DRAPERS' GARDENS

12 THROGMORTON AVENUE

LONDON EC2

CITY OF LONDON

ARCHAEOLOGICAL EXCAVATION

DGT 06

MAY 2009

PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

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12 THROGMORTON AVENUE
LONDON EC2
CITY OF LONDON

EXCAVATION

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An Assessment of an Archaeological Excavation and Watching Brief at Drapers' Gardens, City of London, London EC2

Site Code: DGT 06

Central National Grid Reference: TQ 3282 8140

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1 ABSTRACT

1.1 This report details the working methods and results of an archaeological watching brief and excavation at Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, (DGT 06). The excavation was conducted between September 2006 and October 2007 in advance of the proposed redevelopment of the site. The archaeological works consisted of various watching briefs of enabling trenches and ground reduction and two distinct open area excavations, the eastern and southern portions of the site (Area A) and the western side of the site (Area B). The project was commissioned by Exemplar Developments LLP & Canary Wharf Developments and undertaken by Pre-Construct Archaeology Ltd, under the supervision of Neil Hawkins. This report was prepared and written by Neil Hawkins.

1.2 The excavation encountered multi-phase archaeological activity from the prehistoric to the post-medieval. This was broken down into eleven distinct chronological phases, some with further sub-phases. These are; Phase 1 – Natural, Phase 2 – pre-Roman stream channel and alluvial deposits, Phase 3 (a & b) - Roman AD 50-70, Phase 4 – Roman AD 70-120, Phase 5 (a & b) – Roman AD 120-160, Phase 6 (a & b) – Roman AD 160-250, Phase 7 – Roman AD 250-350/400, Phase 8 – Late Roman AD 350-420, Phase 9 – medieval, Phase 10 – post-medieval and Phase 11 – Modern. A sequence of Roman activity from the 1st to 5th centuries dominates the archaeological record of the site.

1.3 Geologically the site lies within the London (or Thames) Basin consisting of a bed of chalk covered by marine sands, gravels and clays (i.e. Thanet Sands and Woolwich and Reading Beds), over which London Clay formed. The drift geology of the site itself is shown on the British Geological Survey North London map as Floodplain River Terrace gravels overlying the London Clay. This is covered in much of the City by brickearth. London Clay was recorded throughout the site in excavated slots and boreholes. The London Clay was recorded at c. 6.70m OD in the north of the site and slopes down to c. 4.80m OD in the south. This follows the natural slope down towards the River Thames to the south. An area of terrace gravels was recorded in the north of Area B, overlying the London Clay. These terrace gravels were recorded at c. 7.30m OD and sloped down 6.30m OD towards their southern extent.

1.4 The major geological feature of the area is the Walbrook stream and its tributaries. The Walbrook rose in the vicinity of Hoxton and Shoreditch and flowed south, fed by at least three tributaries to the north of the study site, to meet the Thames just to the west of Cannon Street Station. Extrapolated to be crossing through the site were a series of these tributaries of the River Walbrook. Just to the south of the site they were thought to converge, forming the single Walbrook stream which runs into the Thames. Evidence for one of these streams was recorded in the northwest of the site, Area C. A sinuous pre-Roman stream channel was observed cutting the natural London Clay in this area, high energy fluvial gravel deposits filled this channel.

1.5 The earliest evidence of archaeological activity on site was a timber corduroy structure with associated ditch and channel. This timber corduroy structure dated to AD 62, a year after the Boudican revolt. These combined features may have had a variety of usages, but may represent a trackway or define some form of boundary along the northern extreme of Roman *Londinium* at this time. On the north bank of the channel, outside the boundary defined by the timber corduroy, four small timber boxes and a timber door laid flat were recorded. Within three of these boxes the remains of infant burials were recorded. Their location next to the timber door on the

edge of a channel suggests ritual connotations. A timber fenceline, or palisade, potentially enclosing or defining an area was also recorded during this early development of Roman *Londinium.*

1.6 Sometime during the end of the 1st century and the early 2nd century an organised attempt to control the free-flowing Walbrook streams and reclaim the low-lying ground around the streams was initiated. This involved canalising the streams with timber revetting, sometimes redirecting them, and then the laying down of imported dump deposits, raising the ground level between 1.5 to 2 metres.

1.7 Once the program of reclamation and consolidation was completed a metalled gravel road, with associated revetted channels along both sides, was constructed running northnortheast-southsouthwest across the site. The first building was erected on site in the southern half of Area A, east of the road, sometime in the first half of the second century.

1.8 After the construction of this first building, between AD 120 and 160, the site saw extensive development with continued construction of buildings and settlement of the area. This settlement became more intense during this period, with various other structures developing along the eastern side of the road, forming a large complex of buildings. This occupation was represented by a number of phases of timber framed buildings and had a large industrial character to it, with various artefacts, including numerous tools, and archaeological remains, including ovens, suggesting industrial activities such as tanning, butchery, horn working and textile working amongst others. The area of the Upper Walbrook Valley is well attested as a centre for industrial activity during the Roman period[1].

1.9 Roman activity across the site was recorded right through to the late Roman period with numerous buildings still existing along the eastern side of the road and associated revetted channel. These buildings were still in use until at least the middle of the fourth century AD and possibly even continued in use somewhat later. The revetted channels across the site, which formed a major part of the landscape of the area also remained open and use in right through until possibly the early 5th century, suggesting occupation during this time on, or nearby, the site.

1.10 Recovered from within a Roman timber lined well in the northeast of Area A was a hoard of twenty copper-alloy, pewter and iron vessels. This hoard was comprised of; a copper-alloy bucket, a wine bucket, a set of three nested bead-rim dishes and two other similar dishes, the remains of a four-looped zoomorphic hanging bowl, several cauldrons and bowls, one with a hemispherical base, an iron trivet, two shallow one-handled bowls used as dippers, a lead-alloy small dish and flagon and an iron ladle. Recovered from the below the hoard were two coins of the House of Valentinian struck at Arles in the name of Gratian, dating to AD 367-375 and AD 375-378. This provides a *terminus post quem* for the deposition of this hoard; it must have been deposited in or after AD 375[2]. The possibility exists however that this hoard may have been deposited even later than AD 375, potentially even in the early 5th century.

1.11 The next recorded archaeological activity on the site following the Roman period dated to the latter half of the 12th century. This was represented by a collapsed timber revetment structure directly over the location of the previously existing Roman revetted channel. Directly east of this a timber fenceline, represented by a line of

[1] Perring, D., 1991, Roman London.
[2] Gerrard, J., forthcoming, The Drapers' Gardens Hoard: a preliminary account. Britannia.

timber stakes, was recorded running parallel to the revetted channel. Just to the east of this, on the same alignment, the lowest level structural elements of a building were recorded. These chalk post pads supported by softwood timber piles, provide minimal information about the building they represent.

1.12 A handful of deeper cut features dating to the post-medieval period were recorded on site. Most notable amongst these was a timber barrel well which went out of use in the latter half of the 17th century. This lack of archaeological remains is a reflection of the area of the sites usage as a formal garden during the post-medieval period.

1.13 The area of the site remained as open, undeveloped ground, until the late 19th century when the new roads Throgmorton and Copthall Avenues were constructed. Cartographic evidence attests to this, the first map showing development on the site is the Ordnance Survey Map of 1894. The previous Ordnance Survey Map of 1873 showed the area of the site to still be the formal Drapers' Gardens, associated with the Drapers' Hall to the southeast[3]. This is reflected in the archaeological recorded with the archaeological deposits being directly overlain by a Victorian concrete slab. Numerous concrete piles and beams relating to the 1960s Richard Seifert building truncated the archaeological deposits.

[3] Mills Whipp Partnership, October 2001, Revised Archaeological Desktop Assessment of Drapers' Gardens, London EC2.

2 INTRODUCTION

2.1 An archaeological watching brief and excavation were conducted by Pre-Construct Archaeology Limited at Drapers' Gardens, 12 Throgmorton Avenue, London EC2, (Fig. 1). These works were carried out in advance of the proposed redevelopment of the site, and occurred between September 2006 and October 2007. The commissioning client was Exemplar Developments LLP & Canary Wharf Developments. The watching briefs and excavation were all supervised by Neil Hawkins. Tim Bradley and Jon Butler managed the field work and post-excavation respectively for PCA. Kathryn Stubbs, the Senior Archaeology and Planning Officer of the Corporation of London monitored the work. Peter Mills and Mike Hutchinson of the Mills Whipp Partnership were the archaeological consultants on the project.

2.2 The site was previously occupied by the Royal Bank of Scotland and is bounded by 60 London Wall and 8-10 Throgmorton Avenue to the north, Throgmorton Avenue to the east, Copthall Avenue to the south and 2, 4-6, 10-12, and 14-16 Copthall Avenue to the west (Fig. 1). The central National Grid Reference of the site is TQ 3282 8140.

2.3 The site has previously been the subject of a series of reports:

- Mills Whipp Partnership, Revised Archaeological Desktop Assessment of Drapers' Gardens, London EC2, October 2001
- Mills Whipp Partnership, Drapers' Gardens, London EC2: Archaeological Summary Report, November 2002
- Harward, C, Drapers' Gardens, 12 Throgmorton Avenue, London EC2: An Archaeological Evaluation Report, MoLAS, October 2003
- Mills Whipp Partnership, Revised Archaeological Impact Assessment: Drapers' Gardens, London EC2, February 2004
- Mills Whipp Partnership, Outline Archaeological Strategy: Drapers' Gardens, London EC2, February 2004
- Butler, J, Method Statement For An Archaeological Excavation At Drapers' Gardens, London EC2, City of London. Pre-Construct Archaeology Ltd, July 2006

2.4 The site lies within an area of high archaeological potential due to its location in the Upper Walbrook Valley. The valley consisted of a number of tributaries that merged near the centre of the city to form a channel that entered the Thames near the present day Cannon Street Station. Numerous sites in the vicinity have had archaeological investigations revealing a complex sequence of settlement activity, dating from the prehistoric right through to the post-medieval period. Most notably represented is the Roman period, with structured settlement taking place in the form of ground consolidation and water management and the subsequent installation of formalised roads and buildings[4].

2.5 The Archaeological Desktop Assessment indicated that the site was likely to be crossed by two tributaries of the River Walbrook and that the archaeological deposits were likely to consist of stream deposits covered by a series of reclamation dumps.

[4] Maloney, C. with de Moulins, D., 1990, The archaeology of Roman London Vol.1: The Upper Walbrook in the Roman Period, CBA Research Report 69.

These dumps could have been sealed by Roman structures, with later periods likely to be represented by deep cut features. During the Saxon period the area became subject to regular flooding. The medieval, and subsequent post-medieval period, saw the area developed again where it became a centre for industrial activities.

2.6 The site was subject to an archaeological evaluation in 2003 by the Museum of London Archaeology Service (Site Code DPG 03)[5]. The evaluation appeared to confirm the presence of two tributaries of the River Walbrook, the base of the stream channels were filled with up to 2.25m of natural riverlain alluvium. This was overlain by up to 3.60m of low grade dumping and mass reclamation. No evidence of Roman structures was found. A quantity of third century pottery was found however, and was thought to represent finds from deeper cut features.

2.7 The archaeological investigations consisted of several phases of work (Fig. 2). The methodology involved for the various phases of works is discussed in more detail in Chapter 6 of this report.

- An archaeological watching brief was undertaken monitoring the excavation of an enabling trench around virtually the entirety of the site. This consisted of the monitoring of the removal of concrete, and any solid obstructions below, to enable the installation of sheet piles around the sites perimeter. This took place between September 2006 and January 2007.

- An archaeological watching brief was then undertaken in the Phase 4 area (Area C) monitoring the removal of the concrete slab and any deposits below to the development's formation level of 5.50m OD. This area was thought to be truncated down to the top of the natural London Clay. This took place between November and December 2006.

- An archaeological watching brief was undertaken in the Phase 6 area (Area D) monitoring the removal of the concrete slab and piles caps down to the top of surviving archaeological deposits. Once archaeological deposits were revealed these were cleaned, and subsequently recorded, to determine their nature. The area was then covered by terram geotextile and backfilled to protect the archaeology with the prospect of further investigation depending on the finalised foundation design. This took place in January 2007.

- An archaeological watching brief and subsequent excavation in the Phase 2, the eastern and southern area, (Area A) involved the monitoring of the removal of the concrete slab and any other modern deposits down to the top of the archaeological horizons, at which point hand excavation commenced. This took place between February and June 2007.

- An archaeological watching brief and subsequent excavation in the Phase 3 and 5, western areas (Area B) involved the monitoring of the removal of the concrete slab and any other modern deposits down to the top of the archaeological horizons, at which point hand excavation commenced. This took place between September and October 2007.

[5] Harward, C., 2003, Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, An Archaeological Evaluation Report. Museum of London Archaeology Service, unpublished report.

2.8 The completed archive comprising written, drawn and photographic records and artefacts will be stored by Pre-Construct Archaeology Limited until their eventual transfer to London Archaeological Archive Research Centre (LAARC) at Eagle Wharf Road. Site matrices form part of the archive and can be provided by PCA on request.

2.9 The site was given the site code DGT 06.

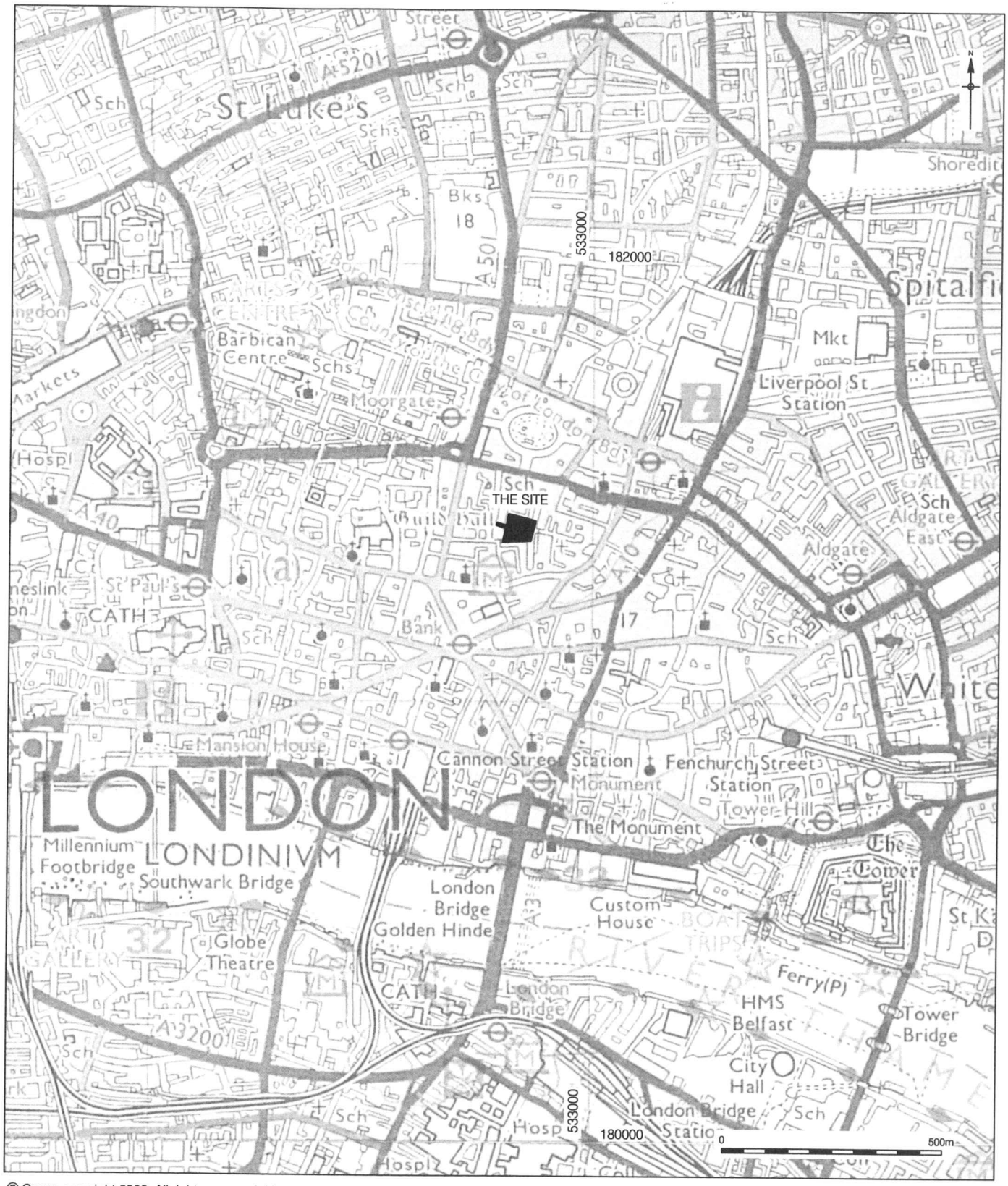

Figure 1
Site Location
1:12,500 at A4

Figure 2
Trench location,
showing location of sections illustrated in the report
1:400 at A4

3 PLANNING BACKGROUND

3.1 Archaeology in City of London and the Corporation of London's UDP

3.1.1 The Corporation of London's policy towards archaeology and the planning process is contained within 'Planning Advice Note 3' revised and updated in 2004[6].

3.1.2 It states its commitment to Planning Policy Guidance: Archaeology and Planning (PPG 16), which states:

> 'The desirability of preserving an ancient monument and its setting is a material consideration in determining planning applications whether that monument is scheduled or unscheduled. Developers and local authorities should take into account archaeological considerations and deal with them from the beginning of the development control process.' (paragraph 18)

It also states:

> 'Where nationally important archaeological remains, whether scheduled or not, are affected by proposed development there should be a presumption in favour of their physical preservation' (paragraph 8)

3.1.3 The **Corporation of London's Unitary Development Plan (UDP)**, adopted in March 1994 and revised in 2002 contains policies relating to archaeological remains and sites with archaeological potential. Policy ARC 1 states:

> 'Where appropriate, to require planning applications which involve excavation or groundworks on sites of archaeological potential to be accompanied by an archaeological assessment and evaluation of the site including the impact of the proposed development'

3.1.4 Planning Advice Note 3 identifies the need for early consultation in the planning process to determine the impact of construction schemes upon buried archaeological strata. Once the results of the Desk Top Assessment and, where necessary, the follow-up trial work is known, an informed decision on the necessity or otherwise for further archaeological strategies may be taken. These strategies may be preservation *in situ,* excavation, or a watching brief.

3.1.5 Following the production of a Revised Desk Top Assessment for the subject site in 2001[7], and after consultation with Kathryn Stubbs, Senior Archaeology and Planning Officer of the Corporation of London, an evaluation strategy was undertaken that was reported upon in 2003[8]. Based on the findings in this report a mitigation strategy was devised following consultation with Kathryn Stubbs[9]. During the initial stages of the excavation, due to the drastically different nature of the archaeological remains, a

[6] Corporation of London Department of Planning, 2004, Planning Advice Note 3: City of London Archaeology, Archaeological Assessment.
[7] Mills Whipp Partnership, 2001, Revised Archaeological Desk Top Assessment of Drapers' Gardens, London EC2, City of London. Mills Whipp Partnership, unpublished report.
[8]Harward, C., 2003, Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, An Archaeological Evaluation Report. Museum of London Archaeology Service, unpublished report.
[9] Butler, J., 2006, Method Statement For An Archaeological Excavation At Drapers' Gardens, London EC2, City of London. Pre-Construct Archaeology Ltd, unpublished report.

new strategy was implemented following consultation with Kathryn Stubbs. The details of which are discussed more thoroughly in Chapter 6 of this report.

4 GEOLOGY AND TOPOGRAPHY

4.1 The site lies within the London (or Thames) Basin consisting of a bed of chalk covered by marine sands, gravels and clays (i.e. Thanet Sands and Woolwich and Reading Beds), over which greyish brown to grey London Clay formed. The upper part of the London Clay is weathered a mottled orange and brown colour.

4.2 The drift geology of the site itself is shown on the British Geological Survey North London map as Floodplain River Terrace gravels overlying the London Clay. This is covered in much of the City by brickearth.

4.3 The major geological feature of the area is the Walbrook stream and its tributaries. The Walbrook rose in the vicinity of Hoxton and Shoreditch and flowed south, fed by at least three tributaries to the north of the study site, to meet the Thames just to the west of Cannon Street Station. Two of the streams are thought to meet the main Walbrook channel to the south of the site. The eastern stream was revealed in an excavation in 1974 in Angel Court and seen to continue to a depth of c.6.90m OD[10]. The main channel was revealed in a culvert under the east end of St Margaret Lothbury in 1976[11]. The bed of the Walbrook was noted to be at a depth of 6.1m below the ground surface during building works in Tokenhouse Yard in 1889[12]. At recent excavations at 6-8 Tokenhouse Yard a northeast to southwest channel, representing the former course of the River Walbrook was recorded at a height of 4.56m OD to the south of the site and 3.71m OD to the north[13]. To the south of the site in King's Arms Yard the natural gravel was observed at levels of between 6.49m OD and 5.27m OD in 1960[14]. The width of the floodplain in the area of the site is some 50m[15]. Recent excavations at 2 Copthall Avenue recorded a palaeochannel aligned east-west[16]. This channel was extrapolated to be running through the area of the site.

4.4 The evaluation report by the Museum of London Archaeology Service in 2003 created a topographic model of the surface of the London Clay and pre-Roman stream deposits across the site[17]. These models were based on boreholes, window samples and test pits undertaken during the evaluation. Boreholes undertaken in the 1960s were also re-assessed and incorporated into these models. The model of the London Clay concluded that at least two channels of the Walbrook were present on the site, both running roughly north-south through the site, one to the west and one to the

[10] Blurton, T.R., 1977, Excavations at Angel Court, Walbrook, 1974, LAMAS Vol.28, p16, 18 & fig. 2.
[11] Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London: a Guide to Records of Excavations by the Museum of London, p147.
[12] SMR 040695.
[13] Leary, J., 2003, Assessment of an Archaeological Excavation at 6 – 8 Tokenhouse Yard, City of London, London, EC2, Pre-Construct Archaeology unpublished report.
[14] Wilmott, A., 1991, Excavations in the Middle Walbrook Valley, LAMAS Special Paper 13, p57.
[15] Maloney, C. with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p23 fig 25.
[16] Humphrey, R., 2008, An Assessment of an Archaeological Excavation and Watching Brief at 2 Copthall Avenue, City of London, London EC2 Pre-Construct Archaeology Ltd unpublished report.
[17] Harward, C., 2003, Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, An Archaeological Evaluation Report. Museum of London Archaeology Service, unpublished report.

east. These were thought to be separated from each other by a ridge of London Clay. The western valley was far shallower than the eastern one. The Winchester Square stream is also thought to clip the extreme southeast corner of the site. The evaluation proposed a change to the established view of the Blomfield Street stream cutting across the area to the north of the site, suggesting that it instead ran through the eastern half of the site, down the west side of Throgmorton Avenue (Fig. 3).

4.5 Results from boreholes undertaken during the excavation, and the excavation itself generally confirmed the results from the evaluation. London Clay was encountered at c. 6.70m OD in the northwestern area (Area C) and sloped down to c. 4.70m OD in the southwest corner of the site. In the western extreme of the site in Area D three auger holes encountered London Clay at 6.25m OD at the west, 6.45m OD in the central part and 6.22m OD in the eastern part of the slot. To the east of the site in Area A no London Clay was encountered to the north as the alluvial deposits continued below the formation level of 5.50m OD. To the south a further three auger holes were sunk which encountered the London Clay at 4.66m OD to the west of the area, at 4.64m OD immediately to the west of the road and at 5.24m OD in the southeastern corner of the site. An area of gravel terrace was also recorded in the northwest area of the site (Area B). This was at a highest level of c. 7.30m OD and slopped down towards the south to c. 6.30m OD.

4.6 Cutting through the natural London Clay in the northwestern area of the site (Area C) was a palaeochannel. This natural watercourse ran through the site from the north aligned virtually north-south and then turned southwest towards 4-6 Copthall Avenue. Despite being heavily truncated, high energy fluvial gravel deposits were identified filling the palaeochannel. Sealing the London Clay across the site were a variety of alluvial flood deposits associated with the various Walbrook tributaries crossing and passing by the site.

4.7 The excavation confirmed the presence of at least two tributaries of the Walbrook crossing through the site, as suggested by the evaluation. However, the character of these channels is more complex and will be discussed in more detail later in this report.

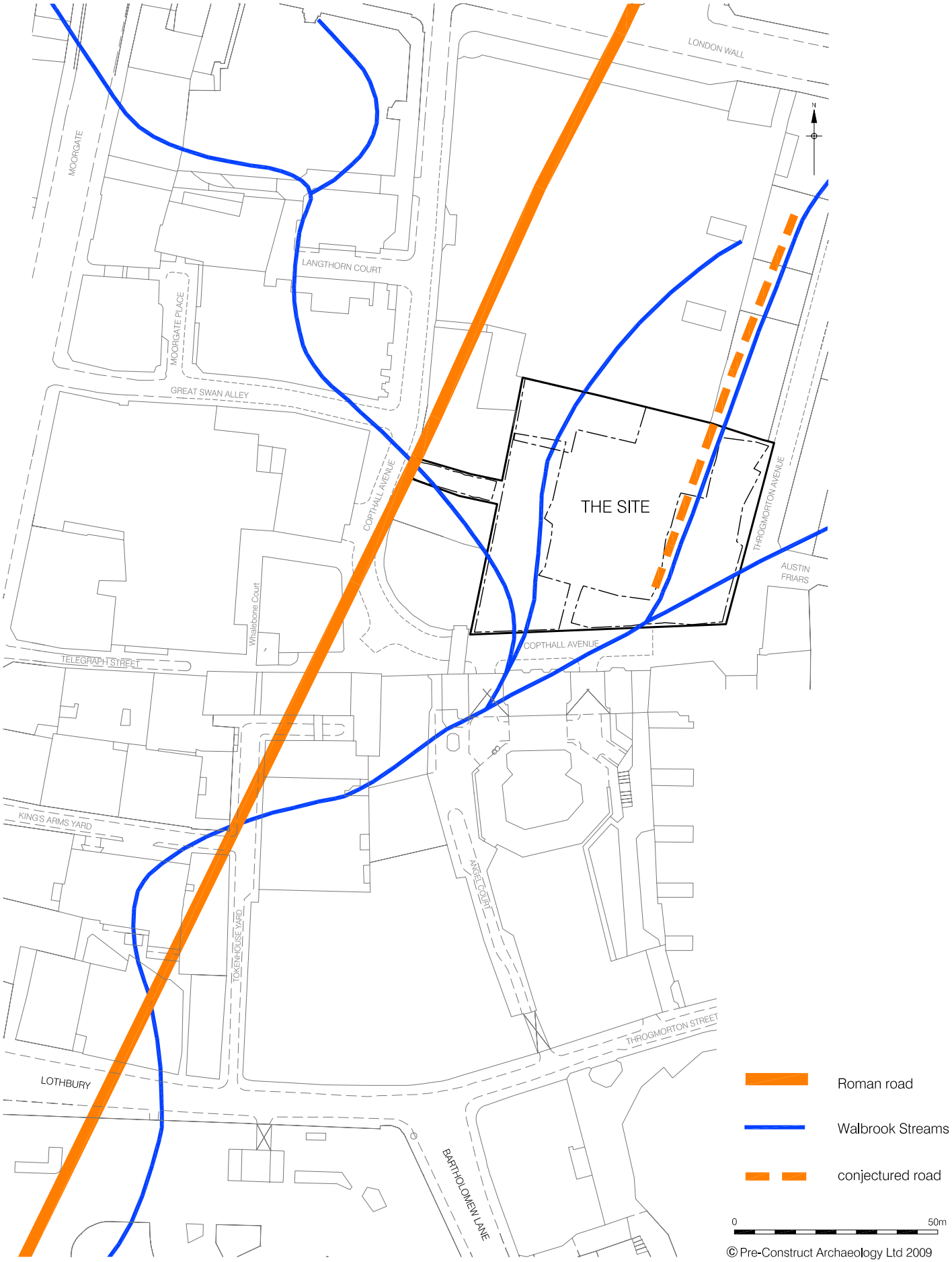

Figure 3
Previous conjectured location of Walbrook streams and roads
1:1,000 at A4

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 A full archaeological and historical background for the site was described in detail in the Desk Top Assessment of the site[18].

5.2 Prehistoric

5.2.1 Prehistoric finds from the City have been limited to stray finds often of doubtful provenance. Evidence of Mesolithic and Neolithic activity along the Thames is evidenced by the discovery of flints especially on the Southwark side. Bronze Age and Iron Age weapons have been dredged from the Thames. It is certainly possible that prehistoric activity may have occurred on the banks of the Walbrook and it is possible that it may have been receptive for votive offerings, however, finds are very few in the vicinity of the site. They consist of three worked flints found during excavations at 52-63 London Wall in 1988, a few Neolithic and Iron Age finds from Finsbury Circus and Iron Age horse equipment found on Moorgate[19]. A late Iron Age bronze fibula brooch was found at Tokenhouse Yard[20] and an iron fibular brooch of similar date was found at 30 Throgmorton Street[21]. Recently excavations at 6-8 Tokenhouse Yard have located a northeast to southwest channel of the River Walbrook. The presence of relatively unabraded Mesolithic struck flint in association with this channel suggests that they were most probably deposited during the Early Holocene. The channel had infilled prior to the Roman period, possibly having migrated further north[22].

5.3 Roman

5.3.1 The Romans began to develop the upper Walbrook Valley in the late 1st to early 2nd century when a planned programme of reclamation and drainage was initiated. The streams were canalised by timber revetments or banks, and marshy land was reclaimed by dumping clay and gravel. At least two major roads were constructed through the valley on a northnortheast to southsouthwest alignment. Road 1 lay to the west of the site in the area of Moorgate. Road 2 ran directly west of the site just east of Copthall Avenue and is also extrapolated to be passing through Area D of the site. A third road was recorded during excavations at 8-10 Throgmorton Avenue in 1999, directly north of the site. This Road 3 is extrapolated to be running directly through the eastern area of the site. These may well have been part of the postulated extensions of the Flavian street grid in the city. Access was provided from within the valley to these roads by means of gravel or timber paths. These roads were main routes from the centre of the city to the cemeteries and market gardening areas of the north outside the city wall[23].

5.3.2 During the 2nd and 3rd centuries many of the early drainage channels were infilled and buildings were erected on the reclaimed land. Clay and timber buildings were

[18] Mills Whipp Partnership, 2001, Revised Archaeological Desk Top Assessment of Drapers' Gardens, London EC2, City of London. Mills Whipp Partnership, unpublished report.
[19] SMR 041174.
[20] SMR 041161.
[21] SMR 041163.
[22] Leary, J., 2003, An Archaeological Desk Top Assessment of 2 Copthall Avenue, London EC2, City of London. Pre-Construct Archaeology Ltd., unpublished report.
[23] Maloney, C. with de Moulins, D., 1990,The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69.

constructed, often on piles, with masonry buildings being confined to the higher ground overlooking the streambed. Industrial activity was located in this area where easy access to a water supply was advantageous. The drainage system was largely maintained, as were the roads, which must have been affected by the construction of the city walls and may have been linked to an intramural road[24].

5.3.3 Some of the buildings showed signs of abandonment for fifty years or more in the 3rd century with reoccupation in the 4th century of buildings with associated industrial activity. The digging of drainage ditches and the raising of the ground level by dumping suggest that the area was becoming wet again perhaps due to the lack of maintenance of the drainage system. The area was finally abandoned by the Romans sometime in the first half of 5th century[25].

5.3.4 Borehole probes at 4-6 Copthall Avenue, immediately north of the site, indicated that either a shallow (0.3m deep) stream or the edge of a deeper one might have flowed northeast to southwest across the site immediately prior to the Roman period. The London Clay was located at 5.8m OD to the west of the site and 5.96m OD to the east, however this rose to 6.3m OD at the southern end, where it had not been eroded by the stream[26]. Excavations at this site showed that extensive dumping overlay the stream to a height of 7m to 7.4m OD, which was cut by drainage channels and overlain with an external gravel surface, possibly a pathway, and a clay surface, both of which had been resurfaced, at a height of between 7.5m and 7.7m OD, possibly dating to the early 2nd century. Associated with this and to the east of the site was a northeast to southwest road, recorded at between 7.64m and 7.95m OD, as well as a timber-lined roadside drain. Later (mid 2nd century) clay and gravel surfaces were also recorded from the site[27]. The earlier drainage channels were overlain with dumped deposits and make-up layers, possibly in preparation for the overlying clay and timber buildings dated to the mid-late 3rd century, *c*. 8.4m OD[28], which were dismantled in the 4th century and overlain by further dump deposits and drainage ditches[29].

5.3.5 Excavations at 5-7 Copthall Avenue for the Guildhall Museum in 1961-2 revealed alluvium containing 3rd and 4th century pottery, suggesting that the stream lay nearby[30], whilst excavations at 10-12 Copthall Avenue revealed an infilled tributary. The gravel road revealed at 4-6 Copthall Avenue was recorded to the west of 10-12 Copthall Avenue, and fronting it were the base plates of two buildings with an alley between them. The buildings had gone out of use by the mid 3rd century, when the area became increasingly wet as indicated by extensive flood deposits[31]. Monitoring work at 20 Copthall Avenue by General Pitt Rivers in 1866 revealed rows of timber piles driven through peat, thought to represent a revetment for the east bank of the Walbrook, although use as building foundations could not be ruled out. Pitt Rivers also recorded thick layers of alternating peat and domestic refuse between 3.05m and 3.96m below the surface[32].

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[24] *Ibid.*
[25] *Ibid.*
[26] *Ibid.*, p20.
[27] *Ibid.*, p40.
[28] *Ibid.*, p61.
[29] *Ibid.*, p72.
[30] SMR 040646.
[31] SMR 043654-62; Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London 1907-1991: a Guide to Records of Excavations by the Museum of London.
[32] SMR 040650.

5.3.6 Excavations at 20-56 Copthall Avenue in 1988 revealed a tributary of the Walbrook, which flowed to the southwest of the site and was backfilled with leather waste as well as between 20 and 30 human skulls. Other finds included an iron awl with leather thongs wound around the head. A NNE-SSW gravel road ran through the middle of the site and 2nd century timber buildings were observed between the road and the tributary. A second road, aligned ESE-WNW, was recorded to the east of the site, and a further two buildings were recorded in the north-west corner of the site, as was a tile and mortar plinth, possibly for a statue[33].

5.3.7 At the southern end of 15-35 Copthall Avenue a major tributary of the Walbrook was recorded running eastwards before meandering to the south, the base of which was recorded at between 5.85m and 6.7m OD. Feeding into the channel from the north were a number of smaller streamlets[34]. By the early 2nd century the trees along the bank had been cut down, the surrounding ground level raised to 6.8m OD, and a northeast to southwest road constructed over a section of the infilled channel. Despite the laying out of a network of drainage channels either side of the road to cater for the displaced stream, flooding episodes occurred and caused erosion to the road leading to it being resurfaced to a height of 6.95m OD, a bank was also constructed perpendicular to the road. After further repairs to the road (to a level of 7.18m OD), the bank was rebuilt and a 2m wide timber platform or raised path, as indicated by timber piles, erected above it, recorded at a maximum height of 8.17m OD. As the area continued to flood the road was raised to a height of 7.45m OD and the bank to a height of 7.78m OD, and further drainage channels laid out, the fills of which contained three human skulls. By the mid 2nd century the road had been rebuilt as a causeway, 0.45m higher, the foundation composed of stacked turves on a raft of branches and twigs[35]. Timber buildings, laid on base plates (two of which remained *in situ*), were erected beside the road over the path. The buildings were abandoned in the mid 3rd century, and were overlain by further alluvial deposits. The road continued to be regularly repaired up to the mid 4th century.[36]

5.3.8 Excavations in 1936 at Northgate House, to the west of the site at 20-28 Moorgate, revealed dumps of Roman kiln wasters indicating proximity to a kiln. Excavations at the same site in 1951 revealed further evidence of pottery manufacture as well as part of the stream valley[37]. Further excavations in 1998-2000 identified up to 8 kilns and a probable potter's workshop dated to the early-mid 2nd century to first half of the 3rd century AD on the west side of a major tributary of the Walbrook stream[38]. Further evidence of a stream was also identified at 30 Moorgate[39].

5.3.9 Excavations to the east of the site at 22-25 Austin Friars in 1989 identified a number of buildings, two of which were masonry with tessellated floors and therefore probably of a high status. These buildings were served by a complex sequence of timber pipes, tanks and wells located close to a channel of the Walbrook[40]. Recently, a borehole at Austin Friars recorded London Clay at a level of 5.3m OD and waterlain deposits to a level of 7.2m OD.

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[33] SMR 041636-49; Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London 1907-1991: a Guide to Records of Excavations by the Museum of London.
[34] Maloney, C. with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p15.
[35] *Ibid.*, p26.
[36] *Ibid.*, p47.
[37] SMR 040645.
[38] Seeley, F. & Drummond-Murray, J., 2005, Roman pottery production in the Walbrook valley: Excavations at 20-28 Moorgate, City of London, 1998-2000, MoLAS Monograph 25.
[39] SMR 040644.
[40] SMR 041567-73.

5.3.10 At recent excavations at 6-8 Tokenhouse Yard, to the south of the site, prehistoric channel fills were overlain by the dumping of sediments and domestic waste in the mid 1st century, recorded at a height of 5.33m OD, as well as the construction of drainage ditches, gullies and box drains, indicating periods of land reclamation and drainage, probably on the margins of the main channel. Building activity was evidenced in the mid to late 1st century by two parallel *in situ* fences with a compacted gravel surface, recorded at 5.45m OD, between them, representing an alley, and the fragmentary remains of a beamslot, suggesting that the area had become dry enough to build upon. The building activity may have only been short-lived, however, since the fences were rapidly overlain by dumped material. After the disuse of the building activity, further attempts were made to reclaim land and control the local hydrology, as evidenced by the construction of more box drains, drainage ditches and gullies, and these wet conditions persisted throughout the end of the 1st century and into the 2nd century. A second phase of building activity was recorded to the south of the site, recorded at a height of 6.70m OD, and represented by an *in situ* pale and wattle wall, however, again this activity may not have been long-lived. Between AD 140-400 the sedimentary succession indicates a complex sequence of dump deposits and cut features such as drainage ditches and gullies, suggesting that the area remained waterlogged. The presence of waterlogged seeds within many contexts further indicates a continuation of wet conditions. An east-west aligned revetted ditch was cut shortly after AD 270 and remained open until the end of the fourth century. A pillar base or statue plinth, dating to the fourth century, overlay the sequence of layers to the south, and was recorded at a height of 7.69m OD [41].

5.3.11 To the south of the site an excavation and watching brief at Angel Court in 1974 revealed a small tributary stream of the Walbrook. This was canalised in the late 1st/early 2nd century by means of timber revetting and artificial banks. A gravel path was laid on clay and gravel reclamation dumps. A second phase of revetment and attempts to manage the rising water levels were revealed, as were the supports of a possible timber footbridge. Substantial Roman buildings and timber drains were recorded in section to the south of the site[42]. Immediately to the east of the site at 9-10 Angel Court a watching brief observed a sequence of alternating Roman flood deposits and rubbish dumps with the remains of a possible timber revetment or building[43].

5.3.12 To the southwest of the site at 8 Telegraph Street gravels and clay raised the ground surface *c.*1.00m to a level of 8.1m OD in the early 2nd century. An E-W post and plank revetment facing south was found[44]. In the mid to late 2nd century two phases of masonry wall were revealed on the same alignment as the revetment, with ground raising between the two phases[45]. These walls were robbed in the last half of the 3rd century[46].

5.3.13 Also to the south of the site in Lothbury two shafts for the Docklands Light Railway revealed evidence of a timber framed building of early 2nd century date which was superseded by a substantial Roman building with a hypocaust, tessellated floors and

[41] Leary, J, 2003, Assessment of an archaeological excavation at 6-8 Tokenhouse Yard, City of London, EC2, PCA unpublished report.
[42] Blurton, T.R., 1977, Excavations at Angel Court, Walbrook, 1975, LAMAS vol.28, p16-26.
[43] SMR 043535, 043536, 043537.
[44] Maloney, C. with de Moulins, D., 1990,The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p40.
[45] *Ibid.*, p60.
[46] *Ibid.*, p68.

plastered walls with decorative painting in the middle of the 2nd century. The hypocaust was modified and the building continued in use until the 4th century[47].

5.3.14 Other evidence of Roman buildings was seen on several sites in the vicinity of the site. At the junction of Moorgate and King's Arms Yard a tessellated floor was discovered in 1843[48]. At 2 Moorgate walls and *opus signinum* floors with indications of a hypocaust were observed in 1927. The walls were revealed at a depth of *c.* 4.11m below ground level and were founded on a double row of timber piles driven into black alluvial deposits[49]. To the south of the site the excavation of a tunnel in Lothbury in 1963 revealed a ragstone and tile wall at a depth of c.3.28m below the road surface[50]. A sewer excavation in the same road in 1835 revealed a tessellated pavement at a similar depth of *c.* 3.35m below the road surface[51]. A similar floor was found during sewer work at the same depth in Lothbury in 1895[52]. A 3rd century mosaic was found in the Bank of England in 1805 at a depth of between 3.35m and 3.65m[53]. Other building work in the Bank of England revealed the remains of Roman buildings at depths of c.3.81m and c.6.25m below ground level.

5.3.15 Recent excavations directly to the west at 2 Copthall Avenue revealed pre-Roman and Roman deposits. A palaeochannel, running east-west, was recorded. This was sealed by early Roman dumped deposits. Driven through these dump deposits was a northwest – southeast alignment of four timber posts and a single plank which didn't appear to be revetting any ditch or channel. However, it is noted that this alignment did respect the line of the previously recorded palaeochannel. A further sequence of dumped and flood deposits were recorded through which was driven a line of north – south timber piles which most likely related to timber framed structures[54].

5.3.16 An excavation at 8-10 Throgmorton Avenue in 1999, directly north of the site, recorded critical information with regard to interpreting the archaeological results from Drapers' Gardens. A sequence of Roman archaeology was recorded from the middle of the 1st century to the mid/late 4th century. The 1st and early 2nd centuries were represented by water-logged deposits at the base of the sequence, with evidence existing of a drainage ditch and a timber causeway. During the rest of the 2nd century mass ground consolidation and development took place with an organised Roman street plan being implemented. Several phases of revetting were recorded during this period, the last of which remained open as a box drain running north-south. This ran along the eastern side of a gravel road. Directly east of these were recorded a series of clay and timber buildings, with possibly as many as four phases of which being identified as they were apparently constantly being rebuilt. In the 3rd and 4th centuries the site became less densely occupied, however a large clay and timber building was

[47] Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London: a Guide to Records of Excavations by the Museum of London, p272.
[48] RCHM, 1928, Roman London, p123.
[49] Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London: a Guide to Records of Excavations by the Museum of London, p106.
[50] Merrifield, R., 1965, The Roman City of London, Gazetteer 161, p237.
[51] *Ibid*.
[52] SMR 040699.
[53] Merrifield, R., 1965, The Roman City of London, Gazetteer 167, p238.
[54] Humphrey, R., 2008, An Assessment of an Archaeological Excavation and Watching Brief at 2 Copthall Avenue, City of London, London EC2 Pre-Construct Archaeology Ltd unpublished report.

built around AD 250 and subsequently was destroyed and collapsed in AD 270. This structure was immediately rebuilt but fell into disuse in the early fourth century[55].

5.4 Saxon

5.4.1 By the early 5th century it would appear that the Roman City of *Londinium* was largely abandoned. The Saxons preferred to settle further to the west in the Strand/Covent Garden area. Their settlement was called *Lundenwic* and was described by Bede in the 8th century as "a trading centre for many nations who visit it by land and sea"[56]. With the growing menace of the Viking raids in the second half of the 9th century, the settlement of *Lundenwic* was in turn abandoned for the site of the old Roman city with the security its old city walls and ditches provided.

5.4.2 The marshy nature of the Walbrook valley did not lead to immediate settlement of the area by the Saxons. The first occupation of the area by the Saxons was found at 8 Telegraph Street to the southwest of the site with evidence of dumping and the construction of a wattle and daub building[57] and in the Docklands Light Railway shaft in Lothbury where a small 10th/11th century timber building was revealed[58]. It was observed that the Roman building in the shaft was probably left standing as a ruin into the 10th century, providing proof that the area was not utilised for over 500 years. Single sherds of Saxon pottery were found at Angel Court[59] and 12-18 Moorgate[60]. However, much of the rest of the area would seem not to have been reoccupied until the late 11th/12th centuries[61].

5.5 Medieval

5.5.1 The earliest mention of the Walbrook is in a charter of William I dated 1068. It is though that the name derives from 'stream of the Britons'[62]. Once the Romans drainage system had been abandoned the flooding of the Walbrook would have become a perennial problem causing the area to become a swampy marsh. There is evidence that the marsh known as Moorfields to the north of the City wall may have extended considerably farther south into the central northern sector of the City. The site at Angel Court, to the south of the development area, marked a limit of the marsh as late as the 14th century. The revetments and culverts which controlled the Walbrook and the drainage of the area during the Roman period were neglected in the medieval period and meant that the region reverted to a swampy area until comprehensive drainage was re-established in the 15th and 16th centuries. The relatively unattractive nature of the land is reflected in the unusually large size of the tenements that were held in this area. William King, who died shortly before 1396 held most of the land between Coleman Street and the Walbrook. Most of the area

[55] Swift, D., 2001, 8-10 Throgmorton Avenue, London, EC2, City of London, An Archaeological Post-excavation Assessment and Updated Project Design. Museum of London Archaeology Service, unpublished report.
[56] Sherley-Price, L., (trans.), Bede, A History of the English Church and People, p104.
[57] Maloney, C. with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p79.
[58] Schofield, J. with Maloney, C., (eds.), 1998, Archaeology in the City of London: a Guide to Records of Excavations by the Museum of London, p272.
[59] SMR 042142.
[60] SMR 044638.
[61] Maloney, C., with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p79.
[62] Wilmott, A., 1991, Excavations in the Middle Walbrook Valley, LAMAS Special Paper 13, p11.

would have used as gardens as it still was as shown on 16th century maps. Many of the documents between 1287 until the mid 14th century refer to ditches and streams, as property boundaries and the area must have been very wet in the winter and subject to flooding. After this drainage of the area must have been undertaken in a more comprehensive fashion as after 1412 there is no further mention of the Angel Court tributary and by the 16th century widespread drainage schemes were in place[63].

5.5.2 Although all medieval deposits had been truncated at 4-6 Copthall Avenue[64], excavations at 10-12 Copthall Avenue in 1905 revealed a medieval well, 6.1m deep, with a timber-lined well shaft[65]. The excavations at 15-35 Copthall Avenue recorded medieval peaty waterlogged deposits at a height of 8.4m OD. Whilst excavations in 1988 at 20-56 Copthall Avenue recorded an 11th century east-west ditch, interpreted as an attempt to re-establish drainage in the area[66]. At 22-25 Austin Friars excavations revealed ragstone walls founded on timber piles, forming part of a building[67].

5.5.3 Excavations at Northgate House, 20-28 Moorgate, revealed evidence that the area remained largely marginal during the medieval period, probably due to the marshy nature of the ground. However, a large drainage ditch and some timber-lined pits were recorded from the site, the contents of which suggest that the area was used for a number of industrial purposes. These activities included the dumping of waste from the slaughter of animals, probably from the meat markets within the city, as well as horn working, cat skinning, tanning and metal-working[68].

5.5.4 Recent excavations at 6-8 Tokenhouse Yard provided evidence of medieval activity comprising a layer containing pottery dating from c. AD 970 to 1100. A wood lined cesspit and connecting east-west sewer drain dated to between AD 1000-1150, cut this layer, suggesting that the area was sufficiently drained for domestic activity recorded at a level of c. 8.90m OD. An east-west revetted ditch, which had begun to be infilled from the mid to late 12th century, was re-cut. Industrial activity was evidenced in an overlying layer, dated from AD 1270-1350, which contained evidence of metal-working, probably the smelting of copper alloy, and included two cylindrical crucibles[69].

5.5.5 At Angel Court to the south of the site the earliest medieval layers were dated to the late 12th or early 13th centuries. The tributary of the Walbrook observed during the Roman phases was no longer seen. Attempts to drain the land were revealed by the presence of a drainage ditch and widespread dumping across the area. A 14th century barrel well was the first evidence of features associated with buildings on the site[70].

[63] Dyson, T., Historical Survey in Blurton, T.R., 1977, Excavations at Angel Court, Walbrook, 1974, LAMAS vol.28, p15.
[64] Maloney, C., with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69, p79.
[65] SMR 041479.
[66] SMR 041649.
[67] SMR 041574.
[68] Drummond-Murray, J. and Liddle, J., 2003, Medieval industry in the Walbrook valley, London Archaeologist, vol. 10, no. 4.
[69] Leary, J., 2003, Assessment of an archaeological excavation at 6-8 Tokenhouse Yard, City of London, EC2, PCA unpublished report.
[70] Blurton, T.R., 1977, Excavations at Angel Court, Walbrook, 1975, LAMAS vol.28, p21.

5.5.6 Evidence of medieval buildings was also revealed at 8 Telegraph Street where a medieval hearth was found[71], at the Bank of England where two 13th century wells, one a barrel well, and a wall were found[72].

5.6 Post-Medieval

5.6.1 The site is apparent on the Agas Map of c.1562 and the Braun & Hogenberg Map of 1572. All show the area to the north of the church of St Margaret Lothbury up to the City wall as largely turned over to gardens. This was probably due to the unsuitable nature of the ground for building because of the Walbrook stream.

5.6.2 John Stow in 1598 described the Walbrook as "this watercourse, having divers bridges, was afterwards vaulted over with brick, and paved level with the streets and lanes wherethrough it passed; and since that, also houses have been built thereon, so that the course of Walbrook is now hidden under ground, and thereby hardly known"[73].

5.6.3 The site of Drapers' Gardens was originally attached to Drapers' Hall located on the north side of Throgmorton Street. Drapers' Hall had been built for Thomas Cromwell on land previously occupied by small tenements (the previous occupants having been unceremoniously ousted). Unhappy with only a 'reasonable' plot of land for his garden, Cromwell ordered the fences of the surrounding gardens to be taken down and a high brick wall to be erected, again this was done without prior notification to the owners of the gardens. John Stow's father had a house and garden nearby and Stow tells us of his father's surprise at finding, with no warning, that the neighbouring house had been lifted up, set on rollers and moved into his garden, to make way for Cromwell's grand garden. When Stow's father spoke to the surveyors about this, their response was "that their master Sir Thomas commanded them so to do" and he notes that "no man durst go to argue the matter, but each man lost his land, and my father paid his whole rent, which was 6*s*. 6*d*. the year, for that half which was left. Thus much of mine own knowledge have I thought good to note, that the sudden rising of some men causeth them in some matters to forget themselves."[74].

5.6.4 The hall and garden passed to the Drapers' Company in 1541. The Drapers' Company was a brotherhood since the 12th century and received its first charter in 1364, and is the third City Livery Company in order of civic precedence. The members traded at different periods in the export and import of wool cloth, becoming very wealthy and influential[75]. The gardens were used to dry and bleach clothes, however following a complaint by the gardener in 1551 that this was damaging the herbs this became limited to only the past and present wardens[76].

5.6.5 At the beginning of the 17th century a number of buildings in the vicinity of the site were owned by the Clothworkers' Company, a guild connected with textiles. In 1607 the Clothworkers' Company decided to survey the boundaries of their extensive properties and in 1611 they commissioned Ralph Treswell, a painter-stainer, to complete the task. Treswell presented his survey a year later in 1612, and asked for £50 in payment. The Company paid him £35 and had him survey their lands in Sutton

[71] SMR 043299.
[72] SMR 041455; 041456; 041457.
[73] Stow, J., 1598, A Survey of London, p45-46.
[74] Stow, J., 1598, A Survey of London, p191-2.
[75] Weinreb, B. & Hibbert, C. (eds.), 1983, The London Encyclopaedia, p169.
[76] *Ibid*., p245.

Valence, Kent and Essex[77]. Treswell's survey shows that two properties existed in the area of the site in 1612. The properties both had gardens, the western garden with a building to the north, and the eastern one with a garden to the south. Peter Doby, undertenant of Mr. Samwayes, held the west property, whilst the eastern property was held by Edward Colley, undertenant of Mr. Street. The western building was on a platform raised above the garden by a low wall and steps, and comprised ground floor rooms in a L-shaped with a garret over one of them. This building can be seen within the footprint of the present-day 2 Copthall Avenue. The eastern building was a lobby-entrance house on two floors, with the stairs to the first floor in the porch. Although this building is seen to be outside the footprint of the site, an out-building at the northern end of the garden as well as a bowling alley, which could have been accessed from the main road, lies within the footprint[78].

5.6.6 The Great Fire of 1666 destroyed the area to the south of the site, including Drapers' Hall, which was rebuilt in 1667, although it was partly burnt and rebuilt in 1772-4[79]. Leake & Hollar's Map of 1667 and Ogilby & Morgan's Map of 1676 show that the fire was stopped just before the site, no doubt helped by the open space provided by the gardens. After the Great Fire the gardens were opened to the public, and soon became a fashionable promenade an hour before dinnertime[80]. Ogilby & Morgan's 1676 map shows that the properties recorded in Treswell's 1612 survey remained, although both buildings in the eastern property had been considerably extended and a formal garden laid out in the western property.

5.6.7 Cartographic evidence throughout the post-medieval period, from Agas' map of 1562 until the Ordnance Survey Map of 1873, shows the area of Drapers' Gardens to be an open area of gardens/small park. Marked development can be seen around the gardens but it remains open ground over the entirety of this period. The Ordnance Survey Map of 1894 however shows a drastic change. The site has now been completed developed, with three buildings and two small avenues now occupying the site[81].

5.6.8 In the early 1960s the building which became known as the Drapers' Gardens tower was erected. It was designed by Richard Seifert, the architect also responsible for the Grade II Listed Building Centre Point and Tower 42. It was this building which was demolished during the archaeological excavation, the tallest building ever to be demolished in the UK.

[77] Schofield, J., 1987, The London surveys of Ralph Treswell.
[78] Schofield, J., 1994, Medieval London Houses.
[79] Harben, H. A., 1918, A dictionary of London being notes topographical and historical relating to the streets and principal buildings in the City of London.
[80] Weinreb, B. & Hibbert, C. (eds.), 1983, The London Encyclopaedia, p245.
[81] Mills Whipp Partnership, 2001, Revised Archaeological Desk Top Assessment of Drapers' Gardens, London EC2, City of London. Mills Whipp Partnership, unpublished report.

6 METHODOLOGY

6.1 An archaeological evaluation conducted in 2003, consisted of the monitoring of geotechnical test pits, boreholes and window samples[82]. The evaluation appeared to confirm the presence of two tributaries of the River Walbrook, the base of the stream channels were filled with up to 2.25m of natural riverlain alluvium. This was overlain by up to 3.60m of low grade dumping and mass reclamation. No evidence of Roman structures was found. Based upon this evaluation a mitigation strategy was formulated by Mills Whipp Partnership in consultation with Kathryn Stubbs, Senior Archaeology and Planning Officer of the Corporation of London. This methodology is described in detail in the Method Statement[83] but a brief summary of the original phased works are as follows:

- **Phase 1** will consist of the monitoring of enabling works. This will consist of pile probing around the entire perimeter of the site in preparation for the insertion of steel piling. In addition ground anchors will be inserted into the soil under Throgmorton Avenue on the eastern side of the development to support the sheet piling. These ground anchors are to be inserted at two distinct levels.
- **Phase 2** will consist of three excavations across the eastern part of the site. These excavations will be dug through the Roman deposits down to the top of the natural stream deposits with environmental sampling thereafter.
- **Phase 3** will consist of an excavation along the southern part of the site. This excavation will be dug through the Roman deposits down to the top of the natural stream deposits with environmental sampling thereafter.
- **Phase 4** will consist of the archaeological monitoring of the reduction of the area to the north-west of the central tower. From available information it is indicated that previous truncation will have removed all but the deepest archaeological remains.
- **Phase 5** will consist of two excavations to the east and southeast of the central tower. These excavations will be dug through the Roman deposits down to the top of the natural stream deposits with environmental sampling thereafter.
- **Phase 6** will consist initially of the archaeological monitoring of the removal of concrete slabs and pile caps down to the top of the archaeological horizons. The later archaeological requirements in this western access area will be dependent on the finalisation of the foundation design.
- **Phase 7** will consist of brief observations beneath the central tower.
- **Phase 8** will consist of archaeological monitoring of any support works necessary on the remainder of the site.

6.2 The proposed development at Drapers' Gardens required demolition of the thirty storey tower and ground reduction work across the whole site to a formation level of 5.50m OD. The original excavation methodology was tied into these phases of sequential demolition and ground reduction events. Phase 1 consisted of the monitoring of an enabling works trench around virtually the entire perimeter of the site for the insertion of sheet piling. Henceforward this will be referred to as the enabling works watching brief. This involved the removal of the concrete slab, modern overburden and any deposits below these by the demolition contractors utilising mechanical excavators with breakers and flat bladed ditching buckets down to a level

[82] Harward, C., 2003, Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, An Archaeological Evaluation Report. Museum of London Archaeology Service, unpublished report.

[83] Butler, J., 2006, Method Statement For An Archaeological Excavation At Drapers' Gardens, London EC2, City of London. Pre-Construct Archaeology Ltd, unpublished report.

which enabled the insertion of sheet piles. This work was undertaken under archaeological supervision.

6.3 The original Phase 2 area, henceforward to be referred to as Area A (Fig. 2), was to consist of three stepped trenches across the eastern half of the site. This involved the breaking out and removal of the existing basement concrete slab along the whole eastern part of the site utilising mechanical excavators with breakers and a flat bladed ditching bucket. This was conducted under archaeological supervision. Once archaeological deposits were visible and confirmed to be low grade dumping the location of the three trenches would be confirmed by the Corporation of London's Senior Planning and Archaeology Officer. However, once the entirety of the concrete slab was removed it was clear that the archaeological deposits were much more complex than the dump deposits extrapolated to survive. Following consultation with the aforementioned Senior Planning and Archaeology Officer and Mills Whipp Partnership a new methodology was formulated and it was deemed necessary to hand excavate the entirety of this area, Area A. All investigation of archaeological levels, features and structures was by hand, with cleaning, examination and recording both in plan and in section. During the course of the excavation, following consultation with the Senior Planning and Archaeology Officer, a strategy was formulated which involved the excavation of all complex archaeology by hand down to the top level of the low grade dump material. Hand dug slots would then be excavated through this material down to the formation level of 5.50m OD or until natural geology was encountered. The rest of the dumped material would then be reduced down to the formation level by mechanical excavator under archaeological supervision.

6.4 The original Phase 3 and 5 areas, henceforward to be referred to as Area B (Fig. 2), the whole western part of the site, followed the same methodology as the original Phase 2 (Area A) as described above. Stepped trenches were to be excavated through the potentially low grade dump deposits. However, as Area A had revealed such a complex sequence of archaeological deposits, this strategy would be reviewed once the concrete slab was removed with the potential being for another open area excavation. As previously, once the concrete slab was removed the complex nature of archaeological deposits dictated that the entire area had to be excavated by hand. A similar strategy was implemented of excavating the entirety of the complex archaeology down to the top of the dumped material and then hand dug slots would be excavated through these to the proposed development's formation level of 5.50m OD or until natural geology was encountered. However, complex archaeology was encountered in one of these slots below the low grade dump material. After consultation with the Senior Planning and Archaeology Officer and Mills Whipp Partnership, it was decided that the low grade material would be removed by mechanical excavators under archaeological supervision down to the top level of the next phase of complex archaeology. Excavation by hand would continue at this point until the complex archaeology was recorded, the formation level was reached or natural geology was encountered.

6.5 The Phase 4 area, the north-western area of the site, will henceforward be referred to as Area C (Fig. 2). The original methodology for this area involved excavating to the formation level of 5.50m OD by the ground works contractors using mechanical excavators. This was to be done under archaeological supervision as a watching/stopping brief, as it was thought to be truncated down to the natural London Clay. This involved the removal of the concrete slab, modern overburden and any deposits below these by the demolition contractors utilising mechanical excavators with breakers and flat bladed ditching buckets. If any archaeological features or deposits were encountered they would be excavated and recorded.

6.6 The Phase 6 area, a slot in the western area of the site, will henceforward be referred to as Area D (Fig. 2). The original methodology for this area involved the removal of the concrete slab, pile caps and modern backfill. This was to be done by the ground works contractors using mechanical excavators under watching brief conditions. Once archaeological horizons were identified they would be cleaned to determine their nature. The archaeological horizons were recorded at this level and left unexcavated; three power-augered boreholes were then undertaken through the area in an attempt to better understand the underlying archaeological and natural sequence. The area was then protected by means of terram geotextile and backfilled. Further work would be determined following consultation with Kathryn Stubbs, Senior Planning and Archaeology Officer of the Corporation of London once the foundation design for the area is finalised.

6.7 Power-augered boreholes were undertaken in a variety of locations across the site. As mentioned above three were undertaken in the western slot area, Area D. Three were also undertaken along the southern area of the site, Area A. These were undertaken following consultation with the Corporation of London's Senior Planning and Archaeology Officer, Kathryn Stubbs, and the archaeological consultants Mills Whipp Partnership.

6.8 All investigation of archaeological levels, features and structures was by hand, with cleaning, examination and recording both in plan and in section. The hand excavation continued to the proposed development formation level of 5.50m OD, or until natural geology was encountered.

6.9 The site archive was organised as to be compatible with its eventual deposition with the London Archaeological Archive and Research Centre (LAARC) at Eagle Wharf Road. Individual descriptions of all archaeological strata and features excavated and exposed were entered onto prepared *pro-forma* recording sheets which include the same fields of entry as found on the recording sheets of the Museum of London. Sample recording sheets, sample registers, finds recording sheets, accession catalogues, and the photography record cards followed the Museum of London equivalents. This requirement for archival compatibility extends to the use of computerised databases.

6.10 A record of the full extent in plan and section of all archaeological deposits as revealed in the investigation was made; these plans were on polyester based drawing film, were related to the site grid and at a scale of 1:10 and 1:20. 'Single context planning' was used on stratified deposits. Where possible the information was digitised for eventual CAD application.

6.11 OD heights of all principal strata and features were calculated and indicated on the appropriate plans and sections.

6.12 A 'Harris Matrix' stratification diagram was used to record stratigraphic relationships. This record was compiled and fully checked during the course of the excavations. Spot dating was incorporated where applicable during the course of the excavation.

6.13 Full photographic records of the investigations were prepared. This included black and white prints and colour transparencies (on 35mm film), illustrating in both detail and general context the principal features and finds discovered. The photographic record also included 'working shots' to illustrate more generally the nature of the

archaeological investigation. The transparencies were mounted in suitable frames for long-term curation in preparation for deposition with the archive.

6.14 The excavation area and watching brief trenches were surveyed into the National Grid and a CAD drawing produced showing their location.

6.15 Multiple temporary benchmarks were established on the site for the various phases of works, including 9.16m OD and 9.04m OD in Area A and 7.78m OD in Area B. All temporary benchmarks were traversed from the Ordnance Survey benchmark of 13.10m OD located on a wall near the intersection of London Wall and Blomfield Street.

6.16 The site was given the site code DGT 06.

7 THE ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1: Natural Geology

7.1.1 Natural London Clay was recorded in various locations across the site, following the very general trend of sloping down from north to south. An area of natural terrace gravels were also recorded in the northern half of Area B.

7.1.2 The earliest deposit encountered was the natural London Clay. As discussed in Chapter 4 above the London Clay was a greyish brown to grey colour. The upper part of the London Clay was weathered a mottled orange and brown colour. In the northwestern area of the site, Area C, the upper weathered London Clay was recorded at a height of c. 6.70m OD. Auger results in the extreme west of the site, Area D, recorded the upper weathered London Clay at levels of between c. 6.25m and 6.45m OD. In the south of Area B the upper weathered London Clay was recorded within a slot at c. 4.70m OD. To the east it was encountered in the southern part of Area A at levels between 4.64m and 5.24m OD.

7.1.3 In the northern half of Area B natural terrace gravels, [4661], were recorded. These terrace gravels had a recorded area of c. 324 square metres and was at a highest level of c. 7.30m OD. The gravels gradually sloped down to south where it abruptly dropped off to a height of c. 6.30m OD.

7.2 Phase 2: Pre-Roman Stream Channel & Alluvial Deposits (Fig. 4)

7.2.1 A natural pre-Roman channel was recorded in Area C, representing one of the Walbrook streams which are extrapolated to be crossing through the site, in this case most likely the 'Western Stream'. Also recorded across the site were alluvial deposits representing overbank alluviation from the various Walbrook streams crossing through, and passing by the site.

7.2.2 Cutting through the natural London Clay in the northwestern area of the site (Area C) was a palaeochannel, [5021]. This natural watercourse ran through the site from the north aligned virtually north-south and then turned southwest towards 4-6 Copthall Avenue. Despite being heavily truncated, high energy fluvial sands and gravels were recorded filling the palaeochannel. The palaeochannel was recorded at c. 6.80m OD and was approximately 8m across at its widest point. The channels depth was not recorded as it went the below the proposed developments formation level in this area.

7.2.3 Sealing the London Clay across the site were a variety of alluvial flood deposits associated with the various Walbrook tributaries crossing and passing by the site. In the northern part of Area A alluvial gravels were recorded within a sondage at c. 5.60m OD, this was the earliest deposit recorded in the northern part of this area with no further excavation taking below as the developments formation level was reached. In the south of Area B a sequence of alluvial sands, gravels and organic layers were recorded at a height of 5.60m OD and had a total thickness of 0.90m.

7.3 Phase 3a: AD 50-70 (Fig. 5)

7.3.1 The earliest recorded Roman activity on site consisted of a timber corduroy structure with an associated channel to the north and ditch to the south, all on the same alignment. These combined features may have delineated and demarked a boundary. Evidence for early water management, in the form of the revetting of channels was also recorded.

7.3.2 Sealing the alluvial deposits in Area B was a group of dumped layers. These mixed deposits were encountered at a highest level of 6.16m OD and had a maximum thickness of c. 0.55m. Laid upon the dumped deposits in the southern end of Area B was a timber corduroy structure [4798]. The structure was aligned eastnortheast-westsouthwest and it measured, as seen, 18.40m long x 4.10m at its widest point but continued beyond the limits of excavation. It was recorded at a highest level of 6.20m OD at its western end and sloped down steadily to 5.92m OD to the east. This structure was composed of timber logs lain side by side horizontally, aligned roughly north-south, forming the corduroy pattern. A small area of corduroy, [4972], appeared to extend south off the main structure [4798]. It extended c. 2m south and was 2m wide. At its southern end it appeared to have slumped slightly into the side of ditch [4864]. Within the corduroy was another square timber structure [4865], measuring 2.5m x 2.5m. This was constructed of similar timber logs, except larger than before, which lay horizontal on the opposite alignment of the corduroy structure [4798], east-west. These larger timbers appear to have collapsed around four leaning timber posts, which formed a rectangle and would originally have been vertical. These larger timbers of structure [4865] had also collapsed over elements of the corduroy [4798]. Structure [4865] was not intrusive, or later than, corduroy structure [4798] but was an integral part of the overall structure undoubtedly constructed at the same time. Below these timbers a linear cut, [4935], was recorded. This ran northnorthwest-southsoutheast apparently connecting ditch [4864] with channel [4591] (see below). Structure [4865] would appear to be the remains of a bridge over cut [4935]. Dendrochronological results from a number of the individual timbers of corduroy structure [4798] date very specifically to AD 62, two dating to the winter of AD62 and one to the spring AD 62 (Appendix 17).

7.3.3 Cutting the dumped layers at the southern extent of Area B was ditch [4864]. This ditch ran eastnortheast-westsouthwest directly south of corduroy structure [4798], to which it was associated. It measured 9.60m in length but would have continued in both directions beyond the limit of excavation. It was recorded at a height of 5.93m OD and was c. 1.10m deep. The ditch was backfilled with a series of mixed silty clay deposits. Recorded at the western end of this ditch was a single timber plank supported by a timber pile, [4982]. No further evidence of revetting, or any other form of timber structure was recorded throughout the length of the ditch. This ditch appears to have been re-cut not long afterwards, [4561], along the same line but not as wide. Again this ditch was backfilled with a series of mixed silty clay deposits. Recovered from fill [4947] was a coin of Marcus Agrippa, probably struck between AD 37-41 and almost certainly lost before the death of Nero in AD 68. Also recovered from one of the fills was an iron ballista bolt SF1153.

7.3.4 Cutting through the alluvial deposits to the north of timber corduroy structure [4798] in Area B was a large channel [4591]. Running virtually parallel to the corduroy it ran through the length of this area of the site, c. 18.50m and was 8.75m wide, it was encountered at c. 6.43m OD. This man made channel was c. 1.05m deep and was filled with a sequence of natural silting and backfilled material. The channel may have originally been a natural feature which was diverted to flow along a controlled route.

7.3.5 Between timber corduroy structure [4798] and channel [4591] was a line of eight driven timber stakes, [4830], cutting through the dumped deposits. The line of timber stakes measured c. 5m eastnortheast-westsouthwest. The timbers were encountered

at a highest level of 5.97m OD and ranged in diameter from 0.06m to 0.10m. These formed a relatively neat line running parallel along the edge of channel [4591], possibly representing a temporary fence line due to the relatively small size of the timber stakes.

7.3.6 Recorded in the southwestern part of Area A was a timber pile and plank revetment structure, [1921]. Aligned approximately eastnortheast-westsouthwest only the northern side of the structure appeared to survive. It was encountered at a height of c. 5.80m OD, the surviving length of which was 2.80m. No dating evidence was recovered from the silty organic fills. This revetment structure represents the earliest recorded attempt to formally canalise one of the Walbrook streams on the site.

7.4 Phase 3b: AD 50-70 (Fig. 6)

7.4.1 The next phase of this early Roman activity consisted of a re-cut of an earlier channel which is subsequently blocked off at one end, most likely for the installation of a timber corduroy sub-structure and an enclosure defined by a timber fenceline. A small area outside the enclosure contained four timber boxes, three of which contained human infant and neonate remains.

7.4.2 Channel [4591] appears to have been re-cut, [4783] during this phase. Still running eastnortheast-westsouthwest, the channel is now c. 6.80m wide, around 2m narrower than previously existing channel [4591]. This channel was filled with a sequence of natural silting and backfilled material [4704], [4705], [4706], [4707], [4936], with a maximum depth of c. 1.05m. A coin dating to AD 69-79, an *As* from the House of Vespasian was recovered from fill [4705]. Along the northern edge of the channel three timber uprights were recorded, [4550-4552], running in a straight line parallel to the channels edge. These timbers were equalled spaced with a gap of c. 1.25m between them and were recorded at c. 6.04m OD. These may represent the timber piles which would have supported planking of a revetment structure which is now gone. No other evidence of a revetment structure was recorded within the channel. The remains of a largely complete amphora [4546] was placed on the northern bank of the recut channel. Recorded at the eastern end of channel [4783] were two parallel rows of timber piles and planks, [4800], blocking off the channel creating a causeway. These timbers were encountered at 6.27m OD. Dendrochronological results from the timbers date to; spring AD 71, winter AD 70 & AD 65-101 (Appendix 17). Also cutting through channel [4783] at its eastern end was ditch [4785]. This curvi-linear ditch appeared to run east-west from timber causeway structure [4800] before almost immediately turning south, continuing outside the southern limit of excavation. It was recorded at 6.10m OD and measured 8.85m long by 0.58m wide, it had a maximum depth of 0.65m. This ditch may have served to drain channel [4783] before the installation of timber causeway structure [4800].

7.4.3 Cutting through the eastern end of channel [4783] was a timber fence line or palisade, [4831]. Running northwest-southeast this fence line consisted of a number of timber pales set vertically in a line next to each. It was recorded at 6.47m OD; its length measured 5.25m and would have continued outside the limit of excavation northwest and southeast. Dendrochronological results from the timbers date to; winter AD 70, AD 42-73 & after AD 37. This timber fence line structure may relate to a similar timber structure, [4493], in the north of Area B, described below.

7.4.4 Lying directly north of channel [4783] was a whole timber door laid flat, [4554], just north of which were four small timber boxes, [4555], [4986] & [4987] & [4504]. Timber box [4555] was recorded at 6.54m OD, rectangular in shape it measured 0.60m long

by 0.25m wide. Within this box human remains [4579] were recorded. These remains were in moderate condition, with all areas of the skeleton represented and were of a neonatal individual, at full term, or 2 months either side. Timber box [4986] was of bentwood construction, measured 0.60m long by 0.27m wide and was encountered at 6.75m OD. Within this box human remains [4991] were recorded. The remains were in poor condition with only skull fragments surviving, the dental development of surviving dentition suggests that the infant was probably less than 6 months in age. Timber box [4987] was recorded at c. 6.79m OD, rectangular in shape it measured 0.65m long by 0.17m wide. Within this box human remains [4734]/[4742] were recorded. These remains were again in poor condition with skull fragments, vertebral neural arches, two long bones fragments, rig fragments and a distal phalange being recovered. As no complete long bones or dentition survived an accurate age could not be determined but the general size of the remains suggest that the infant was less than full term but perhaps in the later stages of foetal development. Timber box [4504] was recorded at c. 7.15m OD, rectangular in shape it measured 0.82m long by 0.24m wide. This timber box contained no human remains. Timber door, [4554], had been laid flat, apparently in association with the burials. Dendrochronological results from the timber date to AD 53-89 (Appendix 17).

7.4.5 Laid upon backfilled channel [4783] was a timber sub-structure, [4743]. Aligned eastnortheast-westsouthwest, the same as the backfilled channel it sat upon, it measured c. 11.50m long by c. 1.90m wide. It was recorded at c. 6.15m OD. This timber structure was constructed of timber logs and piles, the logs being relatively equally spaced c. 1m apart from each other, forming a loose corduroy pattern. These would originally have sat upon the timber piles, but were now displaced. At the western end of this structure only the piles survived.

7.4.6 Cutting the natural gravel [4661] in the north of Area B was a ditch [4540]/[4417]. The ditch ran northeast-southwest measuring 9.50m long by 2.25m wide, its southern end would have continued outside the limit of excavation, with the northern end being its apparent terminus. It was encountered at 7.40m OD and was c. 1.05m deep. The ditch appears to have been backfilled with [4432], [4437], [4438] & [4453], and then replaced by a timber fence line or palisade, [4493], which starts halfway along the original ditch and continues on the same line northeast past where the ditch terminated. The fence line was recorded at a highest level of 7.32m OD and its full length measured 9.60m, the timbers survived to a height 0.80m. Dendrochronological results from the timbers include; after AD 31, after AD 41, AD 58-94 & AD 54-90 (Appendix 17). This timber fence line may be associated with a similar timber structure [4831] in the south of Area B, described above.

7.5 Phase 4: AD 70-120 (Fig. 7)

7.5.1 The next phase of Roman activity involved a structured effort to consolidate and raise the ground level, the end result of which would enable the area to be built upon and settled. This took the form of a series of drainage ditches prior to the mass dumping of imported material raising the ground level c. 2m. Integral to this undertaking was the ability to control the Walbrook streams crossing the site, this was done by revetting the channel with timber piles and planks, canalising the stream.

7.5.2 Sealing the natural alluvial deposits in Area A was a sequence of dump layers imported to consolidate and raise the ground level, prior to formalised settlement of the area. In this area these dumps were recorded at c. 7.80m OD and had a total thickness of c. 2m. These layers were a sequence of mixed silty clay, clay and gravel deposits imported from somewhere off site. Remnants of two ditches were recorded within the sequence of dumped material described above. Ditch [3280] was recorded

in a slot that was excavated through the dump material excavated to the south of Area A. It was aligned northwest-southeast, was recorded at 7.25m OD and was 0.40m wide by 0.60m deep. Ditch [3071] was recorded within a northern slot through the dump material in Area A. It was aligned northwest-southeast, was recorded at 7.28m OD and was 1m wide by 0.50m deep. These ditches likely represent drainage of the area during the consolidation event and may even allow separation between consolidation events which may have been a staged process.

7.5.3 Recorded between consolidation dumps in the south central part of Area A was a layer of compacted gravels, [681]. These gravels were encountered at c. 7.70m OD within a slot excavated through the consolidation material. This horizon may represent some form of metalled surface, possible even a road, especially as it's in the same area where a later road surface was installed (see Phase 5a). However as only a small area of this deposit was recorded within a slot, it cannot be conclusively interpreted and may only be another episode of dumping, part of the overall land consolidation event happening during this phase.

7.5.4 Cutting thin dump layers which sealed timber structure [4743] and channel [4783] in the south of Area B were ditches [4711] and [4541]. Both ditches ran approximately northwest-southeast; [4711] measured 8.75m long by 0.60m wide, was recorded at 6.09m OD and was c. 0.35m deep. Ditch [4541] measured 9.75m long by 0.60m wide, was recorded at c. 6.36m OD and was c. 0.60m deep. These ditches likely represent attempts to drain the land just prior to the mass consolidation which took place subsequently, described below.

7.5.5 Sealing the cut features described above in Area B was a similar mass consolidation event, similar to the sequence described above in Area A of dump layers imported to consolidate and raise the ground level. These raised the ground to a height of c. 7.50m OD and had an overall thickness of c. 1.5m. Remnants of two ditches, [4426] and [4543], were recorded within the sequence of dump material as excavated in a slot through these deposits. Ditch [4426] ran northeast-southwest, was recorded at 6.74m OD, and was 0.40m wide and 0.26m deep. Ditch [4543] ran eastnortheast-westsouthwest, was recorded at 6.20m OD, and was 0.55m wide and 0.42m deep. Again, these ditches likely represent localised drainage in between events of dumping and consolidation. Also recorded within the sequence of dumping at two distinct levels were two groups of postholes. The first group consisted of two postholes, [4557] and [4559]. These were both encountered at c. 6.17m OD, had diameters of c. 0.25m and depths of 0.20m. Neither of these postholes had any timber remains surviving. The second group consisted of three driven timber posts, [4403], [4404] & [4405]. These were recorded at c. 6.80m OD, and had diameters of c. 0.25m. The full depth of these timbers was not recorded.

7.5.6 Recorded within the consolidation deposits in the northern end of Area A, was a timber pile and plank revetted channel, [4154]. This revetted channel ran northeast-southwest and measured c. 16.50m long and was c. 2m wide. It was recorded at a highest level of c. 7m OD at its northeastern end and appeared to slope gradually down to c. 6.85m at its southwestern end. In some areas two courses of planking was recorded, supported by timber piles. In places where timber piles no longer existed the planking had slumped slightly inwards into the channel. The channel was c. 1m deep along its length and was filled by various silty clay and organic silt deposits, [4147-4148], [4200-4205], [4212-4218], [4163-4164], [4169-4169] & [4177]. Dendrochronological results from timber recovered from the revetment dates to AD 69-105. Further southwest, along the same line, another section of revetment structure was recorded, [3058]. Only a limited area of this structure was recorded in a slot but followed the same alignment as [4154]. Timber revetment [3058] was again a pile and plank structure, recorded at c. 7.15m OD it was c. 2m wide. The revetment

was c. 1m deep and was filled by silty clay deposits, [2763], [2891] & [2965]. The western side of this structure showed signs of disrepair as the planking had collapsed inwards. Recorded in the south central zone of Area A was another timber pile and plank revetment structure, [1919], [1920] & [1980]. This structure was again on the same northeast-southwest aligned, its recorded length being c. 5.25m by c. 2m wide. It was recorded at c. 6.60m OD; it was c. 0.50m deep but was not fully excavated. On top of the eastern side of this structure the remnants of four timber planks, [2628], laid flat next to each other were recorded. They were at c. 6.60m OD and may represent a timber bridge across the revetted channel or even capping to the revetment structure. The possible continuation of these structures was also recorded in the southeast of Area B, in the form of timbers [4401], [4725] & [4726]. These were recorded at c. 6.60m OD with only a small area of them revealed next to the limit of excavation.

7.5.7 This series of timber structures appear to represent one overall channel running northeast-southwest across the site, revetted with timber piles and planks. This may originally have been one of the sinuous natural Walbrook streams crossing the site which was then canalised during the Roman period in an attempt to control the water flow, in this case in conjunction with an organised event of mass consolidation of the area upon which to build. The consolidation and raising of the land could not have happened without first attempting to control the free flowing Walbrook streams.

7.6 Phase 5a: AD 120-160 (Fig. 8)

7.6.1 Phase 5a saw an organised layout imposed upon the site. This comprised a road running northnortheast-southsouthwest through the site, along both sides of which ran revetted channels, diverted from their original courses to run parallel to the road, most likely serving as drains. This phase also saw the first structure erected, a timber framed building, in the south of Area A. Associated ditches and pits were also recorded during this phase.

Road (Fig. 23)

7.6.2 Laid on top of the dump deposits in the south central part of Area A was a metalled road surface, [641]. These heavily compacted gravels were recorded at c. 8.40m OD and were 0.35m thick. This surface was c. 8m wide and appeared to be running northnortheast-southsouthwest through this area of the site. A small area of this road was also recorded at the northern extreme of Area A, [2957] and in the central part, [2779]. This small northern area of compacted road gravels, [2957], measured 2.30m in length by 0.80m in width but would have continued beyond the northern and western limits of excavation. They were recorded at c. 8.43m OD and were 0.30m in thickness. The line of this road appears to correspond with the road recorded to the north of the site at 8-10 Throgmorton Avenue in 1999, extrapolated to be crossing through the site[84]. Directly west of the road in the south of Area A was a timber revetment structure, [404] (Fig. 18). This channel was revetted with timber piles and planks and ran parallel to gravel road [641], northnortheast-southsouthwest. It was recorded at 7.50m OD, was 2.25m wide and c. 1.30m deep. Only 7.75m of its length was revealed in this area and would have continued both north and south beyond the limits of the excavation. It was filled with various organic silts which had accumulated over time within the confines of the revetment structure. Recorded running perpendicular to the revetted channel, and apparently running directly into was a bored timber pipe, [215]. Measuring 1.90m in length, it was recorded at c. 7.69m OD.

[84] Swift, D., 2001, 8-10 Throgmorton Avenue, London, EC2, City of London, An Archaeological Post-excavation Assessment and Updated Project Design. Museum of London Archaeology Service, unpublished report.

Recorded at the eastern end of this pipe was a line of timber stakes, [735], running perpendicular to the pipe and parallel with the revetted channel. This line of stakes measured c. 3.10m in length and appear to represent a small fenceline. How this fenceline relates to the bored timber pipe is uncertain, such bored timber pipes usually provide water under pressure to buildings. In this case however, it may have been used to drain water into the channel, possible off a roof associated with the fenceline. Ditch [966] was recorded directly west, and parallel to, revetment structure [404]. This was recorded at 7.24m OD, was 2.5m wide and 0.92m deep. Only 5.25m of its length was revealed but it would have continued north and south outside the limit of excavation.

7.6.3 Running parallel, northnortheast-southsouthwest, directly east of gravel road [641] was another revetted channel, [671]/[1882], [1998]/[2099], [1784]/[1833]/[3170], [3904]/[4197]/[4152]. This timber pile and plank revetment ran through the length of Area A for c. 50m. At its northern end it was recorded as structure [3904]/[4152] at c. 8.15m OD, was 2.25m wide and was c. 0.70m deep with two courses of planking surviving. In the centre of the site it was recorded as structure [1998]/[2099] at c. 8.04m OD, was 2m wide and c. 0.60m deep. At the very southern end it was recorded as structures [671]/[1882] at c. 7.80m OD, measured 2.25m wide, and was c. 0.50m deep. This revetted channel running directly east of, and parallel to the road, represents the diversion of one of the canalised Walbrook streams to serve as drainage. As would be expected with an area of open water it also served the dual function of a being used as a drain into which refuse, and potentially votive offerings, were placed. The channels were filled with various silt and organic silt deposits containing large assemblages of pottery, bone, building material and numerous small finds.

7.6.4 At the northern end of Area A the revetted channel appeared to fork off to the northeast. This heavily altered and repaired revetment, structures [3351], [5004], [3482] & [2716], ran on the same line as the earlier channel [4154]. Timber planking, [3664], also appears to have been installed to connect it with structure [4152]. This implies that despite the installation of the revetted channels which ran parallel alongside the gravel road [641], the northern section of the previously existing northeast-southwest channel remained in use creating this fork at the northern end of Area A. In the centre of Area A, where only the timber piles relating to major northnortheast-southsouthwest revetment structure were present, a wider line of timber piles and planks, [3170], appeared to line up with the northeast-southwest branch.

7.6.5 Cutting through the dump material at the northern end of Area A was a cut, [4223], containing human remains [4207]. The remains were aligned northeast-southwest, with the upper body at the northeastern end. These articulated remains were recorded at c. 7.36m OD. The remains were of an adult male; with c. 80% of the skeleton present, the skull, cervical vertebrae and right arm were all absent. No evidence exists for the removal of the skull and associated cervical vertebrae prior to burial. It is interesting to note that the alignment of the remains respected that of the revetted channels in the area and the possibility exists that they may have been dumped into the side of one of the early phases of channel.

7.6.6 Between the two revetted channels in the north of Area A was a timber lined pit, [4226]. Rectangular in shape, the pit measured 2.50m by 1.90m and was 0.80m deep. It was recorded at 7.32m OD. The pit was lined with two courses of horizontal on-edge timber planking held in place by small stakes, [4225]. The pit was filled with accumulated organic peat deposits [4211] and [4209], one of which, [4209], contained numerous finds including a whole toilet spoon SF925. Just to the north of this pit two more pits were recorded, [4145] & [4124]. Both were sub-circular in plan and were

recorded at c. 8m OD. Pit [4145] measured 1.40m by 1m and was 0.80m deep. Pit [4124] measured 0.65m by 0.70m and was 0.30m deep. Both were filled by silty-clay deposits and probably represent rubbish pits.

7.6.7 Cutting the dump deposits in the centre of Area A was a large rectangular pit, [3589]. Measuring 6m by 2.80m, it was recorded at 7.85m OD and was 0.50m deep. Two ditches, [4069] & [3656], aligned eastsoutheast-westnorthwest, apparently ran into pit [3589] from the east. Neither of these ditches continued on the western side of the pit. These ditches ran parallel to each other, [3656] being to the north of [4069], both being recorded at c. 7.90m OD. Ditch [3656] was 1.25m wide and 0.90m deep. Ditch [4069] was 1.50m wide and 0.45m deep. It appears that these ditches served as drainage, either into, or out of, large pit [3589].

Building 1

7.6.8 To the east of the revetted channel in the south of Area A was the first structure constructed on the site, Building 1. Recorded at c. 7.90m OD Building 1 represents the north-east corner of a structure which continued outside the limit of excavation to the south and was truncated by later medieval channel cut [133]. It can be assumed however that Building 1 would have respected the edge of the revetted channel to west. Respecting the northnortheast-southsouthwest alignment of the aforementioned channel, Building 1 appeared to be square or possibly rectangular in shape. Constructed of horizontal timber beams supported by timber piles, these combined to form the buildings baseplate. Mortise holes were identified within the beams from which upright timbers would have formed the upstanding walls. Building 1 consisted of an outer and inner wall running parallel, almost concentric squares, implying a corridor ran around a central room. Dendrochronological results from one of the timber piles, [3556], dates to the winter of AD 129 (Appendix 17). The overall dimensions of Building 1 as seen within the limits of excavation were 6.25m northnortheast-southsouthwest by 6.25m eastsoutheast-westnorthwest. Recorded in the central room was a mixed clay floor surface [3419], the dimensions of this room were 3.50m by 3.75m. Just to the north of Building 1 was a ditch [3360]. Parallel to Building 1, running eastsoutheast-westnorthwest, the ditch measured 4.75m in length; it was truncated at its western end by later activity. At its eastern end the ditch appeared to terminate. The ditch was c. 1m wide and was 0.30m deep. Within the fill a degraded timber plank, [3406], was recorded which may represent the remnants of a timber lining to the ditch suggesting it served as drainage.

7.6.9 In the centre of Area A small group of pits, [3982], [4002], [4032] & [3988] together with a group of timber stakes were recorded. The small pits were recorded at c. 7.65m OD, were all elongated ovals in plan ranging in size from 0.74m long by 0.22m wide to 1.20m long by 0.40m wide. The pits were all approximately 0.15m deep and filled with burnt charcoal material. The fourth pit differed in size, measuring 1.60m by 1.40m and was c. 0.10m deep. The stakes, [3976-3980] & [3983] were all recorded at c. 7.65m OD and had a diameter of 0.06m. These formed a fairly loose square pattern and may represent some small temporary timber structure.

7.6.10 Cutting the consolidation dumps in Area B was ditch [4385]/[4593]. Running northwest-southeast across the entire excavation area for c. 20m, it was 1.5m wide. The ditch was recorded at c. 7.40m OD and was 0.70m deep. It was filled by a mixture of silty clay and organic silts, some of which were peaty in composition [4581], [4582], [4386], [4406] & [4702]. Of particular note was secondary fill [4581], located within the eastern end of the ditch, the composition of which was a large assemblage of animal bone and horn core, indicators of industrial activities such as leather working and tanning, amongst others. This ditch appears to have been in use as drainage, most likely into ditch [966] or possibly into revetted channel [404] to the

east (described above) and may also have served the dual purpose of delineating a boundary. Directly north of the eastern half of ditch [4593], cutting through the consolidation deposits was a pit, [4584]. The pit was recorded at c. 7.50m OD, was ovoid in plan, it measured 8.30m east-west by 1.70m north-south where it would have continued north past the limit of excavation. This pit, of unknown function, was only 0.14m deep and was filled with a clean sand deposit, [4583].

7.6.11 Cutting the natural terrace gravel, [4661], in the north of Area B were two pits, [4571] & [4586]. Pit [4571] was circular in plan and measured 3.75m in diameter. It was recorded at 6.96m OD and was 1m deep. Pit [4586] was sub-circular in plan and measured 2m north-south by 2.25m east-west where it would have continued outside the limit of excavation. It was recorded at 6.97m OD and was c. 0.92m deep. Both of these pits were filled with broken pottery, animal bone and leather fragments, all domestic refuse, [4569], [4570], [4580], [4588] within pit [4571] & [4572] & [4578] from pit [4586].

7.6.12 Also cutting the dumped deposits in Area B were three driven timber stakes, [4490-4492]. These were recorded at c. 7.35m OD and all had a diameter of c. 0.12m. These timbers formed an 'L' shape, and with a fourth timber would have formed a neat rectangle. These timbers don't appear to relate to any other features and may have represented some form of small timber structure.

7.7 Phase 5b: AD 120-160 (Fig. 9)

7.7.1 Phase 5b saw a large scale development of the area of the site. The small building which previously had stood on the site was replaced by a large structure which encompassed most of the southern half of Area A. This large structure had evidence of organised settlement including clean water being piped under pressure into the household. Industrial activity was also prevalent in this period. The fragments of a structure which had been erected to the west of the road, in the south of Area B were also observed.

7.7.2 Metalled gravel road [641]/[2957] in Area A continued to be in use during this phase as did revetted channel [404] directly west of it. Driven through the gravel road were a group of five timber stakes [639]. These were all recorded at c. 8.35m OD and ran in a single row on the same alignment as the road itself, northnortheast-southsouthwest. The stakes all had a diameter of c. 0.16m and the full length of their line was 3.10m. This line of stakes is interpreted as a small, probably temporary, timber fenceline running along the road.

7.7.3 Directly west of revetment structure [404] in the southwest of Area A was a ditch [840]/[761]. Running northnortheast-southsouthwest, this ditch was 4.75m long by 1.35m wide and would have continued north and south beyond the limits of excavation. This ditch was c. 0.55m deep and was filled with organic silt deposits, [760] & [839].

7.7.4 The revetted channel which ran parallel directly to the east of the road [641] in Area A also remains open into this period, timber structures [671]/[1882], [1998]/[2099], [3904]/[4197]/[4152], [1784]/[1833]/[3170]. Newly constructed during this phase, within revetment structure [1998] in Area A, were two timber footbridges, [1258] & [1259], crossing the structure. Bridge [1258] was constructed of three horizontal timber planks laid next to each other; these were then keyed into the edge of the revetment structure it bridged. The bridge was 0.80m wide and was recorded at

8.14m OD but the timbers had broken in the centre and subsequently collapsed but remained mostly in place due to the way they were keyed into the side. Bridge structure [1259] was c. 3.50m north along the channel from [1258]. This timber structure was constructed in a similar way to [1258] being keyed into the side of the revetment, but hadn't survived in as good a condition as [1258] with the timbers collapsed and displaced. Bridge [1259] was recorded at c. 8.33m OD and was 0.60m wide. Timber footbridge [1259] aligned itself with a corridor separating structures [3049] and [1265], within Building 2, described below.

7.7.5 The northeast-southwest branch of revetted channel also continued to remain open into this phase, structures [3351], [5004], [3482] & [2716]. A slight alteration appears to have been made, however. Another line of timber planks and piles, [4061], was installed at the northern end of the channel slightly changing the course towards the northnortheast. Only the western side of this appears to survive however as no corresponding eastern side to it was observed. This single course of planking was recorded at c. 8.36m OD and its full length measured c. 6.60m.

Building 2

7.7.6 Built upon the area previously occupied by Building 1 during this phase was another, larger structure, Building 2 which encompassed most of the southern half of Area A. Composed of timber beams supported by timber piles, these combined to form the baseplate for Building 2. Mortise holes were observed within the timber sill beams into which uprights forming the standing walls would have connected. It appeared to be L shaped in plan which ran parallel to, and directly alongside, the revetted channel with its northern end turning ninety degrees and continuing outside the limit of excavation. The southern end would also have continued south outside of the limit of excavation. The overall dimensions of Building 2 as seen within the limits of excavation were c. 27m northnortheast-southsouthwest by 14.50m eastsoutheast-westnorthwest. Building 2 was recorded at a general level of c. 7.90m OD. Nine rooms and two corridors were recorded within the building;

- **Room A** was recorded at the northern end of the building. Its recorded area was c. 10.60m eastsoutheast-westnorthwest by 5.60m northnortheast-southsouthwest. A number of degraded timbers, [5019], were recorded with the room at c. 7.73m OD, interpreted as representing disturbed joists which would possibly supported a floor. Sealing these was a rough clay surface, or possible make-up for another surface, [3404]. This was recorded at 7.80m OD and was c. 0.10m thick.
- **Room B** was located south of Room A in the northern end of the building. It measured 8.20m eastsoutheast-westnorthwest by 5m northnortheast-southsouthwest. Recorded within this room was a disturbed tile oven [4044], at c. 7.80m OD. To the west of this was a group of small pits, group [5022], filled with heavily burnt charcoal material, associated with the oven. These pits were recorded c. 7.85m OD, were all sub-circular in shape, ranging in size from 0.45m by 0.50m to 0.80m by 1m. They varied in depth from 0.20m to 0.50m. The remnants of a timber box drain, [3648], were recorded running eastnortheast-westnorthwest at c. 7.85m OD. It measured c. 3m long by 0.30m wide.
- **Room C** was located east of Room B in the northeastern area of the building. The room was delineated by timber sill beams to west and south but the northern sill beam was not present, with only the timber piles remaining, and may even have been robbed out and re-used. A small internal support beam was also recorded within the room. A small area of disturbed tiles was recorded within this room, [3968], at c. 7.80m OD. Measuring 0.60m by 0.80m this may have been the remnants of a small hearth. Sealing this was clay and sand levelling layers, [3203] & [3554], upon which an *opus signinum* floor surface was built, recorded at c. 7.90m OD. The rooms dimensions were 5.25m northnortheast-southsouthwest by 5m eastsoutheast-westnorthwest but would have continued east outside the limit of excavation.

- **Room D** was located on the western side of the building south of Room B. The room was delineated by timber sill beams, all of which had clay sills recorded upon them. This room measured 3.30m northnortheast-southsouthwest by 4.60m eastsoutheast-westnorthwest. Clay floor slab, [3040], was recorded constructed upon levelling layer [3106]. This clay floor was recorded at c. 7.90m OD and was 0.10m thick. Installed against the eastern wall upon the clay floor was a small hearth structure [3020], constructed of two parallel rows of tiles.
- **Room E** was located in the western area of the building to the south of Room D. The room was delineated by timber sill beams, one of which had a clay sill surviving, [2900], with plaster adhering to it. Within this room a rough mortar surface was recorded at c. 7.95m OD and was c. 0.50m thick. The room measured 3.50m northnortheast-southsouthwest by 3.75m eastsoutheast-westnorthwest.
- **Room F** was located in the west of the building south of Room E. The room was delineated by timber sill beams. An internal partition timber beam was recorded in this room upon which was laid a rough mortar surface. This was recorded at c. 7.89m OD and was 0.05m thick. The room measured 1.60m northnortheast-southsouthwest by 3.75m eastsoutheast-westnorthwest.
- **Room G** was located in the southwestern end of the building. A clay sill sealed the western timber beam. A clay surface, [3135], was recorded within this room at c. 7.85m OD and was c. 0.05m thick. The room measured 3.15m northnortheast-southsouthwest by 3.75m eastsoutheast-westnorthwest.
- **Room H** was located at the southern end of the building. No surface was recorded within this room. The western part of this room was truncated by later activity. The room measured 3.60m northnortheast-southsouthwest by 2m eastsoutheast-westnorthwest.
- **Room I** was located at the southern end of the building to the east of Room H. The room was delineated by timber sill beams to the north, south and west and the eastern wall of Building 1 from the previous phase which it re-used. A small remnant of a clay surface was recorded within the room at c. 7.95m OD and was 0.05m thick. The room measured 3.60m northnortheast-southsouthwest by 2.25m eastsoutheast-westnorthwest.
- **Room J** was located at the very southern end of the building. The room was delineated by two beams to the north and the eastern wall of Building 1 from the previous phase which it re-used. The western side of the room was truncated by later activity and the southern end would have continued outside the limit of excavation. No evidence of any surfaces was recorded within this room. The room measured c. 2.70m northnortheast-southsouthwest by 4m eastsoutheast-westnorthwest.
- **Corridor A** ran along the eastern side of the building and turned towards the east at the northern end of the building. A small remnant of painted plaster adhering to a clay wall was recorded at the southern end of the corridor. The corridor was 2.25m wide and measured c. 12.25m along the northnortheast-southsouthwest length and c. 8m along the eastsoutheast-westnorthwest length but would have continued east outside the limit of excavation. A possible threshold area was recorded in the southeastern area of the corridor consisting of two short lengths of timber beams recorded at c. 7.90m OD.
- **Corridor B** ran westnorthwest off Corridor A between Rooms D and E. Painted plaster was recorded on both sides of the walls within this corridor, [2900] & [3064]. Corridor B measured c. 4.30m eastsoutheast-westnorthwest and was 0.75m wide. Corridor B was aligned to bridge structure [1259] which crossed the revetment structure directly west of Building 2.

7.7.7 Recorded at the southern end of Area A, directly east of the major revetted channel running northnortheast-southsouthwest through the site was a small area of tiles, [357]. Recorded at c. 7.93m OD this area of tiles measured 2.30m by 2.40m and was

only a single course thick. Although it appears to be unrelated to Building 2, it may represent a tile surface or possible hearth relating to it.

7.7.8 Respecting the internal edge of the courtyard area of Building 2 was timber box drain [3286]/[3277]/[3318] This box drain, consisting of a flat timber base and vertical timbers ran along the western wall of the internal courtyard area. It appeared to end at the northwest corner of the courtyard but it is assumed that it would originally have continued southeast along the northern courtyard wall. The full length recorded of the box drain was c. 13m; it was 0.60m wide and c. 0.60m deep. It was recorded at c. 7.90m OD. From OD heights along the base of the box drain it appeared that it ran down the site, flowing from north to south. Dendrochronological results from timbers recovered from the box drain include; after AD 121, AD 132-67 & AD 142-78 (Appendix 17). To the east of this was a series of bored timber water pipes, most likely supplying clean water under pressure to the building. Bored timber pipes [3473], [3474],] were recorded running eastnortheast-westsouthwest for c. 8.75m in length, including the area it was robbed, and would have continued outside the eastern limit of excavation. Two more bored timber pipes, [3369] & [3370], ran east-west next to the line of [3473] & [3474]. The eastern end of these pipes was recorded at c. 8m OD and sloped down to c. 7.85m OD at the western end. Dendrochronological results from timber pipe [3370] date it to AD 155-87 (Appendix 17). A number of robber cuts truncated the line of the bored timbers, [3148], [3524] & [3876]. Robber cut [3524] had small section of timber pipe, [3927], apparently discarded back into the cut. These timbers were robbed out to be re-used for a variety of purposes. Recorded to the south and north of the timber water pipes were groups of timber piles, [5005] & [5017]. Group [5005] consisted of twelve driven timber piles, recorded at c. 7.80m OD, and had no particular form to their cluster. Group [5017] consisted of five driven timber piles, recorded at c. 7.90m OD, also with no particular form to their shape. It is unclear what these two groups represent and they didn't seem to directly relate to Building 2.

Building 3

7.7.9 Sealing ditch [4593]/[4385] in Area B was a series of dump layers upon which Building 3 was built. Building 3 was recorded at c. 7.70m OD with only the lowest level of structural elements remaining. It was constructed of timber sill beams supported by timber piles forming the baseplate for the structure. These timbers were degraded and the exact dimensions of the original structure could not be determined. Elements of this structure continued into the southwest part of Area A. Building 3 appeared to be rectangular in shape, aligned perpendicular to revetted channel [404], it measured c. 12.25m northwest-southeast by c. 5m northeast-southwest. It consisted of seven timber beams representing the baseplate and internal joists for a floor surface. No associated floor surfaces were recorded, however, remnants of a clay sill sat upon two locations of the degraded baseplate, [4393], these were recorded at c. 7.80m OD. An anomalous timber beam, [4335], was recorded to the southwest of Building 3 on the same alignment. Measuring 2.75m northeast-southwest it may represent an element of the same structure but with no other related timbers associating it with Building 3 it cannot be interpreted as thus. Cutting a layer, [4394], a possible foundation for a floor surface was a possible un-urned cremation, [4412]. Provisional assessment of the burnt bone recovered suggests the remains to be a mixture of dog, sheep and cattle. Ritual faunal remains are well documented in the Roman period suggesting this may be a 'foundation' deposit associated with the construction of the building. Recorded at c. 7.77m OD it had a diameter of 0.36m and was 0.20m deep. Such ritual offerings below buildings and floor surfaces are well documented in the Roman period. Two pits were also recorded at this horizon, [4261] & [4268]. Both were sub-circular in shape, pit [4261] measured 1.30m by 0.84m and was 0.15m deep. Pit [4268] measured 1.60m by 0.70m and was 0.10m deep; its northern half was truncated by later activity.

7.8 Phase 6a: AD 160-250 (Fig. 10)

7.8.1 *Phase 6a saw the site continue to develop with rebuilds of earlier structures and the additions of new ones. The large building complex recorded in the previous phase continued in use but with alterations to the interior and new structures associated with it being erected. Changes to the nature of the revetted channels also occurred during this phase, with the blocking off of one of the channels branches. Other buildings were also located across the site suggesting this to be a period of intense activity.*

7.8.2 Metalled gravel road [641]/[2957] in Area A continued to be in use during this phase. Revetted channel [404] was replaced by another timber revetment structure, [4999], during this phase. This new structure wasn't as wide as the one it replaced, measuring c. 1.50m in width.

7.8.3 The revetted channel which ran parallel directly to the east of the road [641] in Area A again remained open into this period, timber structures [853]/[1398], [1998]/[2099], [3904]/[4152], [1784]/[1833]/[1660]. However, various localised repairs and alterations were made along the line. At the southern end of Area A the previously existing revetment structures [671]/[1882] were replaced by another structure, [853]/[1398]. Running on exactly the same alignment as the previous phase of revetting this new one was recorded at c. 8.15m OD. This structure was constructed in exactly the same way as before, vertical on edge timber planking was held in place by driven timber piles. Measuring 2m in width, 0.25m thinner than the previous phase, it was c. 0.60m deep. This structure would have continued south beyond the limit of excavation. Further north along the line of the channel, previously existing structures [1998] & [2099] continued in use during this phase. So too did the two timber footbridge structures [1258] & [1259], with [1259] still relating to a corridor with a Building 2 directly east of the revetment. Further north along the main line of revetted channel new revetment structures were constructed during this phase, [2330], [3025] & [2221]. These structures were recorded at c. 8.30m OD, but only the eastern side of the structure was recorded. These were again constructed of the same method of vertical on edge timber planks supported by driven timber piles. Directly east of these structures an area of horizontal timber planking laid flat was recorded, structure [2328]. This structure ran parallel to the revetment structure directly west, it measured c. 4.40m in length by 0.60m wide and was recorded at c. 8.11m OD. This disturbed structure may represent some form of boardwalk between the revetted channel and the building to the east. Originally it may have extended further north and south along the channel's edge.

7.8.4 New revetment structures were recorded during this phase further north along the channel's length. The remnants of structures [1784] & [1833] were retained, mostly in the form of the timber piles, but a new addition was added, structure [1660]. Revetment structure [1660] measured c. 2m wide and was recorded at c. 8.25m OD. At the northern end of Area A revetment structures [3904] & [4152] are also retained. However, during this phase two rows of parallel timber planking were installed perpendicular to the alignment of the channel, creating a causeway, [4130] & [3887]. Both structures were composed of vertical timber planks blocking off the channels interior. The area between the two rows of planking appears to have then been backfilled with deposit [3934], creating the causeway. The area of this causeway measured 2.60m long by 2.30m wide. The two rows of planking were recorded at c. 8.20m OD and were c. 1.20m deep. The channel to the north and south of this causewayed area remained open until the next phase (6b) when they were backfilled and a building was erected upon the area (see Phase 6b below).

7.8.5 The northeast-southwest branch of the revetted channel also continued to remain open into this phase, structures [3351], [2716], & [1773]. Some of the structures from the previous phase appeared to go out of use during this time however.

Building 2 Alterations

7.8.6 Building 2, as described in the previous phase above, continued in use into this phase. Some of the rooms have been altered during this phase however, mostly along the western frontage of the building, Rooms D, E, F & G.

- **Room K** was an alteration of Room D from the previous phase. The room was delineated by timber sill beam [2736], sealed by clay sill [2672], and clay sill [2692]. Clay floor surfaces were recorded at c. 8.12m OD & 8.16m OD and were 0.02m & 0.03m thick respectively. The room had exactly the same dimensions as the original Room D, 3.30m northnortheast-southsouthwest by 4.60m eastsoutheast-westnorthwest.

- **Room L** was an alteration of Rooms E & F from the previous phase. It now appeared that previous Rooms E & F had become a single room. The room was delineated by timber sill beams [2594], [2597], [3235] & clay sill [3155]. A clay sill was recorded upon timber beam [2597] at c. 8.20m OD. In the south of the room the small remnants of a tile hearth were recorded, [2303], at c. 8.21m OD. This area of tiles measured 0.50m by 0.80m. A shallow pit, [3156], was recorded in the north of this room measuring 1m by 1.20m which contained burnt material, [3134], possibly from a hearth. A small beamslot, [3231], was recorded perpendicular from the northern wall [3155]. Measuring 1.20m in length by 0.10m wide, it was 0.09m deep. This may represent an internal partition wall diving up the room or the remnants of floor joists. A posthole containing the remnants of two posts, [3235] & [3236], were recorded in the room at c. 8.02m OD. Two other possible postholes were also recorded within the room, [2826] & [2828] within post pit [2824]. Posthole [2826] had a diameter of 0.28m and was 0.24m deep. Posthole [2828] had a diameter of 0.15m and was 0.15m deep. Both these postholes were encountered at c. 8.00m OD, The room measured c. 4.60m northnortheast-southsouthwest by 4m eastsoutheast-westnorthwest.

- **Room M** was an alteration of Room G from the previous phase. The room was delineated by timber sill beams [2370], [2591], [2593] & [2674]. Clay sill [2369] was recorded upon beams [2370] & [2591] at c. 8.20m OD. Remnants of painted plaster, [2368] & [2592] were recorded on the east and west sides of clay sill [2369]. No evidence for surfaces was recorded within the room. The room had exactly the same dimensions as the original Room G, 3.15m northnortheast-southsouthwest by 3.75m eastsoutheast-westnorthwest.

- **Room N** was located in the area previously occupied by Room I in the southern area of Building 2 which was also altered in this phase. The room rebuild consisted of timber sill beams supported by driven timber piles which combined to form the baseplate for the structure. Lain upon these timber sill beams were tiles, [2759], forming the walls. These tiles were recorded at c. 8.20m OD with three courses of them surviving, 0.30m high. The eastern wall of this room did not survive and was represented only by the timber piles which would have supported the sill beam. A possible threshold was recorded within the western wall of the room, represented by a horizontal on edge timber plank, [2963], in use as shuttering for an area backfilled with clay. This threshold area measured 0.72m wide. Within the room bedding/levelling layers [3122] and [2839] were sealed by a gravel surface, [2821], which was recorded at 8.04m OD. This surface was sealed by occupation layers [2807] and [2769], the highest level of which was c. 8.08m OD and had a combined thickness of c. 0.10m. Sealing this was a horizontal timber plank laid flat, [2762], which may represent the remnants of a later floor. This was sealed by a mortar layer [2566] which may represent another floor surface or the make-up for one. This mortar deposit was recorded at 8.14m OD. A tile dump, [2524], was recorded above this at c.

8.20m OD and may have represented a floor surface, or collapse from the walls or roof of the structure.

7.8.7 Recorded within the area of Room A of Building 2 during this phase was a large group of small pits, group [5023], filled with a very similar charcoal deposit. These pits were sub-circular in shape and ranged in size from 0.25m by 0.36m to 0.57m by 1.07m and ranged in depth from 0.12m to 0.35m. These pits were recorded at c. 7.90m OD. All of these small pits were filled with a very similar dark grey/black deposit composed almost entirely of charcoal. These pits most likely relate to the oven [4044] which continued in use in Room B of Building 2, directly to the south. The remnants of a tile hearth were also recorded directly east of the pitting, [3051]. These were recorded at 7.90m OD and their area measured 1m by 0.65m. These tiles showed evidence of having been burnt *in situ*. A displaced timber beam was also recorded in this area, [2162]. It was recorded at c. 7.94m OD but didn't appear to be *in situ*.

Building 4

7.8.8 Within the possible courtyard area of Building 2 a new structure, Building 4, was built. Building 4 was constructed upon a series of dumped levelling layers which sealed the bored timber water pipes described in the previous phase. Building 4 was constructed of timber sill beams supported by driven timber piles which combined to form the baseplate for the structure. Also recorded were six timber joists, upon which was a remarkably well preserved timber plank floor, [2565]. This timber plank floor was recorded at 8.04m OD. Recorded upon the southern timber sill beam of the building were the remains of a wattle wall, [2754]. Only c. 0.05m of this wattle wall survived upstanding *in situ*. A small area of collapsed wattle, [2564], was recorded sealing the timber planked floor, most likely representing collapse from a wall. This collapsed deposit was recorded at c. 8.10m OD. Building 4 measured c. 6m in length, eastsoutheast-westnorthwest, by c. 4.25m wide, northnortheast-southsouthwest. Dendrochronological results from the timber plank floor date to after AD 127 (Appendix 17). Building 4 may represent a warehouse or some other storage building.

7.8.9 In the centre of Area A, west of the major revetment structure which ran east of the road, was a timber lined box drain, [2526]. Cutting through a layer of dumped gravels, this drain didn't appear to relate to any structures nearby. The timber lined box drain ran parallel to the channel, northnortheast-southsouthwest, for c. 2m in length and was 0.25m wide. The drain would have continued north and south but remained unexcavated due to health and safety and access issues. It was recorded at c. 8.19m OD and was 0.20m deep. Normally such drainage features would be related to buildings or structures.

Building 5

7.8.10 Directly west of revetted channel [4999] remnants of a structure in Area B were recorded as Building 5. Building 5 was comprised of a series driven timber piles and a wattle wall. This wattle wall and the timber piles formed two neat parallel rows measuring 3.20m north-south by 2.50m east-west. The wattle wall itself, [667], was recorded at c. 7.57m OD, measured 1.68m in length by 0.12m wide, it was 0.10m high. To the south was an east-west aligned clay wall [222] which may have formed the southern wall of the building. To the south of this was the remains of a clay floor, [307], and a group of intercutting pits, [325], [317], [490], [666] & [492] and a posthole, [323], were recorded. These were all recorded at c. 7.70m OD and were sub-circular in plan. They ranged in size from 0.50m by 0.60m to 1.10m by 0.70m and were all c. 0.50m deep. Posthole [323] was c. 0.20m in diameter and was 0.27m deep.

7.8.11 Cutting dumped layers in the centre of Area B was a heavily truncated possible ditch, [4325]. Only one edge, the southern, was recorded of this feature. It appeared to be running westnorthwest-eastsoutheast but only c. 3.50m of its length, and c. 1.55m of its width was recorded. Recorded at c. 7.64m OD it was filled with a silty clay deposit and was 0.44m deep. It was truncated to the north and east by modern concrete. Cutting through thin dumps above Building 3 was another ditch, [4312]. This ran on a similar alignment to ditch [4325], westnorthwest-eastsoutheast but was narrower. Recorded at 7.67m OD, it measured 2m in length and was 0.80m wide. It was truncated at its western end and appeared to terminate at the eastern end. It was 0.30m deep becoming shallow to 0.10m deep at its terminus. It was filled by a sandy silt deposit. Ditch [4312] may represent the continuation of ditch [4325], however, as the full size of ditch [4325] was not recorded this cannot be conclusively identified. Further east in Area B, cutting Building 3, was a pit, [4397]. Sub-circular in plan, measuring 1.50m by 0.96m, it was recorded at 7.84m OD. Filled by a sandy silt deposit, [4396], it was 0.20m deep.

7.8.12 Cutting thin dump layers which sealed Building 3 in Area B was a circular feature, [4301]. Measuring c. 1.87m in diameter, it was recorded at 7.57m OD and was c. 3.60m deep. At the very bottom of this cut a single course of horizontal on-edge timber planking, [4732], square in shape, was recorded at 5.40m OD. These timbers represent the remnants of a timber lined well structure. It was filled with various silt deposits, [4739], [4731], [4590], [4589], [4371] & [4269].

Building 6

7.8.13 Sealing dump layers in the centre of Area B was a possible rough surface [4247]. Composed of silty gravel; only a small area of this possible surface survived, c. 6m by 2.30m, it was recorded at c. 7.81m OD and was 0.05m thick. Cutting through this surface was fragmentary evidence for another structure, Building 6. Building 6 consisted of four postholes, [4290], [4292], [4294] & [4296], and a possible beamslot, [4244]. These postholes were recorded at 7.80m OD and had diameters of 0.13m. Posthole [4296] differed in size measuring 0.30m by 0.23m and contained the remnants of a timber post, [4298]. The three smaller postholes formed an L shape, with the larger post offset to one side. Possible beamslot [4244] cut through the western end of surface [4247]. It was recorded at 7.80m OD, measured 0.86m in length by 0.33m wide, and was 0.13m deep.

7.8.14 Recorded at the southern end of Area B was a ditch [4241]. Running north-south this ditch was recorded at c. 7.53m, it measured 2.35m long by 0.73m wide and was 0.38m deep. It appeared to terminate at its northern end and would have continued south beyond the limit of excavation. This may represent some form of drainage ditch originally cut from higher up but subsequently horizontally truncated.

7.8.15 Further north in Area B another possible external surface was observed, [4389]. Recorded at c. 7.41m, it measured 6.50m by 6.80m and was 0.10m thick. It was composed of silty gravels compacted to form a rough external surface. It was truncated at its northern end and would have continued west outside the limit of excavation. Recorded at this level was a line of four driven timber stakes, [4374], [4362], [4361] & [4365]. Forming a rough line running northnorthwest-southsoutheast they were recorded at c. 7.35m OD and had diameters of 0.07m. They may represent a small temporary fence line.

7.9 Phase 6b: AD 160-250 (Fig. 11)

7.9.1 Phase 6b saw another change to the layout of the site, with the redevelopment and alteration of existing buildings and new structures being erected. The large building complex from the previous two phases was replaced by a new structure. Some of the structural elements however remained in use, illustrating continuity of property boundaries and divisions. A new building was also erected in the north of the site upon a backfilled revetted channel. The nature of the site continues to be one of very intense occupation.

7.9.2 Metalled gravel road [641]/[2957] in Area A continued in use during this phase. Revetted channel [4999] from the previous phase was now replaced by a new timber structure, [5000]. Again, as with the previous phase of revetment which replaced the original channel [404] the channel became thinner during this phase. It was now c. 1m wide. This area in the centre of the channel was truncated by a modern concrete beam and therefore obscures the relationship between the timber piles and planks on either side of it.

7.9.3 The revetted channel which ran parallel directly to the east of the road [641] in Area A again remained open into this period, with exactly the same structures in use as the previous phase, timber structures [853]/[1398], [1998]/[2099], [1784]/[1833]/[1660]. Possible timber boardwalk structure [2328] also continued in use during this phase. At its very northern end the channel no longer existed after the blocking off of channel structures [3904] and [4152] with causeway structure [4130] & [3887]. The major channel running through Area A appeared to now run down from the northeast corner through the northeast-southwest branch. In the northern half of the area it met the channel which ran parallel and directly next to the road [641], from where it continued south down through the site and continued beyond the limits of the excavation. This northeast-southwest branch, albeit with multiple phases, appears to have existed for as long as the Romans had been trying to control the Walbrook via canalising the streams.

7.9.4 Recorded directly on top of the backfilled channel [3904]/[4152] in the north of Area A was a degraded timber sill beam, [3158]. This was aligned northwest-southwest and was recorded at c. 8.06m OD. Associated with this was a group of driven timber posts, [3182-3186]. These were recorded at a similar height to timber beam [3158], but didn't seem to form any particular structure. It is unclear what these elements relate to, despite being on a similar alignment to the later Building 7; it is however stratigraphically earlier and may represent the remnants of some other structure.

Building 7

7.9.5 Now located in the north of Area A, constructed upon backfilled channel [3904]/[4152] was Building 7. This structure was composed of timber sill beams supported by driven timber piles which combine to form the baseplate for the structure. Also recorded were internal timber beams representing joists which may have supported a floor, possibly of timber planking. Building 7 was aligned northwest-southeast and measured c. 8.60m northeast-southwest by c. 6.25m northwest-southeast. It was recorded at a general level of 8.40m OD and would most likely have continued north and east beyond the site's limit of excavation. The six internal joists recorded were relatively equally spaced c. 0.60m apart from each other. Set within a cut between two of the joists was an *in situ* amphora, [2110]. Recorded next to this was a small remnant of a compacted gravel surface. This was recorded at c. 8.35m OD, measured 3.40m by 1.60m and was 0.20m thick. Another small area of metalled surface was recorded just to one side of the amphora, at a level of c. 8.30m OD. It measured 0.70m by 0.80m and was 0.05m thick. A number of postholes were recorded at a similar level to Building 7 within the area of the structure and may relate to features within the building.

7.9.6 The northeast-southwest branch of revetted channel, directly east of Building 7, also continued to remain open into this phase, with the same structures as the previous phase existing, [3351], [2716], & [1773]. This branch had now become the only channel at the northern end of Area A after the previously existing revetment was reclaimed and subsequently built upon with Building 7, described above.

Buildings 8, 9 & 10

7.9.7 The centre of Area A was now dominated by the rebuilding of the previously existing structures to form Buildings 8, 9 & 10. Buildings 8 & 9 were constructed upon elements which started out as part of Building 2 in phase 5b. All three strip buildings were constructed of timber sill beams supported by driven timber piles which together formed the baseplate for the structure. The buildings were aligned northwest-southeast and were recorded at a general level between 8.40m OD and 8.20m OD. Buildings 8, 9 & 10 had overall dimensions of c. 18.70m northeast-southwest by 13.75m OD northwest-southeast. All three buildings would have continued east outside the limit of excavation, however, the southeastern corner of Building 10 was recorded just inside the site boundary.

Building 8

7.9.8 Building 8 consisted of a single recorded room, delineated by timber sill beams. Recorded within the room were the remnants of a possible tile hearth or oven, [2605], [2118], [2528], [2581]. These were recorded at c. 8.20m OD and measured 2.80m by 2m. A small beam, [2245], may represent part of the subdivision of the room. In the southern half of the room, running parallel to the southern sill beam was a series of six connected bored timber water pipes, [1142]. These were connected to one another by iron collars. On top of the western most timber pipe was a lead spout fitted onto a hole in the timber, [1215]. The length of pipes measured c. 10.30m and would have continued east outside the limit of excavation. It was recorded at c. 8.11m OD at the eastern end and c. 8m OD at the western end. Recorded directly west of this line of timber water pipe was a square cut, [1326], within which was the degraded remnant of a timber lining which was in turn lined with clay. This rectangular feature measured 2.10m in length by 1.40m and was c. 0.40m deep. This may represent a water tank directly related to the bored water pipes, which would have provided clean water under pressure to the building. Dendrochronological results from the timber pipes date to after AD 144 and after AD 143 (Appendix 17). Postholes were also recorded within the room, directly south of oven/hearth [2605], [2035] & [2636]. These were recorded at c. 8.15m OD and had diameters of c. 0.15m. The building measured c. 10.30m northwest-southeast by c. 5.75m northeast-southwest.

Building 9

7.9.9 Building 9 measured c. 13.25m northwest-southwest by 5.60m northeast-southwest and consisted of two recorded rooms;

- **Room A** was located in the western end of the building. Within this room two tile ovens were recorded, [1378] & [1876]/[3038]. These keyhole ovens were recorded at 8.25m OD sat approximately 2.55m apart from each, facing opposing ways to each other. Oven [1378] measured c. 2.50m in length by c. 2m wide and survived in excellent condition. Oven [1876]/[3038], which appeared to have been constructed in the area of an earlier oven from a previous phase, was heavily disturbed. Its remnants measured c. 2.50m by c. 1.60m. Both ovens had an on edge horizontal timber plank in the end outside the oven forming an area where fire debris would be raked, and then shovelled out. Two postholes, [2079] & [2082] were recorded southwest of oven structure [1378], aligned roughly northeast-southwest, and may relate to this structure in some way. Recorded at c. 8.15m OD these two postholes were c. 0.45m in diameter. Two timber stakes were also recorded east of oven structure [1876]/[3038]. These were recorded at c. 8.10m OD and had diameters of 0.10m and 0.15m. External to Room A, at its western end between the building and the revetted channel, were a group of four beamslots, [2602], [2585], [2612] & [2616]. Three of these beamslots contained the degraded remains of timber beams, [2601], [2583] & [2610]. These were aligned northwest-southeast and were recorded at c. 8.10m OD. A series of timber stakes and postholes were also recorded within this area, [2072-2078]. Timber stakes [2072-2075] formed a fairly neat line running roughly northeast-southwest, located in between the four beamslots described above. At the southern end of these three more stakes, [2076-2078], formed a small cluster. These stakes were all recorded at c. 8.15m OD, stakes [2072-2075] had diameters of c. 0.20m and stakes [2076-2078] had diameters of c. 0.15m. These beamslots and postholes may relate to some form of structure along the front of the building, such as a boardwalk, or raised platform.
- **Room B** was located in the eastern end of the building. The room was delineated by timber sill beams [2626], [4993] & [2452]. Clay sills, [2135] & [2182], were recorded on timber sill beam [2452], at c. 8.25m OD. Clay surface [2544] was recorded in this room at c. 8.25m OD and showed evidence of burning. Upon this tile structure [1025] was recorded at c. 8.30m OD. The remnants of this possible hearth measured 0.66m by 0.69m. Room 3 measured 5.60m northeast-southwest by 3.70m northwest-southeast but would have continued beyond the eastern limit of excavation.

Building 10

7.9.10 Building 10 measured c. 13.75m northwest-southwest by 7m northeast-southwest and consisted of four recorded rooms;

- **Room A** was located in the western area of the building. A clay wall, [2672], was recorded at c. 8.30m OD sealing timber beam [2736] to the north. Remnants of a clay surface were recorded within the room at c. 8.40m OD. Remnants of a small hearth were recorded in this room at c. 8.41m OD and measured 0.80m by 0.75m. Evidence for another beamslot, [716], existed just east of beamslot [664], suggesting this eastern boundary to the room may have shifted slightly. Room A measured 4.75m northeast-southwest by 3.75m northwest-southeast.
- **Room B** was located in the east of the building. Clay walls were recorded on the northern timber sill beam at c. 8.25m OD. Another clay wall was recorded on the southern timber beam at c. 8.35m OD. In the eastern half of the room a group of beamslots representing internal joists was recorded, [2371]. These were aligned northeast-southwest and were recorded at c. 8.25m OD and they covered an area 4.70m by 4.10m. These joists would mostly likely have been throughout the room originally. Sealing these was a clay slab recorded at c. 8.40m OD upon which a very small area of tiles was recorded. This was recorded at 8.43m OD and may represent

the remains of a tile surface or hearth. Room B measured c. 9.70m northwest-southeast by c. 4.40m northeast-southwest.

- **Room C** was located at the southern extreme of the building. A clay surface was recorded within this room at c. 8.30m OD. Laid upon this surface was a spread of tiles [1364] recorded at c. 8.35m OD. This area of tiles measured 1.80m by 1.13m and may represent a surface or hearth. Also cutting the clay surface to the west of the tiles were a small group of postholes. These were encountered at c. 8.30m and all had diameters of c. 0.15m. Room C measured c. 3.45m northwest-southeast by c. 2m.
- **Room D** was located at the southeastern extreme of the building. On edge timber planking was used as shuttering within an eastern beamslot upon which a clay wall was recorded. A clay wall [992] was also recorded on the northern timber beam. A clay wall formed the western boundary to the room. These clay sills were recorded at c. 8.25m OD. Multiple clay surfaces were recorded within this room, the highest level of which was c. 8.35m OD. Room D measured 2.20m northeast-southwest by 3m northeast-southwest.

  Rooms C and D represent additions to the main structure of Building 10. Despite appearing to be separate from each other they were probably both within a 'range' along the southern edge of the Building.

7.9.11 Directly north and south of Building 8, 9 & 10 were two associated box drains, [1395]/[1743] & [2713]. These box drains were constructed with a flat timber base and on edge vertical timbers planks making up the sides. Box drain [2713] had evidence of a timber cap to the drain. Box drain [1395]/[1743] ran parallel, northwest-southeast, to timber sill beam [3517] just outside the northern extent of the Building 8. Running for c. 8.50m in length, it would have continued east outside the limit of excavation, the western end would presumably have run into the revetted channel. Recorded at c. 7.97m OD at its eastern end, and at c. 7.85m OD at its western end, it was 0.30m wide and was c. 0.30m deep. The levels appear to confirm that the box drain was flowing from east to west into the revetted channel. This timber lined box drain was filled with a mixture of naturally accumulated silts and backfilled material, [1742], [1161] & [1155]. Box drain [2713] ran parallel, northwest-southeast, to Building 10 directly south of it. Running for c. 14.50m in length, it would have continued east outside the limit of excavation, the western end would presumably have ran into the revetted channel. Recorded at c. 7.94m OD at its eastern end, and at c. 7.88m OD at its western end, it was 0.20m wide and was c. 0.20m deep. Evidence of the timber capping to the box drain was recorded in three locations along the line of the drain. This timber lined box drain was filled with a mixture of naturally accumulated silts and backfilled material. The levels appear to confirm that the box drain was flowing east to west into the revetted channel there.

7.9.12 Outside the area of Building 10 to the south were a sequence of external surfaces, [2071], [2037] & [1703]. These surfaces are installed upon a sequence of dump and demolition horizons relating to the disuse of Buildings 2 & 4. The first surface remnant [2071] was recorded at c. 8.18m OD, with only a small area of it surviving, 2m by 1m. This rough surface was composed of CBM and gravel and was c. 0.05m thick. Sealing this was surface [2037], composed of compacted gravels, recorded at c. 8.29m OD. An area of 8.70m by 9m was recorded of this surface and it was 0.15m thick. Above this was the last phase of external surface in this area, [1703]. Recorded at c. 8.36m OD, this rough surface was composed of compacted gravels and flints, with a maximum thickness of 0.10m. The surviving area of this surface measured 9.98m by 13m.

7.9.13 Cutting through demolition horizons associated with Building 4 in the south of Area A was the remnant of a linear feature, [245]. Aligned northwest-southeast this linear

feature was truncated at its southeastern end but would likely have continued past the limit of excavation whereas the northwestern end appeared to terminate. Measuring 1.20m in length by 0.60m wide, it was recorded at c. 8.30m OD and was c. 0.15m deep. This possible linear feature was filled with a clay silt deposit which contained domestic refuse.

Building 11

7.9.14 Directly west of revetted channel [5000] were the remnants of a possible structure, Building 11. Building 11 consisted of the structural elements of two postholes, [231] & [233] and a possible beamslot, [294]. Posthole [231] was encountered at 7.53m OD, measured 0.34m by 0.18m and was 0.15m deep. Posthole [233] was recorded at 7.46m OD, measured 0.46m by 0.26m and was 0.26m deep. Beamslot [294] was recorded at c. 7.51m OD; its surviving area measured 1.12m long by 0.36m wide and was 0.13m deep. These three structural elements were aligned perpendicular to the revetted channel in a line running eastsoutheast-westnorthwest. Directly north of these building elements, possibly the interior of the building were two timber barrel bases, [40] & [44]. Timber barrel [40] was recorded at a highest level of c. 7.93m OD with the barrel base recorded at c. 7.53m OD. The barrel had a diameter of c. 0.75m but the northern area had been truncated by modern intrusion. Timber barrel [44] was recorded at a highest level of c. 7.90m OD with the base of the barrel at c. 7.53m OD. The timber barrel appeared to have a similar diameter to barrel [40] of 0.75m but was more heavily truncated by modern intrusion. These barrels were located c. 1m apart from each other. The area of Building 11 measured c. 3.75m eastsoutheast-westnorthwest by 4.80m northnortheast-southsouthwest.

7.9.15 Recorded south of, and external to, Building 11 were a series of pits, [239], [280], [142], [220], [49], [283], [292], [269] & [458]. These were recorded between 7.70m OD and 7.60m OD. They ranged in size from 0.34m by 0.18m to 1.38m by 1.25m and ranged in depth from 0.13m to 1.36m. A driven timber post, [497], was recorded within this area but didn't appear to relate to anything. A beaten earth floor, [195] was recorded to the north of this posthole. The remainder of Area B was represented in this sub-phase by exactly the same features as discussed in the previous phase (see Phase 6a above).

7.10 Phase 7: AD 250-350/400 (Fig. 12)

7.10.1 Phase 7 saw another phase of buildings recorded across the site. These were more fragmentary however as the majority of horizontal stratigraphy associated with them had been truncated away. Many of the structures and features were represented by deeper cut features and driven timber piles. This phase also saw continued evidence of water management with the installation of a major new rebuild of revetted channel along the line of an earlier one in the northern half of Area A.

7.10.2 Metalled gravel road [641]/[2957] in Area A continued in use during this phase together with revetted channel [5000] directly west of its southernmost extent. At the southern end of channel [5000] a line of timber planking and piles, [2630], has been installed running perpendicular to the channel, apparently blocking off the channel. Only a small area of this timber structure was recorded however making interpretation difficult. This timber planking within the channel interior may relate to Building 16 which was directly to the west (see below).

7.10.3 The revetted channel which ran parallel directly to the east of the road [641] in Area A again remained open into this period. The southern end of the channel was still

represented by structures [853]/[1398]. Recorded within revetment structure [853]/[1398] was a series of ten timber planks. These were recorded at c. 7.55m OD and appeared to have dumped into the channel. In the centre of Area A revetment structures [1998] & [2099] from the previous phase were replaced by revetment structure [1766]. Not as wide as the structure it replaced, [1766], measuring c. 1.25m wide and was recorded at c. 8.41m OD. Further north revetment structures [1784]/[1833]/[1660] were replaced by new structures, [2233] and [949]. These structures started as c. 1.50m wide to the south but got thinner towards the north and became c. 0.80m wide. In the centre of this area revetment structure [949] showed evidence of continual collapse and subsequent repair. Along the northeast-southwest line of revetting the previously existing structures [3351], [2716], & [1773] were replaced by the thinner structure [599]/[3228]. This structure now measured c. 0.75m wide and was recorded at a highest level of 8.36m OD.

Building 12

7.10.4 Directly northwest of the revetted channel structure [599] was another structure, composed of tile walls and associated surfaces, Building 12. Only what appeared to be the southeast corner of this building was recorded with the rest of the structure continuing north outside the limit of excavation. Building 12 was aligned northeast-southwest and consisted of tile wall [1293] running northeast-southwest and the base of another wall [1848] which was comprised of ragstone, tile and amphora fragments. The southeast corner of the structure was represented by tile structures [968] & [969]. External tile spreads were also recorded just south and southwest of the building, [1593] & [1846]. A foundation for a possible wall composed of ragstone, tile and amphora fragments was also recorded apparently just south of the corner of the building, [1789], but this may be a disturbed surface. Within the building heavily burnt tile structures [1292] & [1315] may represent an oven or hearth. Also recorded within the building was a square cut, [829], containing the degraded remains of two timber planks, [827], possibly representing the base of a barrel. A circular cut, [984], truncated an area along the southwestern wall, possibly for the robbing out of wall material. Building 12 was recorded at a general level of c. 8.56m OD and measured c. 4m northwest-southeast by 2.75m northeast-southwest.

Building 13

7.10.5 Recorded to the south of Building 12 was a series of postholes and beamslots possibly representing another structure, Building 13. This building consisted of beamslots [961] & [604] both aligned northeast-southwest and measured 3.75m in length. Beamslot [604] contained the stain of a previously existing timber beam. Remnants of a possible beamslot [1361] running northwest-southeast was recorded in the area of the northwest corner of the building. A number of postholes were also recorded in the area of the northwest corner of the building, [1150], [1041] & [1307]. A large linear cut [588], running northeast-southwest from the corner of the building may represent robbing out of material relating to Building 13. A number of other postholes were also recorded in this area relating to the building, [1100], [1254], [1237] & [1301]. Linear feature [1013], running northwest-southeast, may represent the southern boundary to this building. This feature measured 2.80m in length by 1.25m wide and may represent another robber cut of structural elements. It was recorded at c. 8.31m OD and was c. 0.42m deep. Cutting beamslot [961] was pit cut [2173]. Sub-circular in shape it measured 2.20m long by 0.64m wide, but would have continued west past the limit of excavation. It was recorded at c. 8.50m OD and was 0.20m deep. Building 13 was recorded at a general height of c. 8.55m OD. The area of the building measured c. 7.50m northeast-southwest by 6.25m northwest-southeast. Beamslots [961] & [604] may represent an internal division meaning that the building would have extended west past the limit of excavation. Directly south of linear [1013] pit [1244] was recorded. Sub-circular in shape this pit measured 2.20m by 1.48m and was c. 0.15m deep. It was recorded at c. 8.35m OD.

7.10.6 Recorded in the northern half of Area A were two square timber lined wells, [569] & [2923]. Both timber lined wells were constructed of a series of courses of horizontal on edge timber planks one on top of the other. Well [569] was recorded at a highest level of c. 8.23m OD, it measured c. 1.25m by 1.25m and was c. 2.21m deep. Recovered from the backfill of the well's construction cut were two coins of Constantinian issue, dating to AD 330-335 and AD 335-341. These dates provide a *terminus post quem* for the wells construction. Well [2923] was recorded at a highest level of c. 7.51m OD and measured c. 1.25m by 1.25m. This well was excavated to a depth of over 2m but due to health and safety reasons the base of the well was not recorded.

Building 14

7.10.7 Driven through various dumped deposits in the centre of Area A were two parallel lines of timber piles, timber groups, [1261]/[1262] & [1269]/[1263]/[1267], representing Building 14. Although in the area of the previously standing Buildings 8 & 9, these timber piles were on a slightly different alignment, westnorthwest-eastsoutheast. Originally timber sill beams would have sat upon these piles, creating the baseplate for a building, exactly like the structures recorded on site described through the various phases above. These timber piles were recorded between 8.39m OD and 8.27m OD. The top level of these timber piles may not represent the level upon which the timber beams were originally installed. The tops of the piles appeared to be degraded and may also have been truncated in antiquity. The area of this building was c. 12.50m westnorthwest-eastsoutheast by c. 6.90m northnortheast-southsouthwest, but it is interpreted that the building would have continued east beyond the limit of excavation. The western end of the structure would have ended at the revetted channel. This structure appears to have been a long thin strip building similar to those described in the previous phase (Phase 6b, Buildings 8, 9 & 10). Within the interior of this structure a possible beamslot, [872], was recorded. Located within the eastern end of the building it was aligned the same as the timber pile lines, westnorthwest-eastsoutheast. Its area measured 2.80m in length by 0.25m wide and was 0.20m deep. It was recorded at c. 8.30m OD. The beamslot's western end appeared to terminate and the eastern end would have continued beyond the limit of excavation. Also recorded within the interior area of the building were two intercutting pits, [575] & [546]. These heavily truncated sub-circular pits were recorded at c. 8.30m OD. The area of these pits was c. 2.50m by 1m and they were c. 0.15m deep.

Building 15

7.10.8 Recorded in the south of Area A was another fragmentary structure, Building 15. Building 15 was constructed of timber sill beams supported by timber piles, which together formed the baseplate for the structure. Many of the timber sill beams did not survive, with wall lines represented by timber piles and fragments of timber beams. The building was aligned, westnorthwest-eastsoutheast, perpendicular to the revetted channel to the west. The area of the building measured c. 7.80m northnortheast-southsouthwest by 13.50m westnorthwest-eastsoutheast. The building was truncated by later activity at its western end and would have continued east and south outside the limit of excavation. The building was recorded at a general height of 8.45m OD. Three rooms were indentified within the building:

- **Room A** was located in the north-western area of the building. The room was delineated by a series of timber pile lines on the northern, eastern and southern sides. The western end of the room was truncated by later activity. Recorded on the line of the southern timber piles which define the room were two whole pots, [108] & [110]. These two pots were set deliberately within cuts below the building. They both showed evidence of being ritually killed and appear to represent 'foundation' deposits associated with the buildings construction. Both these pots were recorded at c. 8.42m OD. In the western side of the room a series of features were recorded. Running

northnortheast-southsouthwest within the room was the remnant of a possible beamslot, [1496], which might suggest that the room was subdivided. This beamslot was 2m long by 0.40m wide and was 0.12m deep. It was recorded at c. 8.38m OD and may represent the beamslot for a floor joist. Also recorded in the room were the truncated remains of a tile hearth, [1236]. These truncated remains were recorded at c. 8.44m OD and its area measured c. 0.60m by 0.60m. Recorded within the hearth area were a number of dark grey ashy deposits relating to the hearth's use. A truncated pit was also recorded within the room, [931], cutting the northern end of possible beamslot [1496]. The surviving area of the pit measured 0.80m by 0.75m and was 0.17m deep. It was recorded at c. 8.33m OD. Two postholes and a beamslot were also recorded in the room, [848], [821] & [838]. Posthole [848] had a diameter of 0.27m and was 0.10m deep. Posthole [821] was square in shape, measured 0.34m by 0.31m and was 0.15m deep. These were both recorded c. 8.35m OD. Possible beamslot [838] was heavily truncated with only a small area of it remaining. Aligned westnorthwest-eastsoutheast it measured 1m long by 0.36m wide and was 0.10m deep. These three features may represent structural elements relating to possible interior features of the room. Cutting possible beamslot [838] was a circular pit, [733]. Within this cut was the base of a timber barrel, [732]. This pit was recorded at c. 8.45m OD, measured 1.04m by 0.90m and was 0.40m deep. This barrel probably represents another storage barrel similar to ones already described above. The heavily truncated remnants of a timber box drain were also recorded in the room, [814]. The timber remnants within the cuts were badly degraded. This box drain was recorded at c. 8.35m OD, measured c. 3m long by 0.20m wide and was 0.20m deep. This box drain was truncated by two intercutting pits, [724] and [677]. Pit [724] was sub-circular in shape, measured 1.53m by 1.20m and was 0.48m deep. Pit [677] truncated the northern end of [724], was rectangular in shape measuring 0.90m by 1m and was 0.25m deep. Both these rubbish pits were recorded at c. 8.45m OD. Room A measured 9.40m westnorthwest by 5.35m northnortheast-southsouthwest.

- **Room B** was located in the eastern area of the building. The room was delineated by a timber pile line to the west and a linear cut [759] to the north. Recorded within this room was a degraded timber pipe [137]. This timber was recorded at c. 8.17m OD and followed the same alignment as the building, northnortheast-southsoutheast. The surviving area of the timber measured 3.85m in length. This timber pipe appears to have been re-used as a beam or joist within the room. Also recorded within the room was an arrangement of five timber posts, [115], [125], [126], [1068] & [1069], which formed an 'L' shape within the area exposed. It is likely that these timbers would have originally formed a square or rectangle within the entire area of the room. This area may represent a corridor around a room, or multiple rooms. As this area lies unrecorded outside the limit of excavation it cannot be determined precisely. Linear cut [759], which defined the northern boundary of the building, may represent some kind of robbing event. This cut was aligned westnorthwest-eastsoutheast and measured 4.40m in length by 0.70m wide. This was recorded at c. 8.40m OD and was 0.11m deep. Truncating the centre of linear cut [759] was another cut [103]. This oval shaped cut measured 2.20m by 1.25m and was c. 0.25m deep. It was recorded at 8.49m OD and may be a robbing out of timber [137] described above. The room measured c. 4.70m westnorthwest-eastsoutheast by 5.30m northnortheast-southsouthwest but would have continued south and east outside the limit of excavation.

- **Room C** was located in the south of the building. The room was delineated by a timber pile line to the north. The room continued south beyond the limit of excavation. Recorded within the room were two parallel lines of tiles, [131]. These tiles were recorded at c. 8.50m OD and their area measured 2.25m by 0.90m. Recorded between the parallel rows of tiles was the base of a timber barrel, [275]. The barrel was recorded at 8.40m OD with the base of the barrel being at c. 8.20m OD. The barrel had a radius of 0.85m and the southern half continued south outside the limit of excavation. Directly north of tile structure [131] was a badly degraded timber water pipe, [130]. This bored timber pipe, most likely supplying water under pressure to the building, was recorded at c. 8.41m OD. It followed the same alignment as the building, westnorthwest-eastsoutheast; its surviving length measured 3.15m. The

room measured c. 5.60m westnorthwest-eastsoutheast by 2.50m northnortheast-southsouthwest.

7.10.9 Approximately 2.5m north of Building 15 was a degraded timber water pipe, [1455]/[1807]. Running parallel to the building this fragmentary and badly degraded bored timber pipe was recorded at c. 8.49m OD. Its surviving length measured c. 10.50m; it is assumed that its eastern end would have continued beyond its recorded length. At its western end a square pit was recorded, [2171]. This pit measured 1.20m by 0.80m, was recorded at c. 8.22m OD and was 0.52m deep. Lining the interior of this pit was the remnants of degraded horizontal on-edge timber planking, [2176]. This timber lined pit may represent a water tank associated with the bored timber pipe which would have supplied clean water under pressure to the buildings around. Also recorded between Building 15 and the timber pipe [1455]/[1807] were two pits, [252] & [265]. Pit [252] was rectangular in shape, measured 0.70m by 0.86m and was 0.22m deep. Pit [265] was sub-circular in shape, measured 0.55m by 0.53m and was 0.24m deep. Both pits were recorded at c. 8.40m OD.

7.10.10 Recorded to the north of Timber pipe [1455]/[1807] were a series of cut features. Linear feature [2120] was aligned northwest-southeast and measured 3.75m long by 1m wide and was 0.20m deep. Recorded at c. 8.20m OD, It was truncated at both ends. A posthole, [2087], which contained timber post [2117], truncated the western end of [2120]. A series of demolition and dumped deposits sealed this features. The highest level these deposits were recorded at was c. 8.40m OD and they had a combined thickness of c. 0.30m. These demolition deposits most likely relate to Buildings 8, 9 & 10 which were located in this area in the previous phase (6b) and subsequently went out of use. Cutting these deposits was a square pit, [313]. The pit was lined with a series of timber planks, [312]. The pit measured 1.06m by 0.96m and was 0.34m deep. It was recorded at c. 8.35m OD and probably represents a storage feature. Recovered from a fill of the timber lined pit was a large assemblage of animal bone, especially horn core, which was used to backfill the pit. Such animal bone material and horn core is indicative of industrial activity which must have taken placed on, or near, the site.

7.10.11 Also recorded in the area of timber lined pit [313] were a series of other cut features. Posthole [2203] had a radius of 0.40m and a depth of 0.15m. East of this stakehole [2165] was recorded which had a radius of 0.10m and a depth of 0.12m. Pit [2345] was also recorded in this area. Sub-circular in shape it measured 1.10m by 0.87m and was 0.25m deep. Just south of this another pit was recorded, [1482]. This pit had a degraded timber plank within its base, [1481], which may represent the remnants of a timber lining, similar to pit [313] described above. This badly truncated pit was sub-circular in shape, measured 1.60m by 1.40m and was 0.21m deep. These features were all recorded at c. 8.30m OD. A series of driven timber posts and stakes were recorded in this area, [1080-1081], [1098] & [2019-2020], but didn't appear to form any meaningful structure. Also recorded within this area was a possible ditch [306]. Running northwest-southeast it measured 4.10m in length and was 1m wide. The ditches eastern end continued outside the limit of excavation whilst the western end appeared to terminate sharply. This ditch was recorded at c. 8.43m OD and had a maximum depth of 0.25m. Recovered from the fill of the ditch was a large proportion of animal bone, many of which appeared to be the detritus associated with industrial activities. The remnants of a possible gravel surface were recorded within this area, [2310]. This rough, compacted gravel surface was recorded at c. 8.24m OD, measured 1.60m by 2.10m and was 0.05m thick.

7.10.12 Further north a square pit and two smaller intercutting pits were recorded, [582], [653] & [646] respectively. Pit [582] was c. 1m square and 0.15m deep. Pit [653] was an elongated rectangle measuring 0.59m in length by 0.20m wide and was 0.06m

deep. Truncating its southern end was oval pit [646]; it measured 0.40m by 0.74m and was 0.23m deep. All three of these features were recorded at c. 8.40m OD and were probably originally cut from higher up with only the lower portion of them surviving.

7.10.13 Recorded north of Room B of Building 15 on the eastern edge of the excavation was a series of cut features, including pits and postholes. Rectangular pit cut [2753] was recorded at c. 8.05m OD, measured 1.32m by 1.42m and was 0.35m deep. The pit continued east outside the limit of excavation. A small area of another rectangular pit, [1806], was recorded in this area. Recorded at 8.15m OD, it measured 1.15m by 0.66m and was 0.31m deep. This pit also continued east outside the limit of excavation. Truncating pit [1806] was a small linear cut [1696]. Aligned northwest-southeast it measured 0.80m in length by 0.20m wide and was 0.10m deep. The western end of this small gully appeared to terminate and its eastern end would have continued outside the limit of excavation. Recorded at c. 8.20m OD this linear may represent a small drainage gully or possibly the remnants of a beamslot. Two postholes were also recorded within this area, [2487] & [1667]. Posthole [2487] measured 0.16m in diameter and was 0.23m deep. Posthole [1667] had a diameter of c. 0.36m and was 0.30m deep. The fill of posthole [1667] contained moderately sized CBM fragments and stones representing post-packing for timber post that had been removed. These postholes were recorded at c. 8.15m OD and were roughly aligned northnortheast-southsouthwest from one another. This alignment respects Building 15 to the south and may represent some other structure which may have continued east outside the limit of excavation or they may have been part of Building 15 itself. Two other pits were recorded in this area, [228] & [342]. Pit [228] was sub-circular in shape measuring 0.95m by 0.90m and was 0.25m deep. Pit [342] appeared to be sub-circular in shape but only its apparent western extent was recorded as it continued east outside the limit of excavation. The area recorded measured 3.60m by 1m and was 0.25m deep. These pits were recorded at c. 8.40m OD and probably represent rubbish pits.

7.10.14 Cutting through the eastern end of timber pipe [1455]/[1807] was a circular pit, [940]. Set within this circular cut was a timber barrel base, [944]. This sunken barrel had a radius of c. 0.97m, was 0.40m deep and was recorded at c. 8.25m OD. This feature may have represented a sunken storage barrel.

7.10.15 In the area between Buildings 14 and 15 various cut features were recorded, described above. The presence of deeper cuts features such as square timber lined pit [313] suggests that this area between the two buildings may also have been a building. However, no structural evidence survives in this area and so therefore it cannot be determined precisely as an interior of a building.

Building 16

7.10.16 This phase of activity on the western side of gravel road [641] and its associated revetted channel [5000] is mostly represented by deeper cut features and low level structural elements such as driven timber piles. Recorded running perpendicular to the channel and road was a structure composed entirely of driven timber piles. This timber line continued into the Area B excavation together with a number of other related timber piles, all of which combine to form Building 16. Building 16 was entirely represented by timber piles, which originally would have supported the timber sill beams forming the building's baseplates. Building 16 comprised two parallel lines of timber piles, aligned northwest-southwest, and perpendicular rows of piles forming the building's outline. These timber piles were recorded between 7.70m OD and 7.60m OD in Area B and at c. 7.90m OD in Area A. The entire area of the building measured c. 13.10m northeast-southwest by c. 14.60m northwest-southeast. The

building would have continued north and south outside the limit of excavation. Three basic room areas were identified within the building and may actually represent three different strip buildings:

- **Room A** was located in the northern end of the building, in both Areas A & B, and would have continued north outside the limit of excavation. The room measured c. 6.90m northeast-southwest by c. 14.60m northwest-southeast. Within the western end of this room more timber piles were recorded running perpendicular to the main walls, northeast-southwest. These may represent internal partitions within the room.
- **Room B** was located in the centre of the building, in both Areas A & B. The room measured c. 6.25m northeast-southwest by c. 14.60m northwest-southeast. Throughout the room more timber piles were recorded, possibly forming three or four lines running perpendicular to the main walls, northeast-southwest. These again may represent internal partitions within the room.
- **Room C** was located in the south of the building and would have continued south outside the limit of excavation. The area of the room recorded measured c. 3.10m northeast-southwest by c. 6.25m northwest-southeast.

Building 17

7.10.17 Directly west of Building 16 another series of timber piles were recorded, Building 17, on the same northwest-southeast alignment. These timber piles appear to be directly related to timber lined well [4251], described below, around which they cluster. These timbers appear to enclose the well in a small outbuilding or lean-to structure, external to Building 16 directly to the east. This small rectangular structure measured c. 8.75m northwest-southeast by c. 6m northeast-southwest. This structure may have been opened sided with a roof, to cover and house the well. Just to the south a possible entrance or corridor into this covered area was recorded.

7.10.18 Recorded within Building 17 was a square timber lined well, [4251]. Recorded at a highest level of c. 7.90m OD, it measured c. 1m by 1m and was c. 4m deep. The timber lined well was constructed of a series of courses of horizontal on edge timber planking one on top of the other. Also recorded within the well, in two opposing corners, were timber struts which supported the planking. The construction cut for the well was backfilled with a clean clay deposit, presumably for waterproofing. Dendrochronological results from a number of the timbers recovered from the well dated to; the winter AD 250, spring AD 251, AD 239-75, after 222, AD 241-75 and after AD 227 (Appendix 17). This timber lined well is most likely related to Building 16 described above and would originally have been cut from higher up in the sequence.

7.11 Phase 8: AD 350-420 (Fig. 13)

7.11.1 The late Roman period was represented by deeper cut features which remained open until the end of the Roman occupation. This is represented by the revetted channel which ran through the length of Area A and two timber lined wells. A small amount of other cut features appeared to represent a variety of drainage ditches and gullies in the area of the major revetted channel.

7.11.2 The revetted channel which ran through the entirety of Area A continued to remain open into the late Roman period, structures [853]/[1398], [1766], [2233], [949] & [599]/[3228] as described in the previous phase (7). Recovered from a number of the upper fills of these structures were pottery forms dating to after AD 350, the late Roman period. These pottery forms, indicative of activity after AD 350, include; Portchester D/Overwey Ware (PORD), German Mayen Ware (MAYEN), Oxfordshire

White Painted Red Colour Coat (OXRC) and Late Roman Calcite-gritted Ware (CALC) (Appendix 1).

7.11.3 Recorded along the edge of the revetted channel was an extensive gully [411]. Aligned northnortheast-southsouthwest, this gully measured c. 16m in length, was 0.54m wide and varied in depth between 0.30m at the northern end and 0.55m at the southern end. This gully was recorded at a highest level of c. 8.56m OD. This was filled with a mixture of naturally accumulated and deliberately backfilled material. Truncating the northern end of gully [411] was a ditch, [423]. Running virtually east-west ditch [423] measured c. 6m in length and was c. 1.05 wide. It would have continued west past the limit of excavation and at its eastern end was an apparent terminus. This ditch was recorded at a highest level of c. 8.65m OD and was c. 0.26m deep. Another ditch was cut through the line of the revetted channel in the centre of Area A, [500]. This ditch ran north-south for c. 12.75m and was 1m wide. It was recorded at a highest level of c. 8.48m OD and was c. 0.34m deep. Ditch [614] was also recorded in the centre of Area A. Aligned east-west, it measured 2.25m in length and was c. 1.05m wide. It was recorded at a highest level of 8.46m OD and was c. 0.38m deep. The eastern end of this ditch appeared to terminate and the western end appeared to run into the revetted channel located there. These ditches appear to represent drainage activities during this period.

7.11.4 Also recorded in the centre of Area A, to the west of the revetted channel was large cut [463]. This feature appeared to be rectangular in shape, measuring 8.50m north-south by 3.60m east-west, the western edge was not recorded as it continued past the limit of excavation. Recorded at c. 8.48m OD it was c. 0.35m deep. This feature may represent a large, but shallow pit, however as its entire area was not revealed this could not be definitely identified. Cutting [463] was another apparent ditch, [361]. Aligned north-south it measured c. 2.58m in length by 0.90m wide. Recorded at a highest level of c. 8.53m OD it was c. 0.38m deep. This ditch was heavily truncated with an apparent terminus at its northern end. Cutting this ditch was a shallow pit, [352]. Sub-circular in shape this pit measured 2.50m north-south by 2.25m east-west and was c. 0.23m deep. It was recorded at a highest level of c. 8.44m OD. Cutting this pit was another pit, [335]. Rectangular in shape it measured 2.24m north-south by 1.20m east-west but would have continued west past the limit of excavation. Recorded at c. 8.61m OD it was c. 0.42m deep. Cutting ditch [361] was a small linear cut, [344]. Aligned east-west it measured 1.02m in length by 0.30m wide, its eastern end was truncated by a modern intrusion but the western end appeared to terminate. It was recorded at c. 8.52m OD and was c. 0.20m deep. The fill of this linear contained a packing of large stones, suggesting that this feature represents something structural. However, no other structural features associated with this cut seem to survive.

7.11.5 Timber lined wells [569] and [2923], described in the previous phase (7), both continued to remain open into this period. Recovered from within fills [3637] & [3930] of well [569] was a hoard of twenty copper-alloy, pewter and iron vessels. This hoard was comprised of; a copper-alloy bucket, a wine bucket, a set of three nested bead-rim dishes and two other similar dishes, the remains of a four-looped zoomorphic hanging bowl, several cauldrons and bowls, one with a hemispherical base, an iron trivet, two shallow one-handled bowls used as dippers, a lead-alloy small dish and flagon and an iron ladle (Appendix 7). Also recovered from fill [3930] were two coins of the House of Valentinian struck at Arles in the name of Gratian, dating to AD 367-375 and AD 375-378. This provides a *terminus post quem* for the deposition of this hoard; it must have been deposited in or after AD 375.

7.11.6 Sealing the two timber lined wells [569] and [2923] was an extensive dump layer, [416], which covered much of the centre of Area A. Recorded at a highest level of c.

8.62m OD; it measured c. 13.90m by 10.90m and varied in thickness between 0.20-0.30m. In the south of Area A this same dump horizon was recorded as [297]. This was recorded at a similar height of 8.65m OD, measured 12m by 10.50m and varied between 0.30m-0.35m in thickness. This homogenous layer was composed of a mixed sandy silty clay matrix with various fragments of ceramic building material, mortar, painted plaster, and charcoal and oyster shell. As this deposit was stratigraphically above the securely dated well [569], the deposition of the hoard within it is no earlier than AD 375, this means that it post dates this event. As the hoard may have been deposited some while after this date, the potential exists that these dumped deposits may even date to as late as the early 5th century AD.

7.12 Phase 9: Medieval (Fig. 14)

7.12.1 The medieval period was represented by deeper cut features such as ditches and pits and low level structural elements illustrating basic building outlines and sizes.

7.12.2 In the northern half of Area A a medieval pit, [905], was recorded cutting the Roman deposits. Sub-circular in shape this pit measured 1.95m by 1.68m and was c. 1.01m deep. Recovered from the fill of this pit were pottery forms dating to AD 1270-1350 (Appendix 3). Also recorded in Area A was a ditch cut, [586]. Aligned northnortheast-southsouthwest it measured 4.50m in length and was 1.75m wide. This ditch would have continued north past the limit of excavation and apparently terminated at its southern end. The ditch was recorded at c. 8.52m OD and was 0.28m deep. This ditch probably represented a drainage feature and/or delineated a boundary.

7.12.3 Recorded at the southern end of Area A was a large medieval cut, [133]/[277]. Aligned northnortheast-southsouthwest it measured 11.25m in length by 6.25m at its widest point. This linear feature would have continued south past the limit of excavation whilst at its northern end it apparently terminated. Recorded at c. 8.55m OD it was c. 0.30m deep. Recorded along a section of the eastern edge of this feature was a line of collapsed timber planks and timber posts, which would originally have held the planking vertical in place, [281]. This area of collapsed timbers measured 2.25m in length and was recorded at c. 8.55m OD. Dendrochronological results from the timbers dated to AD 1164-1200, AD 1177-97, after AD 1124 and the winter of AD 1188 (Appendix 17). Pottery recovered from fills [106], [107] & [276] date to AD 1240-1300, AD 1240-1270 and AD 1170-1350 respectively (Appendix 3). This feature is located directly over a section of the Roman revetted channel controlling the Walbrook stream and may represent an equivalent medieval feature serving a similar function.

Building 18

7.12.4 To the east of [133]/[277] was a series of five groups of timber piles representing the foundations for a structure, Building 18. Each pile group consisted of a cluster of small beech piles, ranging from two to six timbers, recorded at c. 8.35m OD. Two of these pile groups were sealed by chalk pads, [112] & [295], measuring c. 1.25m by 1.25m. These were recorded at c. 8.50m OD. The building was aligned northnortheast-southsouthwest, the total area of which measured c. 9.40m northnortheast-southsouthwest by c. 8m eastsoutheast-westsouthwest. It is presumed that the building would have continued east and south outside the limit of excavation. Another area of chalk was recorded further north in Area A, [408], but didn't appear to relate to Building 17. This was recorded at c. 8.60m OD and measured 2.40m by 1.75m and may represent the remnants of an external surface.

7.12.5 Recorded between Building 18 and possible channel [133]/[277] was a linear group of timber stakes, group [5024]. This line of timber stakes was aligned northnortheast-southsouthwest, like the rest of the medieval features, and measured c. 10.60m in length. These stakes were recorded at c. 8.50m OD and varied in diameter between 0.05m and 0.07m. These stakes may represent a fenceline associated with Building 18 to the east, possibly separating it from possible channel [133]/[277] directly to the west.

7.12.6 Another group of timber piles were recorded to the south of Area A, [3542]. This group of six timber stakes were recorded at 8.08m OD and ranged in diameter between 0.10m to 0.16m. This group was truncated by possible medieval channel [133]/[277] and may relate to Building 18.

7.13 Phase 10: Post-Medieval (Fig. 15)

7.13.1 As with the medieval period, the post-medieval period was represented by deeper cut features consisting in this phase of a well and pitting.

7.13.2 Cutting through the medieval pit [905] in the north of Area A was a post-medieval barrel well [593]. The barrel comprised of timber barrel staves and hoops forming the lining to the well. The highest level of barrel staves had been deliberately pushed into the interior of the well. The latest fill, [590], sealing these timbers contained pottery dated to 1650-1700, providing a *terminus post quem* for the usage of the well (Appendix 3). This barrel well was recorded at c. 8.50m OD, had a diameter of 1.15m and was c. 0.95m deep.

7.13.3 Partially truncating timber barrel well [593] was a pit, [870]. This pit was ovoid in shape, measuring 1.04m long by 0.64m wide. It was recorded at c. 8.40m OD and was c. 0.61m deep. Fill [869] within the pit contained a Chinese porcelain saucer, along with other small pottery sherds, dating it to the 18th century (Appendix 3).

7.13.4 Cutting through the area of the major revetted channel which was previously located in the centre of Area A was a single driven timber post [415]. This apparent post-medieval timber was recorded at c. 8.60m OD and didn't appear to relate to any other feature in the area.

7.13.5 Another pit, [161], was recorded at the top of the sequence in the southern central part of Area A. Most likely representing the very base of a pit it was recorded at c. 7.80m OD. Sub-circular in shape and heavily truncated by modern activity it measured c. 0.86m by 0.78m and was c. 0.32m deep. No dateable finds were recovered from the single fill, [160], of this feature.

7.14 Phase 11: Modern

7.14.1 Sealing the archaeological deposits across the site were a series of Victorian and 20th century concrete slabs. These concrete foundations covered the entirety of the site and were recorded at a variety of levels; ranging from c. 10.30m OD to c. 9m OD. In some areas, most notably the central core of the 1960s building, the concrete was recorded as low as c. 4.80m OD, truncating any archaeological deposits completely.

Figure 4
Phase 2: palaeochannel
1:125 at A4

Figure 5
Phase 3a: AD 50-70
1:125 at A4

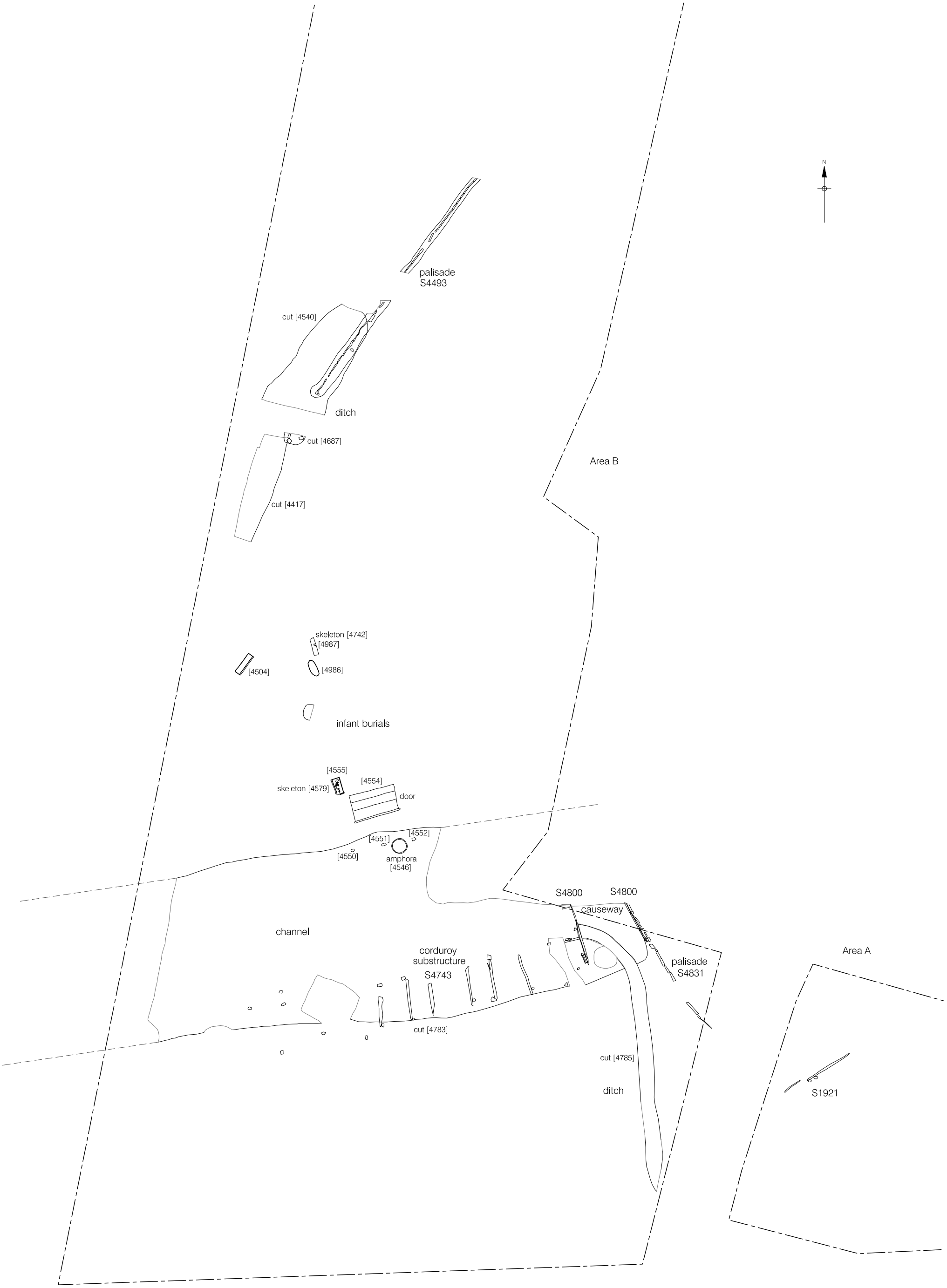


Figure 6
Phase 3b: AD 50-70
1:125 at A3

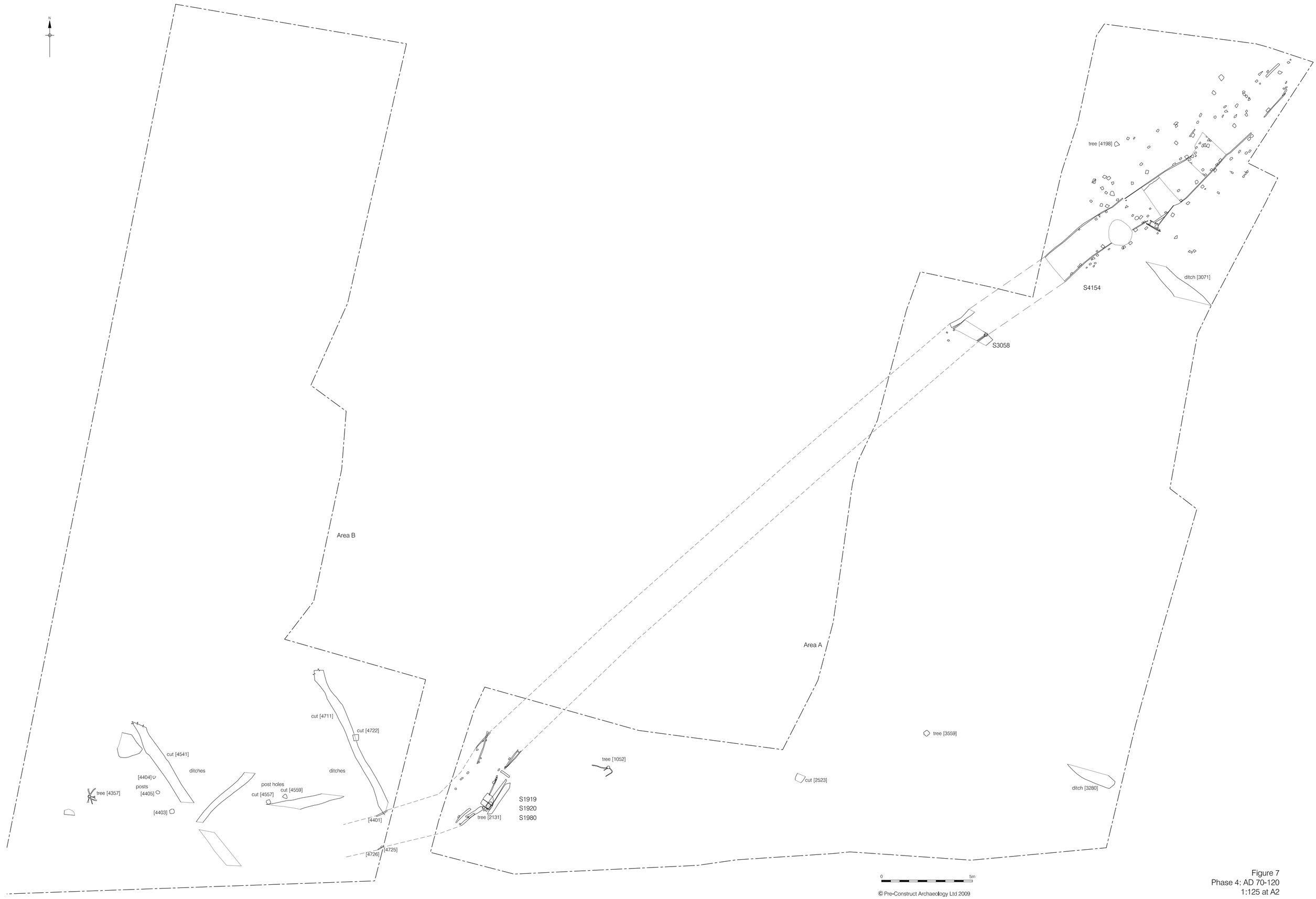


Figure 7
Phase 4: AD 70-120
1:125 at A2

Figure 8
Phase 5a: AD 120-160
1:125 at A2

Figure 9
Phase 5b: AD 120-160
1:125 at A2

N

gravel surface
[4389]

[4374]

[4362]
[4361]
[4365]

Area B

beamslot [4244]

cut [4325]

[4290] [4296]
[4292]
[4294]

B6

gravel surface [4247]

[4414]
[4413]

S4732

cut [4312]

cut [4397]

cut [4328]

ditch [4241]

Area A

B5

wattle
[667]

S4999

clay wall
[222]

floor
[307]

tree [450]
tree [936]
cut [666]
cut [325]
cut
[317]

post hole [323]
cut [490]
cut [492]
cut
[320]

OA

OA
road
[641]

S853

S1398

road
[2957]

causeway 4130

causeway 3887

S3904
S4152

tree [1829]

S3351
S2716
S1773

road
[2779]

S2526

drain

S1784
S1833
S1660

[2162]

hearth
[3051]

[5023]

2a

S2330
S3025
S2221

S2328

2b

cut [2847]

cut [2849]

[4044]

cut [4082]

[3241]

[2672]

[2736]

2c

B2

bridge 1259

2k

[2692]

corridor b

cut [2896]

corridor a

[3231]

[2824]

[3155]

[2826]

[2828]

cut [3156]

bridge 1258

2l

[3235]

[3236]

[3235]

hearth
[2303]

S2209
S2099
S1998

[2594]

[2597]

corridor a

2m

OA
courtyard

[2674]

[2591]

2h

B4

floor
[2565]

[2963]

2n
[2762]

[2759]

wattle wall
[2754]

2j

B2

0 5m

Figure 10
Phase 6a: AD 160-250
1:125 at A2

N

Area B

all features retained from Phase 6a

Area A

[40]

barrels

[44]

B11

cut [239]

cut [231]

cut [233]

beamslot [294]

cut [142]

[274]

cut [280]

cut [49]

cut [220]

floor [195]

OA

cut [292]

cut [283]

cut [269]

post [497]

cut [458]

S5000

OA road [641]

S853

S1398

[2957]

B7

amphora [2110]

tree [1829]

[3158]

S3351
S2716
S1773

[2779]

S2526

S1784
S1830
S1660

S1395

cut

S1743

cut [1326]

B8

plank

hearth /oven

[1215]

[2245]

[2605]

cut [2072]

[2328]

[2528]

[2581]

S2330
S3025
S2221

cut [2602]

cut [2073]

[1142]

[2118]

cut [2035]

cut [2585]

cut [2612]

cut [2636]

cut [2074]

oven [1378]

cut [2616]

cut [2075]

cut [2079]

[2076-8]

cut [2082]

cut [2000]

B9

[2736]

oven [3038] [1876]

9a

bridge 1259

[664]

10a

[2452]

9b

hearth [1025]

cut [2389]

[716]

beamslot [2561]

B10

bridge 1258

10b

10c

[1364]

[2371]

S1998
S2209
S2099

S2713

10d

OA

surfaces

[2071]

[1703]
[2037]

[245]

0 5m

Figure 11
Phase 6b: AD160-250
1:125 at A2

N

Area B

B17

S4251

16a

16b

16c

B16

Area A

16a

S5000

16b

S2630

OA
road
[641]

S853

S1398

[2957]

[1041]

[1307]

[1154]

[1150]

[604]

[1848]

[829]

[1846]

[1293]

[1593]

[984]

[1254]

[1100]

[1257]

B12

[969]

[588]

[1789]

[1301]

[961]

[2173]

B13

cut [456]

[1013]

[1244]

S599

S3228

S2923

[2779]

[649]

[2263]

cut [2332]

cut [2334]

S569

S949

S2233

S1261/1262

cut [546]

B14

cut [575]

S1766

S1269/1263/1267

[653]

[582]

[646]

beamslot
[872]

cut [2203]

[2165]

cut [2087]

[312]

[313]

[2117]

cut [2345]

[1098]

[1015]
[1083]
[1016]

[1082]

[1081]

[1481]

[2020]

[2019]

cut [2171]

cut [2120]

cut [1482]

[2176]

gravel
[2310]

water pipe

[1455]

[1088]

ditch
[306]

[814]
cut for box drain

cut [677]

[944]

cut [848]

hearth
[1236]

[1807]

beamslot [838]

barrel
[732]

cut [724]

cut [931]

cut [252]

cut [265]

[342]

[1667]

beamslot [1496]

cut
[749]

[2753]

[1806]

B15

15a

[228]

[1696]

cut [759]

cut
[103]

pot
[110]

pot [108]

water pipe [130]

[131]

[126]
[125]

[1068]

posts

15c

[275]

[115]

15b

[1069]

water pipe
[137]

0 5m

Figure 12
Phase 7: AD 250-350
1:125 at A2

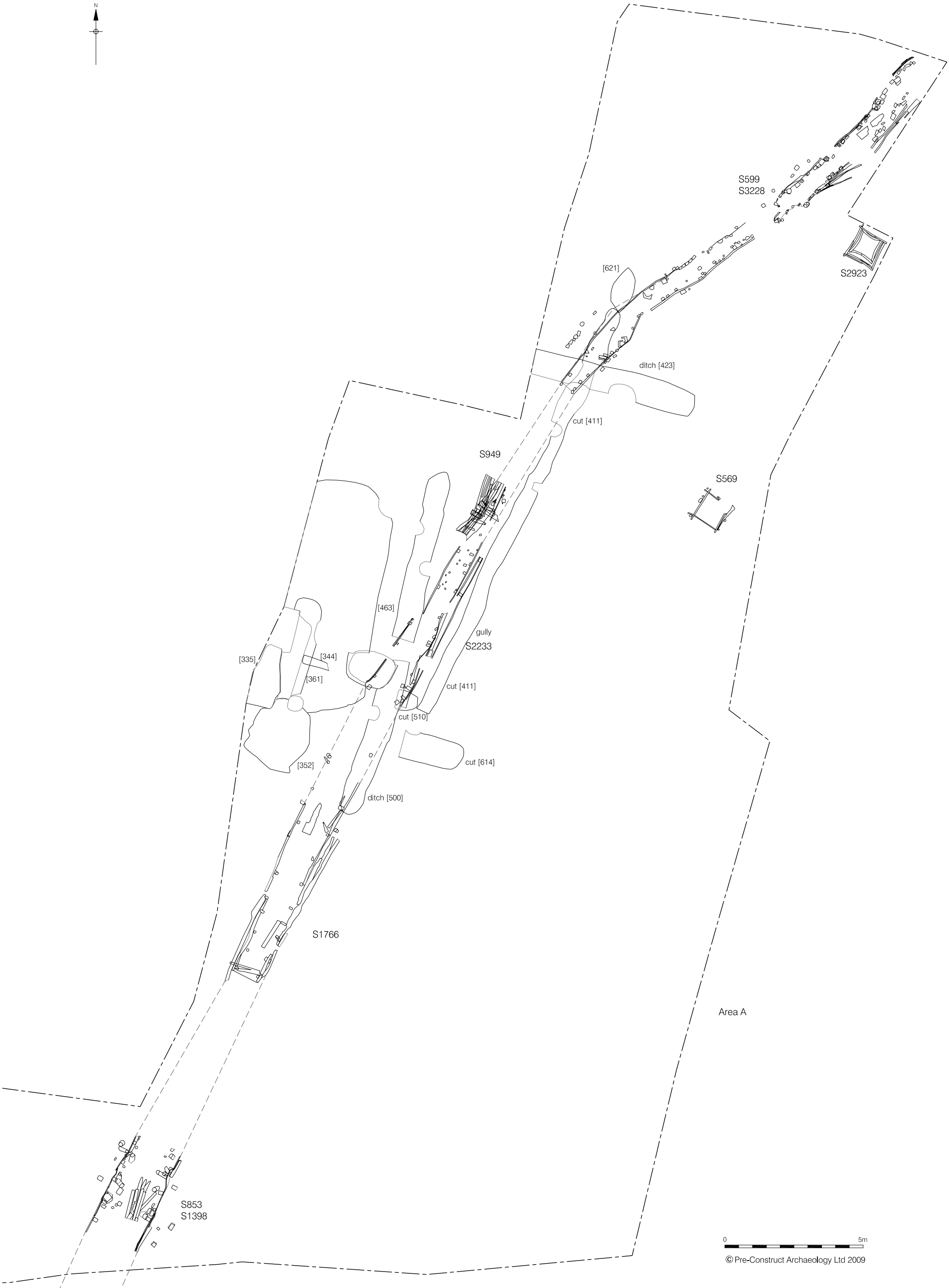


Figure 13
Phase 8: AD 350-420
1:125 at A3

N

cut [905]

[586]

[408]

[277]

Area A

[295]

S281

stakes
[5024]

B18

stakes
[3542]

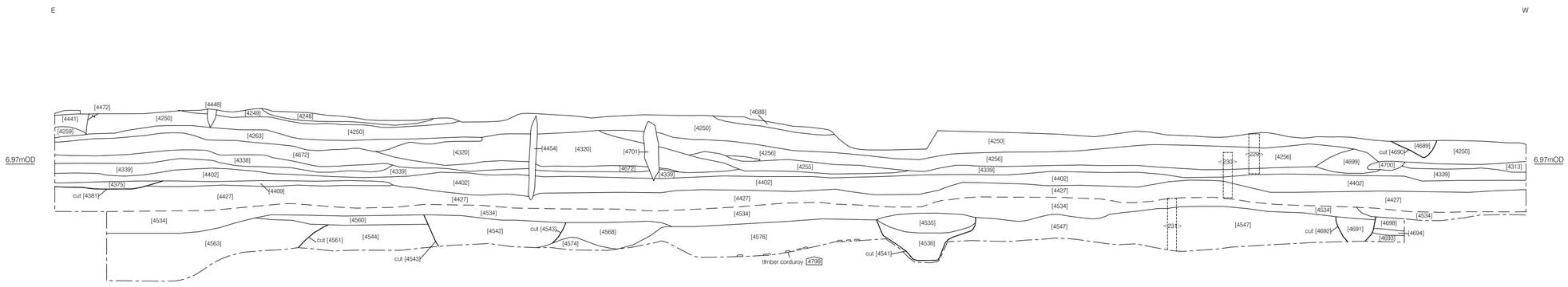
[133]

[112]

0 5m

Figure 14
Phase 9: Medieval
1:125 at A3

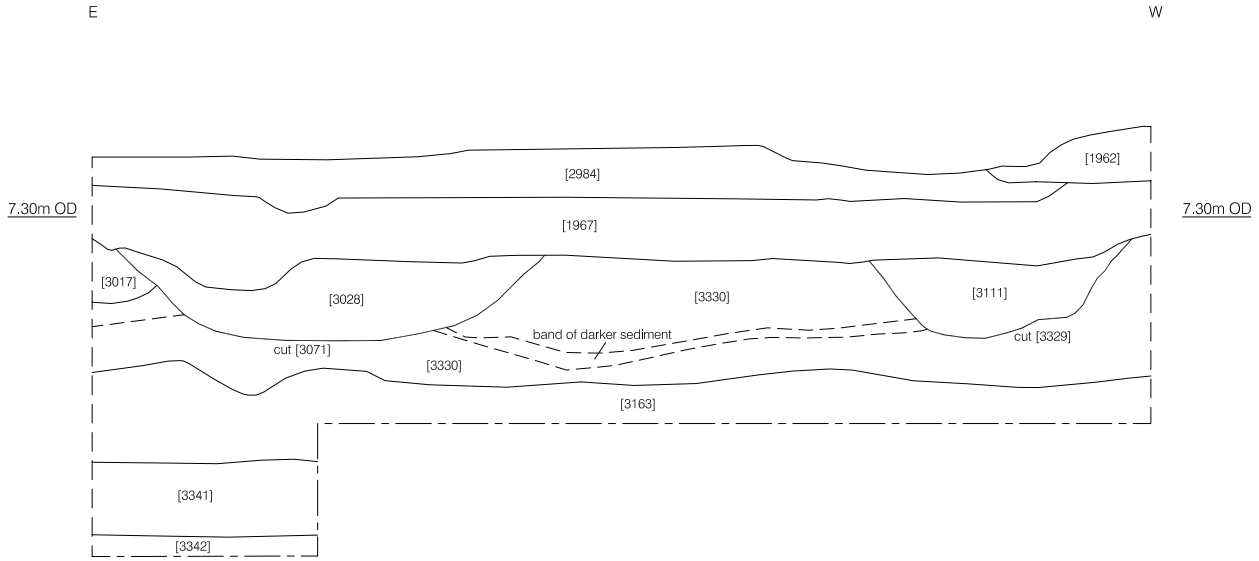
Figure 15
Phase 10: Post-medieval
1:200 at A3



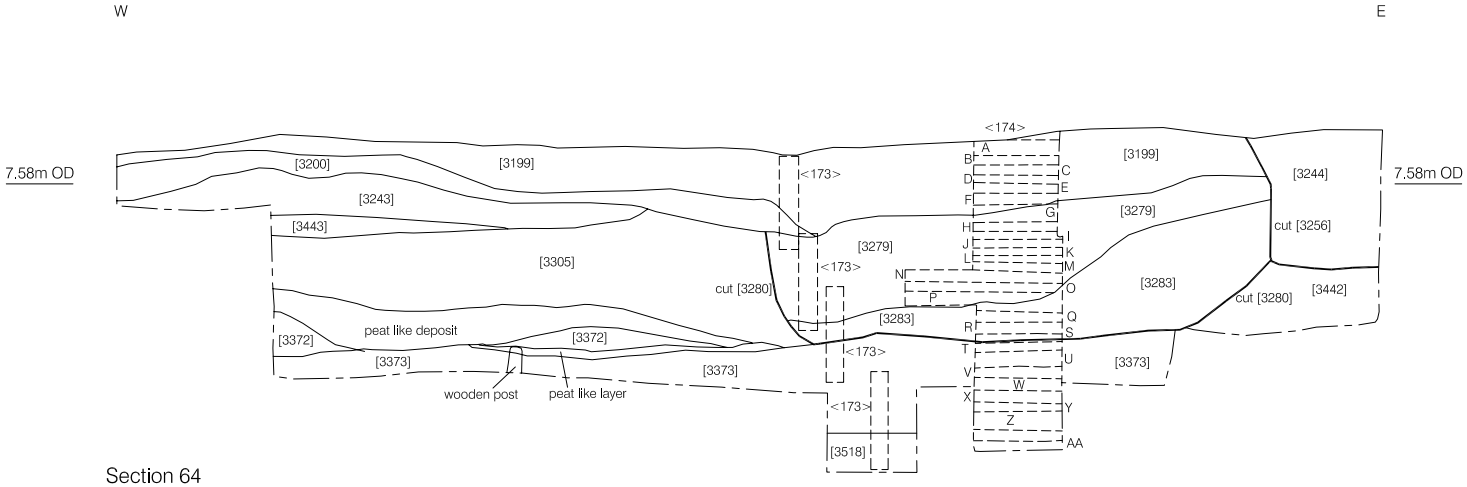
Section 82
North Facing, Area B, along southern limit of excavation, showing corduroy [4798] and overlying dumped deposits

0 2.5m

Figure 16
Section 82
1:40 at A3



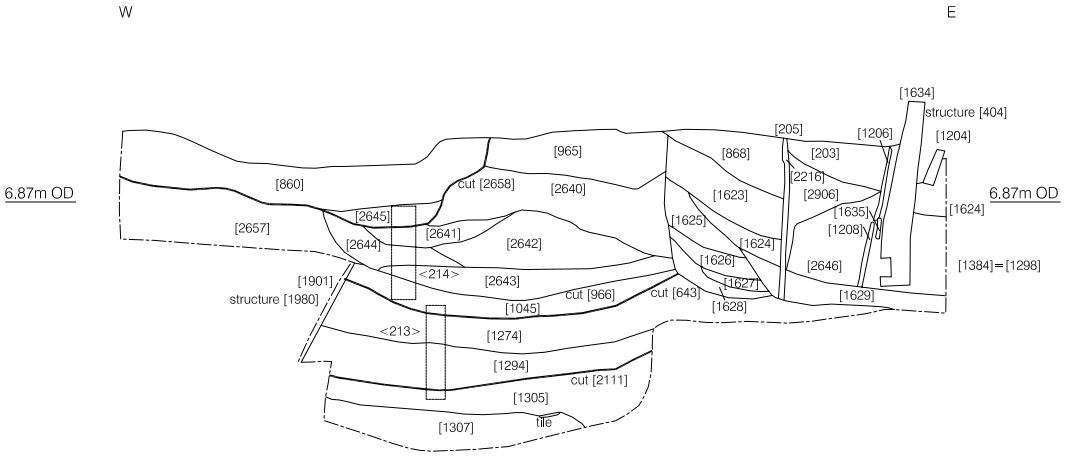
Section 62
North facing section across dumps and alluvial deposits



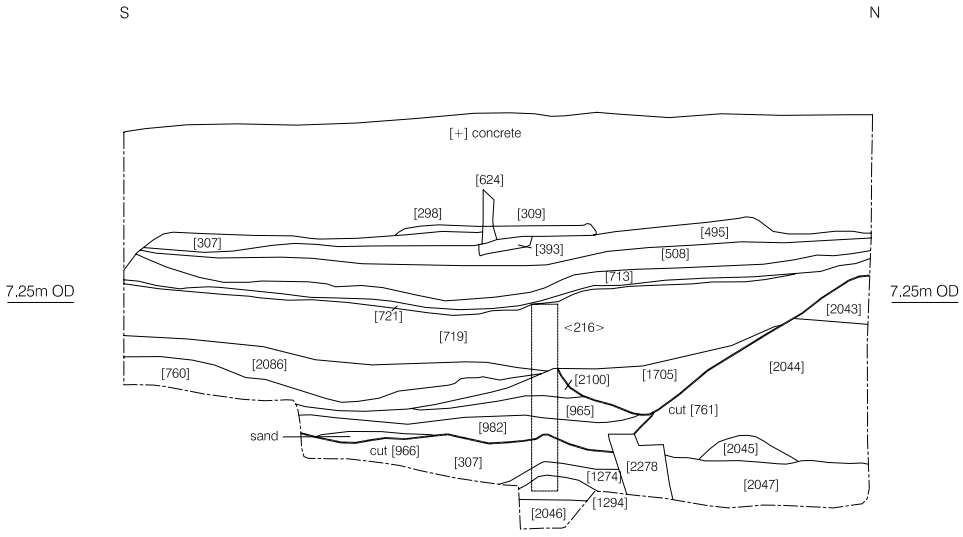
Section 64
South facing section across dumps and alluvial deposits

0 2.5m

Figure 17
Sections 62 and 64
1:40 at A4

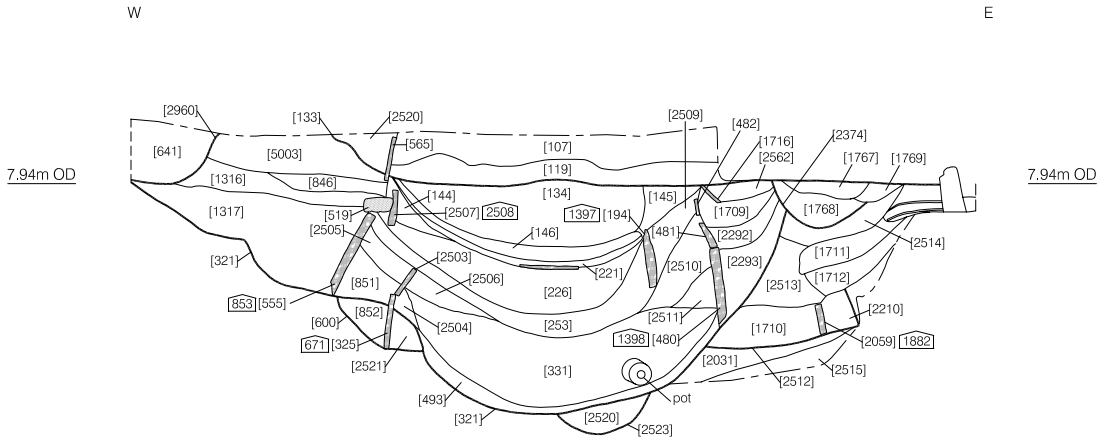


Section 32
South facing section across revetments [404] and [1980]

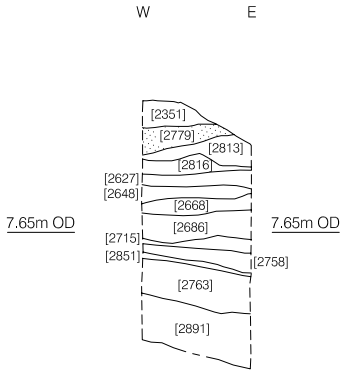


Section 48
East facing section across ditches [966] and [761]

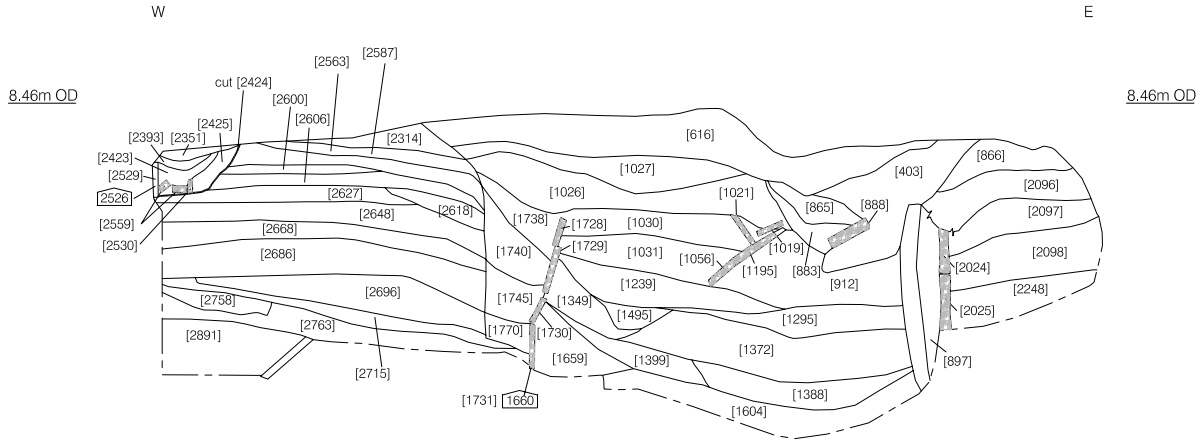
Figure 18
Sections 32 and 48
1:40 at A4



Section S55
South facing section of revetment structures 853/1398 and 671/1882



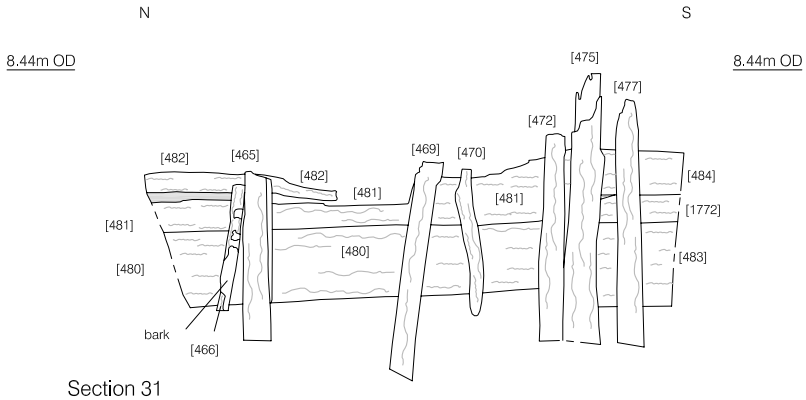
Section 60
South facing section showing road [2779]



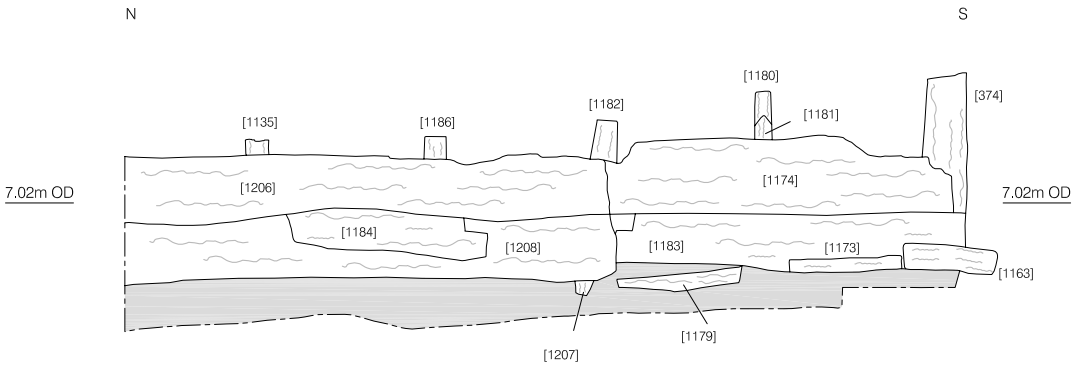
Sections 56 & 57
South facing sections of revetment structure 1660

0 2.5m

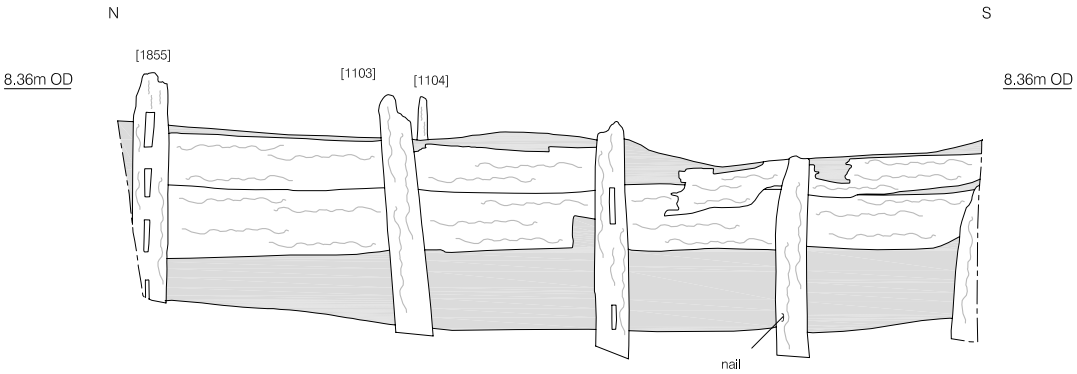
Figure 19
Sections 55, 56/ 57 and 60
1:40 at A4



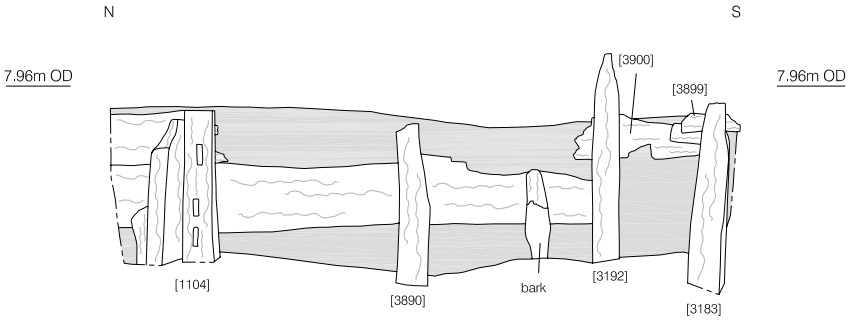
Section 31
West facing elevation of middle phase of Roman drain [1398]



Section 38
West facing elevation timber drain [404]

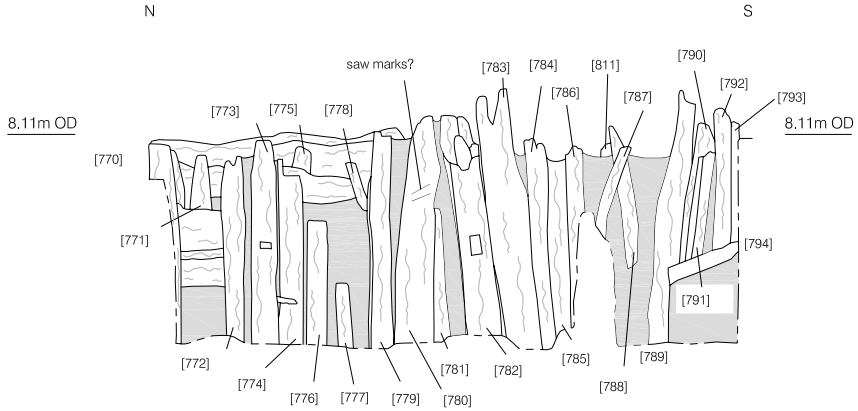


Section 70
West facing of drain revetment [3904]

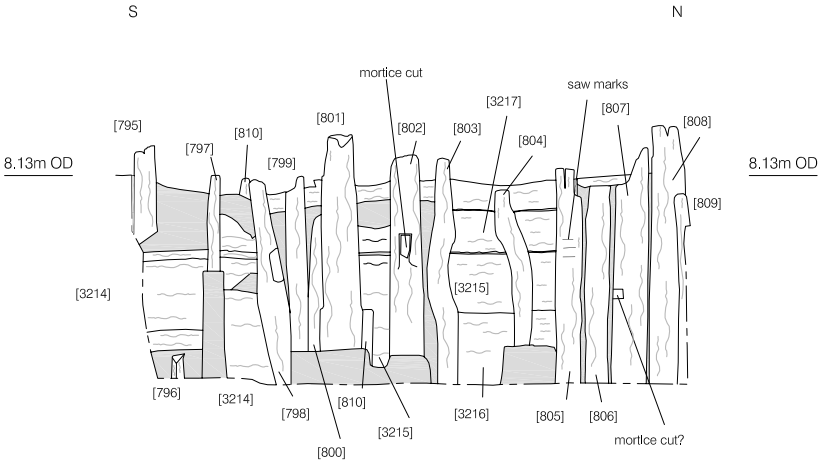


Section 71
West facing elevation of drain revetment [4152]

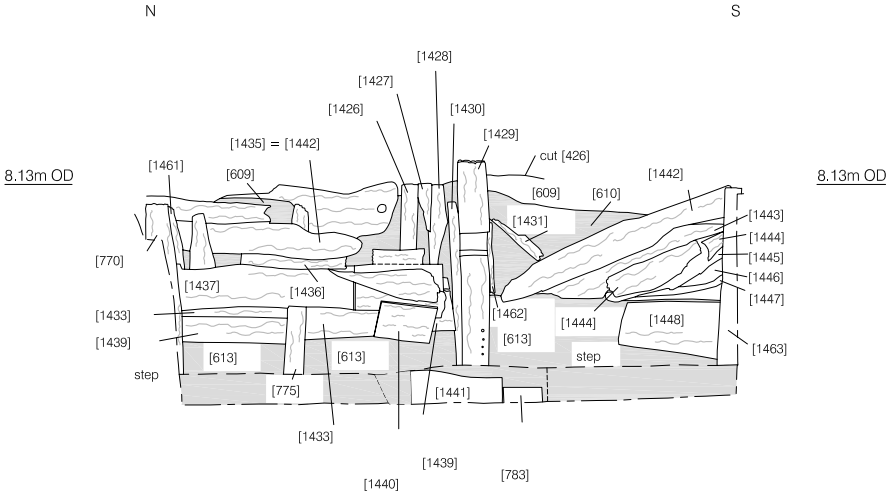
Figure 20
Sections 30, 31, 70 and 71
1:40 at A4



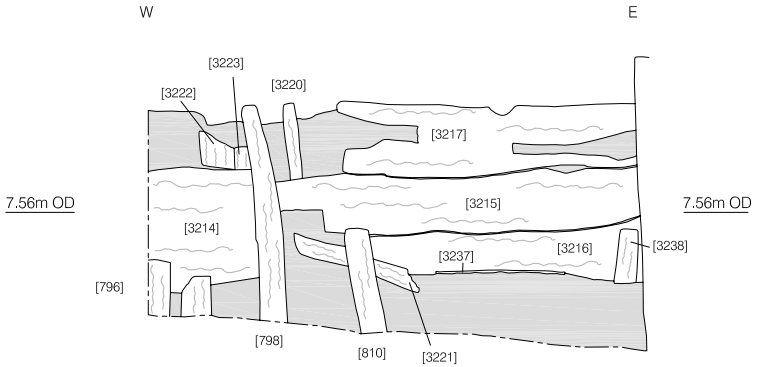
Section 19
West facing elevation of Roman timber drain;
structure [599] last phase



Section 20
East facing elevation of Roman timber drain;
structure [599] last phase



Section 30
West facing elevation of timber planks after removal of vertical
posts; last phase of Roman drain [599]

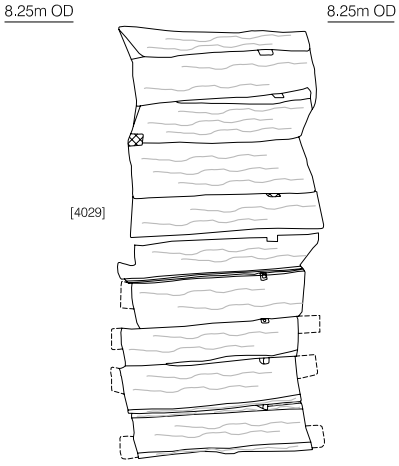


Section 61
South facing of Revetment;
structure [3213] / drain [599]

0 2.5m

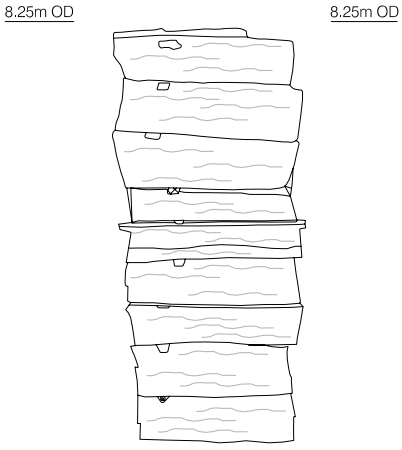
Figure 21
Sections 19, 20, 30 and 61
1:40 at A4

SE NW



Section 21b
Northeast facing internal elevation of Roman well; structure [569]

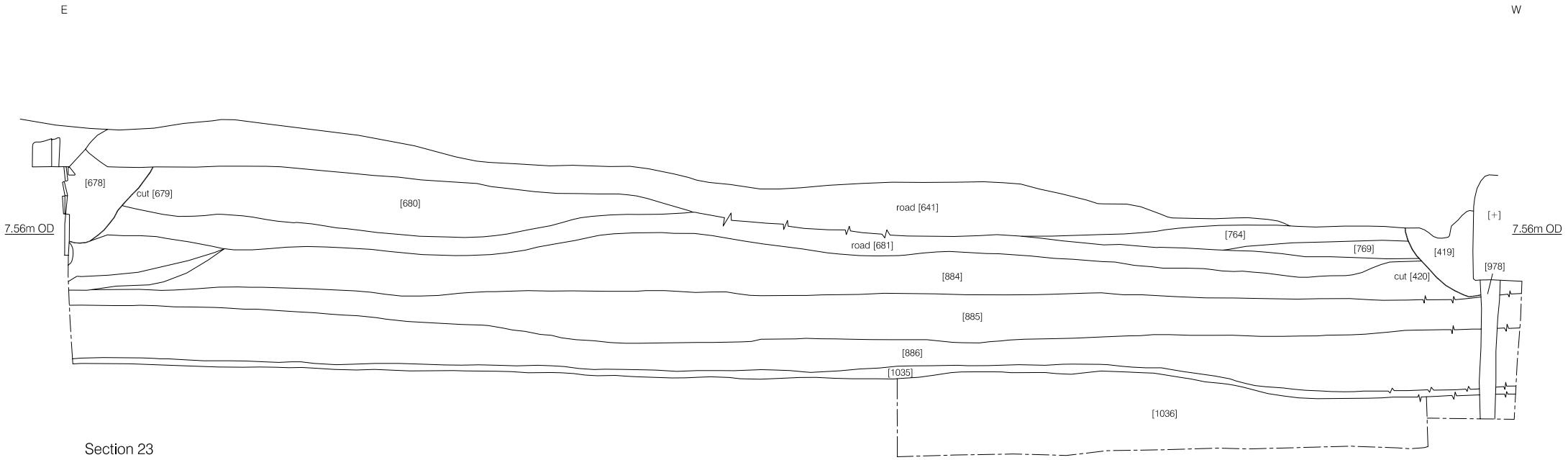
SW NE



Section 22
Southeast facing internal elevation of Roman well; structure [569]

0 2.5m

Figure 22
Sections 21 and 22
1:40 at A4



Section 23
North facing section across road [641]

0 2.5m

Figure 23
Section 23
1:40 at A4

8 ARCHAEOLOGICAL PHASE DISCUSSION

8.1 Discussion of Phase 1 – Natural

8.1.1 The earliest deposit encountered on the site was the natural London Clay. These natural deposits were recorded across virtually the entirety of the site at varying levels. In the north of the site, in Area C the upper weathered London Clay was recorded at c. 6.70m OD. In the extreme west of the site, Area D it was recorded at levels of between c. 6.25m and 6.45m OD. In the south of Area B the upper weathered London Clay was recorded within a slot at c. 4.70m OD. To the east it was encountered in the southern part of Area A at levels between 4.64m and 5.24m OD. The natural London Clay follows a very general trend of sloping down from north to south, towards the River Thames.

8.1.2 In the northern half of Area B an area of natural terrace gravels, [4661], were recorded. These natural gravel deposits were recorded at a height of c. 7.30m OD and sloped down to c. 6.30m OD to the south. At the southern extent of these gravels a Roman channel, [4591], was recorded cutting east-west across them.

8.1.3 Following the archaeological evaluation of the site in 2003 a topographic model of the natural London Clay was extrapolated. This was created from the results of test pits, window samples, boreholes excavated during the evaluation and a reassessment of boreholes undertaken in the 1960s. This model suggested that the northern half of the site was divided by two ridges of London Clay, between which, possible channels were located. The London Clay was then thought to drop off considerably to the south and the southeast. The London Clay recorded during the excavation generally conforms to this model with roughly similar OD heights. The steep slopes off to the south and southeast, along with the valley along the eastern side of the site almost certainly relate to the location of Walbrook channels, discussed below. The natural terrace gravels recorded during the excavation in Area B however were not encountered during any of the evaluation work and represents the only anomalous feature recorded during the excavation which is not represented on the topographic model. The natural terrace gravels in the area of the site have mostly been scoured away by the various Walbrook streams, but its survival in Area B of the site is again due to the location of these streams, discussed below.

8.2 Discussion of Phase 2 – Pre-Roman Stream Channel and Alluvial Deposits

8.2.1 Recorded cutting through the natural London Clay in Area C of the site was a natural palaeochannel, [5021]. This natural palaeochannel ran south down through the area where the Western stream is extrapolated to be located passing through the northwest area of the site. Instead of continuing to run straight south through the rest of the site, as extrapolated, it appeared to turn southwest, heading towards 4-6 Copthall Avenue. This palaeochannel was recorded at c. 6.80m OD and was 8m across at its widest point. The channel was filled with fluvial sands and gravels representing high energy deposition. The depth of the channel was not recorded as it went below the formation level of the excavation.

8.2.2 Recorded throughout the site were a variety of alluvial flood deposits associated with the various Walbrook tributaries extrapolated to be crossing through and around the site. This is unsurprising as in some locations of the upper Walbrook valley the

floodplain has been identified as wide as c. 37m[85]. The presence of possibly as many as four tributaries would contribute to overbank alluviation across and around the site over a widespread area.

8.2.3 Following the archaeological evaluation of 2003 a reconstructed surface of the pre-Roman streams deposits complete with predicted Roman channels superimposed upon it was extrapolated. This was created from the results of test pits, window samples, boreholes excavated during the evaluation and a reassessment of boreholes undertaken in the 1960s. The levels of the alluvial deposits, where recorded during the excavation, match those from the reconstruction reasonably well. However, the excavation provided information about the pre-Roman streams which differs to their extrapolated courses. Evidence for the western stream, extrapolated to be running roughly north-south through the western half of the site, was recorded in Area C in the northwest of the site. However, as already mentioned, this stream turned almost immediately southwest towards 4-6 Copthall Avenue and did not continue south through Area B. The presence of the natural terrace gravels in Area B, just south of the channel also dictates that a channel could not have passed south through this area as it was extrapolated to be.

8.2.4 No other evidence of the location of the pre-Roman streams was recorded across the site. However, the location of the later Roman revetted channels may provide clues as to where the original natural streams may have been located. The various Roman revetted channels will be discussed later in their appropriate phases but a brief discussion of their overall nature in relationship to the natural streams which they canalised is pertinent at this point.

8.2.5 From the reconstruction of the surface of the pre-Roman streams and channels and the topographic model, both from the results of the 2003 evaluation and the excavation, an account of the various Walbrook streams can be postulated. It is, however, necessary to differentiate between the natural pre-Roman streams of the Walbrook and the Roman manipulated and revetted channels which often drastically diverted the natural course of the river. The most westerly steam was predicted to cut across on a northwest-southeast alignment from 4-6 Copthall Avenue towards the southwest corner of the site. The only evidence for a major feature in the southwest of the site was the large possibly recut channel aligned roughly east-west to the north of the corduroy. It is possible that this represents a canalised version of this channel. Evidence from 2 Copthall Avenue to the west suggested the presence of a large east-west palaeochannel which probably is part of the westernmost tributary[86]. To the eastern another tributary of the river known as the Western Stream was predicted to cross the western part of the site on a north-south alignment. The Western stream crossed through the northwest corner of the site as original extrapolated and was recorded as palaeochannel [5021] in phase 2. Instead of continuing south though it would appear to turn to the southwest, heading towards 4-6 Copthall Avenue and to join the stream to the west, as it was not present in the southern part of Area B. The Blomfield Street stream to the east was predicted to have run roughly north-south through Area A during this period too. However, the evidence from the site would suggest that it ran initially from the northeast corner of the site on a northeast-southwest alignment across Area A into Area B. This was represented by the remnants of revetted channel [1921] and [4982] which were recorded in phase 3. The Winchester Square stream (the furthest east of the four predicted streams) was predicted to cross the southeastern corner of the site but would appear to lave lain

[85] Maloney, C., with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69.

[86] Humphrey, R., 2008, An Assessment of an Archaeological Excavation and Watching Brief at 2 Copthall Avenue, City of London, London EC2 Pre-Construct Archaeology Ltd unpublished report.

just to the south and east of the site as no evidence for the stream within the site was found. During phase 4 a single channel, [4154], was recorded running from the northeast corner of the site down to the southwest for virtually the entire length of the site. This probably represents the canalisation of the Blomfield Street stream. In the next phase (5) a Roman road was constructed, alongside which ran revetted channels. The channel on the western side of the road probably represents the diverted Western Stream which once crossed the northwestern corner of the site. The revetted channel on the eastern side of the road was most likely the diverted Blomfield Street stream.

8.3 Discussion of Phase 3 – Roman AD 50-70

Sub-Phase A

8.3.1 This early phase of Roman occupation would have been heavily influenced and effected by the topography of the sinuous Walbrook streams crossing through the site and associated waterlogged deposits. The earliest deposits recorded were a small group of dump layers lain down upon alluvial deposits in an attempt to create a reasonable surface upon which to build. Constructed upon this was a timber corduroy structure, [4798], running eastnortheast-westsouthwest through the south of Area B. Running parallel directly to the south of this corduroy structure was an associated ditch, [4864]. Directly north of the corduroy a wide channel, [4591], discussed below, also ran parallel. Such corduroy timber structures are well recorded during the Roman period and have been used for a variety of purposes related to wet ground. They have been used as foundations for roads, trackways and ramparts in waterlogged areas which would have required a more stable base upon which to build. In the varying cases either rammed/compacted gravel would be installed over the corduroy forming a road or, in the case of a rampart, the up cast of an associated ditch would have been laid on top creating the upstanding defensive bank. No evidence of either a bank or compacted gravels was encountered above the corduroy complicating the interpretation of the structure.

8.3.2 Further complicating this feature's interpretation was another timber structure, [4865], within it. This structure consisted of similar logs laid side by side like the corduroy but substantially bigger and aligned on the opposite axis. These timbers appeared to have collapsed around four leaning timber uprights which must originally have been vertical. These timbers were also on top of elements of corduroy [4798] which ran up to the timber posts. Recorded below timber structure [4865] was a vague linear cut running through the central void between the four displaced timber uprights. These collapsed timbers appeared to bridge this void beneath it. This feature may represent a small gully between the channel to the north of the corduroy and the ditch to the south, draining from one into the other. Such a feature would be unnecessary if the corduroy was a road or trackway as drainage would run off the sides of this road into the associated roadside ditches.

8.3.3 Dendrochronological results from the corduroy structure [4798] may aid in the interpretation of this feature. Numerous timbers recovered gave the specific date of AD 62. This date is around a year after the Boudican revolt when the queen of the Iceni sacked Colchester, London and St. Albans. Corroborating this date was a coin recovered from the fill of the ditch directly south of the corduroy structure. This coin was of Marcus Agrippa, probably struck between AD 37 and 41 and almost certainly lost before the death of Nero in AD 68. This date of the corduroy structure then has certain implications. It must have been related to the reclaiming of London following it being burnt to the ground. The structure may have been a makeshift or temporary trackway to assist in transporting materials and people back into the area during this post-Boudican revolt. As mentioned above such corduroy structures are also used in

the construction of ramparts in waterlogged areas. It may have been such a rampart, on a smaller scale however, with timber structure [4865] possibly representing a similar feature to an interval tower see in larger forts or fortlets. However, these timbers don't appear large enough to support a tower and probably would not have been recorded at a level slumped below the corduroy itself. It is worth noting that recovered from the ditch directly south of the corduroy was an iron ballista bolt, SF1153 (Appendix 6). Such a military item may relate to the function of the corduroy structure. However, if a military presence existed during this time it would be expected that substantially more military artefacts would have been recovered. The corduroy may also represent some form of embankment or causeway, serving multiple purposes including delineating a boundary. It may have been constructed directly south of channel [4591], which already formed a natural boundary that the embankment/causeway then reinforced. This corduroy was not recorded in Area A, where it would be assumed that it would have continued. It may have been that the corduroy was only laid down in very specific locations, where the ground was particularly waterlogged. The boundary that this feature potentially delineated may even have been the northernmost boundary of Roman *Londinium* at this time.

8.3.4 Evidence of water management was also recorded during this very early Roman phase. To the east of the corduroy structure, in Area A, a revetted channel was recorded, [1921]. Only one side of this timber pile and plank revetment was recorded running roughly northeast-southwest. This revetting was stratigraphically lower than another revetted channel from the next phase (4) which appeared to run northeast-southwest and possibly link up with a similar structure at the northern end of Area A. Recorded at the western end of ditch [4864] directly south of the timber corduroy was another small area of timber revetting, [4982]. This remnant was only comprised of a single timber plank supported by a solitary timber pile. No other evidence of timber revetting survived along the rest of the length of the ditch. This remnant may be a continuation of revetment structure [1921] further to the east in Area A, represented another revetted channel which ran along the south of the corduroy structure.

8.3.5 North of the timber corduroy structure a relatively wide channel was located, [4591]. This channel ran parallel alongside the corduroy throughout Area B. The channel was around 8.75m in width and ran through the entirety of Area B. It is unclear if this channel represents the position of one of the natural Walbrook streams. It appears to be man-made due to its relatively regular and linear edges, but it may have re-cut along the line of a natural stream. A later re-cut of this channel showed evidence of being revetted with timber piles and planks. The possibility exists then that this channel was also revetted at some point. It seems unusual that this channel was so wide if it was man-made as usually the Walbrook streams were revetted into thinner channels. It is interesting to note that the natural pre-Roman Walbrook stream recorded in Area C was around 8m in width, whereas the widest revetted channels recorded across the site were between 2 to 2.5m wide.

8.3.6 Located between the timber corduroy structure and the channel was a line of small stakes, [4830]. This line represents a roundwood wattle fence, which are usually uncommon in Roman London. Normally in urban settlements fencelines and walls were constructed of more robust timber or masonry. The potential date of this feature, it being directly associated with the timber corduroy structure dating to AD 62, may explain its presence here. At this early time the Upper Walbrook valley wasn't the formalised bustling urban centre it was later to become after a programmed event of consolidation. This consolidation which considerably raised the ground level created a stable landscape upon which subsequent development took place. Therefore this early date may attest to the apparent 'rustic' nature of this structure, a trait it also shares with the corduroy structure [4798].

Sub-Phase B

8.3.7 A change to the layout of the site occurred not long after the corduroy structure [4798] was constructed. The channel recorded in the previous sub-phase, [4591], was re-cut during this phase, [4783]. This re-cut was not as wide as the previous channel and did not appear to be in use for very long. The channel was subsequently blocked off at its eastern end with two parallel rows of timber planking, [4800], forming a causeway structure. Possibly part of this process was ditch [4785], which appeared to run up to one of the lines of these planks. This may have been used to drain off the channel prior to the installation of the causeway structure ultimately blocking it off. Constructed directly on top of the backfilled channel was a timber sub-structure, [4743]. These timbers may have been the sub-structure to some form of timber boardwalk replacing the embankment or causeway structure represented by timber corduroy structure [4798]. Recorded directly east of the two parallel rows of timber planking which blocked off channel [4783] was a line of timber fence pales, [4831]. These must have been installed after the blocking off of the channel and may even have been the reason for it. This palisade or fenceline ran northwest-southeast but was only recorded within a small area, both ends would have continued beyond the limits of excavation. The southeastern end appeared to carry on into Area A, but no evidence of it was recorded in this location. However, recovered from this area, re-used within another feature, was what would have been the top of one of these palisade timbers, complete with carved spear tip. The northwest end of this palisade may potentially have originally connected to a similar structure recorded at the northern end of Area B, [4493], discussed below. The area between these two structures was completely truncated however so no evidence that they were directly connected survived. This meant that the possibly interior of the area enclosed by these two palisade lines was also wholly truncated.

8.3.8 Recorded on the north bank of channel [4783] were four small timber boxes, [4555], [4986], [4987] & [4504], three of which contained human remains. Three of these timber boxes were rectangular in shape; timber box [4986] however was oval in shape, of bentwood construction. The majority of the human remains recorded within these boxes were badly degraded and fragmentary. Human remains [4579], within box [4555], were the most complete, being in moderate condition with all areas of the skeleton represented. These human remains were of a neonatal individual, at full term, or two months either side. The human remains, [4991], within the bentwood box [4986], were in poor condition with only skull fragments surviving. The dental development of the surviving dentition suggests that the infant was probably less than six months in age. The human remains within timber box [4987] were also in poor condition but the surviving elements suggested they were an infant less than full term but perhaps in the later stages of foetal development. Timber box [4504] contained no surviving human remains. It is assumed however that due to its proximity and location to the other infant burials, it also would originally have contained human remains. The age range of all these human remains is similar; they all died either at or around the time of birth. One of these perhaps survived a few months at least. Two of them probably didn't reach full term *in utero* (Appendix 19). Clearly this area was set aside for these burials. During the Roman period it was usual for infants not to be buried within the main cemeteries and were often buried under floors or in pits and ditches. They have therefore clearly been shown more care in their burial than was usually afford young infants during this period, especially being interned within coffins. It is also interesting that these human remains were inhumations at a period when most bodies were cremated. The location of these burials outside the boundary represented by timber corduroy structure [4798] and associated channel [4591] & [4783] may be significant. This apparent infant burial area may also have been associated with and outside the area enclosed by timber palisade [4493] to the north.

8.3.9 An anomalous find located directly next to the area of infant burials and on the edge of a channel, was a whole timber domestic door, [4554]. The timber door was laid flat

on the edge of channel [4783], directly southeast of infant burial [4555]. Its location and function here is unusual. The fact that the door was laid flat could represent some kind of small, temporary, working platform, although for what purpose is unknown. Its proximity and apparent association with a channel and infant burials, itself unusual, suggests ritual connotations. Votive offerings, especially in the vicinity of watery places, are well attested to before, throughout and after the Roman period. It has also been argued that the Walbrook valley itself is a centre for such votive deposits[87]. Proving any ritual aspects to the presence of the door is impossible; however, it is worth noting the presence of an amphora within the channel almost directly southeast of the door. This amphora, [4546], was set perfectly within the channel edge, albeit inverted. It didn't appear to have been casually discarded or thrown into the channel due to its precise position; it appeared to be more deliberately placed. The reasons for its presence here again difficult to determine with certainty, but it may add some weight to a possible ritual interpretation to this area north of the channel containing the infant burials and the timber door.

8.3.10 In the northern half of Area B, cutting through the area of natural terrace gravels, [4661], a ditch was recorded, [4540]. This ditch was aligned northnortheast-southsouthwest through the area, its southwestern end continued beyond the limits of the excavation. Its northeastern end terminated within the site. This ditch which probably delineated a boundary and served as a drainage feature was subsequently backfilled and replaced with a line of timber fence pales representing a palisade, [4493]. This fenceline appeared to begin halfway through the original ditch, but continued northeast past where the ditch terminated. The northeastern end of the palisade line was truncated but it is assumed that it would have continued in that direction. No other features relating to this enclosure were recorded in the north of Area B due to the area being horizontally truncated. This palisade, or fenceline, may be a continuation of a similar timber palisade or fenceline, [4831] recorded further to the southeast. If this is indeed the case the area on the eastern side of fenceline [4493] would have been the interior of the enclosure. However, no archaeological remains survived which may have related to the interior of the possible enclosed area.

8.3.11 From the artefacts recovered during this phase (3a & b) certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. This phase seems to be generally dominated by craft working/small-scale industrial objects, including objects relating to textile manufacture/repair and styli, indicating literacy and record keeping. A lack of personal adornments recovered is unusual, it is suggested that this represents low status non-domestic activity (Appendix 6).

8.4 Discussion of Phase 4 – Roman AD 70-120

8.4.1 The period represented by Phase 4 saw significant change to the area of the site and the whole of the Upper Walbrook Valley. An organised mass consolidation event is well documented to have occurred at the end of the first century / beginning of the second century AD, raising the low-lying ground level in preparation for formalised settlement of the area[88]. This could only have taken place in conjunction with the ability to manage and control the Walbrook streams within the area.

[87] Clark, J., Cotton, J., Hall, J., Sherris, R, Swain, H., 2008, Londinium and Beyond: Essays on Roman London and its hinterland for Harvey Sheldon, CBA Research Report 156.
[88] Maloney, C., with de Moulins, D., 1990, The Archaeology of Roman London Volume 1: The Upper Walbrook in the Roman period, CBA Research Report 69.

8.4.2 Both open excavation areas of the site recorded a complex sequence of timber revetting within man made channels, rationalising the Walbrook streams, and a full sequence of reclamation and consolidation. In Area A around 2m of dumped mass consolidation material was recorded sealing natural alluvial material relating to the pre-Roman stream deposits. Recorded between dumped consolidation deposits in Area A were other small drainage features and possibly even an early metalled road surface. This possible predecessor to the major road which was constructed in Phase 5 was only recorded in a slot and cannot be interpreted definitely as a road surface. It may only be another gravel dump within the overall consolidation. It's apparent metalling and heavy compaction however suggests otherwise. The presence of this possible surface and the other ditches and gullies recorded within the consolidation event may help to date more precisely this event and even suggests that this organised process may have happened in staggered stages over a period of time. The level at which these drainage features were cut may represent a hiatus between consolidation stages.

8.4.3 Recorded running northeast-southwest through Area A was a revetted channel, [4154]. In the north of Area A this channel was recorded as cutting through the mass dumped consolidation deposits. Further southwest along its line however, evidence of an earlier phase to this channel was recorded, described above. This suggests that this line was in continuous use during, and at the end of the mass consolidation event and therefore may be the alignment of one of the original natural Walbrook streams. It is interesting to note that this alignment, at least in the north of Area A, continues in use during the entire Roman period.

8.4.4 A similar sequence of mass dumped consolidation material was also recorded in Area B of the site; this time however it appeared to be around 1.5m in overall thickness. Below this mass consolidation in Area B was a series of drainage ditches and gullies. These appear to drain into the revetted channel running northeast-southwest across the site. These drainage features may have be installed to drain the marginal land of any standing water prior to the mass importing of dump material involved in the consolidation of the area.

8.4.5 From the artefacts recovered during this phase certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. However as many of the deposits in this phase were dumps most likely to have come from a location off site the information that they provide may not relate directly to activity happening on the site. Therefore only those finds from fills of features and not from the dump deposits are discussed here. Personal adornments are now well represented; in particular a silver signet ring is of relatively high status. Household items such as a bone hinge are also represented. Writing and literacy is again represented. A single copper-alloy bell may be associated with agricultural activities or possibly ritual or religious practices (Appendix 6).

8.5 Discussion of Phase 5 – Roman AD 120-160

Sub-Phase A

8.5.1 The organised mass reclamation and consolidation recorded in the previous phase comes to fruition during Phase 5, with the construction of a formalised street layout consisting of a metalled gravel road with associated drainage on either side, represented by timber revetted channels. Excavations at 8-10 Throgmorton Avenue (site code TGM 99) in 1999, directly north of the site, recorded a similar sequence of metalled gravels representing a road and an associated channel revetted with timber[89].

8.5.2 The metalled road surface ran northnortheast-southsouthwest across the site with the revetted channels running parallel to, and directly alongside it. This road was one of three local roads running south towards the existing grid system of roads which was first laid out during AD 50-60. This early pre-Flavian settlement of *Londinium* was initialled located in the area of Cornhill, but early settlement was also recorded on the western slopes of the Walbrook valley[90].

8.5.3 At the northern end of the eastern revetted channel a separate branch of revetted channel was recorded, running northeast-southwest. This branch was located in the same location as the revetted channel recorded in Phase 4, described above. Both these channels appear to be open and in use at the same time. Various alterations and repairs appear to be made to the northeast-southwest branch and may reflect its continual need to be maintained. This may be due to its apparent 'rough' construction, not being as finely made as the northnortheast-southsouthwest channel. Recorded in the triangular strip of land between these two channel branches at the northern end of Area A was a large timber lined pit, [4225]. During the Roman period the Upper Walbrook Valley is known to be a centre of industrial activity. This timber lined pit may represent the burgeoning industrial activity on the site, taking advantage of its proximity to a fresh water source.

8.5.4 The first building on site appeared during this initial phase of formalised development, Building 1. This apparently square timber framed building was located at the very southern end of Area A, directly east of the revetted channel located there. In plan this building appeared to be composed of two concentric squares, similar in layout to Romano-Celtic temples recorded elsewhere. However, the western extent of the building was truncated away by later activity and the revetted channel appears to be too close to the building for its walls to return to the south, forming the western side of the concentric squares. For the building to form a perfect square it would have to continue to the west into the area occupied by the eastern part of the road and the eastern revetted channel. If this was the case it would suggest that Building 1 was erected before the construction of the road and the diverting of the northeast-southwest channel. It is possible that the building's form outside the southern limit of excavation, where it continues, may have been drastically different to that area recorded on site. Nevertheless its similarity to Romano-Celtic temples cannot be ignored, and if indeed it was identified as such it would add weight to the argument of the ritual landscape of the Upper Walbrook Valley[91]. In addition to its exact layout Building 1's usage is hard to ascertain. Further study of associated finds within and around the building, and possibly finds within the nearby revetted channel, may aid in interpreting the building's function.

[89] Swift, D, 2001, 8-10 Throgmorton Avenue, London, EC2, An Archaeological Post-excavation Assessment and Updated Project Design. Museum of London Archaeology Service, unpublished report

[90] Perring, D., 1991, Roman London, Seaby

[91] Clark, J., Cotton, J., Hall, J., Sherris, R., Swain, H., 2008, Londinium and Beyond: Essays on Roman London and its hinterland for Harvey Sheldon, CBA Research Report 156.

8.5.5 Area B was less well represented during this phase. This area appeared to be less developed with only pitting and a ditch being recorded during this phase. This ditch, [4385], most likely served as a drainage feature and possibly even to delineate a boundary, had a particularly interesting fill within it. Fill [4581] was composed almost entirely of animal bone, especially cattle, and horn cores. The sheer volume of this assemblage across the length of the ditch again suggests intense industrial activity in the area of the site. Further analysis of this material can reveal more detailed information on the type of industries taking place within the area. The presence of this evidence for industrial activity during this phase, when the first buildings also appear on site is interesting. This suggests that development and settlement of the area may have been directly related to industrial activity. The various Walbrook streams are also directly related to this as industrial activity most likely first begun in this area due to the availability and proximity of fresh water.

Sub-Phase B

8.5.6 Development of the area continued unabated during the next phase. This continued settlement was located alongside the road and its associated revetted channels on either side which served as drainage. Building 1 which was located in the southern end of Area A had now been superseded by a larger timber framed structure, Building 2, which dominates virtually all of Area A. Some of the structural elements of Building 1 were re-used in Building, illustrating continuing property boundaries. This continuity of property boundaries and structural elements carries on for large periods of the Roman period and will be discussed further later.

8.5.7 Building 2 appeared to be a single large structure, either square or rectangular in shape, with an internal courtyard area. Around most of this central courtyard a corridor was located from which access to the rest of the building could be gained. Various size rooms were located all around the building. A handful of these rooms had small hearths located within them. Within the northern area of the building an oven or kiln was located, illustrating some form of industrial or craft activity. A series of small intercutting pits were also located within this area, these were all filled with a similar charcoal material. These pits must have been directly associated with the oven or kiln located within the same area, suggesting it was a workshop. A small internal corridor ran off perpendicular to the main outer corridor in the west of the building. This smaller corridor, which had upstanding painted plaster surviving on both walls, led out to a small timber footbridge which crossed the revetted channel located there, allowing access to the road. Another small timber footbridge was recorded to the south of the other. This only appeared to align itself with a room located in the building, with no obvious entry point recorded like the corridor discussed above. Evidence of a fresh water supply, under pressure, to the building was recorded in the area of the courtyard.

8.5.8 Although it appears that this single large structure was suddenly constructed upon the site it may have come into existence in a more sequential way. It has already been noted that some of the southern elements of the building were reused from Building 1 which stood in the previous phase. The possibility also exists that the northern most sections of Building 2, the areas represented by Rooms A, B & C, may have originated as a different building. These rooms may represent either a single, or two earlier strip buildings which extended east off the road and channel. These property boundaries continued to be used, despite varying alterations to the rest of the area of the site, until at least the 3rd century. Potentially these structures were in existence at the same time as Building 1 to the south and subsequently the area between them was developed, creating Building 2. The western range of Building 2, located along the revetted channel to the west, was added and the main corridor around the courtyard built around these and the northern buildings. The slight difference in alignment between the northern section of the building and the rest may attest to this.

8.5.9 It is a difficult to interpret what Building 2, especially in its latest manifestation was. As discussed above it may have evolved from earlier elements into this large structure. Some form of industrial or craft activity was taking place in the northern end of the building. This is attested to by the location within it of a kiln or oven, and numerous charcoal pits relating to it and its usage. Its layout of rooms around a central courtyard invites comparisons to an enclosed market or *macellum.* These market places were normally located in towns in addition to the larger forum. Such buildings are normally square in shape with a series of shops, normally all the same size, located around a central covered courtyard. An excavation at 5-12 Fenchurch Street, uncovered an aisled building which has been interpreted as such; however, it was interpreted as a meeting place for a guild, or *collegium*[92]*.* Some comparisons between Building 2 and an enclosed market can be made; a series of room do exist around a central courtyard area, around which a corridor runs. However, the northern extent of the building definitely has some form of industrial or craft activity taking place in it. It may have been that the original buildings started as small scale workshops and shops, from which Building 2 evolved with a further series of small shops and workshops located around a central open market place. This interpretation cannot be absolutely determined, further study of the finds assemblages associated with the building and its various rooms may aid in identifying the activities which took place within it. This will aid in the interpretation of the building's function.

8.5.10 To the north of Building 2 an open area existed where the two separate channels were located. The northeast-southwest channel branch saw continued repair and alteration again, whereas the other branch remained fairly stable. This northeast-southwest branch appeared to need this constant repair and stabilisation suggesting that certain conditions within it required the constant maintenance. This probably reflects the fact that this part of the channel had a greater flow of water running through it than the branch to the west.

8.5.11 During this phase the first structure west of the road was recorded, Building 3. Only the basic outline of this building survived. The timber framed building was located direct west of the revetted channel on that side of the road in Area A and continued into Area B. Only a small area of it was recorded as it continued north outside the limit of excavation. Recorded below the foundations however, was a small un-urned cremation. This contained a mixture of animal remains from dog, sheep and cattle, fired to a very high temperature. Such ritual faunal remains are well documented in the Roman period suggesting this may be a 'foundation' deposit associated with the construction of the building. As above further analysis of the finds assemblages associated with Building 3 may aid in identifying its function.

8.5.12 From the artefacts recovered during this phase (5a & b) certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. As this phase represents the beginnings of intensive occupation activity the amount of artefacts recovered increased proportionally. Personal adornments are well represented, the majority of which are hair pins, but also recovered were a ring, an earring, a bracelet, and a brooch. Toilet instruments were also well represented. A large number of textile working equipment was recovered including wooden spindles, the majority of which were needles in bronze, copper-alloy and iron. Household objects, including furniture handles and lamps were also recovered. Recreational activities were represented by bone, pottery and glass gaming pieces. A wooden ruler was also recovered suggesting weighing and measuring. Record keeping and literacy is again represented by a large group of styli, iron and copper-alloy and wooden writing tablets. A number of tools, including knives, a hammer, a punch and hones

[92] Perring, D., 1991, Roman London, Seaby.

were recorded, amongst others. Fixtures and fittings were also recorded, including loops, studs and nails. Religious objects are represented by fragments of two pipeclay figurines, a mother goddess and Venus. This large and varied collection of artefacts is a reflection of the intense occupation and activity that was now taking place on and around the site (Appendix 6).

8.6 Discussion of Phase 6 – Roman AD 160-250

Sub-Phase A

8.6.1 The next phase of activity saw continuity of property boundaries with some internal alterations to room layouts. The large Building 2 continued in use into this phase. Virtually the entire western extent of the building, which fronted onto the channel and road, saw some form of rebuilding or alteration. Rooms were restructured and resized possibly adapting to their changing uses. One particular room at the southern end of the site, Room N, had walls installed composed of tiles. The rest of the basic structure to Building 2 remained in place however, various rooms around a courtyard area, between which was located a corridor. Within the northern area of the building, in Room B, the oven or kiln continued in use. However, during this phase a much larger group of pits, virtually identical to the charcoal pits described in the previous phase, were now recorded in the adjacent room, A. Previously these pits had been located in the same room as the oven/kiln. The continuous usage of the kiln/oven and the sheer volume of charcoal material produced probably dictated the expansion of dumping it into the next room. It is odd however that this material, like the majority of other industrial waste material including leather and animal bone, was not dumped into the revetted channel directly west of the building.

8.6.2 Recorded between the revetted channel and Room B of Building 2 was a fragmentary timber structure, [2328], possibly representing a boardwalk structure. This was only recorded in the area outside Room B but it may have been that this boardwalk or platform was originally located along the whole length of the building. Such a boardwalk would have allowed access along the western length of Building 2 between it and the revetted channel located there and kept access dry and above the wet and muddy edge of the channel.

8.6.3 Newly constructed during this phase was a timber framed building located in the courtyard area of Building 2. This structure, Building 4, had a remarkably well preserved timber plank floor laid upon timber joists. Timbers recovered from the building date via dendrochronology to after AD 127. This unfortunately does not provide a firm date for the buildings construction as the timbers may be re-used. The southern wall of the building had the remains of a wattle wall upstanding, an unusual construction method (Appendix 16). The only other comparable structure was excavated at the Courage Brewery site in Southwark, where an even more remarkably preserved timber planked floor was recorded. This represented a waterfront warehouse constructed c. AD 100; it was half cellared with a solid oak plank floor and oak walls[93]. Despite the Courage Brewery warehouse being part of a waterfront complex, Building 4 may have had a similar warehouse usage despite being in a completely different context. It seems unusual that this building was erected in the location of an open courtyard area. Competition for space during this time of intense development may have dictated its location. The buildings function may also have dictated its location close by to workshops or other necessary facilities.

[93] Perring, D., 1991, 'Roman London', Seaby

8.6.4 This phase saw an alteration to the revetted channel branches at the northern end of Area A. Installed during this phase within the northnortheast-southsouthwest channel, at the northern end, were two parallel rows of timber planking, [4130] & [3887]. The area between these parallel lines of planks was then backfilled effectively blocking off this channel, creating a causeway. The northeast-southwest branch remained open and in use however. It is unusual that this channel was blocked off so far north as an area of over ten metres would have remained open, collecting water. It would be assumed that to block off this branch one would do it closer to the junction. It may be that this area was backfilled soon after, discussed below, as the next phase saw this area built upon. An assumed by product of this blocking off of the channel would be that the stream would back up north of the causewayed area, outside the limit of excavation. This would have caused the stream to overspill its confines, flooding the immediate area. The obvious solution to this would be that the channel had been diverted further upstream, outside the limit of excavation. No evidence of flood deposits was encountered at the very northern extent of the area implying that the stream had been diverted elsewhere. The date of this blocking off event, around AD 200, may have some relation to the construction of the stone city wall further north around the same time. Detailed analysis of surrounding sites may reveal more information relating to how the installation of the city wall affecting the immediate area.

8.6.5 Directly west of the revetted channel on the eastern side of the road Building 3 appeared to have now been demolished. Located in this area during this phase was Building 5. This building is composed of a wattle fenceline and a series of driven timber piles. These structural elements appear to form a rough rectangular shape, however, little else was recorded which could suggest what this building represented.

8.6.6 The western side of the site, Area B, again recorded only fragmentary evidence for structures and settlement activity. Building 3 which existed during the previous phase now appeared to have gone out of use out of use and been demolished. The fragmentary remains of Building 6, which was composed of a truncated beamslot and associated postholes, was now located in the area. Along with these structural elements rough external surfaces were recorded, one of which was located further north in Area B. These combined features illustrate continued settlement during this period west of the road but reveal little else about the nature of the activity and usage of the building.

8.6.7 Also recorded in Area B was a circular well, [4301], at the base of which was recorded the remnants of a square timber lining, [4732]. This timber lining would originally have been throughout the well to its top. This well was most likely associated to Building 6 just to the west. The well's presence also illustrates that this immediate area of the site was an external area outside any buildings.

Sub-Phase B

8.6.8 This next phase of activity again saw a change to the layout of the buildings on site but with some elements of continuity of property boundaries. The centre of Area A was now dominated by a series of strip buildings, Buildings 8, 9 & 10. Buildings 8 & 9 represent the continued use of the northern area of Building 2, rooms A, B & C. Building 2 originated in Phase 5b and may potentially have originated slightly earlier than that. As discussed above this northern area of Building 2 may have been in use before the whole of Building 2 took shape. This suggests that the continuity of these building boundaries started in the first half of the 2nd century and carried on through to sometime in the 3rd century. With the exception of the road and its associated revetted channels on either side, these buildings remain the most constant features in the landscape of the site throughout the Roman period. Development took place

around them, mostly directly south, but these property boundaries continued. Internal alterations took place over the years and further study of the finds assemblages may provide information on the usage of the buildings and how it may have changed and evolved over time.

8.6.9 Building 8 was located at the northern end of this range of three buildings, Buildings 8, 9 & 10. Within this thin strip building which continued east outside the limit of excavation, a single room was identified. Within this building a disturbed tile hearth was recorded, [2605]. By this phase the pitting which was taking place in the previous phase has been covered over. Industrial activity must still have been occurring as the oven/kiln from the previous phase was still located in the next building and was joined by a second oven/kiln. It may be that a change in the industrial activity taking place occurred or that another place to dispose of, or way of disposing of, the waste material had been found. Running through the southern area of this building was a line of bored timber water pipes, [1142]. This timber water pipe would have supplied clean water, under pressure, to the building. Directly west of the pipe a rectangular feature, backfilled with clean clay was recorded [1392]. This feature probably represents a tank within which water would have been stored. Located on the western end of the timber pipes, between them and the tank, was a lead 'spout' fitted to the top of the timber. Water would therefore have be pumped under pressure through the timbers and up through the spout into the tank, or vice versa. Dendrochronological results from the timber pipes date to after AD 144 and after AD 143 but it appears that they were used in a period after this date.

8.6.10 Building 9 was located in the centre of the range of three buildings. In the previous phase a tile oven or kiln was located within the room. During this phase this oven/kiln continued in use after a rebuild or repair and was now joined by a second oven or kiln, [1378]. These kilns/ovens faced opposing directions and may have been used in the baking of bread on a larger than domestic scale. An interesting associated find, albeit from an earlier phase (3) and a different part of the site, Area B, was the recovery of an iron bread shovel (SF 1118). Although no similar finds were recovered relating to the building or the ovens/kilns, such an implement could have been used with regard to these ovens or kilns. Another room was recorded directly east of the area of ovens, within which a small tile hearth was recorded. At the western end of the building, between the revetted channel and the building itself, an apparent timber boardwalk structure was recorded. This possible boardwalk structure was only recorded outside this area of building but may have continued further along the edge of it. This may relate to this end of the building being open sided, potentially allowing access into the area occupied by the ovens/kilns.

8.6.11 Building 10 was located at the very southern end of the range of three buildings. This building appeared to be similar to Buildings 8 & 9 with the exception of having a range of two buildings added onto the southern side, similar to lean to structures. In the main area of the building two or possibly even three rooms were identified. Within these rooms, unlike Buildings 8 & 9, no evidence of industrial or craft activity was present. Within one of the lean to rooms to the south, an area of tiles, showing signs of moderate burning, may represent possible small scale industrial activity or more likely a domestic hearth. Further analysis of associated finds may help to determine the activities taking place within this room and the rest of Building 10. Such further study may also provide information as to when these apparent lean to structures were added to the building.

8.6.12 Buildings 8, 9 & 10 have been discussed as separate, individual, strip buildings, but it is worth noting that they may have representing one whole unit within which a variety of activities took place. These buildings, and the activities which took place within them, will be better understood by studying their artefactual assemblages in

conjunction with one another. Recorded directly north of Building 8, and directly south of Building 10, were small timber lined box drains. These two box drains at either end of the row of three buildings defines and delineates them as a single 'unit'. The layout and character of the various rooms within the three buildings also may suggest it being a single building. The northern half of the building appears to be concerned with small scale industrial activity involving the ovens/kilns, whereas the southern area appears to be more domestic in nature. These elements combine to form an overall building and household. External surfaces were also recorded to the south of the buildings and possibly to the north. It is also interesting that the small triangle of land, between Building 8 and the northeast-southwest branch of revetted channel, remained undeveloped throughout the Roman period. Its proximity to the channel may offer an explanation; however, the land on the opposite side of this channel was developed with a building erected there.

8.6.13 Discussed in the previous phase was the blocking off of one of the channel branches at the northern end of Area A. This area was subsequently backfilled and built upon with a timber framed structure, Building 7, erected. Building 7 was a well preserved timber framed building with surviving timber joists throughout its area, upon which a timber plank floor would possibility have sat originally. It is hard to delineate any rooms within the building as only the timber baseplate and the internal joists survived. However, this may suggest that this was a single internal open area, similar to Building 4 located in the south of Area A in the previous phase (6a). This implies that the building was a similar type of storage and warehouse building. Recorded within the building however was a sunken amphora, [2110], set within the ground. Such *in situ* amphorae have been interpreted as either storage features or sometimes latrines. It would seem unusual if this possible warehouse had an internal latrine installed, however, its location in the southeast corner of the building could have been segregated off from the rest of the building. No archaeological evidence for any partitions within the building was recorded however. The construction of this building directly over a backfilled channel doesn't seem to be the most obvious place to build. Competition for space may have been a factor in this decision in what was a well developed area of Roman *Londinium*. To the south of Building 10 however, a larger area of open space appears to exist. It may have been that factors directly in the area of Building 7, outside the limit of excavation, forced this area to be developed. It may also have been that the landowner decided to develop and expand within his own property boundaries, forcing the backfill of the channel.

8.6.14 Directly west of the revetted channel on that side of the road in Area A another structure was indentified, Building 11. Building 11 was represented by fragmentary structural remains including a beamslot and postholes. Little information from these remains was forthcoming especially as such a small area of it was visible. Within the building however two timber barrel bases were recorded, [40] & [44]. These truncated barrel bases may represent storage features within the building, analysis of which may provide information about what was stored within them and what this suggests about the buildings usage and function.

8.6.15 Area B remained identical to the previous phase (6a above).

8.6.16 The large time span of this phase may be problematic. Timber framed buildings are considered to have a life of c. 20 years and perhaps even 40 or 50 years with extensive repairs (Appendix 16). As part of the overall refining of the archaeological sequence and the possibility of tighter dating of the various buildings across the site, it may be that more definitive time spans may be given to the sub-phases which make up this phase.

8.6.17 From the artefacts recovered during this phase (6a & b) certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. An assemblage of over two hundred small finds was recovered from features relating to this phase. Thirty of these were personal adornments, including hairpins, a brooch and a bead amongst others. Toilet instruments were represented by three items. Textile working was represented by three wooden spindles and twelve bone needles. Household utensils included box fittings and furniture fragments. Four counters or gaming pieces represent recreational activities. Record keeping and literacy is represented by styli and a writing tablet. Buildings and services are indicated by various wooden objects including slats and a weatherboard. Thirty tools, including knives, punches and whetstones were recovered. Two fragments of pipeclay figurines represent religious objects (Appendix 6).

8.7 Discussion of Phase 7 – Roman AD 250-350

8.7.1 Intense occupation of the area of the site continued into this phase but now much of the structural evidence was more fragmentary. Some of these structures were only represented by timber pile lines providing minimal information about their functions. During this phase a major new phase of the eastern revetted channel was installed along the northeast-southwest line and down to the southsouthwest to around halfway through Area A, structures [2233], [949] & [599]/[3228]. The northern area of this new revetting was not as wide as the one it replaced and as it continued south through the site widened out to meet the revetment structures further south. This decrease in width and therefore potentially the volume of water flowing through may be due to the drop in water levels which occurred during the later Roman period. Nonetheless, the installation of this structure and the renewed management and control of the stream which this activity implies suggests that water management was still an integral part of the urban landscape as late as the 3rd and 4th centuries.

8.7.2 Recorded in the very northern end of Area A, on the northwestern side of the revetted channel were two structures, Buildings 12 & 13. Only the southeastern corner of Building 12 was recorded, the rest of the structure continued beyond the limits of the excavation. Building 12 was unusual on the site in that its walls were constructed of tiles, mud bricks and large amphora fragments as oppose to the usual timber framed buildings observed. Recorded in the corner of the building was a possible tile hearth or oven, showing signs of moderate burning. Fragments of a timber barrel base were also recorded within the building. This combination of features suggests industrial activity was taking place within the building but only perhaps on a small scale. Building 13, directly south of Building 12 was much more fragmentary. The remnants of timber beams and postholes represent structural evidence; however, no other structural elements survive. Two linear features however, both with fairly irregular sides, may represent robber cuts along the lines of the timber sill beams. If this is the case then these features may define the outline of Building 13.

8.7.3 Constructed during this phase north of Building 14 in Area A were two timber-lined wells, [569] & [2923]. Recovered from the backfill, [728], of the construction cut of well [569] were two coins of Constantinian issue, dating to AD 330-335 and AD 335-341. These dates provide a *terminus post quem* for the well's construction. Well [2923] showed signs of a later rebuild, possible using different wood. It cannot be precisely determined which properties these wells were associated to but it seems likely that the southern well, [569], could have been associated with Building 14 just to the south.

8.7.4 Recorded in the centre of Area A during this phase was Building 14. Located in the area of the previously existing Buildings 8, 9 & 10, this new building represents a

slight change in alignment. Building 14 was, however, only represented by two parallel rows of driven timber piles which originally would have supported a timber baseplate. These minimal remains to this building can provide only basic information about the structure such as dimensions. Like many other buildings recorded on the site it ran up to the revetted channel which ran alongside the road. Most likely representing a long thin strip building its eastern end continued beyond the limits of excavation.

8.7.5 To the south of Building 14 another structure was recorded, Building 15. Unlike the majority of the other buildings recorded during this phase, Building 15 had more structural elements than just the timber piles remaining. Still fragmentary however, Building 15 was a timber framed structure supported by driven timber piles. As with virtually all structures on site the building would have ran up to the revetted channel which ran parallel to the road and then extended off to the east. The area of the building in the area of the channel was truncated however by later medieval activity. The rest of the building continued east and south beyond the limits of the excavation. Multiple rooms were identified with the building but only one had remains surviving related to activities within the building and its usage. Room C in the south of the building, only a small area of which survived, contained the base of a timber barrel, [275]. This barrel appeared to be within a tile structure [131]. Also recorded along the line of an internal wall dividing Room A from Room C were two whole pots, [108] & [109]. These two pots also showed signs of being ritually 'killed'. Such remains are normally considered 'foundation' deposits associated with the construction of buildings, normally located below floor surfaces. More detailed analysis of the finds assemblages associated with the rooms of this building and in particular Room C containing the barrel base, may provide information about the building's usage and character.

8.7.6 In the area between Buildings 14 & 15 a number of features were recorded suggesting that this may also have been internal within another building or structure. Timber-lined pits, a very degraded bored timber pipe and a number of postholes all imply that this area was internal. The possibility exists that this area may have been delineated by the southernmost wall of Building 14 and the northernmost wall of Building 15. If this was the case it may have been that these buildings were similar to the range of structures represented by Buildings 8, 9 & 10 in the previous phase (6b), which most likely combined to form one large unit or building.

8.7.7 The western side of the road during this phase was represented by the revetted channel which ran parallel to it and two apparent structures, Buildings 16 & 18. Both of these buildings were represented by the driven timber piles which would have supported the timber baseplates of the buildings. Because of this only minimal information about the buildings can be interpreted. Building 16, similar to those already recorded on the eastern side of the site, appears to be a series of strip buildings aligned perpendicular to the road up to which they would have run. Of note is the sheer concentration and amount of timber piles along the building lines. The longest line encountered, passing from Area B into Area A had a large amount of piles along its length, this may suggest that the ground was particularly soft in this location and required more heavy piles to maintain stability. Where this pile line met the revetted channel west of the road an area of timber planking within the channel was recorded. This planking ran perpendicular to the line of the channel, apparently blocking it off at its southern end. This blocking off may have been related to the construction of Building 16.

8.7.8 Directly west of Building 16 and external to it was a timber-lined well, [4251]. Dendrochronological results from a number of the timbers recovered from the well date to; the winter AD 250, spring AD 251, AD 239-75, after AD 222, AD 241-75 and

after AD 227 (Appendix 17). It is assumed that this well would originally have been cut from higher up in the sequence. Housing this well was another structure represented only by driven timber piles, Building 17. More fragmentary than Building 16, Building 17 may represent an open sided external structure tacked onto the back of Building 16 to house and cover well, [4251], which would have served the property. A series of timber piles at the southern end between Building 16 & 17 could be interpreted as being a corridor between the two structures which would have continued south beyond the limit of excavation.

8.7.9 The large time span consigned to this phase may be problematic as with the previous phase. As part of the overall refining of the archaeological sequence and the possibility of more specifically dating of the various buildings across the site, it may be that this phase can be broken down into further sub-phases.

8.7.10 From the artefacts recovered during this phase certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. A total of three hundred and thirty seven objects were recovered from this phase. Forty-eight items representing personal adornments were recovered; forty-one of these were hair pins. A handful of toilet instruments, including probes, tweezers and spoons, were recovered. Textile manufacture was represented by ten needles. Household objects were well represented, thirty eight objects recovered is rather more than is usual. These include fragments of copper-alloy and lead alloy vessels, a pewter cup, and a considerable number of box fittings and handles. Five gaming pieces or counters represented gaming and recreation. Literacy is represented by seventeen styli. Three hipposandals, a horseshoe fragment and a possible cart fitting represent objects associated with transportation. Tools were well represented with a large assemblage of thirty nine objects. These included knives, punches, saws, a file and tongs. Five lock plates and three keys were also recovered. Possible 'military' equipment included an arrowhead and a spearhead, both of which, however, could have been used in hunting. Religious objects were represented by three fragments of pipeclay figurines of Venus (Appendix 6).

8.8 Discussion of Phase 8 – Late Roman AD 350-420

8.8.1 The late Roman period was well represented across the site. The majority of the features from this period were deeper cut ones such as the wells and the channels, however, other smaller features were present together with some dumped deposits. Something which cannot be determined precisely, however, is when the road which ran through the site went out of use. In the area of the site that it was recorded no features or other deposits seal it and therefore an accurate date cannot be given to the end of its usage. As no building remains were present during this phase on the site it might be assumed that the road had gone out of use during this period. However, there is definitive evidence that occupation took place in the area, if not directly on the site. This evidence comes mostly from pottery and other artefacts recovered from the channel which clearly remains open during this period. More importantly, however, was the discovery or a hoard of copper-alloy vessels from a well which were deposited no earlier than AD 375 (discussed below). The fact that the well was still open up to this period would suggest that it was associated with buildings which were either located to the east of the site or which had not survived into the archaeological record due to the widespread truncation of the 4th century horizons.

8.8.2 Although the top of the sequence in the western revetted channel was truncated and provided no evidence of very late Roman deposits the eastern channel was proved to have remained open into the late Roman period. Certain pottery forms are indicative

of active in the late Roman period, post AD 350. These pottery forms include; Portchester D/Overwey Ware (PORD), German Mayen Ware (MAYEN), Oxfordshire White Painted Red Colour Coat (OXRC) and Late Roman Calcite-gritted Ware (CALC). Large assemblages which included many of these forms were recovered throughout the length of the channel. This confirms that the channel remained open into the late 4th, and possibly even the early 5th century.

8.8.3 The two timber lined wells, [569] & [2923] constructed in the previous phase remain open into the late Roman period also. This is attested to by the discovery within well [569] of a hoard of twenty copper-alloy, pewter and iron vessels. This hoard was comprised of; a copper-alloy bucket, a wine bucket, a set of three nested bead-rim dishes and two other similar dishes, the remains of a four-looped zoomorphic hanging bowl, several cauldrons and bowls, one with a hemispherical base, an iron trivet, two shallow one-handled bowls used as dippers, a lead-alloy small dish and flagon and an iron ladle. Recovered from the below the hoard were two coins of the House of Valentinian struck at Arles in the name of Gratian, dating to AD 367-375 and AD 375-378. This provides a *terminus post quem* for the deposition of this hoard; it must have been deposited in or after AD 375[94]. The possibility exists however that this hoard may have been deposited even later than AD 375, potentially even in the early 5th century. It has been suggested that the deposition of this hoard may be a southern outlier of a regional pattern of ritual hoarding focussed on the Cambridgeshire fens and that such a ritual act was a communal event, marking the abandonment of this part of *Londinium* with a sacrifice of prestigious objects[95].

8.8.4 A handful of linear features were recorded in the northern half of Area A. These thin gullies were all located around the area of, and alongside the revetted channel. These gullies most likely represent drainage features associated with the channels. The possibility exists that some of these features may even post-date the Roman period, representing activities along the channel after it has gone out of use. Roman pottery was recovered from the majority of these features, however, even if they did post date the Roman period a certain amount of residual Roman pottery would be recovered as the gullies would have been dug through Roman deposits.

8.8.5 Sealing a large part of the north of Area A was a homogenous dump deposit, [416]. This deposit also sealed the two wells, [569] & [2923]. In the south of Area B an equivalent layer, [297], was also recorded. As dump layer [416] seals well [569] which contained the copper-alloy hoard which was deposited late in the 4th century or possibly the early 5th century this dump may represent the end of the Roman sequence on the site and the abandonment of Roman *Londinium.*

8.8.6 From the artefacts recovered during this phase certain interpretations can be made as to the type of activities, industrial or otherwise, taking place on the site. Personal adornments were present in the form of pins, rings and bracelets. Two toilet instruments were also recovered. Two needles represent textile working. Four gaming counters suggest recreational activities. Styli are again present indicative of literacy and record keeping. Tools are present including a hook, knife and hammer. Fittings recovered included keys, lockplates and locks. Two individual items recovered during this phase are of particular note; a carnelian intaglio decorated with a legionary eagle and a shale waste core from the production of shale bracelets. Such an item is well known from shale working sites in the Isle of Purbeck but only one other example is known from London. It is doubtful however that its presence here is indicative of shale working (Appendix 6).

[94] Gerrard, J., forthcoming, The Drapers' Gardens Hoard: a preliminary account. Britannia.
[95] *ibid*

8.9 Discussion of Phase 9 – Medieval

8.9.1 The medieval period, much like the later Roman period was represented by deeper cut features which survived Victorian and modern truncation on site. The outline of a structure, Building 18, was recorded. The basic structural elements which survived were clusters of softwood timber piles upon some of which chalk post pads were recorded. Located in the southern end of Area A Building 18 continued outside the limit of excavation and therefore its exact dimensions are unknown. No dateable evidence was recovered relating to Building 18. The building is ascribed to the medieval period due to its construction style of chalk post pads supported by beech timber piles.

8.9.2 Directly west of Building 18 were the remains of a large linear feature along one side of which was recorded a collapsed line of timber planks supported by piles. This was located directly over one of the Roman revetted channels which were in use from the beginning of the first century AD right through to the end of the Roman period. This feature most likely represents a similar revetted channel attempt to control the Walbrook streams crossing through the site. After the Roman abandonment of the City the Roman revetted channels would have fallen into disrepair. The City was reoccupied in the late 9th century but it wasn't fully settled until after the Norman Conquest. Dendrochronological results from the collapsed timbers of this revetment dated to between AD 1124-1200. Recovered from the organic silt fill of this feature was pottery dating to AD 1170-1350. A pit in the northern end of Area A also had pottery dating to AD 1270-1350. A line of timber stakes was also recorded between Building 17 and the revetted channel. These stakes represent a fenceline along the edge of the revetted channel, separating it from Building 17 to the east. All of these features are on the same alignment suggesting they are all contemporary. The late 12th century date for reoccupation of the area is compatible with the date of the first medieval features on other sites in the Walbrook valley. As the area was marshy and often waterlogged it was an area into which settlement did not penetrate until all other areas within the City had been occupied.

8.9.3 The Augustinian Friary of Austin Friars, as illustrated on Lobel's reconstruction on the area c. 1270, directly east of the site was founded in 1253[96]. Lobel's reconstruction of the area in both c. 1270 and c. 1520 both show the area of the site to be open, with no buildings or other structures located there. The Copperplate map of the 1550s also illustrates no buildings on the site. It may be that the medieval revetted channel and Building 18, recorded on the site, may relate to occupation of the area in the years just prior to the construction of Austin Friars directly to the east.

8.10 Discussion of Phase 10 – Post-Medieval

8.10.1 As already mentioned above, the area of the study site lies undisturbed on the Copperplate map of the 1550s. The area of land occupied by the site, and other plots around, were bought by the Drapers' Company in 1543. The site, which was already a garden, became the Drapers' Gardens associated with their hall to the southeast. The site remained open gardens until the end of the 19th century when some of the

[96] Mills Whipp Partnership, 2001. Revised Archaeological Desk Top Assessment of Drapers' Gardens, London EC2, City of London. Mills Whipp Partnership, unpublished report.

site was sold off and new roads were constructed[97]. This lack of development explains the distinct lack of post-medieval intrusions recorded across the site.

8.10.2 Some post-medieval activity was recorded on site which consisted only of deeply cut features. Recorded at the northern end of Area A was a timber barrel well, [593]. Pottery recovered from the latest fill of the well dates to AD 1650-1700. This provides a *terminus post quem* for the well's usage. However, the date of the construction of the well cannot be determined exactly. Further analysis of the construction style of the timber barrel may further refine its date of installation.

8.11 Discussion of Phase 11 – Modern

8.11.1 As mentioned above the site saw modern development starting at the end of the 19th century. This was recorded on site in the form of concrete slabs associated with Victorian buildings. These directly sealed the archaeological deposits. Further truncation was recorded throughout the site in the form of intrusive concrete piles and beams associated with the 1960s Drapers' Gardens tower. These were sealed by concrete slabs representing the basement levels of the tower.

[97] Mills Whipp Partnership, 2001. Revised Archaeological Desk Top Assessment of Drapers' Gardens, London EC2, City of London. Mills Whipp Partnership, unpublished report.

9 ORIGINAL AND REVISED RESEARCH OBJECTIVES

9.1 Original Research Objectives

9.1.1 The original research objectives of the archaeological evaluation conducted by MoLAS in 2003, despite being addressed within that document, are still valid for the excavation phase of the site and were as follows[98]:

- **What is the nature and level of the natural topography?**

  The natural topography across the site was recorded by observation of the London Clay during excavation and from boreholes. These results, in conjunction with those undertaken during the evaluation in 2003[99], should combine to form a fairly complete model of the underlying natural topography across the site. The results from the excavation do differ slightly to those from the evaluation however. The northwest corner of the site, Area C, recorded a natural palaeochannel cutting the London Clay, which was recorded at c. 6.70m OD. Just to the south of this an island of natural terrace gravels were also recorded. The high point of these gravels being at c. 7.30m OD, this area which would have stood out as a substantially higher piece of land. The rest of the site then appears to slope gradually down to c. 4.60m OD at the south of the site. Boreholes from Area D recorded the London Clay between 6.45m OD and 6.22m OD, apparently following the general slope down from north to south. The two valleys interpreted from the topographic model created after the evaluation were not definitively identified during the excavation. The western valley most likely equates to the palaeochannel recorded in the northwest corner of the site, Area C. It may also explain why the valley appears to stop halfway down the site on the topographic model as the palaeochannel was recorded turning towards the southwest heading towards 4-6 Copthall Avenue. The level of the London Clay in the area of this palaeochannel is higher than the topographic model however; the evaluation also did not record the area of terrace gravels. The eastern valley on the topographic model was also not encountered directly during the excavation. However, none of the boreholes were located directly within it and the excavated slots did not go below the new developments foundation level of 5.50m OD. As this level is higher than the extrapolated valley floor its presence cannot be definitively interpreted. Overall the natural topography was one of the known general slope from north down to south with a higher area of terrace gravels on the western half of the site. These were cut through by the palaeochannel in Area C and most likely by one which was not recorded running straight through Area A, as extrapolated in the topographic model following the evaluation.

- **What are the earliest deposits identified?**

  The earliest deposits identified on site were high energy water lain gravel deposits within a pre-Roman palaeochannel which cut through the natural London Clay. These were presumably deposited during the Holocene when the Walbrook streams scoured out the London Clay.

- **What are the latest deposits identified?**

[98] Harward, C., 2003. Drapers' Gardens, 12 Throgmorton Avenue, London EC2, City of London, An Archaeological Evaluation Report. Museum of London Archaeology Service, unpublished report.
[99] *ibid*

The latest deposits recorded on the site were intrusive concrete foundations associated with the 1960s building. These cut through a 19th century concrete raft which lay directly over the archaeological deposits. Archaeologically speaking, the latest deposits were recovered from a post-medieval pit, dating to the 18th century.

- **Did the pre-Roman topography and environment influence or encourage settlement or exploitation of the Walbrook Valley?**

  The pre-Roman topography was one of sinuous, free-flowing streams meandering through gravel valleys. The early Roman settlement of London took place further south in the area of the Lower Walbrook. The presence of numerous streams across the area of the Upper Walbrook Valley probably meant that it was not considered a viable area for long term settlement and so sat on the periphery of the initial settlement to the south. This problem of excessive water and flooding may also have had its benefits due to the close proximity of a water source, something which may be directly related to the reason why this area later became a centre for industrial activity. As Roman *Londinium* expanded outward however, the area of the Upper Walbrook Valley appears to become an intensely occupied and settled area. This was only made possible however by the canalisation and control of the various Walbrook streams coinciding with the mass consolidation and reclamation of the ground, raising the low-lying area between 1.5 and 2m.

- **Does the site suggest any activity in the Walbrook Valley during the AD 1st century? If so, is it possible to define the nature of the activity?**

  A complex series of archaeological features were encountered dating to the AD 1st century. Recorded in the south of Area B was a timber corduroy structure, running eastnortheast-westsouthwest. Directly associated with this timber structure, running parallel to it, was a ditch to the south and a channel to north. These features can be interpreted in a number of ways; however, as a relatively small area of it was encountered a definitive interpretation proves difficult. The date of these features is of particular relevance. Dendrochronological results from timbers recovered from the corduroy structure date specifically to AD 62, approximately a year after the Boudican revolt. It is therefore assumed that these features were related to the reclamation and re-settlement of London post-Boudican revolt. The possible interpretations of the timber corduroy structure include a trackway, a rampart or some form of boundary. This corduroy is best interpreted as some form of causeway or embankment which, combined with the channel directly to its north and the ditch to the south, delineated or demarked a boundary.

  Development of this early landscape subsequently continued with the channel being re-cut, blocked off with parallel rows of timber planking and subsequently backfilled. Built upon this backfilled channel was another timber structure, possible representing a boardwalk. Recorded on the northern side of the channel four small timber boxes were recorded. Within three of these boxes human remains were encountered. These remains all had a similar age range, they all died either at or around the time of birth. One may have survived a few months and two of them probably didn't reach full term *in utero*. Directly next to this was a whole timber door, an anomalous feature which may have ritual connotations. Also recorded during this period were two timber fencelines, or palisades. These may have connected to enclose an area of the site. However, no direct evidence of the two structures connecting was recorded, nor was any archaeological remains relating to the potential interior of the enclosure recorded, due to modern truncation.

  Later AD 1st century activity is represented by the mass consolidation and reclamation of the area. This began sometime after AD 70 and culminated in the ground level being raised by as much as 2m. The area was then settlement in the early AD 2nd century.

- **Can the site provide any additional information about the sequence of revetment / consolidation of the Walbrook streams during the 2nd century?**

  The sequence of revetting and controlling of the Walbrook tributaries and subsequent mass consolidation is key to understanding the early development of the area during the Roman period. Recorded across the site were multiple revetted channels dating from the late first century AD to the fourth century AD. The full sequence of consolidation which is well documented within the Upper Walbrook valley was also recorded in multiple places across the site during the excavation. These cross sections through the mass consolidation event and the detailed recording of the revetted channels can be used better understand this reclamation and consolidation undertaken at the end of the 1st century/early 2nd century AD.

- **What evidence is there for industrial activity on the site and can this be related to evidence from other sites in the vicinity?**

  A large amount of evidence for industrial activity was recorded across the site. This was in the shape of archaeological and artefactual remains. Archaeological remains recorded across the site which suggests industrial activity include numerous ovens within various phases of buildings and large groups of small pits filled with heavily burnt charcoal material. A very large assemblage of animal bone was recovered, the majority of which came from the various revetted channels, from across the site. This assemblage represents waste materials from a variety of industrial activities including tanning, butchery and horn working (Appendix). Within this assemblage there is also a distinct lack of evidence for bone working, which is unusual. Very large assemblages of artefacts, especially tools, were also recovered from across the site. These artefacts also provide evidence for the types of activities, industrial or not, which took place within the site. Textile manufacture is well represented by numerous needles and spindles. A single iron bread shovel suggests baking on a larger than domestic scale. A large variety of tools relating to various activities were recovered throughout the site, these include; knives, hammers, files, punches, various handles, whetstones, hooks and chisels amongst others.

  The large assemblages of animal bone, artefacts and other evidence recovered from the site, which is one of the largest ever undertaken within the area, can be compared to the already existing corpus of information from surrounding sites. This combined information will greatly advance the knowledge of industrial activities taking place on the site and across the Upper Walbrook Valley, an area well attested to as a centre for industrial activity.

- **What is the evidence for buildings on the site? Can the nature of this occupation (domestic vs. industrial) be determined from the remains and/or artefacts recovered?**

  Multiple timber framed buildings were recorded across the entirety of the site dating from early second century to the medieval period. The first building on site dates to the first half of the 2nd century AD. After this the site developed on a rapid scale with a number of buildings being located along either side of a road running through the centre of the site. Various phases of buildings continued through to the 4th century AD in one form or another. Some of these buildings can be allocated an industrial character due to the presence of large ovens and other industrial refuse such as charcoal filled pits. Many of the other buildings defy precise characterisation of their nature. It seems likely that most of the buildings recorded across the site would have a more diverse nature with domestic and industrial occupation taking place within the same structures. Spatial analysis of the finds from within the buildings and from the revetted channels, into which all the detritus relating the buildings and everyday activities was discarded, may reveal more detailed information about the nature of occupation within the many buildings.

- **Was there activity on the site in the later Roman period and, if so, can the remains and artefacts from the excavation tells us anything about the nature, extent and date of this occupation?**

  Activity in the later Roman period remained relatively intense, timber framed buildings survived on much of the eastern half of the site until at least AD 350. Constructed around this time were two timber lined wells. Recovered from within one of these wells was a hoard of twenty copper-alloy and pewter vessels deposited sometime after AD 375. The presence of such an assemblage of vessels, used for the preparation and display of food illustrates activity in the area of a moderate status. The potential exists that this hoard was deposited as late as the 5th century which would have implications to the extent and date of this late Roman activity. A major revetted channel also ran through the entire length of the eastern half of the site, recovered from the fills of this channel was a large quantity of pottery dating to the late Roman period, post AD 350. A number of other finds including animal bone and registered small finds were also recovered from these later revetted channel fills. The fact that this channel remained open and in use during this period implies activity was taking place on and around the area of the site. The aforementioned finds assemblages can also provide information about the nature of this late Roman activity. The small finds produced a wide range of items suggesting various activities, these include; personal adornments such as pins, rings, bracelets and toilet instruments, textile working is represented by needles, styli illustrate record keeping, fittings such as locks and lockplates were also present as were a large number of tools including hooks, knives and a hammer. These all represent a broad range of activities typical of an urban Roman city, further analysis of which may help to define more closely the nature and extent of late Roman activity across the site and in the immediate surrounding area.

- **Is there evidence for the desertion of the area and responses to changes in ground water conditions in the later Roman period?**

  Little evidence of desertion of the area or responses to changes in ground water conditions in the later Roman period was recorded on the site. Roman timber framed buildings occupied much of the eastern half the site until at least the mid 4th century. Also constructed around this time were two timber lined wells, from one of which was recovered a hoard of twenty copper-alloy and pewter vessels. These were deposited sometime after AD 375 illustrating that activity was still taking place that late into the 4th century. It is also possible that this hoard was deposited as late as the 5th century which would imply that settlement within the area also continued into the 5th century. Similar hoards have been encountered elsewhere across the southeast of England and have been interpreted as 'closure' deposits, marking the abandonment of a feature such as a well, a building or an area. If such an interpretation can be seen as correct further refining of the sequence to define more precisely when this hoard was deposited may suggest when this area in the Upper Walbrook Valley was finally abandoned. Sealing these wells was homogenous dump deposits covering large areas of the site and was the main representations of post-Roman abandonment of the area. Further study of the pottery and finds recovered from these widespread deposits may also help to refine the final date of desertion of the area. As little evidence of flooding appears to have been recorded the reasons for the desertion of the area may been related to socio-political events at the end of the Roman period such as barbarian raids and invasion.

- **Do the surviving deposits contain any information which might suggest the nature of activity in this area of the city during the medieval/post-medieval periods?**

  A small amount of activity dating to the medieval and post-medieval periods was recorded on the site. A collapsed revetment structure located directly over its Roman predecessor was dated to the latter half of the 12th century AD. Associated with this

were a fenceline and the lowest level structural elements of building. This evidence demonstrates that the area was settled and that the Walbrook streams were once again being maintained. Other than this little evidence for the nature of activity during the medieval period was recorded on site.

Even less activity was recorded for the post-medieval period in the sites archaeological record with only a handful of cut features being recorded. The most interesting of the post-medieval features was a timber barrel well recorded in the north of Area A. This barrel well goes out of use in the latter half of the 17th century. This lack of activity during the post-medieval activity is a reflection of the sites land use throughout this period. Cartographic sources from the 16th century through to the 19th century show the site to be open formal gardens, in later years associated with the Drapers' Hall just to the southeast of the site. No development took place on the site until the very end of the 19th century when the land was sold off and a new road layout was imposed upon the site.

- **Are there any remains on the site which might help to more closely define the date at which the marshy area was finally reclaimed and the development commenced?**

  A medieval revetted channel was recorded in the south of the site directly over one of its Roman predecessors. Dendrochronological results from the collapsed timbers of this feature date to AD 1124-1200. Pottery recovered from the revetments organic silt fills date to AD 1170-1350. The presence of this revetting illustrates the fact that the Walbrook streams were once again being managed and maintained. Medieval London is known to be once again well settled at this period; locally the Augustinian Friary of Austin Friars, to the east of the site, is constructed in 1253. As a medieval building was recorded on site just to the east of the revetted channel, it can only be assumed that the Walbrook streams were under control again and the marshy area reclaimed to enable this settlement. Therefore this reclamation and control of the area must have happened sometime previously. However, no archaeological activity was recorded between the medieval period described above and the late Roman period. Therefore no new information can be gleaned as to when this reclamation occurred precisely; only that it predated the mid 12th century.

- **Can the finds and environmental assemblages associated with remains of these periods cast any light on the nature of craft and commerce in the area?**

  Very few artefacts were recovered dating to the medieval and post-medieval periods. The only noteworthy assemblages, albeit fairly small, were recovered from the medieval revetted channel and the post-medieval barrel well. Of particular note from the medieval period was a South Hertfordshire grey ware jar which had perforations and a residue which imply an industrial process, albeit unidentified. Further analysis of this jar may reveal more detailed information on the industrial process which it was used for. Recovered from the post-medieval context were sugar refining vessels indicating that this industry was located in the vicinity. Further analysis of the small medieval and post-medieval assemblages may glean more information about craft and commerce in the surrounding area.

9.2 Revised Research Objectives

9.2.1 Following the evaluation a further series of research questions were posed[100]:

[100] Butler, J., 2006. Method Statement For An Archaeological Excavation At Drapers' Gardens, London EC2, City of London. Pre-Construct Archaeology Ltd, unpublished report.

- **Is it possible to reconstruct the prehistoric environment of the Walbrook valley from analysis of environment samples from the pre-Roman stream deposits?**

  Only a single pre-Roman stream was recorded on the site. Only a small area of it was encountered in the northwest corner of the site, Area C. This was in an area truncated horizontally to a deeper level than the majority of the rest of the site and therefore only the high energy basal fluvial gravel deposits of the palaeochannel were recorded. These deposits would not have yielded any useful environmental results from which the prehistoric environment could have been reconstructed. Across the rest of the site only Roman deposits and the underlying pre-Roman alluvial deposits associated with the various streams were recorded. These continued below the new developments formation level of 5.50m OD and therefore no opportunity to record the pre-Roman streams and their deposits was possible.

- **The Walbrook valley is known to have been subject to periods of flooding. Were these episodes due to natural events and changes or are they a response to manmade interventions in the management of the area?**

  Overbank alluvial deposits were recorded across the site sealing the London Clay. These were associated with the various pre-Roman Walbrook streams which crossed through and in the vicinity of the site. However, little evidence of flooding during the Roman period was recorded, despite a number of revetted channels passing through the site. This is unusual in itself as various flooding events have been recorded on many of the sites excavated in the surrounding area. The lack of apparent flood deposits across the site may have been due to the amount of revetted channels recorded across the site. These revetted channels which were continually maintained and repaired may have been enough to control the Walbrook streams, something which would have been vital in a heavily populated location. These flood horizons recorded on nearby sites were due to a variety of reasons including manmade interventions and inadequate water management features. The installation of the stone city wall around AD 200 is also known to have caused major changes to the Walbrook Valley both inside and outside of the wall. Subsequent to the wall's construction the streams backed up causing the areas on both sides of the wall to become very boggy and marshy. Of note here is that around the same time as the construction of the aforementioned stone city wall in AD 200 one of the two branches of revetted channel recorded in the north of Area A of the site was blocked off with a revetted causeway structure and subsequently backfilled. These two events may be directly related with the redundancy of one of the channels being a consequence of the city walls construction. Further refining of the archaeological sequence may be able to identify possible small flooding horizons previously unidentified.

- **Why was the area abandoned at times during the Roman period? Was this due to a desertion of the area followed by a lack of management of the drainage system followed by flooding of the land? Or conversely was the abandonment a response to the flooding and changing natural conditions?**

  Little evidence of the area being abandoned during the Roman period until the very end was recorded on site. Roman activity was recorded as early as AD 62 on the site, with a continuous sequence of settlement right through to the mid to late 4th century. A possible indicator of the abandonment of the area was a hoard of copper-alloy vessels recovered from a timber lined well. This timber lined well is tightly dated; recovered from the backfill of the construction cut were two coins of Constantinian issue, dating to AD 330-335 and AD 335-341. This provides a *terminus post quem* for the construction of the well. This in itself is evidence for occupation during the latter part of the Roman period. Recovered from below the hoard of 20 copper-alloy vessels were two coins of the House of Valentinian struck at Arles in the name of Gratian, dating to AD 367-375 and AD 375-378. This provides a *terminus post quem* for the deposition of this hoard; it must have been deposited in or after AD 375. The potential exists that this hoard may even have been deposited sometime later than

this date, possibly even into the 5th century. Such ritual deposits are sometimes thought of as 'closure' deposits, signifying the abandonment of an area or building[101]. If this is the case, it may provide a potential date of abandonment to the area during the Roman period.

- **The evaluation produced a surprisingly large proportion of 3rd century pottery. What is the nature of the 3rd century activity on the site?**

  The excavation recorded a sequence of Roman archaeology from the 1st to 4th centuries. Large assemblages of pottery were recovered dating to virtually the entire Roman occupation. Therefore it is unsurprising that the excavation recovered a large proportion of pottery dating to the 3rd century. The 3rd century was one of intense activity on site. With the installation of a road and revetted channels across the site in the early Roman period numerous buildings, and phases of buildings, were then erected and the area became densely populated right through to the mid 4th century. The 3rd century was a continuation of this occupation of the area with timber framed strip buildings located along the road, within which evidence of industrial and craft activities were recorded including kiln/oven structures.

- **Ritual activity from the Roman period has been attested on a number of sites in the City and Southwark, including the deposition of 20-30 skulls in the Walbrook immediately to the north of the subject site. What evidence of Romano-British ritual can be learnt from the deposition of finds, both organic and inorganic, in the Walbrook?**

  As with many other sites throughout the Walbrook Valley, a ritual element to finds deposited in the various channels cannot be overlooked. The ritual aspect of the Walbrook valley has recently been discussed[102]. Votive offerings in and around watery places are well attested to before, and after, the Roman period. However, such a ritual approach will always be problematic and may never be fully proven. The skulls mentioned in the question have counter theories to the ritual aspect; the main one being the result of incidental erosion, accidental drowning, suicide and fluvial action. Recovered across the site were a number of human skulls, much like those from the site immediately to the north. These were deposited within the various channels across the site and also from within other features such as pits and dump deposits. A number of other disarticulated human bones were also recovered from across the site. None of the finds recovered from Drapers' Gardens particularly prove either the ritual theory or the rational theory mentioned above. It does seem unusual however that if incidental erosion disturbed buried remains upstream then you would expect to recover a more diverse selection of human bones and not mostly skulls (see Appendix 19).

  From the finds recovered during the excavation the major evidence for ritual activity were the fragments from pipeclay figurines of Venus and a Mother goddess. Other items have been identified as possibly having ritual connotations, these include thirty bent styli, toilet instruments and other objects. The styli in particular are all bent in a virtually identical fashion, something which has been identified as having ritual significance (Appendix 6). A number of 'killed' pots have also been identified along with specific vessels usually associated with ritual (Appendix 1). Analysis of the spatial distribution of these potentially ritual items across the site, and more importantly from within the various channels, may provide more evidence and information about the ritual aspect of the Walbrook valley.

  Worthy of note however, although not recovered from the Walbrook itself is the hoard of twenty copper-alloy and pewter vessels encountered within a timber lined well on the site. Discussed in more detail elsewhere such deposits have ritual and rational

[101] Gerrard, J., forthcoming The Drapers' Gardens Hoard: a preliminary account. Britannia.
[102] Clark, J., Cotton, J., Hall, J., Sherris, R., Swain, H., 2008. Londinium and Beyond Essays on Roman London and its hinterland for Harvey Sheldon, CBA Research Report 156

explanations. The rational explanation has the hoard hidden for some reason with the expectation of recovering it when any possible danger is over. Such deposits have also been interpreted as ritual offerings, signifying the abandonment of a building or area. Such hoards have been recorded elsewhere in the southeast of England and are usually accompanied by unusual faunal remains. Recorded above the hoard of twenty vessels was virtually the entire skeleton of a young, possibly only a few months old, red deer. This adds further weight to the hoard's ritual interpretation. A horse skull and a pit filled with cremated animal bone were also possible evidence of foundation deposits placed below buildings for ritual reasons.

- **When was this area of the city finally abandoned in the Roman period?**

  As discussed above Roman archaeology dating from the middle of the 1st century right through to the end of the 4th/early 5th century was recorded on the site. A possible indicator of the abandonment of the area of the site was the hoard of copper alloy vessels recovered from a timber lined well, mentioned above. The construction of this well is tightly dated and a *terminus post quem* for the deposition of the hoard is provided by two coins of the House of Valentinian struck at Arles in the name of Gratian, dating to AD 367-375 and AD 375-378 located below the hoard. This provides the *terminus post quem* for the deposition as in or after AD 375. The possibility does exist, however, that this hoard was deposited even later that this date, possibly as late as the early 5th century. As discussed above such ritual deposits are sometimes thought of signifying the abandonment of an area or building[103], possibly providing a potential date for the abandonment of the area during the Roman period. Stratigraphically only widespread homogenous layers were recorded before medieval activity occurred on the site. These layers will also provide more detailed dating to the final abandonment of the area in the Roman period.

- **What is the first evidence of occupation or exploitation of the area after the Roman period?**

  The first evidence of activity after the Roman period dated, via dendrochronology and recovered pottery, to the mid 12th century with a revetted channel being recorded. This revetment structure was located directly over one of its Roman predecessors in the south of Area A. Directly east of this revetted channel was the basic structural elements of a building. As a building appears to be in use at this point, it can be assumed that control of the Walbrook has again been achieved and any marshy areas reclaimed. Therefore these activities must have begun sometime earlier; however, no archaeological evidence for this was recorded.

- **Can the nature of local flora be determined by analysis of environmental samples?**

  A number of environmental samples were taken from a variety of deposits across the site. Assessment of these samples has been carried out (Appendix 22) and further analysis will lead to conclusions regarding the nature of the local environment and flora being made. The conclusions have been organised by phase which should reflect the changing usage of the landscape as it becomes more urban and settled. No evidence of the vegetation cover was recovered relating to Phase 2. Phase 3 recorded pollen from the daisy and grass families suggesting an open environment modified by human activity. Waterlogged wood of beech, hazel and oak indicated woodland utilisation. The majority of the environmental samples relating to Phase 4 were from the dumped deposits relating to the mass consolidation of the ground. Therefore they do not directly represent the local environment and may not be contemporaneous with that period of occupation. Pollen from Phase 5 indicates woodland and grasslands on the margins of the streams. A wide range of

[103] Gerrard, J., forthcoming The Drapers' Gardens Hoard: a preliminary account. Britannia.

waterlogged wood of alder, hazel, holly, ash, willow, elm, pine and oak illustrates woodland utilisation. The pollen preservation from Phase 6 was poorer than the previous phases but it did indicate grassland and open woodland. Waterlogged wood of hazel, oak, willow, alder and maple indicated woodland utilisation. Pollen preservation was also poor from Phases 7, 8 & 9 and indicated a similar floral and waterlogged wood assemblage to Phase 6.

- **Do the finds recovered from the infilled Walbrook streams and the dumped material conform to previously known assemblages?**

  No infilled Walbrook streams were recorded across the site. Only natural high energy fluvial palaeochannel fills were recorded and the later fills of the Roman revetted canalisation of the streams. The mass dump material which followed the infilling of the Walbrook streams was recorded across virtually the entirety of the site. These dump deposits, consolidating and raising the ground level in preparation for subsequent settlement, have been recorded across many other sites in the vicinity. Sites such as 10-12 Copthall Avenue (COV 87), directly west of the site, Northgate House (MRG 95) slightly further west of the site and 2-3 Cross Key Court (OPT 81) and 15-35 Copthall Avenue (KEY 83) all recorded this dumped material. Finds recovered from the dumps from these sites included leather shoes and leather waste, bone and glass, much of which suggested industrial processes. These finds all conform with those recovered from the dumped material recorded across the site, a mixed assemblage of animal bone, leather waste, pottery and various building material.

- **What is the importance of timber structures and objects in determining the nature of Roman timber technology?**

  Without the survival of timber structures and objects the nature of Roman timber technology could not be completely and accurately determined. This is especially true in a province on the periphery of the Roman Empire where things were not always undertaken in the pro forma Roman technique. The area of the site lies in the Walbrook valley, an area described as “a nationally important waterlogged repository of Roman timber structures” (see Appendix 16). The area is well known as a wetland zone where water logging and the lack of air has meant remarkable preservation of organic remains including woodwork. Numerous sites excavated around the area from the post-War era to the more systematic excavations from the 80s and 90s onwards have encountered timber structures and objects. These have been very similar to those recorded at Drapers’ Gardens, including building remains, revetments, fences and wells. The site recorded a number of typical and atypical, and unusual, timber structures. Amongst these unusual finds were little known carpentry details recorded with regard to Building 1 in phase 5a and an unusual construction technique used in a well lining in phase 7. These are only two of a number of these rare and unusual techniques and finds. Waterlogged sites preserving Roman timber are however a disappearing resource, placing more emphasis on the importance of the sites Roman timber assemblage in furthering the knowledge of Roman timber technology. Therefore further study of the woodwork recovered, especially the more unusual detail and objects, from the site will be made and the results will be combined with the known corpus of timber from other sites in the Walbrook valley and from wider afield in Roman London.

- **How does the site and its recording of the Walbrook and its environs compare with other observations from within the Walbrook Valley?**

  The site’s recording of the Walbrook valley is comparable to many other excavations in the immediate vicinity. Like many of these sites it shows a sequence of pre-Roman streams through the low-lying ground before being infilled and the land consolidated during the late1st/early 2nd century. As part of this formalised program of reclamation

a number of phases of drainage ditches were constructed, many revetted with timber piles and planking, effectively canalising the various Walbrook streams. The ground was also raised considerably upon which roads were constructed alongside which revetted Walbrook channels served as roadside drains. Subsequently timber framed buildings were erected and intense settlement began. This sequence of events is well documented elsewhere; sites such as 10-12 Copthall Avenue (COV 87), directly west of the site recorded a number of dumped deposits levelling and raising the ground for early 2nd century buildings. Northgate House (MRG 95) slightly further west of the site also recorded dumped deposits to raise and stabilise the ground level onto which settlement activity began in the early 2nd century. Excavations at 2-3 Cross Key Court (OPT 81) and 15-35 Copthall Avenue (KEY 83) again recorded dumps which raised the ground level. However, the site also recorded early Roman activity pre-reclamation and later 4th/possibly 5th century activity. Such activity may not have been encountered elsewhere because of truncation but also the large open area excavation at Drapers' Gardens enabled a greater insight into the Roman sequence and the almost untruncated nature of the deposits allowed whole buildings to be recorded.

- **What influence did the construction of the city wall have on the management of the Walbrook? Can comparisons be made between the Walbrook valley both within and outside the city walls?**

  No obvious influences on the management of the Walbrook following the construction of the city wall around AD 200 can be inferred across the site. Of note however was that one of the two branches of revetted channel at the northern end of Area A appeared to become redundant at around the same time as the city wall's construction in AD 200. This channel was blocked off with a revetted causeway structure and subsequently backfilled, upon which a timber framed building was later erected. The natural conclusion of blocking off this channel would have been water backing up further north and ultimately spilling its banks and flooding. No evidence of this was recorded on the site but it would have been centred further north outside the site's limits. It may have been therefore that with the blocking of this channel that it may have been diverted elsewhere further north along its line. The fact that this event occurred around the same time as the city wall's construction may only be coincidental but further study of the surrounding sites archaeological sequences, in particular 8-10 Throgmorton Avenue (TGM 99), could provide further information regarding any influence the city wall had on the management of the Walbrook.

  General comparisons between the Walbrook valley both within and outside the city walls can be made. However, the area of the upper Walbrook valley, particularly in the area of the site, has a very individual character due to the sheer number of streams located in such a small area. This would make managing these streams problematic, but it was something which was integral to day to day life, especially in what was a highly populated area.

- **What impact did the construction of the existing building have on the archaeological deposits?**

  The construction of the 1960s Richard Seifert designed Drapers' Gardens tower impacted the underlying archaeological deposits to a variety of depths. The central core of the tower completely truncated all archaeological deposits down to the London Clay. Area C was also truncated down to the natural London Clay, however, a palaeochannel was recorded in this area. The western side of the site, Area B, was truncated down to between 7.90m OD and 7.70m OD. The eastern side of the site, Area A, appeared to be constructed upon an earlier, Victorian, concrete raft. This Victorian activity had truncated this area down to between 8.50m OD and 7.90m OD. Numerous concrete piles and a small number of concrete beams across the entirety of the site, relating to the 1960s tower, completely truncated the archaeological deposits in very localised areas.

9.3 The excavation work undertaken raises further research questions.

- **Can a military presence be identified from the finds relating to the early Roman activity on the site?**

- **Can a parallel for the early Roman timber corduroy structure, dated to AD 62, be found within London? Can its exact function be determined?**

- **Normally infant remains are discarded with little care and attention and often buried below buildings and floors as 'foundation' deposits. Can parallels for the apparent careful burial of the infants within timber boxes be found? How does the whole timber door, laid flat upon the ground, relate to these infant burials?**

- **Can analysis of the associated finds assemblages determine the character and function of the palisade enclosure?**

- **Can the various pre-Roman Walbrook streams be more accurately located following the new results of the excavation?**

- **Can the mass consolidation and reclamation event be more accurately dated? How long did this potentially staged process take? Can the location of where these dump deposits were imported from be accurately determined?**

- **Can the possible early road surface [681] be associated with any buildings or settlement activity?**

- **Can any parallels be found to the unusual timber framed Building 1? Do the finds associated with this building determine its function? In particular are there any explicitly ritual finds confirming its potential usage as a temple?**

- **Can the various timber framed buildings recorded across the site be more accurately dated? Can their exact usage be determined from the finds assemblages?**

- **Can the evolution of nominal Building 2 be more precisely determined? Can its function as a large scale building be determined?**

- **Can the finds from the various channels identify any potential ritual deposits within them? One particular fill from a channel, [1708], appears to have a number of unusual and rare items, including a glass inkwell, only the second example from London found, a glass medallion with a head on it, clipped from a jug, and a number of coins of contemporaneous date, possibly representing a small hoard. Can further analysis of the finds from this channel fill reveal more information about ritual activity in the Walbrook?**

- **Can spatial analysis of the finds from within the channel help to determine the functions, including industrial activities, of the various buildings across the site?**

- **Can the volume and speed of water flowing through the various revetted channels be determined? Do these reflect changing water levels throughout the Roman period?**

- **Can the sequence of buildings recorded on the site help to accurately determine the life span of timber framed buildings during the Roman period?**

- **An apparent lack of flooding from the channels was recorded across the site. Can further analysis and refining of the sequence identify any flood horizons, potentially being associated with the disuse and rebuilding of structures?**

- **Can the blocking off of one of the channels in the northern end of the site around AD 200 be related to the construction of the masonry city wall around the same time? How does this relate to the archaeological sequence as recorded in 8-10 Throgmorton Avenue (TGM 99) directly to the north?**

- **Can the late Roman activity on the site be more definitively characterised?**

- **Can the deposition of the copper-alloy hoard recovered from the well be more precisely dated? Can the reason for its deposition within the well ever be determined?**

- **Will refining the archaeological sequence aid in more accurately determining the final abandonment of the area in the late Roman period?**

- **Does the medieval activity on the site represent the next settlement of the site after the Roman abandonment?**

10 IMPORTANCE OF THE RESULTS, PROPOSALS FOR FURTHER WORK AND PUBLICATION OUTLINE

10.1 Importance of the Results

10.1.1 The investigations at Drapers' Gardens have produced one of the most significant archaeological sites in the City of London in recent years. The site is certainly the best preserved large site to have been excavated within the Upper Walbrook Valley. As the area was largely turned over to gardens for most of its history due to the marshy nature of the land the site has escaped widespread truncation caused by medieval and post-medieval pitting and cellars on other sites. With the obvious exception of the central part of the site in which all archaeological remains had been removed with the construction of the 1960s tower, a series of perfectly preserved Roman horizons were revealed. This revealed a c. 46m length of revetted channel of the Walbrook to be investigated together with its associated road and the remains of some 17 buildings which lined the road over a period of some 300 years. Unusually for Roman sites in the City because of the lack of truncation not only were whole buildings observed but individual rooms within structures could be identified allowing layouts of the premises to be attempted.

10.1.2 One of most significant aspects of the site was the large assemblages of artefacts that were recovered. Large assemblages of pottery, animal bone, ceramic building material and leather were retrieved from the site. Such assemblages have the potential to provide significant information on the lifestyles, material goods, trade and diet of the Roman inhabitants of *Londinium*. Pride of place on the site must of course go to the hoard of metal vessels recovered from the late 4th century well which is of national and even international significance. However, the well preserved small finds, including large numbers of metal and wooden objects, are in many ways of equal significance in helping to determine the nature of objects that were present in the everyday lives of the Romano-British. Several fittings from and pieces of wooden furniture were found which are unusual survivals as the anaerobic and waterlogged conditions on site led to the almost perfect preservation of both organic and metal objects. Athough a number of metal objects have been recovered from the Walbrook channels over the years the vast majority have no precise provenance, the finds from the present site are well stratified and closely dated and may help refine the dating of similar objects recovered by builders and contractors over the years.

10.1.3 The site is of major importance in determining the course of the tributaries of the upper reaches of the River Walbrook. Three or possibly four stream channels were predicted to cross the site. It is important to differentiate between the natural streams of the Walbrook and those that have been diverted and revetted by the Romans. The site provided significant information about both the prehistoric and Roman Walbrook which taken together with the results of other archaeological investigations in the vicinity and borehole data previously carried out on the present site will help to construct a better topographic model of the area.

10.1.4 The early Roman activity on site is of great significance for the history of Roman London. The corduroy, whether it represents a trackway or part of a boundary rampart, is an unparallelled find for Roman London. The date of AD 62 is of course significant as it suggest that the corduroy was laid in the immediate aftermath of the Boudican revolt and was part of the rebuilding of the settlement after the destruction. It would suggest an attempt to either mark a boundary to the rebuilt town or at least a beginning to the exploitation of the Upper Walbrook Valley. It represents the earliest

activity as yet found within the area. The possible enclosure, infant burials and possible ritualised landscape represented by the cemetery, door and amphora are also unique finds for Roman London and are worthy of further study.

10.1.5 The consolidation of the area with the mass dumping to raise the ground and the transformation of the landscape from one of waterlogged marshland to a settled area with a major road, revetted channels and the first buildings has been an occurrence hinted at on other sites in the Upper Walbrook Valley. On Drapers' Gardens it is the sheer quantity of evidence of the transformation which is significance. A 46m long area was studied in detail and the development of buildings with associated domestic, industrial and craft activities was seen across the site whereas on previous sites piecemeal survival allowed only a glimpse of such settlement and activities.

10.1.6 The survival of building wall baseplates, together with clay walls often with surviving painted wall plaster adhering and floors constructed from such different mediums as wood, *opus signinum*, clay and beaten earth has allowed the layout of many of the buildings to be determined with individual rooms with associated ovens/hearths and drainage to be revealed. On many sites the truncation caused by later pitting and cellars has meant that only glimpses of Roman structures were forthcoming, on Drapers' Gardens whole rooms were able to be reconstructed. A number of interesting building types were apparent which will add to our knowledge of the area. The enigmatic possibly square Building 1 with its possible ambulatory invites comparisons with Romano-Celtic temples. Building 2, which appeared to grow from smaller individual elements to form a large structure with an internal corridor surrounding an open courtyard, suggests the appearance of a *macellum* or market building. The small Building 4 has one of the best surviving timber floors from Roman London and its wattle construction is an unusual building technique for the Roman period. Further analysis of these structures and many of the others found on site together with their associated finds assemblages may help to determine their nature and use.

10.1.7 Although late 4th century buildings were not found on the site which may either be a product of the fact that later truncation had removed these horizons or that they were further from the road and the revetted channels than previous phases and thus located off the site, there was important evidence of late Roman activity. The two 4th century wells and the large assemblage of late 4th century pottery recovered from the latest fills of the eastern revetted channel suggest that occupation of this part of the Upper Walbrook Valley continued right up to the end of the roman period. The hoard of metal vessels might also suggest that a building of some status was present in the near vicinity. This late Roman activity and the artefacts associated with it is a significant finding for the site and will be studied in detail at analysis stage.

10.1.8 The first medieval activity on site would appear to be dated to the second half of the 12th century and suggest that reoccupation of the area after the Roman period did not occur until less marshy and less inaccessible areas of the city had been settled. The dating of reoccupation of different parts of the Upper Walbrook valley will help to add to the picture of the growth of London during the medieval period. The stretch of medieval Walbrook which was found on the eastern part of the site is an interesting discovery and was the only remains of the previous 3-4 Walbrook streams found on the site. It is probable that once the Roman revetments failed that the various channels of the river would have attempted to run on their old courses. While deeper truncation on the western side of the site precluded the survival of any of the medieval western channels the width of the medieval Walbrook on the east, c. 6m, is significant as it is much wider than the channels which the Romans tried to confine it to within revetments and much nearer to the c. 8m width of the pre-Roman

palaeochannel found in the northwest corner of the site. This continuing transformation of the Walbrook will be a further avenue of investigation.

10.2 Further Work

10.2.1 The phasing of the site will be refined following further analysis of the building layouts and further analysis of the coins and the pottery, especially the Samian ware. The archaeological sequence will be compared to other sites in the vicinity to place the results in a Walbrook-wide context, but especially concentrating on the Upper Walbrook valley. Further research will be undertaken on the form, development and history of Roman development on other sites from within the Walbrook to place the Drapers' site within a general pattern of development and activity. Previous sites, both published and unpublished, will be studied, if archives are available, in order to inform on the activity, history and development of the site.

10.2.2 The finds assemblages will be further analysed and spatial distribution of material across the site will be attempted in order to attempt to determine the function of certain buildings and rooms within buildings if possible. Further study of the finds assemblages will help to determine the nature of the activity on site and whether it is domestic, industrial or craft related. If possible zoning of such occupations will be attempted. Further work for individual finds assemblages will follow as far as possible the recommendations as outlined in the individual specialist reports (see appendices).

10.2.3 A study of the water management of the Walbrook stream on the site will be conducted by Tony Taylor. This study will use an examination of a numerical water discharge model of the Walbrook valley to postulate likely water flows through Drapers' Gardens at various periods of the site development. The water flows will then be tested against the discharge characteristics of the revetted channels based on their measured dimensions, construction and longitudinal gradient. This part of the study may throw some light on the effect if any of the 2nd century defensive wall construction constricting the Walbrook flows. Where information is available, the downstream flows will also be checked against other sites comparing water levels and gradients. The study may shed some further light on the Walbrook as a water resource.

10.3 Publication Outline

10.3.1 The complexity and significant nature of the archaeological sequence found during the excavation of Drapers' Gardens warrants comprehensive publication. It is therefore recommended that the site be published as part of the Pre-Construct Archaeology monograph series. A brief synopsis of the proposed monograph contents are detailed below although details of the layout should not be considered fixed as they may be subject to revision later in the publication process. The publication will to a large extent be a synthetic text with much of the finds information integrated into the main text. However, certain key aspects of the finds assemblages will be discussed in chapters devoted to specialist reports. Catalogues and tables will to a large extent not be included in the publication but will either be appended on an accompanying compact disc or available on a relevant website. It is proposed that the publication will be in the order of 300-400 pages in length. The monograph will be peer reviewed by one or more archaeologists who are deemed experienced in this area of research. Individuals will be approached once the draft is nearing completion.

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By Neil Hawkins

PCA Monograph Series

domestic, industrial or craft related in nature and different zones of activity will be attempted through study of the finds assemblages.

Chapter 4 Late Roman Occupation and the Hoard

Late Roman occupation will be described with emphasis on the late Roman pottery recovered from the revetted Walbrook channel. The Hoard of metal vessels recovered from the late 4th century well will be described and discussed in detail.

Chapter 5 The Medieval and Post-Medieval Archaeological Sequence

The activity after the end of the Roman period until the post-medieval period will be described focusing on medieval drainage and controlling of the Walbrook and the first post-Roman structures being established on the site. The subsequent history of the site will be explored with reference to map evidence.

Chapter 6 Specialist Reports

Roman Pottery by James Gerrard with contributions by Gwladys Monteil (samian), David Williams (Amphora) and Kay Hartley (mortaria)

Post-Roman Pottery by Chris Jarrett

Coins by James Gerrard

Small Finds by James Gerrard

The Metal Vessels Hoard by James Gerrard

Inscriptions & Grafitti by Roger Tomlin

Iron Slag and Related Debris by Lynne Keys

Glass by John Shepherd

Building Materials by Kevin Hayward

Painted Wall Plaster by Berni Sudds

Leather by Quita Mould

Human Bone by Kathelen Sayer

Animal Bone by Kevin Rielly

The Timber by Damian Goodburn

Environmental Samples by Nick Branch and QUEST

Chapter 7 Discussion of Roman and Medieval Activity

A discussion of the Roman activity will begin by placing the site in its topographic and geological context. The early Roman activity will be discussed and compared to other sites in the city at this time in the aftermath of the Boudican revolt. The consolidation and transformation of the area with the revetting of the Walbrook, the construction of the road and the erection of buildings alongside the road will be discussed. The evidence from the site will be compared with that of other sites along the Walbrook Valley especially with regard to those within the Upper Walbrook Valley but also those in the Middle and Lower parts of the valley. The buildings will be compared to contemporary structures from the rest of *Londinium.* The late Roman activity will be compared to other dated occupation in the city. Comparisons of the large finds assemblages will be made with those from other large sites in the City most notably No. 1 Poultry. The medieval reoccupation of the site and the managing of the

Walbrook will be compared to the date of such activity on other sites within the Upper Walbrook Valley.

Chapter 8 Conclusions

The significance of the site as a whole will be discussed, detailing what new aspects of Roman London have been discovered from an analysis of the archaeological remains and artefacts from the site at Drapers' Gardens.

Bibliography

Index

10.3.2 A series of smaller publications have both been undertaken and are proposed.

British Archaeology	The initial results of the fieldwork were published in a brief article in Jan/Feb 2008[104].
London Archaeologist	A short feature on the Drapers' Gardens bear skull was published in 2008[105].
Minerva	A short article on the site and the hoard was published in Nov/Dec 2008[106].
Britannia	An interim report on the hoard has been submitted to and accepted by this journal for publication in 2009[107].
Late Antique Archaeology	Article on wells and beliefs[108].
London Archaeologist	An interim report based on the findings up to assessment will be published in 2009.
Glossy	It is proposed to publish a popular short book by the end of 2009.

10.3.3 As there are a number of large finds assemblages including well over 1000 small finds other articles focusing in more detail on certain objects or certain aspects of the assemblages may be produced for publication in specialist journals.

[104] Hawkins, N., Brown, G. & Butler, J., 2008. Drapers Gardens. British Archaeology 98, 12-17.
[105] Rielly, K. 2008. The Drapers Gardens Bear. London Archaeologist Vol. 11, No. 12, 318.
[106] Hawkins, N. & Butler, J., 2008. The Drapers' Gardens Roman Hoard. Minerva 19 No.6, 47-48.
[107] Gerrard, J., forthcoming The Drapers' Gardens Hoard: a preliminary account. Britannia.
[108] Gerrard, J., forthcoming. Wells and beliefs systems at the End of Roman Britain: a case study from Roman London. In L. Lavan (ed.) *The Archaeology of Late Antique Paganism*. Leiden, Brill Late Antique Archaeology 6.

11 CONTENTS OF THE ARCHIVE

11.1 Paper Records

Context Sheets	5021
Plans	9000 sheets
Sections	100 (160 sheets)
Photographs	2251 colour slide shots
	1903 black & white shots
	216 colour medium format shots
	228 black & white medium format shots
	c.1032 digital shots

11.2 The Finds

Pottery	520 boxes
CBM	380 boxes
Animal Bone	680 boxes
Human Bone	3 boxes
Leather	12 large storage boxes; c.500 bags
Glass	5 boxes
Lithics	1 box
Clay Tobacco Pipe	1 box
Metal slag	2 boxes
Plaster/mortar	65 boxes
Small Finds	c.1230 objects (including the hoard of vessels); 5 objects gold or silver
Timbers	c.2000
Dendro samples	102
Species ID	42
Environmental samples	240 bulk (700 buckets)
	5 column samples
Metal inc. nails	9 buckets

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APPENDIX 1: ROMAN POTTERY ASSESSMENT

James Gerrard

Introduction

The excavations produced a substantial assemblage of 44,544 sherds weighing 1570.742kgs (1447.58 EVEs). This material survived in a variety of states from very abraded to fresh with a spread in assemblage size from very small (1-30 sherds) to large (100+ sherds) and very large (several boxes). There were a number of groups and examples of intact or semi-complete vessels as well as a variety of amphora, samian, mortaria and other exotica.

Methodology and recording

The methodology used for recording this ceramic assemblage is based on the scheme proposed by the Museum of London Specialist Services and widely used in London and its immediate hinterland (Symonds 2002; Rayner and Seeley 2008). The pottery types and fabrics have been recorded using Museum of London form and fabric codes except where reference to other typologies allows greater precision of description or dating (for instance Young 1977, Lyne and Jefferies 1979). The pottery has been quantified using the standard measures of sherd count, weight and Estimated Vessel Equivalents (EVEs) and all data has been recorded directly into an *Access 2000* database. The database design is that used by medieval and post-medieval pottery specialists within Pre-Construct Archaeology (with some variation) and is ultimately based on standards established by the Museum of London's Archaeology and Specialist Services (Symonds 2002). A copy of this database is available for consultation in the archive.

Once the pottery was quantified, 'specialist wares' (samian, amphora and unusual mortaria) were extracted for further analysis. In the samian's case much of this analysis has been undertaken by Dr Gwladys Monteil and her report is provided below. The amphorae and mortaria assemblages have been summarised and await specialist comment. Further discussion of this can be found below.

Fabrics

A wide variety of fabrics were present and virtually all of these are already well attested from other excavations in London and Southwark. Table 1 lists all of the fabrics by MoLAS fabric code, provides a common name for the fabric and a number of sherds to indicate its scarceness or otherwise. There are some fabrics that are, for a number of methodological reasons, under-represented in the assemblage. This is particularly noticeable in the case of Copthall Close Grey Ware (CCGW) and Local Coarse White Slipped Ware (LCWS) where confusion with AHSU or SAND and VCWS fabrics can happen with relative ease. These issues and some of the more problematic identifications were discussed with Dr Malcolm Lyne who provided guidance and advice.

'Specialist wares'

The samian

The entire samian assemblage was identified and quantified by Dr Gwladys Monteil. It is the subject of a separate report (see Appendix 2).

The amphorae

The excavations produced 3881 sherds of amphorae weighing 627.227kg. The majority of the amphorae sherds were from Gaulish wine amphorae or Baetican 'Dressel 20' olive oil amphorae (Table 2). A single Gauloise 1 amphora (SF1454) from Phase 4 context [1045] bears a painted ink inscription and four Dressel 20 rims have post-firing inscriptions (SF1058, [4496]; SF840, [3911]; SF1150, [4250] and SF1456, [1758]) that relate to the vessel's reuse (van der Werff 2003) (see Appendix 14). Other sherds from these thick-walled vessels seem

to have been reused as building materials (Phase 7 wall [1789]). There are also two examples of these large vessels being deliberately set in the ground or in a channel. The first is a rimless Baetican amphora [2110] associated with Phase 6b Building [2525] and the second was also a Baetican amphora [4546] and placed in Phase 3b channel [4548]. The remainder of the amphorae assemblage includes fragments from Campanian wine amphorae and North African vessels and a large assemblage of unsourced fragments.

There is a single amphora stamp on a sherd of Baetican amphora [341]. It reads RC.G, which is not listed in either Callender's (1965) or Funari's (1995) work.

It is recommended that the amphorae assemblage be examined by Dr David Williams.

The mortaria

The mortaria assemblage accounts for some 1051 sherds weighing 113.762kg. Almost half of this material (458 sherds, 53.485kg) was manufactured in the early Roman VRW and VCWS fabrics. Most of these sherds were probably produced in the Walbrook Valley at the Moorgate kilns (Seeley and Drummond-Murray 2005) or other, as yet unidentified, sites. Mortaria forms represented in these fabrics are predominantly 7BEF and 7HOF. The remainder of the assemblage is dominated by products of the late Roman kilns in Oxfordshire (OXWW, OXWS, 178 sherds, 14.587kg) with forms 7M18, 7M22 and 7WC7 accounting for the majority of vessels. Rarer forms include 7M2, 7M10, 7M14, 7M19, 7M21. The 7M2, 7M10 and 7M14 are (if correctly identified) unusual early Roman occurrences of OXWW in *Londinium* (Young 1977). The remainder of the mortaria includes material from a variety of sources with definite continental (RHMO / SOLL) products present.

The mortarium assemblage (with the exception of standard Oxfordshire and 'Verumlamium Region' products should be examined by Kay Hartley. This includes twenty-six partial or complete mortarium stamps.

Potential groups for publication

The potential of the Drapers' Garden pottery assemblage to support statistical analysis is high. Debate rages over how large a group of pottery should be to enable such analyses (Orton *et al*. 1993, 166-181). A minimum of twenty EVEs has been suggested in some quarters (Orton and Pearce 1984, 35) but in practice groups as small as five EVEs have been published (for instance Drummond-Murray *et al.* 2002, Table 93). At Drapers' Gardens fifty-five individual contexts contain more than 5 EVEs and sixteen contexts contain more than 10 EVEs (Table 3). Furthermore, some of these groups are associated with good coin dates or dendrochronological dates (see Appendices 9 & 17). Thus all of these contexts are candidates for potential publication and larger, statistically more valid groups, can be created once the pottery from particular groups of contexts (or instance contemporary channel fills, levelling layers etc) is considered.

Discussion of the Pottery by Phase

Phase 3: AD 50-70 (Fig. 1)

A total of 31.58 EVEs of Romano-British pottery was recovered from Phases 3a and 3b. The combined assemblage is dominated by South Gaulish samian (SAMLG) and 'Verulamium region' products (VRW, VCWS, VRG). At this date such vessels are likely to have been made outside of the London area as the Moorgate kilns were not yet functioning (Seeley and Drummond-Murray 2002). The Copthall Close Greyware (CCGW) is likely to be intrusive in this phase. Other types of pottery present include 'Early Roman Sandy wares' (ERSA, ERSB), products of the Highgate Wood kilns (HWB, HWC) and Alice Holt / Surrey ware (AHSU). In many respects the assemblage is typical of what Davies *et al*. (1993, 186-192) termed 'Roman Ceramic Phase 1b', which they dated to *c.* AD 60-75.

The assemblage from sub-Phase 3a is too small to be of much statistical use (3.35 EVEs) but appears to be more characteristic of 'Roman Ceramic Phase 1a' (Davies *et al.* 1993, 167-

186) (*c.* AD 50-60). South-Gaulish samian (SAMLG) predominates with other fines wares mainly represented by the fine micacaeous (FMIC) fabrics and the coarsewares split between AHSU, HWB, SAND and VRW. There is little that feels 'military' in this assemblage (LYON being absent, for instance), although closer analysis of the samian forms present might shed some light on this issue.

Phase 4: AD 70-120 (Fig. 2)

Phase 4 deposits and features produced a total of 72.3 EVEs of pottery. Some of this at least is likely to be intrusive. For instance, this phase is too early for BB1, BB2 and SAMEG to be present. The assemblage is dominated by South Gaulish Samian, 'Verulamium Region' wares (especially VRW and VRG) and products of the kilns at Highgate Wood. The importance of HWB and the 'Early Roman Sandy fabrics' has declined with a concomitant rise in AHSU. The relative proportions of HWB compared to the finer, sandy HWC are of interest as the latter is present in large quantities. This is the opposite of what might be expected for this phase of pottery supply to *Londinium* (Davies *et al*. 1993, 195) and may be significant in terms of the site's status. In other aspects the pattern seems typical of Davies *et al.'s* (1993, 192-199) Roman Ceramic Phase 2.

Phase 5: AD 120-160 (Fig. 3)

Phase 5 saw an exponential increase in activity on the site with the formalisation of the street grid, property boundaries and the construction of buildings. Related to this is a massive increase in the discard of pottery. The ceramic assemblage from this phase totals 365.62 EVEs more than a threefold increase on the assemblages recovered from Phases 3 and 4. This phase is also one of profound changes in ceramic supply to the site.

In common with the rest of *Londinium* the first decades of the second century see a shift away from locally produced coarse wares (AHSU, HWB, ERS) toward handmade Black Burnished wares produced in south-east Dorset (BB1) or wheel thrown varieties manufactured in the Thames estuary (BB2). It is also noticeable that VCWS, most of which was probably being made at the Moorgate kilns, has become a more significant fabric in this phase. Both of these phenomena are attested elements of second-century ceramic supply (Davies *et al*. 1993, 205-219). Lezoux samian (SAMCG), along with other Central Gaulish samian suppliers, also (unsurprisingly) begin to make an impact during this phase with South Gaulish samian (SAMLG) continuing to be a strong component. This may be due to the long use-lives for samian vessels.

Phase 5 is also notable for having a number of fabrics present that are improbable at such an early date. In particular, Oxfordshire wares (OXRC, OXWW), Alice Holt / Farnham ware (AHFA), Eifelkeramik (EIFL) and Local Coarse White Slipped ware (LCWS) are all too late to be expected in such an early phase. Intrusion and the difficulties of excavating complex channel fills are likely to explain their presence. NVCC is also likely to be intrusive in this phase. Conversely, the presence of SLOW, considered a pre-Flavian indicator (Davies *et al*. 1993, 29) might indicate the dumping of earlier occupation material from elsewhere in the City.

It has not proved possible at assessment stage to sub-divide the period AD 120-160 into two periods corresponding to Davies et al.'s (1993) Ceramic Phases 4 and 5. This is largely due to the similarities in pottery used during these phases. The presence of HWC 2F jars, considered to be post-AD140 (Davies *et al*. 1993, 83; Symonds *et al*. 2004, 22-25), throughout Phases 5 and 6 (though with an apparent peak in Phase 6b) is of little assistance in resolving this chronological issue (Table 4). However, more detailed analysis of the pottery by group may enable this phase to be sub-divided in the future.

Phase 6: AD 160-250 (Fig. 4)

The period AD 160-250 is a problematic one in the study of Roman pottery in London and Britain. On a national scale the early third century has long been seen as difficult to identify archaeologically (for instance Going 1992, 95-96) and this is a product of the decline in

samian production and issues related to the circulation and deposition of coinage. In the City truncation has often removed third-century and later deposits and it is worth noting that the volume on early Roman pottery in London ceases at AD 160 (Davies *et al*. 1993) and the article on late Roman supply to the City starts with a small group of pottery that may be as early as AD 180 but is possibly post-AD 200 in date (Symonds and Tomber 1991, 67). Early third-century pottery is covered by the finds from New Fresh Wharf (Richardson 1986) but these are dockside assemblages and presumably not typical of the City as a whole.

The date of *c*. AD 160 is thought to mark the collapse of many of *Londinium's* local pottery producers (Davies *et al*. 1993). The kilns at Highgate Wood, Moorgate (Seeley and Drummond Murray 2002) and other centres may all have ceased production at this date. However, doubts are expressed over this terminal date in some quarters (for instance Symonds *et al*. 2005, 25; Dr M. Lyne *pers. comm.*) and it seems possible that some of these industries continued producing until AD 200 or even AD 250. For this site the key ceramic indicators for this date were (excluding samian): the shift from the coarse decorated BB2 'pie-dishes' (4H1-4) to the undecorated silky grey version (4H5-7) (Richardson and Wilmott 1991, 93), the appearance of NVCC, EIFL, NGGW and MOSL and CGBL (Richardson 1986) and the occurrence of incipient-beaded-and-flanged bowls (4G226) in BB1. TSK greywares, thought to be a post-AD 180 indicator in Southwark (Symonds and Tomber 1991, 67), appear less common in the City but remain of some use as a chronological indicator. The terminal date for this phase of AD 250 is marked by the appearance of the late Roman 'super-producers' (OXRC, AHFA) in quantity and the shift to obtuse-lattice decoration on BB1 vessels and the appearance of the 4M flanged bowl and copies.

The phase produced 326.59 EVEs and consideration of the breakdown of this total by fabrics shows considerable similarities with the preceding phase. BB1 and BB2 are present in similar quantities, HWC is still present and the only major change in samian supply is the drop in South Gaulish sherds present in this phase. VRW and VCWS both continue to feature strongly, although for the first time VCWS is present in greater quantities than VRW. This 'VCWS' probably includes the similar LCWS (Seeley and Drummond Murray 2005, 131) and given the general acceptance that these fabrics ought to be in decline at this date it will be worth exploring the nature of the 'Verulamium Region' assemblage in greater detail at a later date. Late second- and third-century indicators (CGBL, NVCC, MOSL, TSK, EIFL) are all present as are a number of intrusive (AHFA) or residual (for instance ERS, HWB) fabrics.

Phase 7: AD 250-350/400 (Fig. 5)

The pottery of the late Roman period is marked by a shift in pottery supply to large regional producers located in rural areas (Symonds and Tomber 1991). There are also a number of typological changes during the mid-third century. This phase covers a period of 100-150 years and it is likely that further subdivision of this phase could be undertaken. It is also worth noting that the latest Roman groups are assigned to Phase 8, which overlaps with this phase. This is largely due to the ambiguities and uncertainties relating to the dating of Romano-British pottery during the late fourth and early fifth century.

Phase 7 produced 299 EVEs of pottery. In general terms much of this pottery looks residual. Most of the BB2, although not necessarily all of it given the presence of some late forms, is residual, as are the various 'Verulamium Region' wares. The samian is all technically residual during this phase as even the latest East Gaulish ware are unlikely to have reached Britain much after AD 250/260. However, the samian may well be 'residual in use' – that is carefully curated, cherished and used long after its production date.

A large percentage (16%) of the pottery is BB1 from Dorset. This is common in London during the late third and fourth centuries and the poor showing of AHFA and Oxfordshire wares would seem to indicate that most of the activity in this phase pre-dates AD 350. The most common BB1 forms are 'late' vessel types (2F13, 4G226, 4M and 5J) which are appropriate to this phase. CALC and PORD (both of which are probably more suited to a late fourth-century date) are present in tiny and presumably intrusive quantities. Interestingly, Argonne ware from Eastern Gaul, which is sometimes seen as a later fourth-century phenomenon, is present in small quantities.

Phase 8: AD 350-400/450 (Fig. 6)

The final phase of Romano-British pottery supply and use contained 147.85 EVEs and is approximately half the size of the preceding phase's assemblage. The majority of the Phase 8 pottery came from cut features including the revetted channel [599]. Its depositional context is thus somewhat different to that of earlier phases when large groups of pottery were derived from dumped layers.

There are two key issues that influence the definition and interpretation of the pottery assemblages of Phase 8. The first issue relates to the start date of *c*. AD 350. This date is established by the presence of particular fabrics (notably PORD but also CALC, MAYEN and GROG) in groups of pottery and the presence of Oxfordshire (OXRC) wares displaying particular decorative schemes (notably white paint (WPD) and rouletted or stamped (RSD/STD) decoration). However, many of these diagnostic indicators are very rare. PORD and CALC rarely form more than 1% or 2% of an assemblage by sherd count. Other indicators, like the relationship between AHFA and BB1 can be used, but essentially the late fourth-century is identified in ceramic terms by the presence of particular wares. In their absence it is difficult to ascertain with confidence whether a group pre-dates AD 350 or is post-AD 350 in date. Thus there is overlap between this and the preceding phase, which terminates at AD 350/400 (Symonds and Tomber 1991).

The second issue relates to the end of Roman pottery use. This is a complex problem (for instance Gerrard 2004, 2005; Cool 2006, 223-235) but the current convention of *c.* AD 400 is an archaeological construct. Given the absence of new coins after *c.* AD 388-402 dating assemblages becomes highly problematic, there is little typological change and thus it is impossible to give a precise 'end' date. Certainly most Roman pottery production must have ceased before *c*. AD 450 (another archaeological construct used as a start date for Anglo-Saxon material culture in Britain) and it seems reasonable to be explicit about this ambiguity. Some of the groups of AD 350+ pottery from the site may have been deposited as early as AD 350-360 but others could have been dumped as late as AD 440-450.

The pottery from Phase 8 is typical of the latest Roman assemblages from London, Southwark and the surrounding area. AHFA is now present in very large quantities and outnumbers BB1 by a ratio or 2 : 1. ARGO, PORD, CALC, GROG, MHAD and MAYEN are all present in minor but significant quantities, while OXRC and NVCC supply the bulk of the fine wares. Residual pottery is present in these groups in small quantities. Samian (SAM) is still significant but none of the Verulamium fabrics makes up more than 5% of the assemblage and BB2 now forms less than 10% of the assemblage. In short, more than half of the ceramic supply is concentrated in the hands of no more than four major suppliers.

Imports continued to reach the site with ARGO (see Appendix 2), MAYEN and LRMA being good examples. The late Spanish amphorae could be from the rare late Dressel 23 form and some of the unsourced amphora is probably of North African origin.

Functional Analysis

One of the major advantages in having an assemblage quantified by EVEs lies in the ability to undertake functional analysis of groups of pottery. Little work has been carried out on the Drapers' material in this way. However, a broad overview by phase has been completed and this reveals some significant patterns (Fig. 7).

Superficially the breakdown of forms by phase reveals a pattern that does not seem to vary in obvious ways. However, flagons are a little less important in Phases 7 and 8; beakers appear somewhat more important from Phase 6; mortaria seem more significant in Phase 8 and amphora (unsurprisingly) are less important from Phase 7. Clear cut interpretation of these patterns is not possible. The changes in Phases 7 and 8 (more mortaria, beakers less flagons and amphora) may be related to a changes in site specific factors (such as a shift from commercial to domestic occupation) or connected to wider issues like the decline in long-

distance trade in amphora-borne commodities and the greater availability of glass for vessels like flagons.

More detailed analysis is probably needed to bring out the finer detail and significance of these patterns. Flagons provide a good example (Fig. 8). In Phases 7 and 8 residual flagons have been excluded from the analysis and this demonstrates that whereas in Phases 3-6 flagons formed *c.* 20% of the assemblage in Phases 7 and 8 flagons in late Roman fabrics only formed 10% and 6% respectively. Similarly, more detailed analysis of functional category '9' (other forms) reveals that lids (9A) form 2.5-6% of the assemblage for Phases 3-6 (Fig. 9). However, by Phases 7 and 8 lids in late Roman fabrics form less than 1% of the assemblage. Is this to be related to a shift in cooking practice, storage or a move to the use of more wooden lids (Cool 2006)? If the latter is the preferred interpretation then it is noticeable that wooden discs ('pot lids') were not present in anything like the quantities required to fulfil the role left by the absence of ceramic lids in the late Roman period. Clearly, further work on this type of issue will aid in the interpretation of the site, specific features and buildings.

Ritual Activity

The nature of activity in and around the Walbrook Valley and whether it had a 'ritual' or religious aspect has been fiercely debated for some years (see Appendix 6). The pottery assemblage offers few clear-cut insights into this question. However, ceramic forms that may have served 'ritual' functions are listed in Table 5. The forms considered as potential 'ritual' vessels are: 'face pots' (2FACE); tazza (9C); triple vases (9E); lamps (9LA) and unguentaria (9N and 9NP). Interestingly, the site produced no examples of the Cam306 form (4C306). This bowl is generally considered to be a ritual vessel and examples are known from nearby excavations at Tokenhouse Yard (Leary and Butler in prep.).

One other phenomenon is sometimes seen as an indicator or 'ritual' activity: complete vessels. The excavations produced thirteen complete pots (Table 6) and two of these had post-firing holes drilled in them. A single tazza (9C) had its footring deliberately removed but was otherwise intact.

It is difficult to determine whether the 'ritual' vessels and 'whole pots' represent ritual activity. Furthermore, if they do represent such activity then it is difficult to determine its scale. Domestic ritual has an altogether different significance to the type of ritual activities associated with temples of religious landscapes. Further work is needed on this aspect of the pottery assemblage and integration of the ceramic evidence with that provided by the small finds, and faunal remains is necessary.

Research Questions

Can the chronology of the site and specific buildings be refined using the pottery evidence?

What evidence is there for local pottery production? Does any of this evidence include wares or forms that were not produced at the Moorgate kilns or pre- or post-date production at those kilns?

What are the trade links of the site and how did these change over time?

What was the function of the site and how did it change over time?

Can the pottery aid in discriminating between different types of activity using breakage or functional studies?

Is there any evidence in the pottery assemblage for ritual activity? How does this relate to other classes of artefactual and ecofactual material?

Can the site shed any light on the state of ceramic supply in the city during the early third century?

Can any work be undertaken on resolving the absolute chronology of the latest Roman pottery assemblages?

Is the site typical of the City, the Walbrook region and how does it compare to Southwark?

Recommendations

It is recommended that a detailed publication report be prepared and published as part of an excavation monograph on the site. This should involve a discussion of pottery supply to the site by phase, discussions of individual groups and specialist reports on the samian, mortaria and amphorae. Wider research themes should also be addressed.

It is recommended that the amphora assemblage be examined by Dr David Williams. A sampling strategy should be established in consultation with him that focuses on the unidentified (*ie* non-BAET and GAUL) fabrics and the late Roman amphorae. These are potentially important assemblage that could shed much light on long-distance exchange in the period AD 250-450.

The mortaria (excluding unstamped VRW, VCWS vessels) should be examined by Kay Hartley. There are a number of third-century German vessels (SOLL, RHMO) and stamped sherds that are particularly significant either intrinsically, for dating purposes or for understanding the trade in such vessels.

Given the well published nature of pottery from Roman London, only a relatively small quantity of pottery requires illustration. Approximately twenty sherds a phase will require illustration (160 in total) with perhaps another forty or so unusual vessels requiring publication in their own right. Amphorae and mortaria will also require illustration but it is difficult to estimate the scale of this work at present. It seems unlikely that more than fifty illustrations will be required for these wares.

Some time should be spent discussing some of the more unusual elements of the pottery from this site with Beth Richardson of MoLAS.

Further work on the groups of pottery associated with the Phase 3a ‘corduroy’ is necessary. Can the pottery shed any light on the function or significance of this structure?

Twenty or so thin sections will be required to confirm the provenances of some of the more unusual and unidentified pottery sherds in the assemblage.

Close co-operation between the pottery specialist and the site supervisor is needed to resolve specific chronological issues and identify groups that could be subjected to functional analysis.

The latest Roman groups (Phase 8) are of great importance in assessing the nature of activity in this part of the Walbrook during the fourth century and after (Merrifield and Hall 2008, 121). They should be published. It would also be worth radiocarbon (AMS) dating large, fresh herbivore bones from these contexts. Two radiocarbon dates would be needed.

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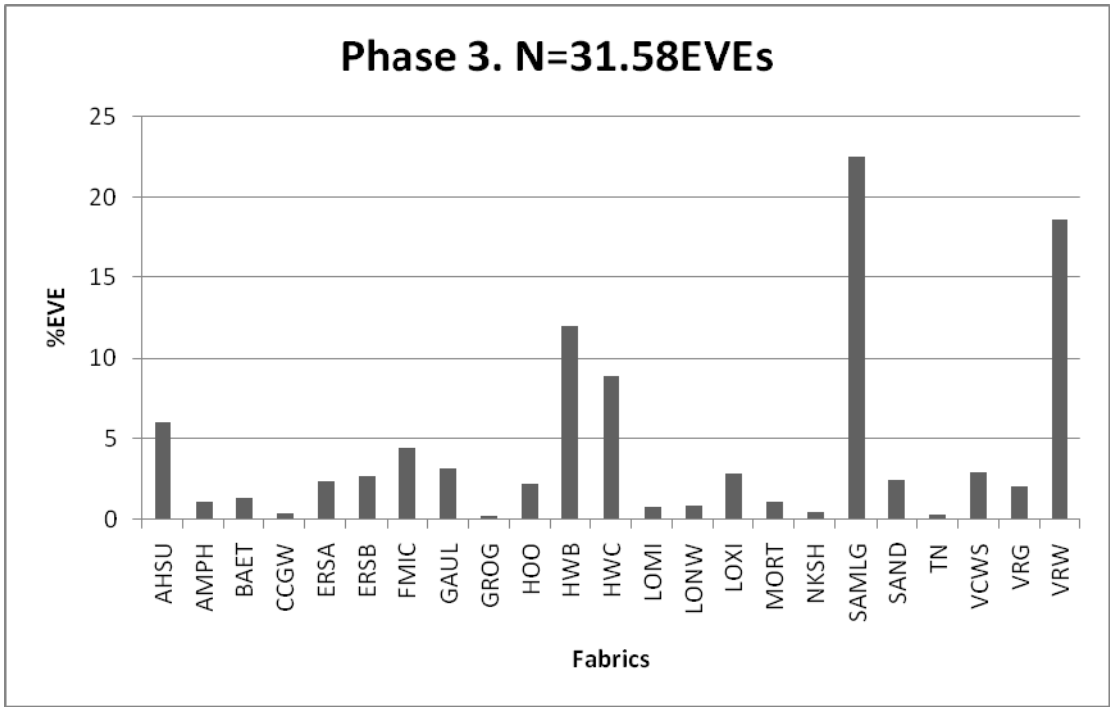

Fig. 1: Pottery from Phase 3 quantified by fabric and EVE

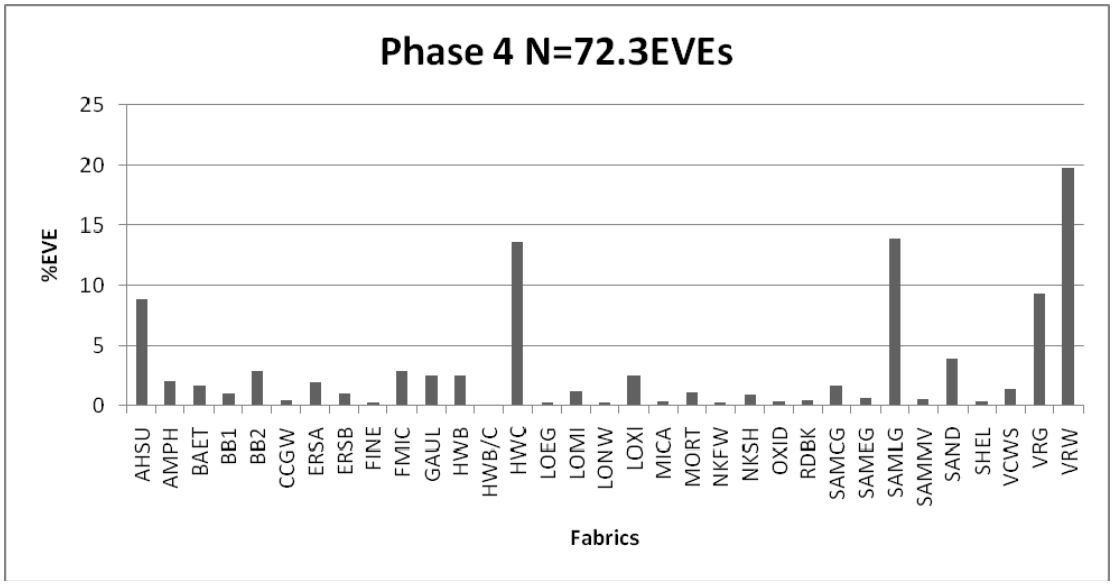

Fig. 2: Pottery from Phase 4 quantified by fabric and EVE

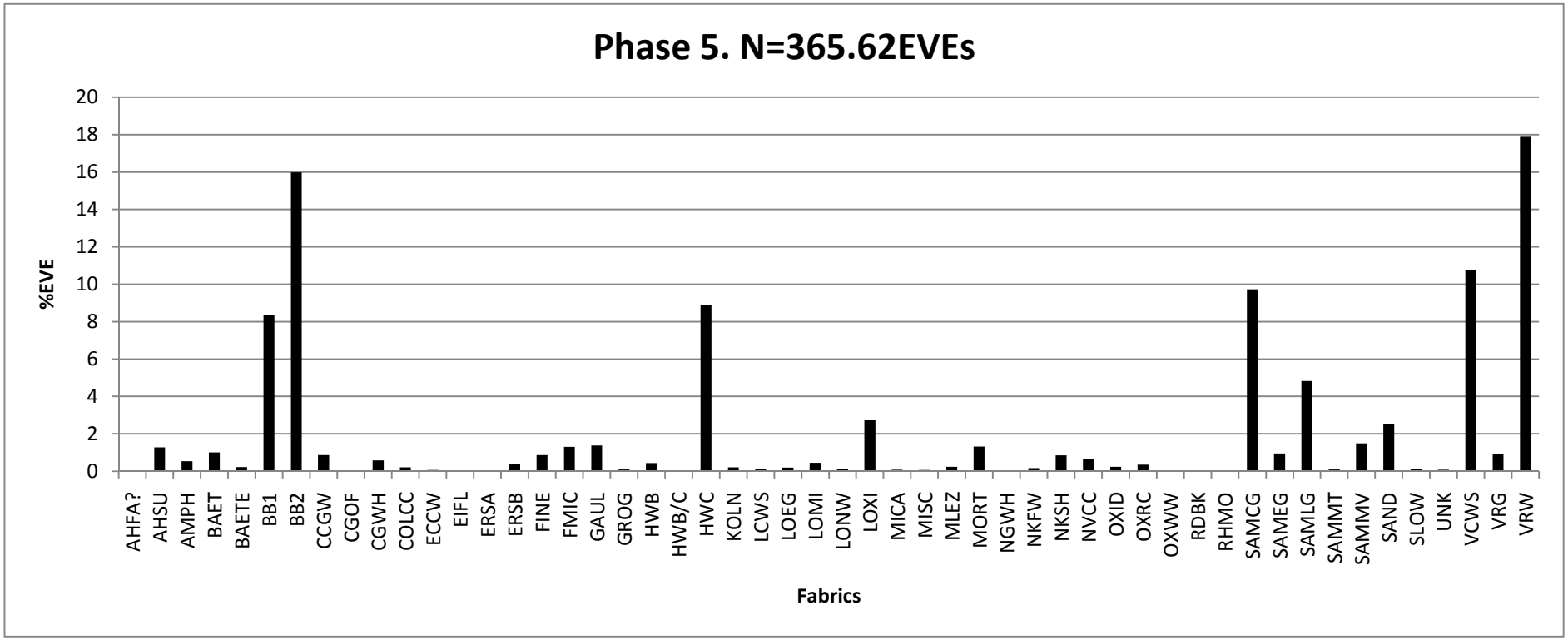

Fig. 3: Pottery from Phase 5 quantified by fabric and EVE

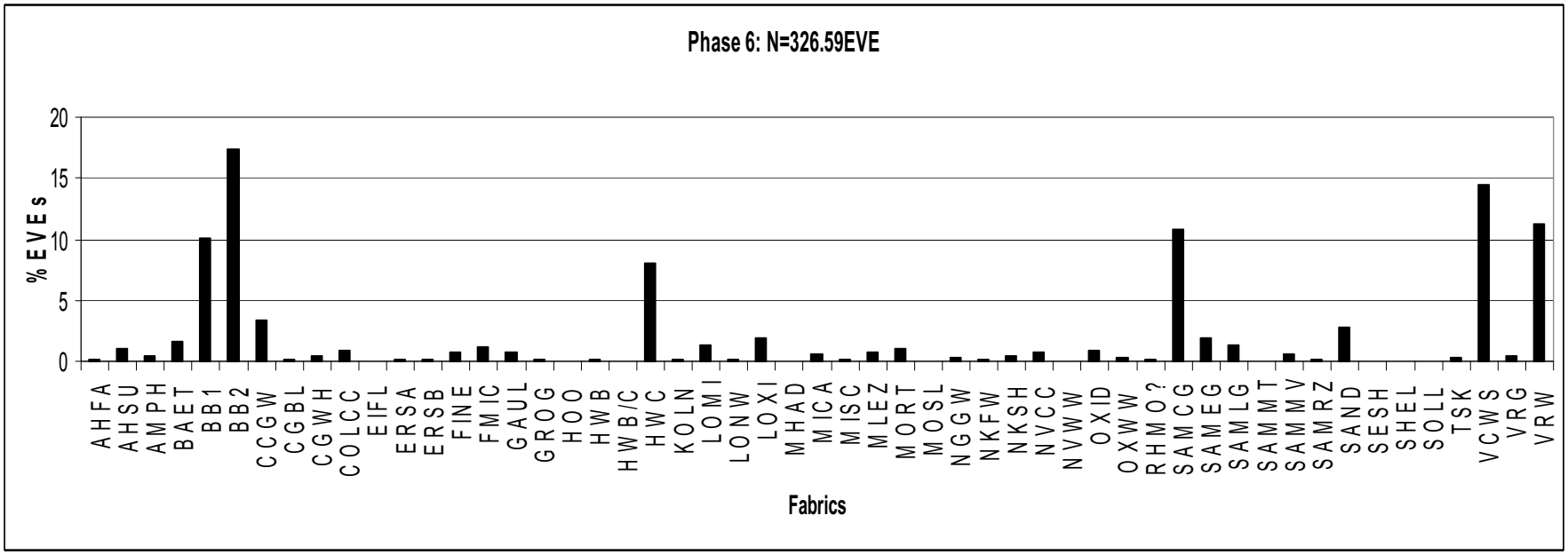

Fig. 4: Pottery from Phase 6 quantified by fabric and EVE

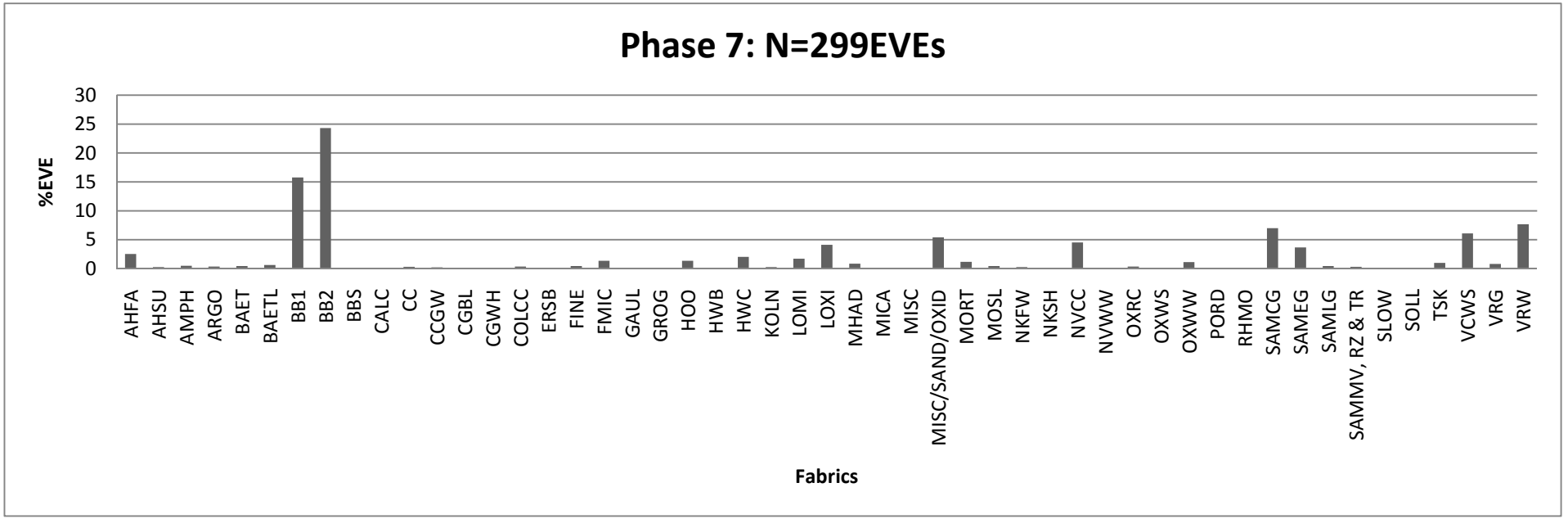

Fig. 5: Pottery from Phase 7 quantified by fabric and EVE

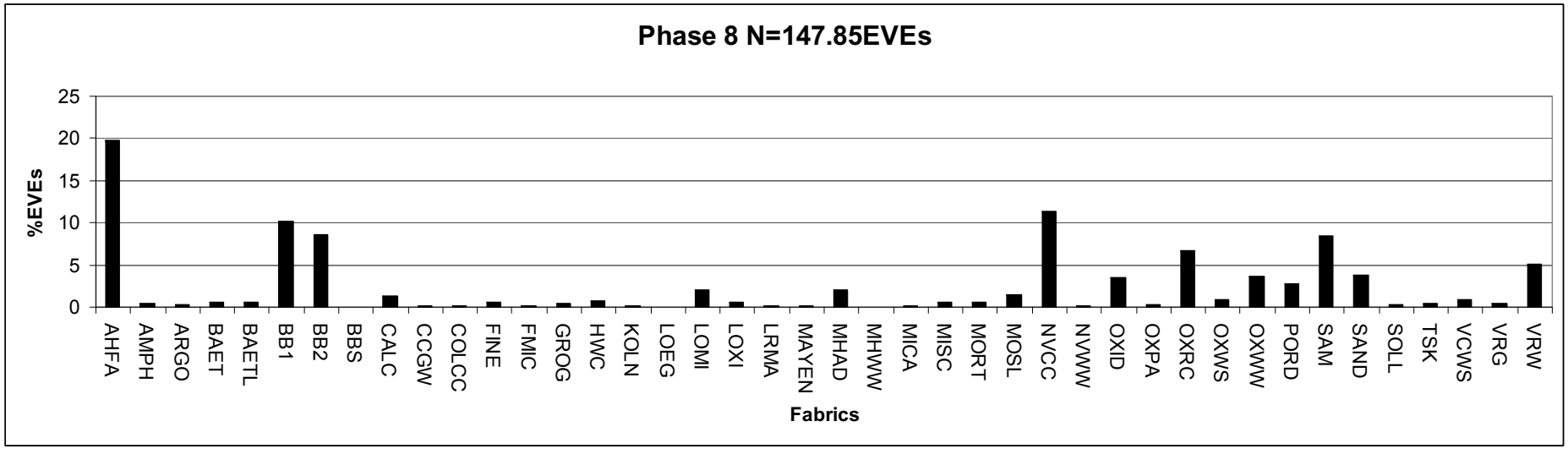

Fig. 6: Pottery from Phase 8 quantified by fabric and EVE

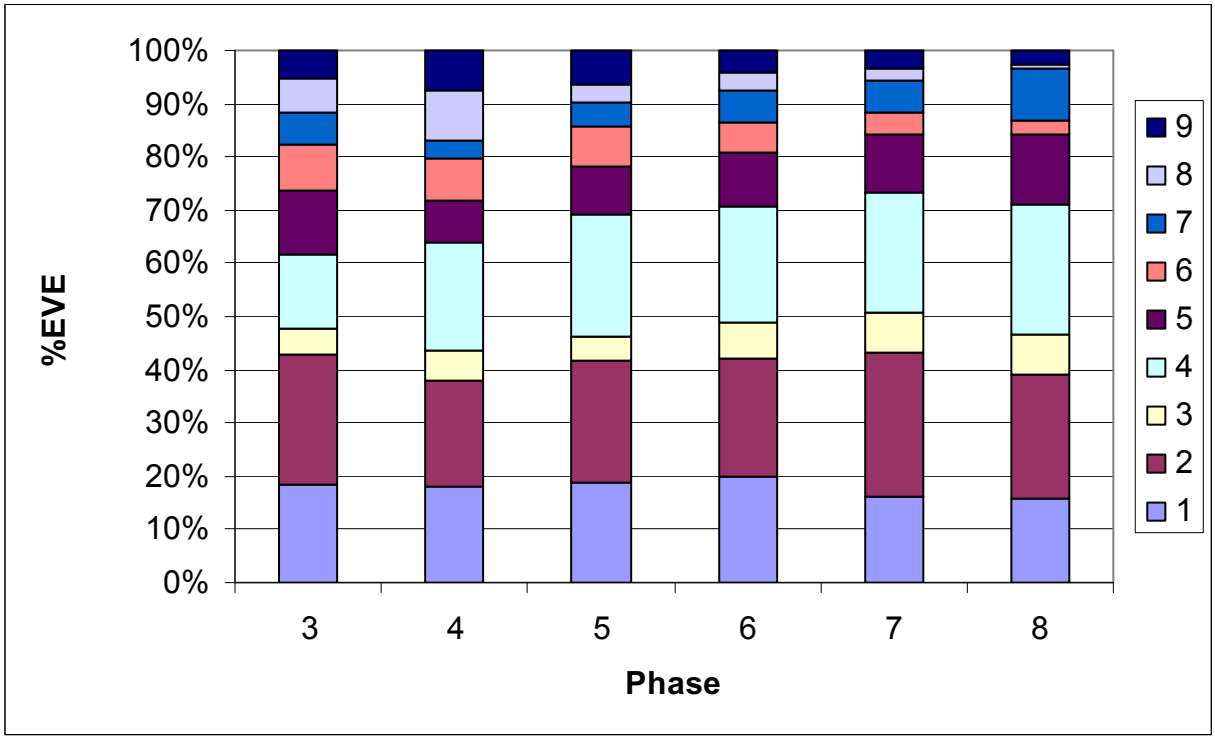

Fig. 7: Quantification of vessel forms by phase and EVE (1=flagons, 2=jars, 3=beakers, 4=bowls, 5=dishes, 6=cups, 7=mortaria, 8=amphora, 9=other forms)

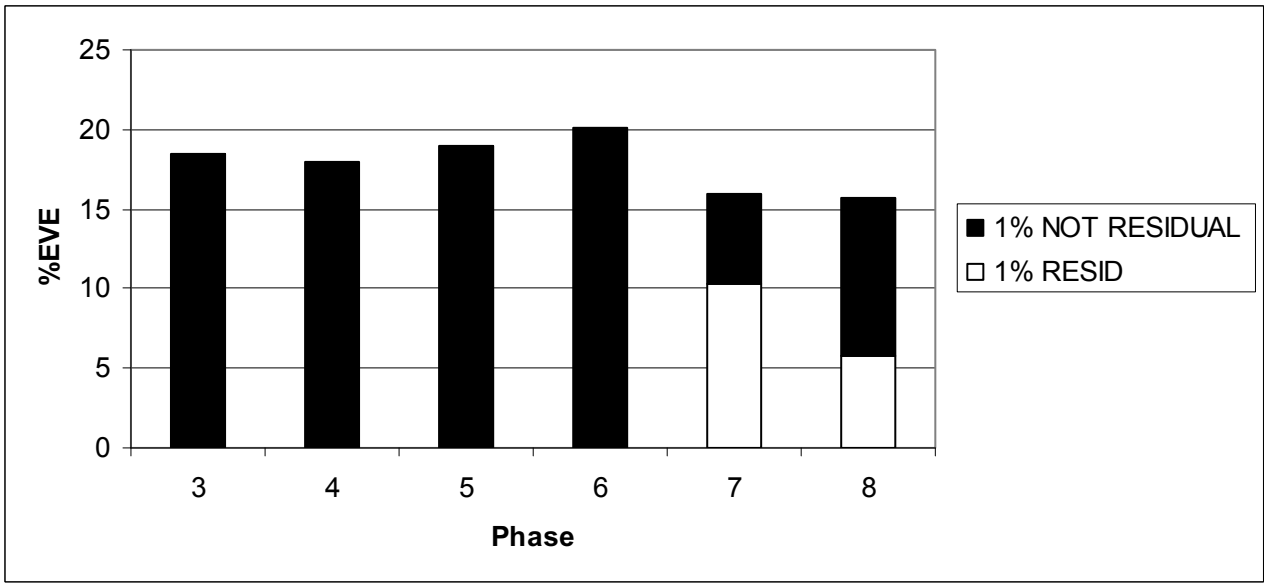

Fig 8: Flagons by phase

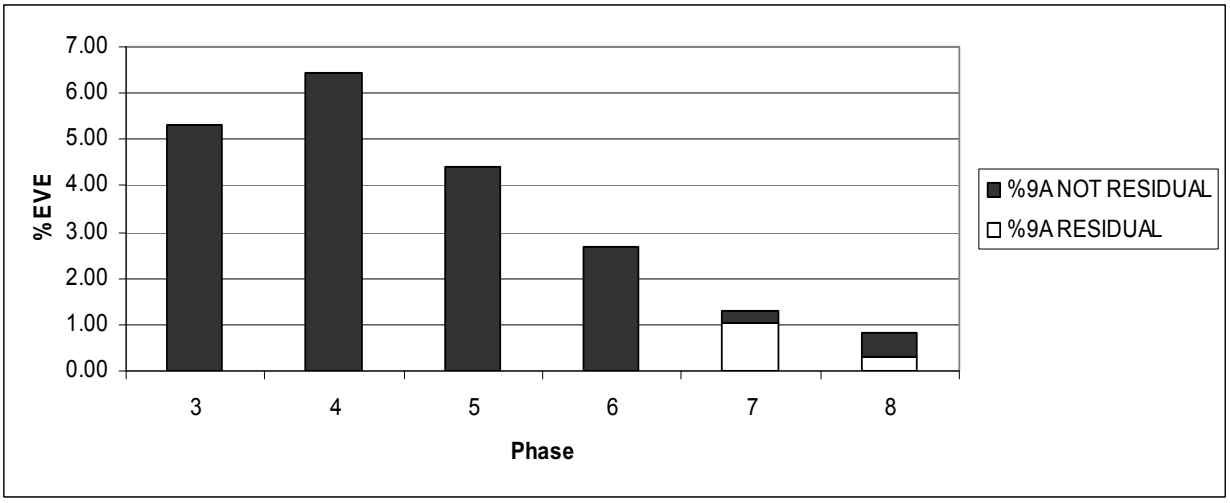

Fig 9: Lids quantified by phase

Fabric Code	Fabric Name	Sherd Count
AHFA	Alice Holt / Farnham Ware	1345
AHSU	Alice Holt / Surrey Ware	796
AMPH	Unknown amphora	1056
ARGO	Argonne ware	23
BAET	Baetican Amphora fabric	1732
BAETE	Baetican Amphora fabric (early)	22
BAETL	Baetican Amphora fabric (late)	209
BB1	Dorset Black Burnished ware Type 1	4215
BB2	Black Burnished ware Type 2	7007
BBS	Black Burnished Style	7
BHWS	Brockley Hill white Slipped ware	1
BLEG	Black Eggshell Ware	1
CADIZ?	Cadiz amphora?	1
CALC	Late Roman 'Calcite gritted' ware	51
CAMP	Campanian amphora	4
CC	Unknown Colour Coated ware	3
CCGW	Copthall Close Grey Ware	110
CGBL	Central Gaulish Black slipped ware	12
CGBLE	Central Gaulish Black Slipped ware (early)	1
CGGW	Central Gaulish Grey Ware	9
CGOF	Central Gaulish Other Fine fabric	9
CGWH	Central Gaulish White Ware	104
COLCC	Colchester Colour Coated ware	220
ECCW	Eccles Ware	1
EIFL	Eifelkeramik	5
ERMS	Early Roman micaceous sandy ware	7
ERSA	Early Roman sandy ware A	184
ERSB	Early Roman sandy ware B	161
FINE	Unknown Fine ware	167
FINEWW	Unknown Fine White Ware	1
FMIC	Fine Micaceous ware	458
GAUL	Gauloise amphora	722
GAUL4	Gaulsoise4 amphora	2
GROG	Grog tempered ware	51
GROGSH	Grog and Shell tempered ware	5
HADBS	Hadham Black Slipped ware	4
HADG?	Hadham Grey ware?	4
HOO	Hoo ware	213

HWB	Highgate Wood B	275
HWB/C	Highgate Wood B/C	4
HWC	Highgate Wood C	2124
HWC+	Highgate Wood C with added sand	4
IMPORT	Unknown import	2
KOAN?	Koan amphora?	1
KOLN	Cologne Colour Coated Ware	136
LCWS	Local Coarse White Sipped Ware	5
LIPR?	Lipari amphora?	2
LOEG	Local Eggshell Ware	67
LOMI	London micaceous ware	431
LOMI1244	London micaceous ware 1244	2
LONW	London Ware	58
LOXI	Local Oxidised ware	746
LRMA	Late Roman Marbled Ware	1
LYON	Lyon Colour Coated ware	3
MARB	Unknown Marbled ware	3
MAYEN	Mayen ware	11
MEDPOT	Mediaeval pottery	5
MHAD	Much Hadham ware	111
MHWW	Mancetter Hartshill White Ware	1
MICA	Mica dusted ware	51
MISC	Miscellaneous small sherds	1359
MLEZ	Micaceous Lezoux samian	24
MORT	Unknown Moratium	256
MORT-NFSE?	Mortarium North French / South East Britain?	1
MOSL	Moselkeramik	201
NACA?	North African Cylindrical amphora?	1
NAFR	North African amphora	4
NFCC	New Forest Colour Coated ware	1
NFSE?	North French / South East British mortarium	4
NGGW	North Gaulish Grey Ware	9
NGWH	North Gaulish White Ware	3
NKFW	North Kent fine ware	117
NKSH	North Kent Shell tempered ware	375
NKWS	North Kent White Slipped ware	2
NVCC	Nene Valley Colour Coated ware	1291
NVWW	Nene Valley White Ware	15
OXID	Oxidised ware	785
OXPA	Oxfordshire Parchment ware	8
OXRC	Oxfordshire Red Colour Coated Ware	353
OXWS	Oxfordshire White Slipped ware	27
OXWW	Oxfordshire White Ware	152
PATCH	Patchgrove Ware	1
PKG	Pink Grog Tempered Ware	16
PORD	Portchester D / Overwey	121
PPOT	Prehistoric Pot	3
RBGW	Romano-British Glazed Ware	1
RDBK	Ring and Dot Beaker fabric	15
RETT	Rettendon Ware	1
RHMO	Rhineland mortarium fabrics (other than Soller)	4
RHMO/SOLL	Rhineland/Soller mortarium fabrics	1
RHMO?	Rhineland mortarium fabrics (other than Soller)?	5
SAM	Samian	10
SAMCG	Central Gaulish samian	2861
SAMEG	East Gaulish samian	771
SAMLG	La Graufesenque samian	1309
SAMMT	Montans samian ware	14
SAMMV	Les Martres-de-Veyre samian (inclusion-less)	261

SAMRZ	Rheinzabern samian ware	25
SAMTR	Trier samian (Trier I and Trier II)	11
SAND	Unsourced Sand tempered ware	2913
SESH	South Essex Shell tempered wares	17
SHEL	Unsourced Shell tempered wares	13
SINZIG	Sinzig beaker	1
SLOW	Sugar Loaf Court Ware	7
SOLL	Soller Mortarium	22
TN	Terra Nigra	2
TSK	Thameside Kent grey ware	932
UNIDWW	Unidentified White Ware	2
UNK	Unknown	5
VCWS	Verulamium Coarse White Slipped Ware	2517
VRG	Verulamiun Region Grey ware	321
VRW	Verulamium Region White ware	3838
XX	Small unidentifiable sherds from samples	561

Table 1: Fabrics present in the assemblage

3					4					5			
	SC	W	EVE			SC	W	EVE			SC	W	EVE
AMPH	42	3681	0		AMPH	64	7041	1.43		AMPH	162	13548	2.92
BAET	80	30706	0.43		BAET	141	28399	1.15		BAET	402	87765	3.43
BAETE	12	1941	0		BAETE	1	132	0		BAETE	10	2255	0.85
GAUL	35	4838	1		GAUL	65	3313	1.82		CAMP	1	14	0
					GAUL4	1	76	0		GAUL	402	87765	3.43
6					7					8			
	SC	W	EVE			SC	W	EVE			SC	W	EVE
AMPH	237	17118	1.39		AMPH	378	35188	1.48		AMPH	143	14624	0.58
BAET	601	123218	5.18		BAET	410	77837	1.37		BAET	67	19278	0.76
BAETL	1	55			BAETL	171	43107	1.9		BAETL	37	5926	0.86
CAMP1	2	452			GAUL	161	6216	0.4		GAUL	21	606	
GAUL	232	11977	1.32		NAFR	2	151						

Table 2. Amphora quantified by fabric and phase

EVE	Context	Phase	Latest associated coin date
5.04	2325	5b	
5.05	4012	5a	
5.06	1582	5	
5.08	3136	5b	
5.33	4394	5b	
5.37	3495	5a	
5.44	4258	6	
5.63	273	7	
5.81	592	7	241-243
5.83	1240	6b	
5.98	4178	5a	
6.01	3542	9	
6.01	4705	3b	69-79
6.12	3034	6b	
6.14	3877	5b	
6.24	4366	6	
6.49	1684	6, 7	
6.53	610	7, 8	
6.74	1275	7, 8	
6.79	4422	5b	
6.91	4269	6	
7.14	2666	5	
7.29	424	8	354-364?
7.36	2841	5b	
7.41	1383	6b	
7.49	3128	6a	
7.58	1045	4	
7.67	609	8	
7.95	4536	4	
8.05	3926	5a	54-68
8.55	1639	5, 6	
8.64	4165	5, 6	
9.02	4256	5b	
9.33	1297	7, 8	141-144
9.64	1028	7	
9.79	297	8	
9.98	4143	5a, 5b	
10.24	4246	6	
10.92	3296	5b	
11.37	425	8	C3/C4
11.54	4068	5a	
11.68	4496	5b	69-79
13.00	2395	6b	
14.76	4706	3b	
15.68	1038	8	354-364
15.90	4583	5a	
16.66	416	7	
17.00	1638	6, 7	
17.75	1708	5, 6	166-169
18.30	3615	5a	
19.40	1583	6, 7	81-96
19.92	4250	5b	
22.16	403	8	318-324
53.65	613	7	154-155

Table 3. Contexts containing more than 5.00 EVEs of pottery

Phase	HWC 2F jars (EVE)	% of all HWC jars
5a	0.65	10.22
5b	1.23	12.08
6a	0.33	9.71
6b	2.93	60.66

Table 4. The presence of 2F jars in HWC by phase.

Phase	Context number	Form	Sherd Count
4	1045	9C	2
4	1045	9LA	1
4	1274	9N	1
4	1967	9C	1
4	3200	9C	1
4	3243	9E	1
4	3375	9C	1
4	4402	9NP	1
4	4547	9NP	1
4	4703	9C	3
4, 5	2763	9C	1
5	2666	9C	1
5, 6	1639	9E	1
5, 6	1708	2FACE	17
5, 6	1708	9C	1
5, 6	1708	9C	1
5a	2210	9C	1
5a	3470	9C	1
5a	3472	9NP	1
5a	3494	9C	1
5a	3495	9C	3
5a	3615	9C	1
5a	3615	9C	1
5a	3615	9C	1
5a	3926	9C	6
5a	4068	9LA	1
5a	4144	9C	1
5a	4410	9C	1
5a	4410	9N	1
5a, 5b	1710	9E	1
5a, 5b	1711	9C	1
5a, 5b	3642	9C	1
5a, 5b	4143	9C	1
5b	2325	9C	2
5b	2558	9C	1
5b	3008	9C	1
5b	3171	9C	5
5b	3554	9C	1
5b	4028	9C	1
5b	4028	9C	2
5b	4028	9C	2
5b	4044	9C	4
5b	4062	9C	1
5b	4250	9E	1
5b	4250	9LA	1

5b	4256	9LA	1
5b	4370	9C	1
5b	4422	9C	1
5b	4496	2FACE?	1
6	1399	9C	2
6	2351	9NP	4
6	4242	2FACE	2
6	4246	2FACE?	1
6	4246	2FACE?	1
6	4246	9N	1
6	4258	9NP	1
6	4269	9C	1
6	4269	9C	1
6	4269	9C	2
6	4311	9NP	1
6	4326	9C	3
6, 7	1239	2FACE?	1
6, 7	1583	2FACE?	1
6, 7	1583	9C	8
6, 7	1583	9NP	1
6, 7	1583	9NP	1
6, 7	1583	9NP	1
6, 7	1684	9C	1
6a	2240	9E	1
6a	2498	9C	1
6a	2498	9C	1
6a	2582	9C	1
6a	2660	9C	1
6a	2661	9C	1
6a	2661	9C	1
6a	2780	9LA	1
6a	2907	9C	2
6a	3128	9NP	1
6a	3404	9N	2
6a	3934	9E	1
6b	219	9C	2
6b	983	2FACE	1
6b	1155	9N	1
6b	1161	2FACE	8
6b	1703	2FACE?	2
6b	1703	9C	1
6b	1872	9N	1
6b	2010	9C	3
6b	2015	9NP	1
6b	2085	9C	1
6b	2112	9E	1
6b	2151	9E	1
6b	2184	9C	1
6b	2387	9NP	3
6b	2395	9C	1
6b	2395	9C	1
6b	2395	9C	1
6b	2395	9NP	10
6b	2638	9C	1
6b	2732	9LA	1
6b	3034	9C	1
6b	3131	9C	2

6b	3202	9C	1
6b	3202	9NP	1
7	416	2FACE	1
7	587	9C	1
7	592	9C	1
7	613	2FACE	1
7	613	9C	2
7	613	9LA	1
7	613	9NP	1
7	613	9NP	1
7	613	9NP	1
7	649	2FACE	4
7	730	9E	1
7	970	9C	1
7	1000	2FACE?	1
7	1004	9C	2
7	1012	2FACE	1
7	1032	9C	1
7	1164	9C	2
7	1196	2FACE	1
7	1454	9C	1
7	1495	2FACE	1
7	1658	2FACE	2
7	1658	9NP	1
7	1847	9LA	1
7	2580	9NP	4
7, 8	333	2FACE?	2
7, 8	610	2FACE	3
7, 8	610	9C	1
7, 8	979	2FACE	1
8	297	9C	1
8	297	9C	1
8	297	9E	1
8	297	9E	2
8	403	9C	1
8	424	2FACE	1
8	424	2FACE	1
8	499	9C	1
8	609	2FACE	1
8	609	2FACE	1
8	750	2FACE	1
8	750	9E	1
8	1038	9NP	1
8	1877	9C	1
9	2326	9C	1
9	3542	9C	1
4	1045	9C	2
4	1045	9LA	1
4	1274	9N	1
4	1967	9C	1
4	3200	9C	1
4	3243	9E	1
4	3375	9C	1
4	4402	9NP	1
4	4547	9NP	1

Table 5. ‘Ritual’ vessel forms by phase

Phase	Context	Form	Comments
5, 6	1934	2F	Complete
5a	3615	2F1	Complete, post-firing hole
5a	3615	9C	Complete, footring deliberately removed
5a	4410	9N	Complete
5b	868	4H1-4	Complete
6, 7	1583	9	Complete
6, 7	1638	9A	Complete
6a	2902	2E	Complete
7	613	9NP	Complete
7	613	2F	Complete
7	613	6DR33	Complete
7	1787	9	Complete
7	2580	9NP	Complete
7, 8	1429	2F	Complete, post-firing hole

Table 6. Complete vessels

APPENDIX 2: SAMIAN POTTERY ASSESSMENT

Gwladys Monteil

Introduction

In total the excavation produced some 5288 sherds of samian – weighing approximately 107kg (table 1). The largest group comes from the east side of the site (Area A) with 3988 stratified samian sherds (table 2). The samian vessels were recorded following the methodology and codes used at Museum of London Specialist Services and Museum of London Archaeology Service (Symonds 1999). The fabric of each sherd was examined, after breaking, under a x 20 binocular microscope. Each entry consists of a context number, fabric, form and decoration identification, condition, sherd count, EVEs, rim diameter and weight, notes and a date range. The presence of patterned internal wear, repair and graffiti was also systematically recorded.

243 vessels have stamps, when possible a reading of stamp was recorded and some suggestion of potters offered. Very brief notes about the decorated vessels were also taken. The following assessment report highlights the main components and interesting features of the samian assemblage and offers recommendations for future work.

Condition

The samian assemblage is, on the whole, in good condition and consists of fairly large and fresh sherds. The average sherd weight is 28g and the percentage of unidentified forms low (1.74% of the sherds). Some groups display particularly large sherds and near complete vessels ([613], [1708], [4250]).

Twelve sherds show evidence of repair, 0.23% of the total assemblage. The figure is quite low when compared to other groups from Roman London, particularly in the City (Marsh 1981; Monteil 2005, 108). Most of the repaired material is 2nd century in date with 10 Central Gaulish pieces and one East Gaulish. This fits with the high percentage of 2nd century material in this group (table 1). The reminder is a South Gaulish Dr37. Decorated samian is generally more repaired than plain samian (Monteil 2005, 108) but here the repaired examples are divided equally with six plain sherds and six decorated. This is again probably related to the date of the group, there is less decorated material available once Central and East Gaulish kilns are the main source of imports (Darling 1998; Willis 2005). Three still have a lead rivet *in situ* and one displays an unusual lead/pewter sheet on the rim (a Dr42 from Les Martres de Veyre in [2841]).

47 vessels display signs of internal wear, often very idiosyncratic, particularly on 'cups'. Biddulph (2008) has studied the existence of form specific wear and the evidence from this group fits with his findings. Several Dr33s display similar wear that seems to concentrate on a thin band at the internal junction of the base and base. More open cups such as Dr27 and Dr35 display a different type of internal wear concentrating on an inner patch. Eight plain bowls of the form Dr38 and five decorated bowls-one Dr30 and four Dr37-were used for mixing or grinding.

The assemblage

The samian assemblage contains a wide range of fabrics (table 1) and forms and is in that sense typical of such groups from Roman London and major civil centres. It departs from most samian assemblages from London (Marsh 1981; Monteil 2005) in that 2nd century material dominates-Lezoux samian represents more than half of the total (table 1). This is particularly marked on the east side of the site (Area A) (table 2) where Central and East Gaulish samian wares add up to more than 80% of the group. This reflects the development of the site - truncation on the Western side (Area B) and occupation developing from AD 120 on the Eastern side (Area A).

fabric	sherds	% Total	weight	% Total	EVEs	% Total
ARGO	11	0.21%	620	0.58%	0.7	0.37%
MLEZ	24	0.45%	1164	1.08%	2.5	1.32%
SAM	5	0.09%	136	0.13%	0.09	0.05%
SAMCG	2856	54.02%	59762	55.61%	104.77	55.33%
SAMCO	2	0.04%	46	0.04%	0.07	0.04%
SAMEG	771	14.58%	20206	18.80%	27.7	14.63%
SAMLG	1308	24.74%	17754	16.52%	43.08	22.75%
SAMLY	1	0.02%	36	0.03%		0.00%
SAMMT	13	0.25%	168	0.16%	0.51	0.27%
SAMMV	261	4.94%	5188	4.83%	8.37	4.42%
SAMRZ	26	0.47%	1750	1.63%	1.42	0.75%
SAMTR	10	0.19%	630	0.59%	0.15	0.08%
Total	**5288**	**100%**	**107460**	**100%**	**189.36**	**100%**

Table 1: Samian Fabrics present in the assemblage (including unstratified) – sherds, weight and EVEs - and as a proportion of the samian assemblage

East Side						
fabric	**sherds**	**% Total**	**weight**	**% Total**	**EVEs**	**% Total**
ARGO	11	0.28%	620	0.74%	0.7	0.51%
MLEZ	18	0.45%	1040	1.24%	2.15	1.55%
SAM	5	0.13%	136	0.16%	0.09	0.06%
SAMCG	2412	60.48%	50298	59.98%	86.21	62.22%
SAMCO	2	0.05%	46	0.05%	0.07	0.05%
SAMEG	726	18.20%	19254	22.96%	25.11	18.12%
SAMLG	608	15.25%	7375	8.80%	18.08	13.05%
SAMLY	1	0.03%	36	0.04%		
SAMMT	7	0.18%	111	0.13%	0.28	0.20%
SAMMV	162	4.06%	2556	3.05%	4.3	3.10%
SAMRZ	26	0.65%	1750	2.09%	1.42	1.02%
SAMTR	10	0.25%	630	0.75%	0.15	0.11%
Total	**3988**	**100%**	**83852**	**100%**	**138.56**	**100%**

Table 2: Samian Fabrics for the East Side – sherds, weight and EVEs - and as a proportion of the samian assemblage

West Side						
fabric	**sherds**	**% Total**	**weight**	**% Total**	**EVEs**	**% Total**
MLEZ	6	0.51%	124	0.61%	0.35	0.80%
SAMCG	380	32.34%	7792	38.53%	14.95	34.20%
SAMEG	30	2.55%	482	2.38%	1.51	3.45%
SAMLG	661	56.26%	9757	48.25%	23.4	53.53%
SAMMT	6	0.51%	57	0.28%	0.23	0.53%
SAMMV	92	7.83%	2010	9.94%	3.27	7.48%
Total	**1175**	**100%**	**20222**	**100%**	**43.71**	**100%**

Table 3: Samian Fabrics for the West Side – sherds, weight and EVEs - and as a proportion of the samian assemblage

Two functional profiles are available for each phase- one is based on EVEs, the other one on sherd count (fig.1). Both types of profiles provide different kind of evidence, the one based on sherd count will systematically favour larger vessels such as dishes and bowls but will allow to compare the group with other studies of samian in London (Monteil 2005) while the one based on EVEs will offer a more balanced pattern, particularly for the cups. The figures are based on the groups assigned to a single phase (see table 5 in appendix for raw values). For the purpose of the functional analysis, the entries for mould decorated forms Knorr 78, Déchelette 64 and Déchelette 67 were combined under decorated beakers. Other beakers (Déchelette 72, Ludowici Vd) are grouped under closed form.

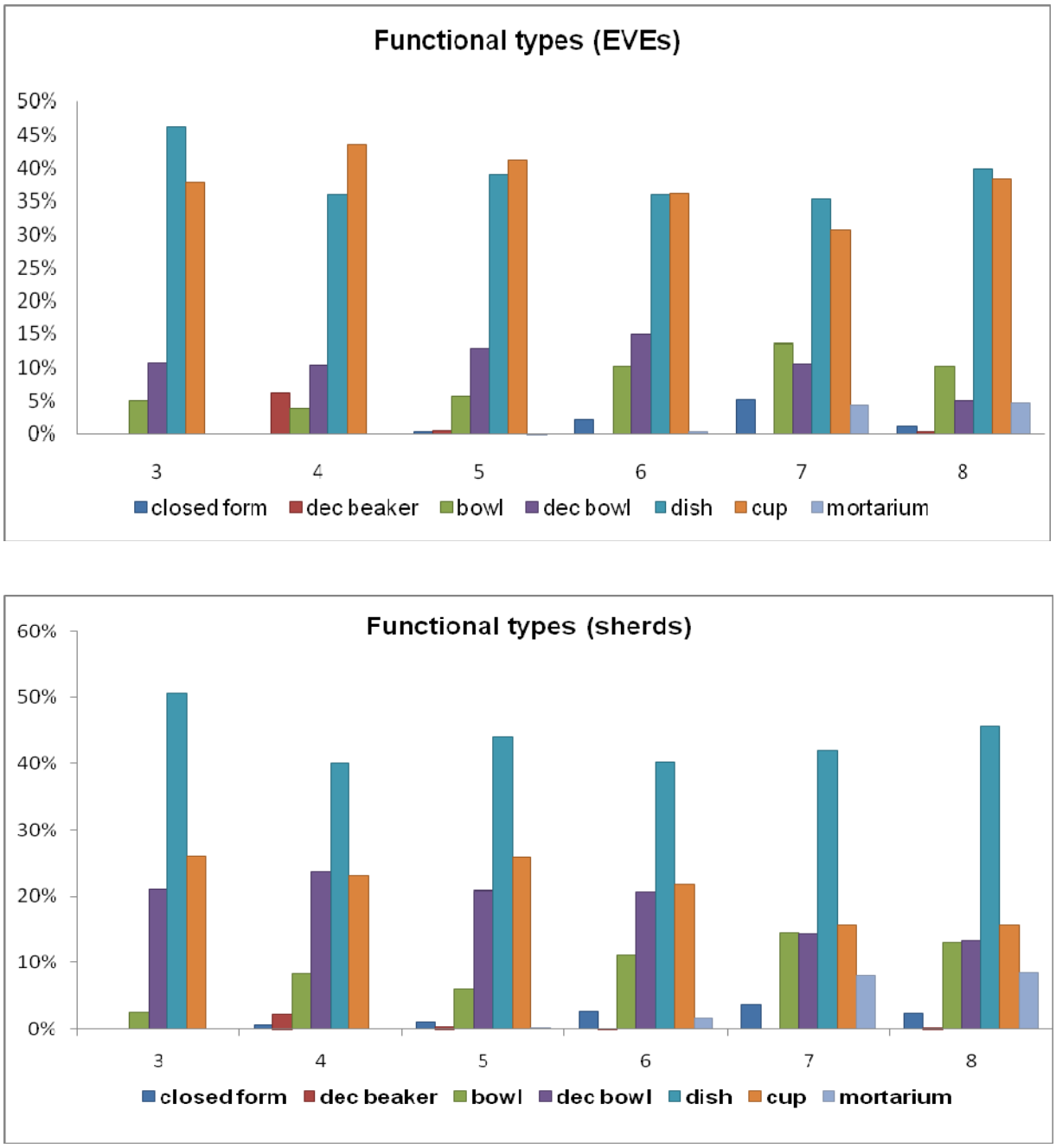

Fig.1 The samian assemblage by functional types for each phase (% of total EVEs and sherds in each phase)

Phase 3: AD 50-70
200 sherds (7.12 rim EVEs) were recovered from contexts assigned to Phase 3. Only 54 belong to sub-Phase 3a - 53 of them are South Gaulish. One was identified as Central ([4784]) but it is most probably intrusive. Most of the material from sub-Phase 3a comes from channel [4591] and it represents the earliest material from the site with one stamped cup RT8 and two bowls form RT12. More examples of the platter Dr15/17 than the Dr18s are present in Phase 3a, a typical pre-Flavian trait.

Sub-phase 3b has a slightly larger assemblage with 146 sherds and an EVEs figure of 5.85. Most of them come from feature [4783], a re-cut of [4591].

Considering the importance of the post-Boudican corduroy and associated features, special attention was paid to the functional profile of the samian assemblage from Phase 3 hoping that it could help shed light on the nature of the structure. Dishes and platters dominate the functional profile at c. 45-50% of total sherds and EVEs (fig.1) more than at any other periods, which could fit with a military profile (Willis 2005, chart 13). Cups closely follow and this could again add argument towards a typical military samian functional profile.

The low proportion of decorated bowls whether based on EVEs or sherds count and the absence of samian inkwells however make the samian group far from unequivocal in providing evidence for a strong military connection for this phase. In the formative period of Roman London (AD 50-69), inkwells mainly occur in the eastern core of the City, ink writing is at this period overwhelmingly related to trade and the military (Monteil 2008). Samian groups from military sites do tend to include inkwells (*ibid*; Willis 2006).

The pre-Flavian samian group from Drapers' Gardens does compare well to contemporary samian functional profiles from Roman London. Two sites show particularly close pictures, the pre-basilican levels of Leadenhall Court and the site of Plantation House (Monteil 2005, 208 and appendix 2). The pre-Flavian (period 2) occupation at Leadenhall Court is completely different- it is peripheral to the main urban core and of a dispersed and possible agricultural nature and dated to c. AD 60 (Milne and Wardle 1993).

At Plantation House a post-Boudican military enclosure was uncovered (Maloney and Holroyd 2001, 70; Maloney and Holroyd 2002, 5) and although based on a different quantification method, the row, the profile shows similar quantities of dishes, cups and relatively low quantities of decorated bowls. At Plantation House the samian proportion for the pre-Flavian period was one of the lowest for the period and other imports (amphorae and Lyon ware in particular) made up most of the assemblage- a typical military profile, especially clear in higher quantities of Lyon ware when compared to samian (Greene 1979; Willis 1996, 218; 2003). There doesn't seem to be particularly large quantities of amphorae from that phase however and Lyon Ware was found residual in later contexts on the site (J. Gerrard, pers comm.).

Phase 4: AD 70-120
The group of samian ware from Phase 4 is slightly larger than in the previous period with 385 sherds for an EVEs figure of 13.52 but the phase is longer and the increase in samian quantities needs to be understood in that light. South Gaulish samian ware still dominates the group but Central Gaulish material (Les Martres de Veyre and Lezoux) contributes to c. 19% of the group. The functional profile based on EVEs (Fig.1) for Phase 4 differs slightly from the previous one, it is more diverse and the cup category dominates. The appearance of mould decorated beakers in Phase 4 (Fig.1) can be related to two factors - the fact that forms such Dé67 and Kn78 start being produced in the Flavian period and the presence of two rims of Dé67 in the dump/levelling layer [886] and the rim of a Kn78 in [1178] a fill for a possible water tank. These two forms are present in several other groups from contemporary sites in London but rarely together. Most of them are in the City, and the Guildhall is the only other assemblage with both (Monteil 2005, fig.74).

When combined with the other mould-decorated forms however, this suggests a high proportion of decorated vessels for this phase (c. 17% total EVEs and c. 26% total sherds). This figure is however in keeping with other assemblages from the period where the

percentage of decorated ware is generally high in consumption groups gravitating between 20 and 30% (Monteil 2005, figs.100 and 102).

Phase 5: AD 120-160
The samian assemblage from Phase 5 is the largest with a total of 1709 sherds for an EVEs figure of 60.13 (Phase 5a has 26.81 EVEs for 686 sherds and Phase 5b has 33.32 for 1023 sherds).

South Gaulish material still accounts for c. 30% of the total sherds, a figure in keeping with the rest of Britain (Ward 1993, 17) and London (Monteil 2005) where 1st century samian material still make relatively large percentages of Hadrianic groups. Central Gaulish samian fabrics dominate the assemblage at 65% of the total number of sherds with a particularly high percentage of the early Central Gaulish industry of les Martres material at c. 9% of the total sherds count for the period. While more detailed examination of the decorated pieces is still needed, the styles of the Les Martres potters X-2, X-4/Igocatus, X-11 and X-12 were identified. This is also the phase with the highest quantities of pre-import Micaceous Lezoux; it only adds up to 11 sherds but includes several decorated bowls, one by the potter Libertus in [4386]. Lezoux material accounts for c. 56% of the total sherd count.

The range of forms widens considerably with at least 46 different types identified, 16 more than in the last phase. There are almost equal quantities of dishes and cups on the functional profile based on EVEs. The fact that half of the examples of the fairly uncommon forms Dr30R come from this phase and were classified as cups might go some way towards explaining this.

The percentage of decorated vessels based on sherds count fits with other samian assemblages from Roman London of the period (Monteil 2005, fig.106) where the average gravitates around c. 20-25%. The percentage of unidentified forms is extremely low and puts this group in par with assemblages from the waterfront, particularly Billingsgate Lorry Park.

A black-slipped fragment from a Central Gaulish beaker form Dé72 or 74 (J. Bird, pers comm.) comes from this phase (dump layer [4256]). The figure with a cloth wrapped around its left arm is close to one used on mould-decorated samian ware (Oswald type 638) but the Oswald type is without the seat/box behind it (J. Bird, pers comm.). Further research might provide better definition of this piece.

Phase 6: AD 160-250
There are 1112 sherds from phase 6 for an EVE figure of 39.92. Lezoux fabric still dominates the assemblage (68%) but the proportion taken by East Gaulish material increases dramatically with c. 13% of the total number of sherds for the phase. The freshness of the assemblage is again revealed by the low percentages of unidentified forms (c. 1.62% of sherd for the period), an unusual figure for samian assemblages of the period in London where the proportion of small unidentifiable samian forms is usually between 10 and 20% of the group (Monteil 2005, appendix 2). Samian *mortaria* and a more diverse range of plain bowls make their appearance in the samian repertoire and this is reflected on the functional profile (Fig.1). Plain samian bowls Dr38, Dr44, Cu21 and Wa81 are a late introduction to the samian repertoire

The percentage of decorated vessels is high (c. 20% of total sherds and c.15% total EVEs-the highest percentage of all periods), particularly when compared to contemporary assemblages from London (Monteil 2005, fig.108 and table 23). Unusually very little is South Gaulish and therefore residual in origin - South Gaulish decorated vessels account for only 2.16% of the total samian sherd count for Phase 6 - and most of the decorated material is Central or East. This makes the samian assemblage from Drapers' Gardens comparable to sites from the waterfront such as Billingsgate Market Lorry Park and Three Quays House where single dumps of large quantities of imported wares were deposited (Symonds 1995)

A Lezoux Dr37 with an intra-decorative retrograde stamp (PATERNFE) by Paternus II comes from this phase ([2660]). Joining sherds from [4246] and [4248] make up a large proportion of another Lezoux Dr37 with an intra-decorative stamp but this time by Albucius ii. Another Dr37

with an intra-decorative stamp by Albucius is in [1867]. At least three vessels by the late Les Martres de Veyre potter Cettus were identified in this phase, in [2722], [4269] and [4366].

A large handle, unusually plain, from a rare East Gaulish samian dish form Dragendorff 39 (Oswald and Pryce 1920, Pl LVII, no.5 and 6) was found in [1771], a floor layer in the strip building [942] (Phase 6b). The form is rare in Britain (Bird 1993, 6) but examples are known in London, particularly on the waterfront (Bird 1986, 145).

The other half of the fairly uncommon forms Dr30R comes from this phase.

Phase 7: AD 250-350/400
712 sherds of samian ware are present in Phase 7. The decrease in the proportion taken up by decorated bowls (c. 14%) is paralleled by an increase in plain bowls. The share taken by closed forms (plain beakers mostly) increases also to 5% of the samian EVEs in this phase. Both phenomena are again chronological, beakers such Dé72 and Ludowici Vd are late samian forms imported from the late 2nd century to the mid 3rd century AD. The complete rim of a rare jar form close to Ludowici KMb with handle attachment, a cupped rim with bifid lid and barbotine decoration (Oswald and Pryce 1920, pl LXXXIII, no. 4, 7 and 8) was found in [3006], a dump layer and accounts for the high EVEs figure.

An unusual dish form close to Ludowici To' from Rheinzabern with overslip buff barbotine decoration dating to the 3rd century (Bird, pers comm. and 1993, fig.3) was recovered from context [1038] a fill in the timber revetment structure [1766] dated to Phases 7 and 8.

Bowls of the form Ludowici SM with barbotine decoration were recovered from [675] and [1028], dump/levelling layers. Both originate from Rheinzabern.

Phase 8: Very Late Roman AD 350+
There are 383 sherds in phase 8 for an EVEs figure of 15.74. Some of this material is most probably residual in this phase but some of it is quite late, particularly the Argonnes ware with roller stamped decoration. Three examples of the bowl Dr37/Chenet 320 from the Argonnes particularly stand out-two with little squares of geometric patterns and one with an elaborate stamped scroll. A possible bowl form Gose 64 with rouletted decoration on the upper band recovered in [403], one of the latest samian forms recorded in Britain (Bird 1993, 10-11).

Inkwells
Samian inkwells are by far the most common types of inkwells recovered on Roman sites (Willis 2006). Samian inkwells form a good body of indirect evidence for ink writing because they are less dependent on conditions of preservation than wood and metal. Since they are relatively common artefacts, they offer the potential for an assessment of the extent of literacy and contexts of ink-writing within Roman London. There are eight entries in the dataset for samian inkwells - one has burnt residues inside ([1638]) and another four display ink staining ([1583], [4263], [4250] and [4710]). A single inkwell is Central Gaulish; the others are South Gaulish in origin. Several other types of finds relating to literacy were recovered from the site, 14 writing tablets and several *styli*.

Context	type	Phase	fabric	Form	Spot-date
1378	Kiln structure	6b	SAMLG	inkwell	50-100
1583	Fill of revetment structure (2221)	6,7	SAMLG	inkwell	180-250
1638	Fill of revetment structure (2221)	6,7	SAMLG	inkwell	130-160
4250	Dump/levelling layer	5b	SAMLG	inkwell	160-200
4258	Make-up layer	6	SAMCG	inkwell	160-200
4263	Organic dump layer	5b	SAMLG	inkwell	120-160
4339	Dump layer	4	SAMLG	inkwell	70-100
4710	Fill of ditch/gully	4	SAMLG	inkwell	70-120

Table 4: contexts with samian inkwells

Two inkwells were recovered in contexts assigned to phase 4 ([4339], [4710]) and this would place Drapers' Gardens amongst the sites with a relatively high number of inkwells in Roman London in the period AD 70 to AD 120 (Monteil 2008, fig. 4.2.2, 179). The number of sites with inkwells in the upper Walbrook Valley is generally small at this period (*ibid*) and this site adds another layer of evidence for this period. An inkwell from a group spot-dated AD 90-100 was recovered at 8-10 Throgmorton Avenue nearby (Monteil 2005, 85).

Most of the inkwells were found in contexts with a spot-date in the second century AD and assigned to phases 5 to 7 (table 4). This is in keeping with previous studies of inkwells distribution in Roman London (Monteil 2005, 86 and 2008) and Britain (Willis 2006) whereby South Gaulish samian inkwells seem to have benefited from a long life span. The context of recovery is typical of the upper Walbrook valley - made-ground and refuse.

Recommendations for future work

This is a particularly important and interesting samian group mainly because of its date. Since most of the material is Central and East Gaulish in date, the emphasis is on the 2nd and early 3rd century AD. Such large and fresh domestic samian groups are still rare in *Londinium* as the period between AD 160 and 200 corresponds to an all-time low in discarded samian quantities (Monteil 2005). This is often related to a contraction of the town and a reduction in population (Marsden and West 1992; Perring 1991, 76-78; Perring with Brigham 2000, 159; Symonds and Tomber 1991, 82). Most large samian assemblages of this date are on the waterfront.

There are 243 stamps and signatures in this group, 223 of which from phased Roman contexts. Most of them are on plain ware but four are base stamps on South Gaulish Dr29 ([4704], [4705], [1294], [4422]); two are South Gaulish infra-decorative signatures on Dr37, three are Central Gaulish intra decorative stamps Dr37 and three are East Gaulish intra decorative stamps on Dr37. A full catalogue of the potters stamps and die identification would provide closer date ranges.

Full analysis of the decorated pieces - particularly the stratified ones in Phases 6 and 7. There are at least 81 decorated vessels (150 sherds) of East Gaulish origin and a full identification of potters could potentially be of great value and add to the other two major East Gaulish groups from Roman London-St Magnus House (Bird 1986) and Shadwell (Bird 2002; forthcoming). Attention should also be paid to the Central Gaulish decorated group, statistically dominant; much can be learned from studying the potters' styles present.

Rubbings of the stamps and the more interesting decorated pieces-once mounted; they can be scanned for illustration purposes (in greyscale, 300dpi) and form part of the archives.

Once groups are defined, further functional analysis and spatial analysis are recommended.

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Appendix

EVEs	**phases**						
types	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
closed form			0.25	0.9	1.05	0.2	**2.4**
dec beaker		0.85	0.26			0.05	**1.16**
bowl	0.36	0.52	3.48	4.07	2.71	1.61	**12.75**
dec bowl	0.77	1.4	7.79	5.97	2.08	0.8	**18.81**
dish	3.29	4.86	23.51	14.37	7	6.28	**59.31**
cup	2.7	5.89	24.81	14.44	6.09	6.05	**59.98**
mortarium			0.03	0.17	0.88	0.75	**1.83**
Total	**7.12**	**13.52**	**60.13**	**39.92**	**19.81**	**15.74**	**156.24**

sherds	**phases**						
types	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
closed form		2	18	30	26	9	**85**
dec beaker		9	6	1		1	**17**
bowl	5	32	104	124	103	50	**418**
dec bowl	42	91	355	230	102	51	**871**
dish	101	154	752	447	299	175	**1928**
cup	52	89	441	242	112	60	**996**
mortarium			2	18	57	32	**109**
inkwells		2	2	2			**6**
unid form		6	29	18	13	5	**71**
Total	**200**	**385**	**1709**	**1112**	**712**	**383**	**4501**

Table 5: raw values for each phase

APPENDIX 3: POST-ROMAN POTTERY ASSESSMENT

Chris Jarrett

INTRODUCTION

A small sized assemblage of pottery was recovered from the site (four boxes). The pottery dates from the medieval to the post-medieval periods. Very few sherds show evidence for abrasion and were probably deposited fairly rapidly after breakage. The fragmentation of the pottery ranges from sherd material to identifiable forms and a small number of vessels have complete profiles. Pottery was recovered from 20 contexts and individual deposits produced small to medium sized groups of pottery (under 30 sherds or up to 100 sherds).

All the pottery (155 sherds and none are unstratified) was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in an ACCESS database, by fabric, form, decoration, sherd count and estimated number of vessels. The classification of the pottery types is according to the Museum of London Archaeological Service. The pottery is discussed by types and its distribution.

THE POTTERY TYPES

Chronologically the pottery from the site can be divided into 120 sherds of medieval, 31 sherds of a post-medieval date and three sherds that span both periods. Additionally there is a single sherd of either Mid Saxon to early medieval pottery that requires further identification.

Middle Saxon- early medieval

Unidentified sandy shelly ware (XX) jar, surviving as a rim sherd with an everted, simple profile, medium to deep neck and a burnished finish. It is hard fired with reduced very dark grey surfaces and a grey core. The main inclusions are moderate to abundant fine, ill-sorted, sub-angular clear quartz, sparse to moderate shell fragments up to 1mm and sparse flint. This sherd could be Mid-Saxon in date, which would make it an anomaly for this area of London or a non-local early medieval ware.

Medieval

Early medieval

early medieval sandy ware (EMS), 970-1100, one sherd, form: jar; rounded.
early medieval shell-tempered ware (EMSH), 1050-1150, one sherd, form: jar; rounded.

London glazed red earthenwares

Coarse London-type ware (LCOAR), 1080-1200, one sherd, form: early rounded jug.
London-type ware (LOND), 1080-1350, 37 sherds, forms: jug; rounded.
London-type ware baluster jug (LOND BAL), 1180-1350, three sherds.
London-type ware in the highly decorated style (LOND HD), 1240-1350, two sherds, form: jug.
London-type ware with Rouen-style decoration (LOND ROU), 1180-1270, one sherd, form: jug.
Late London-type ware (LLON), 1400-1500, one sherd, form: jug.

Non-local glazed wares

Late medieval Hertfordshire glazed ware (LMHG), 1340-1450, one sherd, form: bowl or dish.
Mill Green ware (MG), 1270-1350, one sherd, form: jug.
Unidentified sherd (XX): pink fabric with abundant fine sand and occasional red clay pellets and an internal red slip. Possibly a fabric variant of Earlswood-type ware (EARL), 1200-1400, two sherds, form: jug.

Surrey whitewares

Cheam whiteware (CHEA), 1350-1500, one sherd, form: unidentified.
Coarse Surrey-Hampshire border ware (CBW), 1270-1500, nine sherds, forms: jar or cooking pot.
Coarse Surrey-Hampshire border ware cooking pot with bifid rim, (CBW BIF) 1380-1500, two sherds.
Kingston-type ware (KING), 1240-1400, six sherds, forms: dish; small, jug.
Kingston-type ware in the highly decorated style (KING HD), 1240-1300, three sherds, form: jug.

Wheel-thrown coarse greywares

South Hertfordshire-type greyware (SHER), 1170-1350, 31 sherds, forms: bowl; spouted, jar; rounded (one vessel adapted to an industrial use, jug.
South Hertfordshire-type flint-tempered greyware (SHER FL), 1170-1350, 31 sherds, form: jar; rounded.
Shelly-sandy ware (SSW), 1170-1350, one sherd, form: ?jar.

Imports

Red-painted ware with olive fabric (REDP OLV), 900-1250, one sherd, form: pitcher.
Saintonge ware with mottled green glaze (SAIM), 1250-1650, one sherd, form: jug.

Medieval/post-medieval wares

Imports

Dutch red earthenware (DUTR), 1300-1650, two sherds, form: dish; flared., jar; small rounded.
Siegburg stoneware (SIEG), 1300-1630, one sherd, form: unidentified.

Post-medieval

Surrey-Hampshire border wares

Surrey-Hampshire border whiteware with green glaze (BORDG), 1550-1700, one sherd, form: unidentified.
Surrey-Hampshire border green-glazed whiteware flat-rimmed chamber pot (BORDG (CHP2), 1650-1750, three sherds.
Surrey-Hampshire border whiteware with olive glaze (BORDO), 1550-1700, one sherd, form: unidentified..
Surrey-Hampshire border whiteware with yellow glaze (BORDY), 1550 –1700, one sherd, form: unidentified.

Local red earthenwares

London-area post-medieval redware (PMR), 1580-1900, 21 sherds, forms: sugar cone moulds.
London-area early post-medieval redware (PMRE), 1480-1600, one sherd, form: unidentified.
London-area post-medieval slip-decorated redware (PMSL), 1480-1600, one sherds, form: unidentified.
London-area post-medieval slipped redware with green glaze (PMSRG), 1480-1650, one sherd, form: bowl or dish.
London-area post-medieval slipped redware with clear (yellow) glaze (PMSRY), 1480-1650, one sherd, form: bowl; carinated, type 2.

English Stonewares

London stoneware (LONS), 1670-1926, one sherd: form: ?tankard.

Imported wares

Chinese blue and white porcelain (CHPO BW), 1590-1900, one sherd, form: saucer.
Spanish olive jar (OLIV), 1550-1750, one sherd.

DISTRIBUTION

Table 1 shows the contexts containing pottery, the number of sherds, the pottery types in the deposit, the date range of the pottery types, the latest dated ware and a spot date for the group. Pottery occurs in phases 5-10 and the characteristics of the assemblage are discussed by phase.

Context	Phase	SC	Date range of pottery types	Latest pottery type date range	Pottery types	Spot date
[106]	9	28	900-1400	1240-1400	KING, KING HD, LOND, LOND HD, REDP OLV, SHER, SSW, XX.	1240-1300
[107]	9	21	970-1400	1240-1400	EMS, EMSH, KING, KING HD, LOND, LOND BAL, LOND HD, LOND ROU, SHER.	1240-1270
[276]	9	2	1080-1350	1080-1350	LOND.	1170-1350
[282]	6c	1	1080-1350	1080-1350	LOND.	1080-1350
[345]	8	1	1080-1350	1080-1350	LOND.	1080-1350
[356]	8	1	1080-1350	1080-1350	LOND.	1170-1350
[424]	8	2	1080-1900	1580-1900	LOND, PMR.	1580-1900
[488]	9	32	1080-1350	1170-1350	LOND, SHER FL	1170-1350
[499]	9	1	1080-1350	1080-1350	LOND	1170-1350
[584]	7	1	1080-1350	1080-1350	LOND	1170-1350
[590]	10	28	1080-1900	1580-1900	LOND, BORDO, BORDY, CBW, KING, LLON, LMHG, LOND, OLIV, PMR, PMRE, PMSL, PMSRG, PMSRY, SAIM, SHER	1650-1700
[594]	10	3	1080-1500	1270-1500	CBW, LOND, SHER.	1270-1350
[607]	10	12	1080-1900	1580-1900	CBW, CBW BIF, DUTR, LOND, PMR, SIEG.	1650-1900
[722]	7	1	1270-1500	1270-1500	CBW	1270-1500
[869]	10	12	1080-1900	1590-1900	CHEA, CHPO BW, DUTR, LOND, PMR.	18TH C
[906]	9	5	1080-1350	1270-1350	LCOAR, LOND, MG	1270-1350
[1684]	6c	1	1670-1900	1670-1900	LONS	1670-1900
[3926]	5	1			XX	Mid Saxon – early medieval
[4255]	5	1	1170-1350	1170-1350	SHER	1170-1350
[4257]	5	1	1550-1700	1550-1700	BORDG	1550-1700

Table 1. DGT06: Distribution of pottery types showing individual contexts containing pottery, what phase the context occurs in, the number of sherds, the date range of the latest pottery type, the fabrics present and a suggested deposition date. SC: sherd count.

Phase 5, 120-160 AD

Three sherds of intrusive Mid Saxon to medieval dated pottery types came from the same number of layers. All the sherds appear to be intrusive in firmly dated Roman contexts.

Phase 6c, 160-280 AD

There are single sherds of medieval and post-medieval pottery found in two Roman layers and therefore the Post-Roman pottery is intrusive.

Phase 7, 250-400 AD

Two sherds of medieval pottery were found solely in layers [584] and [722] and are anomalies for this phase.

Phase 8, 350+ AD

From three deposits in this phase there were recovered four sherds of Post-Roman pottery and all are residual.

Phase 9, medieval

This phase produced a total of 89 sherds of medieval pottery from six contexts.

Cut [133]/[277] produced 51 sherds of medieval pottery in its fills [106] and [107]/[276] and the majority of the pottery types were contemporary in the mid and late 13th century. In this feature the main function of the pottery is as drink serving forms *i.e.* jugs as 66% by sherd count and mostly in London-type ware (LOND, LOND BAL, LOND HD), besides Kingston-type ware (KING, KING HD) and the possible Earlswood (XX) sherds but a typical thumbed and stabbed decorated jug handle is also recorded in the South Hertfordshire greyware tradition (SHER). The other function of the pottery is as kitchen or storage wares in the form of jars or cooking pots (10%) and contemporary forms are only in South Hertfordshire-type ware. However, one of the SHER jars has perforations (holes made post firing) in its base and appears and contains a residue that is partially glaze like in appearance. This vessel seems to have been adapted for an as yet unidentified industrial function. This pattern of glazed wares supplying mostly jugs and the greyware industry providing mainly jars is a pattern noted previously in the 13th-century London ceramic profile.

Fill [488] of ditch [500] produced 32 sherds of pottery, but only one sherd is from a London-type ware jug, the rest are as two jars in South Hertfordshire-type flint-tempered greyware (SHER FL) and 29 of these sherds comes from one vessel.

A single sherd of a white slip and green-glazed London-type ware jug was recovered from layer [499].

Cut [905] produced five sherds of pottery in its fill [906] and all in the form of jugs and includes a residual early rounded type in Coarse London-type ware, while contemporay London-type ware and Mill Green sherds are the other fabric types.

Phase 10, post-medieval

In this phase there are 55 sherds of pottery recorded in four contexts, but residual medieval sherds are frequent.

The majority of the pottery from this phase is associated with a barrel well feature [593]. The construction well back fill produced three sherds of medieval pottery, probably derived from deposits truncated by the construction cut for the barrel lined feature. Fill [607] produced mostly medieval pottery, but a sherd of local post-medieval redware sugar cone mould with an internal white slip, probably dates the feature to between c.1650-1700. Of note in this fill is a Dutch redware dish with a complete profile. The top fill [590] of the barrel well produced 18 sherds of post-medieval pottery, the rest being medieval. Eleven sherds are as internally white-slipped local post-medieval redware sugar cone moulds, whilst amongst the other local redwares is a rare slip-decorated (PMSL) sherd. A largely complete waster or second dish in this type of ware was found near by at Moor House and may have been made within the limits of that site during the late 16th century (Sudds 2006). Imported pottery in this fill are sherds of Spanish olive jar (OLIV) and mottle-green glazed Saintonge ware (SAIM), the latter possibly residual. The Surrey-Hampshire border whitewares with the sugar cone moulds indicate deposition between c.1650-1700.

Fill [869] of cut [870] is dated to the 18th century by a saucer in Chinese porcelain and the only other post-medieval wares are a sherd of PMR and the shoulder of a Dutch redware small jar.

SIGNIFICANCE OF THE COLLECTION

The pottery has significance at a local level as it reflects domestic and industrial activity on or close to the site. The paucity of Post-Roman ceramics indicates that land use was not intensive during the medieval and post-medieval periods. The source of the pottery could have been derived from on site activities, but the material could also have been dumped there from another location. The ceramic profile of the site is mostly in keeping with the London area, although the occurrence of a possible Middle Saxon jar is something of an anomaly as the *Lundenwic* settlement was largely centred on the Aldwych and Covent Garden area to the southwest, although a religious enclave is documented in AD 604 at St Paul's Cathedral, to the east and at a shorter distance to the site.

Medieval

The medieval pottery is fairly typical for the London area but only 12th-mid 14th century pottery types are stratified in Phase 9 and earlier Post-Roman pottery types are either residual or intrusive in other phases. The late medieval pottery types are residual in post-medieval Phase 10 contexts. The functional uses of the stratified medieval pottery is typical for medieval London as the glazed redwares supply the jug forms, whilst the greyware industries provide mostly jars or cooking pots. Of note is the South Hertfordshire grey ware jar with perforations and a residue indicating that it had an industrial process and therefore this vessel provides an insight into technologies in medieval London.

Post-medieval

The post-medieval pottery is on the whole fragmentary and relatively few diagnostic forms could be identified. The pottery types present are in keeping with the ceramic profile of London, although a sherd of white slip-decorated local redware (PMSL) is a rare find. The most notable component of the post-medieval pottery assemblage are the sugar refining vessels indicating that this industry was located elsewhere.

POTENTIAL

The pottery has the potential to date the features in which it was found and to provide a sequence for them and a number of vessels would merit illustration or photographing. Other local comparable assemblages of post-Roman pottery have been excavated at 6-8 Tokenhouse Yard (THY01) (Sudds 2003) and Moor House, Moorgate (MRL01) (Blackmore 2006).

Medieval

The potential of the medieval pottery on the site is relatively minimal, except for informing on the types of pottery marketed to this area of London. The South Hertfordshire greyware jar used for an industrial process gives an insight into London medieval industries. Documentary evidence for the medieval land use of the area of the excavation may give a better perspective on the importance of the pottery from this period and the importance of its functions on the site.

Post-medieval

The potential of the post-medieval pottery is rather limited, but the Dutch redware dish provides an addition to the corpus of forms found in London for this ware. The presence of the sugar cone moulds also adds to our knowledge for the distribution of this industry in London.

RESEARCH AIMS

A number of research aims can be used as avenues of further research.

Can residue analysis of the contents of the South Hertfordshire greyware jar inform upon what industrial use it had?

Are any known sugar refining premises located in the vicinity of the site from which the sugar cone moulds might have been derived?

RECOMMENDATIONS FOR FURTHER WORK

A short pottery report is required for the publication of the site. Up to six illustrations of vessels are required and photographs of the highly decorated medieval sherds would be useful to supplement the text. Two pottery types require further identification and Post-Roman pottery specialists at the Museum of London are recommended for consultation. Chemical analysis of the contents of the South Hertfordshire greyware jar are required to determine what industrial process it was involved in. None of the ceramics are recommended for display.

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APPENDIX 4: CERAMIC BUILDING MATERIAL ASSESSMENT

Kevin Hayward

Introduction

A very large assemblage (3708 examples) 1037kg of ceramic building material[109] was retained from excavation at Drapers' Gardens. The assemblage was examined at Pre-Construct Archaeology between September 2008 and February 2009 as part of an assessment of the building materials.

Aims

This assessment serves a number of purposes.

- The identification (under binocular microscope) by form of the main Roman ceramic fabrics at Drapers' Gardens. Brick; Tegulae; Imbrex; Box-Flue; Miscellaneous Daub; *opus signinum*;
- The identification (under binocular microscope) of the main medieval ceramic fabrics at Drapers' Gardens.
- In each section - identify any interesting or unusual pieces that warrant retention.
- A phase summary relating the fabric and form of the different ceramic building materials with the separate phases of Roman (Phases 3a-8) and medieval (Phase 9) activity at the site. In particular what materials were being used in the flooring and walling of the structures on-site and how much of the assemblage can be accounted for by the many dumping episodes.
- Ascertain whether the type and form of the ceramic building material can tell us something about the status of the demolished buildings represented by the dumped deposits. One area of interest is whether any mid-first century bath-house buildings, identified from demolition rubble elsewhere in Roman London (Pringle 1995; 1996) can be identified from the fabric, impression work and form of the box-flue tiles and *tegula mammatae*.
- How typical is the assemblage compared with other Roman sites along the Walbrook Valley – especially 8-10 Throgmorton Avenue (TGM 99); Tokenhouse Yard (THY01) and 2 Copthall Avenue (CXA 06).
- Make recommendations for further study and research especially thin-section analysis.
- The compilation of a ceramic building material catalogue (Draperscbm.cat), which accompanies this assessment.

Methodology

The building materials were examined using the London system of classification with a fabric number allocated to each object. Cbm tesserae are treated separately in this report to the stone tesserae (see Drapers' stone) although comments on the overall character of the mosaics are made in both reports. The application of a 1kg mason's hammer and sharp chisel to each example ensured that a fresh fabric surface was exposed. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10). Where possible, comparison was then made with the Pre-Construct Archaeology Building Material reference collection in order to provide a match. After analysis the common fabric types were discarded. Any unusual or interesting fabrics were retained.

Condition and Distribution

At a site where the predominant structures are timber-lined there is surprisingly a very high quantity of ceramic building material (3708 examples) represented at all phases of activity. Much of the assemblage was recovered from dumped and levelling deposits, especially Phases (5a-7). Phase 6b has by far the highest quantity (280kg – 27%) and an appreciable amount of this relates to the kiln structures associated with strip Buildings 8, 9 and 10 (124kg)

[109] Including daub and *opus signinum*

[964] [1260] [1364] [1378] [1876]. The earliest occupation Phases (3a-4) also contain an appreciable amount of material (86kg), however, this is all fragmentary and intermixed, reflecting its use as dumped material in levelling layers (see below).

Phase	Number	Weight (g)
0	49	27448
3A	60	11189
3B	126	30556
4	178	43212
5	47	6372
5A	278	75363
5B	363	116650
6	213	57635
6A	198	85318
6B	1068	279546
7	851	198484
8	220	91006
9	55	13717
10	2	470

Roman tile and brick

Fabric overview
Given the extensive period of Roman activity (AD 50-400 - Phases 3a to 8) on-site it was not surprising that as many as thirty-four individual fabrics have been identified. The quantity and weight are summarised in the table below.

Fabric	Fabric Description	Date Range	Number	Weight (g)
2452	Very fine early compact sandy Roman fabric	55-160	683	135599
2453	Non local calcareous clay fabric	140-300	4	1037
2454	Fine Eccles Fabric	50-80	251	30285
2455	Very Fine Eccles Fabric	50-80	16	2996
2457	Non local calcareous clay fabric	140-300	12	4360
2459a	Fine early Sandy Roman fabric	50-160	569	252941
2459b	Fine Sandy Micaceous fabric very fine moulding sand	120-250	210	114407
2459c	Fine Sandy Micaceous fabric chaff mouldings	140-250	23	14633
2815	Vitrified or unidentifiable early Roman sand	50-160	217	41404
3004	Very coarse quartz rich early Roman sand fabric	50-160	92	38015
3006	Coarse quartz rich early Roman sand fabric	50-160	301	112920
3009	Silty brick fabric lots of angular large inclusions of clay and sandstone Hampshire	100-120	2	437
3011	Silty Weald Clay fabric beige silt inclusions frequent red iron oxide very coarse	60-200	1	554

Fabric	Fabric Description	Date Range	Number	Weight (g)
3012	Non local possibly calcareous fabric	180-350	1	542
3013	Non local possibly calcareous fabric	180-350	5	787
3018	Silty Weald Clay large blocky silty inclusions	100-120	15	6700
3019	Silty Hampshire	100-120	4	495
3022	Coarse Eccles Fabric	50-80	61	14166
3023	Iron Oxide Radlett Fabric	50-120	321	97524
3023b	Coarse Iron Oxide Radlett Fabric	170-230	20	5463
3026	Non local calcareous fabric	140-300	1	222
3028	Silty Weald Kent Fabric	60-120	1	2256
3028nr3238	Silty Weald Kent Fabric	60-120	2	486
3050	Reigate Fabric rose quartz silty streaks	140-230	1	743
3051	Hampshire Brick Fabric lots of stone inclusions fabric	50-120	1	462
3054	Grog tempered Brick fabric	70-140	9	4608
3055?	Clay inclusion rich silty clay inclusions brick	200-350	1	1464
3057	Silty clay inclusions	75-100	4	1595
3059	Sussex ware lots of chaff	70-140	15	18108
3060	Radlett ware lots of red iron oxide	50-120	69	26482
3060b	Coarse Radlett ware lots of red iron oxide	170-230	7	2511
3238	Silty fabric common silty bands	71-100	15	4503
3500	Roman fabric	50-400	2	415
NEW	Roman or medieval fabric		2	27
REDSILT	Early Roman fabric very fine lots of dissolved pores some with red silt	50-400	91	17888
SAND	Roman or Medieval Fabric		2	76
SHELLYFAB	Probably a non local calcareous fabric	140-300	1	401

In terms of broad fabric groupings their proportion can be divided up into the following:

London Group - sandy fabric coarse moulding sand *2452; 2459a; 3004; 3006; 2815; Red silty ware*
1953 fragments **-** 599kg By far the most common group in keeping with Roman sites elsewhere in London these were manufactured between AD 50 and 160 but are present as reused material throughout the site.

The exception is a variant of the fabric *2452* and *2459a, Red silty ware,* which has numerous cavities and occasional red silty inclusions this is also early as it appears in the early Phase 3b dumps but may have continued to be manufactured well into the 2nd century. It was not possible to trace a comparable texture from the PCA reference collection but it has been identified recently in the HGA02 bath-house site (Douglas *et al.* in prep.). It is common at Drapers' with 91 examples amounting to 18kg.

This fabric group were also recovered in large quantities, used and reused as paving brick in the Phase 5b-7 oven kilns such as Phase 5b Building 2 [3933]; [3968], Phase 6a repairs (Building 5) [670], Phase 6b Building 8 [2605] and Phase 7 Building 12 [1293].

Later London group – sandy fabric – fine moulding sand *2459b; 2459c*
223 fragments – 129kg – these later sandy fabrics are more micaceous and either have a very fine moulding sand *2459b* or are chaff-tempered *2459c.* The fabric 2459b is particularly common the Phase 6a oven tile base of Building 5 [2759] – 12kg and at other *in situ* kiln structures from Phase 5b onwards

North Hertfordshire (Radlett) fabrics *3023; 3023b; 3060; 3060b*
417 fragments – 132kg A vast majority (124kg –94%) of these iron-oxide fabrics have fine quartz inclusions which mean that date from between AD 50-120. Some of this fabric has been identified in brick reused in *in situ* ovens such as the Phase 6 Building 9 key-hole ovens [1876]/[3038] and Phase 7 Building 15 Room C [131]. The later coarser versions 3023b and 3060b (AD 170-230) are not nearly as numerous.

Eccles Fabrics *2454; 2455; 3022*
328 fragments – 47.5kg
These very fine early (AD 50-80) white/pink/grey examples of ceramic building material made from Wealden clay sources are widespread throughout Drapers' Gardens and occur as early as Phase 3b. Nearly all of this material is found in demolition debris. Of interest is their widespread use in mosaics dumped in Phase 6b [2067] along with other early stone and CBM fabrics.

Non local calcareous fabrics *2453; 2457; 3012; 3013; 3026; Shelly fabric new possibly 2456 Source Weald*
24 fragments – 7.4kg. Examples from the (AD 140-350) shelly calcareous group so characteristic of late Roman (AD 140-350) ceramic building material in London are poorly represented. They occur in small quantities only in the dumps and pits associated with later Roman activity (especially Phases 7 and 8). Of interest is one example of a very shelly fabric, comparable to the rare *2456,* in the fill of a Phase 8 timber well structure 569 [573]*.* This is probably the latest dated (AD 270-350) fabric at Drapers' Gardens coming from a kiln outside of London, in Bedfordshire and has been identified from the adjoining site at Tokenhouse Yard (THY01) (Sudds in prep.).

Silty Wealden fabrics *3009; 3011; 3018; 3028; 3028nr3238; 3057; 3238*
43 fragments-16kg. Tile and brick made from a range of early banded and blocky silty fabrics (AD 60-120), from a source in NW Kent or the Weald are present in moderate quantities in dumps throughout the site. A small quantity of brick was re-used in key-hole oven kilns found in Phase 6b Building 9 [1378] [3038].

West Sussex fabrics *3054; 3055; 3059*
24 fragments 22.8kg. These early (AD 70-140) distinctive grog-tempered bricks sourced to kilns in the Hampshire/West Sussex region are used in bricks, roller stamped box-flue tiles and thick curved tile (ceramic column) from Phase 3a onwards. Once again a small quantity of brick were re-used in later oven kilns on site such as the Phase 6b key hole oven kilns from Building 9 [1378] Phase 7 Building 12 [969] and Building 15 Room A [1236]. The brick from [1378] had curious circular wedged incisions (20mm width) which may have functioned as purchase (grip) on floor tiles (see section on brick).

Reigate fabrics *3050;*
1 fragment 743g
This rare late [AD 140-230] busy fabric sourced to kilns in East Surrey has been identified in a solitary tegula from a Phase 5b levelling layer [3456]. It is also possible that a tesserae fragment from another Phase 5b levelling layer [3072] was made of this fabric.

Form

Hypocaust Material

Throughout the site at Drapers' Gardens numerous dumped examples of box-flue tile; half-box flue tile, *tegula mammatae*, chimney pots and curved tile have been recovered from Phase 3b dumps onwards. All of this material attests to the presence of buildings with heated rooms or a possible bath-house(s) in the vicinity of the Walbrook.

Box-Flue Tile
62 examples 17.2kg

There is a great variety both in the form, fabric and markings of the fragmentary box-flue tile assemblage with 99% dateable by fabric from AD 50-160. This variety is a common feature of early dumps throughout Roman London and Southwark and has been attributed to the technological changes in hypocaust material during the first century (Pringle 2007, 209). However, because of the fragmentary nature of almost the entire assemblage it is often not possible to subdivide it up into the discrete types of box-flue form proposed by Pringle (2006; 2007). Rarely is more than one side of the box flue preserved e.g. [1712] and even then it is not possible to ascertain its true dimensions.

From Phase 3b onwards there is scattering of dumped box-flue deposits but they concentrate in Phase 6 and 7 dumps e.g. [2395].

Phase	Type	Suffix	Number	Weight
3A	BX	HALF	1	460
3B	BX	HALF	1	144
3B	BX	HALF	3	520
4	BX	HALF	1	87
4	BX	SCORE	1	261
5	BX	COMB	2	76
5A	BX	COMB	4	1463
5A	BX	HALF	1	289
5A	BX	ROLL	2	469
5B	BX	COMB	2	912
5B	BX	ROLL	1	163
5B	BX	SCORE	1	134
6	BX	COMB	1	190
6A	BX	COMB	1	60
6A	BX	ROLL	2	536
6B	BX	COMB	12	3352
6B	BX	CURVE	1	134
6B	BX	ROLL	2	863
6B	BX	SCORE	1	629
7	BX	COMB	10	2056
7	BX	ROLL	2	1102
7	BX	TEGMAM	1	45
8	BX		1	225
8	BX	COMB	8	2044
8	BX	ROLL	4	619
8	BX	TEGMAMM	1	1656

Fabric
London sandy fabrics (AD 50-160) *2452; 2459a; 3004 3006* (63%)
Radlett fabrics *(*AD 50-120) *3023; 3060* (23%)

Eccles fabrics *(AD* 50-80*)*	*2454; 3022* (1.2%)
Weald silty fabrics (AD 100-120)	*3009* (0.4%)
Hampshire fabrics (AD 70-140)	*3054; 3059* (11.6%)
Late Radlett (AD 170-230)	*3023b* (0.4%)
Late sandy fabric (AD 120-1250)	*2459b* (0.4%)

Markings

Scoring 3 examples 1kg *2452; 2459b*

The earliest type of key markings – the diagonal scored relatively thin-walled box-flue fragments (15-22mm) are very rarely present at Drapers' Gardens. Just one example from a Phase 4 [3377] dump may be the very early (mid first century) Box-flue type 1 lattice scored example of Pringle (1995, 1125). All were made from the local London sandy fabrics.

Combing 40 examples 10.2kg *2452; 2459a; 3004; 3006; 3023; 3060*

The most common type of key marking is the combed form. All are early fabrics but only appear from Phase 5 dumps onwards. Half of the assemblage is made up of the coarse London sandy 3006 (AD 50-160), with Radlett fabrics (9 examples) relatively common.

There is some variability in the design of the combed patterns which is to be expected given that at least 80 identifiable patterns have been recognised (Brodribb 1987). These range from very fine wavy line patterns [1876] through to coarser curved [2198] and crossed examples [3554] and finally examples using very coarse 4 combed teeth [587] [1708]. Unfortunately it was not possible to relate these different styles to a particular fabric or phase.

Roller or Relief Patterning 13 examples 3.7kg *2459a; 3006; 3009; 3054*

A wide range of roller stamp dies were recovered in these later (Late 1st - 2nd century) reused box-flue tiles all of which could be identified in the *Corpus of Relief-Patterned Tiles in Roman* Britain (Betts et al. 1997). These include

Reused Die 58 Chevron design in fabric Radlett fabric 3060 (AD90-120) [332] [568] (requires illustration) also found at Angel Court (Throgmorton Street) (ACW 74)

Die 24 Lowthers billet group (Betts *et al*. 1997) Maze type design is the only example represented by silty Hampshire fabric 3009 [100-120] (requires illustration) [120] used in early at Angmering (West Sussex) no single site in London has >1% of this stamp. First time fabric 3009 from Hampshire used.

Die 23 Lowthers billet group (Betts *et al.* 1997). A variation on the Maze type of design 24 the example from the Phase 6b dump [2395] is quite thick 24mm Box-Flue in fabric 3054 or a variation of as it is particularly silty. This has black sooty residue on its surface confirming it was once used as part of the heated hypocaust system.

Die 12 [273] Plain chevron design fabric 3023 (requires illustration)

Die 78 chevron design [613] 3023b AD 170-230 (requires illustration)

Die 33 lattice design [764] very rare second known example from London the other King Street (KNG 85) (Betts *et al.* 1997) (requires illustration) fabric 2459a (AD 50-160)

Half Box-Flue Tile *2459a 3006; 3023*
5 examples 1.3kg

A very small quantity of unkeyed very thin (15-18mm) fragmentary tegulae shaped objects were uncovered from the earliest phases (AD 50-70) of activity in the entire site. These were identified in the fills of the ditches associated with the corduroy in Area B Phase 3a [4930]

[4567] [4784]. These tiles, in which the flanges on the long-side act as spacers to form a cavity have been described at numerous sites in the city (Pringle 2007, 207) It is possible, however, that they may be the small box-flue type 3 of Pringle (Pringle 2006, 125). Either way they represent demolition material from buildings with heated rooms or some of the earliest bath-houses in London, possibly mid-first century (Pringle 2007).

Curved tile (ceramic column)

Fabric 3054
Two examples [+]; [1378] <135> 2.9kg
Examples of dumped thick large curved tiles with roller stamp key patterning are very rare in Roman Britain (Betts *et al*. 1997, 12) yet at Drapers' Gardens there are two examples, one unstratified the other from Phase 6b [AD 160-250] keyhole oven of an open framed timber building [1378]. This example is blackened but has the distinctive Hampshire Grog fabric *3054* (AD70-140) (Ian Betts pers. obs.) with a type A low profile *tegula mammata* Type A of Brodribb (1987) is attached to the interior. The roller stamp die is identical to Type 37 die large diamond pattern observed at Trinity Square, London which also has a comparable thickness.

Roller stamped dies only come in after AD 80-80 in London and the use of the Hampshire Grog fabric 3054 would date its original use to between AD 80 and AD 140.

The unstratified example also of this fabric is thicker (52mm) but lacks the roller stamp and is clearly a different example of a curved tile.

As to the function of these pieces – one of their uses it has been suggested is as a column or an engaged column infilled with rubble concrete (Betts *et al*. 1997, 12) but this does not account for the *tegula mammata* boss on the interior. Clearly the keying was meant to carry or be set in mortar or another adhesive material and the appearance of *tegula mammata* and the heavily vitrified nature of the fabric would indicate that it was associated with the channelling of hot air that may relate to a bath-house or was possibly reused for this purpose in the Phase 6b oven.

Chimney pot or related function

Fabric 3006; 3060b
Two examples [+] [1713] <1133> 240g

The occurrence of chimney pots once again attests the presence of hypocaust or bath-house structure in the vicinity. The example from a Phase 7 dump [1713] <1133> is particularly striking. This is a knife cut chevron patterned narrow (80mm) base neck louvre on a chimney with a castile shape somewhat similar to Ashstead-type chimneys (Parsons 1971) but lacking the thumb and forefinger frilling, These designs were identified from a solitary bath-house at Footscray and have also been uncovered at Silchester. Their most likely function was as a specialist chimney pot for a bath-house for downward smoking flues from hypocaust (Parsons 1971). Two examples of lamp chimney fragments have also been uncovered at the adjoining site of 8-10 Throgmorton Avenue TGM 99 (Betts 2001).

The coarse sandy London fabric used in the example from [1713] dates the original use of this example to between AD 50 and AD 160.

The second example has been identified (James Gerrard pers. obs.) to be a Lockleys St. Albans pottery fabric.

Tesserae (including Mosaic Fragments)
514 examples 5.4kg London sandy fabric *2452; 2459a*;

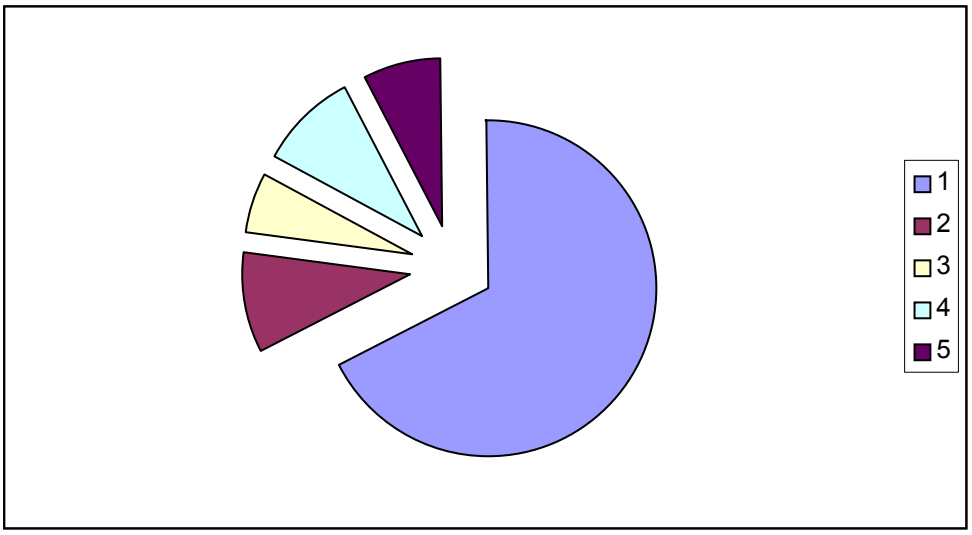
2459B; 2815; 3004; 3006
Radlett Group *3023*
Eccles Group *2454*; *3022*
Silty Group *3018; 3238*

Individual large ceramic tesserae (average size 25x25x20mm) are scattered throughout the site in dumps and levelling layers from Phase 3b onwards. These are dominated (90%) by the London sandy fabric group (AD 50-160) with smaller quantities of the Radlett (20 examples) Eccles (5 examples) and Silty group (3 examples). The much smaller border tesserae (12x12x10mm) characterised by the fine red London sandy fabric 2452 and white Eccles group 2454 are much rarer. All these cubes were manufactured between AD 50 and AD 160 and evidently belonged to different early Roman mosaic floors.

Dumped (mainly border) mosaic chunks (total 1.5kg) are especially common from the Phase 6b dump [2067]. These contain large quantities of small white Eccles *2454* (102 examples) (AD 50-80) and fine red iron oxide *2452* (AD 55-160) (147 examples) that curve around an array of early stone types (see stone report Appendix 5) including black Kimmeridge Dolostone, yellow/brown weathered White Lias and Indurated chalk. This combination of early ceramic fabrics and stone types indicates that they once represented ornate flooring from an early (mid-late first century) building of some pretension.

Brick
569 examples 462kg
Fabrics
The variety of brick fabrics encountered from this very large assemblage can best be summarised in the pie chart below (Fig. 1). Due to the fragmentary and intermixed nature of much (340kg) of this assemblage, however, it is not easy to pick out individual dumps of brick material characterised by a single fabric type. The earliest dumping episodes (Phases 3-5) have a mixture of very early local London Sandy fabrics, white Eccles, Radlett fabrics and to a lesser extent the more exotic West Sussex and Kent silt groups, all of which date to between AD 50-160.

Figure 1 Proportions of main brick fabric groups at Drapers' by weight
1) Early London Sandy Group *2452; 2459a; 3004; 3006* group AD 50-160 (310kg)
2) Late London Sandy Group *2459b; 2459c* AD 120-250 (55.2kg)
3) Eccles Group *2454; 2455; 3022* AD 50-80 (14kg)
4) Radlett Group *3023; 3060* AD 50-120 (43kg)
5) Other Groups - West Sussex Grog Group *3054; 3055; 3059* AD 70-120 (20kg)
Kent Silt Group *3011; 3018; 3028; 3028nr 3238; 3238* AD 60-120 (11kg)
Red silty fabric (3kg); Calcareous Group *2453; 3012* AD 140-350 (700g)



Form and Function
Much of the dumped fragmentary material has been reused with evidence of mortar on broken surfaces from as early as Phase 3b onwards which indicates use away from the site. This part of the assemblage should be treated separately to the brick used in the numerous oven and hearth structures associated with buildings constructed on site between Phases 5b (AD 120-160) and 7 (AD 250-350/400). These hearth/oven bricks are all located in Area A in Phase 5b Building 2 Rooms B, C, D [4065]; [3933]; [3968]; [3020] Phase 6a Building 5 Rooms K, I [2759]; [2776]; Phase 6b Building 8 [2118]; [2605], Building 9 [1378]; [1876]; [3038] and Building 10 [1364]; Phase 7 Building 12 [969]; [1292]; [1293];[1315]; [1593] and Building 15 [131]; [1236]

The first difference relates to the condition of the brick. Although burnt, a large quantity (140 examples – 122kg) of brick retained from these oven structures or hearths is often complete or near-complete either as small square *bessalis* (22cm x 22cm) e.g. Phase 6a Building 5 [2776], larger *pedalis* (29cm x 29cm) and occasional rectangular *lydion* (29cm x 38cm) both found for example in the Phase 5b Building 2, Room C [3933] [3968].

Second, the presence of regular wedge-shaped circular [1378] and rectangular depressions [1236] in reused early West Sussex grog group bricks *3059* and coarse sandy London fabric group *3004*.

Third, the presence of the shallow-bossed "type A" (Brodribb 1987) *tegulae mammata* [1876] [2605] which is normally thought to be added to assist bonding.

Finally, the reuse of very large quantities of early sandy, silty, iron-oxide and Hampshire fabrics in these much later kilns. Although important the later 2nd-3rd century fabrics 2459b and 2459c form only 40% - 50kg of the total assemblage.

Normally large quantities of complete *bessalis* and *pedalis* bricks would be an indicator of structural support associated with hypocausts and therefore heated rooms or bath-houses. Furthermore quantities of box-flue tiles in dumps from the site would normally support this. However, very little of this cavity-walled material is associated with the ovens and hearths and must be associated with demolition of early buildings with heated rooms or bath-house structures in the vicinity. One of the other major uses of *bessalis, pedalis* and *lydion* are as flooring for ovens (Brodribb 1987) and the size of the structures (2 metre square) and vitirified character of the bricks at Drapers' Gardens would support this. Furthermore, it seems likely that the regularly linear, circular and wedge shaped ridges and depressions present in some of the bricks (see above) would have acted as a floor grip.

The other use of brick was as walling as with the large group of brick (35kg) used in structure [2759], Building 1. These narrow rectangular bricks formed 3 bonded courses on the west, south and north walls.

Roofing Tile
1881 examples 488kg
Very large quantities of flanged tegula (634 examples 271kg), curved imbrex (331 examples 63kg) and ridge tile (9 examples 5.5kg) as well as undifferentiated (probably broken tegula) (907 examples 148 kg) form the greatest proportion by weight (47%) and number (50.7%) of ceramic building material on site. However, as with other large assemblages of roofing tile found in dumps associated with timber clad buildings in Roman London one cannot be sure whether any was used in these structures. The absence of any complete tegula and imbrex would indicate that a majority, at least, come from demolition debris belonging to buildings not within the immediate vicinity.

Tegula and Roman Tile miscellaneous
634 examples 271kg (tegula)
907 examples 148kg (broken tile)

These two tables illustrate the vast quantities of broken tegulae and undiagnostic tile present from all periods in dumps, pits and consolidation levels at Drapers' Gardens.

Phase	Type	Suffix	Number	Weight (g)
3A	R	TEG	12	3411
3B	R	TEG	32	10551
4	R	TEG	56	20869
5	R	TEG	11	3536
5A	R	TEG	49	26020
5B	R	TEG	78	31605
6	R	TEG	35	11427
6A	R	TEG	35	18326
6B	R	TEG	115	56277
7	R	TEG	116	49846
8	R	TEG	76	29126
9	R	TEG	6	3858

a) Distribution of Tegulae at Drapers' Gardens

Phase	Type	Number	Weight (g)
3A	RT	32	4449
3B	RT	57	6321
4	RT	55	9056
5	RT	14	831
5A	RT	75	10400
5B*	RT	98	14650
6	RT	51	7605
6A	RT	30	17794
6B	RT	229	39871
7	RT	191	24400
8	RT	54	9475
9	RT	13	1651

* including PPBR inscription

b) Distribution of undiagnostic tile at Drapers' Gardens

The intermixing and widespread reuse of the different fabrics (dominated by the local sandy fabric group 2815) and tegula flange profiles (most common Type 1) and cut/aways (most common Type B) has made it difficult to identify any patterning in the dumping of this material.

One tile of particular interest had the procuratorial stamp the PPRB from a Phase 5b (AD 120-160) dump in Area A [3325]. This is commented on under the section tile inscription and markings.

Imbrex
331 examples 62.6kg

Early Roman 2815 AD 50-160 (especially coarse 3006) (52%)
Radlett Iron oxide fabric group AD 50-120 (17%)
Eccles fabric group AD 50-80 (especially coarse 3022) (13%)
Silt fabric group AD 60-120 (3009; 3019) 2 examples
Other (calcareous; Red silt; late Roman sandy fabric 2459b) 18%

Fragmented lower angled roofed convex tiles or imbrices are found in quantity in levelling deposits throughout the site. The earliest Phase 3a-4 dumps (AD 50-120) and ditch fills from Area B have a surprisingly high concentration (52 examples), containing a variety of early fabrics and forms. The Eccles (AD 50-80) fabric group 2454 and 3022 are especially thick 25-27mm with 9 examples from [4706], whilst the iron oxide group (AD 50-120) and coarse examples of early sandy fabric 2815 (AD 50-160) are thinner (14-19mm).

Ridge Tile 9 examples 5.6kg
2452; 2459a 3004; 3006 Early Roman sandy fabric group 2815 AD 50-160
2459b Late Roman sandy fabric group AD 120-250

Small quantities of fragmentary highly angled convex (>50°) ridge tile used to cover the gap where the tegulae meet at the apex of the roof were identified, particularly from Phase 4 dumps [885]; [886]; [1035]. All the examples were made from the early Roman sandy fabric group 2815, especially the coarse 3006.

Tile and Brick Markings
No animal prints were observed in the assemblage whilst the brick and tile had signatory marks typical of the early fabrics 2815, 3023 and 2454.

One procuratorial stamp marked PPR was identified on a 20mm thick tile (tegula) from the Phase 5b dumps [3325] <760>. It was made from the same fabric 2459a (AD 50-160) as used in the other procuratorial stamps in Roman London (Betts 1995, 209). The double border and bold lettering are consistent with the common Die 10, represented in London by 44 examples in Ian Betts study (1995, 210)

The full title of the stamp is PPR.BR interpreted as

procuratores provinciae Britanniae

Procuratorial stamps were manufactured between AD 70-120 by government owned tileries as part of the massive late first to early second century public building programme (Betts 1997, 221). However, there are no major public buildings in the Upper Wallbrook Valley, where other procuratorial stamps have been identified at sites such as CHL84, OPT81 and LOW 88 (Betts 1997, 216-217) and a die 10 example from the adjoining Tokenhouse Yard (THY01) (Sudds in prep).

Its occurrence in a Phase 5b dump (AD 120-160) is to be expected given the manufacture and use of these tiles at the end of the first century and into the second century.

Roman Mortar, Daub, *opus signinum*

Fabric overview

Fabric	Fabric Description	Date Range	Number	Weight (g)
3101R	Mortar	50-400	135	4358
3102R	Daub	1400BC-400	457	33721
3104	Opus signinum	100-400	44	34006

Daub and Keyed Daub
457 examples 33.7kg

Much of this sizeable assemblage consists of small degraded undiagnostic lumps of daub deposited in demolition layers in both Area A e.g. [2382] and Area B e.g. [4327], which may or may not relate to the on-site timber framed buildings that are a feature of this site from Phase 5a onwards.

Two types of daub fabric were identified – first examples characterised a fine grey/brown texture with numerous clear wattle impressions [4313] and then examples having a reddened almost burnt texture with occasional larger shell and quartz pieces associated with keyed daub as well as plain daub. Both were in use early on as they have been identified in Phase 5b dumps [4313].

The form of some of the material, also warranted closer examination. In particular 4 examples of keyed chevron daub. [4370]; [4422]; [4496]; [4313] found in Phase 5b and 6a dumps in Area B. The example from [4496] is moulded into a tegula shape and is likely to have formed the corner or edge of a timber and daub building. The habit of keying daub to ensure application of plaster dates from around the mid first to second century (Betts *et al*. 1994) so its identification during the mid second century at Drapers' Gardens is not surprising. Area B has evidence for timber and clay-lined structures from this phase (Building 3) so it is possible that they may derive from them.

Larger examples of dumped walling daub are also identified in Area A, with a 15kg section of a collapsed wall identified in [2335].

Mortar
135 examples 4.4kg
Sizeable quantities of gravel type mortar have already been identified at Drapers' Gardens from Phase 4 as being used as arriccio that backs and supports the painted wall plaster (see Appendix 11). This small group of mortar fragments are generally undiagnostic One example, from a Phase 8 ditch or gully [410] <78> is moulded into a smooth crenulated rectangular edge with an intancio or thin plaster layer. Its function is unknown.

***Opus signinum* mortar**
44 examples 34kg
Examples of *opus signinum,* mortar which has crushed tile inclusions, have already been identified from 38 examples of arriccio that backs and supports the wall plaster at Drapers' Gardens (see Appendix 11). However there are sizeable 9kg chunks of this waterproof material being used as flooring in the Phase 5b Room C of Building B2 [2840]. Opus signinum is a second century innovation so its use in essentially a 2nd century building is unsurprising.

Medieval tile
A very small quantity (27 examples) of medieval roofing and flooring tile was recovered from Area A. This reflects the low level of activity at this time.

Fabric and form overview

Fabric	Phase	Fabric Description	Date Range	Number	Weight (g)
1678	10	Flemish Tile Silty Fabric	1350-1550	1	303
2271	9	Reduced Sandy Medieval Peg Tile Fabric	1180-1800	19	1401
2272	9	Coarse Sandy Medieval Peg Tile Fabric	1135-1220	1	248
2273	8	Coarse Sandy Medieval Peg Tile Fabric	1135-1220	3	264
2276	10	Fine Sandy Post-Medieval Peg Tile Fabric	1480-1900	1	167
2587	9	Iron Oxide Medieval Peg Tile Fabric	1240-1450	3	486

Peg-Tile and Ridge Tile *2271; 2272; 2273; 2586*
A group of coarse medieval (sometimes glazed) peg tile and ridge tile was recovered from the fill [106]; [107] of a medieval ditch [133]. Examples of very coarse sandy *2271-2273* and iron oxide *2586* fabrics can be dated from the mid 12th to the mid 13th century.

Floor Tile *1678*
A solitary example of a medieval Flemish floor tile with a busy silty fabric was recovered from the fill [509] of a post-medieval well.

Post-Medieval Tile and brick

Just two examples of post-medieval building material, a fine peg-tile and post-Great Fire frogged brick (1750-1850) were recovered from Drapers' Gardens (see below). The brick, recovered from a late Roman demolition layer [911] must be intrusive whilst the peg tile [509] is from the fill of a post-medieval barrel well.

Fabric	Phase	Fabric Description	Date Range	Number	Weight (g)
2276	10	Fine Sandy Post-Medieval Peg Tile Fabric	1480-1900	1	167
3032	7	Post Great Fire Frogged Brick	1750-1850	1	495

Discussion

Phase summary

The phasing summary will assess the overall character of the ceramic building material assemblage from each phase and (where possible) relate their fabric and form (including evidence for reuse) to the proposed date and function for each occupation phase at Drapers' Gardens and comment will be made to the building material from important structures and features.

Phase 1 and 2 Natural and Overbank Flooding
No ceramic material recovered.

Phase 3: AD 50-70 Early Roman: Corduroy Structure, Channel & Infant Burials

Sub-phase A
11kg (9 contexts) of broken up ceramic building material, all of it from the corduroy part of Area B, was identified from this phase. This assemblage is dominated by broken roofing material (9kg) made from early Roman sandy fabrics *2452; 2459a; 3006* (AD 50-160). The only other fabrics from this phase are the Radlett Group (AD 50-120) and a fragment of brick made from a West Sussex Grog fabric *3054.* (AD 70-140) [4916]. One example of a fragmentary half box flue tile [4930] may derive from a mid-first century building with a heated room or a bath-house (Pringle 2006; 2007).

Some of this material came from contexts representing the initial dumping episode at Drapers' Gardens [4930], whilst the remainder especially [4780], where over half (32 examples) of the assemblage were uncovered accumulate in the slightly later channel deposits that align with the timber corduroy structure dated to AD 62. The ceramic building material assemblage is not exceptional and simply represents small-scale mid first century dumping episodes from low-status buildings in the vicinity. There is nothing to relate the form of the building material (e.g. stamps) with any possible military involvement in this area.

Sub-phase B

Much larger backfill accumulations (31kg – 9 contexts) of broken up ceramic building concentrate in the re-cut channel [4783] immediately to the north of the old corduroy structure (e.g. [4706] 20kg). The ceramic building material here had essentially the same form and fabric as the preceding ditch fill Phase 3a, with two minor differences. First, the appearance of the very early Kent white Eccles fabric (AD 50-80) in some quantity and then the high concentration of imbrex roofing tile fragments, 16 in the large backfill deposit [4706]. As with sub-phase A there is no daub, whilst box-flue tiles are represented by the early half-box form only. Taken as a whole the assemblage dates to the mid/late first century date which corroborates with the dating evidence from both Phase 3a and 3b. Most of the assemblage is indicative of low-status construction material, with the notable exception of some black and red painted wall plaster (see Appendix 11) and complete Purbeck marble inlay [4706] (Appendix 6) which are clearly higher status.

One final point of note is the near total absence of ceramic building material to the north of the re-cut channel in the area containing the 4 timber neonate burials and the door.

Phase 4: AD 70-120 Early Roman: Consolidation

Quantities of dumped fragmentary building material increase during this phase (43kg –178 examples) and this must relate to mass ground consolidation of the entire area (A & B)

The overall character of the dumped assemblage remains consistent throughout the site and has also changed very little since Phase 3b. The sizeable dumps (10kg in total) in Area B for example [4339] [4402] [4703] contain essentially the same early fragmentary roofing tile fabrics 2815 (80%) and *3023* (15%) as those dumps [501] [885] [886] and revetment fills [1045] [2763] in Area. A. This would indicate that the dumping episodes throughout the site were broadly contemporary and had derived from the demolition of the same type of low-status structures identified from the rubble in Phase 3. Although a quantity of dumped decorative polychrome painted wall plaster (Appendix 11) would suggest that some of these early structures were of importance.

Of note are a small concentration of rare roofing ridge tiles in the dumps represented by [885] [886] [1035] and the rarity of cavity walling materials, daub and *opus signinum*. Where box-flue tiles do occur they are either half boxed [501] or scored [3377] which typify late first century forms.

Phase 5a: AD 120-160 Road Layout and First Buildings
There is another increase in the quantity (81kg – 75 contexts) of building material during this phase, most of which, despite it representing the early development of the formalised settlement, is still to be found in a fragmentary condition.

To illustrate the point none of this ceramic building material has been identified in the earliest structure, Building 1 [3331]. Instead they are found broken up in large quantity in the large central [1895] and southern sections [1708-1712] of the northeast-southwest trending revetment structures that criss-cross the site during this phase. Other material was used to level the new road [641] whilst smaller quantities were present as dumps and consolidation layers in Area B [4467].

In each case the assemblage remains essentially the same as Phase 4, with large quantities of broken and reused roof tile and brick featuring in all of these contexts. The fabric is once again dominated by early London sandy fabric *2815*. There are, however, some important additions including the first use of later Roman fabrics e.g. *2459b* (AD 120-250) and the iron oxide *3023b* – which is a sure indication that this dumped deposits are later. Furthermore, the small quantities of box-flue tile are now either combed [1582]; [1711] or roller stamped [1711]; [762]. These techniques were in widespread use during the second century. One striking example was retained the rosette design [764] is very rare for London.

Another important difference is the increase in the quantity of daub in these deposits. Indeed some of the examples are very large e.g. [4158] 10kg which would indicate clay and timber

lined structures are very close by indeed. This is not surprising with the first timber structure Building 1 occurring just to the south of the site.

Sub-phase 5b
The increase in ceramic building material during this phase (116kg – 363 examples) can in part be attributed to the use of bricks in the construction of circular ovens and hearths [3020] [3933] [3967] 3968] [4065] in Rooms B, C and D of the newly constructed timber framed Building 2. In total 23kg of complete brick have been retained from these structures include two complete examples of large rectangular *lydion* [3968] – 18kg and a *pedalis* [3933].

Normally large quantities of complete *bessalis* and *pedalis* bricks would be an indicator of structural support associated with hypocausts and therefore of buildings with heated rooms or bath-houses. Furthermore quantities of box-flue tiles in dumps from the site would normally support this. However, very little of this cavity-walled material is associated with the ovens and hearths and must be associated with demolition of early buildings with heated rooms or bath-house structures in the vicinity. One of the other major uses of *bessalis, pedalis* and *lydion* are as flooring for ovens (Brodribb 1987) and the size of the structures (2 metre square) and vitirified character of the bricks at Drapers' Gardens would support this. Furthermore, it seems likely that the regularly linear, circular and wedge shaped ridges and depressions present in some of the bricks would have acted as a floor grip.

These oven floors are nearly all made from early London sandy fabrics 2815 group (AD 50-160) and many show evidence of reuse and wear which may indicate they may have been salvaged from earlier dumps. The exception is a large fresh *lydion* brick [3968] fresh made from a later fabric 2459b (AD 120-250).

In Building 2, Room B [2840] 10kg of *in situ opus signunum* flooring was also retained, an innovation that was introduced only after the 1st century. *In situ* polychrome painted wall plaster was also recorded in quantity (see Appendix 11) in this structure [2900]; [3064]; [3248] providing a further indication of the status of this building

In contrast, very little building material can be directly attributable to Building 3 in Area B, although it is possible that the keyed daub from associated dumped layers [4394]; [4420] [4495] was an indication that this was a clay-lined structure.

Of note from this phase is the procuratorial stamp PPRB from a dump [3325] and some ornate roller stamp box-flues

Phase 6a: AD 160-250 Continued Development of Buildings

One structure, Room I [2759] in the southern extremity of the altered Building 2 accounts for 35kg (25%) of the large building assemblage (143kg – 411 examples) from Phase 6a. Three courses of brick survived *in situ* forming the north, south and west walls, with a majority (80%) made from the mid second-third century sandy fabric 2459b (AD 120-250) including large square *pedalis* (290mm x 290mm). This would indicate a single build of contemporary (mid-second to third century) bricks for the walls in this structure which corroborates with other dating evidence from this phase. Its function is unclear, the bricks are not burnt which would suggest that it may not have been a hearth structure.

None of the building material relates to the new peripheral structures in Area A such as Building 4 in the courtyard of the preceding Building 2 or Building 5 to the west of it.

Of the remaining building material, large quantities were dumped in the revetted channels that continued to run alongside Building 2 as with channel [853] [494], [1660] [1295] [1388] and [2209]. Here the dumped material remained essentially unchanged from Phases 3 to 5 still having large quantities of reused brick and tile in the early London sandy fabrics *2815* (AD 50-160). Of note was a quantity (44) of loose tesserae in the fill of revetment [2209].

In Area B, small quantities of building material were found in consolidation layers associated with the new Building 6 [4250] [4370]. Whilst 2kg of broken tile and brick were found in the fill

of well 4732 [4589]. Once again their fabrics was typically late first century/early second century this also applies to Phase 6b.

Sub-phase 6b
By phase this is by far the largest accumulation of building material (1068 examples 280kg) at Drapers' Gardens and can be attributed to the major redevelopment and alteration of structures in this part of the Walbrook Valley between the mid second and third century. Over half of the assemblage (147kg) consists of complete or near complete brick and tile belonging to at least four hearth or oven structures [964], [1364], [1378] and [1876] associated with 3 new strip buildings (Buildings 8, 9 and 10). These circular structures continue to rely on recycled brick made from the early London fabric 2815 (AD 50-160). This is not surprising, given that earlier hearth structures were in use in this area in Building 2 Phase 5b. To illustrate this point, the keyhole oven [1876] used in Building 9 Room A which overlies the pre-existing oven [3967] in Room C of Building 2 is made from highly degraded and vitrified brick fragments (204 fragments 56kg) of the same 2815 used in this earlier structure. The flooring of Building 8 was surfaced with *opus signinum* [1771].

By contrast there is no evidence of ceramic building material in the new, much smaller ancillary Buildings 7 and 11.

The other major feature from this phase is the concentration of border mosaic fragments (9 chunks c. 300 *tesserae*) dumped near to the revetment structures [1998] [2009] [2209] bordering Buildings 8 to 10. The types of stone used (White Lias; Indurated Chalk; Kimmeridge Dolostone) and tile fabrics the Eccles 2454 (AD 50-80) and sandy 2459a (AD 50-160) are indicative of a first century date. These materials must have been dumped from an early building of a much higher-status than the surrounding structures in this part of the Upper Walbrook Valley.

Phase 7: AD 250-350/400
The spread of this very large assemblage (851 fragments 191kg) of building material is much greater than in Phase 6b. For example, instead of concentrations of whole brick exceeding 50kg, the individual hearths and associated walling represented by Buildings 12 [969] [1292] [1293] [1315] [1593] [1789] [1848] and Building 15 [131] [1236] are much smaller – in each case yielding assemblages no greater than 5kg. There is also a probable remnant oven in strip Building 14 [1125] characterised by a reused burnt *lydion* made from the Hampshire fabric 3054 [AD 70-130]. Indeed, it is a feature of both the Phase 6 and 7 oven structures that first-second century fabric groups such as 2815; 3023; 2454 are been continually reused. The large Phase 5b ovens from Building 2 Rooms B; C and D lie underneath Building 14 and must have provided a ready supply of kiln material both here and in adjoining structures. Only the oven from Building 15 Room A [1236] uses a fresh consignment of brick made from the later chaff-tempered fabric 2459c (AD 120-250].

Other buildings from this phase (Buildings 13, 16 and 17), much smaller timber framed structures, had no ceramic building material associated with them.

Accumulations of tile that found in the many wells that are a feature of this phase such as [4251] in Area B [4467] [4768] and [569] in Area A [728] [729] [1393] are characterised mainly by early sandy fabrics (AD 50-160). However, it is interesting to note that the much later well [569] dated to the mid fourth century on coin evidence contains a much higher proportion of later third century fabrics (3023b; 2459c).

Phase 8: AD 350-420
The latest phase of Roman occupation at Drapers' Gardens is represented by 220 fragments 90kg of ceramic building material most of which has been dumped in the narrowed NNE-SSW revetted channels that continue to remain open in Area A into the late fourth/early fifth century. Their contents reveal a mixture of broken reused brick, tile and box-flue made from early London sandy fabrics (AD 50-160) together with moderate proportion of later sandy *2459b;* (AD 120-250) *2459c* (AD 140-250), iron oxide 3023b (AD 170-230) and calcareous fabrics *2457* (AD 140-300) that are in keeping with this later Roman activity. Examples

include 12kg – 50 fragments [609] [613] [616] from revetment [599] in the north, as well as 5kg [332] [1038] from revetment [1766] to the south of Area A.

The remainder of the assemblage consists of broken tile and brick in fills of pits [403], wells 597 [573] [3032] capped by late rubbish pits [297] [416] in the central part of Area A. Most of this material consists of an admixture of early and late fabrics but two contexts warrant further investigation. The first is the fill of a very large rectangular pit [403] consisting of large quantities (13kg) of burnt brick and tegulae mammata. As this assemblage lies in an area where hearths had existed in strip Buildings 8-10 (Phase 6b) and Building 14 and Building 15 (Phase 7) it seems reasonable to assume that it represents dumped oven structures deriving from second to fourth century structures in this part of the Walbrook Valley.

The second area is in the late fills of the 4th century well 569. Here the latest calcareous fabric *2456* (270-350) is present [573] whilst the top of the well has over 20kg of opus signinum fragments.

Phase 9 Medieval
The small assemblage (55 fragments 14kg) contains either dumped Roman tile and brick in medieval [98] or is mixed with medieval peg-tile fabrics 2271; 2272; 2586 as in the fill of later medieval revetment structures [106] [107]. The occurrence of the fabric 2272 (AD 1150-1250) together other early fabrics 2586 and 2271 fits in with the pottery evidence from these fills [AD 1240-1300] and the dendrochronological dates from the timber AD 1164-1200. There is no ceramic building material associated with the timber structure building 18.

Phase 10 Post –Medieval
Just one context [590] the fill of a timber barrel contains a stock moulded frogged brick (1750-1850) and a modern peg tile fragment which are in keeping with the post-medieval activity dates at Drapers' Gardens.

Distribution
shaded = contexts with masonry structures – walls, flooring, oven flooring made of either reused or new whole brick or *opus signinum*

Context	Size	Date Range	Of Material	Latest	Dated Material
2	2	-50	1666	-50	1666
19	2	50	160	55	160
39	1	50	160	50	160
98	9	50	160	55	160
102	6	50	160	71	160
106	14	1135	1800	1240	1800
107	10	55	1800	1240	1800
110	1	50	120	50	120
119	3	50	250	120	250
120	3	50	160	100	160
121	2	55	160	55	160
131	12	50	160	55	160
134	8	50	350	180	350
139	1	50	160	50	160
146	5	-50	1666	140	1666
153	5	50	250	120	250
172	69	-50	1666	140	1666
185	2	55	160	55	160
187	1	50	160	50	160

Context	Size	Date Range	Of Material	Latest	Dated Material
206	2	50	1450	1240	1450
207	6	50	160	55	160
217	3	50	160	50	160
219	3	50	160	50	160
221	3	50	250	120	250
222	20	-50	1666	-50	1666
223	1	50	160	50	160
225	2	50	160	55	160
226	8	-50	1666	-50	1666
227	3	50	160	50	160
237	1	50	120	50	120
240	2	50	160	55	160
251	3	50	160	50	160
253	6	50	300	140	300
260	1	50	250	50	250
266	2	50	160	50	160
270	3	50	160	50	160
273	15	50	250	170	250
276	1	50	160	50	160
297	11	-50	1666	55	1666
298	4	50	120	50	120
299	1	55	160	55	160
305	27	-50	1666	140	1666
310	5	50	160	50	160
311	5	50	300	140	300
326	1	-50	1666	-50	1666
332	8	50	160	70	160
333	2	55	250	140	250
334	3	50	250	120	250
338	2	50	160	50	160
340	2	50	160	55	160
341	12	-50	1666	-50	1666
343	2	50	160	50	160
356	4	50	160	50	160
357	1	50	160	50	160
359	7	50	250	120	250
360	2	50	160	50	160
362	4	50	300	140	300
403	35	50	250	120	250
406	1	50	400	50	400
408	3	55	160	55	160
409	3	50	230	170	230
410	4	50	160	50	160
412	2	50	160	50	160
416	14	50	1950	140	1950

Context	Size	Date Range	Of Material	Latest	Dated Material
419	5	50	160	50	160
424	10	50	250	120	250
425	6	50	300	140	300
455	2	50	230	170	230
460	1	50	120	50	120
461	1	50	120	50	120
462	1	55	160	55	160
488	3	1135	1220	1135	1220
494	10	-50	1666	50	1666
495	1	50	120	50	120
499	1	50	120	50	120
501	2	50	160	55	160
507	2	50	160	50	160
511	2	50	160	50	160
568	3	50	160	50	160
573	2	50	160	50	160
587	21	-50	1666	71	1666
590	2	1350	1900	1480	1900
592	2	50	160	50	160
605	3	55	160	55	160
606	5	50	250	120	250
609	12	-50	1666	170	1666
610	4	50	160	55	160
611	1	50	160	50	160
613	12	50	250	170	250
616	9	50	160	50	160
617	10	50	300	140	300
618	10	50	160	55	160
641	11	-50	1666	55	1666
649	10	-50	1666	-50	1666
654	1	50	160	50	160
655	1	55	160	55	160
659	2	50	160	50	160
660	3	50	160	50	160
675	2	50	250	50	250
678	1	50	120	50	120
681	9	50	160	55	160
687	12	50	160	55	160
688	1	55	160	55	160
717	1	50	120	50	120
718	3	50	230	170	230
722	3	50	120	71	120
723	3	50	120	50	120
726	3	50	350	180	350
728	3	50	230	170	230

Context	Size	Date Range	Of Material	Latest	Dated Material
729	2	50	250	140	250
730	13	-50	1666	55	1666
731	8	-50	1666	50	1666
739	3	50	300	140	300
750	3	50	250	120	250
760	1	50	1950	50	1950
763	2	50	250	120	250
764	1	50	160	50	160
767	1	-50	1666	-50	1666
824	2	50	400	50	400
839	1	50	160	50	160
842	2	50	160	50	160
845	2	-50	1950	50	1950
846	3	50	160	55	160
852	3	50	250	50	250
855	3	50	250	50	250
860	1	50	120	50	120
865	1	50	120	50	120
866	2	50	400	50	400
868	4	50	160	50	160
872	20	-50	1666	-50	1666
876	1	50	160	50	160
878	6	50	1850	1630	1850
879	2	55	250	140	250
883	1	50	160	50	160
884	1	50	160	50	160
885	3	50	160	55	160
886	8	50	160	55	160
887	14	-50	1950	55	1950
894	2	55	160	55	160
896	2	55	250	120	250
897	4	50	250	120	250
899	1	55	160	55	160
902	11	50	250	170	250
904	3	50	160	50	160
906	7	50	250	140	250
908	7	-50	1666	55	1666
911	1	1666	1900	1666	1900
912	1	55	160	55	160
916	2	50	160	50	160
918	3	50	250	140	250
925	1	50	80	50	80
930	2	55	160	55	160
932	7	50	160	50	160
938	1	180	350	180	350

Context	Size	Date Range	Of Material	Latest	Dated Material
953	1	55	160	55	160
960	1	50	160	50	160
962	1	50	160	50	160
963	1	50	1950	50	1950
964	47	-50	1666	100	1666
965	4	50	160	55	160
967	14	-50	1666	120	1666
969	2	50	160	70	160
970	2	50	160	50	160
973	1	50	160	50	160
983	27	50	250	140	250
985	1	50	160	50	160
986	1	50	120	50	120
987	1	50	160	50	160
988	22	50	160	55	160
992	7	-50	1666	-50	1666
995	1	-50	1666	-50	1666
996	1	55	160	55	160
998	21	-50	1666	55	1666
999	2	55	160	55	160
1000	1	50	120	50	120
1011	1	50	120	50	120
1012	4	50	1950	120	1950
1022	1	50	120	50	120
1028	11	50	160	55	160
1029	1	50	160	50	160
1032	3	-50	1666	50	1666
1035	1	55	160	55	160
1036	3	50	160	55	160
1038	7	50	230	170	230
1045	13	50	250	120	250
1046	2	50	160	70	160
1054	1	50	160	50	160
1064	3	50	160	55	160
1078	7	50	160	50	160
1125	8	50	160	70	160
1132	1	120	250	120	250
1137	2	50	1950	50	1950
1155	1	120	250	120	250
1156	3	50	160	55	160
1161	4	50	160	55	160
1167	1	55	160	55	160
1178	2	50	160	50	160
1187	5	50	160	100	160
1192	1	50	80	50	80

Context	Size	Date Range	Of Material	Latest	Dated Material
1234	1	50	160	50	160
1236	7	50	250	140	250
1240	3	50	160	55	160
1243	1	70	140	70	140
1249	5	-50	1666	-50	1666
1260	26	-50	1666	50	1666
1274	1	50	120	50	120
1275	26	50	250	120	250
1280	4	-50	1666	-50	1666
1282	6	50	1950	55	1950
1292	14	50	250	50	250
1293	4	50	250	120	250
1294	2	50	160	50	160
1295	1	55	160	55	160
1296	1	50	160	50	160
1297	3	50	250	140	250
1300	2	120	350	180	350
1315	4	50	250	50	250
1317	1	50	160	50	160
1322	3	50	160	55	160
1335	20	-50	1666	-50	1666
1342	2	50	120	50	120
1360	3	50	160	55	160
1364	59	50	250	170	250
1378	30	50	1500	70	1500
1382	3	50	250	120	250
1383	8	50	160	55	160
1384	1	50	160	50	160
1388	1	50	160	50	160
1393	12	50	230	170	230
1394	5	55	250	120	250
1449	1	50	160	50	160
1454	1	50	160	50	160
1458	4	55	250	120	250
1460	4	50	160	50	160
1483	1	50	80	50	80
1484	1	50	160	50	160
1485	4	50	160	55	160
1486	54	50	160	55	160
1494	1	50	160	50	160
1506	10	50	1950	50	1950
1580	2	50	160	50	160
1582	5	50	250	120	250
1583	2	50	160	55	160
1584	3	50	160	55	160

Context	Size	Date Range	Of Material	Latest	Dated Material
1586	1	50	160	50	160
1593	2	50	160	50	160
1595	1	50	160	50	160
1602	2	50	160	55	160
1604	1	120	250	120	250
1611	3	120	250	120	250
1613	9	50	1950	55	1950
1614	1	50	160	50	160
1631	1	55	160	55	160
1640	1	120	250	120	250
1662	3	50	160	55	160
1663	4	50	120	50	120
1684	1	50	120	50	120
1694	1	50	160	50	160
1699	2	50	160	50	160
1700	1	120	250	120	250
1702	1	50	160	50	160
1703	13	50	160	55	160
1708	1	-50	1666	-50	1666
1709	4	50	160	55	160
1710	2	50	160	50	160
1711	1	120	250	120	250
1712	2	50	160	55	160
1713	3	50	160	50	160
1714	1	120	250	120	250
1720	1	50	160	50	160
1738	2	50	160	55	160
1739	26	50	160	55	160
1746	10	50	160	50	160
1767	1	50	160	50	160
1768	3	50	120	50	120
1771	5	-50	1666	50	1666
1786	1	50	120	50	120
1789	6	50	160	55	160
1791	20	50	160	75	160
1793	1	50	120	50	120
1811	1	50	160	50	160
1827	1	-50	1666	-50	1666
1845	2	50	250	50	250
1847	3	50	160	50	160
1857	1	55	160	55	160
1858	1	50	160	50	160
1867	1	50	120	50	120
1872	3	-50	1666	50	1666
1876	203	50	1950	55	1950

Context	Size	Date Range	Of Material	Latest	Dated Material
1877	1	50	120	50	120
1895	4	-50	1666	-50	1666
1897	5	-50	1666	-50	1666
1943	1	50	160	50	160
1967	1	55	160	55	160
2006	1	50	1950	50	1950
2010	2	55	160	55	160
2031	1	55	160	55	160
2036	24	50	1950	50	1950
2037	1	55	160	55	160
2048	1	50	120	50	120
2052	1	100	120	100	120
2062	1	50	160	50	160
2063	3	50	160	55	160
2064	19	50	1950	50	1950
2066	1	50	160	50	160
2067	265	50	250	55	250
2068	5	-50	1666	-50	1666
2071	10	50	350	180	350
2085	3	50	160	50	160
2094	2	50	160	55	160
2097	3	50	160	71	160
2098	3	50	250	120	250
2105	3	50	160	50	160
2112	1	50	160	50	160
2113	1	50	160	50	160
2114	2	50	160	50	160
2118	8	50	160	55	160
2152	1	50	80	50	80
2153	1	50	160	50	160
2172	1	50	80	50	80
2174	1	120	250	120	250
2179	2	50	160	50	160
2182	2	50	80	50	80
2184	5	50	400	140	400
2198	2	50	160	55	160
2205	1	50	120	50	120
2206	6	50	250	120	250
2208	6	-50	1666	50	1666
2209	24	50	160	55	160
2210	4	50	160	55	160
2212	1	170	230	170	230
2224	1	50	160	50	160
2232	2	55	160	55	160
2248	3	50	160	50	160

Context	Size	Date Range	Of Material	Latest	Dated Material
2296	1	50	160	50	160
2298	2	50	250	120	250
2304	3	50	160	70	160
2305	1	50	160	50	160
2309	31	-50	1666	120	1666
2310	12	50	160	50	160
2314	2	55	160	55	160
2319	2	50	250	55	250
2325	6	50	160	55	160
2326	1	120	250	120	250
2327	1	50	120	50	120
2333	2	-50	1666	-50	1666
2335	1	-50	1666	50	1666
2351	4	50	300	140	300
2358	4	50	160	70	160
2373	1	50	160	50	160
2387	1	50	160	50	160
2395	16	-50	1666	120	1666
2411	5	50	160	55	160
2426	4	50	400	120	400
2488	8	50	160	55	160
2489	1	50	120	50	120
2494	4	55	160	55	160
2496	1	50	160	50	160
2497	9	50	160	55	160
2498	8	50	250	120	250
2516	1	50	160	50	160
2524	5	120	250	120	250
2544	20	-50	1666	-50	1666
2576	2	50	160	50	160
2578	4	50	160	55	160
2588	2	50	230	170	230
2605	4	-50	1666	50	1666
2606	12	-50	1666	55	1666
2613	3	50	160	50	160
2617	1	50	160	50	160
2618	5	50	160	50	160
2622	21	50	160	100	160
2637	34	50	160	55	160
2647	1	50	160	50	160
2649	1	120	250	120	250
2661	1	120	250	120	250
2666	2	120	250	120	250
2668	5	50	250	120	250
2675	1	50	160	50	160

Context	Size	Date Range	Of Material	Latest	Dated Material
2685	2	50	160	50	160
2693	1	55	160	55	160
2696	1	50	160	50	160
2714	2	50	160	50	160
2738	2	50	160	50	160
2752	2	50	160	50	160
2755	1	50	1950	50	1950
2759	33	50	250	120	250
2763	6	50	250	120	250
2768	4	50	160	50	160
2775	1	50	160	50	160
2776	1	50	160	50	160
2785	1	50	160	50	160
2817	1	50	400	50	400
2840	4	50	400	50	400
2841	4	50	160	55	160
2884	4	50	250	50	250
2886	1	120	250	120	250
2895	3	50	160	55	160
2902	3	50	160	50	160
2921	1	50	160	50	160
2925	1	50	120	50	120
2926	1	50	160	50	160
2929	1	50	120	50	120
2935	5	55	160	55	160
2943	1	120	250	120	250
2949	1	50	160	50	160
2966	1	50	160	50	160
2972	1	50	120	50	120
2992	2	50	80	50	80
2994	2	55	160	55	160
3001	2	50	120	50	120
3003	7	50	250	50	250
3006	1	120	250	120	250
3008	7	50	160	50	160
3012	32	50	1950	50	1950
3014	1	-50	1666	-50	1666
3016	1	50	160	50	160
3017	3	50	160	50	160
3020	1	50	160	50	160
3021	3	50	160	50	160
3027	4	50	160	50	160
3028	10	-50	1666	-50	1666
3032	13	-50	1666	-50	1666
3034	2	50	250	140	250

Context	Size	Date Range	Of Material	Latest	Dated Material
3038	5	50	250	140	250
3050	2	50	160	55	160
3072	2	50	160	55	160
3106	2	50	160	50	160
3111	8	50	160	50	160
3116	3	50	160	55	160
3121	1	50	250	50	250
3134	1	50	160	50	160
3136	2	50	400	50	400
3137	2	50	160	50	160
3139	4	50	160	50	160
3171	5	50	400	55	400
3187	12	50	1950	50	1950
3189	3	50	400	50	400
3201	1	50	80	50	80
3202	3	50	250	120	250
3203	1	50	160	50	160
3204	1	50	160	50	160
3218	4	50	160	50	160
3225	1	50	120	50	120
3240	3	50	160	55	160
3274	9	50	160	50	160
3290	1	-50	1666	-50	1666
3296	6	50	160	50	160
3306	3	50	250	120	250
3325	9	50	400	55	400
3349	1	50	80	50	80
3359	1	50	120	50	120
3371	17	50	1950	50	1950
3377	1	55	160	55	160
3378	1	50	160	50	160
3404	10	50	160	70	160
3416	11	50	250	120	250
3428	1	55	160	55	160
3456	7	50	400	140	400
3471	2	50	160	55	160
3472	5	50	300	140	300
3491	11	50	160	55	160
3495	2	50	160	50	160
3526	2	50	1950	50	1950
3548	3	50	250	120	250
3554	4	50	250	120	250
3615	6	50	160	50	160
3617	1	50	250	50	250
3642	1	50	80	50	80

Context	Size	Date Range	Of Material	Latest	Dated Material
3649	6	50	250	120	250
3657	1	50	160	50	160
3670	10	-50	1666	-50	1666
3877	5	50	160	50	160
3926	2	50	160	55	160
3930	8	50	400	50	400
3933	11	50	160	55	160
3935	1	50	400	50	400
3937	1	50	400	50	400
3967	3	50	160	55	160
3968	8	50	250	120	250
3975	4	50	250	120	250
3981	10	-50	1666	-50	1666
3990	1	50	160	50	160
3992	3	50	160	50	160
3995	25	-50	1666	-50	1666
4012	1	50	120	50	120
4015	2	50	250	50	250
4019	4	50	160	55	160
4028	1	50	120	50	120
4063	26	-50	1666	-50	1666
4064	4	50	120	50	120
4065	10	50	160	55	160
4068	1	50	120	50	120
4089	4	-50	1666	-50	1666
4158	9	-50	1666	50	1666
4165	1	50	160	50	160
4178	1	120	250	120	250
4199	1	50	250	50	250
4201	1	50	80	50	80
4206	1	55	160	55	160
4208	5	50	160	50	160
4209	3	50	400	50	400
4236	1	50	160	50	160
4238	1	50	160	50	160
4239	3	50	160	55	160
4242	1	50	120	50	120
4243	2	-50	1666	50	1666
4246	17	50	250	120	250
4247	28	50	400	120	400
4248	1	50	250	50	250
4249	4	50	250	170	250
4250	25	50	160	55	160
4255	16	50	250	120	250
4256	13	50	300	170	300

Context	Size	Date Range	Of Material	Latest	Dated Material
4257	5	55	250	120	250
4258	7	50	250	120	250
4260	1	50	160	50	160
4263	7	-50	1666	120	1666
4264	3	120	250	120	250
4269	3	50	160	50	160
4273	11	50	250	120	250
4311	1	50	250	50	250
4313	4	-50	1666	55	1666
4314	1	50	80	50	80
4318	1	50	160	50	160
4320	5	50	250	120	250
4326	4	-50	1666	120	1666
4327	17	-50	1666	140	1666
4338	19	50	250	120	250
4339	14	50	250	140	250
4346	5	50	250	120	250
4353	3	50	250	120	250
4354	15	50	1950	120	1950
4359	1	50	160	50	160
4363	7	50	160	55	160
4364	4	50	250	120	250
4370	12	-50	1666	140	1666
4371	3	50	250	120	250
4376	4	50	250	120	250
4386	5	50	160	55	160
4389	5	50	250	120	250
4390	1	120	250	120	250
4392	2	50	120	50	120
4394	10	50	250	120	250
4402	7	50	160	55	160
4409	1	50	120	50	120
4410	2	50	160	50	160
4411	4	50	250	50	250
4422	10	-50	1666	55	1666
4427	3	50	160	50	160
4434	2	50	160	50	160
4438	1	50	160	50	160
4452	1	120	250	120	250
4467	9	50	250	120	250
4489	3	50	160	50	160
4495	6	50	250	120	250
4496	22	-50	1666	180	1666
4505	6	-50	1666	55	1666
4534	3	50	400	50	400

Context	Size	Date Range	Of Material	Latest	Dated Material
4536	22	50	160	55	160
4549	18	50	160	70	160
4553	1	50	160	50	160
4563	1	50	120	50	120
4567	9	50	160	55	160
4572	4	50	160	55	160
4581	5	50	160	55	160
4583	12	50	250	170	250
4589	9	50	160	55	160
4592	1	50	120	50	120
4626	5	50	160	55	160
4667	15	50	250	120	250
4703	28	50	250	71	250
4704	4	50	160	55	160
4706	47	50	250	170	250
4707	3	55	160	55	160
4710	3	50	120	50	120
4720	1	50	160	50	160
4723	2	50	160	50	160
4740	4	50	160	50	160
4768	4	50	250	140	250
4775	1	50	160	50	160
4780	38	50	160	55	160
4784	5	50	160	50	160
4864	6	50	160	55	160
4916	1	70	140	70	140
4930	6	50	160	55	160

Summary

The Roman ceramic building material assemblage at Drapers' Gardens is probably the largest (3708 examples - 1038kg) to be assessed in the Upper Walbrook Valley far exceeding the quantities from adjoining sites 8-10 Throgmorton Avenue (TGM99) 226kg (Betts 2001), Tokenhouse Yard 337kg (THY01) (Sudds in prep.) and 2 Copthall Avenue (CXA06) (Hayward 2008) (31kg), reflecting both the size of the excavation and the longevity of occupation/activity (AD 50-420). However, as the many structures (Buildings 1-17) that appear on the site from Phase 5a (AD 120-160) through to Phase 7 (AD 250-350-400) are timber framed, the quantities of *in situ* masonry (200kg) are not as great as would be expected. Instead, the vast bulk of building material (c. 800kg) is fragmentary, reused and is deposited in dumps and the fill of revetted channels, wells and pits that cover the site. This material represents the demolition of a number of off-site masonry buildings, from as early as Phase 3a (AD 50-70)[110]. This type of assemblage typifies the many other "ephemeral" waterlogged sites along the Upper Walbrook Valley where the continual levelling and consolidation of the ground surface would have required the large quantities of dumped building material and the revetment of the Walbrook drainage system would have provided a natural trap of cbm.

[110] Dumps from Phases 3a-5a (AD 50-160) pre-date the existence of any known structures in the vicinity and therefore must have been brought in from outside the confines of the Upper Walbrook Valley.

The character of the dumped material between both Areas A and B and the 9 phases and sub-phases of Roman activity/occupation remains essentially the same. From the outset (Phase 3a) it consists of very large quantities of roofing tile and some brick made from the early sandy fabric group *2815,* (AD 50-160) (85%) that is ubiquitous throughout Roman London. Only later (Phase 5a onwards) does the proportion of the later sandy fabric *2459b* (AD 120-250) gradually increase. This rather unexceptional assemblage all points to the demolition of standard town house structures. Obviously in a site the size and longevity of Drapers' Gardens there is not only a great number of fabric-types (34 in total) but the occasional oddity or rarity that needs not only further analysis but also hints of the demolition of much higher status structures in the vicinity. This includes an interesting assemblage (62 examples) of box-flue and half-box flue tiles with a variety of incision, comb and roller stamped designs that reflect the demolition of buildings with heated rooms or bath-house structure(s) from as early as the mid-first century onwards. The presence of very rare roller stamp Roman columns and chimney lids also suggests the demolition of such a structure(s). One further indication of status are the mosaic fragments (1.5kg) found in the Phase 6b dump [2067] These contain large quantities of small white Eccles *2454* (102 examples) (AD 50-80) and fine red iron oxide *2452* (AD 55-160) (147 examples) that curve around an array of early stone types (see Appendix 5) including black Kimmeridge Dolostone, yellow/brown weathered White Lias and Indurated chalk. This combination of early ceramic fabrics and stone types indicates that they once represented ornate flooring from an early (mid-late first century) building of some pretension. The evidence from the stone assemblage (Appendix 5) would also indicate that a small proportion of the material from these dumps once belonged to building (s) of higher status. One candidate could be from excavations to the east of the site at 22-25 Austin Friars in 1989 where a number of buildings were identified, two of which were masonry with tessellated floors and therefore probably of a high status

Finally there is a single example of the Roman procuratorial stamp PPR.BR from a Phase 5b dump [3325]. This is the only example of an official stamp on site and serves to further highlight the industrial character of the structures at Drapers' Gardens. Procuratorial stamps were manufactured between AD 70-120 by government owned tileries as part of the massive late first to early second century public building programme (Betts 1997, 221). However, there are no major public buildings in the Upper Wallbrook Valley, although other procuratorial stamps have been identified at sites such as CHL84; OPT81; LOW 88 (Betts 1997, 216-217) and a die 10 example from the adjoining Tokenhouse Yard (THY01) (Sudds in prep).

Finally, there are the *in situ* circular oven brick floors (200kg) that are found from Phase 5b onwards (AD 120-160) in the corridor style courtyard timber framed building (Building 2) [3020] [3933] [3967] [3968] [4065], Phase 6a (AD 160-250) alterations [2759], the Phase 6b (AD 160-250) strip buildings – Buildings 8, 9 and 10 [964] [1364] [1378] [1876] and finally the Phase 7 (AD 250-350/400) Buildings 12 [969] [1292] [1293] [1315] [1593] [1789] [1848, Building 15 [131] [1236] and probable remnant oven in strip Building 14 [1125].

Normally large quantities of complete *bessalis* and *pedalis* bricks would be an indicator of structural support associated with hypocausts and therefore heated rooms or bath-houses. Furthermore quantities of box-flue tiles in dumps from the site would normally support this. However, very little of this cavity-walled material is associated with the ovens and hearths and must be associated with demolition of early buildings with heated rooms or bath-house structures in the vicinity. One of the other major uses of *bessalis, pedalis* and *lydion* are as flooring for ovens (Brodribb 1987) and the size of the structures (2 metre square) and vitirified character of the bricks at Drapers' Gardens would support this. Furthermore, it seems likely that the regularly linear, circular and wedge shaped ridges and depressions present in some of the bricks would have acted as a floor grip. The continual use and reuse of these bricks in ovens is an indicator of industrial activity in and around this part of the Upper Walbrook valley

Only during Phase 5b [120-250AD] are there hints that the corridor-styled timber framed courtyard building (Building 2) may have had a higher status. *Opus signinum* floors [2840] and *in situ* polychrome painted wall plaster [2900] [3064] [3248] are recorded in quantity (Appendix 11) from this structure.

Recommendations

As most of the very large ceramic building material assemblage at Drapers' Gardens consists of common fabrics and forms which have been broken up, intermixed and reused the decision was made to discard this material. Nevertheless, certain aspects of the assemblage require more detailed analysis. These include:

- A more thorough review of the sizeable box-flue tile assemblage at Drapers' Gardens in light of recent studies (Pringle 2006; 2007) that have identified very early half box and box flue tiles from other dumps in Roman London that belonged to mid-first century bath-houses. I would recommend a specialist to look at this material in more detail.
- Visit Ian Betts in order to clarify some of the rarer fabric types from the much larger LAARC cbm reference collection in particular the red silty ware. Also, to see if there are similar examples of the chimney lamp and curved tile (column) fragments.
- Get five examples of ceramic building material used in the unusual early mosaic [2067] sampled for thin-section analysis. In the stone report, recommendations have been made for the stone from this mosaic (chalk and Lias) to be sampled. The samples would be prepared using the facilities at AFESS (University of Reading).
- Preparation of a Drapers' Gardens ceramic building material fabric reference collection and thence integrating it within the PCA fabric reference collection
- For publication, a chapter on the building material (stone and ceramic building material) which should include the form, fabric, of the key building material types especially the geological source of the unknown stone types (see stone report Appendix 5) illustrated by a series of photomicrographs. A series of illustrations on the more unusual roller stamped and combed box-flue tile dies, chimney pot lids, Columns and procuratorial stamp. Comparison of the assemblage as a whole with other sites should be made.

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APPENDIX 5: STONE ASSESSMENT

Kevin Hayward

Introduction

A large worked stone assemblage[111] (425 examples) 106kg was retained from excavation at Drapers' Gardens. The assemblage was examined at Pre-Construct Archaeology between September 2008 and February 2009 as part of an assessment of the building materials.

Aims

This assessment serves a number of purposes.

- The identification (under binocular microscope) of the main stone-types at Drapers' Gardens.
- The identification of the geological character and (where possible) the geological source of the worked stone.
- What each type of stone was used for – and what qualities made it suitable for use.
- In each section - identify any interesting or unusual pieces that warrant retention.
- A phase summary relating the fabric and form of the different stone types with the separate phases of Roman (Phases 3a-8) and medieval (Phase 9) activity at the site. In particular what materials were being used in the flooring and walling of the structures on-site and how much of the assemblage can be accounted for by the many dumping episodes.
- Ascertain whether stone function and type can tell us something about the status of the demolished buildings represented by the dumped deposits.
- How typical is the assemblage compared with other Roman sites along the Walbrook Valley
- Make recommendations for further study and research especially thin-section analysis.
- The compilation of a stone catalogue (Drapersstone.cat), which accompanies this assessment.

Methodology

The building materials were examined using the London system of classification with a fabric number allocated to each object. Stone tesserae are treated separately in this report to the cbm tesserae (see Appendix 4) although comments on the overall character of the mosaics are made in both reports. The application of a 1kg mason's hammer and sharp chisel to each example ensured that a fresh fabric surface was exposed. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10). Where possible, comparison was then made with the Pre-Construct Archaeology Building Material reference collection in order to provide a match. After analysis the common fabric types were discarded. Any unusual or interesting fabrics were retained. A small sample[112] of the statuary from [4352] <999> was also prepared for thin-section analysis as part of the *Corpus Signorum Imperii Romani* volume for south-east England (Coombe *et al.* in prep).

Condition and Distribution

[111] Including all stone SFs and individual stone tesserae.

[112] 1-2cm sample was obtained from the rear or unobtrusive part of the worked stone using a small mason's hammer (1kg) and chisel using guidelines set out (Hayward 2006; in prep). The sample was embedded in colour resin, mounted on a glass slide and ground to 30 microns using the rock preparation facilities at the University of Reading School of Human and Environmental Sciences. The rock was then analysed using a polarising microscope x 40 (Leica DMLP) and compared with thin-sectioned outcrop samples prepared as part of the researcher's PhD research to determine the geological source.

Worked stone is represented in all phases (apart from 10), with phases of activity 5b, 6b and 8 containing the vast majority by weight (85.1kg –80.3%) of the assemblage. By contrast the earliest occupation phases (3a-5a) contain very little stone (see below). The very high concentration of fragments (285) from phase 6b can be attributed to the large quantity of individual tesserae.

Phase	Number	Weight (g)
0	1	33
1	1	5
3A	1	42
3B	8	756
4	3	3190
5A	6	425
5B	24	32893
6	15	911
6A	10	1686
6B	285	23211
7	57	13131
8	11	29005
9	2	723

Figure 1 distribution of worked stone at Drapers' Gardens

Most of the worked stone identified from the dumping episodes had been broken up, although occasional examples are in much better condition such as the statuary [4352] (Coombe *et al*. in prep.), mortars [3173] and mosaic [2067] fragments. As with the ceramic building material there is evidence for reuse, particularly the whetstones [403].

Stone Fabrics

In all, twenty rock types were identified from the assemblage in hand specimen, many of which have been identified at Roman sites in London before. In most cases it was also possible to assign each rock a geological source. The range of quality materials (marbles; basalts freshwater limestones; lavastones; fine-grained sandstones and limestones called freestones[113] and cementstones) and geological sources (Italy; Rhineland; Dorset coast; Cotswolds) is an indication of the draw on stone resources that this part of Roman London had.

Only occasionally was the rock too fine-grained or chemically complex to be assigned a geological source. The results are summarised in the table below and the accompanying petrological report.

Fabric	Rock Type	Number	Weight (g)
3105	Kentish ragstone	24	34867
3106	Hassock stone	6	16801
3107	Possible Malmstone	1935	1935
3108	Laminated Greensand	7	6061
3109	Oolitc Limestone – Trigonia Grits and Combe Down Oolite	2	8658

[113] Freestones are fine-even-grained rocks with an open porous texture that enable the rock to be worked or carved in any direction.

Fabric	Rock Type	Number	Weight (g)
3111	Ferrugenous sandstone	1	103
3112R	Purbeck marble	19	4000
3113	Kimmeridge Cementstone	197	3930
3114R	Thassos marble	5	5015
3116	Chalk	7	621
3117	Flint	7	377
3118	Tufa	1	1346
3120	Basalt	4	4000
3120	Malmstone	1	1700
3120	White Lias	2	400
3122	Calcareous clay (Septaria)	2	279
3123R	German Lavastone	1	1000
3125	Indurated chalk	37	204
3131	Pennant sandstone	1	507
3138R	Sussex//Petworth marble	3	14993

Figure 2 Listing of main rock types at Drapers' Gardens by weight and number

Limestones 7 types

- Bath Stone 3109 (Combe Down Oolite) Middle Jurassic (Bathonian) – South Cotswolds Banded Shelly Oolitic Grainstone with calcite "watermarks" 1 example 7.5kg Phase 5b dump Statuary [4352] <999> Area

  The female head of (probably) a sphinx [4352] has suffered some damage and weathering and the head has broken off cleanly. Hairstyle of wavy strands and gathered into a small bun is well preserved and hints at a 2nd century date. The use of these banded oolitic limestones for statuary in and around the London area during the 2nd century is evident elsewhere in the Venus at Greenwich, female head at Skipton Street, Southwark, and fragment of statue with drapery at Tabard Square, Southwark (Coombe *et al.* in prep).

- Fine hard white oolitic grainstone 3109 (Upper Inferior Oolite) Middle Jurassic (Bajocian) – West Cotswolds Gloucestershire. Very small ooids and elongate sparry fragments of the echinoderm *(Clypeus*). 1 example 1.2kg Phase 7 fill of well Area B [4667] worked fragment

  This second type of oolitic limestone has only previously been identified in a Late Claudian-Neronian engaged column at Regis House (Brigham *et al.,* 1996a; Pringle & Samuel 2001; Hayward 2006; in prep.) (KWS 94) (KH63). The source some 190km west of London is much further away than the Bath stone (152km) used in the 2nd century statuary at Drapers' Gardens and may represent the recycling of early (1st-2nd century) dumped deposits evident elsewhere at this site.

- Fine hard very pale-green packstone 3120 (Jurassic or Lower Cretaceous) 1 example 1.7kg – [879] <220> Phase 7 dump source unknown three possibilities 1) a form of dense Malmstone (Upper Greensand Leatherhead-Farnham), 2) a variety of Caen stone (Middle Jurassic – Normandy) or 3) Tisbury stone (Upper Jurassic – Salisbury) 1 example worked ashlar block or even tombstone fragment given the peripheral locality of the site.

Two of these three source rocks (Caen stone; Malmstone) are unusual for Roman London – with a third Tisbury stone absent. Tisbury stone has been identified in the 4th century Amesbury Sarcophagus (Hayward 2007). Further analysis required.

- Purbeck marble (Upper Jurassic) 3112R – Isle of Purbeck, Dorset. Dark grey fossiliferous packstone – lots of small *Paludina carniferus.* gastropods. 19 examples 4kg Early dump Phases 3b-7 Mortar, inlay, paving. [1659] [1684] [1789] [4496] [4706].

  The widespread early use of Purbeck marble in London (Pritchard 1986) is also evident at Drapers' Gardens with a complete inlay [4706] found in a Phase 3b ditch AD 50-70 above the Phase 3a corduroy in Area B. The dumping of such a high quality condensed shelly limestone or marble so early on in the sequence would indicate that it once belonged to a high status building in the vicinity that may even pre-date the Boudican revolt. Purbeck marble mortars [1684] are common elsewhere early on in south-east England including Insula IX Silchester (Hayward pers. obs.). Finally, mention needs to be made of a large cornice (with a bevelled edge) [1789] that has been reused in a Phase 7 wall [1789]. Cornices of Purbeck marble are rare in Roman London (Pritchard 1986) and the form is very comparable with examples from Chichester (Hayward pers. obs.) There is a hole on the upper surface which would indicate some sort of attachment to a wall or floor.

- Sussex, Petworth or Bethersden marble (Lower Cretaceous) 3138R – Petworth, West Sussex. Dark-grey fossiliferous packstone – different to Purbeck marble in that it contains the larger freshwater gastropod *Paludina fluviorum* as well as some smaller *Paludina infracretacicus* (Birch 2006). 3 examples 15kg Dump Phases 5a-6 possible Tomb fragment [2395] inlay [2696] and large worn paving slab [642].

  Sussex marble has not previously been identified from Roman London, although it seems likely given the similarity between Purbeck marble and small Paludina Sussex Marble that the supply of stone from Kent and West Sussex was occurring (Potter 2004). This also makes practical economic sense being much closer to London, and accessible some of the way by boat e.g. Bethersden marble is relatively close to the River Medway. Only in a 4th century stone cyst at Chichester have I been able to confidently identify the use of this material during the Roman period. One very large worn paving slab [642] 13kg about 60mm thick from a reused Phase 5b (AD 120-160) Ditch.

- Tufa (Holocene) 3118 Local. River deposit. Very hard coarse cemented carbonate sediment formed around springs in limestone or chalk regions (Crowley 2005). 1 reused example 1.4kg [1038] associated with Phase 8 fill of revetment structure.

  Tufa has been identified at other sites in Roman London including Winchester Palace (Crowley 2005), its light weight may indicate that it was once associated with rib-vaulting in bath-houses as is the case at Chester (Macdonald 1931) – however there is no shape so it is difficult to determine its primary use.

- Chalk (Upper Cretaceous) 3116 – Local outcrop. Fine white powdery packstone. RUBBLE 7 mainly reused examples 621g in Phase 6 and 7 dumps.

  Chalk building stone rubble with mortar attached e.g. [416] is a common rock-type used in the rubble and foundations throughout Roman London.

Sandstones and Silica rich rocks 7 types

- Flint (Upper Cretaceous) 3117 – Local outcrop or River Terrace gravels. Black amorphous siliceous rock. 7 examples 377g BURNT FLINT Very small quantities of naturally worn burnt flint have been identified in Phase 6 and 7 dumps. Given its presence in the natural terrace gravels which underlie the site this seems the most likely source.

- Kentish Ragstone *3105* Lower Greensand (Hythe Beds) Maidstone. Hard dark-grey fine cemented calcareous sandstone RUBBLE; HONESTONES; PAVING; 24 examples 35kg

- Hassock Greensand 3106 Lower Greensand (Hythe Beds) Maidstone, Kent, Olive green coarse glauconitic sandstone 1 example [2316] crowded with bivalves *Exogyra* RUBBLE; 6 examples 17kg

These two walling materials are found together at outcrop (Worssam & Tatton-Brown 1993) in West Kent and are by far the most common stone type at Drapers' Gardens forming over 50% of the entire assemblage by weight (51kg). Both materials are the nearest suitable source of hard walling material and account for their widespread use not only here but throughout Roman London. Large quantities (30kg+) have either mortar e.g. [403] or *opus signinum* [2137] attached but are only found in Phase 5b to 8 dumps rather than in any *in situ* walling[114]. Only two contexts yielded Kent ragstone from on-site structures. The part-worked block from [3020] relates to the Phase 5b hearth (AD 120-160) associated with building [1265] whilst the block of Hassock stone [2316] is associated with the Phase 6b door entrance (AD 160-250).

Another use of Kent ragstone at Drapers' Gardens is in whetstones. Seven examples [223] [2096] [2105] [2608] [3615] [4250] [4496] are found in Phase 5a-6b dumps, whilst a seventh [2137] is a reused building stone with a deep hole in. The fine, hard, even grained fabric of this sandstone is an ideal media with which to sharpen tools.

Given the widespread use of Kentish ragstone from the early second century onwards in London, it is not surprising that nearly all of recorded stone made from this fabric at Drapers' Gardens only occurs after Phase 4 (post AD 120). However, hardly any of this material can be attributed to the on-site structures which is not surprising given the nature of the timber framed buildings.

- Medium Grained Laminated Sandston*e* 3108 Mesozoic (Source Unknown – probably Lower Greensand Maidstone) very fine laminated quartz rich sandstone scattering of black iron oxide and mica. 7 examples 6.1kg PAVING, ROOFING, WHETSONE [119] [207] [332] [610] [2605]. Small quantities of very finely laminated micaceous sandstone paving or possibly even roofing are present in the fill of late Roman (Phase 8) [332] and medieval ditches (Phase 9) [119] including a hexagonal roofing fragment [610]. They are essentially a flaggy version of Kentish ragstone and as such are probably part of the same Lower Greensand facies of West Kent.

Finally, these micaceous sandstones are suitable for whetstone use e.g. Phase 6b fill of revetment channel [207] and Phase 6b hearth [2605]. The example from [207] is a very large smoothstone block with a polished surface and has been burnt. It is possible that this too was associated with hearth production.

- Pennant sandstone 3131 Upper Carboniferous (Namurian) Source – Bristol region. Hard green olive green micaceous sandstone. 1 example – 507g Roofing reused as sharpening stone [403] Phase 8 silty deposit.

This solitary example of a roofing tile with a nail hole probably comes from late Roman occupation and was redeposited in a Phase 8 deposit. The use of stone as roofing tiles in southern Britain (third-fourth century) is essentially a late Roman phenomena (Boon 1974, 203). Pennant Sandstone has been identified as roofing at Silchester (Wooders 2000) and Groundwell Ridge Villa, Swindon (Hayward pers. obs.). The example also shows evidence of reuse as a whetstone with cut marks evident. Once again this has been observed at Silchester (Hayward pers. obs.).

[114] Although the Phase 7 walling at [1789] does mention the use of ragstone.

- Ferruginous sandstone 3111 Tertiary (local) or Maybe Folkestone Bed (Lower Cretaceous) or a local tertiary carrstone. Kent. Coarse dark brown iron rich sandstone. RUBBLE [1383] Phase 6b.

Marbles 1 type

Only examples of white marble have been identified from the site.

- Coarse-grained (saccharoidal) white Aegean marble (Pritchard 1986) possibly Thassos 3114 Phase 5a – 6b dumps [611] [2608] [3456] [4496] and Phase 7 tile spread [131] Mortar, cornice, inlay. 5 examples 5kg

  Two examples of white marble mortar fragments from Phase 6a dumps [611] [2608] have been identified. Mortar fragments of white marble are relatively common in Roman London from the late first century onwards (Yule 2005) though a petrological study of these objects has yet to be undertaken. The example from [611] has a very gentle shallow profile that is very comparable with the form with the late first century Winchester Palace example (Yule 2005, 149) and may even be a *labrum* that may have derived from an earlier high-status building.

Igneous rocks 2 types

- Neidermendig Lava Stone 3123 Tertiary – Eifel Mountains. Extremely hard dark grey vesicular basaltic lava QUERNSTONE 1 example – 1kg [2122] Phase 6b dump

  A solitary example of a rotary quern under (or lower) stone edge with grind marks is the only example of a quernstone at Drapers' Gardens. The rock (Neidermendig lava) is a very common rock type from Roman London coming from outcrops over 800km away along the bank of the Rhine and shipped downstream before being transported cross-channel to London.

- Basalt 3120 very dense dark grey/black basic fine to medium grained igneous rocks. Geological age and source unknown – unlikely to be Cornish elvan (used in mortars at Exeter) as this material is granitic in composition. Good possibility of this being a basaltic lava from the Eifel mountains in the Rhineland (similar source to the Neidermendig lava), Brittany, Hadrians Wall or even Egypt. Further analysis required. Used as mortar [3173] <745>, [412] <113> whetstone [+], [1297] <395> 4 examples 4kg Phases 5b to 8 fills.

  The use of black basalt in whetstones is very rare or absent in Roman London. The usual preference being native materials with whetstones (e.g. Kentish ragstone). Similarly, mortars use either native materials (e.g. Purbeck marble) or white Aegean marble (both of which are present at Drapers' Gardens). Not only is the material very hard it also polishes very easily given the mortars a striking black shiny colour. Further analysis is required in order to determine whether these materials or either native (e.g. Whin Sill, Northumberland) or continental (Brittany, Egypt or most probably Rhineland).

Cementstones and Indurated Mudstones 4 types

- White Lias 3120 (Lower Jurassic Somerset-Dorset). Pale-creamy-white very fine-grained calcareous mudstone. Two opus-sectile fragments 400g from Phase 5b dump [4422] 92 small fragments of possible tesserae [2067] Phase 6b dump

  Two polished triangular (right angled) 120x80x80mm *opus-sectile* (geometrical shaped) stone fragments are made from this fine grained calcareous mudstone. This rock-type is very rare for Roman London, but comparable size *opus-sectil*e fragments made from this material have been identified in the very early occupation

(AD 70-90) at 25-26 Lime Street (LIM 83) near the Roman forum area (Pritchard 1986, 177). The use of *opus-sectile* fragments was only a short-lived vogue in floor decoration for Roman Britain between AD 43 and the late first century. It therefore seems likely that the examples from a Phase 5b dump at Drapers' Gardens [4422] once belonged to a very early high-status building in the vicinity.

It is possible that the 92 orange/brown small fragments (212g 10mm x 10mm x 10mm) that form part of the mosaic fragments [2067] Phase 6b dump may also be made from White Lias though further analysis is necessary before we can be certain to distinguish it from indurated chalk.

- Septarian Nodules 3122 (Eocene) London Clay London Basin. Off white-yellow-cream mudstone nodules. Two examples 250g from fill of Phase 6 pits [3164] [4327]. These local concretionary deposits were used in small quantity as building rubble in Roman London.

- Indurated or Hard Chalk (Upper Cretaceous) 3125– Local outcrop. Indurated white packstone. TESSERAE 37 examples – 204g [2067] [2929] [3041] [3134] [3325] [3620] [3877] Small (10-12mm squared) white tesserae fragments found in small quantities in Phase 5 and 6 dumps (especially the dumped mosaic from [2067] – 13 examples) with one small example from Phase 4. This rock types have been identified throughout Roman London e.g. Winchester Palace (Yule 2005, 91) and examples from Silchester have been sourced using microfossil analysis to a late Cretaceous (Campanian) horizon of the Upper Chalk possibly in the Swanage-Dorchester region (Wilkinson *et al*. 2008).

- Kimmeridge Dolostone and Kimmeridge Shale 3113 Upper Jurassic (Kimmeridgian) Dorset. Hard fine grained laminated mudstone. TESSERAE AND RAW MATERIAL 197 Tesserae examples 3.9kg especially [2067] Large example of raw material 2.8kg [153] Phase 7 dump Fissile Kimmeridge shale furniture fragment [3201] <1461> Phase 6 dump. Small (10-12mm squared) dark-grey black square and triangular tesserae are found scattered throughout the site but chiefly in Phase 6 and 7 dumps, with 130 examples recovered from the Phase 6b dumped mosaic fragments [2067]. The recovery of a large chunk of Kimmeridge dolostone from a Phase 7 pit is and indication of on-site processing of tesserae at some phase in this part of Roman London.

  Tesserae made from this rock-type have been identified in large quantities throughout central southern England (Allen & Fulford 2003) including Plantation Place, Watling Court and Winchester Palace. Their use at Watling Court is in association with timber buildings destroyed by the Hadrianic fire. At Plantation Place they are associated with timber framed buildings that date to AD 70 so it is possible that the material at Drapers' Gardens may represent dumped material from a much earlier structure in the vicinity.

  These materials have been sourced (using thin-section and mineralogical analysis) by Allen and Fulford (2003) to the Upper Jurassic Kimmeridge Clay formation of the Dorset coast. At Kimmeridge Bay these hard dolostones outcrop as hard ledges that stretch out into the bay and would have been accessible by boat.

Function of stone

Type	Suffix	Number	Weight (g)
S	ASH	3	5959
S	BURNT	1	14
S	FURN	1	14
S	INLAY	18	1400

Type	Suffix	Number	Weight (g)
S	MORT	5	6927
S	MOSAIC	295	856
S	MOULD	4	4468
S	NAT	4	321
S	NOD	1	8
S	OPSEC	2	398
S	PAV	7	15296
S	QUERN	1	1000
S	RMAT	2	2824
S	ROOF	3	561
S	RUBB	33	48831
S	STAT	1	7500
S	TESS	29	569
S	TOMB	1	1713
S	WHET	13	6052
S	WORKED	2	1308

Figure 3 the proportion of stone by function at Drapers' Gardens.

Building rubble/Ashlar *3105; 3106; 3107; 3116; 3117; 3120; 3122*

Taking the assemblage as a whole, the quantities of building stone rubble were high, 48.9kg (46.1%), however for a large Roman site in the city these totals are insignificant. These low figures can be accounted for by the fact that most of the buildings at Drapers' Gardens are timber framed whilst the site itself is peripheral to the centre and therefore to the demolition of the main stone masonry buildings.

All of the stone rubble has a geological source that lies within the Thames Basin or along the northern limb of the Wealden anticline. This is consistent with other studies of stone building rubble from London e.g. Winchester Palace (Yule 2005), where the Thames and the Medway would have been important natural routes of communication and supply from nearby outcrops.

Fabric	Type	Suffix	Sum Of Weight (g)
3105	S	RUBB	31557
3106	S	RUBB	15958
3107	S	RUBB	224
3116	S	RUBB	621
3117	S	RUBB	67
3120	S	RUBB	201
3122	S	RUBB	96

Figure 4 proportions of building rubble at Drapers' Gardens

As expected, Kentish ragstone *3105*, Hassock stone *3106* and the associated laminated sandstone an 47.5kg (97.1%), were by far the most common type of material, the hard unyielding character of these Lower Greensand stones made it the ideal construction material in London during the Roman period – only really used on a large scale from the early 2nd century onwards. This is verified at Drapers' Gardens when building rubble only begins to be found in Phase 5b dumps onwards (AD 120-160).

Small quantities of tufa, flint, chalk, carrstone, and septarian nodule were also identified as well as a possible malmstone from the Upper Greensand of the Farnham-Leatherhead area.

Roofing material *3108; 3131*

Very small quantities of Pennant stone from the Upper Carboniferous of Bristol and the laminated sandstone from the Weald could be identified as roofing material in Phase 7 dumps. The use of stone as roofing tile in southern Britain (third-fourth century) is essentially a late Roman phenomenon (Boon 1974, 203) and it is clear from the vast quantities of tegula and imbrex at Drapers' Gardens (see Appendix 4) that ceramic building material was the preferred material choice for building in this district.

Paving *3105; 3108; 3111*

Fine hard even-grained sandstones from the Weald such as Kentish ragstone *3105* and laminated sandstone *3108* were found to be the most common material for paving at Drapers' Gardens. The exception is one very large 13kg paving slab of Sussex marble [642]; it is heavily worn smooth slab from a Phase 5b fill of a Roman ditch. The use of a limestone for this purpose is unusual, but Sussex marble is a particularly durable condensed limestone. All of the material came from dumped deposits so it is not possible to say whether they originally belonged to the buildings on site or from the demolition of a building further afield.

Quernstone *3123R*

A German lavastone rotary quern fragment from the Phase 6b dump [2112] is the sum total of all the grinding and milling stone artefacts on site. This dearth of quern would indicate that properties/activity along this section of the Upper Walbrook were not engaged in processing foodstuffs

Honestones/smoothstones *3105; 3106; 3108, 3120; 3131*

Fine hard, even grained sandstones from the Weald such as Kentish ragstone *3105*; Hassock stone *3106* and laminated sandstone *3108* were found to be the most common material (10 examples – 5kg) at Drapers' Gardens for sharpening tools. They are typically small elongated implements but occasionally are larger such as the polished smoothstone rectangular block from a Phase 6b fill of a revetment structure [207].

Other materials used for this purpose are two polished black basalt smooth stones including one unstratified example with knife cuts. Finally, a roofing tile of the very green hard Pennant sandstone [403] was reused as a whetstone again displaying knife cuts. All these whetstones come from Phases 5a to 7 dumps, apart from a large smooth stone associated with a Phase 6b hearth [2605] which may indicate it was related with this activity.

Stone Mortar *3112R; 3114R; 3120*

A relatively large and varied mortar stone dataset was recovered from Drapers' Gardens all from Phases 5 to 8 dumps and ditch fills. Of interest was a shallow dish shaped mortar made of Greek marble from [611] comparable stylistically with an example with the late first century Winchester Palace example (Yule 2005, 149) and may even be a *labrum* that may have derived from an earlier high-status building.

The petrology of two black basalt polished mortars is of particular interest. This rock type has not been identified in mortar from Roman London and it is not at all clear where the material was been quarried from (see fabrics). Further analysis is required.

Phase	Fabric	Type	Suffix	Context	Number	Comment
5B	3120	S	MORT	3173	1	Black basalt unknown source robber fill

Phase	Fabric	Type	Suffix	Context	Number	Comment
6	3112R	S	MORT	1684	1	Purbeck Marble COMMON MORTAR fill of 1684
6A	3114R	S	MORT	611	1	White saccaroidal marbl Thassos vessel dump
6B	3114R	S	MORT	2608	1	White saccaroidal marble/Thassos dem debris
8	3120	S	MORT	412	1	<113> Bowl Black Basalt Shaped furniture piece upper fill ditch

Figure 5 Mortar types at Drapers' Gardens

Moulded stone including Statuary and Tomb *3109; 3112R; 3114R; 3138R*

Very few examples (5) of moulded stone were recovered from the site, although their form and geological source are very different suggesting that they represent demolition of a number of different structures of some pretension. By far the most impressive is the head of a female made from Bath-stone recovered from the Phase 5b (AD 120-160) dump [4352]. It has been described in the forthcoming *Corpus Signinum Imperii Romani* (Combe *et al*. in prep.) as a 2nd century sphinx based on the hairstyle that may have adorned a funerary monument similar to the *Longinus* military tombstone from Colchester (RIB 201).

It is possible that both the statue and the thick slab of Sussex marble from the Phase 6b cut for a timber box-drain [2395] represent demolished funerary pieces from an adjoining cemetery. Drapers' Gardens lies close to the boundary of the Roman city and cemeteries such as the site (MOH 88) (Hall 1996, 65) where many limestone funerary sculptures (RIB 15; Price 1880) have been identified.

The dumped mouldings of Purbeck marble [1694] and Greek marble [611] [2608] are all cornices that were used to adorn either an impressive public building or could again be funerary.

Phase	Fabric	Type	Suffix	Context	Weight	Comment
5B	3109	S	STAT	4352	7500	Combe Down oolite statue head of sphinx 2nd century dump
5B	3114R	S	MOULD	3456	1093	Bevelled Edge v coarse either Thassos - Grce/Carrara
6B	3138R	S	TOMB	2395	1713	Sussex marble worked not inlay very thick 71mm
7	3112R	S	MOULD	3578	2595	Two adjoining worked lumps of Purbeck Marble wall
7	3114R	S	MOULD	131	780	Carrara fine white Italian mortared bevelled could be tile spread poss surface tomb edge or paving

Figure 6 Moulded stone and statuary at Drapers' Gardens

Floor Decoration – Mosaics and *Opus-sectile* fragments *3113; 3120; 3125*

All the stone floor decoration derive from dumped deposits (Phases 4 to 8) so it is not possible to determine whether some these fragments belonged to Phases 5 to 7 buildings on site.

Of particular interest are a large group of mosaic fragments and individual tesserae found in Phase 7 dump [2067]. These consist of different coloured small (10x10mm) border stone tesserae as well as two different coloured ceramic tile fabrics. The black, brown and white stone tesserae are represented by Kimmeridge Dolostone – Upper Jurassic – Dorset; White

Lias – Lower Jurassic –Somerset and possibly indurated chalk – Upper Cretaceous – North Dorset) respectively. These alternate and curve around a red sandy ceramic fabric 2452 and white Eccles ceramic fabric 2454 and obviously once belonged to a building of some pretension.

The interesting thing is the association of very early Eccles ceramic tile (AD 50-80) and White Lias (a first century stone fabric in London) together with other materials e.g. Kimmeridge Dolostone that are found in early Roman London in some quantity (Allen & Fulford 2003). This would suggest that they belong to a very early (probable first century) mosaic floor from a building of some status.

Two polished triangular (right angled) 120x80x80mm *opus-sectile* (geometrical shaped) stone fragments are made from this fine grained calcareous mudstone. This rock-type is very rare for Roman London, but comparable size *opus-sectil*e fragments made from this material have been identified in the very early occupation (AD 70-90) at 25-26 Lime Street (LIM 83) near the Roman forum area (Pritchard 1986, 177). The use of *opus-sectile* fragments was only a short-lived vogue in floor decoration for Roman Britain between AD 43 and the late first century. It therefore seems likely that the examples from a Phase 5b dump at Drapers' Gardens [4422] once belonged to a very early high-status building in the vicinity.

Wall decoration – Inlays *3112R; 3114R; 3138R*

A small quantity of stone wall veneer fragments were found in dump deposits at Drapers' Gardens again attesting to the demolition of important building(s) in the vicinity. The rock types; Purbeck marble; Sussex marble and Aegean marble are represented elsewhere at Drapers' Gardens in paving, and mouldings. However, what is particularly interesting is the recovery of a large complete inlay fragment of Purbeck marble from a very early Phase 3b (AD 50-70) in a ditch overlying the corduroy. It is the earliest example of worked stone from the site yet it is made from a high quality condensed limestone. The very early quarry (mid first century) and supply of high quality stone from central-southern England such as freestone from the Jurassic freestone ridge in tombstones and architectural fragments (Hayward 2006; in prep.) and in this case polished wall and floor inlays from the Dorset coast and Somerset (Purbeck marble, White Lias) is replicated at other sites in Roman London and southern England.

This shows an in-depth knowledge of the British Jurassic freestone outcrop within a decade or two after the conquest.

Phase Summary

The phasing summary will assess the overall character of the worked stone assemblage from each phase and (where possible) relate their fabric and form (including evidence for reuse) to the proposed date and function for each occupation phase at Drapers' Gardens and comment will be made on the building material from important structures and features.

Phases 1 and 2
No material recovered.

Phase 3: AD 50-70
With the exception of a fragment of Kentish ragstone [4930] and a complete inlay of Purbeck marble from the fill of the re-cut Roman channel [4706] both in the corduroy area no other worked stone was recovered during this very early phase. However, the dumping of such the highly quality condensed shelly limestone (Purbeck marble) so early on in the sequence would indicate that it once belonged to a high status building in the vicinity that may even pre-date the Boudican revolt. The very early use of high quality stone is south-east England apparent elsewhere in tombstones (Hayward 2006; in prep.) and indicate an in-depth knowledge of the Middle Jurassic freestone outcrop very soon after the conquest.

Phase 4: AD 70-120

Just three examples of worked stone, Kentish ragstone, chalk and Pennant sandstone from dumps in Area A [886] and Area B [4427] and the fill of the revetment structure [2929] are an indication of how little stone was in circulation at this early developmental phase in the provincial capital.

Phase 5a: AD 120-160
Very small quantities of worked stone (6 examples) were identified in this, the first major phase of the formalised settlement at Drapers' Gardens either in the fill of revetment structures as with an example of whetstone [3615] or in dumping layers [2696]. This last example is an inlay made from Sussex marble a rock type never seen in Roman London.

Phase 5b: AD 120-160
This phase is marked by the dumping of a wide variety of exotic stone-types all of which are indicative of earlier high-status structures in this part of the Upper Walbrook Valley. Most concentrate in or near to Area B, including the 2nd century (funerary) sphinx head [4352] carved out of Cotswold oolitic limestone a very common freestone material in Roman London (Hayward in prep.). This may have come from a nearby cemetery located to the north of London. White Lias *opus-sectile fragments* [4422], which are essentially a first century innovation, and a worn Sussex marble moulding from the large N-S revetment ditch [642] close by to Building 3. Continental materials include an unusual black basalt mortar [3173] and a bevelled edge moulding made from a Greek marble.

Other than this there is a quantity of Kentish rag with opus signinum attached dumped in Area A [3240] [3877]. It is possible that this derived from the flooring of Building 2 Room B [2840] where it was found *in situ* (see Appendix 4).

This phase has the highest number of stone items [24 – 32.9kg].

Phase 6a: AD 160-260
Moderate quantities 25 examples (2.5kg) of worked stone were recovered from the NE-SW revetment channels that ran alongside altered Building 2 and from dumps in Area A. Two items are worthy of mention, a Greek white mortar [641] and an unusual Kimmeridge shale disc [3201] <1461> with three holes punched in which may have functioned as a furniture item.

Phase 6b: AD 160-250
One example of worked stone, some Hassock greensand rubble is associated with the entranceway of Building 7 [2316]. Other than that the remainder of the assemblage (23kg) consists of local and exotic materials such as a black basalt hone stone [1297] and another Greek marble mortar [2608] from demolition debris or the fill of the main NE-SW revetment structures.

The principal find from this phase are the dumped border mosaic fragments (9 chunks *c*. 300 tesserae) dumped near to the revetment structures [1998] [2009] [2209] bordering Buildings 8 to 10. The types of stone used (White Lias; Indurated Chalk; Kimmeridge Dolostone) and tile fabrics the Eccles *2454* (AD 50-80) and sandy *2459a* (AD 50-160) (see Appendix 4) are indicative of a first century date. These materials must have been dumped from an early building of a much higher-status than the surrounding structures in this part of the upper Walbrook valley.

Phase 7: AD 250-350/400
Reuse of moulded stone is evident (Purbeck marble and Kentish ragstone) in oven walling from Building 12 [1789]. Whilst the occurrence of stone roofing tile from revetment structure 1766 [1275] is a clear indication that this phase is Late Roman. The use of stone as roofing tile in southern Britain (third-fourth century) is essentially a late Roman phenomenon (Boon 1974, 203).

Phase 8: AD 350-420
With the exception of a black basalt mortar from a late dump [412], the remainder of the demolition material is local mortared building rubble, especially Kentish ragstone (20kg) from

the fill of the main revetments [1997] [2029] [2056] and tufa [1038]. These would have once belonged to masonry structures in the vicinity.

Phase 9: Medieval
The little stonework recovered from this phase was Roman roofing and flooring intermixed in a medieval dump [119].

Summary

Nearly all of this sizeable stone assemblage was recovered from the consolidation dumps and revetment fills that covered the site from Phase 3 onwards. What was recovered from the many buildings, in use from Phase 5b (AD 120-160) to Phase 7 (AD 250-350/400), amounted to just reused Purbeck marble mouldings and Kentish ragstone in the walling surrounding a Phase 7 (AD 250-350/400) tile kiln in Building 12 [1789] and a Phase 6b greensand paving slab from Building 7 [2316]. This was to be expected given that all the buildings were timber framed with clay lining, a feature of adjoining sites such as Tokenhouse Yard (THY01) (Sudds in prep.), 2 Copthall Avenue (CXA 06) (Hayward 2008) and 8-10 Throgmorton Avenue (TGM 99) (Betts 2001).

What is perhaps more revealing is the character and function of the worked stone recovered from these dumps and revetment structures. In all 20 rock types were identified, many of which could be attributed a geological source. As expected local stone, in particular the calcareous sandstone, Kentish ragstone, was abundant. Perhaps most surprising of all was the quantity of more exotic regional and continental source rocks in a part of Roman London characterised by low-status timber framed industrial and residential dwellings. For, example, the presence of White Lias mudstone from Somerset in *opus-sectile* and mosaic fragments, a rock only found in Roman London during the first century (Pritchard 1986). The occurrence of 1 or possibly 2 examples of moulded Sussex marble (also identified at Copthall Avenue) as well as inlays of Purbeck marble from as early as Phase 3b levels [4706]. Indeed, the presence of Kimmeridge dolostone and indurated chalk in the tesserae shows what a pull London had on the natural resources of the Dorset coast from the first century. There was an exquisitely carved sphinx head of oolitic limestone from the Cotswolds. Finally, there was a variety of continental materials in particular black basalt mortars and white marble mortars and inlays.

This suite of exotic materials, many of which were dumped as early as Phase 5b all point to the demolition or renovation of a building or more probably buildings of high status during the second century in or around the vicinity of the upper Walbrook valley. Whether any of this material came as far as the amphitheatre or forum or even from the northern cemetery (as with the funerary monument) is open to question.

Set against this is of course, is the sheer size of the site and length of occupation/activity at Drapers' Gardens. Inevitably there will be some exotic finds found amongst these dumps and revetment fills and should be considered a major contributory factor.

Recommendations
During the assessment, it was not possible to identify the geological source of all the worked stone. Furthermore, some of these rock-types are either new (e.g. the basalt used for the mortar; Sussex marble) or very rare for Roman London (White Lias? *opus sectile* fragments and tesserae; limestone from [879] [4667]. All of this material is also too fine grained to be characterised in hand specimen. With this in mind, it is recommended that about 10-15 thin-sections are produced in order to more fully understand the character and geological source of these samples.

It is hoped that such a study would be used to differentiate between Purbeck marble and Sussex marble – a common problem in stone study from Roman and medieval Britain.

Samples of tesserae could also be forwarded to a specialist (e.g. Pari White) in order to ascertain whether the stone is White Lias or Indurated chalk.

Illustrations of the stone mortar and statuary are required.

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APPENDIX 6: ROMAN SMALL FINDS

James Gerrard

Introduction

One thousand one hundred and seventy-five small finds were recovered from these excavations. The range of objects was wide including extremely well-preserved copper-alloy, iron, lead-alloy, wooden and stone objects. The range and state of preservation are not unusual for a Walbrook site (for instance Wilmott 1991) but on a regional and national basis should be considered exceptional.

An important late Roman hoard of metal vessels is the subject of a separate assessment (below) and interim publication (Gerrard forthcoming).

Methodology

The finds have been recorded in the Pre-Construct Archaeology Roman Small Finds Database (Access 2000), which was originally developed for recording finds from this site. A copy of the database is held in the archive and a hardcopy print is provided as a table at the end of this report. No items were x-rayed for this assessment and no conservation beyond basic cleaning has yet been undertaken.

Finds have been identified using standard catalogues (Crummy 1983; Manning 1985) and functional categories have been assigned to each find using the scheme developed by Crummy (1983, v) (Table 1). This scheme is not without its difficulties (Cool and Baxter 2000; Crummy 2007a). However, it is widely used and thus useful for inter-site comparisons of assemblages.

Discussion

The discussion of the small finds falls into three sections. Firstly, the finds are discussed by phase. Secondly, important and unusual finds are discussed individually and thirdly, groups of objects that may relate to wider research questions (such as the nature of 'ritual' in the Walbrook Valley) are highlighted.

Small finds and context numbers are only given to highlight particularly significant or unusual objects. For small finds details please refer to the table / database. It should be noted that finds from long-lived features that cross phases have been assigned to the latest phase in the following discussion.

Phase 3: AD 50-70

Sub-phase 3A produced only six objects. Of most note, given the date of the timber 'corduroy' structure, is an iron ballista bolt head SF1153 from ditch fill [4864]. This is the only explicitly military object from this phase. Other objects include two personal adornments: a fragment of fine copper-alloy chain and a copper-alloy ear-ring. Also present were two styli and a needle.

The ballista bolt may indicate some military activity, assuming it is not a casual loss. The stylus suggests literacy and possibly the keeping of records and this would also be appropriate to a military context. Even the needles, seemingly 'female' artefacts, could have a place amongst a military assemblage (Allason-Jones 1999). Nevertheless, the burial and ear-ring would seem to indicate funerary and domestic activities.

Sub-phase 3B produced a larger group of 27 objects and, with only three exceptions, all of the finds came from the fills of ditch/channel [4548]/[4783]. Unusually for a Roman phase there are no personal adornments. However, textile manufacture / repair is well attested with two wooden spindles and two copper-alloy needles, one of which was deliberately bent. Six styli are present indicating literacy and record keeping.

There were a number of 'tools' and associated objects. Two elaborate knife handles (SF1104 and 1105) were recovered from fill [4705]. Baking on a greater than domestic scale appears to be indicated by an iron bread shovel (SF1118, [4585]). This is a type of object that does not appear in Manning's (1985) catalogue. More common items, suggestive of small-scale craft or industry are an awl and a punch. A small copper-alloy pendant (SF1102, [4705]) is similar to Crummy's (1983) Number 4241 and may be a military item. There are also a number of studs, fittings and fragments of lead waste that are listed in full in the tables. This sub-phase also produced a wooden coffin and nails associated with infant burial [4555].

In general terms this phase seems to be dominated by craft working / small-scale industrial objects. The lack of personal adornments is striking suggesting low status non-domestic activity. The military pendant may be significant given the date of the corduroy structure in Phase 3A.

Phase 4: AD70-120

This phase is largely concerned with the consolidation and raising of the ground level. Many of the items from these deposits will have originated off-site and have been dumped during these consolidation operations. Given this it seems reasonable to make a distinction between objects from layers and those from fills.

Sixty-three objects were found in Phase 4 dump/levelling layers. Five of these were personal adornments: four bone hairpins and a single barley-twist iron bracelet (SF978, [3442]). For the first time toilet and cosmetic equipment appears in the assemblage with two copper-alloy toilet spoons (Crummy 1983, No. 1897) and a poorly preserved pair of iron tweezers present. Textile working equipment includes five needles in iron and copper-alloy. Household utensils are represented by a wooden vessel (SF1195, [1035]) and a 'pot lid' (SF798, [3377]) – both objects that rarely survive. Four iron styli attest to the continuing importance of literacy and a single knife is the only tool from these deposits. 'Fittings' encompasses a wide variety of objects but an iron wall-hook, a copper-alloy ferrule and a copper-alloy nail are indicative of a variety of activities. A key for a barb spring padlock indicates the presence of private, securable space. The final item of interest is a fragment from a bone (cattle femur – K. Reilly pers. comm.) sword grip (SF1039, [4434]) similar to an example from the early principate illustrated by Bishop and Coulston (2006, fig 40a). Other finds include a variety of lead, copper, wood and iron waste or unidentifiable objects listed in the tables.

Nineteen objects came from fills of various features. Personal adornments are represented by three finger rings, two in copper-alloy and one in silver (SF286, [1274]). The latter is clearly a signet ring of relatively high status and the bezel is decorated with an ear of wheat.

A single bone hinge and a fragment of wooden vessel are household objects. Writing and literacy is represented by a fine tin inlaid copper-alloy disc with catch that may be an inkwell lid (J. Hall *pers. comm.*) and a wooden writing tablet. Further analysis of the 'inkwell lid' (SF1087, [4710]) is required and a good parallel for its form is sought. It is also in need of conservation.

A single copper-alloy bell (SF258, [1138]) may be associated with agricultural activities or alternatively with ritual or religious practices. Romano-British bells are the subject of current research at the University of Reading (Sandie Williams *pers. comm*.) and this item should be added to their corpus.

Phase 5: AD 120-160

This phase represents the beginnings of intensive occupation activity, the formalization of property boundaries and the construction of buildings. Three hundred and fifteen objects were recovered from this phase and the majority of these (37) were bone hairpins of Crummy's (1983) types 1, 3 and 5. There were also two copper-alloy examples. Other personal adornments include: a copper-alloy / yellow metal finger-ring with green glass intaglio (SF22, [226]), an ear-ring, a copper-alloy buckle, a copper-alloy wire bracelet, a brooch in the form of

a sitting cockerel – a type of object thought to be associated with the cult of Mercury (Crummy 2007b). There is also a shale bracelet (SF1465, [2952]), paralleled by an example from Exeter (Holbrook and Bidwell 1991, fig 126.9). There is also a group of very fine copper-alloy chain mesh. It is far too fine to have served as 'mail' and is likely to be form a purse (Crummy 1983, 1850; Woodward and Leach 1993, 133.9). Toilet instruments include three toilet spoons, two spoon probes, a pair of tweezers, An earscoop, a toilet set (SF916, [4206] a box-wood comb (SF1203, [4507]) and a cosmetic palette of Kimmeridge mudstone (SF67, [253]).

Twenty-six pieces of textile working equipment were recovered from this phase. Twenty-two of these objects were needles in bronze, copper-alloy or iron. The remaining items were wooden spindles. Household objects include a copper-alloy ring key, three ?furniture handles, three fragments of wooden furniture, a bucket mount and box fitting. There were also three lamps, two wooden 'pot lids', a ?ladle and a 'basalt' stone mortar (SF745, [3143]), possibly from the West Country, Brittany or the Rhineland (Dr K. Hayward *pers. comm*.). An unusual find (though presumably very common) were some pieces of fuel faggots from ?rubbish pit [3982]. Recreational activities are represented by eight bone, pottery and glass gaming pieces, although this type of object may have been used as counter. Weighing and measuring is otherwise only suggested by a wooden ruler (SF1141, [4582]).

Record keeping and literacy is indicated by twenty five iron and copper-alloy styli and twelve wooden writing tablets. Equipment associated with transportation includes a possible trace hook, a curry comb, a hipposandal and a possible harness strap. Buildings and services are represented by a wooden glazing bar – an unusual survival and an interesting detail. Tools include a cleaver, three knives, a hammer (SF66, [253]), a file, a punch, a rake tine, a spatula, two hones and three handles. Fixtures and fittings include a bone hinge, six joiner's dogs, a wall hook, double spiked loops and a number of studs, nails and other miscellaneous fittings listed in the database. An ox-goad (also interpreted as a pen nib), a bone with a tether ring and a hipposandal indicate animal husbandry and transportation. Fragments of two pipeclay figurines: a mother goddess and Venus are the only religious objects.

A number of objects defy identification or are of ambiguous attribution. However, SF1222, [1710], a turned wooden staff, is of some interest. It invites comparison with the centurion's *vitis* depicted on the cenotaph monument of Marcus Caelius (*CIL*8648; Bauchhenss 1978, 1), although other depictions of such objects seems to show them as a knobbly length of vine wood (for instance Woodward and Leach 1993, fig 95). Whether the staff was used as a centurion's *vitis*, or in some other disciplinary capacity or whether it was used for some other, unknown purpose remains beyond reconstruction.

Phase 6: AD 160-250

Phase 6 produced two hundred and forty objects. Of this total, thirty objects were personal adornments: twenty-six bone and copper-alloy hairpins, a single melon bead, a disc brooch, a brooch pin and a decorated silver finger-ring. Toilet instruments account for a mere three objects: a toilet spoon and two wooden combs and textile working equipment is represented by three wooden spindles and twelve bone needles.

Household utensils include: box fittings, two wooden cask heads, two fragments of furniture, a lead alloy bowl, two fragments of Carrara marble mortar, a fragment from an iron vessel and two fragments from wooden vessels. Recreational activities are represented by four counters or gaming pieces and a wooden object (SF56, [298]) that might be a wheel from a ?toy. A single weight with an iron chain for suspension attest to the importance of weighing and measuring and eleven styli and a writing tablet to the significance of record keeping and literacy. Transportation might be hinted at by two possible trace hooks. Buildings and services are indicated by a wooden, water pipe, wooden slats and a wooden weatherboard.

Phase 6 produced thirty tools. These include: ten knives, five punches, a socketed hook, an awl, three brush fragments, three whetstones, a rake tine, a spike and five tool handles. There are a wide variety of fittings, largely of unknown function or of ubiquitous types. However, three double spiked loops, four hinges, three joiners' dogs, seven keys, three

wallhooks and a loop headed spike are present in this category. A single ox-goad indicates animal husbandry and a small buckle might be a military item. Religious objects are represented by two fragments of pipeclay figurines.

Phase 7: AD 250-350/400

Phase 7 produced three hundred and thirty seven objects.

There were forty-eight personal adornments in this phase. Of this total forty-one objects were hair pins with the later Roman types (Crummy 1983, Types 3-5) beginning to feature prominently in the group. There is also a cog wheel bracelet, a late Roman and British form (Swift 2003, fig. 25), and three brooches. One of these is penannular and two are poorly preserved. One is a plate brooch and may be zoomorphic in design. There is also a shale bracelet and an odd lead alloy cruciform stud of unknown function. It is, however, probably a dress accessory. Toilet instruments include two probes, a spoon probe a pair of tweezers and two toilet spoons.

Textile manufacture is represented by ten needles. Household objects are represented by rather more items than is usual. Some thirty eight objects belong in this category and include fragments of six copper-alloy or lead alloy vessels, an iron leg, possibly from a trivet, and a pewter cup (SF125, [613]) paralleled by an example illustrated in Jones' work on pewter from the Walbrook (Jones 1983, fig. 5.4). There are also a considerable number of box fittings and handles as well as two ring keys that probably fitted lockable caskets. A candle stick and a candle holder are lighting furniture – associated, perhaps, with the shift to tallow from olive oil consumption. Pieces of wooden barrels and furniture are also present alongside a shale platter and furniture fragment. A leaded bronze mount in the form of a lion may be a knife handle (Anon. 2005, fig. 2.12).

Gaming and recreation is represented by five gaming pieces / counters and literacy by seventeen styli. Objects associated with transportation are represented by three hipposandals, a fragment from a horseshoe and a possible cart fitting. Two waterpipe collars are from fills and dumps may indicate the breakdown of the piped watersupply at this time.

This phase produced a large assemblage of thirty-nine tools. There are twelve knives, seven punches, two saws, pieces from two rakes, part of a pair of tongs, two hones, a toothed blade, an awl, a fid (pointed wooden pin), a file, a thatching needle, a ferrule, a handle from a bucket and handles from two other unknown objects. Fitting include: a hasp, wallhooks, joiners' dogs, loop headed spikes, double spiked loops, hinges, hooks and pieces of chain. There are also five lock plates and three keys. Items associated with transportation / animal husbandry includes an ox goad and a snaffle bit. 'Military' equipment includes an arrowhead and a spearhead. However, both of these could have been used in hunting. Only three religious objects were recovered: fragments of pipeclay figurines of Venus.

Phase 8: AD 350-400/450

Phase 8 produced ninety-three objects. Eighteen of these finds were personal adornments and include eight late Roman pins, three finger-rings, the base of a crossbow brooch and five bracelets. One of the latter was manufactured from Kimmeridge Shale. Toilet instruments were represented by a probe and a spoon probe.

Textile working is represented by a mere two needles and household objects by a bucket stave, a bucket binding (from the well containing the hoard), an iron handle and a shale vessel fragment. Four gaming counters suggest recreational activities and a balance arm is suggestive of weighing and measuring. Five styli are indicative of the importance of literacy and record keeping.

Tools are present and include: a hook, a knife, a hammer and two chisels. There is an unidentified tool and two hones. One of the latter objects is a reused slate. This may suggest that access to purpose made whetstones was becoming more difficult at this late date.

Fittings include two keys, a lockplate, two locks, two pintles, a hook, a handle, a double spiked loop and a chain as well as other undiagnostic iron fittings and straps.

A single intaglio of carnelian is decorated with a legionary eagle and is discussed further below. It is of mid- to late second-century date and is 'residual' in this phase. It may, however, have still been in use as an heirloom and lost in the late Roman period.

Phase 8 also produced a single shale waste core from the production of shale bracelets. This is a type of object well-known from shale working sites in the Isle of Purbeck (Woodward 1987) but only one other example is known from London (Denford 2000). It is probably not indicative of shale working during this phase but it may have been picked up in Dorset and transported to London as a curio or with some other commodity (like BB1 pottery) by accident.

This discussion of the small finds from the final Roman phase of activity excludes the vessel hoard, which is discussed separately below.

Discussion by phase

Table 2 shows the total number of objects by functional category and phase. Any conclusions based on this table are likely to be misleading due to the presence of waste from metal and bone working. This type of find is considered in more detail below. A more useful presentation of the data is the removal of Categories 15-17 and the amalgamation of finds from Phases 3-4, 5-6 and 7-8. This means that the three periods (AD 50-120, AD 120-250 and AD 250-400/450) have groups of finds that are large enough to be compared with one another (although Phases 3 and 4 have only 86 objects - not enough to be truly valid in a statistical sense) (Table 3).

In many respects the breakdown of the small finds assemblage by functional category is typical of a Roman site in the City of London and located in the Walbrook Valley. Some changes over time can be discerned. There are slight hints that the presence of military objects is associated with pre-AD 120 activity, although this may be over-representation due to the small number of objects present in Phases 3 and 4. Items associated with textile working (Category 3) appear to be more common before AD 250 as do items associated with literacy. However, fittings and tools appear concentrated in the late Roman phases (AD 250-400/450).This may represent a shift from a craft-working / industrial base in the early Roman period to a domestic land use during the late Roman period. The decline in writing equipment may also be related to broader social issues such as a possible decline in literacy during the *Dominate*.

There appear to be no other major patterns visible in Table 3. The slight increase in personal adornments in Phases 7 and 8 could be associated with a perceived shift to domestic occupation. Household objects remain relatively stable over time and the remaining categories of object are represented by too few examples for any clear cut patterns to emerge.

Craft working residues

Fragments of metal- and bone-working waste were recovered from all phases. However, no clear assessment of this material can be made at this point in the post-excavation process. The metal-working waste and some tools should probably be considered alongside the slag by both the small finds and the slag specialist. Similarly, the bone working waste should only be assessed once the faunal assemblage has been assessed by the animal bones specialist. It seems clear, however, that the production of some metal and bone objects was undertaken at the site.

Unusual objects

SF202, [403]

A red jasper intaglio depicting a legionary eagle clutching thunderbolts between its talons, a victory wreath in its beak and flanked by manipular standards. Dr Martin Henig (pers. comm.) comments that the style and use of jasper would indicate a second-century and probably Antonine date. In his recent review of intaglios from London Henig has described this find as likely to be the finest example of its kind from Britain (Henig 2008, 234).

SF1141, [4582]

A wooden ruler with divisions scratched in the surface marked by vertical lines and circles. Wooden rulers are unusual finds and metal rules are rather more common with at least one from a Walbrook site and another known from London (Wilmott 1991, fig. 77.271). The identification of Roman rulers has the potential to provide data on the use of Roman and local measurements in *Londinium* and as such this find is of some significance.

Thematic discussion

In this section a brief thematic discussion of several categories of object is provided. The aim of this is to provide an insight into the interpretive potential of assemblage. Due to the nature of the thematic discussion objects that are not 'small finds' in the classic sense (for instance inkwells, triple vases) are included.

Evidence for literacy

The site produced 75 styli or fragments of styli, 14 writing tablets or fragments of writing tablets and pieces of a maximum of 9 samian inkwells (Form 9RT13) and the lid from another ?inkwell. There are also a considerable number of wooden and ceramic artefacts with incised graffiti (see Appendix 14). These objects would appear to indicate a relatively high level of literacy among the inhabitants during the early Roman period at least (Evans 2001; Willis 2005; Monteil 2008).

Analysis of the distribution of these finds may reveal concentrations or associations with particular types of structure/feature. Some thought should also be given to whether styli are over-represented on Walbrook sites because of the nature of the ground conditions and whether they fulfilled a ritual function (Woodward and Leach 1993, 327). On the latter point it is worth noting that ten of the styli are bent (as are other objects such as toilet spoons) and this could be considered ritual damage

Evidence for religious and ritual activity

The debate over the nature of the Walbrook Valley and its 'ritual' aspects has been recently discussed by Merrifield and Hall (2008). The only explicit evidence for 'ritual' activity from the site were fragments from a maximum of seven pipeclay figurines of Venus and a Mother goddess. These objects are a well-known class of artefact and were probably produced in Central Gaul (Rouvier-Jeanlin 1972). Other items that may have been ritually damaged include thirty bent styli, toilet instruments and other objects, a number of 'killed' pots and specific vessel forms associated with 'ritual' (see Appendix 1). Analysis of the distribution of these finds and their association with specific structures or features may suggest whether there were any ritual foci on the site.

Lighting furniture

Lamps and candlesticks are relatively rare finds that are sometimes associated with specific types of activity that include ritual, military and high status urban lifestyles (Eckardt 2002). A candlestick, a candleholder and fragments of 11 lamps were identified. This is a relatively low total and it is noticeable that the candlestick, the candleholder and a pottery lamp were recovered from Phase 7 fill [613]. Further comparison with assemblages form other London sites would be profitable.

Locks and keys

Locks and keys represent the creation of private controllable space. Unfortunately, they are subsumed within Crummy's (1983) Category 11 ('Fittings') and thus difficult to interpret. The excavations produced 19 keys and two ring-keys suitable for locks on boxes and chests. There are also seven pieces of lock plate or lock. What is striking about the assemblage is the presence of five lockplates and three keys in fills ([1583] and [1638]) of revetment structure [2221]. This would suggest that there is some spatial patterning to be explored in the distribution of this type of find.

The nails (James Gerrard with Luciano De Camillas)

A large group of three thousand, three hundred and twenty-five well preserved nails were recovered from the excavations. Of this total, 632 (19%) broken nails were discarded at assessment stage. No detailed classification of these nails using typologies like those developed by Manning (1985) or Rhodes (1977) was undertaken. However, evidence for extraction, or the 'bending over' of a nail's tip for safety's sake when it was driven through a piece of wood was noted. The nails varied in size from a minimum of 7mm to a maximum of 180mm and mean sizes are given for each of the phases that produced more than one hundred nails in Table 4. Comparison with statistics for the Walbrook 'hoard' of nails from Bucklersbury House (ER268H) and other local and non-local sites (Rhodes 1991, figs. 93 and 94) shows the sizes to be well within Roman norms.

The nail assemblage would not appear to warrant further work for the publication but could be a useful resource for further studies on nail typology, extraction and iron working in *Londinium.* As such they, or a representative sample, should be retained in the archive.

Phase	Number of Nails	Mean size (mm)
3	14	-
4	67	-
5	735	62
6	913	56
7	1344	61
8	219	61
9	27	-
10	6	-

Table 4. The number of nails by phase (including discarded broken examples) and mean nail sizes for each phase producing more than one hundred nails.

Recommendations

No objects have yet been x-rayed. In spite of their generally well-preserved state all objects should be x-rayed as a form of archive documentation. This is especially true of the ironwork which may not be archivally stable in the long term (Museum of London 1998, 52; English Heritage 2006).

A number of objects (*c.* 50) require cleaning and/or conservation. These are mainly copper-alloy but also include some iron objects.

All wooden and composite objects require conservation.

Only a sample of the nails should be kept when the site is deposited in the Museum of London.

The styli, knives, needles and pins should be re-examined and any chronological distinctiosn noted.

The worked animal bone should be examined by the small finds and animal bone specialist. The same should be done for the metal working waste with the slag specialist.

Dr Martin Henig should examine the various gemstones and intaglios from the site.

The geological artefacts (mainly hones and vessels) include a number of unusual rock types that would benefit from thin section analysis (no more than 10 samples).

Spatial distributions of artefact types and associations with structures should be undertaken in conjunction with the site supervisor.

A methodology should be developed for ascertaining whether there is any evidence for ritual deposition of small finds, other objects and faunal remains.

A large number of objects will require illustration (*c*. 150). However, the majority of objects can be described with reference to standard corpora.

Some time should be spent in conjunction with other small finds specialists reviewing the unknown or unidentifiable objects.

Comparison with other similarly sized finds assemblages from the City and Southwark would be useful and informative.

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Category Number	Description
1	Objects of personal adornment or dress
2	Toilet, surgical or pharmaceutical instruments
3	Objects used in the manufacture or working of textiles
4	Household utensils and furniture
5	Objects used for recreational purposes
6	Objects employed in weighing and measuring
7	Objects used for or associated with written communications
8	Objects associated with transport
9	Buildings and services
10	Tools
11	Fasteners and Fittings
12	Objects associated with agriculture, horticulture and animal husbandry
13	Military equipment
14	Objects associated with religious beliefs and practices
15	Objects and waste material associated with metalworking
16	Objects and waste material associated with horn and bone working
17	Objects and waste material associated with pottery working
18	Objects of unknown function

Table 1: Crummy's (1983, v) functional categories for the analysis of small finds.

	Functional Category																	
Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
3	2	0	6	1	0	0	7	0	0	5	5	0	2	0	2	0	0	3
4	8	3	8	6	0	0	7	0	0	3	8	1	2	0	5	4	0	9
5	49	10	26	24	8	1	37	3	1	16	45	3	0	2	19	11	1	63
6	27	4	15	14	8	2	10	8	10	23	33	1	1	2	22	11	0	50
7	48	6	10	30	5		17	5	2	39	77	2	2	3	9	6	0	80
8	18	2	2	6	0	1	5	0	0	8	19	0	1	0	3	7	0	21
9, 10 & [+]	6	1	4	1	0	0	4	1	0	12	23	1	0	0	1	2	0	13

Table 2. The number of small finds by functional category and phase.

	Functional Category															
Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**18**	**Total No. of Objects**
3 & 4 %	11.6	3.5	16.3	8.1	0.0	0.0	16.3	0.0	0.0	9.3	15.1	1.2	4.7	0.0	14.0	86
5 & 6 %	15.3	2.8	8.3	7.7	3.2	0.6	9.5	2.2	2.2	7.9	15.7	0.8	0.2	0.8	22.8	496
7 & 8 %	16.1	2.0	2.9	8.8	1.2	0.2	5.4	1.2	0.5	11.5	23.5	0.5	0.7	0.7	24.7	409

Table 3. The number of small finds by functional category (excluding Categories 15, 16 and 17) as percentages by phase.

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
0	10	0	0	Fe	Ferrule		0
0	7	0	0	Fe	Stylus	Prob Manning 1a	0
0	7	0	0	Fe	Stylus	phase 2	0
0	11	0	0	Fe	Key	lever lock	0
0	10	0	0	Fe	Knife	Manning 12b	0
0	1	0	6	Cu	Pin	Crummy 1	0
0	1	0	14	Bone	Pin	Crummy 3	0
0	7	0	27	Fe	Stylus		0
0	11	0	155	Fe	Hook		0
0	4	0	254	Fe	Vessel		0
0	2	0	594	Cu	Toilet spoon		0
0	3	0	597	Fe	Needle		0
0	11	0	649	Fe	Wall hook?		0
0	18	0	930	Wood	?Turning waste		0
0	10	0	945	Fe	Thatching needle		0
0	11	0	946	Fe	Hook		0
0	11	0	947	Fe	Key		0
0	11	0	947	Fe	Key	L shaped Lift Key	0
0	18	0	967	Cu	Ring and chain		0
0	11	0	1023	Cu	Stud	convex	0
0	11	0	1023	Cu	Stud		0
0	3	0	1083	Wood	Spindle		0
0	12	0	1106	Fe	Hipposandal		0
0	8	0	1106	Fe	Hipposandal	Manning Type 2	0
0	3	0	1125	Cu	Needle	Crummy 2	0
0	1	0	1126	Cu	Brooch	Bow brooch	0
0	15	0	1503	Pb	Sheet		0
0	11	0	0	Cu	Stud	convex	0
0	7	204	675	Fe	Stylus		0
0	11	340	0	Fe	Hook		0
0	1	572	107	Cu	Pin	Crummy 2	0
0	16	688	171	Bone	Fragment		0
0	1	1523	419	Bone	Pin	Crummy 1	0
0	18	1810	433	Fe	Ring		0
0	18	2206	1517	Pb	Disc		0
0	16	2973	715	Bone	Fragment		0
0	18	3627	1163	Fe	Straps		0
0	18	3901	0	Wood	Reused barrel		0
0	18	3937	842	Fe	Ring		0
0	18	4395	1020	Cu	Implement		0
0	11	4395	1021	Cu	Stud	flat head	0
0	18	4395	1022	Pb	Obj		0
3a	1	4563	1063	Cu	Chain		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
3a	3	4780	0	Fe	Needle?		0
3a	3	4780	1109	Cu	Needle	Crummy 2	0
3a	7	4864	0	Fe	Stylus		0
3a	13	4864	1153	Fe	Ballista bolt / arrowhead	Manning Type 1, V240	0
3a	1	4788	1120	Cu	Ear-ring		4830
3b	7	4549	1093	Fe	Stylus	Manning Type 1	0
3b	18	4585	1113	Fe	Pin / needle		0
3b	7	4585	1114	Fe	Stylus?	Manning Type 1	0
3b	18	4585	1115	Fe	Strips		0
3b	7	4585	1116	Fe	Stylus	Manning type 1	0
3b	3	4585	1117	Wood	Spindle		0
3b	10	4585	1118	Fe	Bread shovel		0
3b	7	4704	1157	Fe	Stylus		0
3b	10	4704	1158	Fe	Punch		0
3b	13	4705	1102	Cu	Pendant		0
3b	11	4705	1103	Cu	Stud	Convex	0
3b	10	4705	1104	Cu	Handle	Crummy No 2938	0
3b	10	4705	1105	Cu	Knife handle		0
3b	15	4706	0	Pb	Waste		0
3b	15	4706	0	Fe	Waste		0
3b	18	4706	0	Fe	Rings		0
3b	3	4706	1112	Cu	Needle	Crummy 2	0
3b	7	4706	1119	Fe	Stylus	Manning Type 1	0
3b	10	4706	1121	Fe	Awl		0
3b	11	4706	1127	Cu	Ferrule		0
3b	11	4706	1140	Cu	Stud	Flat head	0
3b	3	4706	1290	Wood	Spindle		0
3b	11	4706	1502	Cu	Misc Fitting		0
3b	3	4723	1098	Cu	Needle	Crummy 1	0
3b	7	4723	1099	Fe	Stylus	Manning Type 1	0
3b	11	4555	0	Fe	Nails		4555
3b	4	4555	0	Wood	Box		4555
4	18	1035	0	Wood	Thin oak board		0
4	4	1035	1195	Wood	Vessel		0
4	12	1138	258	Cu	Bell	Crummy 4166	0
4	18	1138	259	Fe	Obj		0
4	13	1500	0	Wood	Pallisade		0
4	18	1961	0	Fe	Obj		0
4	7	2984	0	Fe	Stylus		0
4	3	3111	734	Cu	Needle		0
4	16	3199	746	Bone	Fragment		0
4	16	3199	747	Bone	Fragment		0
4	1	3199	748	Bone	Pin	Crummy 5	0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
4	3	3199	749	Bone	Needle		0
4	7	3199	750	Fe	Stylus	Manning Type 2	0
4	3	3199	751	Bone	Needle		0
4	3	3199	770	Fe	Needle		0
4	1	3199	775	Bone	Pin	Crummy 1	0
4	18	3199	776	Cu	Strip		0
4	16	3243	752	Bone	Fragment		0
4	18	3375	0	Fe	Stylus / spindle?		0
4	18	3375	768	Fe	Obj		0
4	1	3375	769	Bone	Pin	Crummy 5	0
4	2	3375	912	Cu	Toilet spoon	Crummy 1897	0
4	3	3376	774	Fe	Needle		0
4	16	3376	782	Bone	Fragment		0
4	11	3376	1277	Fe	Wall hook		0
4	3	3377	785	Wood	Spindle		0
4	18	3377	785	Wood	Obj		0
4	1	3377	786	Bone	Pin	Crummy 5	0
4	2	3377	787	Cu	Toilet spoon	Crummy 1897	0
4	4	3377	798	Wood	Pot lid		0
4	1	3442	978	Fe	Bracelet		0
4	11	4402	0	Fe	Loop	figure of eight loop	0
4	2	4402	0	Fe	Tweezers		0
4	7	4402	1026	Fe	Stylus	Manning Type 1	0
4	11	4402	1027	Cu	Ferrule		0
4	11	4402	1028	Cu	Nail	Crummy No 2995	0
4	15	4402	1528	Pb	Sheet		0
4	15	4402	1529	Pb	Sheet		0
4	15	4402	1530	Pb	Waste		0
4	7	4409	1030	Fe	Stylus	Manning Type 1	0
4	10	4409	1031	Fe	Knife	Manning Type 6	0
4	15	4427	1539	Pb	Sheet		0
4	13	4434	1039	Bone	Sword grip	Coulston and Bishop Fig 40a	0
4	15	4434	1040	Pb	Waste		0
4	11	4534	1501	Cu	Fitting		0
4	7	4536	1062	Wood	Writing tablet		0
4	3	4536	1084	Cu	Needle		0
4	3	4536	1085	Cu	Needle		0
4	10	4536	1086	Cu	Tool		0
4	7	4703	1091	Fe	Stylus	Manning Type 1	0
4	7	4710	1087	Cu with tin/silver inlay	Inlaid disc	inkwell?	0
4	4	4710	1089	Cu	Drop handle	Crummy No 2142	0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
4	18	4710	1090	Wood	Odd object/box		0
4	10	4710	1092	Fe	Chisel		0
4	1	4710	1094	Cu	Finger-ring	Crummy No 1744	0
4	1	4710	1096	Cu	Finger-ring		0
4	11	4741	1097	Cu	Boss	Crummy no. 4045	0
4	4	1045	0	Pot	Lamp		1980
4	18	1045	0	Fe	Objs		1980
4	4	1045	237	Wood	Vessel		1980
4	11	1045	333	Bone	Hinge		1980
4	4	1045	333	Bone	Hinge		1980
4	1	1274	286	Ar	Finger-ring		1980
4	11	4148	0	Fe	Wall hook		4154
5	7	1582	433	Fe	Stylus		1773
5	1	1895	566	Bone	Pin	Crummy 3	1998
5	1	2927	711	Bone	Pin	Crummy 5	3277
5	18	2952	0	Fe	Ring		3277
5	1	2952	1465	Shale	Bracelet		3277
5	5	2966	712	Bone	Gaming Counter		3277
5	11	2966	714	Cu	Fitting		3277
5	1	2966	720	Bone	Pin	Crummy 1	3277
5	1	2966	756	Bone	Pin	Crummy 1	3277
5	16	3483	788	Bone	Fragment		3277
5	16	3483	789	Bone	Fragment		3277
5	18	2666	664	Fe	Obj		3318
5	18	2666	665	Cu	Ring		3318
5	16	2666	667	Bone	Fragment		3318
5	1	2666	670	Bone	Pin	Crummy 1	3318
5	7	2666	1228	Wood	Writing tablet		3318
5	9	2666	1291	Wood	Glazing bar		3318
5	18	2992	0	Fe	Pin/needle tip		3318
5	7	2992	1227	Wood	Writing tablet		3318
5, 6	1	1630	363	Bone	Pin	Crummy 1	0
5, 6	1	1630	364	Bone	Pin	Crummy 2	0
5, 6	7	1639	365	Fe	Stylus?		0
5, 6	7	1639	366	Fe	Stylus		0
5, 6	10	1639	367	Compos	Knife		0
5, 6	11	1639	1255	Fe	Split pin		0
5, 6	3	4165	0	Wood	Spindle		0
5, 6	3	4165	0	Wood	Spindle		0
5, 6	10	4165	914	Fe	Knife		0
5, 6	10	4165	1278	Fe	Rake tine		0
5, 6	11	4165	1279	Fe	Joiner's dog		0
5, 6	18	4165	1280	Fe	Ring		0
5, 6	6	1708	445	Pb	Weight		1998

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5, 6	10	1708	463	Fe	Knife	Manning 6a	1998
5, 6	11	1708	464	Bone	Hinge and fitting		1998
5, 6	1	1708	474	Cu	Brooch	Type 261	1998
5, 6	4	1708	474	Wood	Furniture		1998
5, 6	18	1708	475	Wood	Cone		1998
5, 6	10	1708	476	Fe	Knife tang		1998
5, 6	10	1708	477	Wood	Tool handle		1998
5, 6	18	1708	478	Fe	Obj		1998
5, 6	18	1708	479	Stone	Ball?		1998
5, 6	1	1708	481	Bone	Pin	Crummy 1	1998
5, 6	16	1708	482	Bone	Fragment		1998
5, 6	11	1708	483	Cu	Key	Lever lock key / rotary key Crummy4150	1998
5, 6	2	1708	484	Cu	Toilet spoon	flat spoon	1998
5, 6	11	1708	486	Fe	Fitting		1998
5, 6	4	1708	487	Wood	Cask head		1998
5, 6	11	1708	492	Cu	Fitting		1998
5, 6	11	1708	508	Fe	Joiner's dog		1998
5, 6	15	1708	509	Fe	Strips		1998
5, 6	16	1708	510	Bone	Fragment		1998
5, 6	7	1708	1257	Fe	Stylus		1998
5, 6	10	2208	589	Fe	Knife		2099
5a	18	680	172	Fe	Obj		0
5a	0	681	179	Wood	Fragment		0
5a	1	681	179	Wood	Pin		0
5a	7	965	219	Wood	Writing tablet		0
5a	14	965	1187	Pot	Figurine		0
5a	18	1022	0	Fe	Hook		0
5a	11	1137	256	Cu	Boss		0
5a	11	1137	257	Cu	Stud	comvex head	0
5a	7	2031	561	Fe	Stylus		0
5a	18	2031	569	Fe	Pin / needle tip		0
5a	7	2031	571	Fe	Stylus		0
5a	18	2031	572	Fe	Fitting		0
5a	4	2031	609	Cu	Ring-key	Crummy 2165	0
5a	11	2031	610	Cu	Fitting		0
5a	18	2031	1261	Pb	Waste		0
5a	11	2648	1161	Fe	Double spiked loop		0
5a	15	2667	1523	Pb	Waste		0
5a	18	2668	0	Fe	Obj		0
5a	15	2668	669	Pb	Bar		0
5a	18	2668	682	Fe	Chain link		0
5a	3	2715	673	Cu	Needle	Crummy 2	0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5a	5	2733	676	Glass	Gaming Piece		0
5a	1	3386	1542	Bone	Hairpin		0
5a	11	3471	0	Fe	Nails		0
5a	7	3471	782	Fe	Stylus	Manning 3	0
5a	7	3471	783	Fe	Stylus	Manning 3	0
5a	15	3471	1525	Pb	Casting		0
5a	8	3495	799	Fe	Curry comb		0
5a	1	3495	800	Bone	Pin	Crummy 1	0
5a	15	3495	800	Cu	Strip		0
5a	1	3613	834	Bone	Pin	Crummy 1	0
5a	10	3615	0	Stone	Whetstone		0
5a	10	3615	0	Fe	Obj		0
5a	3	3615	809	Bone	Needle	Crummy 2	0
5a	1	3615	810	Bone	Pin	Crummy 1	0
5a	11	3615	811	Cu	Binding	Crummy No 4108	0
5a	3	3615	831	Bone	Needle, Pin	Crummy 1, Fragment	0
5a	3	3615	852	Bone	Needle	Crummy 1	0
5a	1	3653	832	Bone	Pin	Crummy 5	0
5a	18	3926	0	Fe	Obj		0
5a	0	3926	0	Fe	Objs		0
5a	11	3926	847	Fe	Key	Barb spring padlock key Manning Fig 25.12	0
5a	18	3926	848	Fe	Obj		0
5a	16	3926	850	Bone	Fragment		0
5a	1	3926	851	Bone	Pin	Crummy 5	0
5a	1	3926	870	Bone	Pin	Crummy 5	0
5a	10	3926	871	Wood	Spatula		0
5a	3	3926	874	Bone	Needle		0
5a	15	3926	882	Pb	Disc	lead disc with hole	0
5a	17	3926	883	Ceramic	Pot Burnisher		0
5a	4	3926	884	Wood	Pot lid		0
5a	4	3926	893	Pb	Vessel		0
5a	18	3926	1273	Pb	Lead hook		0
5a	18	3926	1274	Fe	Notched bar		0
5a	11	3926	1275	Fe	Fitting		0
5a	15	3964	849	Cu	Waste		0
5a	16	3975	885	Bone	Fragment		0
5a	3	3975	886	Bone	Needle		0
5a	4	3981	0	Wood	Faggot/fuel cut ends		0
5a	15	4012	0	Fe	OBJ		0
5a	7	4012	877	Wood	Writing tablet		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5a	7	4012	881	Wood	Writing tablet		0
5a	3	4012	889	Fe	Needle		0
5a	3	4012	889	Cu	Needle	Crummy 2	0
5a	1	4012	890	Cu	Pin		0
5a	18	4012	891	Fe	OBJ		0
5a	3	4012	892	Bone	Needle	Crummy 1	0
5a	5	4050	1685	Glass	Gaming Piece		0
5a	7	4060	901	Cu	Stylus		0
5a	1	4067	897	Bone	Pin	Crummy 5	0
5a	4	4068	0	Pot	Lamp		0
5a	1	4068	905	Bone	Pin	Crummy 1	0
5a	4	4142	913	Pb	Lamp		0
5a	16	4144	913	Bone	Fragment		0
5a	11	4206	0	Fe	Key	Barb spring padlock	0
5a	2	4206	916	Cu	Toilet set		0
5a	11	4208	1281	Fe	Fitting		0
5a	3	4209	917	Bone	Needle		0
5a	3	4209	918	Fe	Needle		0
5a	10	4209	919	Fe	Knife	Manning Type 13	0
5a	3	4209	920	Bone	Needle		0
5a	1	4209	921	Bone	Pin	Crummy 5	0
5a	7	4209	922	Fe	Stylus	Manning Type 3	0
5a	1	4209	923	Cu	Pin shaft		0
5a	7	4209	924	Fe	Stylus	Manning 2	0
5a	2	4209	925	Cu	Toilet spoon	Crummy1897	0
5a	3	4209	926	Wood	Spindle		0
5a	7	4255	1004	Fe	Stylus	Manning 3	0
5a	10	4255	1285	Fe	Punch		0
5a	18	4313	0	Fe	Fitting?		0
5a	11	4386	1012	Cu	Fitting		0
5a	3	4410	1024	Cu	Needle		0
5a	11	4429	1500	Cu	Ferrule		0
5a	15	4429	1532	Pb	Casting		0
5a	1	4467	1061	Cu	Pin?		0
5a	11	4497	1052	Cu	Stud	Flat head	0
5a	11	4502	1056	Cu	Stud	Crummy No. 3173	0
5a	2	4570	1203	Wood	Comb		0
5a	15	4581	0	Pb	Waste	sample 227	0
5a	18	4581	1294	Wood	Pierced disc		0
5a	6	4582	1141	Wood	Ruler		0
5a	7	4582	1229	Wood	Writing tablet		0
5a	10	4582	1295	Wood	Wedge		0
5a	11	4583	0	Fe	Fitting		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5a	1	1845	459	Bone	Pin	Crummy 1	1882
5a	18	3419	773	Cu	Ring		3331
5a, 5b	11	1712	1494	Cu	Fitting		0
5a, 5b	1	3493	791	Bone	Pin	Crummy 5	0
5a, 5b	15	3493	792	Fe	Waste		0
5a, 5b	18	3493	793	Fe	Obj		0
5a, 5b	1	4143	1165	Cu	Buckle		0
5a, 5b	18	1710	0	Fe	Pin / needle		1882
5a, 5b	18	1710	512	Fe	Obj		1882
5a, 5b	10	1710	568	Fe	Cleaver	Manning 2a	1882
5a, 5b	18	1710	570	Fe	Strip		1882
5a, 5b	18	1710	1222	Wood	Staff		1882
5a, 5b	18	1710	1258	Fe	Strips		1882
5a, 5b	10	1710	1292	Wood	Handle		1882
5b	4	226	0	Fe	Handle		0
5b	1	226	16	Bone	Pin	Crummy 3	0
5b	1	226	22	AV or Cu	Finger-ring with intaglio		0
5b	7	226	24	Fe	Stylus		0
5b	10	226	25	Fe	File?		0
5b	18	253	0	Fe	Strip		0
5b	14	253	23	Pot	Figurine		0
5b	18	253	26	Fe	Bar		0
5b	3	253	30	Fe	Needle		0
5b	7	253	31	Fe	Stylus	Manning 3	0
5b	7	253	32	Fe	Stylus		0
5b	1	253	32	Bone	Pin	Crummy 1	0
5b	3	253	36	Bone	Needle	Crummy 1	0
5b	1	253	37	Cu	Buckle		0
5b	8	253	38	Fe	Strap		0
5b	11	253	39	Fe	Fitting		0
5b	10	253	66	Compos	Hammer		0
5b	2	253	67	Shale	Mixing pallete		0
5b	15	331	608	Fe	Blank?		0
5b	7	493	606	Wood	Writing tablet		0
5b	1	493	1207	Fe	Brooch		0
5b	7	493	1225	Wood	Writing tablet/label		0
5b	1	2325	613	Bone	Pin	Crummy 1	0
5b	1	2325	619	Bone	Pin	Crummy 5	0
5b	16	2841	723	Bone	Fragment		0
5b	4	2935	928	Wood	Furniture		0
5b	5	2935	1466	Ceramic	Gaming piece / Counter		0
5b	1	3008	724	Bone	Pin	Crummy Misc	0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5b	4	3008	1293	Wood	Pot lid		0
5b	11	3010	0	Cu	Mount		0
5b	11	3010	1497	Cu	Mount		0
5b	11	3030	1162	Fe	Fitting		0
5b	15	3072	741	Pb	Sheet		0
5b	1	3127	733	Bone	Pin	Crummy 1	0
5b	1	3137	739	Bone	Pin	Crummy 1	0
5b	5	3147	735	Bone	Gaming Piece		0
5b	4	3173	745	Stone	Mortar	basalt	0
5b	5	3240	759	Bone	Gaming Piece	Crummy 1	0
5b	18	3240	762	Fe	Chain		0
5b	1	3240	762	Cu	Chain mesh	Crummy 1850	0
5b	18	3282	763	Fe	Ring		0
5b	11	3369	0	Wood	Pipe		0
5b	0	3456	0	Fe	Wire		0
5b	0	3456	780	Fe	Punch		0
5b	7	3456	795	Fe	Stylus	Manning 3	0
5b	7	3456	796	Fe	Stylus		0
5b	4	3456	1498	Cu	Fitting		0
5b	16	3523	794	Bone	Fragment		0
5b	1	3623	830	Bone	Pin	Crummy 5	0
5b	1	3623	833	Bone	Pin	crummy 5	0
5b	18	3646	812	Pb	Sheet		0
5b	3	3877	843	Bone	Needle	Crummy 1	0
5b	2	3877	844	Bone	Earscoop		0
5b	1	3877	845	Bone	3 Pins	Crummy 1, Crummy 1, Crummy 5	0
5b	11	3877	846	Fe	Key?		0
5b	3	3877	903	Bone	1 Needle, 1 Fragmnent		0
5b	5	3877	904	Bone	Gaming Piece		0
5b	18	4019	0	Fe	Obj		0
5b	7	4019	895	Fe	Stylus	Manning 2a/3a	0
5b	11	4019	896	Fe	Handle		0
5b	3	4076	907	Wood	Spindle		0
5b	16	4119	909	Bone	Fragment		0
5b	11	4119	910	Bone	Hinge		0
5b	11	4250	0	Fe	Joiner's dog		0
5b	18	4250	0	Fe	Strip		0
5b	4	4250	0	Pot	Lamp		0
5b	11	4250	936	Fe	Hook		0
5b	18	4250	941	Fe	Rod		0
5b	1	4250	952	Cu	Ring		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5b	12	4250	952	Compo	Ring	Bone with tether ring	0
5b	18	4250	957	Fe	Needle?		0
5b	4	4250	959	Fe	Handle, drop		0
5b	10	4250	977	Stone	Whetstone		0
5b	11	4250	978	Fe	Strap		0
5b	18	4250	980	Fe	Strap		0
5b	1	4250	981	Cu	Brooch	Crummy Type 214	0
5b	1	4250	1010	Cu	Brooch	Crummy 265	0
5b	7	4250	1051	Fe	Stylus		0
5b	11	4250	1053	Cu	Fitting		0
5b	3	4250	1054	Fe	Needle		0
5b	18	4250	1055	Fe	Obj		0
5b	18	4250	1057	Fe	Strip		0
5b	15	4250	1526	Pb	Sheet		0
5b	4	4256	0	Pot	Lamp		0
5b	7	4256	968	Fe	Stylus	Manning 3	0
5b	2	4256	969	Cu	Spoon Probe	Crummy No 1931	0
5b	4	4256	975	Wood	Vessel		0
5b	18	4256	976	Fe	Obj		0
5b	18	4256	979	Fe	Strap		0
5b	3	4256	1044	Wood	Spindle		0
5b	4	4256	1045	Pot	Lamp		0
5b	18	4263	992	Fe	Ring		0
5b	2	4263	993	Cu	Toilet spoon	Crummy No. 1897	0
5b	1	4263	1208	Bone	Pin	plain	0
5b	4	4263	1527	Pb	Lid?		0
5b	18	4320	996	Fe	Obj		0
5b	18	4338	0	Fe	Obj		0
5b	7	4338	1000	Fe	Stylus	Manning Type 1	0
5b	18	4338	1001	Cu	Wire		0
5b	7	4338	1048	Fe	Stylus	Manning Type 1	0
5b	18	4352	998	Fe	Strip		0
5b	11	4354	0	Fe	Wall hook		0
5b	3	4372	1014	Wood	Spindle		0
5b	11	4372	1015	Cu	Stud	convex	0
5b	15	4372	1016	Cu	Waste		0
5b	11	4372	1018	Cu	Fitting		0
5b	15	4372	1019	Pb	Waste		0
5b	2	4372	1166	Cu	Spoon Probe		0
5b	18	4496	0	Fe	Obj		0
5b	18	4496	0	Fe	Pin / needle		0
5b	7	4496	0	Fe	Stylus	Manning Type 1	0
5b	18	4496	0	Fe	Chain link		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5b	1	4496	0	Fe	Buckle?		0
5b	11	4496	0	Fe	Fitting		0
5b	11	4496	0	Fe	Joiner's dog		0
5b	18	4496	0	Fe	Sheet		0
5b	18	4496	0	Fe	Obj		0
5b	18	4496	1059	Stone	Polisher?		0
5b	11	4496	1533	Pb	Sheet		0
5b	18	4538	0	Wood	Saw marks		0
5b	11	4538	0	Fe	Loop headed spike and ring		0
5b	4	4538	0	Fe	Fittings		0
5b	15	4538	0	Fe	Waste		0
5b	11	4538	0	Fe	Fitting		0
5b	10	4538	0	Fe	Knife		0
5b	4	4538	0	Fe	Bucket Mount		0
5b	11	4538	0	Fe	Fitting		0
5b	11	4538	0	Fe	Joiner's dog		0
5b	11	4538	1065	Fe	Stud		0
5b	11	4538	1067	Fe	Latch?		0
5b	4	4538	1068	Cu	Fitting		0
5b	1	4538	1070	Cu	Bracelet	Wire	0
5b	7	4538	1071	Fe	Stylus		0
5b	12	4538	1072	Fe	Hipposandal		0
5b	7	4538	1072	Fe	Stylus		0
5b	7	4538	1073	Fe	Stylus	Manning Type 3	0
5b	7	4538	1074	Fe	Stylus	Manning Type 3	0
5b	12	4538	1075	Fe	Ox Goad		0
5b	8	4538	1077	Fe	Hipposandal		0
5b	15	4538	1078	Fe	Tongs?		0
5b	18	4538	1079	Fe	Obj		0
5b	4	4538	1080	Wood	Vessel		0
5b	10	4538	1223	Wood	Handle		0
5b	10	4538	1224	Wood	Handle/tool		0
5b	7	4538	1230	Wood	Writing tablet		0
5b	7	4538	1231	Wood	Writing tablet		0
5b	7	4538	1232	Wood	Writing tablet		0
5b	7	4538	1233	Wood	Writing tablet		0
5b	18	4538	1534	Pb	Obj		0
5b	15	4538	1535	Pb	Waste		0
5b	11	3296	0	Wood	Joinery offcut		1265
5b	10	3296	1268	Fe	Tool		1265
5b	11	3296	1269	Fe	Joiner's dog		1265
5b	11	3296	1270	Fe	Fitting / handle		1265
5b	18	3296	1271	Fe	Strips		1265

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
5b	16	3296	1272	Bone	Waste		1265
5b	2	3133	732	Cu	Toilet spoon	Crummy 1897	3049
5b	3	3136	757	Bone	Needle	Crummy 2	3049
5b	18	3145	740	Fe	Ring		3049
5b	3	3239	753	Fe	Needle		3049
5b	7	3261	878	Fe	Stylus	Manning 3	3049
5b	18	3554		Wood	Offcut		3115
5b	1	3554	803	Bone	Pin	Crummy 1	3115
5b	1	3554	804	Bone	Pin		3115
5b	10	3554	855	Fe	Knife	Manning 11	3115
5b	18	3554	856	Fe	Rod		3115
5b	18	3554	857	Fe	Rod		3115
5b	1	3554	858	Cu	Ear-ring		3115
5b	3	3554	859	Fe	Needle		3115
5b	1	3554	860	Bone	Pin	Crummy 5	3115
5b	16	3554	861	Bone	Fragment		3115
5b	3	3554	862	Bone	Needle		3115
5b	1	4018	894	Bone	Pin	Crummy 1	4018
5b	11	4027	0	Fe	Wall hook		4061
5b	5	4028	887	Bone	Gaming Piece		4061
5b	4	4028	899	Clay	Lamp		4061
5b	1	4062	902	Bone	Pin	Crummy 1	4061
5b	11	4337	0	Fe	Hook		4336
5b	18	4394	0	Fe	Obj		4336
5b	18	4394	0	Fe	Bar		4336
5b	4	4394	1032	Fe	Ladle?		4336
5b	11	4422		Fe	Double spiked loop	As Manning R34-47	4336
5b	1	4422	1042	Cu	Pin	Crummy	4336
5b	2	4422	1047	Cu	Tweezers		4336
5b	18	4422	1049	Fe	Bar		4336
5b	4	4422	1286	Fe	Handle		4336
5b	15	4422	1531	Pb	Sheet		4336
5b	18	4495	0	Fe	Strip		4336
5b	18	4508	0	Fe	Ring		4336
5b	4	3438	1289	Wood	Furniture		5019
5b, 6	18	3913	841	Fe	Fitting		3420
5b, 6a	4	1424	1245	Fe	Box fitting		1258
5b, 6a	10	1424	1246	Fe	Punch? Tool?		1258
6	4	31	69	Cu	Vessel	bowl	0
6	4	38	5	Pb	Bowl		0
6	11	4246	931	Fe	Key?		0
6	18	4246	949	Fe	Ferrule		0
6	10	4246	960	Fe	Knife		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6	4	4246	961	Fe	Fitting/mount		0
6	11	4246	963	Cu	Fitting		0
6	10	4246	964	Wood	Handle		0
6	11	4246	965	Fe	Loop headed spike		0
6	3	4246	987	Wood	Spindle		0
6	18	4246	989	Fe	Wire		0
6	4	4246	991	Cu	Fitting		0
6	18	4246	1282	Fe	Strip		0
6	18	4246	1283	Fe	Strip		0
6	7	4246	1284	Fe	Stylus		0
6	1	4253	954	Cu	Brooch pin?		0
6	14	4258	973	Pot	Figurine		0
6	4	4258	974	Wood	Furniture		0
6	18	4264	0	Fe	Ring		0
6	10	4269	984	Fe	Handle		0
6	18	4319	0	Fe	Obj		0
6	11	4319	1029	Cu	Stud	flat head	0
6	10	4319	1035	Fe	Knife	Manning Type 1	0
6	15	4319	1036	Pb	Waste		0
6	8	4326	994	Fe	Hook		0
6	11	4326	997	Cu	Binding		0
6	10	4355	1002	Compos	Awl/leatherworker's tool		0
6	11	4360	0	Fe	Fitting		0
6	15	4366	1499	Cu	Sheet		0
6	7	4371	1008	Fe	Stylus	Manning Type 1	0
6	15	4396	1034	Pb	Waste		0
6	1	4590	1108	Ar	Finger-ring	silver ring with decorated shoulders and blue enamel 'stone'	0
6	10	1399	301	Fe	Punch?		1660
6	18	1399	302	Fe	Strip		1660
6	7	1399	347	Fe	Stylus		1660
6	18	1399	348	Fe	Strap		1660
6	1	1738	410	Bone	Pin	Crummy 1	1660
6	16	2248	596	Bone	Fragment		1660
6	15	2248	1520	Pb	Waste		1660
6	10	1370	304	Fe	Socketed hook		3351
6	11	1317	291	Cu	Fitting		853
6, 7	4	1371	303	Wood	Decoartive spindle		0
6, 7	4	1371	303	Bone	Spindle?		0
6, 7	4	1581	1234	Wood	Vessel		0
6, 7	18	1581	1509	Pb	Sheet		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6, 7	18	1684	0	Fe	Wire		0
6, 7	1	1684	431	Bone	Pin	Crummy Misc	0
6, 7	1	1684	434	Bone	Pin	Crummy 3	0
6, 7	18	1684	435	Fe	Ring		0
6, 7	1	1684	631	Bone	Pin	Crummy ?	0
6, 7	3	1684	632	Fe	Needle		0
6, 7	11	2096	0	Fe	Pintle?		0
6, 7	5	2096	578	Bone	Gaming Piece		0
6, 7	10	2096	580	Stone	Whetstone		0
6, 7	1	866	197	Bone	Pin	Crummy 3	1660
6, 7	1	866	573	Cu	Brooch		1660
6, 7	16	897	210	Bone	Fragment		1660
6, 7	11	1295	295	Fe	Mount		1660
6, 7	10	1349	293	Fe	Knife		1660
6, 7	4	1349	324	Fe	Drop handle?		1660
6, 7	11	1372	296	Fe	Hinge		1660
6, 7	1	1372	298	Bone	Pin	Crummy 1	1660
6, 7	18	1388	1244	Fe	Fitting		1660
6, 7	18	1583	0	Fe	Obj		2221
6, 7	10	1583	334	Fe	Saw		2221
6, 7	4	1583	335	Wood	Cask head		2221
6, 7	4	1583	337	Pb sn	Flagon neck		2221
6, 7	9	1583	337	Fe	Water-pipe collar		2221
6, 7	18	1583	338	Fe	Handle?		2221
6, 7	18	1583	339	Fe	Chain		2221
6, 7	4	1583	340	Wood	Vessel		2221
6, 7	12	1583	341	Fe	Ox-goad		2221
6, 7	7	1583	342	Fe	Stylus?		2221
6, 7	4	1583	343	Fe	Box fitting		2221
6, 7	1	1583	420	Bone	Pin	Crummy 1	2221
6, 7	1	1583	421	Bone	Pin	Crummy 1	2221
6, 7	10	1583	422	Fe	Knife		2221
6, 7	7	1583	424	Fe	Stylus		2221
6, 7	3	1583	425	Fe	Needle		2221
6, 7	10	1583	426	Fe	Punch		2221
6, 7	10	1583	427	Fe	Punch?		2221
6, 7	11	1583	428	Fe	Lock plate		2221
6, 7	18	1583	429	Fe	Buckle?		2221
6, 7	18	1583	430	Fe	Fitting		2221
6, 7	18	1583	431	Fe	Pin?		2221
6, 7	11	1583	432	Fe	Loop headed spike		2221
6, 7	1	1583	437	Bone	Pin	Crummy 1	2221
6, 7	18	1583	438	Fe	Mount		2221
6, 7	15	1583	439	Pb	Sheet	folded	2221

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6, 7	1	1583	440	Bone	Pin	Crummy 1	2221
6, 7	18	1583	441	Fe	Obj		2221
6, 7	18	1583	442	Fe	Collar		2221
6, 7	10	1583	444	Fe	Point		2221
6, 7	11	1583	446	Fe	Loop headed spike		2221
6, 7	11	1583	449	Fe	Fitting		2221
6, 7	3	1583	450	Fe	Needle		2221
6, 7	10	1583	451	Fe	Tool		2221
6, 7	4	1583	452	Fe	Fitting		2221
6, 7	11	1583	453	Fe	Stud		2221
6, 7	10	1583	456	Compos	?Thatching needle		2221
6, 7	18	1583	592	Stone	Burnisher		2221
6, 7	4	1583	593	Compo	Handle	Bone with inlay	2221
6, 7	18	1583	1248	Fe	Strip		2221
6, 7	10	1583	1249	Fe	Tool?		2221
6, 7	18	1583	1250	Fe	Waste		2221
6, 7	11	1638	0	Fe	Fitting		2221
6, 7	11	1638	0	Fe	Mount		2221
6, 7	18	1638	0	Fe	Objs		2221
6, 7	11	1638	0	Fe	Objs		2221
6, 7	18	1638	0	Fe	Bar		2221
6, 7	18	1638	0	Fe	Objs		2221
6, 7	1	1638	369	Bone	Pin	Crummy 1	2221
6, 7	11	1638	514	Fe	Double spiked loop		2221
6, 7	11	1638	515	Fe	Double spiked loop		2221
6, 7	7	1638	516	Fe	Stylus		2221
6, 7	11	1638	517	Fe	Key	slide	2221
6, 7	11	1638	518	Fe	Loop headed spike		2221
6, 7	11	1638	519	Fe	Loop headed spike		2221
6, 7	10	1638	520	Fe	Knife	manning 6c	2221
6, 7	18	1638	520	Fe	Bent obj		2221
6, 7	18	1638	521	Fe	Fitting		2221
6, 7	11	1638	522	Fe	Loop headed spike		2221
6, 7	11	1638	523	Fe	Double spiked loop		2221
6, 7	10	1638	524	Fe	Knife	manning type 4	2221
6, 7	11	1638	525	Fe	Double spiked loop		2221
6, 7	11	1638	526	Fe	Hinge		2221
6, 7	11	1638	527	Fe	Double spiked loop		2221
6, 7	11	1638	528	Fe	Key		2221
6, 7	11	1638	529	Fe	Chain link with hook		2221
6, 7	10	1638	531	Fe	Punch		2221
6, 7	11	1638	532	Fe	Loop headed spike		2221
6, 7	11	1638	533	Fe	Knife	slide key manning 1	2221

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6, 7	4	1638	534	Fe	Handle		2221
6, 7	1	1638	535	Bone	Pin	Crummy 1	2221
6, 7	11	1638	536	Fe	Double spiked loop		2221
6, 7	11	1638	537	Fe	Nail	globular	2221
6, 7	10	1638	538	Fe	File?		2221
6, 7	11	1638	539	Fe	Strip		2221
6, 7	11	1638	540	Fe	Lockplate		2221
6, 7	11	1638	541	Fe	Key		2221
6, 7	11	1638	542	Fe	Lock plate?		2221
6, 7	11	1638	543	Fe	Lock plate		2221
6, 7	4	1638	544	Fe	Handle?		2221
6, 7	11	1638	545	Fe	Joiner's dog		2221
6, 7	11	1638	546	Fe	Fitting		2221
6, 7	11	1638	547	Fe	Hinge		2221
6, 7	1	1638	548	Fe	Pin	crummy 1	2221
6, 7	10	1638	549	Fe	Awl		2221
6, 7	18	1638	550	Fe	Rod		2221
6, 7	10	1638	551	Fe	Knife	Manning 6c	2221
6, 7	11	1638	552	Fe	Loop headed spike		2221
6, 7	10	1638	553	Fe	Tong		2221
6, 7	18	1638	554	Fe	Obj		2221
6, 7	11	1638	556	Fe	'T' shaped clamp		2221
6, 7	11	1638	557	Fe	Nail?		2221
6, 7	7	1638	558	Fe	Stylus		2221
6, 7	10	1638	633	Fe	Handle		2221
6, 7	18	1638	634	Fe	Ring		2221
6, 7	11	1638	635	Fe	Lockplate		2221
6, 7	18	1638	636	Fe	Obj		2221
6, 7	18	1638	637	Fe	Fitting		2221
6, 7	4	1638	638	Cu	Ring		2221
6, 7	10	1638	639	Fe	Knife handle		2221
6, 7	18	1638	640	Fe	Ring and chain		2221
6, 7	18	1638	641	Fe	Chain		2221
6, 7	18	1638	642	Fe	Chain		2221
6, 7	18	1638	643	Fe	Strip		2221
6, 7	11	1638	1251	Fe	Small split pins		2221
6, 7	10	1638	1252	Fe	Punch/chisel		2221
6, 7	10	1638	1253	Fe	Tool		2221
6, 7	10	1638	1254	Fe	Tool		2221
6a	11	2660	0	Fe	Fitting		
6a	7	336	0	Fe	Stylus	Manning 3	0
6a	18	506	0	Fe	Obj		0
6a	4	611	1164	Stone	Mortar		0
6a	4	630	0	Fe	Vessel		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6a	16	719	175	Bone	Circular fragment		0
6a	18	719	176	Fe	Strip		0
6a	16	719	177	Bone	Fragment		0
6a	15	719	1209	Fe	Sheet		0
6a	13	2160	0	Fe	Buckle		0
6a	15	2230	1519	Pb	Waste		0
6a	18	2240	0	Fe	Obj		0
6a	16	2304	600	Bone	Fragment		0
6a	11	2304	601	Cu	Nail	Crummy 2992	0
6a	5	2319	605	Pb	Disc/counter		0
6a	1	2319	620	Bone	Pin	Crummy 1	0
6a	1	2491	650	Bone	Pin	Crummy 1	0
6a	10	2498	1267	Fe	Tool?		0
6a	10	2608	663	Stone	Whetstone		0
6a	14	2608	900	Ceramic	Venus Figurine		0
6a	15	2608	1522	Pb	Sheet		0
6a	11	2608	1540	Fe	Pin		0
6a	10	2647	668	Fe	Knife	Manning Type 11a	0
6a	3	2661	666	Bone	Needle	Crummy 2	0
6a	16	2661	671	Bone	Fragment		0
6a	3	2661	701	Bone	Needle	Crummy 1	0
6a	1	2661	710	Bone	Pin	Crummy 5	0
6a	1	2714	678	Bone	Pin	Crummy 5	0
6a	10	2764	0	Fe	Punch		0
6a	18	2771	136	Fe	Nail?		0
6a	1	2805	687	Bone	Pin	Crummy 5	0
6a	8	2817	680	Fe	Trace hook?		0
6a	3	2998	722	Bone	Needle	Crummy 1	0
6a	7	3029	729	Fe	Stylus	Manning type 3	0
6a	11	3035	727	Bone	Hinge		0
6a	11	3050	0	Fe	Joiner's dog?		0
6a	18	3128	736	Fe	Obj		0
6a	7	3128	737	Fe	Stylus	Manning Type 1	0
6a	10	3128	738	Stone	Whetstone		0
6a	3	3204	744	Bone	Needle	Crummy 2	0
6a	11	3204	1154	Cu	Key		0
6a	11	3204	1154	Cu	Key		0
6a	3	3289	758	Bone	Needle	Crummy 2	0
6a	11	3404		Fe	Wall hook		0
6a	18	3404	0	Fe	Fitting		0
6a	9	3404	790	Wood	Weather board		0
6a	18	3670	835	Fe	Ring		0
6a	18	3934	0	Wood	?Peg		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6a	1	3934	873	Bone	Pin	Crummy 1	0
6a	9	2564	119	Wood	Laths/slats		2756
6a	4	2780	0	Pot	Lamp		2756
6a	18	2365	0	Fe	Objs		2772
6b	4	40	1287	Wood	Cask head		0
6b	4	44	1288	Wood	Cask head		0
6b	10	48	61	Organic	Brush		0
6b	2	48	1188	Wood	Comb		0
6b	10	141	0	Organic	Brush		0
6b	7	141	1226	Wood	Writing tablet		0
6b	10	190	234	Fe	Knife		0
6b	16	206	60	Bone	Worked Bone		0
6b	15	206	1204	Fe	Bar		0
6b	10	219	15	Organic	Brush		0
6b	1	219	28	Bone	Pin	Crummy 1	0
6b	10	219	40	Bone	Handle?		0
6b	1	282	51	Bone	Pin	Crummy 1	0
6b	5	298	56	Wood	?Wheel/toy		0
6b	11	1613	1493	Cu	Nail	convex head	0
6b	15	1613	1511	Pb	Sheet		0
6b	18	1661	1256	Fe	Pin		0
6b	11	1685	406	Fe	Wall hook		0
6b	11	1685	411	Fe	Hinge	Manning 1a	0
6b	18	1685	1514	Pb	Bar		0
6b	11	1691	396	Fe	Hook?		0
6b	18	1723	0	Fe	Obj		0
6b	11	1723	0	Fe	Key	lever lock?	0
6b	11	1723	0	Fe	Wall hook		0
6b	10	1723	0	Fe	Punch or chisel?		0
6b	18	1723	1259	Fe	Strip		0
6b	18	1779	0	Fe	Obj		0
6b	3	1867	1260	Fe	Needle		0
6b	15	1876	562	Pb	Sheet		0
6b	11	2006	555	Bone	Hinge		0
6b	18	2010	0	Fe	Obj		0
6b	1	2048	1262	Bone	Hairpin		0
6b	18	2094	0	Fe	Obj		0
6b	18	2113	599	Fe	Ring		0
6b	11	2113	1263	Fe	Rivet		0
6b	1	2113	1264	Bone	Hairpin		0
6b	1	2137	581	Glass	Gadrooned Bead		0
6b	1	2187	598	Bone	Pin	Crummy 1	0
6b	12	2198	1266	Fe	Ox-goad		0
6b	5	2205	586	Bone	Gaming Piece		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6b	4	2205	587	Fe	Vessel?		0
6b	15	2205	1516	Pb	Waste		0
6b	15	2214	1518	Pb	Sheet		0
6b	18	2218	1495	Cu	Chain		0
6b	11	2241	0	Fe	Double spiked loop		0
6b	15	2341	1521	Pb	Sheet		0
6b	15	2361	1496	Cu	Sheet		0
6b	1	2387	630	Bone	Pin	Crummy 1	0
6b	11	2395	0	Fe	Fitting		0
6b	10	2395	616	Compo	Knife	Fe knife with bone handle	0
6b	18	2395	674	Wood	Spike		0
6b	3	2395	675	Bone	2 needles, 1 pin, 1 fragment	Needles Crummy 1,	0
6b	18	2489	621	Fe	Wire		0
6b	4	2598	647	Wood	Vessel		0
6b	4	2732	0	Pot	Lamp		0
6b	11	2994	716	Fe	Key	Lift key	0
6b	18	3005	0	Fe	Objs		0
6b	5	1001	227	Bone	Gaming piece	Crummy 1	1142
6b	18	1001	1238	Pb	Waste		1142
6b	9	1148	0	Wood	Pipe		1142
6b	18	1322	1508	Pb	Disc		1378
6b	11	1382	0	Fe	Key		1378
6b	15	1161	275	Pb	Waste		1395
6b	16	1742	484	Bone	Fragment		1743
6b	1	1742	583	Bone	Pin	Crummy 3	1743
6b		2632	648	Bone	Fragment		3024,942
6b	18	2076	579	Cu	Sheet		3643
6b	18	2083	0	Fe	Waste		3643
6b	11	1240	0	Fe	Fitting		404
6b	18	1240	283	Fe	Ring		404
6b	18	1240	1241	Fe	Handle/pin		404
6b	1	1384	323	Cu	Pin/needle		404
6b	2	1384	350	Wood	Comb		404
6b	1	207	76	Bone	Pin		4999
6b	7	223	21	Fe	Stylus		4999
6b	0	223	22	Fe	Nail		4999
6b	15	223	27	Cu	Wire		4999
6b	18	223	34	Fe	Fitting		4999
6b	7	223	53	Fe	Stylus	Manning 4	4999
6b	10	223	54	Stone	Whetstone		4999
6b	1	223	55	Bone	Pin	Crummy 1	4999
6b	3	223	58	Bone	Needle	Crummy 1	4999

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
6b	1	223	73	Bone	Pin	Crummy 1	4999
6b	10	223	74	Fe	Spike		4999
6b	18	1383	0	Fe	Obj		4999
6b	11	1383	0	Fe	Fitting		4999
6b	1	1383	306	Bone	Pin	Crummy 5	4999
6b	1	1383	307	Bone	Pin	Crummy 1	4999
6b	1	1383	308	Bone	Pin	Crummy 5	4999
6b	15	1383	309	Cu	Wire		4999
6b	1	1383	315	Fe	Pin?		4999
6b	1	1383	316	Fe	Pin		4999
6b	7	1383	317	Fe	Stylus		4999
6b	4	1383	1242	Fe	Box fitting		4999
6b	18	1383	1243	Fe	Waste		4999
6b	11	877	1235	Fe	Fitting		942
6b	18	992	0	Fe	Objs		942
6b	16	992	358	Bone	Fragment		942
6b	15	1343	1539	Pb	Waste		942
6b	15	1394	1492	Cu	Sheet		942
6b	18	1640	0	Fe	Obj		942
6b	18	1640	1513	Pb	Bar		942
6b	15	1827	1515	Pb	Waste		942
6b	16	2068	567	Bone	Fragment		942
6b	4	2068	1463	Stone	Mortar		942
6b	4	2112	649	Stone	Quern		942
6b	18	2136	584	Fe	Obj		942
6b	11	2136	585	Fe	Double spiked loop		942
6b	10	2182	1265	Fe	Punch		942
6b	18	2242	595	Fe	Ring		942
6b	11	2297	602	Fe	Double spiked loop		942
6b	5	2588	661	Bone	Gaming Piece		942
6b	11	2768	1524	Pb	Fitting		942
7	4	416	0	Shale	?Platter		
7	18	416	0	Fe	Obj		
7	2	416	38	Cu	Toilet spoon		
7	18	416	85	Cu	Pin?		
7	11	416	86	Fe	Hook		
7	1	416	87	Cu	Brooch	pennanular brooch	
7	11	416	1205	Fe	Fitting		
7	15	416	1206	Fe	Bar		
7	15	416	1506	Pb	Litharge		
7	8	941	218	Fe	OBJ		
7	10	941	221	Fe	Knife		
7	11	1793	455	Fe	Hasp		

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7	18	101	19	Fe	Nobj		0
7	18	103	425	Cu	Obj		0
7	18	104	425	Cu	Fitting		0
7	18	105	425	Cu	Obj		0
7	18	114	0	Fe	Obj		0
7	1	118	609	Cu	Bracelet	cog wheel	0
7	18	120	0	Fe	Obj		0
7	2	128	13	Cu	Probe		0
7	18	172	6	Fe	Obj		0
7	8	234	188	Fe	Hipposandal		0
7	15	240	20	Pb	Sheet		0
7	18	270	0	Fe	Obj		0
7	15	270	0	Fe	Bars		0
7	7	270	0	Fe	Stylus		0
7	18	270	0	Fe	Ring		0
7	18	270	0	Fe	Strap		0
7	11	270	0	Fe	Nails		0
7	18	270	0	Fe	Obj		0
7	11	270	0	Fe	Chain		0
7	16	270	0	Bone	Fragment		0
7	18	270	0	Fe	Fitting		0
7	11	270	29	Cu	Stud		0
7	12	270	45	Fe	Snaffle bit		0
7	11	270	46	Fe	Double spiked loop		0
7	11	270	47	Fe	Loop		0
7	11	270	48	Fe	Hinge		0
7	4	270	1504	Pb	Vessel		0
7	4	270	1541	Compo	Handle	bone and Fe	0
7	4	272	1241	Cu	Fitting		0
7	10	311	1383	Fe	TOOTHED BLADE		0
7	18	424	0	Fe	Obj		0
7	4	424	101	Ar	Spoon		0
7	18	424	108	Cu	Hook?		0
7	10	580	139	Fe	Raw tine		0
7	8	580	196	Fe	Horseshoe?		0
7	3	587	120	Cu	Needle	Crummy 2	0
7	11	592	121	Fe	Swivel		0
7	11	592	123	Fe	Strap hinge		0
7	4	592	131	Cu	Ring-key	Crummy 2165	0
7	15	592	1213	Fe	Waste		0
7	10	592	1214	Fe	Punch		0
7	10	592	1215	Fe	Punch		0
7	11	592	1216	Fe	Double spiked loop		0
7	4	592	1217	Fe	Handle		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7	11	592	1218	Fe	Key		0
7	13	592	1219	Fe	Arrowhead		0
7	18	603	115	Cu	Obj		0
7	18	618	170	Cu	Ring		0
7	10	622	0	Fe	Ferrule / collar		0
7	8	622	140	Fe	Hipposandal		0
7	11	649	0	Fe	Nails?		0
7	1	649	159	Bone	Pin	Crummy 3	0
7	7	655	217	Fe	Stylus	Manning 3	0
7	11	655	1211	Fe	Nail	large needle with domed round head decorated	0
7	4	656	164	Stone	Quern		0
7	18	675	205	Fe	Hook		0
7	4	722	183	Fe	Fitting		0
7	11	722	184	Fe	Hook		0
7	4	722	186	Fe	Fitting		0
7	11	722	187	Fe	Joiner's dog		0
7	16	722	189	Bone	Fragment		0
7	11	722	407	Fe	Wall hook		0
7	11	722	1212	Fe	Fitting		0
7	18	731	0	Fe	OBJ		0
7	18	739	191	Fe	OBJ		0
7	11	739	1490	Cu	Nail	spherical head	0
7	3	816	192	Cu	Needle	Crummy 2	0
7	18	826	193	Fe	Pin?		0
7	18	887	199	Fe	Ring		0
7	11	907	0	Fe	Ferrule		0
7	4	907	211	Fe	Vessel?		0
7	18	911	1236	Pb	Strip		0
7	10	930	215	Fe	Knife		0
7	18	963	0	Fe	Bar?		0
7	18	987	0	Fe	Objs		0
7	7	987	222	Cu	Stylus		0
7	18	995	223	Fe	Chain	figure of eight	0
7	1	995	230	Bone	Pin	Crummy 3	0
7	1	995	231	Cu	Finger-ring	similar to Crummy 1758, coiled	0
7	18	996	0	Fe	Obj		0
7	1	1012	232	Bone	Pin	Crummy 4	0
7	11	1028	0	Fe	Double spiked loop		0
7	18	1028	0	Fe	Bar		0
7	1	1028	238	Pb	Stud?		0
7	1	1028	359	Bone	Pin	Crummy 6	0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7	11	1028	360	Pb	Stud		0
7	1	1032	236	Av	Ear-ring		0
7	11	1128	0	Fe	Hook		0
7	10	1132	0	Fe	Knife?		0
7	1	1135	255	Cu	Brooch	Plate brooch	0
7	18	1141	260	Cu	Ring		0
7	18	1164	269	Fe	Bar		0
7	4	1237	1028	Fe	Box fittings		0
7	14	1299	297	Clay	Figure		0
7	10	1299	349	Fe	Knife	Manning 11a	0
7	4	1454	313	Shale	?Furniture		0
7	1	1454	326	Bone	Pin	Crummy 3	0
7	11	1476	0	Fe	Pintle		0
7	5	1478	322	Ceramic	Gaming Piece		0
7	5	1478	322	Pot	Counter		0
7	18	1483	1247	Fe	Obj		0
7	15	1493	328	Cu	Sheet		0
7	18	1515	0	Fe	Hook		0
7	9	1594	345	Fe	Waterpipe collar		0
7	18	1601	15100	Pb	Sheet		0
7	1	1614	368	Bone	Pin	Crummy 3	0
7	15	1614	1512	Pb	Waste		0
7	2	1642	362	Cu	Tweezers		0
7	14	1663	394	Pot	Figurine		0
7	0	1663	394	Ceramic	Figure		0
7	1	1774	415	Bone	Pin	Crummy 6	0
7	18	1792	0	Fe	Obj		0
7	18	1792	0	Fe	Obj		0
7	1	1792	448	Bone	Pin	Crummy 3	0
7	4	1847	0	Pot	Lamp		0
7	3	2752	677	Bone	Needle	Crummy 2	0
7	4	2921	699	Cu	Vessel		0
7	1	2921	700	Bone	Pin	Crummy 3	0
7	1	2921	702	Bone	Pin	Crummy 5	0
7	13	2921	703	Fe	Spearhead	Manning V26	0
7	18	2921	707	Fe	Obj		0
7	4	2921	708	Fe	Trivet?		0
7	18	2921	709	Fe	Fitting		0
7	18	2921	795	Fe	Fitting		0
7	11	1017	1239	Fe	Fitting		1453
7	7	1495	327	Fe	Stylus		1660
7	10	1495	681	Fe	SAW		1660
7	1	1484	318	Bone	Pin	Crummy 4	2233
7	10	1484	319	Bone	Fid.		2233

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7	15	1484	320	Cu	Strip		2233
7	11	1484	321	Fe	Loop headed spike		2233
7	18	1484	321	Fe	Strap		2233
7	10	1484	576	Compos	Handle		2233
7	10	3205	0	Fe	Handle		3228
7	10	3205	742	Fe	Knife	Manning 12b	3228
7	18	3306	764	Fe	Hook?		3228
7	5	904	206	Bone	Counter		404
7	5	904	206	Bone	Gaming Piece	Crummy 1	404
7	4	904	216	Wood	?Glazing bar		404
7	11	4237	932	Fe	Hook		4251
7	7	4265	985	Fe	Stylus		4251
7	4	4667	0	Wood	Barrel stave		4251
7	18	4667	0	Fe	Fitting		4251
7	11	4667	0	Fe	Fitting		4251
7	10	4667	1123	Composite	Rake		4251
7	4	4768	1107	Cu	Fitting Box		4251
7	11	399	1372	Fe	Joiner's dog		50
7	4	728	180	Cu	Handle	drop handle, fine	569
7	10	728	351	Stone	Whetstone		569
7	11	729	182	Cu	Fitting	tubular	569
7	7	4029	879	Fe	Stylus	Manning 2a/3a	569
7	11	613	0	Fe	Pin		599
7	4	613	0	Pot	Lamp		599
7	4	613	0	Fe	Handle		599
7	11	613	0	Fe	Joiner's dog		599
7	18	613	0	Fe	Objs		599
7	4	613	125	Pb	Cup		599
7	1	613	127	Shale	Bracelet		599
7	18	613	136	Fe	Strap		599
7	11	613	138	Fe	Loop hinge	Manning 2	599
7	18	613	146	Fe	Ring		599
7	3	613	147	Bone	Needle	Crummy 1	599
7	3	613	147	Bone	Needle		599
7	16	613	163	Bone	Fragment		599
7	7	613	239	Fe	Stylus	Manning 3	599
7	7	613	249	Fe	Stylus	Manning 3	599
7	2	613	250	Cu	Toilet spoon	flat round bowl	599
7	7	613	252	Fe	Stylus	Manning 4	599
7	7	613	253	Fe	Stylus	Maning 4	599
7	1	613	254	Bone	Pin	Crummy 3	599
7	1	613	265	Bone	Pin	Crummy 1	599
7	1	613	266	Bone	Pin	Crummy 1	599
7	2	613	267	Cu	Spoon Probe		599

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7	18	613	268	Fe	Strip		599
7	18	613	271	Fe	Obj		599
7	1	613	273	Bone	Pin	Crummy 1	599
7	1	613	274	Bone	Pin	Crummy 1	599
7	1	613	300	Bone	Pin	Crummy 3	599
7	11	613	325	Fe	Joiner's dog		599
7	10	613	329	Fe	Knife	Manning 4	599
7	4	613	330	Fe	Candle holder		599
7	1	613	353	Bone	Pin	Crummy 5	599
7	1	613	354	Bone	Pin	Crummy 5	599
7	4	613	390	Fe	Candlestick		599
7	1	613	391	Bone	Pin	Crummy 1	599
7	2	613	392	Cu	Probe		599
7	18	613	393	Fe	Ring		599
7	4	613	397	Fe	Handle		599
7	18	613	398	Fe	Strip		599
7	7	613	409	Fe	Stylus	Manning 3	599
7	7	613	460	Fe	Stylus	Manning 3	599
7	18	613	460	Fe	Obj		599
7	18	613	461	Fe	Strip		599
7	11	613	462	Fe	U shaped wall hook		599
7	3	613	465	Wood	Spindle		599
7	1	613	497	Bone	Pin	Crummy 3	599
7	16	613	505	Bone	Fragment		599
7	1	613	506	Bone	Pin	Crummy 1	599
7	1	613	655	Bone	Pin	Crummy 1	599
7	16	613	656	Bone	Fragment		599
7	1	613	657	Bone	Pin	Crummy 1	599
7	3	613	658	Fe	Needle		599
7	1	613	659	Bone	Pin	Crummy 1	599
7	1	613	660	Cu	Pin	Crummy 1	599
7	11	613	726	Cu	Fitting		599
7	1	613	731	Bone	Pin	Crummy 5	599
7	14	613	1194	Pot	Figurine		599
7	15	613	1210	Fe	Bars		599
7	11	613	1489	Cu	Fitting		599
7	1	1000	233	Bone	Pin	Crummy 3	599
7	8	273	41	Fe	Hipposandal		949
7	18	273	42	Fe	Ring / bracelet		949
7	11	273	43	Fe	Nail		949
7	4	273	44	Cu	Lion mount		949
7	7	273	50	Cu	Stylus		949
7, 8	16	1275	287	Bone	Fragment		1766
7, 8	18	1275	344	Wood	Disc		1766

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
7, 8	11	1275	1349	Fe	Pintle		1766
7, 8	10	1297	395	Stone	Hone	Basalt	1766
7, 8	3	1297	402	Fe	Needle		1766
7, 8	1	1297	403	Bone	Pin	Crummy 3	1766
7, 8	11	1297	418	Fe	Fitting		1766
7, 8	11	1297	1240	Fe	Handle		1766
7, 8	10	1611	355	Fe	Hook		1766
7, 8	7	1611	361	Fe	Stylus		1766
7, 8	18	3201		Fe	Obj		3228
7, 8	11	3201	742	Fe	Lock plate?		3228
7, 8	1	3201	743	Bone	Pin	Crummy 3	3228
7, 8	1	3201	784	Cu	Finger-ring	Crummy 1770	3228
7, 8	16	3201	1461	Shale	Waste core		3228
7, 8	18	610	0	Fe	Obj		599
7, 8	11	610	0	Fe	Key?		599
7, 8	1	610	235	Bone	Pin	Crummy 3	599
7, 8	1	610	645	Bone	Pin	Crummy 1	599
7, 8	2	610	651	Cu	Probe		599
7, 8	18	610	652	Fe	Ring		599
7, 8	7	610	653	Fe	Stylus	Manning 3	599
7, 8	10	610	654	Fe	Knife	Manning 4	599
7, 8	11	610	683	Fe	Fitting		599
7, 8	18	610	685	Fe	Strip		599
7, 8	18	610	686	Fe	Strip		599
7, 8	4	912		Wood	Tub stave		949
7, 8	18	912	213	Wood	Disc		949
7, 8	1	1027	234	Bone	Pin	Crummy 3	949
7, 8	10	1030	1485	Fe	Hammerhead		949
7, 8	18	1890	511	Fe	Obj		949
8	11	178	641	Cu	Fitting		0
8	11	297	0	Fe	Pintle / pivot		0
8	7	297	0	Fe	Stylus		0
8	18	297	0	Fe	Obj		0
8	11	297	0	Fe	Fitting		0
8	15	297	1487	Cu	Waste		0
8	15	297	1505	Pb	Litharge		0
8	18	310	64	Fe	Obj		0
8	10	310	70	Fe	Chisel?		0
8	1	310	71	Bone	Pin	Crummy 3	0
8	18	310	1383	Fe	Obj		0
8	1	334	68	Shale	Bracelet		0
8	11	356	0	Fe	Objs		0
8	5	356	1155	Pot	Counter		0
8	10	403		Stone	Slate reused as		0

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
					hone		
8	6	403	77	Fe	Balance arm		0
8	11	403	88	Bone	Hinge		0
8	16	403	195	Bone	Fragment		0
8	13	403	202	Carnelian	Intaglio	Intaglio with legionary eagle and standards	0
8	11	403	208	Fe	Fitting		0
8	1	403	209	Cu	Brooch	crossbow	0
8	16	403	999	Bone	Fragment		0
8	4	403	1142	Shale	Vessel		0
8	18	409	1488	Cu	?Wire		0
8	5	410	25	Bone	Gaming Piece	Crummy 1	0
8	18	411	100	Fe	Strap		0
8	11	412	44	Fe	Hook		0
8	11	462	95	Fe	Chain	figure of eight link with atriculated spike	0
8	2	605	122	Cu	Spoon Probe		0
8	1	616	124	Shale	Bracelet		0
8	1	616	130	Cu	Bracelet	strip	0
8	1	616	156	Bone	Pin	Crummy 6	0
8	15	616	1507	Pb	Waste		0
8	11	718	0	Fe	Double spiked loop		0
8	11	2922	713	Cu	Padlock		0
8	4	1038	0	Fe	Handle		1766
8	18	1038	0	Fe	Waste		1766
8	16	1038	263	Bone	Fragment		1766
8	1	1038	574	Cu	Bracelet	Cable	1766
8	18	1038	1491	Cu	Ring		1766
8	1	1595	346	Jet	Fragment		1766
8	4	3637	868	Fe	Bucket mount		569
8	18	3930	865	Fe	Ring		569
8	1	3930	866	Cu	Bracelet	Crummy 1724-1732	569
8	4	3930	867	Fe	Bucket binding		569
8	1	3930	1276	Fe	Finger-ring?		569
8	18	609	0	Fe	Obj		599
8	7	609	119	Cu	Stylus?		599
8	1	609	229	Bone	Pin	Crummy 5	599
8	4	609	270	Fe	Fitting		599
8	11	609	305	Fe	Lock?		599
8	7	609	766	Fe	Stylus	Mannning 3	599
8	3	609	767	Fe	Needle		599
8	1	1877	490	Cu	Finger-ring		599

DGT06 SF							
Phase	Functional Category	Context No	Small Find No	Material	Object Name	Type	Structure No
8	18	1877	494	Cu	Handle?		599
8	18	1877	495	Fe	Needle / pin		599
8	18	1877	496	Fe	Ring		599
8	10	1877	498	Fe	Chisel		599
8	5	1877	499	Bone	Gaming Piece	Crummy 1	599
8	5	1877	499	Bone	Counter		599
8	11	1877	500	Fe	Fitting		599
8	16	1877	501	Bone	Fragment		599
8	18	1877	502	Fe	Chain links	figure of eight	599
8	11	1877	503	Cu	Key	lever lock / rotary key	599
8	10	1877	504	Fe	Tool		599
9	18	98	0	Fe	Ring		0
9	18	106	0	Fe	Mount		0
9	18	107	62	Fe	Blade roughout		0
9	18	107	63	Fe	Obj		0
9	10	107	252	Fe	Knife		0
9	11	119	11	Cu	Stud		0
9	1	585	142	Jet	Fragment		0
9	11	2326	614	Fe	Loop hinge?	Manning 2	0
9	3	3542	805	Bone	Needle	Crummy 1	0
9	10	3542	806	Fe	Tool		0
9	4	3542	807	Fe	Fitting - box		0
10	1	590	114	Cu	Pin		0

APPENDIX 7: METAL VESSELS HOARD ASSESSMENT

James Gerrard

Introduction

A hoard of twenty copper-alloy, lead-alloy (pewter) and iron vessels were recovered from the lower fill of a timber-lined well. The latest coins from the construction backfill of the well date to *c*. AD 335 and associated pottery includes an abraded AHFA storage jar sherd with curvilinear combed decoration which could be dated as late as AD 350+ (Lyne and Jefferies 1979, 40). Two further coins were recovered from the fill below the hoard. Both of these were unworn issues of the House of Valentinian and the earliest date at which they could have been lost is AD 375. The hoard is thus exceptionally well dated.

The hoard had been disturbed and damaged by the insertion of a 1960s pile but is otherwise in good condition with few vessels exhibiting corrosion. After recovery the vessels were rapidly transported to Brockley where their condition was assessed by Dana Goodburn (Conservator). Under her supervision and advice the vessels were washed using a fine spray of water and a soft brush by Dr Marit Gaimster (Finds Manager). Following this a photographic and drawn record was made of the objects.

The following report is divided into three sections: a descriptive catalogue of the vessels, a discussion of their significance and recommendations for further work.

Catalogue

<813> Copper-alloy cauldron with internal triangular lugs for the simple handle. The vessel has a rounded base below a carination and an out-turned rim. There is a hole drilled in the centre of the base. In very good condition with slight green patina. There is a black residue in the bottom of the vessel. A similar cauldron is illustrated by Kennet (1971, fig. 5.2) from the Halkyn Mountain hoard. Rim diameter: 265mm, Weight: 1081g.

<814> Copper-alloy ladle, complete. It has a short handle with a slightly splayed end and opposing triangular protrusions near base. In very good condition with a slight green patina. There is a possible circular repair on the underside of the base. A skillet from Swaffham has similar decoration on the handle (Kennett 1971, fig. 15) Rim diameter: 203mm, Weight 538g.

<815> Iron trivet, complete but one leg is loose and the ring is broken in one place. All three legs have simple slightly protruding feet. The object is in good condition with very little corrosion. Manning (1985) has no examples of trivets in his catalogue. Parallels should be sought for this object. Diameter 227mm.

<816> Copper-alloy bucket with internal rounded lugs to secure a handle moulded with ovolos. The bucket is decorated with parallel horizontal moulded ribs at the top and bottom. The top of the lower pair of mouldings marks a weld where the base of the vessel has been joined with the top. The bucket has three external moulded / trefoil feet. There is a circular drilled hole in the base. In good condition. Rim diameter: 284mm, Base diameter 246mm, Weight: *c*. 2000g. The closest parallel for this vessel is an example from a fifth-century grave in Nubia (Török 1987, 127 and pl. 31.16).

<817> Copper-alloy bowl with simple outward turned rim and a flat base. In good condition. The inside has fine scratches that are likely to be scouring lines and there are possible ?tool marks externally. Rim diameter: 336mm, Base diameter: 160mm, Weight: 1666g.

<818> Copper-alloy bowl with flat rim folded up and over at edge. Decorated with raised beads along the rim and concentric rings internally. There is a central dot marking the position of the lathe used to execute these rings. The footring is slightly splayed. The object is complete and in good condition with only a slight green patina. Slight internal scratches may be use wear. Under Kennet's (1971) terminology this vessel is a *basin á bord godronné*. Similar vessels in silver are known from the Traprain Law treasure where they are dated to the late fourth or early fifth century. (Hartley *et al.* 2006, 236 Nos. 240-242). Rim diameter: 319mm, foot ring diameter 1221mm, Weight: 1000g.

<819> Copper-alloy carinated bowl with simple out turned rim and convex base. In good condition with only a fine green patina. Rim diameter: 305mm, Base diameter: 185mm, Weight 821g.

<820> Lead-alloy (pewter) bucket with an iron handle. The vessel is complete but squashed somewhat. The form of the vessel is very much like that of a Black Burnished 'cooking pot' (2F) but with a vertical rim, rather than an everted rim. The handle is broken. Rim diameter: 192mm, Base diameter: 128mm, Weight: 2376g.

<821> Copper-alloy carinated 'Hemmoor bucket' with vertical rim and triangular lugs. The base is slightly convex and a splayed foot ring is attached externally. There is a drilled hole at the centre of the base which has been plugged and filled. The vessel is in good condition. Rim diameter: 212mm, Foot ring diameter: 125mm, Weight: 1107g.

<822> Copper-alloy bowl with an outwards turned rim bent down at the edge. The rim is decorated with raised beads and there is a splayed footring attached to the underside of the vessel. Under Kennet's (1971) terminology this vessel is a *Basin á bord godronné*. Rim diameter: 238mm, Foot ring diameter: 96mm, Weight 476g.

<823> Copper-alloy skillet. Carinated, with a hemispherical base and concave sides above the carination. There is a simple, plain out-turned rim. The handle has a single terminal expansion. Similar to a vessel from Irchester illustrated by Kennet (1971, fig. 9.7). The vessel is complete but crushed and in three pieces. Rim diameter: 195mm, Weight: 238g.

<824> Copper-alloy 'Hemmoor bucket'. Slightly inturned rim and a hemispherical base above a splayed pedestal foot. The vessel has trefoil shaped lugs securing a handle, which is complete and decorated. The base of this vessel has a drilled central hole but is detached from the rest of the vessel along a weld/solder line. The metal is in a poor state of preservation. Rim diameter 178mm.

<825> Lead-alloy bowl. Shallow with an inturned rim and projecting flange decorated with raised semi-circular beads. Complete and in good condition but squashed. Rim diameter: 140mm, Foot ring diameter: 50mm, Weight: 319g.

<826> Copper-alloy bowl with outwards turned rim and moulded beads along the edge. Flat base with a drilled central hole (plugged and filled) and raised footring. Under Kennet's (1971) terminology this vessel is a *basin á bord godronné.* Rim diameter: 305mm, Foot ring diameter 122mm, Weight: 567g.

<827> Iron ladle with 'barley twist' handle. Manning (1985, 104-105) describes a similar object. Rim diameter 70mm, Weight 53.6g

<828> Lead-alloy (?pewter) bowl The form is reminiscent of samian form DR31 but without a basal kick. A similar vessel was reovered from a mire at Abercynafon, Wales (Earwood *et al*. 2001, fig. 3.1). The interior is decorated with incised concentric rings and there is a slight footring. The vessel is in good condition. Rim diameter: 150mm, Base diameter: 62mm, Weight 258g.

<829> Copper-alloy bowl with outward turned rim decorated with moulded raised beads. Straight-sided with footring. Central drilled hole at the base. Complete and in good condition. Under Kennet's (1971) terminology this vessel is a *basin á bord godronné.* Rim diameter: 258mm, Foot ring diameter 89mm, Weight: 681g.

<853> Copper-alloy hemispherical bowl with out-turned rim. The rim is decorated with raised beads and the base has a raised footring. There is a hole in the centre of the base, which is unfilled but backed by the foot. Rim diameter: 271mm, Foot ring diameter: 83mm, Weight: 486g.

<854> Copper-alloy hanging bowl. The vessel is large but the form is like that of an 'Irchester' bowl: the rim is inturned and is flat based. The vessel was badly damaged by the 1960s pile. The bowl would have been suspended by chains attached to four rings. Only two of these now survive but both were held in place by zoomorphic loops that recall late Roman belt fittings (Hawkes and Dunning 1961; Böhme 1986). Rim diameter: 415mm, Base diameter: 125mm, Weight: 1852g.

<869> Lead-alloy jug with a moulded, decorated handle. Complete and in good condition but squashed. Rim diameter: 40mm, base diameter: 50mm, weight 674g.

Discussion

The hoard is a substantial collection of copper-alloy and pewter vessels and associated iron objects. It is not the largest hoard of bronze vessels from Britain – that honour can probably be claimed by the nineteenth-century find near Knaresborough (Yorkshire), which is said to "have filled a cart" (Quoted in Kennet 1971, 132). However, the Knaresborough hoard is only partially extant (Eggers 1961) and there are few hoards that can claim to have an archaeological context as good as the collection from Drapers' Gardens. Even the find of nine late Roman 'Irchester type' bowls at Amersham (Buckinghamshire) was discovered by metal-detecting, although associated with a known Romano-British landscape (Farley *et al*. 1988).

The size of the group and their archaeological context makes the group of national significance. However, given that the chronology for many of the items under discussion is ultimately derived from continental grave finds (Kennet 1971) the fact that the hoard is so well dated makes it of international significance. This international significance is heightened by the importance of a number of individual pieces.

The hanging bowl <854> is a type of vessel that continued in production well into the early middle ages. One of the most famous examples comes from the Sutton Hoo burial and these vessels are usually considered to be the product of indigenous craftsmen working for the Anglo-Saxon elite. The Drapers' Garden example is thus a potentially 'ancestral' vessel to the later early medieval examples, which has the benefit of being securely dated (Dr Noel Adams *pers. comm.*).

The trivet <815> is a difficult object to immediately parallel, though other examples surely exist.

The number of vessels with handles (buckets, cauldrons etc) is also high (<813>, <816>, <820>) and Kennet (1971) illustrates no definite buckets.

The pewter vessels are of known types (the handled vessel <820> may be an exception) and were probably produced in the West Country / Mendip area (Wedlake 1958; Beagrie 1989).

The group of *basin á bord godronnés* are of slightly different sizes and may represent a dining set. Vessels of this type were considered by Kennet (1971) to be of Gallo-Roman manufacture with 'Irchester bowls' an indigenous development. It is noticeable that the Drapers' hoard has no Irchester bowls. They are common in late Roman British hoards – that at Amersham (Farley *et al*. 1988) contained nothing but Irchester type vessels. This may suggest that part of the hoard was acquired on the continent (the pewter vessels seems to preclude the likelihood that the whole collection was assembled in Gaul).

The wider context of the hoard is also of interest. It is a truism in archaeology that the reasons for a hoard's deposition can never be reconstructed (Reece 1988). Traditionally hoards have been seen as a response to political or military instability and 'barbarian' raiding. The date of the Drapers' hoard (after AD 375) would fit such a model and given that the coins provide only a *terminus post quem* the deposition of the hoard in the period AD 400-450 cannot be ruled out. More recently archaeological attention has been focussed on alternative interpretations of the reasons underlying hoarding and ritual deposition has become favoured in some quarters (see, for instance, Millett 1994; Petts 2003; Gerrard 2005), although a robust defence of traditional views has been mounted (Johns 1996).

The deposition of the Drapers' hoard would fit either a 'raiding' or 'ritual' context. Indeed, it is important to note that ritual deposits will probably increase during periods of social stress so the two explanations – although presented as polarised opposites – may not be mutually exclusive. What is striking is the number of wells and shafts that contain late Roman 'votive' deposits (Pearce 2004, 92-96) and groups of metalwork (Manning 1972). A similarly late well at Shadwell (E. London) contained a large assemblage of nearly intact pottery vessels and a copper-alloy bowl which might be analogous to the Drapers' hoard in terms of depositional context (Douglas *et al*. forthcoming). A pewter vessel found before 1925 in Copthall Court (immediately south of the site) should also be

noted here (Wheeler 1925, 25). It was inscribed with a Chi-Rho and could conceivably be another votive deposit.

Recommendations

- Each vessel should be x-rayed in profile and from above to ascertain how they were manufactured and to provide an archival record.
- The hoard should be assessed by a conservator and appropriate measures taken to ensure its long term preservation.
- Metallurgical analysis should be undertaken to ascertain the type of alloys used in the manufacture of these vessels. This is especially true of the lead-alloy / pewter vessels (Beagrie 1989, 190-191)
- Further work should be undertaken to identify parallels for the vessels.
- Specialist opinions should be sought on the hanging bowl and buckets
- Research should be undertaken to elucidate the vessel's depositional context, their origins and function.
- It is recommended that the hoard and a discussion of its context be published as a short article in Britannia (Gerrard forthcoming) prior to the publication of any excavation report. This will put the hoard in the public domain, raise the profile of the site and may lead to external specialists approaching us with comments.

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APPENDIX 8: POST-ROMAN METAL AND SMALL FINDS

Märit Gaimster

Eleven metal and small finds were recovered from post-Roman contexts; they are listed in the table below. Some of the finds from Phase 9, such as the copper-alloy hairpin (SF11) and the looped iron strap (SF614) are clearly residual Roman finds; this may be true also for other objects here. The casket strap fitting (SF807) or the whittle-tang knife (SF252), moreover, have both Roman and medieval parallels. Undoubtedly post-Roman, however, is the brass coin weight (SF117), dating from the late 15th or early 16th centuries (B. Cook, the British Museum, pers.comm.). The incomplete copper-alloy pin (SF114) is also almost certainly later; the characteristic bend suggests this is an early modern headdress pin (cf. Margeson 1993, fig. 5).

Recommendations

Some of the finds from Phase 9 require further identification to establish a date, and for this purpose should be x-rayed. If further medieval parallels can be established, the small group of post-Roman finds may be included in further publication; the assemblage is, however, too small and disperse to warrant any significant discussion. The coin weight should be further identified.

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Phase 9: medieval				
context	**sf**	**description**	**pot date**	**recommendation**
98	1298	circular iron fitting; complete; diam. 125mm	180-250	x-ray
106	1299	iron ?strap fitting; possibly for door or casket; W 32mm	1240-1300	x-ray
107	62	iron flat-section ?rake tine or blank for shears; incomplete	1240-1270	further id.
	63	iron ?sheet/vessel; triangular piece with two original edges; W 103mm ht.55mm	1240-1270	x-ray
	252	iron whittle-tang knife; incomplete; L 100mm; blade W 25mm	1240-1270	x-ray
119	11	copper-alloy pin with large flat head; complete; residual Roman hairpin	350-420	
2326	614	iron looped strap; L 150mm; residual Roman ?bucket fitting	120-200	
3542	806	iron ?awl; complete; long circular iron pin with thickened, burred head; L 215mm	n/a	x-ray and further id.
	807	iron casket strap fitting; incomplete; semi-circular strap with flattened round terminal for fixing; L 95mm	n/a	x-ray
Phase 10: post-medieval				
590	114	copper-alloy pin; incomplete with head missing; L 55mm	1650-1700	
607	117	complete rectangular brass coin weight for gold noble; late 15th or early 16th centuries; uniface with ship; wt. 7g	1650-1900	further id.

APPENDIX 9: COINS ASSESSMENT

James Gerrard

Introduction

The excavations produced 95 coins of which 93 were Roman. There was a single post-medieval coin and an unidentifiable corroded fragment that may not be a coin. Many of the coins were remarkably well preserved and corrosion free and a substantial number (72) could be identified after only superficial cleaning. Full details of the coins were recorded in accordance with English Heritage guidelines (Brickstock 2004) and the full catalogue is available in the archive as an Access 2000 database.

Coin recovery was largely down to the keenness of the individual excavator's eyesight. This may have created a recovery bias toward the larger, earlier coins during the first (eastern) phase of excavation. The second phase, on the western side of the site, had been truncated by modern activity to a greater depth and thus early deposits were more fully investigated in this area. Furthermore, the use of metal detectors (courtesy of the 'London Mudlarks') in this area will have aided in coin recovery.

Summary List

Context	SF Number	Date	Denomination	Condition Ob	Condition Rev
0	89	192	Sestertius	SW	SW
0	116	364-375		SW	SW
0	149	364-375		SW	SW
0	164	C1/C2		C	C
0	165	270+	Antoninianus	VW	VW
0	618	97-117	Dupondius	UW	UW
0	932	PMED?			
0	1129	C3	Follis?	C	C
0	1130	69-79	As	SW	SW
21	1136	324+		VW	VW
61	7	69-79	As	VW	EW
121	12	117-138	Sestertius	EW	EW
146	49	C1/C2	Sestertius	EW	EW
146	52	C1/C2	As	EW	EW
223	17	138-161	As	SW	VW
223	18	117-138	As	VW	VW
310	57	273-274	Antoninianus	SW	SW
403	80	318-324	Follis	c	EW
403	90	C3/C4		EW	EW
403	93	318-324	Follis	VW	VW
403	96	269-270	Antoninianus	SW	SW
413	79	270-290	Antoninianus	VW	VW
424	81	354-364?		VW	VW
424	92	C3/C4		EW	EW
425	102	C3/C4		EW	EW
425	106	C3/C4		C	C
493	99	81-96	Sestertius	VW	EW
493	607	C1/C2	As	EW	EW

Context	SF Number	Date	Denomination	Condition Ob	Condition Rev
587	112	117-138	Denarius	UW	UW
592	128	117-138	Dupondius	SW	VW
592	135	241-243	Antoninianus	UW	UW
613	357	117-138	Sestertius	EW	EW
613	389	154-155	As?	UW	UW
728	181	330-335		SW	SW
728	194	335-341		EW	EW
729	214	330-335		C	C
729	264	198-200	Denarius	SW	SW
852	203	117-138	Dupondius	UW	VW
902	207	C1/C2	As	EW	EW
902	212	296-318?	Follis	C	C
970	226	260-296	Antoninianus	SW	SW
995	200	270-290	Antoninianus	VW	VW
995	224	271-273	Antoninianus	VW	VW
995	225	253-268	Antoninianus	VW	VW
995	290	168-171	Sestertius	SW	SW
1004	228	C1/C2	As	EW	EW
1038	262	354-364		SW	SW
1038	575	C1/C2	As	EW	EW
1134	261	C3/C4?		C	C
1297	401	141-144	As	EW	EW
1297	417	117-138	Sestertius	VW	EW
1388	927	77	Denarius	VW	VW
1393	299	253-268	Antoninianus	SW	VW
1583	588	81-96	Dupondius	EW	EW
1638	370	C1/C2	As	EW	EW
1708	400	69-79	Sestertius	EW	EW
1708	468	141-144	Sestertius	UW	UW
1708	469	141-144	As	UW	UW
1708	470	140-144	Sestertius	UW	UW
1708	471	98-117	Sestertius	EW	VW
1708	472	166-169	Sestertius	SW	SW
1708	473	95-96	Dupondius	SW	VW
1708	480	140-144	Dupondius	UW	UW
1708	493	69-79	As	EW	EW
1723	414	139-161	As	VW	VW
1739	412	69-79	Denarius	SW	SW
1786	416	253-268	As	SW	VW
1792	447	161-180	Sestertius	EW	EW
1845	512	98-117	As	VW	VW
2031	560	C1/C2	Sestertius	EW	EW
2210	603	C3/C4		C	C
2224	590	96-117	Sestertius	EW	EW
2319	604	250-296	Antoninianus	SW	SW

Context	SF Number	Date	Denomination	Condition Ob	Condition Rev
2319	627	98-117	Sestertius	EW	EW
2518	623	C1/C2		C	C
2588	662	81-96	As	EW	EW
3205	765	115-117	Sestertius	SW	VW
3554	802	98-117	As	SW	VW
3646	808	69-79	Denarius	SW	EW
3926	898	54-68	As	EW	EW
3926	1137	C1/C2		C	C
3930	863	375-378		UW	UW
3930	864	367-375		UW	UW
4242	950	78-79	As	SW	VW
4250	1009	69-79	Denarius	EW	EW
4250	1138	C3/C4		EW	EW
4372	1017	C3/C4		EW	EW
4390	1064	C1/C2		EW	EW
4393	1006	136-138	Denarius	UW	UW
4496	1007	69-79	As	EW	EW
4538	1139	C1/C2		EW	EW
4667	1122	196-211	Denarius	UW	UW
4705	1101	69-79	As	VW	EW
4768	1100	200-201	Dupondius	UW	UW
4947	1124	37-41	As	SW	SW

Discussion

The number of coins from Drapers' Gardens is small and caution should be exercised in the interpretation of any patterning they present. However, it is noticeable that the fourth century is poorly represented and the late third century – often a peak in Romano-British coin loss – is also under-represented. This phenomenon is probably due to the removal of the late Roman stratigraphy.

There is little coin loss prior to the Flavian period (AD 69-96). The exceptions are an 'Agrippa' *as* (SF1124, [4924]: discussed more fully below) and a poorly preserved *as* of ?Nero (SF898, [3926]). Neither implies intensive activity prior to the reign of Vespasian. The Flavian period has the biggest peak of loss implying that activity began in an intensive way during the late first century, although it should be noted that much of the Flavian coinage was well worn. This may suggest that activity did not really commence until the early second century (Fig. 1). The Trajanic, Hadrianic and Antonine periods (AD 117-180) show substantial numbers of coins possibly indicating an increase in activity. The early third century, as is usual for British sites, has few coins with coin loss picking up in the latter decades of the century. Interestingly, most of the radiate coins appear to be regular issues with few of the usually ubiquitous irregular radiate copies.

A group of nine coins from channel fill [1708] were found in close proximity to one another and may represent a hoard or group of votive offerings. They ranged in date from 69-79 to 166-169 and included five *sesterces*, two *dupondii* and 2 *asses* with a combined value of 6½ *sesterces.* In an age when a soldier was paid 225 *denarii per annum* 6½ *sesterces* would represent 1.5 days of a soldier's work. Looking at the coins in these terms also raises the salutary fact that all of the identifiable first- and second-century coinage only amounts to 48.25 *sestertces* – a tiny sum compared to the amount of money that must have circulated in early Roman *Londinium*.

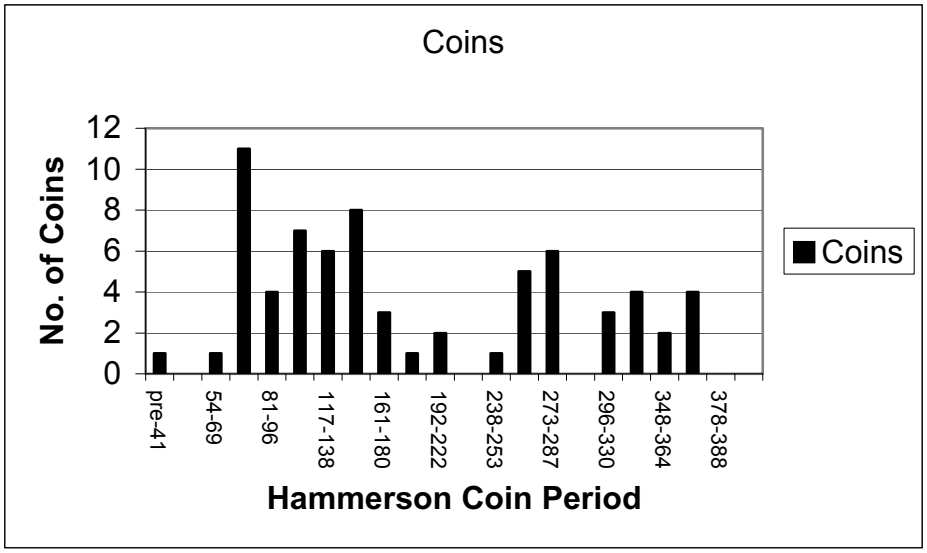

Fig 1. Coin loss at Drapers' Gardens by Hammerson's (1996) periods.

Coins of Intrinsic Interest

Four coins represent rarities or oddities:

SF470 [1708]. OBV: ANTONINVSAVGPIVSPPTRPCOSIII
REV: ROMVLO AVGVSTO SC Romulus
AD 140-144, *Sestertius, RIC* III (Ant Pius), 624a. Listed as 'Rare'

SF604, [2319] OBV: IMPERATOR Eagle
REV: COS[III] Trophy of arms
Late third-century *antoninianus*. This coin looks like a mule of two reverse dies. Further research needed.

SF89, [+] OBV: [LAELAVREL]COMM[AVGPFEL]
REV: [PROVIDENTIA]AVG SC. Hercules standing L. foot on prow, resting club on rock and receiving grain ears from Africa, who stands R. holding sistrum and wearing elephant headress and lion at feet.
AD 192, *Sestertius*, *RIC* III (Comm), 641. Listed as 'Rare'.

SF389, [613] OBV: AVRELIVSCAESAVG[PIIFIL]
REV: [TR]POTVIIII[COSII]SC. Minerva standing L, holding owl and spear: shield at L side.
AD 154-155, *Dupondius*. As *RIC* III (Ant Pius), 1371. This type of coin is unlisted for Marcus Aurelius' ninth tribunician year in *RIC*. However, examples are known from the sacred spring at Bath (Walker 1988, 298) and Coventina's well on Hadrian's Wall (Allason-Jones and McKay 1985, 59). I am grateful to Sam Moorhead (British Museum) for confirming the identification of this coin. Rare.

SF1124, [4947] OBV: M AGRIPPA LF COS III
REV: SC Neptune
AD 37-41, *as*. This coin was recovered from the fill of a ditch flanking a timber trackway in the earliest phase of activity. It was probably struck under Caligula, Agrippa's grandson, although some would assign them to the reign of Tiberius. They continued to circulate into the Claudian period as issues counter marked TICA attest and finds from Exeter (Holbrook and Bidwell 1991, 24) and Usk (Boon 1974, 103 and

105) point to continued circulation and copying during the reign of Nero. There is also an example from Ravenglass (Cumbria) that in conjunction with other finds might point to loss during the very early Flavian period (Gerrard and Mills 2002, 60 and 63-65). In short, this coin could have been lost at any point between AD 37 and AD 80. However, if one were looking for a Claudian – Neronian loss then this would be a good candidate.

Recommendations

The coins will be of primary use in assisting the phasing of the site sequence.

Approximately thirty coins need full identifications from *Roman Imperial Coinage*. This is especially true for those covered by *RIC II,* which is out of print and undergoing revision. All coins will need to be X-rayed prior to publication (an archive requirement: Museum of London 1998) and a percentage need further cleaning. It is recommended that the rarities noted above be photographed for publication and archive purposes.

95 coins is a small sample but when combined with coin finds from other nearby excavations may enable the nature of activity in this part of the Walbrook Valley to be better understood. It is recommended that the coins be combined with other local finds (Hall 1991) and analysed using the methodologies set out by Reece (1991; 1995) and Hammerson (1996).

The publication should include a coin catalogue and a discussion of the significance of the coin finds in their local context (Hall 1991). The group of coins from the channel fill ought to be photographed and published as a group, especially if other evidence (ceramic, faunal) of ritual / votive activity is forthcoming.

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APPENDIX 10: CLAY TOBACCO PIPE ASSESSMENT

Chris Jarrett

Three fragments of clay tobacco pipe stems, that can only be dated broadly to between *c.*1580-1910, were recovered from the excavation. The distribution of the stems are shown in Table 1. Two fragments are intrusive in Roman deposits recoded in Phases 6a and 6b, but one fragment was recovered in fill [106] of the Phase 10 post-medieval barrel [593] and is probably contemporary with the feature.

Context	Phase	Fragment count	Spot date
[607]	10	1	1580-1910
[2094]	6b	1	1580-1910
[2558]	6a	1	1580-1910, ?19th century

Table 1. DGT06: distribution of the clay tobacco pipes showing the context they occur in, the phase, number of fragments and a spot date for the deposit.

Significance and potential of the assemblage and recommendations for further work

There is little or no significance to the clay tobacco pipe assemblage and the only potential of the clay tobacco pipe stems is as a dating tool to the deposits, despite two fragments being intrusive. No recommendations are made for further work on the assemblage.

APPENDIX 11: PAINTED WALL PLASTER ASSESSMENT

Matthew Harrison

A total of 37 shoe boxes of plaster were retained from the excavation at Drapers' Gardens, 12 Throgmorton Street, London EC2. The material was assessed in order to establish:

a) The range of paints and designs present and therefore the status and character of buildings on and in the vicinity of the site.
b) The extent of *in situ* plaster, and how this material compares to material from other contexts.
c) The composition of the plaster and therefore evidence of building methods, particularly evidence of renovation and re-use.

Methodology

Each fragment was weighed, measured and examined with a hand lens. The composition of the intonaco (fine plaster) and arriccio (lower coarse mortar) was noted in terms of fabric, thickness, as well as size and frequency of inclusions. The fresco colour was recorded, as well as the design of any fragments with polychrome frescoes.

Quantification and Distribution

The site yielded 1508 fragments of plaster, weighing a total of 149.316 Kg. The majority (80%) are painted and 24% of the assemblage is polychrome frescoes. However, comparatively little of the wall plaster was found *in situ*. There are 427 *in situ* fragments from seven different contexts.

The plaster is most common in contexts relating to Phases 5-7 (AD 120-350) with significant amounts found in Phase 4 (AD 70-120) and very few fragments in Phases 3, 8 and 9. A high proportion of the Phase 4 plaster comes from contexts [1045] and [1274], deposits relating to the construction of a revetment. No buildings are found on site in this period and it is therefore likely these finds are dumped from surrounding area during consolidation works.

The higher volume of plaster in phases 5 and 6, however, is likely to relate to buildings constructed on site during these phases. All of the *in situ* plaster relates to Phases 5b and 6b – two periods of extensive building east of the road in Area A on site. The high volume in Phase 7 (AD 250-350), a phase characterised by disuse and destruction, results mainly from a demolition layer [687] and may relate to demolition of buildings constructed on site in earlier phases. The assemblage, therefore, is on the whole reflective of buildings constructed on site between AD 120-250, as well as material from surrounding area dumped from AD 70 onwards.

Table 1 – Painted plaster

Phase	Number	No of Frags	Weight (g)	Polychrome	Black	Brown	Blue	Green	Orange	Pink	Red	White	Yellow
0	20	38	1884	10	6	3	0	3	4	0	9	4	3
3	2	2	187	1	0	0	0	0	0	0	2	1	0
4	68	85	7690	11	10	2	4	2	4	3	42	16	4
5	147	411	34300	60	40	7	47	2	3	4	89	34	2
6	142	297	28931	40	22	16	2	10	8	1	89	29	3
7	178	258	34070	42	42	9	9	16	39	1	94	29	3
8	7	7	333	1	1	1	0	1	2	1	5	0	0
9	5	7	92	0	0	0	0	0	0	0	5	0	0
TOTAL	**569**	**1105**	**107487**	**165**	**121**	**38**	**62**	**34**	**60**	**10**	**335**	**113**	**15**

Table 2 – Unpainted plaster and mortar

Phase	Number	No of Frags	Weight (g)
0	3	3	77
3	2	2	86
4	6	17	405
5	40	151	14178
6	39	99	16383
7	31	129	10429
8	1	1	138
9	0	0	0
TOTAL	**122**	**402**	**41696**

Fresco

Red is the most common colour, occurring on 335 pieces of plaster. Black (121) and white (113) also occur prominently. Rarer colours are Blue (62), Orange (60), Brown (38), Green (34), Yellow (15) and Pink (10). The relative frequencies of colours are similar in all phases; however there is a significant amount of blue plaster in Phase 5 (including *in situ* plaster from structures) and an increase in orange paint in later Phases 7 and 8.

28% of the painted plaster includes more than one colour. The polychrome pieces are, in all but a few cases, simple stripes and therefore indicate a simple border for a panel design. However, the borders may include up to four colours in combination, in some cases with stripes repeated.

There are two well preserved examples of more elaborate designs. From context [1035] is a piece with a black and white striped border and red panel which has yellow lozenge and curved 'X' shapes decorating the edge of the border, painted onto the central red panel. Similarly [1507] produced a piece with a white and pink striped border, with white curved 'X' and 'V' forms painted along the border over the central panel. Both these contexts relate to Phase 4 and are found in deposits relating to the consolidation and revetment works. Additionally a piece from context [1877] has an interesting composition, but the fragment is smaller than the aforementioned pieces. This piece has a design consisting of large forms in orange and black painted over the striped border, rather than lining it. This piece is similarly from a deposit relating to revetment of the stream in Phase 8.

There are a further six pieces with elaborate designs which are not as well preserved. Plaster from [3926], Phase 5a, has a red lozenge painted over a black stripe, at 45 degrees to the direction of the stripe. There is a simple white spot on black ([3017]), white curved line ([2403]). Pieces of *in situ* plaster from Phase 6b ([2182] and [2135]) show simple flourishes to black border on red/orange in the form of circular shapes. What was once a floral design may be evident on a piece from [2776], though it is badly damaged.

All the more simple designs, and the more fragmentary ones, relate to Phases 5-6, where the majority of plaster is found and the majority of building on site occurs. The more elaborate and better preserved pieces are from Phases 4 and 8, and are deposited in construction cuts for revetments and road levelling layers, perhaps originating from buildings nearby the site.

Intonaco

There is little variation in the intonaco layer in the assemblage. The material is typically a lime mortar with little sand added, typically ranging from between 0.5mm and 2mm in thickness.

Arriccio

The majority of fragments have a single arriccio of lime and sand. However there are 38 examples of the use of *Opus Signinum*. Nine of these cases are those in which there are two layers of arriccio, one a lime and sand mortar, the other *Opus Signinum*.

Examples from four contexts show evidence of renovation, where second layers of arriccio, intonaco and fresco are added. This includes material from [997], a collapse of wall plaster relating to demolition of buildings on site.

In Situ Wall Plaster

There is plaster from three contexts that relate to structure [942] ([2182], [2135] and [992], Phase 6b). Here we see a large number of fragments in red and brown with black borders and simple black design. Additionally, there is a fragment of green and black plaster, and orange and red plaster, which indicates a range of colours and schemes relating to a single building.

Similarly, there are two contexts relating to structure [1265] (Phase 5b). One ([3064]) shows a greyish blue paint without any evident borders, but covered in red and black splash marks. The other ([3248]) is a plain black painted plaster. There are linear impressions on the back of these black fragments perhaps indicating keying.

The plaster from context [2900] is almost identical to that of [3064], showing a greyish blue paint without borders and splashed with red and black. This context relates to the same phase (5b) but a separate structure, [3049].

Conclusions

a) The majority of the plaster relates to Phases 5-7, with a significant amount from Phase 4. The plaster from Phase 4 was probably dumped from areas nearby the site, whereas a significant amount of the material from Phases 5-7 relates to buildings constructed on site between AD 120-250.
b) A large majority of the plaster is painted and significant amounts are polychrome.
c) The most common colour is red, with white and black also prominent.
d) The polychrome examples are generally simple designs, showing only bordered panels.
e) There are a small number of examples with designs more elaborate than the bordered panel. The best examples of more elaborate designs come from Phases 4 and 8 ([1035], [1507] and [1877]); however, these are probably dumps of material from buildings nearby the site. Less well preserved, and perhaps less elaborate, examples are found in Phases 5-6, both *in situ* ([2182] and [2135]) and in other contexts ([3936], [3017], [2403], [2776]).
f) *In situ* fragments show that a range of colours and schemes were in use on a single building.
g) Points b-f suggest that the buildings on site were more than modestly decorated, though the more elaborate designs from Phase 4, which must originate off-site, may suggest that there were slightly more lavish buildings nearby.
h) *In situ* fragments from different structures have almost identical colours and splash marks ([2900] and [3064]) perhaps illustrating contemporary construction.
i) There is evidence of renovation in the form of re-plastering, from contexts related to the destruction of buildings on site ([997]).
j) Although the painted wall plaster from Drapers' Gardens lacks visually exquisite panelled and two dimensional architectural designs found at sites such as Winchester Palace (Yule 2005, fig. 84) and the basilica (Milne 1992, fig. 37), as well as more recently at the Lime Street site (Telfer and Betts 2009, 14-19) it is still an important indicator of the type of decoration of low status houses in the north of the city.
k) The dump deposits in Phase 4 also show that the early wall plaster in the provincial capital was of a high decorative standard.

Recommendations

The fragments with designs more elaborate than a bordered panel ([1035], [1507], [1877] [2135], [2182], [2403], [2776], [3017], [3936]) should be examined by a specialist.

The *in situ* material, particularly [2900] and [3064], should be examined by a specialist to assess its quality.

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APPENDIX 12: GLASS ASSESSMENT

John Shepherd

Introduction

A total of six hundred and seven individual fragments of glass were submitted for identification). All the glass had been cleaned and the majority had been bagged as bulk samples. Only twenty-seven items had been individually accessioned. These are: -

[332]	<14>	Colourless	Vessel
[0]	<65>	Black	Counter
[1895]	<94>	Natural green blue	Vessel
[1876]	<96>	Colourless	Vessel
[2242]	<105>	Colourless	Vessel
[2138]	<106>	Colourless	Vessel
[2691]	<125>	Natural green blue	Window, cast matt/glossy
[3111]	<155>	Natural green blue	Bottle, square (Isings form 50)
[3111]	<155>	Natural green blue	Vessel
[3189]	<160>	Colourless	Vessel
[3204]	<161>	Colourless	Vessel
[3254]	<163>	Natural green blue	Vessel
[3506]	<167>	Natural green blue	Vessel
[3620]	<177>	Natural green blue	Vessel
[3670]	<180>	Natural green	Vessel, burnt
[3885]	<182>	Natural green blue	Vessel
[4042]	<196>	Colourless	Vessel
[1685]	<405>	Black	Counter
[1582]	<458>	Colourless	Bowl, base (Isings form 85b)
[1708]	<491>	Natural green blue	Medallion, jug
[2137]	<581>	Dull green	Melon bead
[2187]	<582>	Dull green	Melon bead
[2411]	<625>	Natural green blue	Beaker or bowl, base
[2733]	<676>	Opaque white	Counter
[2966]	<719>	Natural green blue	Jar, rim
[3004]	<721>	Colourless	Vessel
[3404]	<839>	Natural green blue	Window, cast matt/glossy, grozed all round

The following assessment examines all of the glass from this site. It comprises two documents – this Ms Word document (DGT06 glass assessment.doc) and an MS Excel spreadsheet listing every item (DGT06 glass.xls).

This assessment was conducted ‘blind’, that is without supporting phase information. It is possible that one or two of the identifiable fragments might be dated later than their contexts – and appear to be intrusive. It is suggested that, if this is the case, that the examples where this occurs are reviewed at the time of writing the final report. In the main, however, the greater majority of the identifiable fragments come from well-attested and datable types, so this is not expected to pose too great a problem.

The assessment

Six hundred and seven individual fragments of glass were submitted for identification and assessment. All are, or appear to be, Roman in date. No recognisable fragments of early medieval, medieval or post-medieval glass could be identified. All are fragmentary, although some fragments

are large and also a couple of vessels are near reconstructable. Of the total, two hundred and seventy three fragments can only be assigned to free-blown vessel forms of unidentifiable shape ('Vessel' in the Excel spreadsheet).

Three hundred and thirty-four fragments could be identified by form. These include three counters ([0] <65>; [1685] <405>; [2733] <676>) and two beads ([2137] <581>; [2187] <582>). The small number of beads is probably worthy of note – although at the time of writing it is possible that other small items might appear in the processing of soil samples. Forty-eight fragments of cast, matt/glossy window glass, common throughout the Roman period but especially during the first and second centuries, are present as well as a single identifiable fragment of cylinder blown window glass, a type of glazing common from the late second century onwards.

Of particular interest for the remaining two hundred and eighty identifiable items is the very large proportion of bottle glass fragments. One hundred and eighty-one bottle glass fragments could be identified, 64.6% of this remaining total, 32% of all vessel fragments. These bottles are the common cylindrical or square-sectioned varieties well known among glass assemblages of the late first and second centuries. These bottles were used as in transit and storage containers, and their presence in large numbers here gives another indication of the functions carried out in the buildings excavated on this site. Of interest also is the large number (12) of decorated bases from this site. These come from the mould-blown examples of such bottles (square-sectioned, prismatic bottles) and as such they can be die-linked with other examples from western European sites. A study of these designs, which includes some geometric patterns, will assist in identifying the origins of these bottles, linking them with continental trade routes.

The remaining one hundred and fifty-three fragments are made up of, primarily, tablewares such as drinking vessels and jugs or flagons. The earliest recognisable vessels are five pillar-moulded bowl fragments, representing at least two vessels ([1243]; [2693]; [3116]; [4366]; [4706]), of the mid to late first century. Such vessels continued to be used during the earliest part of the second, but had largely left circulation by the end of the first quarter of the second century. Only two fragment of strongly coloured glass ([1035]; [2566]) are present. Neither can be identified by form.

Three fragments of cast, ground and polished bowls are present ([2461]; [4549]). A few jug fragments of the late first or early second century are also represented, but these are few. They include, however, the moulded boss from the lower part of the handle of a jug in the shape of a maenid's head. Such items can be die-linked to other examples. A couple of vessels are represented by substantial proportions of their profiles, especially two bulbous bodied bottles of the second century. A glass inkwell, only the second example from London (the other comes from Tabard Square), can also be identified ([1708]).

It should be noted that distinctive drinking vessels of the mid second century are not present.

Of particular interest are a number of vessel types common to the late second or third century. These include at least six examples of common 'Airlie' type cups ([299]; [310]; [675]; [1372]; [1582] <458>; [1746]; [2395]; [4710]). At least eleven other fragments can be broadly dated to the late second or third centuries. Although individual finds of the late second and third century are known from the London area, assemblages of this date are not common - it is interesting to note that another PCA site (Tabard Square, LLS02) also produced a large assemblage of similarly dated glass, making it a useful comparison.

It should be emphasised here that only one recognisable late Roman, i.e. late third or fourth century, fragment of glass could be identified – the base of a conical-shaped beaker ([2169]). The simple conclusion is that there was no glass supply of note to this site after the third century.

One hundred and ten of the identifiable vessel fragments can be sufficiently described to be included in a full catalogue of the glass. Ninety-one fragments are worthy of illustration – this, however, is a maximum total and that number could be reduced (perhaps by 50%) so that only exemplars of duplicate vessel types are illustrated.

Conclusions

Bearing in mind that this assessment was conducted without supporting phase data, it is possible to make some broad comments about the supply of glass to this site – comments that might relate to the nature of occupation on the site.

Other than the pillar moulded bowl fragments and two fragments of strongly coloured glass (all of which could equally date from the late first or very early second century), there is no distinctive first century assemblage on this site. All of the glass could, as has just been stated, be of late first century date at the earliest and in use during the second century. The absence of distinctive second century drinking vessels is worthy of note, however such vessels might be regarded as slightly higher status and perhaps not in keeping with the status of the buildings on this site. There are drinking vessels present that could have been in use during the second century, vessels of a plainer nature.

The large number of bottle fragments is exceptional, 55% of the identifiable fragments, *c.* 30% of the total, and perhaps gives an indication of functions on this site. A comparison with in transit and storage containers in other materials (e.g. ceramic amphorae and flagons) might be of interest here.

The presence of a large number of late second and third century vessels is of interest and helps to fill a gap in our knowledge about glass supply to *Londinium* during that period. This contrasts with a distinctive absence of late Roman glassware, suggesting that, at least, the supply of glass in quantity to this site had ceased before the end of the third century.

The presence of a number of cast matt/glossy window glass fragments gives an indication of some architectural detail for the buildings here – although the exact number of panes these fragments represent (they could come from just the one!) cannot be calculated. A single fragment of later cylinder blown window glass is also present.

Beads are very few, which may contrast with the quantity of other personal items from this site, and only three glass counters were recovered.

Recommendations

This assemblage as a whole gives a very interesting and comprehensive cross-section of glass supply to this part of *Londinium* during, primarily, the second and third centuries and, as such, is worthy of further work and research. The majority of vessels are common types, with numerous parallels in London and beyond, and their research would be straightforward. Further study of the bottle base designs would be an additional task not normally conducted on London assemblages.

Research and publication recommendations are as follows: -

Task 1 Catalogue preparation 110 entries
Task 2 Vessel research, including bottle study
Task 3 Final edit and bibliography etc.

Illustrations

91 fragments are worthy of illustration. However, as mentioned above, if only exemplars are illustrated then this number could be reduced, perhaps by as much as 50%.

APPENDIX 13: LITHICS ASSESSMENT

Barry Bishop

Introduction

Excavations at the site resulted in the recovery of thirteen struck flints and just over 0.4kg of burnt flint fragments. This report quantifies and describes this material, assesses its significance and recommends any further work required for it to achieve its full research potential.

Quantification

Decortication Flake	Core Rejuvenation Flake	Flake	Blade	Blade-like Flake	Core	Retouched
2	1	4	3	1	1	1

Table 1: Quantification of Struck Flint and Burnt Flint by Context

Burnt Flint

Twenty-five fragments of burnt flint weighing 401g were recovered from a number of different features. The degree of burning was variable, with some pieces still retaining their original colour and cortex type, but most had been burnt to the extent that they had shattered and changed colour. This variability is consistent with the pieces having been incidentally burnt in or near a hearth, rather than from deliberate production. It was distributed widely with only small quantities recovered from any individual context, and no hearths or dumped material from hearths could be identified. It most likely represents 'background' waste residually incorporated into the features.

Struck Flint

Raw Materials

The raw materials used consisted of semi-translucent brown to grey fine-grained flint. Cortex, where present, varied from weathered but rough to smooth worn, indicating that the raw materials mostly consisted of pebbles and cobbles obtained from local gravel terrace deposits.

Condition

As may be expected from a predominantly residual assemblage, the condition of the pieces varied. Some were in a good condition but most had experienced some chipping and abrasion, consistent with redeposition.

Description

The thirteen struck pieces consisted of a variety of flakes and blades and one core. The only retouched piece comprised a systematically produced micro-blade that had been notched on its right dorsal towards its distal end and, subsequently, had snapped where it had been notched. Although lacking the characteristic oblique facet, this may represent a micro-burin that had failed to snap properly. The core was large for central London assemblages, it weighed 846g and consisted of a heavily burnt globular shaped core with many flakes removed from a number of randomly aligned striking platforms (Clark *et al*. 1960 type C). The remainder of the assemblage included a number of blades, most of which were systematically produced and two of which showed clear evidence of having been utilized, most likely for cutting or sawing a relatively hard material, such as wood or bone. The presence of a core rejuvenation flake, this removing hinge fracture scars and part of an opposed striking platform, and two decortication flakes indicates flint reduction was occurring at the site.

The majority of the assemblage, including the core rejuvenation flake, the blades and the blade-like flakes, would be characteristic of Mesolithic or Early Neolithic assemblages; the micro-burin, if correctly identified, would be a diagnostic indicator of Mesolithic industries. The core and some of the other flakes are less chronologically diagnostic but would be more typical of later flintworking, perhaps of Bronze Age date.

Significance

The assemblage is small and there is a paucity of diagnostic pieces but it does indicate activity at the site during the Mesolithic or Early Neolithic periods and possibly later. Relatively little evidence of prehistoric occupation has been identified in the City, certainly if compared with Southwark across the river. This discrepancy would largely appear to be a consequence of the considerable urbanisation that the City has witnessed, combined with the lack of fortuitous preservational conditions, such as the alluvium that has preserved early deposits in many places in north Southwark, and that, not surprisingly, archaeological attention in the City has traditionally focussed on the Roman and medieval periods. Recent surveys have demonstrated that within the City, Roman and later activity has destroyed prehistoric deposits in many areas, but also that the prehistoric activity was perhaps not as sparse as once believed (Holder and Jamieson 2004). In this light even small residual assemblage have significance in that they can contribute to a wider understanding of the nature and extent of activity in this area.

Recommendations

As the assemblage does contribute to the otherwise poor record of prehistoric activity in the area it is recommended that it is examined in more detail and fully described for inclusion in any published account of the fieldwork.

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APPENDIX 14: INSCRIPTIONS AND GRAFFITI ASSESSMENT

Roger Tomlin

Inscribed objects are grouped by material: lead, bone, wood (writing-tablets and barrels), leather, ceramic (amphorae, samian and coarseware). Each one is identified by context-number and the small-find number. In measurement, width precedes height or length. The following conventions are used:

[ABC] lost letters restored
(ABC) omitted letters supplied
Λ 'open' (unbarred) A
'AB' two letters ligatured together
A̗ 'dotted' letter, i.e. of uncertain reading

CIL *Corpus Inscriptionum Latinarum* (by volume)
RIB II *Roman Inscriptions of Britain*, II (by fascicule)

(1) LEAD

[4706] SF1462
Oblong with rounded corners, 44mm by 55mm, cut from sheet lead *c*. 4mm thick. It has been pierced with two holes near the straightest edge, but their purpose is uncertain: one hole would have sufficed for a label, and there is no sign that it was ever attached to anything by both holes. But if the object were magical, to be pierced by nails would symbolise 'defixion'. Inscribed to the left of the holes on both faces, in irregular capitals:

(a)
N
OXI

(b)
ES

N is twice the height of OXI, as S is of E, but a continuous text was apparently intended. There is no Latin form *noxies*, but perhaps the writer conflated the adjective *noxius* with the participle *noce(n)s*, both meaning 'harmful'. The object is certainly not a label inscribed with name(s) or quantity, and the use of lead, the piercing, and the enigmatic text, all suggest malevolent intent.

(2) BONE

[4358] SF1168
Fragment of a pig's scapula with a series of natural 'contour'-like marks. Not inscribed.

(3) WOOD (i), writing-tablets

Thirteen fragments were examined, five of them more closely, for traces of inscribed text. The first two apparently retain part of the 'address'. Waxed stylus tablets used for correspondence were often inscribed on the outer, unwaxed, face with the recipient's 'address': his name, and perhaps a brief description by occupation or place.

3(i).1 [493] SF606
Fragment 166mm by 38mm, preserving one corner of a recessed stylus tablet and the midway cut for the binding-cord. A series of straight lines has been scored on the outside, but except for a diagonal stroke at one end, they are now rather faint. They could be read as letters either way up, and are presumably the beginning or end of an 'address'.

3(i).2 [4931] SF1225
Small fragment 104mm by 36 mm, of a writing-tablet presumably, but there is no sign that either face was originally recessed. Scored on one face:

NN
[...]

In both letters, each stroke touches the next, so N must be read, not IV. It is uncertain which way up to read them, and whether NN is the beginning or the end of the text. If the latter, one possibility is the abbreviation *[... d(ominorum] n(ostrorum)*, '... of our (two) Lords'; but this would be Severan or later in date.

The other three fragments retain traces of incised text on their recessed face. The original coating of black wax does not survive, but the stylus, by cutting through to the wood, has left traces of letters which are usually illegible.

3(i).3 [141] SF1226
Fragment 150mm by 37 mm, preserving the width of a recessed stylus tablet and the midway cut for the binding-cord. The incised traces of cursive writing belong to the bottom of a 'page': first two incomplete lines of text, probably with traces of earlier text(s), and then a third line, not necessarily by the same hand, which concludes with a five-letter word placed somewhat lower still:

...
...
... ACTVM

[...] actum

'... executed.'

The position of *actum* suggests that it was added separately, perhaps to mark the execution of a legal document (a contract, loan note, etc.). This term is usually followed by a note of place and date, but not here.

Three intersecting lines have been scored to the left. Over the whole document, such crossings-out would indicate its subsequent cancellation, but that is not necessarily the case here.

3(i).4 [2992] SF1227
Two conjoining fragments overall 167mm by 70 mm, preserving the width of a recessed stylus tablet, the midway cut for the binding-cord, and two holes pierced for the hinges. The recessed face is discoloured and abraded, but retains incised traces of cursive writing, especially in the bottom left corner where the surface is better preserved. Here the beginning survives of the last two lines:

.V...
C.N...

3(i).5 [4538] SF1231
Fragment 144mm by 60mm, preserving the width of a recessed stylus tablet and the midway cut for the binding-cord. The recessed face retains extensive traces of incised cursive letters, but they belong to more than one text, and are almost all illegible.

(3) WOOD (ii), barrels

3(ii).1 [40]

Five conjoining planks (only four drawn) amounting to a complete barrel-head 0.76m in diameter, *c*. 35mm thick. There are two sets of inscriptions.

1. At right-angles, a branded stamp. This has been struck twice, the second time as usual to coincide with the bung:

(i) SEX SER'VA'NDI

(ii) SEX SE[...]

Sex(ti) Servandi and *Sex(ti) Se[rvandi]*

'(Product) of Sextius Servandus'

In (i), V and A, although now damaged, were evidently ligatured. In (ii) the second S is preceded by an indistinct mark, perhaps casual damage caused by the hot iron. The cognomen *Servandus* is frequent in Gaul and Germany, but occurs widely elsewhere.

2. Four graffiti, not necessarily by the same hand or even related, but (ii) and (iv) at least should be taken together.

(i) Three letters, lightly scored and now incomplete; perhaps CIP

(ii) CAPRIACVM

Capriacum

(iii) 7 VIIII

(iv) CVXIS

(modios) CV (sextarios) XI s(emis)

'105 *modii*, 11 ½ *sextarii*' [925.46 litres]

In (i), the first letter might also be L. The third letter, if indeed P, is differently formed from P in (ii). Whether or not they are related, the graffiti are by different hands.

In (ii), the full loop of 'P' is not certain and the letter might be E, but visually this is less likely. 'R' is also incomplete, but the only other possibility is K, a rare letter almost only found in first place.

The termination –ACVM indicates a place-name, and if preceded by CAPRI-, one derived from the nomen *Caprius*, the name of the estate-owner presumably. This is Latin, but it is well attested in Gaul, where it 'concealed' the Celtic element **gabro-s* ('goat'). The place-name *Capriacum* is not anciently attested, but many place-names in France are thought to be derived from it, including Chevrey Cossigny (dép. Seine et Marne), *vicus Capriacus* in 1140. Much the most attractive identification, however, is Gevrey-Chambertin (dép. Côte d'Or) in Burgundy, *Gibriacus* in 630 and *Gebriacus* in 858, famous ever since for its vineyards: see A. Dauzat and Ch. Rostaing, *Dictionnaire étymologique des noms de lieu en France* (2nd ed., 1978), s.v. *Gabriac*.

(iii) is apparently the numeral '9' scored over (as if to delete it), preceded by a reversed C; compare DGT06 [44]. Perhaps a batch-number, or to identify the barrel within the shipload.

(iv) The sequence CVXIS is not possible as a single numeral of capacity, and visually CV and XIS are on slightly different alignments, so they should be taken as two numerals. The *modius* [8.754 litres] contained sixteen *sextarii*, each of 0.547 litres.

The contents were evidently thought to be valuable, for such a large total to be noted so precisely. The introduction to *RIB* II.4, 2442, notes two barrels from Silchester approximately 889 and 930 litres in capacity, and another from London of *c*. 1050 litres, so '925' is an acceptable size.

3(ii).2 [44]
Two conjoining planks forming almost half a barrel-head 0.74m in diameter, *c*. 36mm thick. There are two inscriptions.

1. At right-angles, the last three letters of a branded stamp:

[...]RAS

Branded stamps on barrels are often an abbreviated name, and especially the three initials of a Roman citizen's *tria nomina*, whether they refer to the cooper or the shipper. But the sequence of letters here suits neither form, so it is probably a complete name of Greek derivation ending in –RAS, most likely one of the small group in *–agoras* such as *Hermagoras*.

2. In rather elongated cursive letters scored with a sharp point:

DOL VET SERTIENSES 7V

Probably *dol(ium) vet(us) Sertienses ..*

'Old Vat *Sertienses* ...'

The *dolium* was a very large earthenware storage jar used for the fermentation and maturing of wine, so the reference here is not to the barrel itself, but to the origin of the wine; in modern terms, to the 'vat' or 'vintage'. *vetus* ('old'), variously abbreviated, is often used in dipinti to qualify wine and other products, and means that they had been allowed to mature before being exported. A likely parallel is the graffito on a small barrel-head from Vindolanda which Robin Birley reads as DOLVLI (in E. Birley, R. Birley and A. Birley, *Vindolanda Research Reports, New Series* II: *The Early Wooden Forts. Reports on the Auxiliaries, the writing tablets, inscriptions, brands and graffiti* (1993), 85, not illustrated). The addition of a single diagonal stroke to each of the last two letters, whether it has been lost or only overlooked, would make the reading into DOL VET. It was accompanied by unspecified 'further graffiti elsewhere'.

Sertienses, nominative or accusative plural, suggests the inhabitants of a place-name in *Sert-* . There is no sure identification, but a possibility is Sers (dép. Charente) in Aquitaine, derived from *serta* ('garlands') by Dauzat and Rostaing (see above) who cite *Sertorovilla* (852) and *in sertis* (923). Sers is *c*. 15 km south-east of Angoulême, and thus within the modern appellation of 'Cognac' for the spirit distilled from the local Vin de Charente.

The long sinuous line which cuts the I of *Sertienses* must belong to another graffito, now lost; it is perhaps the top of S, *s(emis)*, in a note of quantity below, as on DGT06 [40].

To the right of *Sertienses* is apparently a reversed C, followed by V. This may be a numerical notation, '5', like the '9' similarly located on DGT06 [40]. Perhaps a batch-number, or to identify the barrel within the shipload.

(ii).3 [4667]
Complete barrel stave, 0.115m by 1.815m, 33mm thick. Branded twice towards one end:

M P P

M P P

M(arcus) P(...) P(...)

The three initials of a Roman citizen's *tria nomina*. For other examples from London, see *RIB* II.4, 2442.12 (L E FL), 13 (L M F), 14 (M C S); and compare the leather off-cut below.

3(ii).4 [44C]
One end of a barrel stave, 0.16m by 0.51m, 37mm thick. Two pairs of intersecting diagonal cuts ('X' and 'X'), and an incomplete brand:

C N .

G(aius) N(...) .(...)

See previous note. C was apparently double-struck; the third letter may have been L or N.

3(ii).5 [44F]
One end of a barrel stave, 0.165m by 0.39m, 37mm thick. Shallow traces of a brand:

D D D D

Perhaps not complete. It is presumably an abbreviated name or names, but not in the usual form of three initials.

(4) LEATHER

[1811]

Leather off-cut with impressed stamp or brand. In neat capitals *c*. 10mm high:

T F B

Probably *T(itus) F(lavius) B(...)*

This is probably a tanner's mark to identify a hide or bundle of hides before tanning: see M. Rhodes, 'Inscriptions on Leather Waste from Roman London', *Britannia* 18 (1987), 173-81. They consist of abbreviated personal names, especially the three initials of a Roman citizen's *tria nomina*; for other examples from London, see *RIB* II.4, 2445.13 (SE G F, stamped), 29 (L E M, incised), 33 (M S M, incised). Appropriate iron dies for the purpose found in London are *RIB* II.1, 17 (C V C, 13 mm high) and 23 (M M A, 13 mm high).

(5) AMPHORAE

(i) south-Gaulish, probably for wine (Gauloise 1)

5(i).1 [1045]
Most of the neck and upper shoulder, now fragmented; the neck carries a painted inscription (dipinto) neatly written in black ink:

V
V 'LX'XX

[...]IB EVTYCI

Probably *V | V (sextarios) LXXX | [us]ib(us) Eutyc(h)i*

'... (?) old wine, 80 (*sextarii*), for the (personal) use of Eutychus [*or* Eutychius].'

This reading, or rather its restoration and expansion, is not quite certain since dipinti from Gauloise 1 for comparison are unknown, according to F. Laubenheimer, *La production des amphores en Gaule Narbonnaise* (1985), 399. But compare the dipinti found on a related amphora-type, Gauloise 4 (*ibid*., 399-403), better published as A. Desbat, R. Lequément, B. Liou, 'Inscriptions peintes sur amphores: Lyon et Saint-Romain-en-Gal', *Archaeonautica* 7 (1987), 141-66. L1 in particular reads: AMIN | VET VSIB | IVLI ADIVTORIS, *Amin(eum) vet(us) usib(us) Iuli Adiutoris*. The initial V of VET is of exaggerated form unlike that of VSIB, but resembles V here in lines 1 and 2, which is evidently a notation either for *v(etus)*, 'old (wine)', or *v(inum)*, 'wine'. The type of wine, often specific on Gauloise 4 (*Amin(eum)*, *Mas(sicum)*, etc.), is not stated.

There is then a space, between lines 2 and 3. The beginning of 3 is lost, but the uninscribed space further to the left shows that there was no room for a name incorporating the element [NN N L]IB, 'so-and-so, freedman of so-and-so'. Instead read [VS]IB, *usib(us)*, a term explained by Liou (above), who compares *CIL* xv 4807, *usibus cellari Severi*, and *CIL* iv 2583 (etc.), *v(inum) r(ubrum) in usus Coeliae Proculae*, for which Mommsen cites *Digest* 33, 9, 4, 2 to show that a producer of oil or wine might retain for his own use (*usus*) a 'reserve' (*penus*) distinct from his commercial stock. In dipinti this reference to personal 'use' might be taken literally, to refer to the purchaser; but like the term *penuarium* (from *penus*, see for example *RIB* II.6, 2492.11), it was surely intended as a guarantee of quality from the producer. For the quantity of '80' (*sextarii*) [43.76 litres], compare the '60' which sometimes forms part of dipinti on Gauloise 4, for example MVLSAR | LX published by Liou in *Archaeonautica* 7 (1987), at 78 (F 112), '60 (*sextarii*) of *mulsum* [honey-sweetened wine]'.

(ii) south-Spanish, for oil (Dressel 20)

(a) Graffiti made *before* firing, and thus relating to manufacture:

5(ii).1 [3154] SF1471
Wall sherd, neatly incised:

[...]XIIK M[...]

[...] XII K(alendas) M[...ias ...]

'... on the twelfth day before the Kalends of March *or* May.'

The date 18 February or 20 April, perhaps with the addition of a consular (year) date now lost.

5(ii).2 [3001] SF1469
Wall sherd, freely incised like DGT06 SF1147, but not from the same vessel:

[...]B

Below and to the left are the tips of two strokes.

5(ii).3 [1161] SF1458
Sherd including the basal knob; incised while the vessel was inverted:

probably the upper half of P

The upper half of R, or a complete D, are also possible; but they look less likely.

5(ii).4 [650] SF1147
Wall sherd, freely incised like DGT06 SF1469, but not from the same vessel:

[...]RI.[...]

(b) Graffiti made *after* firing, and thus relating to ownership or capacity:

5(ii).5 [3911] SF840
Complete rim sherd, deeply incised:

IANVARI K̇V MVIIIS

Ianuari KV m(odios) VIII s(emis)

'(Property) of Januarius *KV*, (capacity) eight (and) a half *modii*.'

Ianuarius is quite a common name, so KV was presumably added to identify this particular individual; perhaps he was *Ku(piti filius)*, 'son of Kupitus' [Cupitus].

5(ii).6 [4496] SF1058
Rim sherd, incised:

MVM

Probably the initials of the owner: *M(arcus) V(alerius) M(artialis*, for example, or *M(arcus) V(alerius) M(aximus)*. For another instance of MVM from London (but on samian), see *RIB* II.7, 2501.398.

5(ii).7 [1378] SF1456
Rim fragment, somewhat abraded. Incised:

[...]IIS

Probably *[m(odios) V]II s(emis)* or *[m(odios) VI]II s(emis)*

'(Capacity) seven *or* eight (and) a half *modii*.'

5(ii).8 [3493] SF1148
Complete handle, incised:

Ṁ VIIİ[...]

Probably *m(odios) VIII*

'(Capacity) eight *modii*.'

There are two diagonal cuts somewhat to the left of the numeral, which are presumably an abraded M. A large chip has removed all but the bottom tip of the final digit, and any evidence of whether it was followed by S for *s(emis)*, '(and) a half', or by another digit for VIIII, '9'.

5(ii).9 [4250] SF1150
Rim sherd, incised:

XIIII

'14'

Probably a note of capacity in *sextarii*, accompanying another numeral for *modii* with or without M.

5(ii).10 [4248] SF1220
One end of a handle, incised at right-angles:

[...]INXVI

A diagonal scratch descends from the first letter, which if deliberate would make it L; but it seems to be casual. The last three letters are apparently the numeral '16', but this would be difficult as a note of capacity since the capacity of Dressel 20 amphoras (for example DGT06 SF840) is noted in *modii* (usually six, seven or eight) and *sextarii* (of which there were sixteen to the *modius*). But compare *RIB* II.6, 2494.88 (Richborough) for another instance of XVI cut on an amphora handle.

5(ii).11 [4439] SF1221
Wall sherd, roughly scratched:

a six-pointed 'star'.

A mark of identification.

5(ii).12 [2776] SF1467
Wall sherd, with a zig-zag scratch and a 'cross' made apparently with two different instruments. If not casual, they may be part of a mark or mark of identification; but they can hardly be deliberate numerals or lettering.

(6) SAMIAN

All graffiti were made *after* firing, and thus relate to ownership of the vessels.

(a) Literate graffiti, (i) personal names:

6.1 [3419] SF1480
Sherd of a cup (Drag. 27) preserving the profile, with a conjoining rim sherd. Scratched on the wall just above the foot-ring:

[...] FAL

An abbreviated personal name, probably in isolation. It might be a nomen such as *Fal(erius)* or *Fal(tonius)*, but is more likely to be a derived cognomen, or a cognomen such as *Fal(ernus)*.

6.2 [2151] SF1460
Base sherd of a decorated bowl (Drag. 37) which includes the entire foot-ring with one fragment conjoining. Incised in a series of diagonal cuts across the width of the foot-ring:

NΛNILΛ

A is 'open' (unbarred), and L is formed with a diagonal cross-stroke two-thirds down. Graffiti incised in this way across the width of the foot-ring are often only numerals or marks of identification, but here there is sufficient variation to suggest that a name was intended. But a (feminine?) name *Nanila* seems otherwise unattested.

6.3 [613] SF1146
Base sherd of a decorated bowl (Drag. 37) which includes the entire foot-ring. Scratched underneath within it:

ONII

Probably *One(simus)*. The name is quite common, but with the possible exception of *RIB* II.4, 2442.14 (an imported barrel-stave), it has not previously been found in Britain.

6.4 [1453]
Base sherd of a dish (Drag. 18), incised on the wall just above the foot-ring:

VET.[...]

There is probably the downstroke of a fourth letter in the break, perhaps E or I. One possibility would be *Vet[eris]*, '(property) of Vetus'.

(a) Literate graffiti, (ii) numerals:

6.5 [4706] SF1478
Base sherd of a cup (Drag. 27) stamped OF RVFIN (Rufinus of La Graufesenque), scratched underneath within the foot-ring:

two converging diagonals, probably V

The numeral '5', unless the initial letter of the owner's name as a mark of identification. Compare DGT06 SF1479.

6.6 [1877] SF1479
Sherd comprising about one-half of a bowl or dish (Drag. 18/31) stamped PRIM[...]. Scratched underneath within the foot-ring:

two converging diagonals with a horizontal line below, probably V

The numeral '5', unless the initial letter of the owner's name as a mark of identification. Compare DGT06 SF1478. There is craquelure in the gloss surface, but it is not lettering.

6.7 [1425] SF1152
Rim sherd of a bowl or dish (Drag. 18/31), scratched on the wall below the rim:

[...]XIIII

Probably a numeral, '14' (or more, ending in '4').

The graffito is much abraded, with other scoring, but seems to be a numeral only.

(b) Non-literate graffiti:

6.8 [3877] SF1149
Base sherd of a cup (Drag. 27) stamped GENITOR F. Scratched underneath within the foot-ring:

a stylised 'palm' branch, a mark of identification.

6.9 [1685] Sf1482
Base sherd of a bowl (Drag. 31), scratched underneath within the foot-ring:

a stylised 'palm' branch, a mark of identification.

6.10 [3137] SF1484
Base sherd of a cup (Drag. 33) stamped TIIRITIO M. Scratched underneath within the foot-ring:

Two concentric circles and a lattice of lines intersecting more or less at right-angles, now incomplete.

A decorative pattern intended as a mark of identification, possibly erasing an earlier graffito evidenced by part of two lines at a diagonal.

6.11 [2230] SF1481
Wall sherd of a cup (Drag. 27), scratched above the foot-ring:

[...]X

Probably complete, and a 'cross' made of two intersecting strokes for identification.

6.12 [3296] SF1483
Wall sherd of a dish (Drag. 18). Scratched on the wall above the carination, part of a pattern consisting of two lines meeting at an acute angle, with lines meeting at right-angles within. Not lettering, but a mark of identification.

6.13 [474]
Base sherd of a cup (Drag. 33) which includes most of the foot-ring. Lines have been scored opposite each other on the inner face of the foot-ring, possibly intended as numerals (I and V), but more likely as marks of identification.

(7) COARSEWARE

(a) Graffiti made *before* firing, and thus relating to manufacture:

7.1 [4422] SF1050
Base sherd of a black jar, neatly incised underneath:

B

Presumably the initial letter of the potter's name.

7.2 [4250] SF1151
Rim sherd of a black-burnished jar, incised on the inside wall:

'VE'

The two letters are ligatured, and are presumably the initial letters of the potter's name, for example *Ve(recundus)*.

(b) Graffiti made *after* firing, and thus relating to ownership:

7.3 [4165] SF1475
Base sherd of a black-burnished jar, scratched underneath:

ΛP

An abbreviated personal name, for example *Ap(ollinaris)* or *Ap(rilis)*.

7.4 [3136] SF1470
Wall sherd of a thin-walled black jar, inscribed in neat capitals:

[...]ΛRT.[...]

Probably *Art[emidorus]* or a cognate name derived from 'Artemis'.

The sequence –ART– suggests the very common name *Martialis*, but the next letter, although incomplete, is characterised by a medial second, upward, stroke; so it cannot be I. Since F is excluded by the sequence of letters, it must be E or H. Visually, E is more likely than H. But the internal sequence –ARTE– is hardly found: *Martensis*, for example, although cognate with *Martialis*, is almost unknown as a personal name. Thus A is probably the initial letter, of a theophoric name derived from that of the Greek goddess Artemis: *Artemidorus*, *Artemius*, or *Artemisius*. But H cannot be quite excluded, which would allow *Parthenius* (etc.).

7.5 [4143] SF1476
Base sherd of a grey jar, scratched underneath:

IA[...]

Perhaps IA[N] for *Ian(uarius)*, in rather tall letters. Compare DGT06 SF840.

7.6 [2813] SF1468
Base sherd of a grey jar, scratched underneath:

IVL

Iul(ius)

Although strictly a nomen, *Iulius* is quite often found on its own as a cognomen.

7.7 [4027] SF1473
Wall sherd with moulded banding, in a pink fabric with cream slip; scratched above the banding:

SO[...]

S was scratched twice. A personal name such as *So[linus]* or *So[llemnis]*.

7.8 [2666] SF1464
Two conjoining wall sherds of a grey jar, scratched in rather tall capitals:

TIV.[...]

At the beginning of a name, this letter-sequence is very unusual. Probably a name of Celtic etymology, for example *Tiucius*, uniquely attested in *CIL* v 5890.

7.9 [416] SF1143
Base sherd of a grey jar, neatly incised underneath:

VΛRIL[...]

Probably *Varil[lus]*, developed from *Varus*.

7.10 [3296] SF1472
Rim sherd of a black-burnished jar. Incised below the rim:

[...]NIΛV.[...]

Probably *[...]ni Au.[...]*

The letter-sequence is difficult, so this is probably two names, especially since the third and fourth letters are on a lower alignment. They are followed by the tip of a downstroke, probably I or L. The two names might be those of successive owners, the first at least in the genitive case. But more likely, they are the end of the owner's nomen, and the beginning of his cognomen, both in the genitive case: '(property) of [...]nius Avi[tus]', for example.

APPENDIX 15: LEATHER ASSESSMENT

Quita Mould

Methodology

The leather was scanned when wet and separately bagged and boxed into the three major functional categories: shoes, stitched sheet leather and waste leather. A basic quantification of the material has been made and the information correlated with the available site phasing.

Current condition and conservation recommendations

The leather was washed and wet when scanning and initial quantification took place. Much of the leather, particularly the stitched sheet leather and shoe uppers, are delicate and easily torn. There is no doubt that a wider range of identifications will be possible during analysis once the leather is conserved. The leather in a small number of bags need additional washing and slight mould growth was noted in bags of waste leather from context [1503].

It is recommended that the leather be conserved to facilitate study, illustration and to permit long term storage. The current policy of LAARC, the eventual repository of the site archive, is for all organic material to be conserved.

Quantification

Leather was recovered from 240 contexts and unstratified. A basic count of the minimum number of shoes present, the waste leather (S = secondary waste, P = primary waste) and fragments of stitched sheet leather are given in table 1 below.

Phase	No contexts	Shoes	Waste	Stitched sheet
3a	4	3	1xS	13
3b	3	8	4xS 3xP	27
4	17	28	14xS 6xP	14
4/5	1	0	3xS	0
5a	43	101	205xS 42xP	58
5b	51	133	155xS 16xP	21
5/6	13	34	74xS 14xP	5
6a	17	17	19xS 9xP	2
6b	22	34	52xS 25xP***	6
6	11	18	10xS 4xP	1
7	9	11	11xS 8xP!	1
5/6/7	6	7	41xS 20xP**	2
6/7	14	32	25xS 19xP*	3
7/8	8	13 (+gilded)	9xS 14xP	5
8	10	55	6xS 16xP	2
9	4	3	22xS 1xP	0
10	2	0	0	0
U/S	5	9	20xS	2
Totals	240	506		160

Table 1: Drapers' Gardens (DGT06) basic quantification of leather by phase
*** 18 bags of thick waste leather with hide edges present
** 15 bags of primary waste and scrap from a slumped layer [1503] on top of revetment structure [3351]
* bag primary waste from fill [1638] of revetment structure [2221]
! tanner's or owner's marks

The Roman shoes

Four shoe constructions were represented in the assemblage and will require slightly differing recording strategies at the analysis stage.

Nailed construction
The majority (64%) of the Roman shoes were of nailed construction. They were represented principally by their bottom unit components, the shoe uppers being poorly preserved, as is usually the case. Consequently the style of only a few shoes could be positively identified. A small number of shoe uppers were present, however, and will be the chief focus of the analysis of the nailed shoes. There is good evidence for at least four styles including typical 2nd and 3rd century types. Of interest were fragments from a shoe of 'Southfleet' style found in fill [1595] of revetment structure [1766] in Phase 7/8 and a shoe upper with denticulated upper edge and thonged seam [134] from Phase 8. The principal constructional features of the bottom units will be recorded in tabular form.

One-piece construction
17% of the shoes were of one-piece construction. They occur in a number of similar styles but are rarely of identical cutting patterns. One shoe, from fill [4768] of well [4251] in Phase 7, was notable in having an unusual back seam which may suggest it is of late Roman date.

Sandals
8% were sandals. At least three examples of sandals with an unusual double toe strap fixture, suggesting a toe loop and strap, were noted in Phases 5-8. To my knowledge, this feature has not been seen in Britain previously. A sandal toe strap, a relatively unusual find, was present in fill [1240] of a revetment structure [404] in Phase 6b. A single sandal with a toe post rather than a toe strap was noted in a dump [3008] in Phase 5. Sandals with decorated insoles were present: chiefly linear decoration with a single example with stamped circular floral motifs. A small number of sandals for very small children were found indicating high status.

Stitched construction
11% of the shoes were of stitched construction. It was notable that the soles of these shoes and the sandals were often reinforced with hobnails suggesting that they had been used or adapted for outdoor wear.

Other
The binding from a cork soled or wooden soled slipper came from fill [4068] of ditch [4069].

The Roman stitched sheet leather

It is estimated that there are *c*. 176 pieces of stitched sheet leather (currently stored in one plastic storage crate). In addition there are various fragments of sheet with no stitching present, torn from larger stitched panels. These will be scanned alongside the stitched leather from the same contexts so that any deriving from a single item can be re-united wherever possible.

A number of stitched sheet panel fragments were associated with hems, edge bindings or appliqué panels of differing shapes (circles and pentangles). Others were slotted, thonged or patched. A rectangular stitched panel with vertical slots surrounded by stitched lozenges to attach facings came from fill [1708] of revetment structure [1998] in Phase 5/6. Two panels with decorative stitching with a scrolled motif were also noted in the assemblage. These stitched panels come from a range of items including potentially,

garments
tent panels
shield covers
bags
pouches.

Other Roman leather items with interesting features.
A fragment of gilded leather came from [1611] in Phase 7/8.
Waste leather with a stamped leaf motif or symbol [4262] U/S.
Tool marks: large C shaped punch marks [4262] U/S, small C-shaped punch marks from Phase 5a.

Tanner's or owner's mark TFB [1811] in Phase 7.Second possible tanner's marks in [4667] fill of well 4251 in Phase 7.

The Roman waste leather

Primary waste
A large amount of leather (quantified by bag only at present) appears to be dated to the third century, occurring in bulk in contexts attributed to Phase 6b, 5/6/7 and 6/7.

This material includes 18 bags of thick leather waste with large areas of hide edge dumped in the fill [1161] of a box drain [1395] and 17 bags of thick primary waste and scrap from slumped fill [1610] on top of revetment structure [3351]. The majority of the primary waste comprises hide edges but the skin from an animal head came from [613] in Phase 8 and two legs from phase 5, with another stamped TFB from context [1811] in Phase 7.

Secondary waste
Secondary waste, much of it diagnostic of shoemaking, was found in small quantities throughout the Roman period, with a significant amount occurring in the first half of the second century (Phase 5). There is evidence that sandals were being manufactured in the vicinity.

The leather by phase

Phase 3: AD 50-70
A small group of shoes of three different constructions and waste leather along with stitched leather with hems, stitching to attach an appliqué, and curved fragments that may suggest a possible shield cover came from Phase 3. This group of early leather, 4% of the total assemblage, will be a focus of analysis.

Phase 4: AD 70-120
Shoes and waste leather were found in Phase 4 along with a stitched panel and a circular appliqué from a dump/levelling layer [1035].

Phase 5: AD 120-160
The majority of the leather, nearly half of the entire assemblage (48%) came from mid second century contexts attributed to Phase 5

Phase 5a: Large groups came from backfill [3495], [3615] of a roadside revetted ditch [3904] and included, shoes, stitched leather panels, bindings and a circular appliqué. Binding from a possible cork soled sandal and stitched panels came from fill [4068] of ditch [4069]. Shoes and the remains of a panel with decorative scrolled stitching came from fill [4386] of ditch 4385. A piece of waste leather with C-shaped punch marks was found with other waste leather in a dump/levelling layer [3926].

Phase 5b: A clay layer [3296] contained shoes, waste leather, a panel with a denticulated edge and a fragment with stitching from a circular appliqué. An unusual pentangular-shaped appliqué came from fill [3613] of a construction cut from a timber pipe. Relatively large groups of shoes came from dump/levelling layers [3877], [4250], [4256], [4338], the largest group containing 17 nailed shoes, 15 one-piece shoes, 2 sandals (1 with floral stamps) 7 pieces stitched panel, 6 pieces of shoemaking waste came from 4538.

A large group of leather that included the remains of a rectangular stitched panel with a slotted border and lozenge-shaped appliqués, possibly comparable with the military tool bags from Valkenburg (Groenman-van Waateringe 1967, 75 fig. 20), came from fill [1708] of revetment structure [1998] attributed to Phase 5/6.

Phase 6: AD 160-250
Small groups of leather were found in contexts attributed to Phase 6a. A large group of material came from fill [207] of revetment structure [4999] and fills [1240], [1298] of revetment structure [404] in Phase 6b. Approximately 18 bags of compacted waste leather came from fill [1161] of a box drain [1395].

Phase 7: AD 250-350/400
A large group in Phase 6/7 came from fill [1638] of revetment structure [2221], and comprised shoes, waste leather and tent fragments. Upper fragments from a shoe of 'Southfleet' style and gilded leather fragment also came from contexts in Phase 7/8.

Phase 8: Very late Roman AD 350+
The largest single group of leather from the excavations was found in fill [613] of revetment structure [599] and comprised principally of shoes. The leather from Phase 8, representing over 5% of the total assemblage, will be a principal focus of analysis.

Phase 9: medieval
Remains of a shoe of 13th-early 14th century date, a small number of other medieval turnshoe fragments along with a stitched panel, a belt and a leather case for an object unidentified at present, were found in fills [106], [107] of ditch [133]. Roman shoemaking waste and a small number of Roman shoes were found in context [3542] a timber pile attributed to Phase 9.

Phase 10: post-medieval
A medieval turnshoe sole [607] and a bottom unit component from a post-medieval shoe or possibly a late medieval leather patten [608] were found in fills of a barrel [593]

Unstratified
A small amount of Roman shoes and waste leather along with a stitched panel were found in unstratified contexts [348], [1538] ,[4316], [+]. One piece of waste cattle hide has a leaf-shaped stamp of a general type seen occasionally decorating sandal insoles. It should be illustrated and reported on as any item with this stamp recovered in the future may be suggested to be a local product. Another is covered with a series of small C-shaped punch marks. These two stamped pieces come from context [4262].

Comparable material

Large amounts of leather have been recovered from previous investigations of the upper Walbrook valley but the bulk of the material does not appear to have been subject to modern analysis. The finds from the 1981-4 excavations have been briefly summarised (Groves 1990, 82-4). This present work provides the opportunity to study the leather and make the results of modern day excavation widely available.

A large group of leather from contexts dated AD 70-160 (Miller and Rhodes 1980; Rhodes 1980) and another of early-mid third century date (Rhodes 1986; MacConnoran 1986) have been well published in the past. To my knowledge more recent leather finds have appeared in much more summary fashion as a minor component of individual site based publications. The Roman military leather from London has been the subject of detailed specialist study over a number of years but the work is ongoing and the results are not scheduled for wider dissemination/publication in the immediate future (Jenny Hall pers. comm.).

Potential for analysis

The analysis of leather will provide valuable information on:

dating to compliment that provided by the ceramic and numismatic evidence
status of local inhabitants
local industries
the nature of the accumulated deposits

Suggested areas of particular interest
The early Roman material (Phase 3 AD 50-70)
The very late Roman material (Phase 8 AD 350+)
Sandals with unusual toe loop and toe strap fastening
Possible military component.
The leather appears to represent a principally civilian assemblage, but aspects were present that may point to a small possible military component. The sheet leather includes some potential tent panels, a

shield cover and the remains of two bags of a type recovered at Valkenburg. There is no obvious early military footwear present, with a single possible exception. Particular nailing patterns present may also be seen on military groups elsewhere (Velsen and Vindolanda for example) but this may well be a reflection of date only (this aspect will be considered during analysis).

Work required

The total assemblage is large and practicalities dictate that the recording, data gathering, study and illustration be streamlined as much as possible. It is proposed that Quita Mould (QM) records, studies and reports on the shoes and waste leather and that Sue Winterbottom (SW) records, studies and reports on the stitched sheet leather items.

A basic record (as defined in the RFG & FRG Guidelines 1993) should be made of the total assemblage and the information entered onto the site database. The data gathered can then be correlated with the contextual information and the assemblage quantified by functional category within each site phase. This information will then be summarised to inform those studying the stratigraphic sequence and produce a publication text.

The constructional details of the Roman shoes will be recorded in tabular form as much as possible with an emphasis being placed on any evidence of upper styles present. The waste leather will be recorded in tabular form as appropriate, it may be best to quantify the large bags of waste by dry weight rather than count.

The stitched sheet leather items will be recorded principally by the use of working drawings as appropriate. These working drawings can be used to prepare illustrations for publication on request. Any sheet leather with no stitching or other diagnostic features present will be recorded by measurement only.

The leather assemblage will be summarised for publication with a catalogue description and illustration of one example of each object type represented and any significant style variations. Other relevant information will be presented in tabular form. Sketched re-constructions will be provided where relevant.

Tasks required
Renumber and bag as necessary
Compile a basic record for shoes, sheet leather, waste leather
Correlated with contextual evidence
Plot to identify any associations with particular buildings and associated structures
Summarise by phase and consider by agreed themes

Additional work by others
Prof. Roger Tomlin has been shown the stamped leather (TFB and possibly the C-punch marks) (see Appendix 14)

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APPENDIX 16: TIMBER ASSESSMENT

Damian Goodburn

INTRODUCTION

Terms of reference of this report

This report sets out to provide a brief overall summary of the various categories of historic woodwork found and recorded in various ways as described below. It is arranged according to the existing provisional phasing. It attempts to put the information in a regional and national context with a view to assessing the relative importance of the specialist archive of this project and its worth for further analysis and publication. The report also sets out to describe the approach used to the excavation, sampling and recording of the waterlogged woodwork found, noting the quantities of material and records involved. Finally, the prioritised potential for further research of particular groups of material is highlighted in relation to their regional and in several cases national importance.

Although some information bearing on the interpretation of the building sequence will considered here, the overall stratigraphic and topographic sequence is covered at length in the main text of this report. Extensive use is also made of the initial tree-ring and wood Species ID report by Ian Tyers (Appendix 17). For brevity here, whenever precise dates are used below, the latter work will have been drawn on but will not be cited on each occasion.

Why other material and information is referred to here

It is essential to demonstrate the special importance of the huge Drapers' Gardens ancient woodwork assemblage by briefly outlining what was already known from previous excavations in the London region and elsewhere in Britain. This writer has a detailed knowledge of the London region evidence and that published from most other areas. So the comment provided here is supported by knowledge of large bodies of relevant data. During the publication phase detailed references will be provided but at this stage in the post-excavation work only a few select references are given at the end and site names and codes mentioned where relevant.

The Walbrook Valley, a nationally important waterlogged repository of Roman timber structures

The Drapers' Gardens site lay in the northern part of the largely in-filled valley of the historic River Walbrook and its numerous defunct tributaries. It has become well known as an area in which the ancient drainage was impeded creating a wetland zone between the two main hills of the City of London. The extensive local waterlogging has been effected greatly by de-watering in some areas over the last few decades but fortunately not within the limits of the Drapers' Gardens site. The waterlogging and exclusion of air has preserved the woodwork discussed here which is rarely preserved on most Roman sites away from obvious waterside locations. The lack of salts in most of the deposits meant that the metalwork has also been well preserved in many cases. This includes metal fittings in the woodwork and woodworking tools (below). The depth and speed of the in-fill of the valley also acted to preserve levels above the ancient ground surfaces in some cases (eg. for Building 4 Structure [2756]). Finally, the fact that much of the site was a garden without basements for the last few hundred years has contributed to the rare level of preservation including continuous building wall lines and property boundaries resembling those known internationally from the Coppergate early medieval site waterlogged site in York, but in this case they are of Roman date. This level of preservation allows the refined use of tree-ring dating to help dissect the earliest parts of the site using callendrical precision dates that can be directly compared with historical sources in due course (see report by Ian Tyers Appendix 17). More work on precision phasing will clearly be possible during the analysis phase and the woodwork specialist may be able to contribute to some of that work through double checking the structural situation and evidence of previous use or otherwise, of sampled timbers.

Other key comparative sites excavated in this waterlogged urban zone include some referred to in the main report. The first moderately systematic investigations that yielded considerable amounts of Roman period woodwork took place on sites undergoing rebuilding after the Second World War.

Timber-lined wells, piled foundations and portable wooden artefacts were the bulk of material found (eg Wilmott 1982). In more recent times several sites were excavated by the Department of Urban Archaeology and then Museum of London Archaeology Service including 15 to 35 Copthall Avenue where building sill beams were found *in situ* (Maloney 1990). More recently still the excavated woodwork was even more systematically recorded and sampled at sites like No. 1 Poultry and the Bucklersbury shafts (Rowsome 2000; Hill and Rowsome forthcoming), 72-75 Cheapside (Hill and Woodger 1999), both on the west side of the Walbrook Valley. Small excavations by PCA at Tokenhouse Yard, just to the southwest of Drapers' Gardens, have also yielded significant new information on the typical, but little known, timber infrastructure of Roman London (Leary and Butler in prep.). This took the form of oak pale fencing standing over 0.5m above the contemporaneous ground surface and rare evidence of Roman urban trees growing *in situ* similar to the evidence from Drapers' Gardens Phase 4.

On the various Walbrook sites excavated before Drapers' Gardens the range of parallel Roman woodwork included building remains, reused building timbers, joinery (eg the No. 1 Poultry board and ledge door), revetments, foundations, boardwalks, fences, wells, casks and a range of wooden implements. For variations in the construction of timber-lined drains the key reference site is the recently published amphitheatre site (Goodburn 2008).

A disappearing resource

Sites only a short distance to the west of Drapers' Gardens in Coleman St for example have shown how localised 20th century de-watering and basement building can rapidly destroy the preserved Roman building timbers so that only voids or peaty smears survive from buildings like those found so much better preserved at Drapers' Gardens. This is a disappearing archive, and the Drapers' Gardens Project amounts to the best access yet we have had to that resource, despite the often fast pace of the site work.

The wider London corpus of wet-site evidence for various types of Roman woodworking

Outside the Walbrook Valley most of the Roman woodwork from the London region has been found in the waterfront zones of the Thames, the extinct Fleet Valley and several parts of the Southwark islands. This large assemblage of woodwork includes material both similar and distinct from that from Drapers' Gardens. For example, rather well preserved building timbers have been found both *in situ* at sites like the Courage Brewery, Southwark (Brigham *et al*. 1995) and as reused groups at sites like Cannon Street Station (Goodburn 1991) and also on this excavation. However, the waterfront zone is dominated by Roman heavy duty civil engineering, predominantly using very large baulks of oak, to make quays, warehouse foundations, bridge footings, dugout drains and boats (Milne 1985; Brigham 1990; Marsden 1994).

London dryland sites with particularly well preserved relevant evidence for building in timber and earthy materials

Even some dryland sites in London have provided substantial evidence relevant to understanding the timber and earthen buildings excavated at Drapers' Gardens.

Much of the best preserved evidence found up to the 1980s, for variations in Roman period urban vernacular building is collated in a detailed synthetic study by Perring, Roskams and Allen (1991). There the authors discuss and illustrate detailed evidence for plan forms and several incidences of well preserved collapsed burnt walls from dryland excavations. During the analysis phase of study of the Drapers' Gardens evidence this material will have to be examined in detail as it may yet provide alternative scenarios for the interpretation of some of the very large groupings of rooms into nominal Buildings found on the east side of the site eg nominal 'Building 2'. Other open area dry site excavations with relevant information include sites like Leadenhall Court (Milne 1992). The plan forms of buildings relate directly to the usually lost elements of carpentry of the walls, foundations and roofs, even the layout of drainage can be closely related to building form.

The national corpus of Roman woodwork

Only a few other areas outside London have yielded Roman timber building remains to any great extent such as parts of Carlisle, York and the Forts of Vindolanda and Ribchester (eg McCarthy 1991; Birley 1977). Material from those areas provides some parallels for the Drapers' Gardens varied assemblage but it is already clear that there are also differences in details such as the types of species used. However, even when the net is set wide enough to include Roman sites at some distance such as Vindolanda, there is woodworking evidence from DGT 06 that is unique such as such as the details of construction of Buildings 1 or 4 and in small scale woodwork the wooden *pes monetalis* ruler [4582] <1141>.

The methodology of waterlogged woodwork recording and sampling used, and the quantity of material covered in the project

During the 1970s a systematic approach to recording waterlogged historic timbers was developed by Museum of London archaeologists which resulted in greatly improved 'capture' of information about early woodworking (e.g. Milne 1985 etc). In the late 1980s the approach taken was made even more rigorous and approaches to sampling early woodwork were also improved and codified in the Museum of London Archaeological Site Manual 2nd edition (Spence 1990). At that time the Museum of London also appointed a part-time Specialist in Ancient Woodworking to carry out and co-ordinate such work when waterlogged sites or above ground historic woodwork was encountered during archaeological projects. Since 1988 this author has held that post greatly assisted by many other archaeologists working in the London region. A little later English Heritage developed national guidelines on the recording of different types of waterlogged woodwork drawing on the Museum of London experience for the historic material. The Guidelines also required the involvement of an Ancient Woodwork Specialist where waterlogged wood remains could be anticipated or were uncovered during an excavation. These 'Guidelines' were in turn revised in 1996 and have been used with the Museum of London manual and the assistance of this author to guide the recording and sampling of historic woodwork on Pre-Construct Archaeology excavations since the late 1990s.

The recognition, interpretation and recording of details of historic woodwork has also been pushed forward by practical experimentation in aspects of early woodworking including areas such as reconstructing sawing methods used by Roman sawyers to make planks from the patterns of marks on excavated planks (Goodburn 2001). This work has been carried out since 1988 in ancient woodland, mainly by London archaeologists led by this writer, the most relevant project here being the replication of a section of Roman timber framed wall for the Museum of London galleries using only tools, materials and techniques documented archaeologically at that date (as of 2009 this wall section is still on display next to the original timbers from Cannon St Station). Some of those timbers closely resemble some of those excavated at Drapers' Gardens, found both *in situ* and reused. This work may seem unconnected to the assessment of the findings of the excavations at Drapers' Gardens but it has produced detailed insights that improve the quality of initial recording and are very useful at the analysis stage of study when we set out to see the people, technology and social organisation behind the material remains.

The general methodology for timber and roundwood recording at Drapers' Gardens is described in Spence 1990, the essence of it is that woodwork is exposed, planned at 1:20 (sometimes in more detail), photographed *in situ* and illustrated on elevation drawings at 1:10 where relevant. A cross referenced entry in the 'Site Index' was made and Pro-forma 'timber sheets' with a checklist of questions were then filled out for each numbered timber and commonly sketches with dimensions were then added to the back of the sheet. A full representative sub-set of the material attributed timber sheets was then drawn to scale commonly 1:10 but also 1:5 and other scales as were required to show key details. For very fine detail such as text engraving on cooperage timbers tracing was also used. All numbered timbers were attributed to a 'Structure or umbrella group No.', or if small and non structural, a 'deposit No.', unless found isolated. The 'umbrella' number was then used for brevity in site stratigraphic records such as the matrix. Some key material was also photographed after lifting and careful cleaning. A very small proportion of the worked wood, mainly smaller items were then carefully packaged and reviewed by potential curators possibly wishing to retain samples of the woodwork to be conserved and retained for museum collections.

When circumstances on-site were particularly pressing the drawn or sketched record and site index entry took precedence which accounts for a few timber sheets not filled out. However, the majority of timber sheets not filled out resulted from the numbering of repetitive items such as drain or foundation

piles on plans and then the items could not be lifted and recorded in detail. This was usually the result of safety concerns and as a result of prioritising work carried out by this author explicitly designed to speed up recording and sampling work whilst losing as little information as possible (see below).

This writer also made brief notes and sketches of key woodworking evidence during the frequent working visits to the excavation, which have helped to target this assessment towards the key groups of woodwork. All the various written and records have been scanned for the production of this report starting with the digitised site index except for where the most repetitive items (truncated foundation pile groups, and road side revetment piles and planks) as resources of time did not permit this nor was it likely to be very productive.

Total number of timbers or wattlework structures or casks individually numbered: 1723

Total number of timber drawing sheets: 127

The smaller wattlework and cooperage items were mainly given one number and are thus counted as one here. Additionally some small groups of stakes or piles that could not be extracted were simply given one 'timber number'. Thus, the total number of structural worked wood items recorded to at least some basic detail was over 2,000. However, as there was a great deal of repetition in the piles and planks used in the pile and plank roadside drains, and foundation pile lines there was considerable near duplication in timber sheet records. It was also the case that records of un-lifted material were minimal sometimes comprising plan evidence only renduring timber sheets redundant. Small wooden items were treated as finds and have not been included in this number, although some key items are referred to in the report. The vast majority of the numbered items of structural woodwork are of Roman date, with less than 50 of later medieval or post-medieval date and none dating to the Saxon period. The lack of Saxon timber building activity is interesting as at several sites on the west side of the Walbrook Valley there is well dated Late-Saxon building activity in timber such as at No. 1 Poultry and 72-75 Cheapside.

Size of the specialist archive

For comparison in terms of size of the woodwork archive, the very large No. 1 Poultry project only had 1,386 individually recorded timbers, wattlework items and casks were recorded individually. Similarly the vast majority of the items were of Roman date. At other large site the number of Roman period timbers is typically half that such as just over 800 at the amphitheatre site.

In sum, the archive of timber records for this project is huge in bald terms the number of individually numbered items of Roman date is the greatest recorded, by far, for any London excavation, but in real terms allowing for high levels of duplication, it is about the same size as that for the No. 1 Poultry project.

The total number of tree-ring study samples taken: 118

The total number of species ID samples taken: 50

The vast majority of the woodwork was oak. Timber and large roundwood of the oak family, Quercus Sp, was simply identified by experienced eye, mainly this author's, after cleaning on-site, using its clear diagnostic features such as large rays, bold ring porous structure etc. Thus, only material of uncertain species was sampled. 'Oak' here is assumed to be the two natives Q petraea and Q robur and their hybrids, which cannot be distinguished as botanical wood samples and have nearly identical properties.

Special circumstances for investigating repetitive elements of Roman woodwork on this project

The failure of evaluation work to pick up the very complicated and well preserved sequence of timber structures found at Drapers' Gardens forced difficult choices on the project team at the commencement of the excavation phase. It was clearly essential to carefully excavate and record the remains of sequences of uniquely preserved timber and earth buildings or similar features exposed at the beginning of the project but a sampling policy could reasonably be taken with the repetitive and

more commonplace pile and plank roadside drains. Clearly there was a risk of losing some information and possibly important finds but this was considered the lesser of two evils the other being not to excavate the well preserved building remains in plan. It must also be remembered that on many rural sites such ditch-fill sample excavations are common place archaeological compromises. A responsive strategy to minimise lost information was developed and the very regular attendance of this writer was required as part of that to help recognise important woodwork material as soon as it was uncovered and prioritise the recording and sampling.

Drain structures and truncated piled foundation lines were exposed, planned and then representative sections were hand excavated and recorded in detail with a watching brief maintained on the rest which was removed by controlled machining. A rough estimate would be that *c*. 30% of the length of the main road side drains were dug by hand and recorded in detail with elevations at 1:10 and copious timber records where it was possible to extract the piles and planks reasonably intact. So with the above provisos, the resultant policy is broadly in line with Museum of London practice (Spence 1990) tailored to the unfortunate situation that the project developed in. It was also broadly in line with the requirements of the English Heritage Guidelines document 'Waterlogged Wood' (see above, Brunning 1996).

THE RANGE OF WOODWORK FOUND DURING THE DRAPERS' GARDENS PROJECT; A BRIEF SUMMARY OF ITS GENERAL CHARACTER

The earliest structural woodwork on site includes the remains of a rather precisely laid out corduroy trackway of cleft oak logs of AD 62, near it lay traces of a raised board walk and fence line. Just to the north rare finds of Roman joinery included a complete reused, board and ledge door and remains of several boxes reused as infant coffins, including one of bentwood construction. A substantial palisade of thick cleft oak timbers was also laid out across the west side of the site dating to AD 70. Two of the weathered palisade planks were found collapsed so that their tops were preserved which had been carved into heart shaped points and they would have stood over 2.2m high.

In the second century onward the project produced a great range of evidence for timber buildings and timber lined pile and plank revetted drains. These included a considerable quantity of articulated building timbers from timber framed, vernacular town buildings of a variety of forms *in situ* and a selection of reused building timbers. Typical building remains survived just above the contemporaneous ground surface and comprised sill beams set on clusters of piles. Many of the sill beams were well preserved enough to have clear mortice joints for studs and posts, and in some buildings traces of floor joists survived where planked floors had been used. Two buildings stand out in terms of the clarity of their plan and distinctive construction. One building at the south end of the site 'Building 1' had a form and large jointed foundations suggesting it may have had a central raised section or tower, with a felling date of AD 129. At the other extreme in terms of size, the best preserved timber building was small with one room but had a floor of sawn planks surrounded by base plates into which light studs were set and around which heavy wattlework was woven (Building 4). The wattle was covered in brickearth daub and in one place on the floor what may have been part of a collapsed lath and plaster ceiling was found. A series of later Roman timber and earthen buildings were also found including some surviving only as lines of pile foundations eg Structure [1263]. Several box-lined wells were also found with variations in the materials and jointing used showing variations in timber supply and the work of individual 'carpenters', some of which were surprising. Several bored oak water pipes were found from two water mains, including one with lead fittings rising up out of the oak ground pipe.

The site also yielded a considerable number of smaller items of woodwork of considerable importance such as a wooden ruler with inscribed Roman inch divisions and what may have been a centurion's turned batton. Several reused silver fir half casks were also found and some of the heading pieces had a variety of inscriptions on them including the words 'SEX SERVANDI' (see Appendix 14). Other smaller wooden items included tool handles, furniture fragments, small turned vessels and writing tablets. Other finds bearing on the woodworking evidence included woodworking tools such as an adze hammer and bow drill bit. In sum, we can fairly note that the project has yielded more information on Roman woodworking in the northern part of the empire than any other individual project in London or the rest of Britain.

A PROVISIONALLY PHASED SUMMARY OF THE WOODWORK FOUND

The following section of the report is intended to provide a more detailed but still economical, summary of the woodwork found and to highlight key material for detailed further analysis. The discussion and brief description focuses on the woodworking aspects rather than details of stratigraphy. At this stage there will not be very much coverage of the pile and plank road side drains as it should be possible to plot out individual phases in more detail later. These could be sub-divided on the basis of the pile type used and further review of the tree-ring study evidence including; not just dating but 'same tree' matching where timber with extremely similar annual ring sequences is taken as from the same tree and phase of work. Isolated or small groups of piles or stakes have been ignored here as the woodworking implications of such material are greatly overshadowed by more intact assemblages of building elements, which run from piled foundations upward. All the Phases 3 to 8 include Roman woodwork, whilst Phase 9 is late 12th century, and Phase 10 includes some (early?) post-medieval woodwork.

WOODWORK FROM PHASE 3A, AD 50-70

A simple corduroy causeway Structure [4798] etc

The earliest timber structures found on the site were very atypical of Roman woodwork from London as a whole and were to some extent more what we might expect in a native British or perhaps Roman military context. They comprised a simple corduroy track of close set cleft oak logs set across the long axis of the trackway, which had been repaired in patches (Structure [4798] etc). The corduroy logs had been made by the established prehistoric technique of radial splitting or 'cleaving' medium sized, straight oak logs, mostly into 1/4ths but some smaller sub divisions down to 1/32nds were also found. The longest logs were *c*. 3.5m long and less than 200mm wide. Initially on discovery the structure was though to possibly be pre-Roman but a small scatter of Roman ceramics and the typically Roman very straight lay out of the northern edge showed that it had been built early in the Roman period. Tree-ring study of the best samples selected provided a felling date of late winter to spring AD 62. It has been briefly suggested the corduroy was part of the foundations for a rampart but this writer suggests that this is unlikely as a ditch passes through under it and there is no evidence of the crossing pattern of timbers known in images of Roman timber-laced ramparts (eg those shown on Trajan's column). It seems that Structure [4798] probably functioned as a localised, timber reinforced causeway to the south of a ditch.

The date of AD 62 for the construction of the trackway is perhaps meaningful as it was also the year of rebuilding a substantial waterfront zone following the Boudican attacks.

A roundwood fence between the trackway and the ditch to the north Structure [4830]

Roundwood wattle fences are not common features in the urban core of Roman London but they are occasionally found in the suburbs and during the earliest phases. However, wattlework in general is very common on native British sites often used for house walls as in the AD 50s in London such as at 72-75 Cheapside on the west side of the valley. But it seems that as the larger urban settlement developed more robust durable wooden fences dominated. This fence only survived in places and was very difficult to find in the very wet conditions applying at the time of exposure. It was made with a mixture of oak, ash and willow/poplar stakes (Willow/ Poplar species are very difficult to separate from wood samples alone.)

Two pile and plank revetments Structures [1921] and [4982]

These simple low pile and plank revetments may be all that remains of once more continuous revetting along the southern edge of the corduroy track as repaired with the laying of the [4972] logs. They suggest that the trackway was in effect a slightly raised causeway.

WOODWORK FROM PHASE 3B AD 50-70

Board walk foundations Structure [4743]

This foundation structure consisted of lines of N-S aligned light ground beams (joists) of oak *c*. 1.5m long with retaining stakes at both ends, which would have supported a decking of boards or hurdles. The retaining stakes were a mix of boxed heart and cleft oak with sapwood. Several were suitable for tree ring dating and provided a felling date range of AD 64-97. The implied board walk would have run E-W as did the corduroy track but at a slightly higher level. It would have been *c*. 1.5m wide. It seems that it probably replaced the simpler corduroy trackway for E-W access across the wet area. During the analysis phase it will be possible to compare both the trackway and board walk with others from the immediate area and other Roman sites such as Ribchester fort.

Robust palisade timbers in situ Structures [4493], [4798] and [4831]

Finding two substantial, reused palisade timbers in Area A had indicated that there must have been such a structure in the vicinity. In Area B two lengths of robust, earth-fast palisade were found *in situ* Structures [4493] and [4831]. All the timbers were of cleft and hewn oak of varied sections and set closely together. Most of the pales had plank like sections but some were more square and post-like. The vast majority were radially cleft timbers probably 32nd sections as were the collapsed pales found reused in Area A. They varied from *c*. 350 to 150mm wide and 35 to *c*. 100mm thick. The collapsed pales were clearly well over 2.4m long originally and had roughly cut blunt spear shapes on the tops with traces of three horizontal, nailed on rails behind. This is truly a palisade not a 'fence'. A number of similar thick oak pales or staves were found reused in an early board walk at the Bucklersbury site and with which the Drapers' Gardens examples can be compared.

It must be borne in mind that the northern limb of the palisade was set in a slight hummock of free draining natural sand and gravel which caused some decay of the staves and shrinkage. The post-excavation phase plan clearly shows what appears to be a pedestrian gateway through the palisade *c*. 1.5m wide at the south end of the northern limb (see the phase plan 3b Fig. 5). On the edges of the gap extra posts were set in presumably to hold the gate. Tree-ring analysis has now tightened the date of constructing the palisade to AD 70, the same period that the earliest phase of the timber amphitheatre was being constructed. It will be a relatively simple matter to provide a graphic reconstruction of the palisade from the recorded evidence during the analysis stage.

A low pile and plank revetment Structure [480]

A simple cleft pile and plank revetment was found that ran parallel to the palisade, Structure [480]. The piles were cleft out of wild wood oak timber and dated to AD 70 the same as the palisade. The erection of the revetment was a semi-skilled job and would have created a berm *c*. 1.5m wide to the west of the palisade Structure [4831]. The sawn oak planking used as shuttering in the structure was well preserved and still bore diagnostic marks showing that it had been sawn out on a pair of trestles. Sawing timber was still a fairly new technology in AD 70 introduced by the Romans to Britain.

A near complete board and batten 'har hung' door [4554]

A remarkably well preserved simple oak door was found reused on the northern edge of the ditch and carefully lifted. It is currently being conserved by York Archaeological Trust. The door was made of three radially split boards of oak secured with four oak battens. The radially split oak was probably chosen above sawn oak as it shrinks much less in seasoning. The battens are held in place by iron nails driven alternately and clenched. Along one edge a planed strip of radially faced oak was edge nailed to the largest board and it protruded to form a simple wooden 'harr hinge'. The door clearly once had a lock operated by an 'L' shaped key but this had been crudely hacked off before it was reused. Strangely traces of an extra iron pivot were found on the har strip, which was presumably added for extra security when the door was closed. The total height of the door was *c*. 1.71m by 0.93m wide. Sapwood survived on the widest door board and it was discretely sampled for dating placing it in this phase (see Tyers Appendix 17). The door is broadly similar to a more fragmentary example found reused at the No. 1 Poultry site but that example was rather more carefully made with rebated edges to stop the wind blowing through when the boards shrank. Fragments of a panelled door, as known from Roman Egypt, was recovered from the Regis House waterfront site. So we have to see the Drapers' Gardens example as quite rustic, by Roman London standards. In due course it will be of interest to see how this door might fit into excavated London buildings of this period.

Examples of small oak boxes used or reused as infant burial containers, box [4504] etc

Small joinery in the form of boxes are very rare find on Roman London sites and though decayed and distorted the Drapers' Gardens examples are very useful additions to the London corpus. Most of the boxes were of rectangular form made of small cleft boards of oak (probably fence pales in the case of [4555]), but one [4986], was oval in plan and proved to have been a bentwood container. It was of radially raced oak with a thin bent side bent round an oval base board. Only one other bentwood container, a crushed corn measure, was known from Roman London (from Gresham Street) at the time of excavation and very recently part of another has just been found on excavations by PCA at the Olympic Park development site. Unfortunately the boxes proved to be very fragile on lifting but it was possible to retain one for conservation after recording. In due course these finds can be compared with others of late prehistoric and Roman date.

WOODWORK FROM PHASE 4, AD 70-120

Pile and plank drains in many phases

Woodwork of this provisional phase includes several sub phases of substantial timber lined drains of pile and plank type running NE-SW across the site. All the timbers used were of oak. At the NE end Structure [4154], seems to include one phase of drain reveting planking but several phases of piling to retain it and other structures. Where the piles are in tight clusters such as some to the SW these are likely to be intrusive foundation piles left from buildings higher in the sequence. At the SW end this includes a wattle structure probably a fence that just links Areas A and B. It also includes the disturbed remains of a pile and plank revetment on what becomes the west side of the road. Presumably this activity implies the beginning of some form of NE-SW routeway. Some of the material used for the disturbed pile and plank revetments includes reused weathered, palisade timbers such as [1321], which was split out of a large wildwood oak that started growing around 270 to 300 BC.

Tentative timber evidence for a period of low intensity use of the site

It is suggested here that the palisade timbers would have required *c.* 5 years weathering *in situ* to have achieved the surface they had before reuse in a roughly built very early drain. There are no tight tree-ring felling dates which fit this period and it may well be the case that this gave time for the trees noted below to become established on ground not used intensively.

Urban edge trees

It is very rare on historic period sites to find the well preserved stumps of growing trees particularly in a town environment but in the area of the Drapers' Gardens site the remains of several trees growing *in situ* were found. Seven were described separately and sampled when the species was not clear most of these appeared to be growing during this phase e.g. [4357]. The species range included ash, willow / poplar and pomoideae sp. and unidentified examples.

WOODWORK FROM PHASE 5A AD 120-160

Multiple phases and sub phases of pile and plank drain revetments

The structural woodwork of this phase includes numerous builds and rebuilds of substantial NE-SW drains with pile and plank revetments using a variety of types of oak piles and sawn oak plank sheathing eg Structuress [404], [3351], [3904], and [1998] etc. Some of these sub phases may be possible to link by careful study of alignments, materials used, levels, stratigraphy and double checking the tree-ring study. The timber drain sequences demarcated the NE-SW main road. In the extreme north of Area A the timbers of a decayed timber-lined tank were also found, Structure [4225].

Samples of the piles used in the pile and plank drains were selected for detailed recording including many that were reused building timbers (below) and others that were hewn from young, freshly cut oaks such as piles [633] and [639] hewn box halved and boxed heart respectively. The logistics and details of the preparation and use of these repetitive elements can be reconstructed in more detail during the analysis phases. Well preserved sections of roadside drain sheathing planks were also lifted and recorded in detail on a sample basis such as cubit wide plank [529] which was from the

outside of a hewn saw baulk and planks [1469]a and [1469]b which were matched planks from the same baulk.

An unusual building with unusual timber foundations: Building 1 a possible temple?

Building 1, Structure [3331], was clearly an elaborate timber framed structure found towards the end of the excavation. Close examination of the sill beams and foundation piles provided evidence of little known Roman carpentry details. The plan form was also clearly distinctive with a more lightly built outer corridor-like structure surrounding and joined to a substantial inner set of foundations of what must have been an inner higher core of the building.

Much of the building had clearly been systematically dismantled down to ground level in the Roman period but for some reason the NE corner survived best. The larger than usual inner oak sill beams had tool marks showing that they had been made by a method rarely used in Roman Britain. They were box-quartered from a moderately large hewn baulk, by making three saw cuts so they had two sawn and two hewn faces. The smaller sillbeams of this building and all the others found on site were made by hewing a small oak to a fairly regular boxed heart section, or less commonly by hewing a cleft section from a large oak into a roughly rectangular sectioned beam. By contrast the inner core sill beams such as [3353] had two very straight smooth sawn faces and were a matched set of four. This atypical method of timber conversion was apparently used to provide true flat faces on the under sides so that they would sit firmly and level on foundation piles tenoned to fit mortices cut in their soffits. The proportions of this very careful work imply that the part of the building set on the larger sills was comparatively higher than those found elsewhere on the site i.e. at least two probably three or more storeys. The outer sill beams to which the inner set were originally joined with lap dovetails, were much smaller and simply set on pile clusters similar to those found in later buildings on the site and elsewhere in the Walbrook valley. The outer sills were morticed for light studs but the full complement of mortices is not shown on the current general phase plans. It will be essential to double check the 1:20 site plans to enable the most accurate reconstruction of the structure to be made. One of the freshly cut foundation piles [3556] provided a bark edge date of 'winter' 129 AD securely dating the structure, it could not be the result of underpinning etc.

The plan form and proportions are closely similar to those of two Roman temples found recently in the Southwark suburb and so this building is attributed this possible function as a working hypothesis (J. Butler pers. comm.).

A true Roman planked box drain

Running N-S on the east side of Building 1 was a true box drain of typical Roman form i.e. an elongated pre-fabricated box. The sides and base were made of sawn oak planks, and originally it was supplied with a lid plank set on small spreader beams notched into the side planking. It will be important to check which way the plank overlap splays of the different drain sections are orientated so that the intended flow direction can be seen. The drain's location on plan under the east wall of Building 1 seems confusing and structurally unlikely. Could it be that the drain is actually earlier than Building 1? This might mean that its location was unknown to the builders.

WOODWORK FROM PHASE 5B AD 120-160

More phases of pile and plank drains with evidence for foot bridges

The woodwork of this period is dominated by further pile and plank drain revetment structures such as Structures [2099] and [1998]. These structures now have evidence of buildings encroaching to their very edges and collapsed remains of planked foot bridges over them eg Structures [1259] and [1258]. In the latter old oak beams were set down as kerb-like features on the drain edges and planks were then laid across them for pedestrian access.

Tentative evidence for boardwalks built over the edges of the road

At the south end of the road where both sides could be investigated a series of small stakes and stake holes were found running parallel with the road edges but overlapping the road way by perhaps 1.5m (see phase plan Fig. 8). These could be the remains of supports for some form of roadside

boardwalk on each side. On the west side the position of oak pipe [215] strongly suggests that it was set to carry eaves run off back under a boardwalk into the main roadside drain that had been built over. Thus it would appear that at this phase the road may have had a timber walkway along each side with the gable ends of at least some of the roofs oversailing it.

Nominal 'Building 2'

This nominal single building is extremely complex with a multitude of rooms and is very difficult to envisage as a single timber and earth building being over 30m wide. Many questions are thrown up by the provisional plan such as, how could the roof be laid out so as to drain, or how were the rooms given light. These are typical problems on this type of excavation, but I believe it should be possible to unravel plausible plans by re-examining some of the technological details such as where the mortices are in relation to possible doorways etc. More time should be set aside for this work during the analysis phase. However, there is a great deal of interest for the student of Roman buildings and building carpentry here for example, in what must have been one of the higher status rooms with an *opus signinum* floor (Room C) in its last phase, the south wall sill beam [3539] appears to have been reused from an earlier building. So at one level the owners spent money laying a pink mortar floor and at the other they saved money where the timber materials were hidden at the wall base. The alignment and forms of the sill beams are very varied and several are some what out of true. Also would it be necessary to have two plank foot bridges over the road side drain for the same property? There might have been a need if the properties were separate and without connecting passageways. Other questions include could 'Room B' be an external courtyard with oven and lean to roof over part of it and was the corridor internal or external?

A disturbed water main of timber pipes

This phase also include the rather disturbed remains of a Roman water main made of bored oak pipes running NE-SW. They are essentially identical to those phased a little later.

WOODWORK FROM PHASE 6A AD 160-250

The problem of timber building longevity

In this phase the woodwork is again dominated by the comparatively well preserved remains of nominal 'Building 2'. Here the problem of the likely longevity of timber buildings in contact with damp ground has to be raised. An estimate here for a Roman style timber framed building set on the ground is of a *c.* 20 year average life with perhaps 40 or 50 years with very extensive repairs. Proven average lives of *c*. 10- 15 years are documented for earth-fast early medieval urban buildings. A range for *c*. AD 120-*c.* AD 250 is just far, far too long for Building 2. This could only happen if the sill beams were set on masonry dwarf walls as has been found on some Roman sites but that means a substantially more expensive building to start with. The buildings in this quarter of town do not suggest wealth and cost of construction must have been paramount.

Building 4 the best preserved timber building found during the Drapers' Gardens project, the second best preserved from Roman London

Building 4 has to be described as one of the two best preserved Roman timber buildings found in Britain alongside the warehouse of AD 152 found at the Courage Brewery site in Southwark (Brigham *et al*. 1995). The survival of a virtually complete plan of the small structure of one room *c*. 5.5m by just under 4m is significant enough but many other key details also survived. For example, a space between the studs for a door way in the north wall and the survival of a nearly intact timber floor made of cubit wide sawn oak planks. The planks were set on light ground set joists that were not jointed to the sill beam frame. Even elements of the wattle and stud walls and lath and plaster ceiling were also found. This structure probably had a specialised function though it is currently uncertain as to what that was. It is tempting to describe it as a 'storage shed' but it had a relatively expensive planked floor almost certainly a plaster ceiling which implies a more domestic function. This timber structure will repay further study during the analysis phase where questions such as the relevance of the wood chip layer surrounding the building can be examined.

The base of a jointed box well Structure [4732]

This box well-lining only survived one course high made of cubit wide planking (445mm) and cut to join with single dovetails at the corners. The corners were further reinforced by securing with iron nails. This example of a timber box well-lining with be compared with the others found on the project and the corpus created by Wilmott and others (Wilmott 1982).

WOODWORK FROM PHASE 6B AD 160-250

A variety of timber buildings

The woodwork of this phase is dominated by the remains of buildings. Building 7 in the north with substantial decayed floor joists looks quite coherent. The piles under the joists must imply heavy contents. A typical Roman wine cask weighed around 1 tonne full. Perhaps this building had a heavy good storage function at least on its ground floor?

Nominal Building(s) 8, 9 and 10

On the current phase plans the outlines of the decayed timber joists and sill beams of buildings separated out as Building 8, 9 and 10 would seem to comfortably fit together as one building bounded by an E-W true box drain to the north and south. The *c*. 14m width of the building would probably imply a double pitched roof shedding water to a central gully and side eaves. Whilst at least one room of the east side clearly had a timber floor set on joists it could well be that the northern rooms were partly open as they seem to have contained several ovens. The building was supplied with piped water which must have been rather costly. Could the building or group of buildings have been involved in providing fast food to the public right on the side of a major road as was proposed for a broadly similar building excavated at No. 1 Poultry? Finds and ecofactual evidence may help with interpreting the function of this and other buildings.

Bored oak log waterpipes and their diagnostic features [1148] etc

Six sections of Roman timber water pipe survived beneath the floor of Building 9. They were made of radially cleft sections of large oak logs rather than the elm used in post-medieval times. These cleft sections were very roughly hewn quadrilateral and then bored down their length, leaving a bore of 70mm. The rusted remains of iron collars that joined them were also found *in situ*. The west end section joined a lead pipe which appears to have led into a square timber tank that had largely decayed away. The water mains will be given more consideration during the analysis phase of work and can be compared with less well preserved finds from other sites to examine the issue of standardisation etc.

It should be noted that the remains of what appear to have been reused oak gutters were also found reused as piles in the pile and plank drains eg timber [1693] these rare items will received more attention later in the analysis stage as they appear to be very rare survivals of what must have been very common place building fittings in the closely packed areas of Roman London.

Reused softwood ½ casks [40] and [44]

Early on in the excavations at Drapers' Gardens the remains of several extremely well preserved softwood ½ casks came to light. The first two found [40] and [44] were so well preserved that at first they seem to be recent. But it soon became apparent that they were of Roman date and made of the typical cleft and shaved silver fir derived from Alpine central Europe. In the case of Cask [40] and [44] parts of the hooping also survived and was found to be of oak and ash roundwood split and shaved down. All the cooperage found on this project has been recorded in detail including cursive and stamped inscriptions that have survived on some of the staves and heading pieces such as the two words 'SEX SERVANDI' on the outside head of cask [40] (see Tomlin Appendix 14). Other evidence such as tool marks and ancient sealants used also survived well. This material will form a tight group of woodworking evidence to revisit during the analysis phase where it can be compared with other similar material. The half casks were all sunk into the contemporary earth in the SE corner of the site for reuse but what that was is as yet uncertain.

It must be remembered that these containers of trade were very large holding a tonne of wine, far more than any amphora. They illustrate the connectedness of Roman London to the Rhineland areas where it seems they were mainly filled. As Britain south of Hadrian's wall had no native softwoods by this period the casks were often broken up and reused to make writing tablets and other items.

WOODWORK FROM PHASE 7 (*c.* AD 250-350)

Piled foundation lines for later Roman buildings

The woodwork of this phase is dominated by surviving pile foundations along wall lines, such as those for Buildings 14 and 16 (see phase plan Fig. 11). These take the form of clusters of piles, often three, spaced on *c*. 1m centres which would have had sill beams placed on them that had been removed by recent activity and decay in this phase.

The foundation piles found were almost always of radially cleft oak, usually from1/4 to 1/16th sections. Sometimes the sections ran from near the pith to the sapwood but in most cases the piles were triangular eg [2458] or quadrilateral in cross section eg [2463] because the wedge shaped cleft log had been cleft again tangentially producing two piles from each log. In those where the second cleaving had not been done attempts had still been made to cleave off the bulk of the sapwood eg [2457]. In practice it proved very difficult to find piles with more than 45 rings having some sapwood, so obtaining dateable tree-ring samples was very difficult. The tips of the piles were axe cut often quite crudely by the standards of work used on other types of piles in Roman London. The production and logistics of making these foundations will be explored more fully in the analysis stage.

Three more timber box wells Structures [1513], [2923], [4251]

In these three well-linings we get glimpses of the work of three different carpenters working with a variety of timber raw materials which give us more quite subtle insights into variations in the timber supply system for Roman London and what was considered adequate in materials and jointing for wells. They are not works of elaborate joinery but careful solid carpentry to a budget. It also seems that the lower levels at least lasted for many decades.

Well-lining [569] was the most primative in construction as the planking was not made by the usual Roman London method of sawing the planks from a hewn baulk of oak (as initially thought) but by cleaving and hewing out planks from half logs. This is the only Roman structure known to this author in London that has planks made this way which might be expected in pre- and post Roman periods when planking saws were not used. This fact suggests rustic workmanship was filling in a gap the '*sectores materiarum'* (sawyers of Roman London) were not filling for some reason. The date of the hoard found in the well backfill is after *c*. AD 375 (see Gerrard Appendix 7) the date of the construction is key but unfortunately the tree-ring dating of this material did not produce a date. Perhaps conditions were just too turbulent at the time to have reliable supplies of sawn planks on hand? The corner jointing is by sawing and chiselling a full depth halving slot, which though typical of quick Roman workmanship was weak. Each course of planking varied in width from *c*. 250mm to nearly 300mm and diagonal corner brace/ foothold battens were built in. None of the courses were located by jointing and so were located by surrounding small stakes and rammed backfill.

Well-lining [2923] also had some surprises although the initial well box lining was made of standardized sawn oak planks 250mm wide, a common Roman size, what appears to have been a later repair frame was made of sawn poplar planks (or possibly willow as botanical ID can not distinguish to species). This is a very rare example of the use of this soft deciduous wood for structural carpentry in Roman London. The corner jointing in this case was a stronger but more expensive version of that used above where the planks were halved and a nail driven into the end grain of the adjacent plank. Very unsually the iron nails used were set in rough cut countersinks and the heads smeared over with cream mortar, a detail not recorded elsewhere.

Finally, well-lining [4251] is more typical of Roman period box wells found in the City of London with simple corner jointing using one dovetail, held in place by the rammed back fill rather than the nails. Again each course was mainly held in place by the rammed backfill and the friction of the joint and did not interlock with each other. Diagonal struts were used to reinforce the corners and provide access. What was a little unusual was that each course of sawn oak planks varied in width considerably,

some were *c*. 285mm wide, others *c*. 240mm wide and the narrowest only 180mm wide which is the narrowest sawn planking this writer has seen from Roman London.

In plank [4278] we have a rare glimpse of hiding shoddy workmanship as a break by a corner joint was held in place by a nail that would be hidden in the assembled well.

The variation in sizes and even species in well planks is the type of evidence that feeds into the thematic study of woodmanship as indicated by the Drapers' Gardens material (below).

WOODWORK FROM PHASE 8 AD 350-420

Little can be added here in relation to the woodworking evidence as we do not have evidence of new building in timber for this period.

WOODWORK FROM PHASE 9 MEDIEVAL

Most of the medieval archaeology on the site had been truncated by later activities but a small amount of woodwork, very different from that of the Roman period, survived in the SE corner. This comprised a truncated and partly collapsed revetment around a a shallow water filled feature lying over the south end of the eastern Roman roadside drain, some isolated stake tips and several clusters of small beech foundation piles (see phase plan Fig. 13). The remains of the revetment were of pile and plank type and were found mainly surviving as a line of large roundwood stakes running almost N-S. However, in one zone four stakes and the cladding they once supported had collapsed to the west into the feature and been preserved. The stakes were of oak round wood *c*. 100mm in diameter and the sheathing of wide radially cleft boards set on edge. The lower two were of oak with the top course being of beech, which if slightly overlapped, would have revetted a bank *c*. 1m high. The boards were 1/32nd clefts from large old wildwood trees typical of early medieval work in the London region up until just a little after AD 1200. After *c*. 1180 sawn planking was gradually reintroduced for revetment sheathing and by the 1230s had become fairly common place after a gap of 800 years since the late Roman period. The tree-ring dating of the undecayed beech plank provided a felling date of 'winter' 1188.

Just to the east of the cut feature several clusters of beech roundwood piles formed an 'L' shaped outline of the NW corner of a structure which would have supported some sort of timber framed or possibly stave built building (Building 18).

WOODWORK FROM PHASE 10 EARLY POST-MEDIEVAL

The last broad phase currently used in relation to the site sequence is of early post-medieval date. All that survived from this period of interest here was the base of a cask-lined well, Structure [593], [628]. This included a fairly complete basal cask with the heading knocked out and the partial remains of another which had slipped down inside the first when the well was abandoned. Unusually the basal cask sat astride four foundation piles of oak. All the elements were cleaned and a selection drawn and photographed including those staves showing cooper's marks. The staves were of radially cleft oak very different to the Roman examples of silver fir, but the hoops were broadly similar and of ash roundwood. In due course this material can be compared with other finds of the same broad period and possibly the register of official coopers marks in the City of London library.

THEMATIC SECTION: SELECTED REUSED TIMBERS, SMALLER ITEMS OF WOODMANSHIP AND TOOL KITS

A RANGE OF REUSED AND DISPLACED BUILDING TIMBERS

Very approximately 25% of the main pile and plank road side drain piles were found to have been used second hand. It was clear from features such as relict mortice joints and recesses for infill staves that most of the oak timbers were derived from timber framed buildings eg [476], [1855] and many others. Many items were of the parts that do not normally survive *in situ*. Most of the timbers were small boxed heart oak timbers though some were of cleft oak and in one case [776] it was clear that the reused building stud was of ash. The scantlings and layout of various joints can tell us much about

Roman building in timber in general. Further study will also shed light on details such as wall finishes i.e. whether the studs were seen or plastered over etc.

Other elements of 'building related type' found, either reused or possibly collapsed in the roadside drains include, elements of building cladding, such as one piece of gable weather boarding cut to fit the apex and elements such as thin cleft fence pales. Even more unusual items found were small oval bosses of oak that might possibly have been architectural features such as cores for stucco work.

RARE FURNITURE TYPE FRAGMENTS

Several small, clearly reused timbers were found that would appear to have been parts of furniture eg [3483] or [1170]. The former is a box halved piece of oak with pegged tenon joints (not seen in Roman 'carpentry' but used by joiners) and a moulded shape suggesting that it may have been part of a couch or something similar. The latter item was a light, radially faced oak board with a bevelled edge and the neatly made recess for a dovetailed cross batten that might have been part of some form of panelling or similar feature. Other items of furniture size include plank [3901] which must have been part of a softwood trade container or crate held together solely by edge nailing, like some modern boxes for bottled wine still are. This small assemblage will be worthy of further examination during the analysis phase and exhibits features different to those of the carpentry.

A SUMMARY OF TOOLMARK, TOOL KIT AND JOINTING EVIDENCE

A few comments on the survival of distinctive tool marks on certain timbers have been provided above, such as the distinctive saw marks on some revetment planking, and the archive of timber records for this project contains many more such records. During the analysis phase it should be possible to provide a fuller account of the evidence showing its variety. It is already clear that there are variations in axe mark size and form from early material such as the corduroy timbers of AD 62 to the well planking of AD 250. Here the great compression that many of the later *in situ* building timbers have suffered and some in use decay removed most of the tool marks except inside joints. But this factor was negligible on the more rapidly buried items. It is normally possible to reconstruct the tool kits needed to build certain well preserved ancient structures from the surviving tool marks tempered by practical considerations such as the weight of materials etc. Normally an illustrated glossary of joints recorded during a project would also be compiled to add to the existing corpus. New examples from the Drapers' Gardens excavations would include the dovetailed recess for a cross batten on timber [1170].

WOODWORKING TOOLS FOUND DURING THE EXCAVATIONS; RULER ETC

The excavations on this site produced many well preserved iron and composite finds including several woodworking tools. The most unusual and important of these finds was a ruler of ash wood surviving just under 1 foot long [4582] <1141>. After careful cleaning and drawing it can be seen that the divisions are for a pes monetalis foot just under the size of a recent imperial foot. The inch divisions are not numbered but compass drawn marks were made, a semi-circle at 3ins, another at 6ins and a full circle at 8ins and possibly another semi-circle at 10ins. Other tool finds include an adze hammer and a bow drill bit. All the many iron nails used by Roman woodworkers in oak timber needed to have pilot holes drilled for them unlike modern steel nails in softwood, so the bow drill would have been very important.

MISCELLANAEOUS SMALL WOODEN ITEMS

The wood and composite items found include a number of important objects such as a perfectly turned hardwood staff 805mm long by *c*. 23mm diameter that may well have been an centurion's batten. The latter was very skilfully turned, probably on a bow lathe. Other finds include several tool handles and a crude-looking iron rake.

EVIDENCE FOR CHANGES IN TREES AND WOODMANSHIP

It should already be clear from the forgoing text that there was considerable variation in the size and shape of the oaks and other tree species used to build the timber and roundwood structures excavated and recorded at Drapers' Gardens. This variation was a result of the woodmanship

practices used and regional environmental conditions. In some cases wildwood material was also used that came from high dark forest where little management took place, but the majority of timber came from young small trees growing quickly in more open conditions controlled by woodsmen. This had the unfortunate consequence of making tree ring dating more difficult than on many other Roman London sites where more large timber was used, a factor already noted by Ian Tyers (see Appendix 17). Several instances of trees growing *in situ* on the site were also recorded, including some which may possibly have been planted in linear arrangements ie hedges along the edges of the ditches. The reuse of imported softwoods even provides a glimpse of exotic woodlands in other parts of the Roman empire. The evidence taken as a whole and meshed with charcoal studies shows how the important resources of wood and timber were husbanded and used. Ironically there is little evidence of these hinterland resources in the hinterland of *Londinium* but samples of the material survive to be studied on exceptionally well preserved urban sites such as Drapers' Gardens. The casual use of wide boards cleft from very large, slow grown trees in the late 12th century structure indicates that wildwood conditions pertained in the wider hinterland in places at that time. Indeed, it now appears that the wildwood spread after the fuel hungry economy of the Romans collapsed

FUTURE WORK TOWARDS AN ANALYSIS/ PUBLICATION DRAFT REPORT

Some more work with the voluminous site archive is clearly needed particularly in relation to the detailed phasing and grouping of some elements of the timber buildings and pile and plank drains. Following that and liaison with other project staff an analysis report could be compiled. This report would be a tailored reworking of the above with concentration on some reconstruction draft figures particularly of the palisade, Building 1, Building 4 and some details of other buildings, here evidence for Roman units of measurement would be considered. It would be fully referenced etc. It would also include enlarged thematic sections on aspects of the woodworking evidence such as changes in the use of woody raw materials found in the Drapers' Gardens assemblage, the range of joints found, selected reused timbers and the tool mark evidence. Discrete groups of material such as the later Roman casks or water pipes or possibly the woodworking tools could also be summarised under thematic headings working in collaboration as required.

The Drapers' Gardens project represented perhaps the last large scale chance to examine the life of ordinary urban Romans and their built environment in London and possibly the northern part of the empire as a whole, based on high quality 'wet site evidence'. Indeed, the evidence also sheds light on activities such as woodmanship which took place outside the urban confines in the Roman countryside. Some of the woodwork can even be situated at some distance from the province in central Alpine Europe where the Silver Fir casks were made. The evidence for urban timber building construction must be viewed as second to none in London and probably the rest of the province and elsewhere in the northern parts of the empire.

Following further analysis it should be possible to go some distance in the reconstruction of the best preserved timber and earth buildings and also to reveal aspects of their life-history and modification in real time, with the help of tree-ring dating, in a way that is simply impossible on 'dry' sites. Again with the help of such tight dating, the principal researchers at the analysis stage will be able to set the phases of building and use of the site into a real historical context, such as the probably military lead in the rebuilding of the new town after the Boudican uprising.

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APPENDIX 17: DENDROCHRONOLOGICAL ANALYSIS

Ian Tyers

An initial group of 21 samples excavated at Drapers Gardens, 12 Throgmorton Avenue, City of London (sitecode DGT06, NGR *c*. TQ 3283 8140) was submitted for dendrochronological dating in 2007, dates were obtained from 11 of these (Tyers 2007). A second batch of 97 samples were submitted for dendrochronological assessment and analysis along with 50 samples for wood identification. The dendrochronological analysis dated 45 of the second batch of timbers to the 1st, 2nd, 3rd & 12th centuries, and identified links with some of the earlier material, resulting in 1 additional dated timber from the first batch. This report combines the results from both batches, and provides updated results for 3 of the initial batch of samples.

Methodology
The 97 dendrochronological samples were supplied as complete cross sections, it is assumed in the absence of other information that these were obtained from the optimum location for sapwood and bark survival from the timber. Several pairs of these may have consisted of 2 sub-samples from the same timber. The identification samples were supplied as sub-samples, or whole excavated fragments, several groups of this material consisted of multiple fragments of wattle or cask hoops.

Each dendrochronological sample was assessed for the wood type, the number of rings it contained, and whether the sequence of ring widths could be reliably resolved. For dendrochronological analysis samples need to be either oak (*Quercus* spp.), or another of the dendrochronologically viable timbers types, usually to contain 50 or more annual rings, although some material with fewer rings may be suitable where large numbers of samples are available, 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. Most of the supplied samples were oak, there was a single beech (*Fagus*) sample. Standard dendrochronological analysis methods (see e.g. English Heritage 1998) were then applied to each suitable sample. The sequence of ring widths in each sample were revealed by preparing a surface equivalent to the original horizontal plane of the parent tree with a variety of bladed tools whilst the timber was frozen solid. The width of each successive annual growth ring was revealed by this preparation method. The complete sequence of the annual growth rings in the suitable samples were then measured to an accuracy of 0.01mm using a micro-computer based travelling stage. The sequence of ring widths were then plotted onto semi-log graph paper to enable visual comparisons to be made between sequences. In addition cross-correlation algorithms (e.g. Baillie & Pilcher 1973) were employed to search for positions where the ring sequences were highly correlated (Tyers 2004). Highly correlated positions were checked using the graphs and, if any of these were satisfactory, new composite sequences were constructed from the synchronised sequences. Any *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.

Tables 10-13 lists examples of the best matches for 4 composite series constructed from the 56 datable oak samples from this site against reference series, Table 14 likewise for the single beech sample. These tables are intended to show that there is independent corroboration for the dates given to them in this report, the individual series and the composites match many other reference series.

For the wood identification analysis microscopic cross-section's were taken from each sample in 3 planes (tangential, radial, and transverse), these were mounted on glass slides with cover slips. The features were then examined at up to 400x magnification and compared with illustrations and keys in Schweingruber (1978). The identifications are given in Table 3.

Results and Discussion
The second batch of material comprised 96 oak samples, and 1 beech sample, 3 pairs of the oaks may have been sub-samples of single timbers.

After the samples were prepared for analysis it was concluded that 92 of them were suitable for measurement (Table 2). All the data was compared both with each other and individually with Roman, and other period, tree-ring data from London and elsewhere in England, along with the material

previously analysed as part of batch 1 from the site. Sequences from 41 samples from batch 2 were found to cross-match against Roman data from the London and South-East regions providing consistent calendar dates for each of these sequences (Tables 4-6, 10-12), samples from 3 medieval oaks were found to cross-match each other (Table 9) and against medieval oak data from London and the South-East regions (Table 13), and the single piece of medieval beech was found to match against the interim beech sequences from London and elsewhere (Table 14). The batch 2 Roman material assisted in dating one of the hitherto undated timbers from batch 1, and in addition 2 groups of matching but undated timbers were identified, one of 2 timbers and one of 3 timbers, each comprising timbers from both batches 1 and 2 (Figures 3 & 4, Tables 7 & 8). The updated details of these batch 1 timbers are highlighted in Table 1. The other sequences were not found to cross-match in a reliable and statistically significant fashion and remain undated. A summary of the results for the batch 2 samples are provided in Table 2 and Figure 2.

This initial analysis dates the rings present in the datable samples. The correct interpretation of those dates relies upon the character of the final rings in the samples. If a sample ends in the heartwood of the original tree, a *terminus post quem (tpq)* 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 that may be missing. This *tpq* may be many decades prior to the real felling date. Where some of the sapwood or the heartwood/sapwood boundary survives on the sample, a felling date range can be calculated using the maximum and minimum number of sapwood rings likely to have been present. If bark-edge survives then a felling date can be directly utilised from the date of the last surviving ring. The sapwood estimates applied here are a minimum of 10 and maximum of 46 annual rings, where these figures indicate the 95% confidence limits of the range. These figures are applicable to oaks from England and Wales. Figures 1 & 2 and Tables 1 & 2 include the interpreted date of each of the datable samples. These dates do not necessarily indicate the date of the structure from which the samples were derived since the timbers may be reused or repairs to the structures.

The structural groupings of this material were unavailable at the time of the analysis.

Visual inspection of the bar diagrams (Figures 1 & 2) shows this material does however fall into 3 major date groupings.

25 of the dated samples from both batches probably were used during the first few decades of the Roman occupation (Figures 1 & 2, Tables 1, 2, 4 & 10). Discussing only the batch 2 timbers; several were felled in late AD 62 (4853, 4865, there was also 4860 in batch 1), and several in late AD 70 or early AD 71 (4807, 4845, 4808), but a great deal of incomplete material, i.e. without intact bark edge, appear to be broadly co-eval with these groupings or of similar date, some of which presumably may come from stratigraphically related material, or for which the stratigraphy may further constrain the dendrochronological date. Only a handful of timbers could be pre-Boudican in date (4837, 1321, 4857, 4598, 4596, 211, 4841) although since all are incomplete they could all be post-Boudican. There is no material certainly felled after spring AD 71 and before AD 118, although again as much of the material has incomplete bark there are several (e.g. 3898, 215) that could be post-AD 70 and pre-AD 100.

20 of the dated samples from both batches end in the 2nd century (Figures 1 & 2, Tables 1, 2, 5 & 11). Again discussing only batch 2; felling dates have been identified for AD 129, AD 151 (an example of this was also identified in batch 1), AD 165, AD 172, and amongst the incomplete material there are numerous examples that are likely to be broadly co-eval, including one possibly felled in AD 118, and one certainly felled in the later 2nd or early 3rd century (518 felled AD 190-214). Some of these timbers are presumably stratigraphically related, or the stratigraphy may further constrain the dendrochronological date. This material contains markedly less rings than most of the 1st century material.

8 of the dated samples are mid-3rd century (Figures 1 & 2, Tables 1, 2, 6 & 12) with 2 further samples felled in winter AD 250, these presumably going with the 2 identified from batch 1, where one was also showing the very start of growth for AD 251. The incomplete material, i.e. without intact bark edge, in this group appear to be broadly co-eval with these, some of which presumably are stratigraphically related. This material contains fewer rings than either the 1st or 2nd century material.

3 Roman timbers were matched together (178, 182, 183, Figure 3, Table 7) but do not currently yield absolute dates, 178 has bark edge. This link may assist with stratigraphic interpretations.

The 53 dated Roman timbers from Drapers now form a single continuous tree-ring sequence.

2 further Roman timbers were matched together (1513, 4029, Figure 4, Table 8) but do not currently yield absolute dates, 4029 has bark edge. This link may assist stratigraphic interpretations.

In both cases, this material may be a single undatable tree, or group of trees, but which are contemporaneous with the dated material, or they may be sourced from somewhere exotic for which reference data is poor or non-existent, or they may be local timbers from the later 3rd or 4th centuries when the London composite reference series is weak or non-existent. Stratigraphic feedback would be welcome.

3 large pieces of medieval oak from context [281] were matched together and absolutely dated (Tables 9 & 13, Figure 5) none has complete bark-edge but sapwood estimates indicate a date of AD 1177-97 for this material. A single piece of beech with the same context number, matches several individual beech reference series indicating this was felled in winter AD 1188. Some medieval barrel staves (593) were not datable despite containing relatively long tree-ring sequences, these could be of exotic origin.

Wood identification results for the 50 samples are listed in Table 3. None of these results are unusual or particularly noteworthy; the use of *Abies alba* (Silver Fir) casks to transport Roman foodstuffs from central and southern Europe which are then re-used as e.g. well linings and writing tablets is well attested from previous London excavations. There are some tree-ring series available from the principal source areas and some English excavated *Abies* samples have been matched to these.

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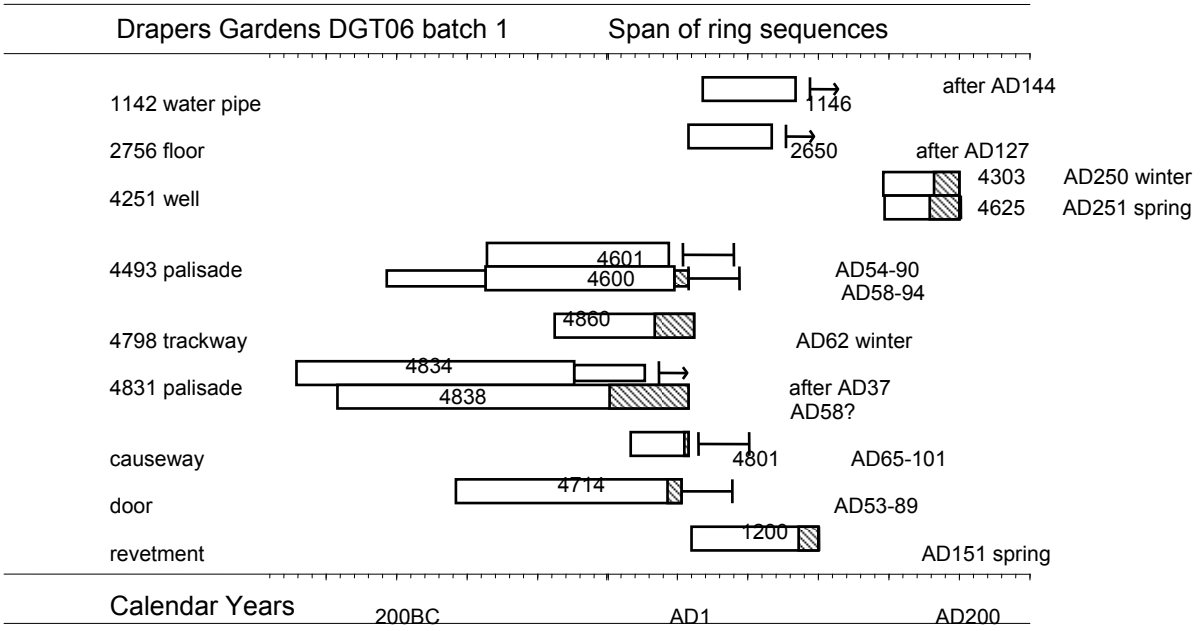
Figure 1. Updated bar diagram showing the calendrical positions of the 12 dated tree-ring sequences for samples from batch 1 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. The interpreted felling dates are also shown.



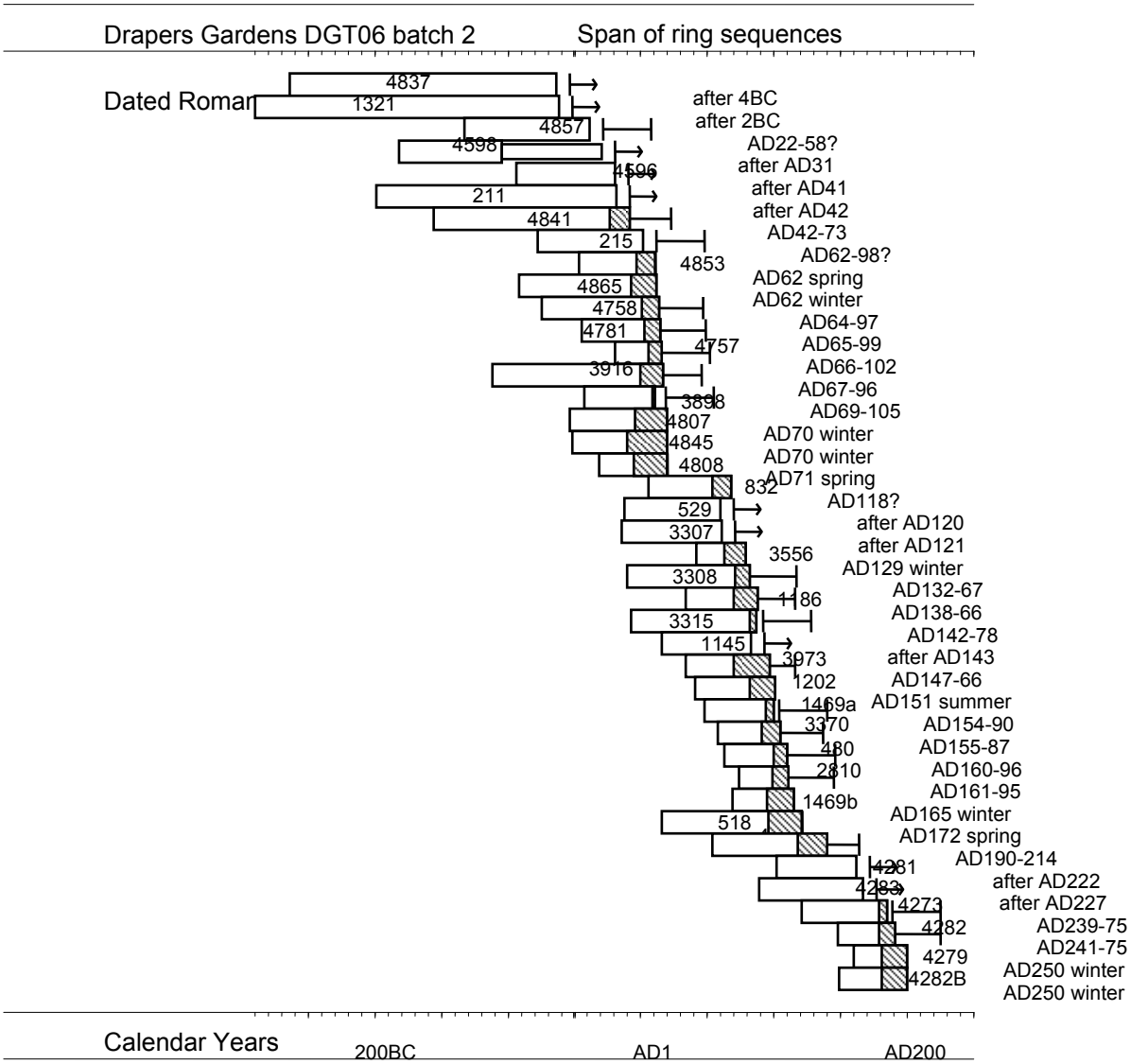
KEY

White bars are oak heartwood, hatched bars are oak sapwood, narrow bars are estimated numbers of unmeasured rings (either unmeasurable due to their poor preservation or as detached fragments).

Note Figures 1 & 2 use the same horizontal scale to assist comparisons.

Figure 2. Bar diagram showing the calendrical positions of the 41 dated Roman oak tree-ring sequences from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. The interpreted felling dates are also shown. Key Figure 1.

This figure can be updated when stratigraphic groupings become available.



Note Figures 1 & 2 use the same horizontal scale to assist comparisons.

Figure 3. Bar diagram showing the relative positions of 3 matched but undated Roman oak tree-ring sequences from batch 1 and batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. Key Figure 1, Table 1. Horizontal scale is arbitrary, and not related to Figure 4.

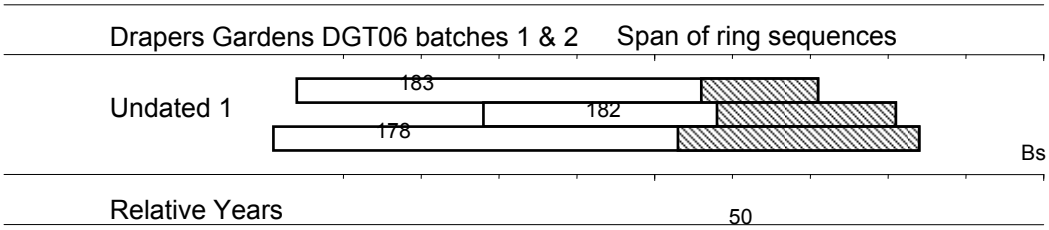


Figure 4. Bar diagram showing the relative positions of 2 matched but undated Roman oak tree-ring sequences from batch 1 and batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. Key Figure 1, Table 1. Horizontal scale is arbitrary, and not related to Figure 3

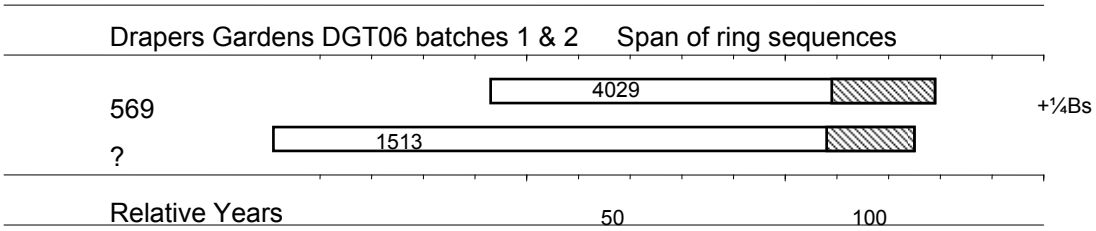


Figure 5. Bar diagram showing the calendrical positions of the 4 dated medieval tree-ring sequences from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. The interpreted felling dates are also shown. Key Figure 1. 281C highlighted orange is beech, the others are oak

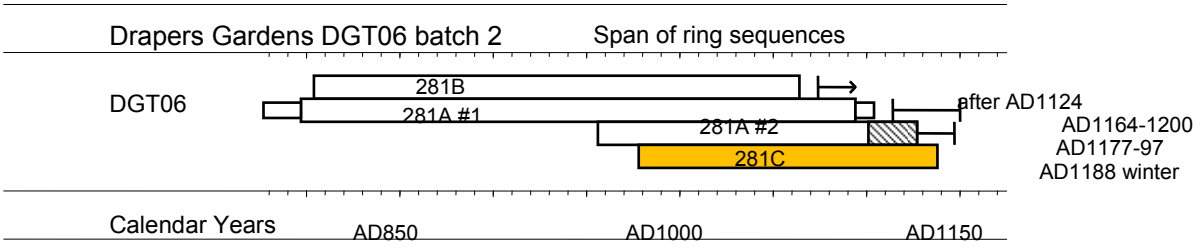


Table 1. Updated details of the dendrochronological samples from batch 1 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06.

Timber	Size (mm)	Rings	Sap	Date of measured sequence	Interpreted result
183	110 x 5	68	15	undated [1]	-
1146	180 x 125	67	-	AD68-AD134	after AD144
1200	155 x 115	91	14+¼Bs	AD60-AD150	AD151 spring
2650	170 x 20	60	-	AD58-AD117	after AD127
2653	130 x 20	40	-	undated	-
3645	230 x 40	52	15	undated	-
4029	130 x 40	87	20+¼Bs	undated [2]	-
4132	120 x 85	66	14	undated	-
4196	145 x 40	76	35	undated	-
4303	240 x 40	55	18+Bw	AD196-AD250	AD250 winter
4600	300 x 85	*70*+135	H/S+*10*	87BC-AD48	AD58-94
4601	300 x 70	130	H/S	86BC-AD44	AD54-90
4625	265 x 35	54	21+¼Bs	AD197-AD250	AD251 spring
4714	385 x 35	161	10	108BC-AD53	AD53-89
4801	130 x 10	42	3	AD17-AD58	AD65-101
4821	90 x 65	90	28+Bw	undated	-
4834	250 x 75	198+*50*	-	221BC-24BC	after AD37
4838	235 x 75	250	56+?B	192BC-AD58	AD58?
4855	85 x 65	65	18+Bw	undated	-
4860	105 x 60	100	28+Bw	38BC-AD62	AD62 winter
4862	155 x 35	56	14	undated	-

KEY

Values in italics in Rings & Sap columns indicate unmeasured rings (these were either unmeasurable due to their poor preservation or as detached fragments). In Sap column; H/S indicates sequence ends at the end of heartwood and start of sapwood, +?B indicates sequence ends at possible bark-edge, +Bw indicates sequence ends at a complete ring - winter felled, +Bs indicates sequence ends at an incomplete ring – late spring or summer felled, +¼Bs indicates sequence ends with an additional partial ring below bark – early spring felled. Yellow rows are updated from the initial report. Superscripts indicate timbers that are undated but match samples from batch 2, these are labelled with the same superscripts in Table 2, these links may assist phasing of the site. * In Table 2 281C = beech, the rest of this material is oak

Table 2. Details of the dendrochronological samples from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06, key Table 1.

Timber	Size (mm)	Rings	Sap	Date of measured sequence	Interpreted result
178	110 x 5	84	31+Bs	undated [1]	-
182	95 x 5	54	23	undated [1]	-
211	425 x 35	181	-	149BC-AD32	after AD42
215	190 x 100	80	?H/S	28BC-AD52	AD62-98?
281A1	410 x 45	*20*+298	+*10s*	AD847-1144	AD1164-1200
281A2	165 x 45	172	26	AD1006-1177	AD1177-97
281B	305 x 40	261	-	AD854-1114	after AD1124
281C *	265 x 75	161	+Bw	AD1028-1188	AD1188 winter
395	135 x 100	79	H/S	undated	-
476	205 x 160	52	14	undated	-
480	385 x 55	48	10	AD113-AD160	AD160-96
485	175 x 40	106	25+¼Bs	AD66-AD171	AD172 spring
512	180 x 140	58	21+Bw	undated	-
518	240 x 195	87	22	AD104-AD190	AD190-214
529	330 x 60	73	-	AD38-AD110	after AD120
535	240 x 155	88	13+?B	undated	-
555	440 x 60	~30	-	unmeasured	-
593i	185 x 25	189	-	undated	-
593l	145 x 25	162	-	undated	-
651	200 x 85	81	-	undated	-
777	150 x 135	87	-	undated	-
790	90 x 60	68	6	undated	-
795	155 x 155	58	11+¼Bs	undated	-
801	180 x 160	~34	-	unmeasured	-
832	195 x 195	63	14+?B	AD56-AD118	AD118?
945	220 x 30	~25	-	unmeasured	-
1056	250 x 60	~25	-	unmeasured	-
1103	175 x 140	92	19	undated	-
1145	190 x 170	68	-	AD66-AD133	after AD143
1185	170 x 125	53	15	undated	-
1186	130 x 100	55	18	AD84-AD138	AD138-66
1202	140 x 130	61	19+Bs	AD91-AD151	AD151 summer
1321	275 x 40	229	-	240BC-12BC	after 2BC
1469a	180 x 50	53	6	AD98-AD150	AD154-90
1469b	240 x 50	47	20+Bw	AD119-AD165	AD165 winter
1513	150 x 40	125	17	undated [2]	-
1654	165 x 140	69	16	undated	-
1758	170 x 115	69	25+¼Bs	undated	-
1781	115 x 95	139	23	undated	-
1929	220 x 160	57	10	undated	-
1940	70 x 65	96	26+¼Bs	undated	-
1942	180 x 140	63	10	undated	-
2144	180 x 115	50	13+¼Bs	undated	-
2145	195 x 195	51	6	undated	-
2146	185 x 120	59	13+¼Bs	undated	-
2147	225 x 165	130	30+B	undated	-
2529	145 x 25	98	11+*15s*	undated	-
2530	135 x 25	*10*+76	-	undated	-
2810	190 x 60	38	12	AD124-AD161	AD161-95

3268	265 x 25	142	?H/S	undated	-
3307	260 x 30	76	-	AD36-AD111	after AD121
3308	265 x 35	93	11	AD40-AD132	AD132-67
3315	165 x 35	95	5	AD43-AD137	AD142-78
3352	135 x 100	47	32	undated	-
3370	150 x 105	48	14	AD108-AD155	AD155-87
3407	95 x 90	53	9	undated	-
3556	140 x 125	38	16+Bw	AD92-AD129	AD129 winter
3891	160 x 125	141	12	undated	-
3898	130 x 110	54	2	AD8-AD61	AD69-105
3916	170 x 125	129	17	62BC-AD67	AD67-96
3918	190 x 170	36	-	undated	-
3973	150 x 25	64	27	AD84-AD147	AD147-66
4005	160 x 120	39	12+¼Bs	undated	-
4227	415 x 40	98	1	undated	-
4273	215 x 30	65	6	AD171-AD235	AD239-75
4279	170 x 45	41	19+Bw	AD210-AD250	AD250 winter
4281	190 x 35	61	-	AD152-AD212	after AD222
4282A	180 x 45	44	12	AD198-AD241	AD241-75
4282B	190 x 50	52	19+Bw	AD199-AD250	AD250 winter
4283	290 x 40	79	-	AD139-AD217	after AD227
4529	95 x 90	38	-	undated	-
4537	275 x 35	90	-	undated	-
4596	150 x 140	75	-	44BC-AD31	after AD41
4598	270 x 50	78+*75*	-	132BC-55BC	after AD31
4635	165 x 105	69	16	undated	-
4636	130 x 90	59	22	undated	-
4639	180 x 130	39	11	undated	-
4642	125 x 85	49	10	undated	-
4747	110 x 35	50	-	undated	-
4748	120 x 110	59	20+Bw	undated	-
4755	115 x 110	61	23+Bw	undated	-
4757	135 x 80	36	10	AD31-AD66	AD66-102
4758	150 x 70	89	13	25BC-AD64	AD64-97
4761	140 x 85	53	14	undated	-
4765	110 x 80	43	15+Bw	undated	-
4766	145 x 65	49	15	undated	-
4781	145 x 85	60	12	AD6-AD65	AD65-99
4807	155 x 115	74	24+Bw	4BC-AD70	AD70 winter
4808	155 x 120	52	25+¼Bs	AD19-AD70	AD71 spring
4837	285 x 65	201	-	214BC-14BC	after 4BC
4841	190 x 70	148	15	106BC-AD42	AD42-73
4845	165 x 100	72	30+Bw	2BC-AD70	AD70 winter
4849	195 x 115	~27	-	unmeasured	-
4852	145 x 30	75	-	undated	-
4853	165 x 70	58	14+¼Bs	AD4-AD61	AD62 spring
4857	110 x 75	95	?H/S	83BC-AD12	AD22-58?
4865	125 x 60	104	19+Bw	42BC-AD62	AD62 winter

Table 3. Details of the identification samples from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06.

KEY
Abies; *Abies alba*, Silver Fir, from central Europe
Alnus; *Alnus* spp., Alder, one of several species, usually *Alnus glutinosa*, native
Fagus; *Fagus sylvatica*, Beech, native
Fraxinus; *Fraxinus excelsior*, Ash, native
Pomoideae; fruitwood indeterminate, crab apple, hawthorn, etc., native
Quercus; *Quercus* spp., Oak, one of 2 species, native
Salicaceae; willows and/or poplars indeterminate, native

Cf. Comparable to, condition too poor for some key microscopic feature
UNID. Unidentifiable, condition too poor, or material not distinctive enough for identification (bark and roots etc)

Timber	Identification	Comments
40h	Abies	
40i	Quercus	cask hoop
44d	Fraxinus	cask hoop
44e	Quercus	cask hoop
44i	Abies	
209	Alnus	
209	Alnus	
275b	Abies	not 2756
284	Fagus	
355	cf Pomoideae	
387	Fraxinus	
435	Quercus	
450	cf Salicaceae	
468	Alnus	
593m	Fraxinus	cask hoop
593n	Fraxinus	cask hoop
654	UNID Charcoal	
667	Quercus	wattle
732	Abies	
776	Fraxinus	
812	Quercus	
936	Salicaceae	
944a	Abies	
944c	Abies	
944d	Abies	
944e	Abies	
944h	Abies	
944l	Abies	
1052	cf Pomoideae	
1286	Alnus	
1329	Quercus	
1468	Quercus	
1481	Quercus	
1829	UNID	hardwood root
1936	Alnus	
2131	cf Fraxinus	root
2582	Quercus	wattle
3060	Salicaceae	

3539	Quercus	
3981	Quercus	
4004	Quercus	
4198	UNID	hardwood root
4357	UNID	hardwood bark
4562	Pomoideae	
4790	Fraxinus	
4791	Quercus	
4792	Salicaceae	
4793	Quercus	
4795	Quercus	
4796	Quercus	

Table 4. The *t* values (Baillie & Pilcher 1973) between the 7 dated mid-1st C. sequences from batch 1, and the 18 dated mid-1st C. sequences from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. These were combined into the composite sequence used in Table 10. – *t*-value less than 3.0. \ no or short overlap

	4601	4714	4801	4834	4838	4860	211	215	1321	3898	3916	4596	4598	4757	4758	4781	4807	4808	4837	4841	4845	4853	4857	4865
4600	7.98	5.67	3.27	-	4.39	4.31	3.10	-	3.80	3.08	5.43	-	-	-	5.36	-	-	3.09	4.68	8.12	3.64	-	3.37	5.36
4601		3.94	-	-	3.86	4.04	-	4.96	4.55	3.04	4.62	-	-	\	4.75	-	-	-	3.79	4.41	-	-	-	4.15
4714			-	5.83	7.48	10.85	5.93	4.00	6.03	5.07	7.51	4.25	3.36	6.62	5.72	4.44	-	-	5.29	9.72	-	4.50	7.37	6.43
4801				\	-	-	-	-	\	-	-	-	\	-	-	-	4.24	13.71	\	5.83	-	3.30	\	-
4834					11.28	-	3.36	\	10.79	\	-	-	-	\	\	\	\	\	12.44	5.34	\	\	-	-
4838						6.78	4.40	5.82	11.49	5.49	6.96	-	-	3.04	5.09	4.90	-	-	10.28	7.69	-	4.10	4.63	4.63
4860							-	4.78	4.18	5.12	6.00	5.17	\	4.19	4.40	3.36	-	-	-	6.90	-	4.76	6.24	6.34
211								-	4.73	-	3.98	-	-	\	3.17	-	-	\	4.07	5.14	-	-	-	-
215									-	3.32	4.45	-	\	-	3.84	5.98	-	-	-	4.64	-	-	-	-
1321										\	3.05	-	3.66	\	\	\	\	\	11.19	5.12	\	\	3.18	-
3898											5.43	-	\	3.40	5.55	5.69	-	-	\	5.06	-	6.34	\	-
3916												4.50	\	3.03	4.52	3.78	3.04	-	6.23	9.67	-	4.55	7.74	4.48
4596													\	\	-	-	-	\	-	4.80	-	-	3.24	5.20
4598														\	\	\	\	\	-	-	\	\	-	\
4757															-	4.27	-	-	\	\	-	4.70	\	4.88
4758																-	3.01	-	\	7.52	3.05	5.41	-	3.44
4781																	-	-	\	3.98	-	-	\	-
4807																		4.96	\	5.44	8.16	-	-	-
4808																			\	4.53	-	-	\	-
4837																				6.38	\	\	-	-
4841																					6.10	-	5.93	7.17
4845																						-	\	-
4853																							\	-
4857																								3.78

Table 5. The *t* values (Baillie & Pilcher 1973) between the 3 dated mid-2nd C. sequences from batch 1, and the 17 dated mid-2nd C. sequences from batch 2 Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. These were combined into the composite sequence used in Table 11. – *t*-value less than 3.0, \ no or short overlap.

	1200	2650	480	485	518	529	832	1145	1186	1202	1469 a	1469 b	2810	3307	3308	3315	3370	3556	3973
1146	-	4.29	-	3.08	-	4.29	-	9.84	-	-	-	-	\	-	-	-	-	-	3.03
1200		-	3.65	4.22	-	-	-	-	4.83	6.91	4.41	-	5.08	3.04	4.19	4.69	3.27	4.31	-
2650			\	3.71	\	4.45	-	3.70	-	3.61	4.82	\	\	4.60	4.24	3.93	\	4.63	5.07
480				4.99	3.55	\	\	-	-	-	4.73	4.44	6.93	\	-	-	-	-	-
485					-	3.52	3.31	3.32	3.77	4.93	3.10	3.55	3.05	-	3.60	3.24	-	5.52	-
518						\	-	-	-	-	-	-	-	\	-	-	-	-	-
529							-	3.41	-	3.37	\	\	\	3.66	3.93	4.29	\	4.83	5.19
832								3.71	3.46	4.03	-	\	\	3.64	3.89	3.02	\	3.69	4.29
1145									-	-	-	3.64	\	3.45	-	-	-	-	3.28
1186										5.08	3.66	-	-	-	-	-	-	7.49	-
1202											5.52	-	3.42	3.09	3.36	-	3.74	5.99	3.82
1469a												-	-	\	-	-	4.53	5.09	3.86
1469b													3.65	\	\	-	-	\	-
2810														\	\	\	-	\	-
3307															10.46	7.16	\	4.65	6.76
3308																9.62	-	4.89	10.07
3315																	3.75	4.34	10.25
3370																		4.79	3.77
3556																			5.01

Table 6. The *t* values (Baillie & Pilcher 1973) between the 2 dated structure 4251 well timbers from batch 1, and the additional 6 dated mid-3rd C. timbers from batch 2, from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. These were combined into the composite sequence used in Table 12. – *t*-value less than 3.0, \ no or short overlap.

	4625	4273	4279	4281	4282	4282b	4283
4303	4.12	6.32	9.80	-	8.31	7.97	-
4625		-	3.64	-	4.23	3.71	-
4273			4.04	6.53	5.00	3.86	7.38
4279				\	5.25	9.96	\
4281					-	\	16.19
4282						4.67	-
4282B							3.95

Table 7. The *t* values (Baillie & Pilcher 1973) between 3 undated Roman timbers from batch 1 and batch 2, from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06.

	178	182
183	8.86	7.12
178		5.44

Table 8. The *t* value (Baillie & Pilcher 1973) between 2 undated Roman timbers from batch 1 and batch 2, from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06.

	1513
4029	13.95

Table 9. The *t* values (Baillie & Pilcher 1973) between the 3 dated oak timbers from 281, from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06. These were combined into the composite sequence used in Table 13.

	281A2	281B
281A1	12.52	4.36
281A2		4.19

Table 10. Showing example *t* values (Baillie & Pilcher 1973) between the composite sequence constructed from the 7 dated mid-1st C. sequences from batch 1 and the 18 dated mid-1st C. sequences from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06 and oak reference data.

	DGT06 mid-1st C. 240BC-AD70
London, 1 Poultry ONE94 (Tyers 2000)	20.42
London, 11-11A Pudding Lane PDN81 (Hillam pers comm.)	20.28
London, 12 Arthur St AUT01 (Tyers 2002)	18.81
London, Blackfriars/Holborn VAL88 (Tyers & Hibberd 1993)	17.11
London, Cannon St Station LYD88 (Hillam 1989)	16.57
London, Guildhall Yard GYE92 (Tyers 2001b)	17.06
London, Regis House King William St KWS94 (Tyers 1995)	20.83
London, Suffolk House SUF94 (Tyers & Boswijk 2001)	23.09

Table 11. Showing example *t* values (Baillie & Pilcher 1973) between the composite sequence constructed from the 3 dated mid-2nd C. sequences from batch 1 and the 17 dated mid-2nd C. sequences from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06 and oak reference data.

	DGT06 mid 2nd C. AD36-AD190
Hampshire, Itchen St Denys/Bitterne SOU881 (author unpubl.)	8.45
London, 1 Poultry ONE94 (Tyers 2000)	10.61
London, 52-63 London Wall LOW88 (Nayling 1990)	8.72
London, Blossoms Inn GHT00 (Crone & Tyers 2002)	9.20
London, Courages Brewery Park St CO88 (Brigham *et al* 1995)	9.23
London, Guildhall Yard GYE92 (Tyers 2001b)	10.89
London, Guys Hospital GHL89 (Tyers & Boswijk 1996)	8.14
London, Suffolk Ho. Upper Thames St (Tyers & Boswijk 2001)	9.12

Table 12. Showing example *t* values (Baillie & Pilcher 1973) between the composite sequence constructed from the 2 dated sequences from structure 4251 from batch 1 and the additional 6 mid-3rd C. timbers from batch 2 from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06 and oak reference data.

	DGT06 mid 3rd C. AD139-AD250
London, 1 Poultry ONE94 (Tyers 2000)	6.77
London, 99-101 Q. Victoria Street QUV01 (Tyers 2003)	6.52
London, Baynards House Q. Victoria St BC75 (Morgan 1980)	8.14
London, Billingsgate Lorry Park BIG82 (Hillam 1990)	9.04
London, Guys Hospital GHL89 (Tyers & Boswijk 1996)	8.04
London, New Fresh Wharf NFW74 (Hillam & Morgan 1986)	6.70
London, Tooley St/Battlebridge Lane TYT98 (Tyers 1999)	5.40
Sussex, Pevensey Castle (Tyers 1994b)	7.29

Table 13. Showing example *t* values (Baillie & Pilcher 1973) between the composite sequence constructed from the 3 dated oak '281' sequences from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06 and oak reference data.

	DGT06 oak late 12th C. AD847-AD1177
Hampshire, Winchester Cathedral (Barefoot & Tyers 2002)	7.21
London, Bull Wharf BUF90 (Tyers & Boswijk 1997)	6.79
London, Bull Wharf UPT90 (Tyers 1994a)	6.50
London, Fennings Wharf FW84/TW84 (Tyers 2001a)	5.96
London, Fleet Valley VAL88/PWB88 (Tyers & Hibberd 1993)	5.96
London, Thames Exchange TEX88 (Nayling 1991)	7.09
London, Vintry VRY89 (Hibberd 1992)	7.67
Oxfordshire, Shire Lake (Hillam & Miles 1992)	6.18

Table 14. Showing example *t* values (Baillie & Pilcher 1973) between the dated beech 281C sequence from Drapers Gardens, 12 Throgmorton Avenue, City of London, site DGT06 and beech reference data.

	DGT06 beech 281C AD1028-AD1188
London composite beech chronology (author unpubl.)	5.56
London, Bull Wharf BUF90 Beech (author unpubl.)	4.30
London, Fennings Wharf FW84 Beech (author unpubl.)	4.06
London, Gresham Street GHT00 Beech (author unpubl.)	4.93
London, Innholders Hall IHA89 Beech (author unpubl.)	4.18
London, Vintry VRY89 Beech (author unpubl.)	4.04
Wales, GGAT272 Magor Pill Wreck Beech (author unpubl.)	4.15

APPENDIX 18: ANIMAL BONE ASSESSMENT

Kevin Rielly

Introduction

The excavation lies within the north central area of the City, on the border of the Middle and Upper Walbrook river areas, some 100m to the south of London Wall, marking the former northern boundary of the Roman city wall. The site was excavated in two parts, the eastern area (Area A) preceding the western area (Area B). Both areas had been severely truncated by modern development, as shown by the rather sparse remains of medieval and post-medieval levels, these phases represented by the lowermost parts of deeply cut features. In addition, Area B had clearly suffered a greater depth of truncation, essentially limiting any horizontal stratigraphy in this area to before AD 200. A further difference between these two areas concerns the excavation of the early Roman strata i.e. the levels predating the development of the site, which was achieved under normal excavation conditions in Area B, but in some haste in Area A due to time constraints.

However, despite these problems, the site has produced a well dated Roman sequence from various early activities including a cemetery, to the 2nd century development and subsequent structural changes through to 4th century occupation marked by the fills of truncated deep features. There is also evidence, though minimal, again limited by truncation, of medieval and post-medieval activity.

Animal bones were provided by each phase of activity, with the late Roman levels in particular providing very large quantities of material. The condition of the bones was good to excellent, as would be expected from such a wet site. The retrieval of these collections was principally undertaken by hand, which was augmented by an extensive sampling programme.

Methodology

The hand collected 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 (onto an Access database) 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. All the sieved bones were scanned, noting total quantities as well as the number of bones belonging to the major species and general comments concerning fragmentation and skeletal representation. It should be noted that the fish bones have not been identified at this stage.

Description of faunal assemblage by phase

26,401 bones were recorded from the hand-collected assemblage, of which 17,387 (65.8%) were identified to species or species group (see Methodology). In addition, the sieved assemblage, arising from a total of 123 samples, provided 8,245 bones of which approximately 570 bones are identifiable. The site has been divided into 10 phases and bones were recovered from each (see Table 1). These stratigraphic units can be described as the initial natural deposits (Phases 1 and 2), 1st and early 2nd century early structures and consolidation (Phases 3 and 4), 2nd and 3rd century buildings and road layout (Phases 5 and 6), followed by truncated Late Roman (Phases 7 and 8), medieval (Phase 9) and post-medieval (Phase 10) features. The great majority of the bones are clearly from the Roman deposits.

Phase	Hand collected	Sieved
1	12	
2		1
3a	68	
3b	360	35
4	429	29
4, 5	23	

5	162	13
5a	2867	4316
5a, 5b	143	
5b	3510	436
5b, 6	7	
5, 6	419	
5, 6, 7	2	
6	581	
6a	743	343
6b	1883	745
6, 7	551	150
7	5829	1700
7, 8	1793	
8	6564	419
9	437	58
10	18	
Total	**26401**	**8245**

Table 1. Distribution of and hand collected and sieved bones by phase

The previously described truncation and recovery differences between the two major excavation areas are well illustrated in Table 2, combining the bone collections from the two main stratigraphic units. While both areas show that the majority of the bones were recovered from the building and late Roman levels, there is an obviously higher proportion of bones from the better excavated lower levels in Area B and a greater proportion of late Roman and post-Roman bones from Area A. The significant quantity of building period bones from Area B are essentially derived from Phase 5.

Combining the various phases between the western (Area B) and eastern (Area A) excavations it can be seen that the early Roman levels (Phases 3 and 4) provided 3.3% of the hand collected assemblage, while the building and late Roman levels produced 39.2% and 55.8% respectively. The latest two phases each provided rather minor collections, accounting for just 1.7% of the total assemblage. In contrast, the greater part of the sieved assemblage was derived from the building phases with 71% compared to the late Roman levels with 25.6%. This difference is essentially related to a rather large collection of about 4,200 bones from ditchfill [4581] in Phase 5a (see below). A major purpose of sieving is the recovery of bones which wouldn't normally be efficiently retrieved by hand collection. This can be seen most effectively by the recovery of fish bones. However, this food group is rather poorly represented at this site, with just 4 bones from hand collection and, perhaps surprisingly, only 6 samples with fish bones. In addition, each of these provided just one fragment with the exception of the two fish bones found in [4068] Phase 5a.

Phase	**Area A**	**Area B**	**Grand Total**
	N	**N**	**N (%)**
3 - 4	191	666	857(3.3)
5 - 6	7219	3121	10340(39.2)
7 - 8	14126	613	14739(55.8)
9 - 10	455	0	455(1.7)
Total number of bones	22003	4400	26403

Table 2. Percentage representation of hand collected bones in Areas A and B by phase using data from Table 1.

Phases 1 and 2 (Natural)
There are 12 bones from Phase 1 (8 cattle bones and one cattle-size fragment) and one from Phase 2 (a cattle bone taken from a sample), arising from a posthole [2332] and natural alluvium respectively.

Phase 3 (AD 50-70)
All the animal bones were recovered from Area B deposits and in particular from the large ditch bordering the northern edge of the 'corduroy' in Phase 3a, situated at the southern extremity of this Area and the expanded version of this same ditch in Phase 3b. In addition, some bones were derived from the scatter of infant burials to the north of the ditch. Cattle, sheep/goat and pig formed the majority of the hand collected bones in Phase 3a, these three joined by dog in Phase 3b. The dominance of cattle amongst the first three species is a common theme within the phased assemblages from this site (see Table 4). Each of these is represented by a wide range of skeletal parts, although with a notable proportion of horncores amongst the cattle bones (10 out of 64 bones in both phases). 95 out of the 97 dog bones in both phases (see Table 3) were recovered from Phase 3b and 94 of these represent the remains of two animals derived from fill [4706]. Each of these individuals was adult and of middling size (about 40-50cm at the shoulder, after Harcourt 1974). In addition, the better represented skeleton was clearly male as shown by the presence of a bacculum (os penis).

There were a few rather ambiguous human/animal calcined bones from a sample taken from one of the graves [4504], the same fill providing a small collection of unburnt amphibian bones.

Species	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Cattle	65	96	2944	1298	3413	6025	239	1
Horse	11	7	29	33	28	63	41	
Sheep/Goat	32	27	191	201	107	131	9	4
Sheep		5	49	38	30	55	4	
Goat			2	8	11	6	1	
Pig	35	46	325	354	211	75	15	1
Dog	97	32	108	95	107	54	7	2
Cat				1	3	4		
Red deer		6	2	12	12	47	1	
Roe deer		2	11	9	2			
Hare	4	4	11	8	1	1	1	
Rat					1			
Whale						1		
Chicken	22	15	125	100	50	18	3	
Mallard	4	2	17	22	8	2	1	
Goose		1	20	17	8	4	4	
Swan				2		1		
Dove				1				
Pigeon			1		1			
Woodcock				2	3			
Raven		1	2	2	1	4		
Crow			1		1		1	
Uniden mammal	158	185	2867	1429	2384	1865	108	10
Haddock				1				
Uniden fish			1	1				
Grand Total	**428**	**429**	**6706**	**3634**	**6382**	**8356**	**435**	**18**

Table 3. Species abundance amongst the hand collected assemblages by phase

Species	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Cattle	49.2	55.2	83.8	68.4	90.5	95.7	89.2
Sheep/Goat	24.3	18.4	6.9	13.0	3.9	3.1	5.2
Pig	26.5	26.4	9.3	18.6	5.6	1.2	5.6
Total	**132**	**174**	**3511**	**1899**	**3772**	**6292**	**268**

Table 4. Percentage abundance of major domesticates (hand collected bones).

Phase 4 (AD 70-120)
This phase is marked by a series of consolidation dumps as well as the revetment of one of the Walbrook streams, producing structure S4154, this running NE-SW at the northern end of Area A. This particular structure continues, albeit with some modifications, throughout the site sequence. There is another, smaller revetted structure in the south-west of this area and a collection of various cut features in the southern part of Area B. The moderately sized bone assemblage was roughly equally divided between the two areas, each providing bones from the various dumps with the majority from Area B taken from cut features and in particular ditches [4541] and [4711], these with 58 and 64 bones respectively. Cattle is again the best represented amongst the major domesticates and again each provided a general mix of skeletal parts. The general spread of cattle parts include a small collection of horncores (10 out of 96, see Figure 1), which is a notably smaller proportion than found in Phase 3.

Of interest in this collection, is the first occurrence of deer, incorporating a partial foreleg from [1035], a fill within the southern revetment structure [1919] in Area A. This species may well be associated with high status, particularly where several bones have been found. As well as red, this phase also provided a notable proportion of roe deer, with the majority of these bones taken from the dressed carcass (see Tables 5 and 6). It is important here to divide these parts from the antlers and perhaps the metapodials, which could be interpreted as working or craft waste rather than food waste. Another possible indication of wealth was the recovery of a bone belonging to a particularly large galliform, perhaps belonging to a peacock, from the same revetment structure. This same feature also produced a dog femur from which it was possible to extrapolate a shoulder height of 718mm, placing this animal within close range of some of the largest dogs found in Roman Britain (Harcourt 1974).

Species	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Cattle	40.1	47.1	79.6	62.6	88.5	94.7	86.0
Sheep/Pig	41.4	38.2	15.3	29.0	9.3	4.2	10.4
Large game	0.0	3.9	0.4	1.0	0.4	0.7	0.4
Small game	2.5	2.0	0.3	0.6	0.1	0.0	0.4
Poultry	16.0	8.8	4.4	6.7	1.7	0.4	2.9
Total	**162**	**204**	**3698**	**2072**	**3857**	**6365**	**278**

Table 5. Percentage abundance of the major food groups within the hand collected phased assemblages, where Large game is deer, Small game is hare, swan, dove, pigeon and woodcock, and Poultry include domestic chicken, duck and goose.

Evidence suggesting local bone working activity is provided by the recovery of 12 sawn cattle metapodials from Area A dump [2], the same deposit also producing a cattle-size longbone ‘blank’.

Phase 5 (AD 120-160)
The initial part of this phase (Phase 5a) saw the construction of the N-S road in the southern part of Area A, which was flanked by parallel revetted channels. The eastern revetted structure continued, after a slight hiatus, along the western edge of Area A and appears to meet the surviving revetted channel (described in the last phase) in the northern part of this trench. At southern end of Area A is the first building, Building 1, representing the NE corner of a truncated structure. This has a box drain S3286 attached to the NE corner which extends for some metres approximately due north. The Area B features are limited to a large linear cut, running E-W [4385]/ [4593], at its southern end.

Species	**Skeletal part**	**Phase**				
		4	**5**	**6**	**7**	**8**
Red deer	Antler		1	2	5	3
	Feet	2	1	5	4	19
	Other	4	1	4	3	25
Roe deer	Antler					
	Feet	1	5	3		
	Other	1	7	2	2	

Total	N	8	15	16	14	47
	%	3.2	0.4	0.7	0.3	0.7

Table 6. Abundance and skeletal representation of red and roe deer, where N is the number of deer bones and % equals percentage of identifiable bones. Feet refer to metapodials and phalanges

Species	**5a**	**5b**	**5a**	**5b**
	All	All	Excl [4318]	Excl [1705]
Cattle	93.4	66.6	70.5	61.7
Sheep	2.9	13.5	13.0	15.5
Pig	3.7	19.9	16.5	22.8
Total	**2315**	**1021**	**515**	**891**

Table 7. Percentage abundance of major domesticates within the hand collected assemblages from phases 5a and 5b including all deposits and excluding the possible 'glue waste' collections from [4318] and [1705].

The bone assemblage from Phase 5a amounted to a hand collected total of 2,867 fragments with a further 4,316 from sieving. Bones were recovered from both areas and from a variety of features, in particular from dumps and from the various cut features. A proportion of this collection was undoubtedly derived from the occupants of Building 1, however, very few bones were found in the vicinity of this structure. Most of the Phase 5a bones was in fact taken from Area B, with 2,069 of the hand collected and 4,307 of the sieved bones, which in turn was largely produced by layer [4318] (1,801 bones) and fill [4581] (4,200 fragments) respectively. The latter fill was taken from the eastern end of ditch [4593]. Each of these two collections is composed of smashed and chopped cattle and cattle-size limb bone fragments, mainly humerus and femur, but also radius and tibia. There is a clearly high level of fragmentation, more obviously noticeable in the sample assemblage, and as this appears to be deliberate, as suggested by the butchery evidence, it is probable that both collections represent waste derived from the manufacture of glue.

The proportion of cattle bones in this phase is clearly higher than seen in previous phases, which is undoubtedly skewed due to the presence of the 'glue waste'. Excluding these collections diminishes the representation of cattle compared to the smaller domesticates, but not sufficiently to severely reduce the dominance of this species (Table 7). There is a general continuance of the mixed skeletal part distributions seen in previous phases, with the exception of the 'glue waste' as well as the bones recovered from the timber-lined tank [3589] and one of the fills [4068] of ditch [4069], both of which provided concentrations of cattle skull fragments (a minimum of 9 skulls in each fill) plus metapodials from the latter deposit. These could represent butchers waste. While this phase, combined with phase 5b, did not produce any concentrations of either horncores or metapodials, it is interesting to note the presence of timber-lined pits, including the previously mentioned [3589], as well as a large example in the northern part of Area A [4226]. These may have had some industrial purpose involving post-mortem animal products (and see the timber-lined barrel in Phase 6b).

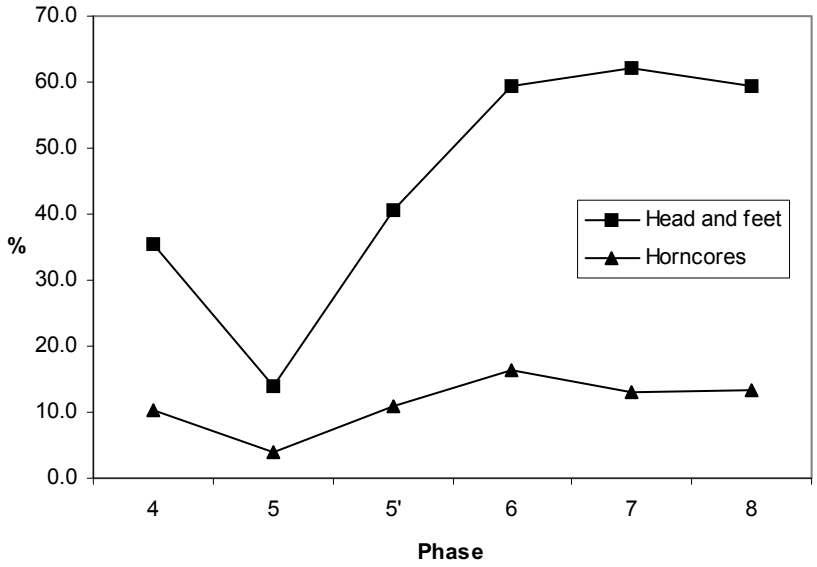


Figure 1. Percentage abundance of skull, metapodials and phalanges (Head and feet) and Horncores in the phase 4 to 8 cattle assemblages. Phase 5' excludes the probable 'glue waste' collections from [1705] and [4318].

Dogs are again well represented, with a particular concentration arising from fill [4012] (part of the revetted structure S3904). This provided the remains of at least three partial skeletons. In addition, a single bone from a rather small dog (shoulder height of 248.5mm), was discovered within the dump [3926]. Evidence for the use or disuse of dogs in this phase is shown by a skull from [3471] (from tank [3589]) with multiple traumatic injuries including 2 healed factures, 1 near the left and the other near the right orbit. Various pathologies, especially traumas, are relatively common amongst the dogs at this site (see below). Knife marks to a dog humerus from Phase 5a/5b deposit [3416] (a fill of the surviving revetted channel at the northern end of Area A) appears to indicate defleshing which may or may not suggest its flesh was consumed, but not necessarily by humans. Butchery marks were also noticed on a horse tibia from fill [2949] taken from revetted channel [3058] (Phase 4/5). While butchered horse bones are relatively uncommon in Roman London, they are not infrequent.

The revetted features described in Phase 5a continued into Phase 5b, however, there are major changes in Area B, where the E-W ditch is replaced by a partial building (Building 3), and also in the southern half of Area A, which is now dominated by the NW corner of a large multi-roomed building (Building 2 extending and replacing Building 1) with an inner corridor and courtyard.

Most of the bones from this phase were recovered from Area A i.e. 2,907 (84.5%) out of 3,511 hand recovered fragments. The majority of these were taken from a fill [1705] (1,675 bones) of ditch [761], a feature running parallel and to the west of the roadside revetted ditch S404. This collection, comprising 130 cattle and 1,545 cattle-size pieces, is very similar to the deliberately smashed cattle limb bone assemblages recovered from the adjacent phase 5a ditch in Area B and it is conceivable that they derive from a similar source. It is notable that this deposit, at the western end of Area A, is clearly close to the aforementioned Area B collections. These bones, however, show a far larger proportion of articular ends, the great majority of which show extensive cut marks, with a regular lateral-medial and anterior-posterior splitting of the epiphyses. A similar collection, though smaller, was found in dump deposit [2325], which is located just north of Building 2. It is necessary to remove this assemblage from the Phase 5b collection to view the representation of the major domesticates (see above Phase 5a), but again, there is little change to the overriding dominance of cattle.

There is a notable collection of bones from the building complex Building 2 with most of these bones taken from the fill [3296] of the foundation trench for timber beam [3243], which is part of structure [1265] (Room D). A substantial assemblage included a highly fragmented horse skull from an adult male as well as a sawn cattle scapula. The last can be interpreted as working waste while the former

could conceivably represent a foundation deposit. Most of the Area B bones were provided by a number of dump deposits, with a proportion adjacent to the partial building (Building 3). Of interest here, is the relatively large proportion of the smaller domesticates with 25 sheep/goat and 13 pig compared to just 20 cattle bones, which is clearly different to the general cattle dominance. Indeed, this contrasts with the other dump levels in this area which give totals of 45 sheep/goat and 62 pig compared to 163 cattle.

Also of interest in this area was the recovery of a possible unurned cremation within a pit apparently cut through a foundation deposit for Bulding 3. It contained a large quantity of calcined bone as well as charcoal plus some burnt oyster and mussel. The bone varies from blackened to calcined and, where identifiable, appears to be animal rather than human. There is part of a dog skull, a few sheep and pig footbones, a cattle carpal/tarsal, a sheep-size vertebra and rib, two chicken wing bones, and a fish vertebra (?mackerel).

Phase 6 (AD 160-250)
This phase was also divided into two sub phases. Phase 6a witnessed a subtle modification of Building 2, with the major change being the reconstruction of one of the southernmost rooms in stone (Room N). In addition the southern part of the courtyard has now been filled with another timber building (Building 4), this overlying a series of wooden pipes dating to the previous phase. In addition, another building has been constructed at the western end of Area A, adjacent to the western roadside ditch (Building 5). This ditch and indeed all the previously described revetted structures have been retained. Meanwhile in Area B, there are a few cut features and the earliest well on this site, S4732.

All the bones in Phase 6a were taken from Area A deposits, a total of 743 fragments, with the majority provided by a series of dump layers scattered about the site. Cattle continue to provide the major part of the major domesticate collection, although with an unusually high proportion of pig (see Table 8). There is certainly a better representation of cattle head and feet parts compared to previous phases (60.3% and see Figure 1), perhaps suggesting a greater deposition of butchers waste amongst the phase 6a deposits. While there are no obvious butchers' waste collections either in individual deposits or within a particular locality in this phase, this type of collection does occur in other phase 6 deposits (see below). Such evidence could perhaps suggest waste from a local butchers rather waste tipping from numerous non local sources.

Species	**5/6**	**6**	**6a**	**6b**
Cattle	86.8	66.7	50.4	70.8
Sheep	6.3	15.3	17.8	11.3
Pig	6.9	18.0	31.8	17.9
Total	**236**	**294**	**355**	**1006**

Table 8. Percentage abundance of major domesticates within the hand collected assemblages from Phases 5/6, 6, 6a and 6b.

There is a further continuation of the main drainage features into Phase 6b, with the exception of the N-S channel at the topmost end of Area A which has now been covered with a square building (Building 7). Other changes include the replacement of Building 5 with Building 11 and, the major change, the removal of Building 2 and Building 4, being replaced by a series of 3 strip buildings, generally in the middle half of this area. The three buildings, N to S, are Building 8, Building 9 and Building 10, the last two subdivided into rooms, and all fronting onto the main N-S revetted channel S1998 and ultimately the road. The Area B features haven't changed since the previous phase.

The phase 6b bones are all in Area A, amounting to 1,883 fragments. A large part of this assemblage was found in various deposits associated with the strip buildings, with notable collections recovered from the box drain S1395 and the wooden water pipes/tank S1142/S1392 forming the northern and southern boundaries of Building 8, and also from the gravelled area [1703], a possible yard, just south of Building 10 as well as from a number of fills/dumps within Building 10. Other collections in association with buildings include those found in pit [2997] within Building 7 and then within each of the two barrels [40] and [44] adjacent to Building 11. Beyond the buildings most of the bones were recovered from the revetted channel at the northern end of this area and also from the ditch S404/S4999 bordering the east side of the road at the southern extremity of Area A.

Each of these collections features a wealth of cattle bones, reflecting the general pattern of cattle dominance (see Table 8). The majority of the cattle assemblages include a mix of skeletal parts, although there are some notable exceptions. One of the dumps in Building 10, [1260], probably in Room D, produced a sieved assemblage comprising a large number of heavily fragmented cattle limb bones, a large proportion of which were calcined. It can be assumed that this collection represents yet another dump of 'glue waste'. The calcined part may represent bone fragments that had fallen into the hearth during the cooking process. This process would involve boiling the bones in order to remove the collagen which then sets into a jelly. It is possible that some bones may have fallen into the fire rather than the cooking pot. In addition, concentrations of cattle horncores were found in the box drain S1395 (24 out of 45 cattle bones) and in one of the barrels near Building 11, [43], where cattle provided 21 out of the 36 fragments and 16 of these were horncores. The juxtaposition of a water tight container and horncores could suggest a local hornworking establishment. Further, fill [2572] in the northern channel provided an assemblage of 100 bones largely composed of cattle head parts and metapodials as well as cattle-size vertebrae, very similar to a larger collection (240 bones) from [2693], also from this channel but dating to Phase 5/6 (see below). This type of collection has been interpreted elsewhere as a form of butchers waste most often seen from the later 2nd century at London sites (Liddle 2008; Rielly 2006), although these often also tend to include scapulas and pelves.

The remaining bones in Phase 6, including those from deposits which could not be assigned to either Phase 6a or 6b, were largely recovered from the revetted structures (all of Phase 5/6) and in particular from the channels adjacent to the central buildings in Area A as well as the northern structures S1773 and S2716. In Area B, there is a small collection of bones, dated to Phase 6, from the well and adjacent ditchfills. The probable butcher's waste collection from [2693] S1773 has already been mentioned. In addition, a sawn cattle horncore was found in one of the fills [4269] within the Area B well alongside a small collection of other horncores. The sawn horncore is a clear indication of hornworking, the use of the saw marking this item as craft waste. This same area provided a number of dog skeletons, with at least two from dump [4363] as well as one each, both from rather small animals, from ditchfill [4326] (shoulder height of 209.5mm) and dump [4319].

Phase 7 (AD 250-350/400)
There were further changes to the pattern of buildings in this phase, while the road and major revetment structures remained. The three strip buildings were replaced with Building 14, approximately overlying Building 8 and 9, while a relatively large square building (Building 15), divided into two rooms, west to east) now occupied the south-eastern part of Area A. In addition, new buildings, Building 13 and Building 16, have replaced Building 7 and Building 11 respectively. Building 16 extends into Area B and is divided into three rooms from north to south. Finally there is an additional building (Building 17) to the west of Building 16. The previously described well in Area B had been abandoned by this phase, to be replaced by another well, S4251 which appears to be within Building 17. Two further wells, S2923 and S568 were located in the northern part of Area A adjacent to the eastern margin of the trench.

While bones dated to this phase were found in most areas of the site, there were some areas with particular concentrations and conversely, others with very little bones. Area B, which suffered a greater level of truncation did produce some bones, but these were limited to fills within the well S4251 (613 bones). In marked contrast, Area A, provided notable collections from the fill [587] of a possible robber trench [588] in Building 13 (421 bones), in the fills of the northern (S599) (316 bones) and central (S949 and S2233, with 480 bones, plus another 434 bones from the Phase 6/7 fills of S1660 and S221) revetment structures, and then within a collection of cut features and dumps in the south-eastern part of Area A to the north and north-west of Building 15 (1,699 bones). Each of these collections, in common with this phase in general (Table 7), provided an excess of cattle bones, which tended towards a mix of skeletal parts. However, this phase did produce one of the highest proportions of cattle head and foot bones (see Figure 1), clearly suggesting a greater incorporation of butchers waste. This type of waste has clearly formed the major part of the collections found within well S4251 and also from Phase 6/7 S221 fill [1583], were 74.7% and 68.8% of the cattle bones respectively are head and foot parts. Much of the other cattle bones in these fills are scapulas and pelves, while the cattle-size portion includes a large number of vertebrae. All of these parts could be interpreted as butchery waste (see above Phase 6). The well contained at least 24 cattle skulls, three of which are sufficiently complete in the frontal area to show that none of these animals was poleaxed.

While such damage has been noticed on other cattle skulls, as from pitfill [3471] Phase 5a and, in particular, from ditchfill [1038] Phase 8 (see below), the lack of indentation/perforation in the mid frontal area clearly shows that this was not the only method used to cull livestock. A further example of specialist waste is the collection from [311], fill of timber-lined pit [313] situated between Building 14 and Building 15, where 73.2% of the cattle assemblage was composed of head and feet and 17.2% were horncores.

This phase also provided further examples of possible 'glue waste', again composed of highly fragmented cattle and cattle-size limb bone pieces. These include the fill of the Building 13 robber trench, and, from the same part of the site, two sieved collections taken from ditch [1013] (with a combined fragment count of about 1,400 pieces), which possibly represents the southern boundary of this building. The latter two assemblages contained a high proportion of calcined fragments, again perhaps suggesting (see above Phase 6) waste items dragged from the associated hearth(s).

There were also more dogs with head wounds, including a skull from [353] (part of revetment structure S2630) with a healed fracture at the anterior part of the nasal bones, plus another with a depressed fracture (also healed) dorsal to (above) the right eye, from [3205], part of revetment structure S3228. Each of these skulls came from partial skeletons.

Finally, there is a single case of bone working, a sawn distal radius of a horse from fill [273] within revetment structure S949, while the Phase 6/7 fill [1583] (described above) also provided a single rat tibia. This could not be identified to species, but it almost certainly represents black rat. This species was introduced to Britain early in the Roman era and a number of London sites have provided evidence for its distribution throughout the City and the Southwark suburb by the 2nd/3rd centuries (Rielly 2004; Rielly in prep).

Phase 8 (Very Late Roman AD350+)
The noted truncation in both areas limits this and subsequent phases to the deeper features. These include, entirely in Area A, the continuation of the revetted structures from Phase 7, essentially those along the road (S853 and S1398 in the south, and S949, S1766 and S2233 up the middle) as well as the northern revetted channel (S599 and S3228). In addition, there are the later fills of the wells S2923 and S569. However, there are also some major cuts just west of the central roadside revetments.

While more limited in terms of features, this phase provided some of the larger bone collections, with most coming from the central and northern revetment structures. The total number of bones from the three main revetment features and including the assemblages from the adjacent cuts are as follows:- northern channel S599 – 2,303; central structure S2233 – 453 and S1766 – 2,600; and southern structure S853 – 482. Theses structures also provided large assemblages from Phase 7/8 deposits, with totals of 320 bones from S599, and then 108 and 1,317 bones from S949 and S1766 respectively. The latter total includes the 1,116 bones recovered from fill [1275], while the largest single collection was provided by the phase 8 fill [425] in S599, with 1,561 fragments.

All of these fills are cattle and cattle-size dominated, as reflected in the general totals for Phase 8 and Phase 7/8 (Table 3), making combined percentages of 93.7% and 94.5% respectively. Both phases clearly provided the largest proportion of cattle bones amongst the occupation phases, either taken as a portion of the entire phase assemblage or relative to the other major domesticates. Cattle forms 97.5% and 95.3% of the major domesticate collections from Phases 7/8 and 8 respectively. The combined assemblage provided a similar proportion of head and foot parts and also horncores to the previous two phases (see Figure 1), suggesting a mixed distribution of parts but with a notable admixture of butchers waste. There are no clear indications of cattle hornworking waste i.e. sawn fragments (reflecting the single fragment found in a Phase 6 deposit), although there is a sawn ram horncore from [3637] one of the lower fills in well S569 (and see below). However, as in previous phases, there are occasional concentrations of cattle horncores, which could represent this type of waste. The problem here is that such collections could also be interpreted as skinning waste, assuming that the foot bones have been transferred elsewhere, either for bone working or the manufacture of glue.

Above average concentrations of cattle horncores, comparing the proportions shown in Figure 1, were recovered from the [1275] assemblage (18.2%), and from [403] (16.3%) and [134] (17.8%) representing fills from S1766 and S853 respectively. The same three collections, alongside the S1766

fill [1038] also provided a majority of head and foot parts (>70%), suggesting the dumping of butchers waste as well as, possibly, craft waste. Of particular interest is the inclusion of a large quantity of scapula, pelves and cattle-size vertebrae within [1275] and [1038], demonstrating further examples of a type of butchers waste making its appearance in the late Roman period (see above). A large proportion of the phase assemblages are well fragmented, although not to the extent noticed in other phases that have been described as glue waste. The level of fragmentation is clearly related to the extensive butchery, with several deposits showing the two-way splitting (lateral-medial and anterior-posterior) noticed in previous collections.

This phase provided further instances of butchered horse bones (compare Phase 5a), including a humerus from [362], a dump possibly associated with S2233, and a tibia from [403], both exhibiting defleshing marks to the shaft. There are also clear cases of bone working with a sawn cattle metatarsal from [610] S599 plus a sawn red deer antler from [568] S569. Another antler pieces, from [699] S599, could also represent craft waste. Notably, the example from [568], which has been 'dropped', is from a rather large animal, as indeed are the red deer bones from [403], a skull with 'dropped' antlers and two metatarsals.

The proportion of wild game in this phase is rather small and a large proportion of the deer bones may represent craft rather than food waste (see Tables 3, 5 and 6). However, it should also be mentioned that a large proportion of the red deer bones actually represent the remains of a single partial articulation from one of the upper fills of well S569. This skeleton, including a few ribs as well as most of the forelimb and hindlimb parts, although excluding the phalanges, clearly represents a rather juvenile individual, possibly no more than 4 to 5 months. It was discovered following excavation and so its state of articulation when buried is unknown. However, the absence of the head and vertebrae may suggest the deposition of particular parts, possibly still articulated, as perhaps suggested by the lack of butchery marks. This skeleton is highly significant, considering the juxtaposition of the bronze hoard directly below this level in fills [3930] and [3637]. While other bones were recovered from a selection of these wellfills, they clearly reflect the typical domestic and/or butchers/industrial waste found elsewhere at this site.

Finally, this phase produced two rather unusual finds, a compete bear skull from [609], one of the fills of the S599 and a fragment of whale bone (from one of the smaller species) recovered from [403]. Several cut marks on the latter bone suggest it was defleshed. The bear skull, clearly identified as brown bear, showed no marks, and the absence of other parts, strongly suggests it represents a keepsake.

Phase 9
The truncation which affected the last phase had an even worse effect on the medieval and post-medieval levels. There is also a very good chance of major redeposition from the underlying and very rich Roman deposits. Out of a total of 437 bones dated to this phase, the great majority belong to cattle (239 bones) and cattle-size (99 bones), which is very unlike medieval assemblages found elsewhere in the city. The major features include a large ditch [133], approximately positioned where the revetted channel on the E side of the Roman road used to be. This contained the majority of the assemblage, with 342 fragments, the greater amount from [107] and [2326] with 134 and 142 fragments respectively. This last assemblage is almost entirely composed of highly fragmented cattle limb bone pieces, suggestive of the 'glue waste' collections described from phase 5. As well as cattle, there is a good representation of horse bones, essentially arising from [106] and [107] (both in ditch [133]) with 3 and 37 bones respectively (out of a total of 41 bones). There is also a single red deer fragment, an antler piece from [119], part of ditch [133], which has been sawn through the main shaft, clearly representing working waste.

The cattle dominated collections as well as the presence of possible 'glue waste' could simply suggest a close similarity of animal usage in this area between the medieval and Roman periods. However, there is a far greater possibility that these collections have been irreparably compromised by redeposition.

Phase 10
This phase is represented by a total of just 18 bones. While the species representation, showing a mix of cattle and the smaller domesticates, does not reflect the Roman evidence, the rather small quantity of bones precludes any further discussion.

Conclusions

The information available from this very large collection of bones, which has been briefly described in this report, can best be discussed with reference to three main headings. These include data concerning the provision, supply and consumption of meat; the use of animals for craft or industrial purposes; and finally any evidence from the animal bones that could indicate ritual activity.

Domestic occupation and butchery

The very large collections of bones found at this site all have one major aspect in common, the clear and overriding dominance of cattle bones. This is particularly shown from the development of the site onwards i.e. from Phase 5, where previously, both sheep/goat and pig provided a moderate proportion of the major domesticate assemblages. This change coincides with the recovery of cattle assemblages derived from specialist sources, namely the concentrations of head and foot parts interpreted as butchers waste and the large number of horncores and highly fragmented limb bones representing various types of industrial waste (see below). However, as well as these bones, there are large dumps of cattle food waste, which suggests that the increased abundance of this species is not entirely related to a similar increase in specialist deposition. Beef was clearly the major component of the meat diet in this area throughout the occupation period, becoming, with some variation, almost the sole provider by the 4th century.

The butcher's waste evidence is of interest, especially as it seems to follow a general pattern seen at other late 2nd century and later sites for the inclusion of vertebrae as well as scapula and pelves in such collections (Rielly 2006, 117; Liddle 2008). This is not invariably the case, with a proportion following the earlier method separating out the head and foot parts only. Otherwise, the excessive quantity of butchered cattle bones found at this site, especially those incorporating cleaver marks, reflects similar evidence found at a number of Roman sites in the City and Southwark. Extensive efforts were made to record these cut marks in order to ascertain the various butchery methods employed. Interpretation will be based on information gleaned from London sites as well as from more general works (Pinney 1999; Maltby 1989). Of some interest was the evidence concerning the method of slaughter, with several cattle skulls showing the distinctive marks of the poleaxe while other skulls showed no such fractures or perforations. This is clearly a topic worthy of further research.

Information concerning the method(s) of exploitation of the major food animals can be gleaned from the available age and sex information, principally derived from the mandibles and, from cattle, the distal metacarpals (after Thomas 1988). These essentially demonstrate the exploitation of the animals prior to slaughter and whether the emphasis was on secondary products (as milk) or the rearing of animals for their meat. No attempt has been made to analyse this information at this juncture but there is clearly enough data to provide a more than adequate comparison of cattle management between the later phases (see the number of mandibles in Table 9).

Returning to the high proportion of cattle bones, this is often used as a guide to the relative status of the site occupants, here referring to the Romanisation of the local populace or rather the extent to which they have adopted the Roman meat diet as initially practised by the military presence in this country (King 1984). However, by the late 1st/2nd century the great majority of the faunal assemblages from London are heavily biased towards cattle, suggesting a general adoption rather than that based within particular levels of society. Status can be ascertained by the representation of certain species, most notably of game and in particular of deer. A large proportion of red and roe deer were found at the 1st century levels associated with notably affluent occupation at Winchester Palace (Rielly 2005). However, at Drapers', while deer bones were found in all phases, they were best represented in phase 4 prior to the development of the site. The developed phases, however, have provided a wide range of specialist waste deposits (butchers and industrial), which would suggest a rather low status, always assuming that either the butchery and/or the industries were being practised in or in the vicinity of this area.

Special mention should be made of the bear skull from the phase 8 revetment structure. This represents one of only three bear bones so far discovered in Roman London. The other two, both femurs, were recovered from 3rd/4th century deposits at Courages Brewery and Tabard Square (Pipe 2003; Rielly and Yeomans 2008). It is tempting to relate this find with the possible use of bears within

the amphitheatre at the Guildhall. However, while this bone could represent a keepsake (note the absence of other parts), the date of the deposit is clearly much later than the late 2nd century demise of the amphitheatre.

Finally, there is ample data concerning the size and possibly the 'type' of cattle represented at this site. Numerous measurements were taken which can offer a large dataset concerning the dimensions of certain bones, particularly the metapodials, and by extrapolation (using Boessneck and von den Driesch 1974) the general size of these animals. In addition a determined attempt was made to define the various 'types' of cattle horncore, following Armitage and Clutton-Brock (1976), which was based on their work at Angel Court (Clutton-Brock and Armitage 1974). This work is intended to expand upon that provided by the Angel Court assemblage and provide a basis for comparison for other London based research in this field. Notably, the Drapers' Gardens assemblage provided 728 horncores (see Table 9 and Figure 2), which can potentially be aged and sexed, compared to the 85 cores from Angel Court.

Skeletal part	**Phase**					
	3	**4**	**5**	**6**	**7**	**8**
Horncore	3	6	50	97	167	405
Mandible	3	5	32	37	244	523

Table 9. The quantities of cattle horncores and mandibles that can provide sex and age information.

Evidence for industrial activity

There would appear to be at least two industrial activities in operation at or in the vicinity of this site, namely oil extraction/glue manufacture and hornworking. A number of deposits containing highly fragmented cattle limb bones were found in Phase 5a through to 7; with a possible localised concentration in Phase 5 west of the road. Each of these collections is very similar with the exception of a few where a proportion of the fragments are heavily burnt, suggestive of hearth scrapings. Similar collections have been found at three other sites in this locality, including from a 2nd century level at 20-28 Moorgate (Liddle 2005), a contemporary level at 52-62 London Wall (Pipe 1989) and a 3rd century deposit at 8-10 Throgmorton Avenue (Rielly 2001). However, while superficially similar, the examples of such waste at Drapers' Gardens do show major differences, including the relative proportion of shaft pieces relative to articular end fragments, the level of butchery and, as mentioned, the presence of burnt fragments. Each of these variables may have some bearing on the method(s) used to separate the required proteins and oils from the bones and ultimately on the quality of the finished product. An obvious requirement concerning the manufacture of these products is a heat source. Several small hearths have been noticed at this site, in particular within or adjacent to the various rooms associated with Building 2 Phase 5/6a and its supercedents Buildings 8-10 Phase 6b. An inspection of the bone assemblages taken from these hearths or from layers in the vicinity may provide information concerning the industrial or domestic use of these features.

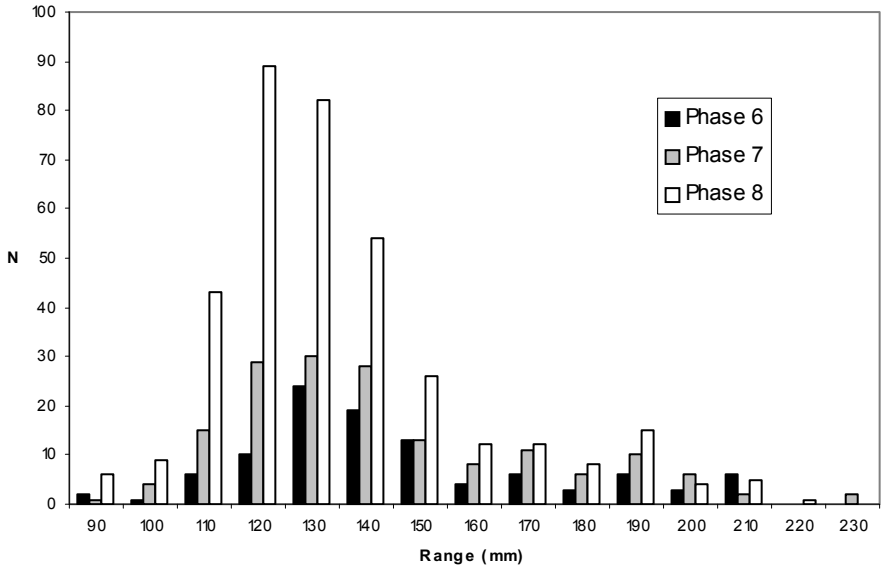


Figure 2. Cattle horncore basal circumference measurements from phases 6, 7 and 8.

The great quantity of horncores found at this site is clearly unusual for Roman sites in London, where this skeletal part is often under represented. In these cases it is assumed that the horns had been transferred to one or more hornworking centres. It is certainly notable that the other site in the City with a similar concentration of horncores is in close proximity to Drapers' Gardens at Angel Court, while large quantities were also found at 8-10 Throgmorton Avenue, strongly suggesting the presence of hornworking in this area, probably from the late 2nd through to the 4th centuries. The preponderance of certain ages and sexes, as deduced from the horncores at Angel Court was tentatively linked to the preferences of the hornworker (Clutton-Brock and Armitage 1974, 91). Clearly it would be more appropriate to choose horns with a larger quantity of raw material, selecting therefore on the basis of age and size. The Drapers' horncore collections include a large proportion of rather small young cores as well as a wide range of sizes amongst the adult portion (see Figure 2), which may suggest the absence of any such selection procedure. This figure actually shows a preponderance of smaller cores, although this is probably related more to the 'types' of cattle available rather than choice. However, it would be beneficial to make a closer study of those collections with major concentrations of horncores, where any evidence for selection should be apparent.

There is a singular lack of cut marks around the bases of the Drapers' cores, which could suggest that the sheaf was removed by either allowing the horn to rot or through soaking. The latter method would require waterproof containers, generally timber and clay-lined pits. Such structures have been found at this site, dating from Phase 5a to 7, with a particular concentration between Building 14 and Building 15 in Phase 7. While these may well have been used for water storage and transfer, they're often associated with timber water pipes; an industrial usage cannot be discounted. Especially as the fills from two of these structures, one of the Phase 5a barrels adjacent to Building 11 and one of the tanks adjacent to Building 15 in Phase 7, provided small but significant collections of cattle horncores.

Ritual activity

The group of baby burials in Area B dated to Phase 3b demonstrates the most obvious and possibly the earliest ritual activity at this site. While three of these contained skeletons, albeit in a poorly preserved state, the fourth [4504] produced a small collection of calcined bone fragments. Unfortunately, the contents of this cremation were too fragmentary to allow a firm identification. A few unburnt amphibian bones, discovered in the same sample, can be interpreted as intrusive. The burials of young children found in other parts of Roman London have often been accompanied by dog burials, as seen for example at Lant Street, Southwark (Sayer and Sudds in prep). While the dog skeletons found in the large east-west ditch at the south of Area B may not be associated, the apparent contemporaneity of these finds may be significant.

The recovery of possible 'foundation' and 'termination' deposits are probably worth greater consideration. A rather fragmented though apparently complete horse skull was found in a foundation cut for a wall forming one of the rooms in Building 2 (Phase 5a). It was not recorded *in situ* and so it is impossible to suggest if it had been placed in a particular way. However, it is undoubtedly an unusual find in relation to its position and there is a strong possibility that it represents a deliberate burial marking the foundation of this property. In addition, an odd collection of burnt (mainly calcined) bones were recovered beneath Building 3 in Phase 5b. Originally interpreted as an unurned cremation, on closer inspection, it was found to consist principally of burnt animal bones. This bears some comparison with the calcined sheep bones discovered at Throgmorton Avenue (Rielly 2001) and Tokenhouse Yard (Yeomans in prep), these dated to the 3rd and 3rd/4th centuries respectively. However, each of these sites provided the near complete remains of a single carcass.

In contrast the demise of the well S569 in Phase 8 was notably demonstrated by the discovery of the bronze hoard within the lower fills [3930] and [3637]. The red deer skeleton recovered from the fill [573] directly over this hoard may well represent another aspect of this termination event. The skeleton is limited to a large part of the fore and hind legs as well as a few ribs. It is tempting to see this collection representing the deliberate burial of particular parts of the carcass, possibly still articulated, as suggested by the lack of butchery. There is no mention in the stratigraphic record of an animal skeleton, partial or otherwise, although this may relate more to the manner of recovery rather than any actual lack of articulated parts. The ritual significance of this find is highlighted by two other finds of similarly aged red deer, one accompanying a horse and a dog skeleton in a Roman pit at Mansell Street (Barber and Bowsher 2000, 19-20, 319-20), one of the East London cemetery sites, and the other, incorporating two red deer skeletons, from a late 4th century fill of a well at Baldock (Chaplin and McCormick 1986, 410).

Recommendations for further work

First and foremost it can be suggested that the post Roman assemblages are unworthy of further consideration due to either their small size (Phase 10) or their potential for redeposition (Phase 9). The Roman collections, in sharp contrast, can supply ample information on the domestic and industrial usage of animals in this area, with a particular emphasis on the 3rd and 4th centuries. The topics highlighted in the last section (Conclusions) demonstrate the various analyses and research that should be undertaken on this very important assemblage.

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APPENDIX 19: HUMAN BONE ASSESSMENT

Kathelen Sayer

Introduction

Human remains were recovered from Drapers' Gardens in the form of both articulated burials and disarticulated remains. The burials consisted of four neonates buried within wooden coffins and an adult inhumation. Disarticulated remains were recovered from 24 contexts.

Methodology

The skeletal remains from the inhumation burials were analysed to assess the condition of the remains and where possible the age, sex and stature of the individual, any gross pathology present was recorded to site and morphological changes described.

The condition and completeness of a skeleton affects the amount of data that can be recorded. The condition of the bone was recorded according to the stages of surface preservation suggested by McKinley (2004) and the completeness of the skeleton was based on a complete skeleton consisting of:

Skull	20%
Torso	40%
Arms	20%
Legs	20%

Age was assessed using the stages of epiphyseal fusion, measurement of long bone length, dental development and eruption, dental attrition (Brothwell 1981), changes within the pubic symphysis (Brooks and Suchey 1990) and the auricular surface (Lovejoy 1985). All individuals where ageing data could be collected were placed into one of the following age ranges:

Neonate	0-1 month
Infant	birth - one year
Juvenile	1 - 12 years
Adolescent (Adol)	12 - 20 years
Young Adult (YA)	20 – 35 years
Middle Adult (MA)	35 – 50 years
Old Adult	50 + years
Adult	>20 years
Undetermined	

Sexually dimorphic traits in the pelvis and skull were used to ascertain the sex of the individual. Each individual was placed into one of the following categories; male, female (positive identification), male?, female? (compares favourably to a sex but not conclusive), "I" (indeterminate) and '?' (inconclusive).

The living stature of the skeletons was, where possible, calculated from the long bone lengths using the regression equations devised by Trotter and Gleser (1958). The choice of long bones used was based on the preservation of the skeleton and the order of preference suggested by Brothwell and Zakrzewski (2004) for the regression equations.

The dentition was recorded in the following way: -

	Right								Left							
Maxilla	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Mandible	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

/	lost post-mortem tooth present but jaw missing	X U	lost ante-mortem present	-

NP	not present	PE	partially erupted
O	tooth erupting	B	broken
V	tooth unerupted	--	tooth and jaw not present
PU	pulp exposed	R	root only

Dental pathology was recorded to site and severity. Brothwell (1981) devised the scoring system used for calculus and the following grading system of severity was used for caries:

1 Pit/fissure
2 <half crown destroyed
3 >half crown destroyed
All crown destroyed

The disarticulated bone was recorded to skeletal element and number of fragments, surface condition was recorded using McKinley's (2004) grading system, bleaching or discolouration was described, age and sex were recorded where possible and any pathological changes were described as were any evidence of gnawing or cut marks.

Results

INHUMATION BURIALS
Phase 3a: Neonate Burials AD 50-70 Early Roman

As with all ageing techniques, ageing of young babies and foetuses is most reliably carried out using a combination of techniques, including the stage of skeletal and dental development and long bone length. As growth and development can be affected by many factors including environmental influences such as diet and disease, any results provide an estimate of the biological age of the individual – i.e. what stage skeletal and dental development has been reached – rather than chronological age (Scheuer & Black 2000). Lack of any of the skeletal areas required to carry out assessment of age results in a less accurate estimate.

Burial [4579]

Burial [4579] was a neonate buried within a timber coffin [4555]. Remains from this burial are labelled as both [4579] and [4555], retrieved from a bulk sample <233> taken from within the coffin. The remains are in moderate condition and the combined remains from both these contexts represent a single neonatal individual, with all areas of the skeleton represented. The long bone measurement ages the infant at c. 36 weeks, and the dental development places the infant at full term or 2 months either side of full term. It is possible that the infant was less than full term.

Burial [4734] <236>

This burial was of a neonate within a timber coffin [4987]. The remains are in poor condition and very little of the skeleton survived. The elements that were present were a skull fragment (the petrous portion of the temporal bone), vertebral neural arches, 2 long bone fragments, including the distal end of a femur, rib fragments and a distal phalange. No complete long bones or dentition were present to provide an accurate age but the general size of the remains and especially that of the petrous portion, suggest that the infant was less than full term but perhaps in the later stages of fetal development.

Burial [4742]

The remains from this burial were recovered from a timber coffin [4987] and are in very poor condition with very little of the skeleton surviving. The only elements present were fragments of both femora, four fragments of unidentified long bone and the crown of a left maxillary incisor. The remains belong to a neonate.

Burial [4991]

The remains [4991] were buried within timber box/coffin [4986] and were in poor condition with only skull fragments surviving. The areas of the skull present included both left and right petrous portions of the temporal bones, a fragment of the right orbit and six tooth cusps, including the left and possibly

right mandibular 2nd molars, the right and left maxillary 2nd molars and the right central and lateral maxillary incisors. The dental development of the remains suggests that the infant was probably less than 6 months in age.

Phase 5a AD 120-160 - Inhumation

Burial [4207] Phase

The remains are of an adult male and are in good condition with c. 80% of the skeletal elements present. The skull, cervical vertebrae and right arm are absent but the rest of the skeleton is represented. There is no evidence for the removal of the skull and associated cervical vertebrae prior to burial, however the 1st and 2nd thoracic vertebrae has suffered what looks to be post-mortem damage. Using the pelvis, the man was possibly of middle adult age. He would have stood around 1.79m (5 ft 8) tall. The spine shows signs of stress or trauma in the form of osteophytosis (lipping) on the 9th and 10th thoracic vertebrae and Schmorl's Nodes in the 10th, 11th and 12th thoracic vertebrae. These pathologies suggest that the individual undertook heavy physical work which placed strain on his back. No other pathological changes were present.

Disarticulated Human Bone

In addition to the inhumation burials disarticulated human bone was recovered from 24 contexts, all dated to the Roman period. The details of these can be found in the table below. All of the remains are in good or moderate condition with very little erosion, if any, and most of the bone is stained dark brown in colour. A calvarium from [3653], Phase 5A, was completely filled by a hard chalk or lime substance, the external surface was covered with the same material and it completely encases the base of the skull.

Skulls or skull fragments were found in 14 of the contexts and long bone fragments were recovered from the remaining 10. The skulls consist of either the cranium (a skull without a mandible) or the calvarium (the cranial vault without the facial bones). In total there were 5 craniums and 3 calvarias, the remaining 6 contexts were skull fragments and a mandible. One cranium, [595], was found with the atlas bone present – the 1st cervical vertebrae – which indicates that although the mandible was not present the cranium must have been at least partially fleshed when deposited otherwise this vertebrae would have become detached.

It is not possible to estimate an age for all the bone but most of the remains appear to have come from adults, with 4 females and 4 males identified from the skulls. Of those skulls that could be placed within an age group based on their dental attrition there are 2 young adults, 1 male, 1 female, and 3 middle adults, 2 female and 1 male. A foetal bone was recovered from gravel surface [681] in Phase 5A.

Other than dental pathology none of the skulls had any other pathological or ante-mortem changes and no pathologies were recorded on the long bones.

The minimum number of individuals represented by the disarticulated remains from all phases is 16.
Four contexts within which disarticulated human bone was found have been voided since excavation.

Table 1 Disarticulated Human Remains (in phase order)

Phase	Context	Type	Skeletal element	Age	Sex	Comments
4	4147	Fill of revetment structure [4154]	Skull fragment parietal?	?	?	Moderate condition Grade 1
4	4169	Fill of revetment structure [4154]	Right and left parietal and occipital bones	Adult?	?	Good condition Grade 0 Stained dark brown
4	4985	Context number given to human skull found during watching brief of ground reduction	Cranium – left maxilla only Dentition (1-8) / / / U U U U U	Young Adult	Male	Moderate condition Grade 0 Dental attrition 25-35 years. Stained mid brown
5A	681	Gravel surface-possibly early road	Right humerus	Foetus Possibly around 27	?	Good condition Grade 1 Measures 41.99mm

				weeks		
5A	1712	Slumped deposit – possibly backfill of revetment structure [1882]	Ulna shaft fragment	?	?	Poor condition Grade 4 Stained dark brown
5A	3653	Fill of revetment structure [3904]	Calvarium	Adult?	Female	Cranial vault is completely filled by hard chalk/lime? Outside surface of skull covered with very hard substance and base of skull completely encased in this material.
5A	4012	Fill of drain [3904]	Occipital bone	Adult	?	Good condition Grade 0 Stained dark brown
5A	4028	Fill of revetment structure [4061]	Left femur – proximal, mid and distal shaft	Adult	?	Good condition Grade 1 Lateral part of distal shaft missing Stained dark brown
5A	4028	Fill of revetment structure [4061]	2 joining skull fragments – occipital and left and right parietal	Adult?	?	Good condition Grade 1 2 fragments Stained dark brown
5A	4386	Fill of ditch [4385]	Right tibia – mid and distal shaft.	Adult?	?	Good condition Grade 1 Stained dark brown
5A	4467	Dump/levelling layer	Right radius – proximal and mid shaft	?	?	Good condition Grade 1
5A	2401	Dump/levelling layer	Femur shaft – proximal, mid and distal	Adult	?	Moderate condition Grade 3 Stained dark brown
5B	2899	Make-up/levelling layer	Skull fragment possibly parietal	?	?	Moderate condition Grade 0 Stained dark brown
5B	3655	Context number given to human skull found within Roman pit [3589]	Cranium; left parietal and occipital missing. Dentition Right Left / B R / / / / / / U / / R / /	Adult	Male	Moderate condition Grade 0 13 Fragments Stained dark brown
6	4246	Levelling layer	Left humeral shaft – proximal, mid and distal	Juvenile	?	Good condition Grade 1 Stained dark brown
6	4358	Dump/levelling layer	Right radius – shaft only	Adult?	?	Good condition Grade 0 Medial portion of distal shaft missing Stained dark brown
6	4363	Dump layer	Fibula shaft – both ends missing	Adult	?	Good condition Grade 1 Stained dark brown
6	4363	Dump layer	Left clavicle – shaft only	?	?	Good condition Grade 0 Stained dark brown
6	4376	Dump/levelling layer	Right pelvis – including part of ilium, auricular surface and ischium	Adult	Male	Moderate condition Grade 1 2 Fragments Stained dark brown
6A	595	Disarticulated skull found within layer [630]	Cranium and Atlas Dentition Right (8-1) U U U U U U U / Left (1-8) / / U U U U X /	Young Adult	Female?	Good condition Grade 0 Dental attrition 25-35 years Calculus and ante-mortem tooth loss. Stained mid brown Skull residue large fragments of

						charcoal
6B	1384 SF356	Fill of revetment structure [404]	Right parietal, left parietal and fragment of occipital, including nuchal crest.	Adult	?	Good condition Grade 0 3 fragments. Post-mortem break along sagittal suture and left parietal. Stained dark brown
5, 6, 7	1639	Dump layer	Cranium Dentition Right (8-1) / U U / / / / / Left (1-8) / / U / / / /	Middle Adult	Female	Good condition Grade 0 Dental attrition 25–35 years Coronal suture open. Stained dark brown
6, 7	1684	Fill of cut [1965] may be backfill during construction of revetment structure or a fill of an earlier revetment.	2 skull fragments; probably occipital	Adult	?	Moderate condition Grade 0 Two lines scored into surface of bone
7	273	Fill of revetment structure	Right ulna – Proximal articular surface, proximal and mid shaft.	Adult	?	Good condition. Post-mortem break through shaft and to side of articular surface. Grade 0 Stained brown
7	273	Fill of revetment structure	Left radial shaft – proximal and mid shaft, inferior part of radial tuberosity present	?	?	Good condition Grade 1 Stained brown
7	587	Fill of possible robber cut [588]	Left femur – proximal shaft.	Adult	?	Moderate condition Grade 1
7	1458	Fill of posthole [1459]	Right tibia – proximal, mid and distal shaft	Adult	?	Moderate condition Grade 2 7 fragments Stained dark brown
7, 8	273	Fill of revetment structure	Right tibial shaft	Adult	?	Good condition. Both proximal and distal ends missing. Grade 0 Stained brown
7, 8	332	Fill of revetment structure	Left tibia – proximal surface, anterior portion of the proximal shaft, mid and distal shaft complete	Adult	?	Moderate condition Grade 0 Bone in three fragments due to post-mortem breaks.
7, 8	1275	Fill of revetment structure	Right humerus – proximal surface, proximal and mid shaft	Adult	?	Good condition Grade 0 Quite a slight bone in size and proportion. Stained brown.
8	462	Primary Fill of late Roman ditch	Left femur; femoral head, lesser trochanter, shaft.	Adult	?	Moderate condition Grade 1 Stained dark brown
8	605	Fill of [614] rubbish pit or cut associated with drain	Left tibia – Proximal end, proximal and mid shaft.	Adult	?	Moderate condition Grade 1
8	609	Fill of revetment structure	Left –femur – Proximal surface and shatf	Adult	?	Moderate condition Grade 0 Post-mortem damage to lesser and greater trochanters
VOID CONTEXT	293	VOID	Left femoral shaft	Adult/sub-adult	?	Moderate condition Grade 0

						Both ends missing. Post-mortem break along length of mid and distal shaft. Stained brown
VOID CONTEXT	577	VOID	Left ulna – proximal shaft and proximal end of mid shaft.	Adult/sub-adult	?	Moderate condition Grade 1
VOID CONTEXT	1878	Fill of revetted channel	Mandible Dentition Right (8-1) U U U U U U U / Left (1-8) / U U U U U U U	Middle Adult	Male?	Moderate condition Grade 0 Post mortem break through mid line of mandible Dental attrition 33-43 years Calculus Stained mid brown
VOID CONTEXT	2673	Dump layer	Cranium Left maxilla and zygomatic bone broken away from cranium. Damage to facial bones. Dentition Right (8-1) / U U U U U U / Left (1-8) / / U U U U U /	Middle Adult	Female	Good condition Grade 0 Calculus on all teeth Dental attrition 25-35 years Stained dark brown
	+	Trench 1B	Calvarium	Adult	Male	Good condition Grade 0 Stained mid brown

Discussion

The group of infant burials all appeared to have died either at birth or around the time of birth, one perhaps surviving a few months at least and at least two of them not reaching full term in utero. Buried within coffins within an area seemly set aside for the burials they have apparently been shown more care in their burial than was usually afforded young infants during the Roman period. During the time it was usual for infants not to be buried within the main cemeteries and they were often buried under floors or in pits and ditches.

The disarticulated assemblage is of potential significance, partly due to the number of skull fragments or partial skulls present. Elsewhere within the Walbrook and on a wider scale the Thames, the presence of skulls within their deposits has provoked a number of explanations. For many years they were believed by some to be victims of the Boudican revolt. However this theory has been largely dispelled and there are two prominent theories current. One suggests a ritual element to the deposition of the skulls, sometimes in association with metal objects, and a practice continued from the Bronze Age through to the Roman period. This theory has been put forward by Marsh and West (1981), Bradley and Garden (1988) and a ritual element as part of the deposition of the skulls, especially in the Upper Walbrook, is in part supported by Maloney (1990) and Wilmott (1991) over the theory of the Boudiccan Masacre. Knusel and Carr (1995) counter this argument and suggest that the presence of the skulls does not represent ritual deposition but are the result of incidental erosion, accidental drowning, suicide and fluvial action on these remains.

In view of the common occurrence of skulls in the Upper Walbrook Valley and the ritual significance that has been placed on them by some, the presence of the skulls at Drapers' Gardens could be the result of ritual deposition. The more complete skulls are similar to those found elsewhere in that they consist of craniums and calvarias and are in good condition. The presence of long bones within the assemblage could either disprove this theory and suggest that the disarticulated remains represent disturbed burials or provide further evidence of other skeletal elements being deposited as well as skulls.

All of the disarticulated bone at Drapers' Gardens comes from Roman contexts and occurs throughout phases 4 to 8. They also come from a range of features including revetment structures, pits and dump layers and as such if the remains do represent evidence for ritual deposition within the Walbrook at

least some of them have been redeposited within other features and layers. Maybe they have been washed down through the channels and become incorporated within the general materials used on the site. It is also possible that some of the remains within features such as pits have been placed there as part of a closing ritual once use of the feature has ended.

Recommendations for further work

No further work is required on the skeletal remains. Further research should be carried out to find comparisons for both the neonatal burials and the deposition of the disarticulated remains. The details of the deposition of the disarticulated remains should be considered in relation to other finds and deposits within the features and contexts in order to assess whether they provide further evidence of ritual deposition of human remains within the Upper Walbrook and within the wider context of the Roman period.

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APPENDIX 20: METAL SLAG ASSESSMENT

Lynne Keys

Introduction and methodology

A small assemblage (weighing just over 5.8kg) was recovered by hand and by sampling on site. For this report it was examined by eye and categorised on the basis of morphology alone. Each slag or other material type in each context was weighed; smithing hearth bottoms were individually weighed and measured to obtain statistical information. Quantification data are given in the table below in which weight (wt.) is shown in grams, and length (len.), breadth (br.) and depth (dep.) in millimetres.

Quantification table and explanation of terms

		DGT 06					Drapers' Gardens, 12 Throgmorton Street, London EC2
cxt	^s	identification	wt.	len	br	dep	comment
172	6	magnetised pea grit	12				
191		vitrified hearth lining	9				
222	8	magnetised residue	3				charcoal, tiny iron wire fragments, very occ. hammerscale flakes
227		ferruginous concretion	103				
267		vitrified hearth lining	60				
297		ferruginous concretion	27				
305	17	magnetised pea grit	2				
310		cinder	4				
416		vitrified hearth lining	31				
426		crucible?	50				to be examined by ceramic specialist
605	29	magnetised pea grit	1				
606	35	magnetised pea grit	1				
645	37	magnetised pea grit	1				
650	39	magnetised pea grit	1				
719		smithing hearth bottom	338	110	105	40	
764	47	magnetised pea grit	1				and charcoal
781		ferruginous concretion	275				iron panning with clay
781		fired clay	7				
878	64	magnetised pea grit	1				
894		iron & copper lump	63				
964	58	magnetised pea grit	1				
996		ferruginous concretion	183				iron panning with clay
1001		charcoal	32				large pieces
1030		iron	464				hammer head?
1187		ferruginous concretion	22				iron panning with clay
1235		ferruginous concretion	23				iron panning with clay
1322	77	magnetised pea grit	2				
1322	78	magnetised pea grit	3				
1335	75	magnetised residue	6				pea grit & occ. iron flakes
1342	76	magnetised pea grit	2				
1385	82	magnetised pea grit	1				
1485	86	magnetised residue	4				iron rivet, shanks & magnetised pea grit
1613		iron	322				
1613		iron rich undiagnostic	288				
1638		droplet	1				
1640	91	magnetised residue	1				magnetised pea grit & very occ. hammerscale flake
1703		iron	396				

1708		smithing hearth bottom	504	100	95	45	
1710		litharge	650	110	105	25	
1713		undiagnostic	20				
1897	93	magnetised residue	6				hammerscale flakes, iron flakes, charcoal & fired clay
2112		cinder	9				
2169		cinder	35				with CuO & Cu traces on interior
2208		cinder	264				
2218	109	iron	7				
2309	107	magnetised pea grit	2				
2321		nail shank	11				with charcoal concretions
2490	13	iron flakes	0				
2606	122	magnetised residue	6				pea grit & two hobnails
2666		litharge	295				with possible residue in surface
2803	137	undiagnostic	61				
2805		iron rich undiagnostic	15				
2925	147	magnetised residue	11				tiny charcoal shavings or burnt straw
3111	155	magnetised residue	1				very occ. hammerscale flake
3167		hammerscale	0				very occ. tiny broken pieces
3167		undiagnostic	226				tiny charcoal inclusions
3204	161	magnetised residue	7				small iron rod fragment & occ. hammerscale flake
3296		charcoal	8				good for dating?
3633		cinder	51				
4031	195	magnetised residue	7				with some hammerscale flake
4083	207	magnetised residue	2				pea grit & very occ. hammerscale spheres
4269		smithing hearth bottom	421	110	80	40	
4319		charcoal	20				large fragment with rings: useful for dating?
4366		lead	23				
4394	1033	crucible?	307				to be examined by ceramic specialist
4667		litharge	92				fragment

Activities involving iron can take two forms:
1) *Smelting* is the manufacture of iron from ore and fuel in a smelting furnace. The slag produced takes various forms depending on the technology used: furnace slags, run slag, tap slag, dense slag or blast furnace slag. There was no diagnostic smelting slag in the Drapers' Gardens assemblage.

2a) *Primary smithing*: hot working (by a smith using a hammer) of the iron lump to remove excess slag. The slags from this process include smithing hearth bottoms and micro-slags, in particular tiny smithing spheres.

2b) S*econdary smithing:* hot working, using a hammer, of one or more pieces of iron to create or repair an object. As well as bulk slags, including the smithing hearth bottom, this generates micro-slags: hammerscale flakes from ordinary hot working of a piece of iron (making or repairing an object) or tiny spheres from high temperature welding to join or fuse two pieces of iron. Where the Drapers' Gardens slag was diagnostic it represents secondary iron smithing.

Most of the slag in the assemblage was undiagnostic, i.e. could not be assigned to either smelting or smithing either because of its morphology or because it had been broken up during deposition, re-deposition or excavation. Other types of debris in the assemblage may be the result of a variety of high temperature activities - including domestic fires - and cannot be taken on their own to indicate iron-working was taking place. These include fired clay, vitrified hearth lining, cinder and heat-magnetised clay or grit.

Significant groups

Iron slag

Iron slag in the form of undiagnostic slag with tiny charcoal inclusions and very broken hammerscale was found as early as phase 4 or 5 in (3167) back fill of a revetment [3170] and from that time on small quantities appear in various layers and fills. Pit [3329] fill [3111] produced a tiny amount of flake hammerscale. The clay layer from wall [222] contained some flake hammerscale, charcoal and iron wire fragments. Demolition material relating to tile hearth [1236] (Building 15) produced magnetised pea grit and some iron flakes. There is a tiny amount to evidence suggesting that building [942] (in Phase 6b) may have had some association with iron working. Heat magnetised residues in sample <91> (1640) contained a tiny quantity of flake hammerscale. The quantities in all these features are, however, small and may have come in with other material being dumped but they do reveal the process producing them was ordinary hot working of iron rather than high temperature welding.

The quantities of *heat-magnetised pea grit* found in samples do not, on their own, represent industrial activity, although they probably do represent material from hearths.

Larger (bulk) iron slags are missing from the assemblage but in the Roman period these were often taken away from the forge or forges to be used on roads and other surfaces as metalling.

Litharge

Three fragments of what appear to be litharge were recovered from various fills. Litharge is the waste produced when a base metal (for example, lead) is refined in order to extract a precious metal (for example, silver). If the litharge has not been washed too severely or scrubbed, it is often possible to analyse the surface of the litharge to determine what metal was being extracted. The piece from [2666], fill of box drain [3318] appears to have some residue on its surface which may reveal what metal was being used and what was being extracted.

Other features with litharge were [1710] fill of revetment [1882] and [4667], well [4251].

Crucible fragments and copper-alloy working

Make up layer [4394] and the fill of cut [426] produced fragments of crucible. A lump of iron and copper alloy from [894] and a possible iron hammer head (layer [1030]) were also removed.

Discussion of the assemblage

The assemblage mostly waste material dumped as levelling or backfill disturbed and re-deposited by later activities. Although at first sight an unpromising and ‘bitty’ assemblage, it gives clues to the type of industries taking place somewhere further away from the Draper’s Gardens site: iron smithing, copper-alloy working, extraction of precious metals from base metals etc.

Recommendation for further work

To examine the site evidence and write up the iron slag assemblage for publication (using site plans and matrix) should take no more than a day.

The possible pieces of litharge need to be analysed by a specialist to determine whether they are litharge and, if so, what metal was being refined and what was being extracted. Marcos Martinon-Torres or Thilo Rehren at the Institute of Archaeology may be able to arrange this.

The crucible fragments should also be analysed by a specialist (see 2, above).

APPENDIX 21: SHELL ASSESSMENT

Rebecca Lythe

Introduction

The following report outlines the results of the preliminary analysis of marine Mollusc remains recovered from Drapers' Gardens, City of London. The main aims of this report are:

- To identify all recovered Mollusc remains to genus or, when possible, species level
- To consider their potential origins and modes of deposition
- To consider their usefulness as a resource to past populations

Methodology

In order to keep sampling representative and systematic, shellfish from all contexts on site were collected according to the following strategy:

For every context that contained marine Molluscs, one in five of each species was recovered. Where multiple fragments of material from the same species were found, only fragments with complete umboes were counted so as to avoid over-representation of heavily fragmented individuals. The material was then analysed in the following way:

The Molluscs were observed with a hand-held magnifying glass and, where possible, identified to genus or species level. Numbers of individuals per species per context were counted. As bivalvia (such as cockles and mussels) have two shells and gastropoda (such as whelks and limpets) have one, the two classes cannot be compared directly. Consequently, all bivalve shells were assigned a value of 0.5 and all gastropods a value of 1. These "values" were recorded in Table 1.

The ecological niche occupied by each species was identified and hypothetical modes of deposition considered. Potential uses for the various species were speculated upon.

Mollusc remains were probably not consistently discarded within the confines of the site in representative quantities throughout its occupation. As a consequence, changes in species frequency over time were not considered on account of the small size of the assemblage relative to the size of the site and long duration of occupation.

Results

The total number of shells collected per species per context and their "value" was recorded (Table1).

Table 1: total numbers of shells and "values" per species of marine Mollusc per context.

Context Number	Phase	Species Present	Total Number of Shells Collected	Value
43		*Ostrea edulis*	1	0.5
47		*Ostrea edulis*	1	0.5
48		*Ostrea edulis*	1	0.5
48		*Buccinum undatum*	1	1
98		*Ostrea edulis*	7	3.5
119		*Ostrea edulis*	4	2
120		*Ostrea edulis*	5	2.5
120		*Mytilus edulis*	2	1
121		*Ostrea edulis*	5	2.5
128		*Ostrea edulis*	1	0.5
134		*Ostrea edulis*	7	3.5
137		*Littorina littorea*	1	1
137		*Ostrea edulis*	2	1

137		*Mytilus edulis*	4	2
139		*Ostrea edulis*	4	2
146		*Ostrea edulis*	8	4
172		*Ostrea edulis*	5	2.5
172		*Buccinum undatum*	1	1
172		*Mytilus edulis*	7	3.5
172		*Ostrea edulis*	3	1.5
194		*Mytilus edulis*	2	1
195		*Mytilus edulis*	1	0.5
222		*Mytilus edulis*	1	0.5
223		*Ostrea edulis*	1	1
229		*Ostrea edulis*	1	0.5
240		*Ostrea edulis*	3	1.5
244		*Ostrea edulis*	1	0.5
253		*Ostrea edulis*	10	5
253		*Mytilus edulis*	5	5
293		*Ostrea edulis*	1	0.5
297		*Mytilus edulis*	4	2
297		*Ostrea edulis*	2	1
305		*Ostrea edulis*	2	1
305		*Mytilus edulis*	4	2
322		*Ostrea edulis*	2	1
322		*Mytilus edulis*	1	0.5
331		*Ostrea edulis*	33	16.5
356		*Ostrea edulis*	5	2.5
356		*Ostrea edulis*	10	5
403		*Ostrea edulis*	2	1
489		*Buccinum undatum*	1	1
493		*Ostrea edulis*	5	2.5
494		*Ostrea edulis*	4	2
494		*Mytilus edulis*	2	1
509		*Mytilus edulis*	2	1
545		*Ostrea edulis*	14	7
545		*Buccinum undatum*	1	1
545		*Mytilus edulis*	2	1
574		*Ostrea edulis*	1	0.5
583		*Ostrea edulis*	6	3
583		*Mytilus edulis*	3	1.5
585		*Mytilus edulis*	8	4
585		*Ostrea edulis*	2	1
585		*Cerastoderma edule*	1	0.5
592		*Ostrea edulis*	6	3
594		*Ostrea edulis*	1	0.5
598		*Ostrea edulis*	2	1
598		*Mytilus edulis*	2	1
598		*Buccinum undatum*	1	1
598		*Cerastoderma edule*	1	0.5
605		*Ostrea edulis*	4	2
606		*Ostrea edulis*	2	1
606		*Mytilus edulis*	1	0.5
615		*Mytilus edulis*	4	2
650		*Mytilus edulis*	8	4

650		*Ostrea edulis*	4	2
650		*Cerastoderma edule*	2	1
726		*Buccinum undatum*	3	3
764		*Ostrea edulis*	2	1
764		*Mytilus edulis*	2	2
852		*Ostrea edulis*	8	4
855		*Ostrea edulis*	37	18.5
868		*Mytilus edulis*	2	1
878		*Mytilus edulis*	12	6
881		*Ostrea edulis*	1	0.5
883		*Ostrea edulis*	3	1.5
911		*Ostrea edulis*	1	0.5
964		*Mytilus edulis*	3	1.5
982		*Mytilus edulis*	7	3.5
986		*Ostrea edulis*	2	1
995		*Ostrea edulis*	3	1.5
995		*Buccinum undatum*	2	2
998		*Mytilus edulis*	4	2
998		*Cerastoderma edule*	2	1
1001		*Ostrea edulis*	24	12
1001		*Mytilus edulis*	5	2.5
1012		*Ostrea edulis*	1	0.5
1012		*Mytilus edulis*	1	0.5
1040		*Ostrea edulis*	2	1
1067		*Ostrea edulis*	2	1
1091		*Ostrea edulis*	1	0.5
1091		*Mytilus edulis*	1	0.5
1102		*Ostrea edulis*	2	1
1155		*Ostrea edulis*	3	1.5
1164		*Ostrea edulis*	1	0.5
1164		*Mytilus edulis*	1	0.5
1164		*Patella vulgata*	1	1
1175		*Mytilus edulis*	1	0.5
1249		*Ostrea edulis*	6	3
1249		*Mytilus edulis*	2	1
1260		*Ostrea edulis*	8	4
1260		*Mytilus edulis*	4	2
1260		*Ostrea edulis*	6	3
1260		*Mytilus edulis*	2	1
1299		*Ostrea edulis*	2	1
1300		*Ostrea edulis*	1	1
1306		*Ostrea edulis*	2	1
1308		*Ostrea edulis*	2	1
1317		*Ostrea edulis*	3	1.5
1322		*Mytilus edulis*	2	1
1322		*Ostrea edulis*	1	0.5
1322		*Mytilus edulis*	1	0.5
1338		*Ostrea edulis*	1	0.5
1382		*Ostrea edulis*	2	1
1382		*Ostrea edulis*	1	0.5
1385		*Mytilus edulis*	4	2
1478		*Ostrea edulis*	2	1

1478		*Mytilus edulis*	1	0.5
1484		*Ostrea edulis*	12	6
1484		*Mytilus edulis*	7	3.5
1485		*Mytilus edulis*	16	8
1485		*Cerastoderma edule*	3	1.5
1486		*Ostrea edulis*	7	3.5
1486		*Mytilus edulis*	4	2
1494		*Ostrea edulis*	1	0.5
1506		*Cerastoderma edule*	1	0.5
1506		*Mytilus edulis*	1	0.5
1583		*Mytilus edulis*	8	4
1583		*Ostrea edulis*	1	0.5
1613		*Ostrea edulis*	3	1.5
1640		*Ostrea edulis*	3	1.5
1640		*Mytilus edulis*	4	2
1699		*Ostrea edulis*	8	4
1699		*Mytilus edulis*	4	2
1699		*Ostrea edulis*	1	0.5
1699		*Cerastoderma edule*	2	1
1703		*Ostrea edulis*	34	17
1710		*Ostrea edulis*	9	4.5
1710		*Buccinum undatum*	1	1
1710		*Ostrea edulis*	3	1.5
1711		*Ostrea edulis*	1	0.5
1723		*Ostrea edulis*	3	1.5
1740		*Ostrea edulis*	3	3
1767		*Ostrea edulis*	1	0.5
1770		*Ostrea edulis*	8	4
1770		*Ostrea edulis*	6	3
1798		*Ostrea edulis*	2	1
1811		*Ostrea edulis*	1	0.5
1867		*Ostrea edulis*	3	1.5
1867		*Mytilus edulis*	1	0.5
1876		*Mytilus edulis*	1	0.5
1876		*Ostrea edulis*	1	0.5
1878		*Mytilus edulis*	1	0.5
1883		*Ostrea edulis*	2	1
1892		*Ostrea edulis*	1	0.5
1892		*Mytilus edulis*	2	1
1895		*Mytilus edulis*	4	2
1895		*Littorina littorea*	1	1
1897		*Cerastoderma edule*	2	1
2036		*Ostrea edulis*	2	1
2036		*Mytilus edulis*	3	1.5
2053		*Ostrea edulis*	1	1
2064		*Ostrea edulis*	1	0.5
2064		*Mytilus edulis*	2	1
2064		*Mytilus edulis*	1	0.5
2064		*Mytilus edulis*	22	11
2064		*Buccinum undatum*	1	1
2065		*Mytilus edulis*	1	0.5
2066		*Ostrea edulis*	2	1

2066		*Mytilus edulis*	4	2
2094		*Ostrea edulis*	1	0.5
2108		*Ostrea edulis*	2	1
2138		*Ostrea edulis*	2	1
2138		*Mytilus edulis*	1	0.5
2138		*Buccinum undatum*	1	0.5
2142		*Ostrea edulis*	4	2
2172		*Ostrea edulis*	3	1.5
2187		*Ostrea edulis*	2	1
2192		*Ostrea edulis*	4	2
2192		*Mytilus edulis*	5	2.5
2194		*Mytilus edulis*	2	1
2194		*Ostrea edulis*	1	0.5
2196		*Ostrea edulis*	1	0.5
2196		*Mytilus edulis*	2	1
2217		*Ostrea edulis*	2	1
2218		*Ostrea edulis*	2	1
2218		*Mytilus edulis*	2	1
2218		*Cerastoderma edule*	2	1
2231		*Ostrea edulis*	2	1
2242		*Mytilus edulis*	4	2
2242		*Ostrea edulis*	1	0.5
2242		*Cerastoderma edule*	1	0.5
2309		*Cerastoderma edule*	2	1
2321		*Ostrea edulis*	1	0.5
2321		*Mytilus edulis*	2	1
2321		*Littorina littorea*	1	1
2391		*Mytilus edulis*	2	1
2411		*Ostrea edulis*	3	1.5
2490		*Mytilus edulis*	1	0.5
2490		*Ostrea edulis*	1	0.5
2494		*Mytilus edulis*	4	2
2509		*Ostrea edulis*	1	0.5
2520		*Ostrea edulis*	1	1
2544		*Mytilus edulis*	16	8
2606		*Ostrea edulis*	2	1
2606		*Mytilus edulis*	6	3
2617		*Mytilus edulis*	6	3
2627		*Ostrea edulis*	2	1
2662		*Ostrea edulis*	2	1
2666		*Buccinum undatum*	1	1
2667		*Ostrea edulis*	2	1
2691		*Ostrea edulis*	2	1
2691		*Cerastoderma edule*	2	1
2735		*Ostrea edulis*	1	0.5
2771		*Mytilus edulis*	10	5
2781		*Ostrea edulis*	1	0.5
2781		*Mytilus edulis*	1	0.5
2784		*Mytilus edulis*	20	10
2785		*Mytilus edulis*	10	5
2789		*Mytilus edulis*	4	2
2789		*Ostrea edulis*	4	2

2789		*Mytilus edulis*	7	3.5
2789		*Mytilus edulis*	1	0.5
2791		*Mytilus edulis*	2	1
2791		*Cerastoderma edule*	1	0.5
2795		*Ostrea edulis*	2	1
2799		*Mytilus edulis*	3	1.5
2803		*Mytilus edulis*	1	0.5
2803		*Ostrea edulis*	1	0.5
2805		*Mytilus edulis*	4	2
2820		*Mytilus edulis*	2	1
2820		*Ostrea edulis*	1	0.5
2848		*Buccinum undatum*	2	2
2898		*Ostrea edulis*	3	1.5
2925		*Ostrea edulis*	1	0.5
2925		*Mytilus edulis*	4	2
2937		*Mytilus edulis*	2	1
2966		*Buccinum undatum*	1	1
2989		*Ostrea edulis*	1	0.5
3003		*Mytilus edulis*	14	7
3005		*Ostrea edulis*	5	2.5
3012		*Mytilus edulis*	4	2
3016		*Mytilus edulis*	10	5
3028		*Mytilus edulis*	2	1
3028		*Ostrea edulis*	1	0.5
3028		*Cerastoderma edule*	1	0.5
3029		*Ostrea edulis*	42	21
3032		*Ostrea edulis*	2	1
3032		*Mytilus edulis*	1	0.5
3041		*Mytilus edulis*	10	5
3111		*Mytilus edulis*	6	3
3111		*Cerastoderma edule*	2	1
3111		*Ostrea edulis*	1	0.5
3111		*Ostrea edulis*	1	0.5
3111		*Mytilus edulis*	4	2
3111		*Mytilus edulis*	2	1
3111		*Ostrea edulis*	1	0.5
3124		*Mytilus edulis*	4	2
3164		*Mytilus edulis*	4	2
3164		*Ostrea edulis*	1	0.5
3189		*Mytilus edulis*	6	3
3189		*Ostrea edulis*	1	0.5
3202		*Ostrea edulis*	3	1.5
3204		*Mytilus edulis*	3	1.5
3204		*Cerastoderma edule*	1	0.5
3254		*Ostrea edulis*	2	1
3254		*Mytilus edulis*	2	1
3279		*Ostrea edulis*	1	0.5
3279		*Mytilus edulis*	4	2
3279		*Cerastoderma edule*	2	1
3292		*Ostrea edulis*	1	0.5
3292		*Mytilus edulis*	2	1
3325		*Ostrea edulis*	5	2.5

3371		*Ostrea edulis*	4	2
3371		*Mytilus edulis*	2	1
3371		*Buccinum undatum*	2	2
3413		*Mytilus edulis*	1	0.5
3413		*Ostrea edulis*	1	0.5
3506		*Mytilus edulis*	4	2
3506		*Ostrea edulis*	2	1
3526		*Ostrea edulis*	1	0.5
3526		*Mytilus edulis*	1	0.5
3617		*Mytilus edulis*	1	0.5
3620		*Mytilus edulis*	8	4
3644		*Ostrea edulis*	1	0.5
3644		*Mytilus edulis*	4	2
3649		*Mytilus edulis*	6	3
3670		*Ostrea edulis*	2	1
3670		*Mytilus edulis*	4	2
3872		*Patella vulgata*	1	1
3885		*Mytilus edulis*	4	2
3885		*Ostrea edulis*	1	0.5
3905		*Mytilus edulis*	2	1
3905		*Mytilus edulis*	4	2
3905		*Ostrea edulis*	2	1
3935		*Mytilus edulis*	1	0.5
3961		*Mytilus edulis*	2	1
3964		*Mytilus edulis*	64	32
3964		*Cerastoderma edule*	2	1
3975		*Ostrea edulis*	2	1
3975		*Mytilus edulis*	2	1
3981		*Ostrea edulis*	2	1
3981		*Mytilus edulis*	4	2
3989		*Mytilus edulis*	3	1.5
3995		*Mytilus edulis*	3	1.5
4001		*Mytilus edulis*	5	2.5
4001		*Cerastoderma edule*	1	0.5
4001		*Ostrea edulis*	1	0.5
4031		*Mytilus edulis*	4	2
4042		*Mytilus edulis*	12	6
4042		*Cerastoderma edule*	4	2
4045		*Mytilus edulis*	5	2.5
4047		*Mytilus edulis*	2	1
4063		*Ostrea edulis*	2	1
4063		*Mytilus edulis*	4	2
4063		*Littorina littorea*	1	1
4068		*Ostrea edulis*	2	1
4068		*Mytilus edulis*	1	0.5
4068		*Buccinum undatum*	1	1
4072		*Ostrea edulis*	1	0.5
4072		*Cerastoderma edule*	1	0.5
4072		*Mytilus edulis*	1	0.5
4079		*Mytilus edulis*	3	1.5
4083		*Mytilus edulis*	3	1.5
4083		*Ostrea edulis*	2	1

4089		*Ostrea edulis*	1	0.5
4144		*Mytilus edulis*	1	0.5
4236		*Ostrea edulis*	1	0.5
4250		*Cerastoderma edule*	1	0.5
4250		*Buccinum undatum*	1	1
4318		*Ostrea edulis*	5	2.5
4318		*Mytilus edulis*	2	1
4581		*Mytilus edulis*	6	3

The natural habitats of the species found on site were as follows:

1. Common Cockle (***Cerastoderma edule***): found mainly in the intertidal zone, from the mid-tide level down, in sandy environments. It is common to all British coasts.

2. Common Limpet (***Patella vulgata***): a rock dwelling species, abundant in the intertidal zone of all British coasts.

3. Common Mussel (***Mytilus edulis***): occurs on rocky coasts between the mid-tide level in the intertidal zone and the shallow sublittoral zone. It is commonly found on all British coasts.

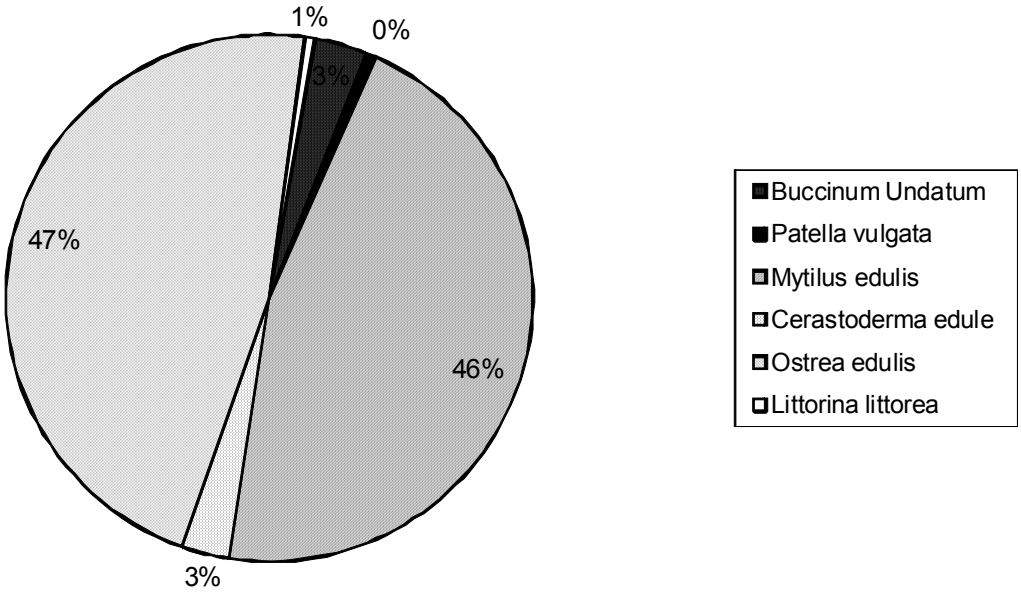
4. Common Oyster (***Ostrea edulis***): occurs in coarse sediment between the spring tide extreme low water mark and a maximum of 50m into the sub-littoral zone. Whilst they are now relatively uncommon in British waters, they were once widespread.

5. Common Periwinkle (***Littorina littorea***): found between the upper shore and the shallow sublittoral on soft substrata or rock. Commonly occurrs on weedy, rocky shores around all British coasts.

6. Common Whelk (***Buccinum undatum*)**: occurs mainly between the sublittoral zone and the continental shelf, but can also be found in the intertidal zone up to the spring tide low water mark. It can live in muddy sand and gravel or on rocks and is common to British waters.

(Hayward 1996)

Figure 1: Chart to show percentage of each species found within the assemblage from Drapers Gardens



Inferences

When the natural habitats of the shellfish are considered, it becomes obvious that they were brought to this inland site by human action. As they were recovered from dumped deposits containing domestic waste and all species are edible, they were probably imported as a food resource.

It is hypothesised, due to the unusually large size of some *Ostrea edulis* shells within the assemblage (the largest being 118mm wide and 116mm long) that some were farmed. Modern wild examples do not normally exceed 100mm in diameter (Hayward 1996). Excavations at nearby Pudding Lane, to the south of the site, produced a first century assemblage of small, irregularly shaped oysters, whilst the bulk of second to third century examples were larger and more regular. The former group was interpreted as originating from natural beds, whilst the latter may have been farmed (Milne 1995). It has been hypothesised that oyster farming occurred on the Essex and Kent coasts in the mid to late Roman period (Alcock 2001; Milne 1995; Applebaum 1958). This presumably enabled the species to be collected quickly and in greater numbers than foraging would allow.

Evidence from other contemporary sites in Britain and beyond suggest oysters and mussels were a popular foodstuff during the Roman period (Alcock 2001). This may explain the large percentages of these species relative to others in the assemblage (Figure 1).

Cockles, mussels, whelks and limpets were probably harvested from their natural, marine habitats and transported to site, probably by boat along the Thames. The river would have provided a means of importing coastal resources to the city quickly and easily, maintaining freshness. Oysters may have been shipped from farmed beds on the south and east coasts to the Roman port of *Londinium* (Alcock 2001).

The total number of shells recovered from site was small relative to the number of contexts excavated, suggesting Mollusca did not form a major part of the diet in Roman London. This contradicts evidence

from many other excavations in the city, perhaps due to the bulk of Mollusc remains being discarded beyond the boundaries of the site. Taphonomic variables may also have affected the assemblage, including adverse preservational conditions and problems. It therefore remains probable that the dietary importance of marine Molluscs to the Roman occupants of Drapers' Gardens was greater than the results suggests.

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APPENDIX 22: ENVIRONMENTAL ASSESSMENT

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment undertaken by Quaternary Scientific (QUEST) in connection with the proposed development at Drapers' Gardens, 12 Thogmorton Avenue, City of London (Site Code: DGT06; National Grid Reference: TQ 3282 8140). During recent archaeological investigations at the site undertaken by Pre-Construct Archaeology Ltd, column and bulk samples were obtained for environmental archaeological assessment, and possible future analysis, from the following phases (Hawkins 2008):

Phase 2: Palaeochannel & Overbank Alluviation
Phase 3: AD 50-70 Early Roman: Courdroy Structure, Channel and Infant Burials
Phase 4: AD 70 – 120 Consolidation Channel Construction
Phase 5: AD 120 – 160 Road Layout & First Buildings
Phase 6: AD 160 – 250 Continued Development of Buildings
Phase 7: AD 250 – 350/400
Phase 8: Very Late Roman AD 350+
Phase 9: Medieval

The overarching aims of the environmental archaeological assessment were to evaluate their potential for reconstructing the past economy and diet, and general environmental context, of the site. In order to achieve this aim, the environmental archaeological assessment consisted of:
Recording the lithostratigraphy of the column samples to provide a preliminary reconstruction of the sedimentary history
Determination of the organic matter content (spot samples from selected bulk samples) to aid preliminary reconstruction of the sedimentary history
Assessment of the preservation and concentration of pollen grains and spores (spot samples from selected bulk samples) to provide a preliminary reconstruction of the vegetation history, and to detect evidence for human activities
Assessment of the preservation and concentration of diatom frustules (spot samples from selected bulk samples) to provide a preliminary reconstruction of the hydrological history
Assessment of the preservation and concentration of macroscopic plant remains (waterlogged and charred seeds and wood) and insect remains (from selected bulk samples) to provide a preliminary reconstruction of the vegetation history, the nature of wood use on the site during the different phases of human activity and general environmental context of the site
To identify the contents of a pottery vessel dated to the Roman Period in order to esablish the level of preservation and the frequency and species-diversity of any environmental remains and provide information on the possible function of the pot.

THE SITE

The site lies inside the boundary of the Roman city of *Londinium*, approximately 100m south of London Wall. The site is in the valley of the Walbrook, a left-bank tributary of the lower Thames and about 0.7km from the modern waterfront of the Thames at the point where the confluence with the Walbrook is likely to have been. The British Geological Survey (1:50,000 Sheet 256 North London 1994) shows the site to be underlain by Alluvium marking the former floor of the Walbrook valley and extending northward from the north bank of the Thames. The Alluvium is flanked by the terrace deposits of the Taplow Terrace which overlie London Clay bedrock.

The site is on the valley floor of the Walbrook with a natural ground surface probably between 6.0m and 7.0m OD. The principal channel of the Walbrook was at a lower level, possibly close to OD (Barton 1992), and close to the east of the site. In the Roman period, the flow of the Walbrook appears to have been carefully managed, but by the medieval period the channel of the Walbrook was little more than an open sewer with the valley floor prone to flooding. The channel was covered over in the late medieval period, probably when St Margaret Lothbury, a short distance to the south, was rebuilt in 1440.

METHODS

Field investigations

During the excavation, undertaken from February to October 2007, column samples and bulk samples were recovered by Pre-Construct Archaeology Ltd and Quaternary Scientific from specific archaeological features and contexts, which would enable an assessment of the potential of the deposits to address the site-specific research questions.

Lithostratigraphic descriptions

The lithostratigraphy of all column samples (Tables 1 to 9) was described in the laboratory using standard procedures for recording unconsolidated sediment and peat, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition e.g. gravel, fine sand, silt and clay; (4) recording the degree of peat humification, and (5) recording the unit boundaries e.g. sharp or diffuse.

Organic matter determinations

Sub-samples were taken from one hundred and thirty-two selected bulk samples for determination of the organic matter content (Table 10). These records were important for two reasons: (1) they identified lithostratigraphic units with a higher organic matter content that may be suitable for radiocarbon dating, and (2) they identified increases in organic matter possibly associated with more terrestrial conditions or human activities e.g. dumping of doemstic waste. The organic matter content was determined by standard procedures involving: (1) drying the sub-sample at 110^0C for 12 hours to remove excess moisture; (2) placing the sub-sample in a muffle furnace at 550°C for 2 hours to remove organic matter (thermal oxidation), and (2) re-weighing the sub-sample obtain the 'loss-on-ignition' value (see Bengtsson and Enell 1986).

Pollen assessment

Sub-samples were extracted from one hundred and thirty-four selected bulk samples for assessment of the pollen content. The pollen was extracted as follows: (1) sampling a standard volume of sediment (1ml); (2) deflocculation of the sample in 1% Sodium pyrophosphate; (3) sieving of the sample to remove coarse mineral and organic fractions (>125µ); (4) acetolysis; (5) removal of finer minerogenic fraction using Sodium polytungstate (specific gravity of 2.0g/cm^3); (6) mounting of the sample in glycerol jelly. Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control is maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the Reading University pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). Plant nomenclature follows the Flora Europaea as summarised in Stace (1997). The assessment procedure consisted of scanning the prepared slides at 2mm intervals along the whole length of the coverslip and recording the concentration and state of preservation of pollen grains and spores, and the principal pollen taxa (Table 11).

Diatom assessment

Sub-samples were extracted from forty five selected bulk samples for assessment of diatoms. The diatom extraction involved the following procedures (Battarbee *et al.,* 2001):
Treatment of the sub-sample (0.2g) with Hydrogen peroxide (30%) to remove organic material and Hydrochloric acid (50%) to remove remaining carbonates
Centrifuging the sub-sample at 1200 for 5 minutes and washing with distilled water (4 washes)
Removal of clay from the sub-samples in the last wash by adding a few drops of Ammonia (1%)
Two slides prepared, each of a different concentration of the cleaned solution, were fixed in mounting medium of suitable refractive index for diatoms (Naphrax).

The assessment procedure consisted of scanning the prepared slides at 2mm intervals along the whole length of the coverslip and recording the concentration and state of preservation of diatom taxa (Table 12).

Plant macrofossil assessment (charred and waterlogged seeds)

One hundred and forty-four bulk samples were assessed for waterlogged macrofossil remains. Eighty two of these samples were also assessed for charred macrofossils, and an aditional eight samples were assessed only for charred macrofossils. To recover the waterlogged material, one litre sub-samples were wet-sieved using 300 micron and 1mm mesh sizes. The residues were scanned using a low power zoom-stereo microscope (Table 13). For the charred material and charcoal up to 10 litre sub-samples were processed by flotation by Pre-Construct Archaeology Ltd using a 1mm and 300-micron mesh sizes. The dried flots and residues were sorted 'by eye'. The flots and residues were viewed under a zoom stereo microscope at x7-45 magnification and the quantities and preservation of the charred remains in each sample were recorded (Table 14). Those samples with a moderate to high concentration of charred plant remains and charcoal underwent a more detailed assessment, which consisted of identifying the main waterlogged and charred seed taxa (Tables 13 and 14). Plant nomenclature follows Stace (1997).

Detailed wood assessment (charcoal and waterlogged wood)
Eighty-five bulk samples were selected for the detailed wood assessment. Species identification was undertaken on 10 randomly selected fragments from each sample (Tables 15 and 16). Preparation and examination of fragments, both charred and/or waterlogged, followed standard procedures as described in Hather (2000). During the assessment information concerning sample size and fragment condition were recorded alongside any evidence of thermal and biological degradation. Nomenclature used follows Stace (1997). Taxa suitable for potential radiocarbon dating are also indicated for each sample. Samples and taxa are ranked accordingly on a scale from 1 = greatest potential through to 3 = least potential and N = not recommended/no potential.

Insect assessment
Twenty-five bulk samples were selected and processed for the insect assessment. Samples were processed by paraffin flotation following the methodology of Atkinson *et al* (1987).
Wash bulk peat samples through a 5mm mesh using hot water to remove larger wood fragments
Wash remaining fraction onto a 300 micron mesh
Wash twice with hot water to remove the fine fraction, and two cold water washes to remove the possibility of a thermal gradient forming during the subsequent flotation
Drain well and mix with paraffin in a large bowl for 5 minutes
Decant excess paraffin back into the stock bottle through an 80 micron mesh
Add cold water to the organic fraction, mixing thoroughly
Leave to stand for 15 minutes
Decant the oil overlying the bulk material onto a 300 micron mesh and wash gently with detergent and hot water
Rinse with distilled water, dehydrate in 95% ethanol, and transfer to a sealed container for storage in 95% ethanol
Save remaining bulk material for further extraction of other fossil material.

Flots were scanned briefly using a low power binocular microscope (x10) to record the insect material, and to note principal beetle (Coleoptera) and bug (Hemiptera) taxa (Table 17).

Assessment of the contents of a Roman pottery vessel
During excavations at Drapers' Gardens, two small samples were taken from the fill [1934] of a Roman pot (sample <513>), from the inside of the vessel and from soil adhering to the outside. Both samples were soaked in water and very gently broken up and then processed by wet sieving through a stack of sieves (with the smallest mesh size being 0.25mm) for the recovery of any organic remains. The organic remains were scanned using a binocular microscope (Table 18).

RESULTS AND INTERPRETATION OF THE SEDIMENTARY SEQUENCES REPRESENTED IN THE COLUMN SAMPLES
Taking the five sequences described here together (from Sections 32, 48, 64 and 82; Figures 1 and 2), it is possible to recognise in general terms an upward transition from natural sediment at the base of the succession through semi-natural deposits to stratified archaeological horizons.

Natural sediment was seen only at the base of column sample <173/4> with an upper contact at 6.09m OD. Below this level mottled pebbly sand (Unit 1) is present representing context [3518]. Above this level gravelly clayey sand (Unit 2) is present incorporating scattered plant remains and variable amounts of mainly small charcoal particles [3373]. The top of this unit is at 6.59m OD. Similar

sediment is present in the lower part of the other three sequences described here - in column sample <RHUL-4> Unit 1, with an upper contact at 6.86m OD; in column sample <214> Unit 1, with an upper contact at 6.47m OD and in column sample <229> Unit 1, with an upper contact at 7.02m OD and extending down through column samples <230> and <231>. In all these sequences this sediment is brown in colour and incorporates variable amount of plant material, finely divided wood debris and charcoal. In column samples <229> and <230> mollusc remains are present including species favouring marshy habitats. In column samples <RHUL-4> and <229> the upper contact of the sediment is marked by a thin (10mm) layer of peat. In column samples <231> and <RHUL-4> the sediment is horizontally bedded but in column sample <214>, massive and in column sample <173/4>, chaotic. Apart from charcoal, no anthropogenic material was recorded from any of this sediment.

In column samples <214> and <173/4>, in the column sequence <229>, <230>, <231>, and in the lower part of Unit 1 in column sample >RHUL-4>, the sediments described above are assigned to archaeological Phase 4 and are thought to represent evidence of early Roman ground-raising on the floor of the Walbrook valley to create a ground surface at *c.* 7.2m OD. The nature of the sediments is not inconsistent with this interpretation, but suggests that as well as the artificial redistributon of natural sediments, natural or semi-natural processes were also involved in raising the ground level. A similar conclusion was reached on the basis of similar evidence recorded just to the south of the Drapers' Gardens site at Copthall Avenue (Batchelor *et al.* 2008). In both localities the limited range of anthropogenic material preserved in this sediment (exclusively charcoal) suggests that this phase of occupation in the Walbrook valley preceded any intensive urban development.

The upper part of Unit 1 of column sample <RHUL-4> represents contexts [982], [964] and context [2100] assigned to archaeological Phases 5a and 5b and recorded in the field as ditch fill. In the column sample the sediment is indistinguishable from material in the lower part of Unit 1, assigned to archaeological Phase 4, so may represent inwash of Phase 4 material into the ditch. Elsewhere, deposits assigned to Phase 5, in column samples <214>, Units 2 and 3 [2645], [2641], [2644], [2643] and column sample <229>, Units 2 and 3, [4250], [4256] are more chaotic in character, are generally black in colour and contain a much larger assortment of anthropogenic material, including CBM, mortar and remains of edible shellfish. Similar material in column sample <RHUL-4>, Unit 2 represents context [719] and is assigned to Phase 6a.

The upper part of the column sequence <173/1> - <173/4> incorporates the fill of a substantial excavation - cut [3280]. At the base of the sequence within the cut is silty fine sand [3283] which contains sparse anthropogenic debris. Above this and forming the bulk of the infill within the excavation is a bed of peat, *c.* 0.39m thick [3200], [3279]. Small amounts of sand and a few clasts of flint are present in the peat, but no anthropogenic material was recorded. The upper contact of the peat is at 7.27m OD. The cut and the fill are all assigned to archaeological Phase 4.

Overlying the peat and representing context [3199] is a dark (dark greyish brown to black) deposit (<173/1>, Units 2, 3, 4, and 5), crudely bedded and rich in anthropogenic material, including remains of edible shellfish, charcoal, CBM, mortar, wood fragments and a piece of a leather strap. This material has also been assigned to Phase 4 but is all above the level of 7.2m OD, thought to be the level of the ground surface created during Phase 4, and in addition resembles deposits assigned elsewhere to Phases 5 and 6.

RESULTS AND INTERPRETATION OF THE SEDIMENTARY SEQUENCES REPRESENTED IN SECTION S.62

A sediment sequence generally similar to those recorded in the column samples was examined in the field forming Section S.62 (Figure 3). All of the sediments forming the sequence exposed in Section S.62 have been provisionally assigned to archaeological Phase 4.

At the base of Section S.62, forming context [3163], dark bluish grey sand and gravel was present with a sub-horizontal upper contact at a level of *c.* 6.3m OD. No anthropogenic material was recognised in this unit and it probably represents the upper part of the underlying natural sediment, or possibly natural sediment redistributed during ground-raising activity early in the Roman period.

Overlying the sand and gravel in Section S.62 was a sequence of sediments *c.* 1.3m thick forming discontinuous sub-horizontal beds or resting on concave upward bounding surfaces. The diversity of anthropogenic material appeared to increase upward in this sequence and two contexts, [3028] and

[3111], have been recognised as ditch fills. Within the lower part of this sequence, within context [3330] a well-defined bounding surface was recognised, marked in places by compaction and elsewhere by a thin peaty accumulation of plant remains. This surface, close to a level of 6.6m OD seems likely to be equivalent to the surface forming the top of Unit 2 in column sample <173/4> and of Unit 1 in column samples <RHUL-4>, <214> and <229>. As suggested, above this surface may be the surface resulting from ground-raising in the early Roman period. However, context [3330] has a rather even, but less well-defined, upper surface close to 7.2m OD and this may, alternatively, represent the raised Roman ground level. In either case, the overlying contexts [1967] [2984] [1912] may belong in Phase 5 or later rather than Phase 4.

The probable natural ground surface at the Drapers' Gardens site is identified at a level of *ca.* 6.0m OD. Above this level in all the sequences examined, semi-natural sediments are present, some of which appear to have been deposited naturally in an alluvial environment while others appear to have been redistributed in the course of floodplain and valley floor management. All of this material contains relatively little anthropogenic material and therefore appears to have been deposited, or put in place, at a time of low-intensity land-use in the surrounding area. The upper surface of these semi-natural deposits, most likely the surface resulting from ground-raising early in the Roman period, lies somewhere between *c*. 6.5m OD and *c*. 7.3m OD. At least two bounding surfaces with appropriate characteristics can be recognised within this height range. All of this material was deposited, or put in place, at a time of relatively low-intensity land-use in the surrounding area. The upper surface of these semi-natural deposits varies between 6.47m OD in column sample <214> and 7.27m OD in column sample <RHUL-4>. The overlying deposits, seen in all the sequences examined, are dark in colour, more or less chaotic or crudely bedded in structure and rich in anthropogenic material, principally CBM, mortar, charcoal and the remains of edible shellfish. The deposits recorded here from the Drapers' Gardens site are generally similar in character and arrangement to those recorded at a short distance to the south at the Copthall Avenue site (Batchelor *et al.* 2008).

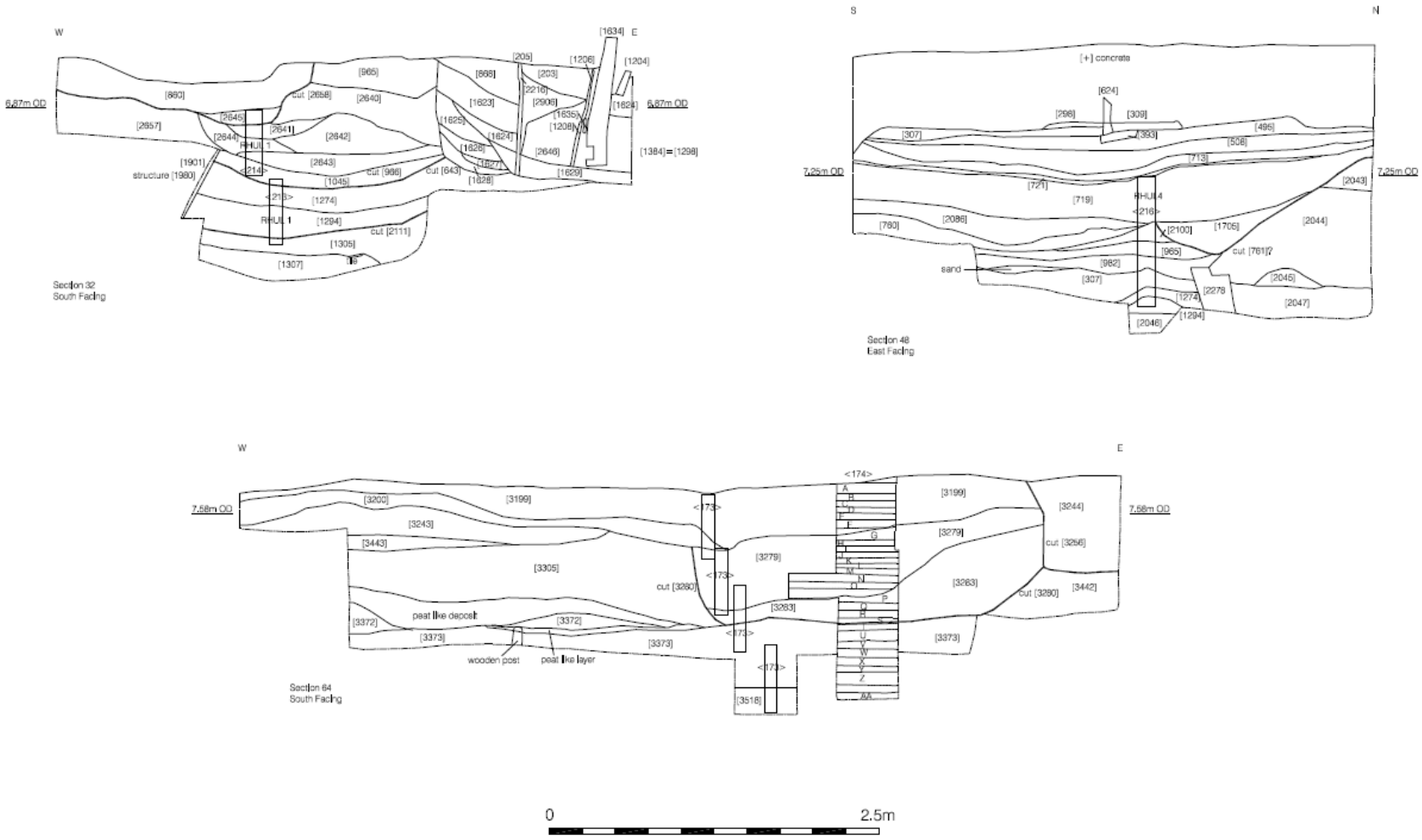

Figure 1: Illustrating the location of column samples <214> and <213> in Section 32, column sample <216> in Section 48 and column samples <173/1-4> and bulk samples <174> A to AA, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

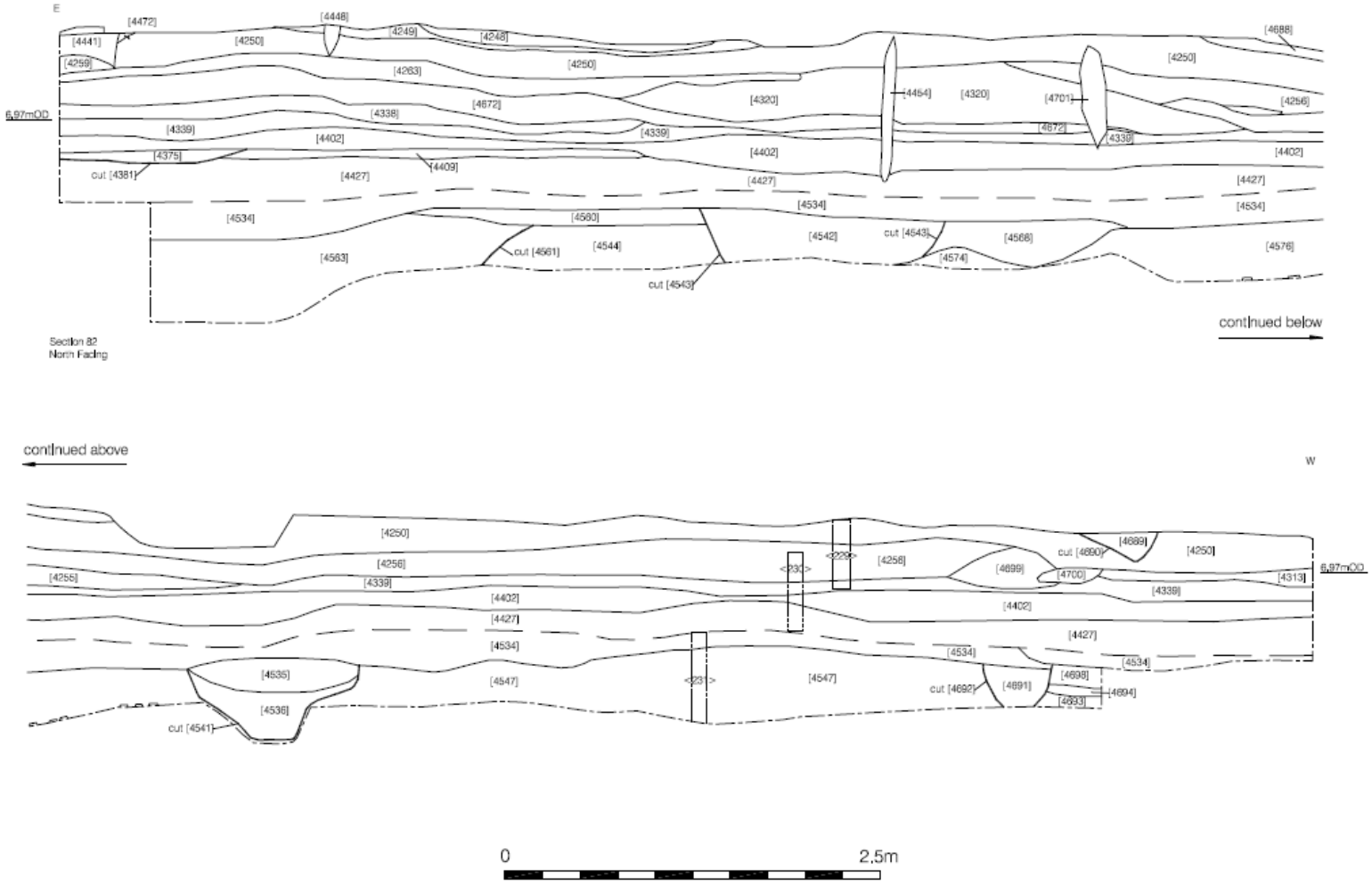

Figure 2: Illustrating the location of columns <229>, <230> and <231> in Section 82, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

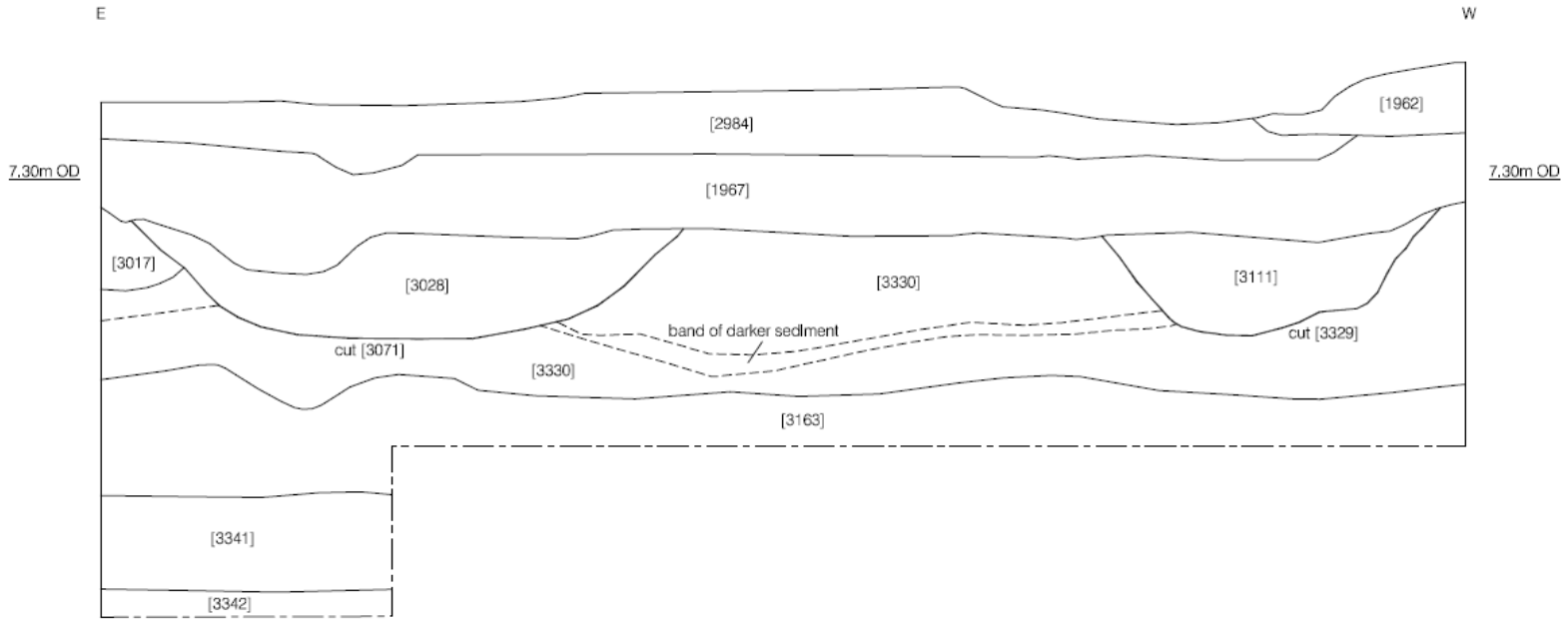

Figure 3: Section S. 62, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Table 1: Lithostratigraphic descriptions column sample RHUL4 <216>, Section 48, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
7.25-6.86	2	6a	(719)	Black; very poorly sorted sandy clayey silt with sub-angular flint clasts (up to 60mm) and peaty layers between 023 and 033; crude sub-horizontal bedding; abundant plant remains including cherry stone; fragments of wood; fragments of mollusc shell, probably *Mytilus edulis* (the Common Mussel); slender long bone, possibly avian; charcoal; CBM; vivianite; sharp contact with:
6.86-6.25	1	5b, 5a, 6b, 4	(2100) (965) (982) (1043) (1274) (1294) (2046).	10YR4/2 dark greyish brown; very poorly sorted clayey silt with thin sand layers and scattered sub-angular flint clasts (up to 35mm); crude sub-horizontal bedding; abundant plant remains; wood fragments; charcoal

Table 2: Lithostratigraphic descriptions column sample <173> (1 of 4), Section 64, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
7.73-7.55	5	4		10YR4/2 very dark greyish brown to black; very poorly sorted sandy silty clay with scattered sub-angular and well rounded flint clasts (up to 20mm); crumb structure; common plant remains; fragments of mollusc shell - *Ostrea edulis* (the Common Oyster) and *Mytilus edulis* (the Common Mussel); charcoal; CBM; mortar; vivianite; gradual transition to:
7.55-7.48	4	4	(3199)	10YR3/2 dark greyish brown; poorly sorted sandy silty clay with scattered flint granules (up to 10mm); common plant remains; charcoal; CBM; well marked transition to:
7.48-7.45	3	4	(3199)	Black; sparse very poorly sorted sandy silty clay; crude sub-horizontal bedding; abundant wood debris; discontinuous partings of broken mollusc shell (*Ostrea* and *Mytilus*); well-marked transition to:
7.45-7.27	2	4	(3200)	10YR4/2 very dark greyish brown to black; very poorly sorted sandy silty clay with scattered sub-angular flint clasts (up to 40 mm); chaotic; abundant plant remains; wood fragments; mollusc shell (*Ostrea*); charcoal; CBM; piece of leather strap; sharp contact with:
7.27-7.23	1	4	(3279)	Black; unhumified plant remains (reeds, etc.)

Table 3: Lithostratigraphic descriptions column sample <173> (2 of 4), Section 64, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
7.32-6.82	1	4	(3279)	10YR2/2 very dark brown to black; peat - well preserved herbaceous remains passing down to reed dominated, scattered flint granules; piece of wood (50 x 20 mm) at 015-019; pupal case

Table 4: Lithostratigraphic descriptions column sample <173> (3of 4), Section 64, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description

7.03-6.89	3	4	(3279)	Black; peat - well preserved reed remains; very sparse mineral grains; sharp contact with:
6.89-6.78	2	4	(3279)	10YR2/2 very dark brown; silty well-humified peat with scattered clasts of sub-angular flint (up to 30mm) and rolled pellets of sand; vivianite; sharp contact with:
6.78-6.53	1	4	(3283) (3373)	10YR3/2 dark brown; moderately sorted silty fine sand with sub-angular flint clasts (up to 40 mm); massive; common plant remains; charcoal; plaster; small (4mm) sharp flint impact flake

Table 5: Lithostratigraphic descriptions column sample <173> (4 of 4), Section 64, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
6.59-6.09	2	4	(3373)	10YR4/2 dark greyish brown; very poorly sorted silty clayey sand with scattered sub-angular flint clasts (up to 60mm); chaotic; scattered plant remains; charcoal; vivianite; well-marked transition to:
6.09-6.00	1	4	(3518)	10YR6/2 light greyish brown with 5YR4/8 yellowish red mottling; moderately sorted slightly silty fine sand with scattered sub-angular flint clasts (up to 15mm); massive; vivianite?

Table 6: Lithostratigraphic descriptions column sample <214>, Section 32, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
6.85-6.82	3	5a	(2645)	10YR4/2 dark greyish brown; well sorted fine sandy silt; massive; common plant remains; sharp contact with:
6.82-6.50	2	5a	(2645) (2641) (2644) (2643)	Speckled 10YR4/2 dark greyish brown and 10YR7/2 light grey; gravelly sand; chaotic; common plant remains; wood fragments; scattered mollusc shell (juvenile Common Mussel - *Mytilus edulis*); CBM; well-marked transition to:
6.47-6.35	1	4	(1045)	Black oxidising to 10YR4/2 dark greyish brown; slightly gravelly silty clayey sand with sub-angular flint clasts becoming less clayey at base; massive; common plant remains; wood fragments; charcoal; vivianite

Table 7: Lithostratigraphic descriptions column sample <229>, Section 82, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
7.40-7.24	3	5b	(4250)	10YR3/2 very dark greyish brown and 10YR5/6 yellowish brown; very poorly sorted gravelly gritty silty sand with sub-angular flint clasts (up to 25mm); chaotic; scattered plant remains; common charcoal; CBM; mortar; strong acid reaction; vivianite; gradual transition to:
7.24-7.02	2	5b	(4256)	10YR2/2 very dark brown; very poorly sorted gravelly silty sand with gritty peat inclusions and sharply bounded silty clay inclusion; crudely bedded; common plant remains including fragments in silty inclusion; pieces of mollusc shell (Common Mussel - *Mytilus edulis*); charcoal; CBM including particles in peaty inclusions and in silt inclusion; vivianite; strong acid

				reaction; very sharp contact with:
7.02-6.90	1	4	(4339)	Thin (10mm) peaty layer at top of unit, overlying chaotic mix of gritty peat with gravelly clayey silt with clasts of sub-angular flint (up to 20mm); abundant plant remains; wood fragments; common mollusc remains; vivianite; weak acid reaction

Table 8: Lithostratigraphic descriptions column sample <230>, Section 82, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
6.96-6.91	4	5b	(4256)	Black (upper 10mm) passing down to 10YR3/2 very dark greyish brown; thin layer (10mm) of slightly sandy peat overlying well sorted very peaty silt; massive; common plant remains; common mollusc remains including whole gastropods (including *Succinea* spp); sharp contact with:
6.91-6.78	3	5b	(4256)	10YR3/3 dark brown; poorly sorted gravelly silty sand with well rounded and sub-angular flint clasts (up to 35mm); chaotic; scattered plant remains; vivianite; sharp contact with:
6.78-6.65	2	4	(4339) (4402)	2.5Y5/6 light olive brown and 2.5YN4 grey; very poorly sorted sandy clay and gravelly clayey sand with well rounded and sub-angular flint clasts (up to 35mm); chaotic; scattered plant remains; piece of charcoal; well-marked transition to:
6.65-6.46	1	4	(4427)	10YR3/2 very dark greyish brown; poorly sorted slightly gravelly gritty silty sand with sub-angular flint clasts (up to 20mm); massive; common plant remains

Table 9: Lithostratigraphic descriptions column sample <231>, Section 82, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Depth (m OD)	Unit number	Phase number	Context number	Description
6.67-6.63	3	4	(4534)	10YR3/3 dark brown; moderately sorted andy silty gravel with flint clasts (up to 35mm); massive; sharp contact with:
6.63-6.51	2	4	(4547)	10YR4/3 brown with 2.5YR3/4 dark reddish brown; poorly sorted gravelly sandy silt with flint clasts (up to 15mm); massive; common plant remains; vivianite; well-marked transition to:
6.51-6.17	1	4	(4547)	10YR4/3 brown alternating with 10YR3/3 dark brown; poorly sorted slightly gravelly sandy silt with flint clasts (up to 25mm); inclined bedding defined by variations of texture, colour and organic content; very common plant remains; wood fragments; vivianite

RESULTS OF THE ORGANIC MATTER DETERMINATIONS

The organic matter determinations indicate low values during Phases 2 and 3a (<5%), which is undoubtedly indicative of a sparsely vegetated alluvial floodplain environment on the margins of a river channel, and low intensity anthropogenic activity. However, during Phases 3b, 4 and 5 (AD 50 to 160) there is a notably increase in organic matter content, with values sometimes exceeding 50%, which correlates well with geoarchaeological and archaeological evidence for increased human activities resulting in the deposition of domestic waste materials. During Phases 6, 7 and 8 the organic matter

content of the archaeological contexts is highly variable, but there is a generally impression that there is an overall reduction. This is difficult to explain due to the overwhelming evidence for continued human activities at Drapers' Gardens, but may be due to increased incidence of flooding after AD 160, and especially during Phase 7 (AD 250 – 250/400), where the values are consistently low, and similar to Phases 2 and 3a. Alternatively, the lower values may reflect a change in the nature of domestic activities or the increased oxidation of organic matter due to drier surface conditions.

Table 10: Organic matter determinations, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Organic matter (%)
252	4940	2	2.16
238	4776	3a	2.88
246	4563	3a	4.29
253	4929	3a	4.22
245	4875	3b	16.12
155	3111	4	11.9
164	3279	4	49.39
175	64	4	79.67
210	4211	4	11.12
47	764	5a	9.96
56	939	5a	12.97
57	954	5a	9.45
60	982	5a	5.59
108	2521	5a	23.54
122	2606	5a	4.78
191	3981	5a	19.07
192	3995	5a	4.66
193	4001	5a	4.69
194	4015	5a	20.74
195	4031	5a	13.28
196	4042	5a	16.68
198	4045	5a	13.84
199	4047	5a	17.89
200	4063	5a	13.75
201	4072	5a	34.6
202	4079	5a	52.15
203	4075	5a	29.21
204	4089	5a	18.08
205	4068	5a	43.33
206	4091	5a	37.98
208	4144	5a	3.67
11	253	5b	10.77
24	331	5b	12.31
25	493	5b	17.56
51	868	5b	8.78
93	1897	5b	16.6
98	2036	5b	6.8
107	2309	5b	1.58
111	2391	5b	45.69
117	2510	5b	2.24
124	2789	5b	15.86
129	2781	5b	11.38
130	2784	5b	8.73
131	2789	5b	9.76
132	2799	5b	12.16
133	2795	5b	23.48
135	2791	5b	18.06

136	2771	5b	14.55
137	2785	5b	11.34
138	2805	5b	14.77
139	2803	5b	13.81
142	2937	5b	14.24
145	3010	5b	7.65
146	3016	5b	10.94
147	2985	5b	30.33
148	3041	5b	12.02
149	3003	5b	6.15
151	3032	5b	17.43
155	3124	5b	13.73
157	3187	5b	13.02
158	3164	5b	14.39
160	3189	5b	6.51
161	3204	5b	13.76
163	3254	5b	25.31
165	3292	5b	19.04
167	3506	5b	23.14
168	3371	5b	5.38
169	3413	5b	19.56
171	3526	5b	4.71
176	3617	5b	7.05
177	3620	5b	8.79
178	3644	5b	35.86
179	3649	5b	18.76
180	3670	5b	14.98
182	3885	5b	25.26
185	3909	5b	22.97
188	3961	5b	36.99
189	3964	5b	23.44
190	3905	5b	27.37
207	4083	5b	5.15
187	3935	5b	20.74
94	1895	5,6	4.89
8	222	6a	3.55
27	509	6a	20.02
44	719	6a	3.22
126	2820	6a	50.49
58	964	6b	2.43
68	893	6b	25.11
71	1260	6b	3.16
78	1322	6b	2.76
91	1640	6b	5.33
96	1876	6b	1.88
99	2064	6b	3.46
102	2192	6b	2.76
103	2194	6b	2.84
104	2196	6b	5.43
105	2242	6b	3.25
106	2135	6b	3.13
109	2218	6b	2.17
125	2691	6b	12.29
172	3541	6b	51.26
239	706	6b	13.37
12	292	6b	12.28
26	494	6,7	2.89

112	1583	6,7	9.38
4	189	7	6.79
6	172	7	2.58
9	104	7	2.84
10	254	7	3.73
17	305	7	3.09
30	598	7	4.37
32	615	7	5.11
37	645	7	5.38
62	1012	7	4.29
63	1032	7	3.86
65	998	7	6.86
69	1235	7	3.72
70	1279	7	2.74
70	1279	7	3.62
80	1362	7	2.83
82	1385	7	3.15
85	1506	7	6.53
86	1485	7	6.08
86	1485	7	9.18
90	1699	7	5.19
14	332	7,8	13.32
152	3026	7,8	30.92
23	297	8	4.04
29	605	8	8.13
33	499	8	6.78
35	606	8	4.36
39	650	8	3.06

RESULTS AND INTERPRETATION OF THE POLLEN ASSESSMENT

Sub-samples were taken from over one hundred selected bulk samples for the assessment of the pollen content. The results of the pollen assessment are discussed in Phase order as follows (Table 11):

Phase 2: Palaeochannel & Overbank Alluviation

No pollen and a low concentration of microscopic charred particles were preserved in the single sample from Phase 2. This finding is perhaps consistent with the low organic matter values (Table 10).

Phase 3: AD 50-70 Early Roman: Courdroy Structure, Channel and Infant Burials

Sub-Phase 3a: No pollen was preserved in samples <253> and <246> (contexts [4929] and [4563] respectively). Sample <238> (context [4776]) had a high pollen concentration and preservation comprising Lactuceae (daisy family), Poaceae (grass family) and *Chenopodium* type (e.g. fat hen). This assemblage indicates the presence of an open environment most likely modified by human activity.

Phase 4: AD 70-120 Consolidation Channel Construction

Pollen was present in all three samples. Samples <155> and <179> (contexts [3111] and [3849]) had low pollen concentration in a moderate state of preservation, comprising Lactuceae (daisy family), Cyperaceae (sedge family) and *Betula* (birch). Sample <210> (context [4211]) had moderate to high pollen concentration and preservation comprising: *Corylus* type (e.g. hazel), Poaceae, (grass family), *Chenopodium* type (e.g. fat hen) and *Ranunculus* type (e.g. creeping buttercup). These samples indicate a relatively open environment dominated by herbs, with sporadic shrub and tree taxa. Microscopic charred particles were present in low concentrations in only two of the samples.

Phase 5: AD 120-160 Road Layout and First Buildings

Sub-Phase 5a: Pollen was present in half of the twenty-two samples prepared. However, only two samples (<205> context [4068] and <206> context [4091]), both from fill [4069], contained pollen in a moderate to high concentration and state of preservation. Sample <205> comprised *Corylus* type (e.g. hazel), Poaceae (grass family) and Lactuceae (daisy family), while sample <206> comprised *Corylus*

type, *Quercus* (oak), *Alnus* (alder) and *Betula* (birch). The other combined samples contained a low concentration and preservation of pollen with *Ulmus* (elm), *Ilex* (holly), *Hedera* (ivy), Cyperaceae (sedge family), *Chenopodium* type (e.g. fat hen), and *Polypodium* (polypody). These taxa indicate the presence of damp mixed deciduous woodland and open disturbed ground and grassland communites growing locally to the site during Phase 5a. Microscopic charred particles were present in all samples, in varying low to high concentrations.

Sub-Phase 5b: Forty-eight pollen assessments were carried out on samples from Phase 5b. Pollen was not recorded in seventeen samples. In the remaining thirty-one samples, pollen concentration was generally very poor and in a moderate state of preservation. The general assemblage was dominated by herbaceous taxa including: Poaceae (grass family; present in twenty-two samples), Cyperaceae (sedge family; present in seven samples) and Lactuceae (daisy family; present in 5 samples), with *Artemisia* (mugwort) and *Chenopodium* type (e.g. fat hen) both present in single samples. Shrub taxa were also recorded in many of the samples including *Corylus* type (e.g. hazel; present in seven samples) and *Ilex* (holly; present in 3 samples) with *Erica* spp (heather) and *Hedera* (ivy) present in single samples. Evidence for the tree taxa was near absent, with *Alnus* (alder) recorded in only four samples. This overall assemblage is indicative of an environment comprising open disturbed ground, grassland and shrubland communites growing locally to the site during Phase 5b. Microscopic charred particles were present in generally high concentrations in all samples.

Phase 6: AD 160-250 Continued Development of Buildings
Sub-Phase 6a: Five pollen assessments were carried out on samples from Phase 6a. No pollen was preserved in sample <8> (context [222]). Pollen was mainly preserved in low concentrations and a moderate to high state of preservation, with the exception of sample <27> (context [509]), which had a moderate to high pollen concentration. The taxa recorded in all samples comprised Poaceae (grass family), Cyperaceae (sedge family), Lactuceae (daisy family), *Quercus* (oak), *Corylus* type (e.g. hazel) and *Ilex* (ivy). Concentrations of microscopic charred particles ranged from low to high, but were present in all samples.

Sub-Phase 6b: Eighteen pollen assessments were carried out on samples from Phase 6b. Pollen was not preserved in twelve samples, and was only recorded in low concentrations and in a low to moderate state of preservation in the remaining six. These samples indicate the local growth of *Corylus* type (e.g. hazel), Poaceae (grass family), Lactuceae (daisy family), and *Chenopodium* type (e.g. fat hen), with *Alnus* (alder). Concentrations of microscopic charred particles ranged from low to high, but were present in all samples.

Phase 7: AD 250-350/400
Twenty pollen assessments were carried out on samples from Phase 7. Pollen was not preserved in eleven samples, and was only recorded in low concentrations and in a low to moderate state of preservation in the remaining nine. These samples indicate the local growth of Poaceae (grass family), Cyperaceae (sedge family), Lactuceae (daisy family), *Artemisia* (mugwort), *Plantago* sp (e.g. ribwort plantain) and *Chenopodium* type (e.g. fat hen), with *Alnus* (alder) and *Ulmus* (elm). Concentrations of microscopic charred particles ranged from low to high, but were present in all samples.

Phase 8: Very Late Roman AD 350+
Five pollen assessments were carried out on samples from Phase 8. No pollen was preserved in four of the samples. Sample <35> (context [606]) had a moderate to high pollen concentration and preservation, and the following taxa were recorded: Poaceae (grass family), Lactuceae (daisy family) and *Chenopodium* type (e.g. fat hen). Microscopic charred particles were recorded in generally high concentrations.

Phase 9: Medieval
Only a single sample was prepared and assessed from Phase 9 (sample <80>; context [1302]). Pollen was recorded in a low concentration and moderate state of preservation, and the taxa recorded include *Chenopodium* type (e.g. fat hen) and Lactuceae (daisy family). Microscopic charred particles were recorded in high concentrations.

Unknown Phasing
Three samples were prepared from samples of unknown phasing. Pollen was not recorded in sample <245> (context [4873]). Pollen was recorded in a low concentration and moderate state of

preservation in samples <12> and <259> (contexts [299] and [4708] respectively). *Chenopodium* type (e.g. fat hen) was recorded in sample <12>, whilst sample <259> contained Poaceae (grass family), Cyperaceae (sedge family) and *Corylus* type (e.g. hazel). Microscopic charred particles were recorded in low to moderate concentrations.

Table 11: Pollen assessment, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Main pollen taxa	Common name	Concentration	Preservation	Micro charred particles
					0 (none) to 4 (high)	0 (none) to 4 (high)	0 (none) to 4 (high)
252	4940	2	-	-	0	0	1
238	4776	3a	Lactuceae	Daisy family	3	3	1
			Poaceae	Grass family			
			Chenopodium type	e.g. Fat hen			
253	4929	3a	-	-	0	0	1
246	4563	3a	-	-	0	0	0
210	4211	4	*Corylus* type	e.g. Hazel	3	3	3
			Poaceae	Grass family			
			Chenopodium type	e.g. Fat hen			
			cf. *Ranunculus*	e.g. Creeping buttercup			
155	3111	4	Lactuceae	Daisy family	1	2	1
179	3849	4	Cyperaceae	Sedge family	1	3	4
			Betula sp.	Birch			
117	2054	5a	-	-	0	0	1
199	4047	5a	*Corylus* type	e.g. Hazel	1	1	4
196	4042	5a	*Polypodium*	Polypody	1	2	3
192	3995	5a	-	-	0	0	2
47	764	5a	Cyperaceae	Sedge family	2	1	1
			Poaceae	Grass family			
208	4144	5a	Poaceae	Grass family	2	2	1
			Ilex	Holly			
			Hedera	Ivy			
			Alnus	Alder			
			Corylus type	e.g. Hazel			

206	4091	5a	*Corylus* type	e.g. Hazel	4	3	1
			Quercus	Oak			
			Alnus	Alder			
			Betula sp.	Birch			
201	4072	5a	Poaceae	Grass family	1/2	2	4
			Ulmus	Elm			
204	4089	5a	-	-	0	0	4
202	4679	5a	-	-	0	0	2
200	4063	5a	-	-	0	0	1
193	4001	5a	*Corylus* type	e.g. Hazel	1	2	1
191	3981	5a	*Betula* sp.	Birch	1	2	3
			Alnus	Alder			
57	954	5a	*Chenopodium* type	e.g. Fat hen	1	2	1
			Ilex	Holly			
56	939	5a	-	-	0	0	1
122	2606	5a	Poaceae	Grass family	1	2	2
205	4068	5a	*Corylus* type	e.g. Hazel	3	3	1
			Lactuceae	Daisy family			
			Poaceae	Grass family			
60	982	5a	-	-	0	0	1
194	4015	5a	-	-	0	0	4
205	4075	5a	Poaceae	Grass family	1/2	3	4
198	4043	5a	*Corylus* type	e.g. Hazel	1	3	3
195	4031	5a	-	-	0	0	4
176	3617	5b	*Lactuceae*	Daisy family	1	2	4
			Erica spp.	Heath			
			Alnus	Alder			
137	2785	5b	*Corylus* type	e.g. Hazel	1	2	4

98	2036	5b	-	-	0	0	3
163	3254	5b	Poaceae	Grass family	1	2	1
177	3620	5b	-	-	0	0	2
180	3670	5b	*Chenopodium* type	e.g. Fat hen	1/2	2	3
			Corylus type	e.g. Hazel			
			Poaceae	Grass family			
187	3935	5b	*Corylus* type	e.g. Hazel	1	2	2
			Alnus	Alder			
151	3033	5b	Poaceae	Grass family	1/2	2	4
			Ilex	Holly			
93	1897	5b	-	-	0	0	3
131	2789	5b	*Artemisia*	Mugwort	1/2	2	4
			Poaceae	Grass family			
			Cyperaceae	Sedge family			
196	3016	5b	*Corylus* type	e.g. Hazel	1	1	2
			Poaceae	Grass family			
184	3964	5b	Poaceae	Grass family	1	2	1
135	2791	5b	*Alnus*	Alder	1	2	4
148	3041	5b	Cyperaceae	Sedge family	1	2	3
147	2985	5b	Poaceae	Grass family	1	2	4
125	2791	5b	Cyperaceae	Sedge family	2	3	3
			Ilex	Holly			
			Poaceae	Grass family			
145	3010	5b	*Alnus*	Alder	1	1	3
133	2795	5b	Poaceae	Grass family	2	2	2
			Cyperaceae	Sedge family			

			Lactuceae	Daisy family			
169	3413	5b	Poaceae	Grass family	1	1	3
129	2781	5b	Cyperaceae	Sedge family	1	2	4
			Poaceae	Grass family			
207	4083	5b	Lactuceae	Daisy family	1	2	2
168	3371	5b	-	-	0	0	1
11	253	5b	Poaceae	Grass family	1	2	1
			Corylus type	e.g. Hazel			
124	2789	5b	*Sphagnum*	Sphagnum moss	1	3	4
			Corylus type	e.g. Hazel			
188	3961	5b	-	-	0	0	1
136	2771	5b	Poaceae	Grass family	1	2	3
189	2803	5b	*Hedera*	Ivy	1	2	4
			Ilex	Holly			
			Poaceae	Grass family			
164	3278	5b	Lactuceae	Daisy family	2	3	1
			Artemisia	Mugwort			
			Poaceae	Grass family			
132	2799	5b	Cyperaceae	Sedge family	1/2	2	4
114	2494	5b	-	-	0	0	2
111	2391	5b	Poaceae	Grass family	1	2	4
107	2309	5b	-	-	0	0	1
185	3909	5b	-	-	0	0	3
196	3906	5b	*Corylus* type	e.g. Hazel	2/3	3	3
			Cyperaceae	Sedge family			
			Poaceae	Grass family			
161	3204	5b	Poaceae	Grass family	1	2	4
155	3124	5b	-	-	0	0	4

158	3164	5b	-	-	0	0	3
138	2805	5b	-	-	0	0	4
167	3506	5b	-	-	0	0	4
178	3644	5b	-	-	1	2	4
130	2784	5b	Poaceae	Grass family	1	2	3
175	3471	5b	Lactuceae	Daisy family	1	2	1
171	3526	5b	-	-	0	0	2
160	3189	5b	Poaceae	Grass family	1	2	2
142	2937	5b	Poaceae	Grass family	1	1	4
24	331	5b	-	-	0	0	0
149	3003	5b	-	-	0	0	3
165	3292	5b	Poaceae	Grass family	1	2	4
94	1895	5, 6	Poaceae	Grass family	2	2	1
104	2146	5, 6	Lactuceae	Daisy family	1	2	2
			Poaceae	Grass family			
157	3107	6a	Poaceae	Grass family	1	2	4
			Cyperaceae	Sedge family			
126	2820	6a	*Quercus*	Oak	1	2	1
			Corylus type	e.g. Hazel			
8	222	6a	-	-	0	0	1
27	509	6a	Lactuceae	Daisy family	3	3	1
108	2821	6a	*Ilex*	Holly	1	3	4
			Poaceae	Grass family			
68	893	6b	Poaceae	Grass family	1	2	4
106	2135	6b	*Chenopodium* type	e.g. Fat hen	1	2	2
71	1260	6b	*Alnus*	Alder	1	1	1
78	1322	6b	-	-	0	0	1
91	1640	6b	-	-	0	0	3

103	2194	6b	-	-	0	0	2/3
77	1322	6b	-	-	0	0	2
86	1488	6b	-	-	0	0	4
99	2064	6b	*Corylus* type	e.g. Hazel	1	2	4
112	1586	6b	-	-	0	0	2
102	2192	6b	-	-	0	0	2
5	195	6b	Lactuceae	Daisy family	1/2	1	2
			Poaceae	Grass family			
172	3541	6b	-	-	0	0	4
96	1876	6b	-	-	0	0	3
58	964	6b	-	-	0	0	2
105	2242	6b	-	-	0	0	3
109	2218	6b	*Alnus*	Alder	2	3	3
			Lactuceae	Daisy family			
			Chenopodium type	e.g. Fat hen			
			Corylus type	e.g. Hazel			
64	878	6b	-	-	0	0	3
26	494	6, 7	-	-	0	0	1
30	598	7	-	-	0	0	2
37	645	7	Lactuceae	Daisy family	1	2	4
32	1015	7	-	-	0	0	2
90	1699	7	-	-	0	0	0
30	598	7	*Alnus*	Alder	1	1	1
70	1244	7	*Ulmus*	Elm	1	2	3
62	1012	7	-	-	0	0	2
6	172	7	Cyperaceae	Sedge family	1	2	2
9	104	7	Poaceae	Grass family	2	3	3
			Cyperaceae	Sedge family			

71	1269	7	-	-	0	0	2
85	1506	7	Lactuceae	Daisy family	1/2	3	3
17	305	7	*Chenopodium* type	e.g. Fat hen	1	2	3
63	1032	7	-	-	0	0	2
70	1279	7	-	-	0	0	2
69	1235	7	-	-	0	0	3
65	998	7	*Plantago* sp.	Plantain	1	2	3
82	1385	7	-	-	0	0	2
4	189	7	-	-	0	0	1
80	1302	7	-	-	0	0	1
14	372	7	*Chenopodium* type	e.g. Fat hen	2	2	3
			Artemisia	Mugwort			
			Poaceae	Grass family			
52	3026	7, 8	Poaceae	Grass family	2	3	1
23	297	8	-	-	0	0	3
35	499	8	-	-	0	0	1
39	650	8	-	-	0	0	3
297	605	8	-	-	0	0	3
35	606	8	Lactuceae	Daisy family	3	3	3
			Poaceae	Grass family			
			Chenopodium type	e.g. Fat hen			
36	585	9	*Chenopodium* type	e.g. Fat hen	1/2	2	3
			Lactuceae	Daisy family			
12	299	?	*Chenopodium* type	e.g. Fat hen	1	2	2
245	4873	?	-	-	0	0	1
259	4708	?	Poaceae	Grass family	2	2	1
			Cyperaceae	Sedge family			
			Corylus type	e.g. Hazel			

RESULTS AND INTERPRETATION OF THE DIATOM ASSESSMENT

Sub-samples were taken from forty-five selected bulk samples for the assessment of the diatom content. There were no identifiable diatoms present on the slides (Table 12). Diatom valve breakage and silica dissolution was a common occurrence, and may have altered the diatom assemblage significantly (see Flower 1993; Ryves *et al.* 2001).

Table 12: Diatom assessment, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Concentration	Preservation	Weight (g)
252	4940	2	0	0	1.37
238	4776	3a	0	0	2.06
246	4563	3a	0	0	1.5
47	764	5a	0	0	1.13
56	939	5a	0	0	2.68
193	4001	5a	0	0	0.88
198	4045	5a	0	0	2.1
200	4063	5a	0	0	0.83
202	4079	5a	0	0	0.87
203	4075	5a	0	0	1.39
205	4068	5a	0	0	0.8
208	4144	5a	0	0	1.15
11	253	5b	0	0	2.07
24	331	5b	0	0	2.17
25	493	5b	0	0	2.15
51	868	5b	0	0	1.41
98	2036	5b	0	0	1.02
107	2309	5b	0	0	1.49
111	2391	5b	0	0	1.17
116	2510	5b	0	0	1.5
124	2789	5b	0	0	1.45
133	2795	5b	0	0	1.05
138	2805	5b	0	0	0.96
146	3016	5b	0	0	0.88
155	3124	5b	0	0	1.36
157	3187	5b	0	0	1.01
161	3204	5b	0	0	204
165	3292	5b	0	0	0.99
169	3413	5b	0	0	1.01
176	3617	5b	0	0	1.46
179	3649	5b	0	0	1.51
180	3670	5b	0	0	0.82
94	1895	5, 6	0	0	1.53
126	2820	6a	0	0	1.04
103	2194	6b	0	0	1.08
104	2196	6b	0	0	1.19
105	2242	6b	0	0	1.01
26	494	6, 7	0	0	1.23
4	189	7	0	0	0.98
80	1362	7	0	0	1.33
82	1385	7	0	0	1.29
85	1506	7	0	0	0.81
90	1699	7	0	0	1.13
152	3026	7, 8	0	0	1.93

33	499	8	0	0	1.11

RESULTS AND INTERPRETATION OF THE PLANT MACROFOSSIL ASSESSMENT

One hundred and forty four bulk samples were assessed for waterlogged macrofossil remains. Eighty-two of these samples were also assessed for charred macrofossils, and an aditional eight samples were assessed only for charred macrofossils. These samples represented contexts from Phases 2, 3a, 3b, 4, 5a, 5b, 5/6, 6a, 6b, 6/7, 7, 7/8, 8 and 9. The results described here combine the charred (flot) and waterlogged (seived) assessments, but where appropriate indicate whether macrofossil remains were charred or waterlogged.

Phase 2: Palaeochannel & Overbank Alluviation

One sample was assessed from Phase 2. This sample (sample <252>) contained only a limited number of small fragments of waterlogged wood (between 1 and 25 fragments).

Phase 3: AD 50-70 Early Roman: Courdroy Structure, Channel and Infant Burials

A total of sixteen samples were assessed from Phase 3. Three of these samples contained abundant well-preserved waterlogged or charred seeds.

Sub-Phase 3a: sample <244>, fill of posthole (4917), contained both charred and waterlogged seeds (between 26 and 50 of each, main taxa: *Carex* sp., Apiaceae) and sample <235>, fill of a Roman timber coffin [4968] containing decayed infant remains, contained between 26 and 50 charred seeds. In addition, samples <253> and <237> contained between 51 and 75 fragments of waterlogged wood. Sample <237> also contained between 26 and 50 mollusc shells. Sample <255>, fill of a Roman timber coffin [4968] containing decayed infant remains, contained over 101 fragments of waterlogged wood.

Sub-Phase 3b: Sample <239>, fill of ditch [4783], contained between 26 and 50 waterlogged seeds, fragments of waterlogged wood and mollusca. The main taxa in this sample were *Chenopodium* and *Carex* sp.

Phase 4: AD 70-120 Consolidation Channel Construction

Four samples were assessed from Phase 4. Three of these samples contained numerous waterlogged seeds: sample <155>, fill of a cut for ditch/pit [3329], contained between 51 and 75 waterlogged seeds, 26 to 50 bone fragments and 1 to 25 fragments of pottery; sample <164> contained 26 to 50 waterlogged seeds and 26 to 50 fragments of waterlogged wood; and sample <210>, fill of timber lining [4225], contained between 51 and 75 waterlogged seeds and 26 to 50 mollusc shells. The main taxa present in samples from Phase 4 were *Carex* sp., Cyperaceae, *Ranunculus* sp., Caryophyllaceae and Apiaceae.

Phase 5: AD 120-160 Road Layout and First Buildings

A total of eighty samples were assessed from Phase 5. Of these, thirty-three samples each contained between 26 and 75 waterlogged or charred seeds.

Sub-Phase 5a: Of the thirty-three samples, ten were from sub-Phase 5a. Sample <220>, fill of ditch [4385], contained more than 101 waterlogged seeds (main taxa: Apiaceae, *Ranunculus* sp., *Carex* sp. and cf. *Urtica*). One sample from sub-Phase 5a, sample <108> (fill of revetment structure (671)) contained seeds identified in the assessment as charred cereal grain (*Hordeum* or *Triticum* spp.).

Sub-Phase 5b: The remaining twenty-one samples from Phase 5 were from sub-Phase 5b. Samples <131> (fill of pit [2790]), <132> (gravel layer), <139> (fill of pit [2804] and <146> (fill of pit [3033] contained large quantities (between 26 and 75) of both charred and waterlogged seeds. In addition, sample <207>, a possible ash pit relating to oven feature [4044], contained between 76 and 100 charred seeds. The main taxa present in these samples were *Carex* sp., *Ranunculus* sp. and Cyperaceae. Five samples from sub-Phase 5b contained seeds identified in the assessment as charred cereal grain (*Hordeum* or *Triticum* spp.), namely samples <192> (fill of beamslot), <165> (fill of construction cut for pit [3293], <161> (fill of pit [3165]) and <151> (fill of pit [2804]).

Phase 5/6

It is unclear whether two of samples (<94> and <156>) assessed for macrofossils originate from Phase 5 or Phase 6. Of these, sample <156> contained between 51 and 75 mollusc shells, but did not

contain any waterlogged or charred seeds. Sample <94> contained a small number (between 1 and 25) of charred seeds.

Phase 6: AD 160-250 Continued Development of Buildings
A total of twenty five samples were assessed from Phase 6, incorporating sub-Phases 6a and 6b. Of these, two samples (<27> and <125>) contained reasonable amounts of waterlogged seeds.

Sub-Phase 6a: Sample <27>, a demolition or collapsed deposit, contained between 76 and 100 waterlogged seeds (main taxa: *Carex* sp.) and between 26 and 50 fragments of waterlogged wood.

Sub-Phase 6b: Sample <125>, fill of a timber post, contained between 51 and 75 waterlogged seeds (main taxa: *Carex* sp., Cyperaceae). In addition, sample <3> (backfill of a barrel) contained between 51 and 75 fragments of waterlogged wood, 51 to 75 mollusc shells, between 26 and 50 fragments of bone, and 26 to 50 fragments of leather. Sample <71>, a floor sample, contained between 26 and 50 mollusc shells, 76 to 100 fragments of bone and pottery. Charred seeds were not present in any of the samples from Phase 6.

Phase 6/7
It was unclear whether two samples (<26> and <112>) assessed for macrofossils originated from Phase 6 or Phase 7. Of these, sample <112>, fill of revetment structure [2221], contained between 26 and 50 charred seeds and 26 to 50 waterlogged seeds (main taxa: Apiaceae, Cyperaceae). Between 26 and 50 mollusc shells were also recorded in this sample.

Phase 7: AD 250-350/400
Twenty-two samples were assessed for macrofossils from Phase 7. Of these, two samples (<4> and <17>) contained more than 25 seeds. Sample <4>, fill of revetment structure [404], contained between 26 and 50 waterlogged seeds. Sample <17>, fill of linear cut [306], contained large numbers (between 76 and 100) of charred seeds, and between 26 and 50 mollusc shells. Sample <82>, a probable level for firebox [1506], contained between 1 and 25 charred seeds including cereal grain (*Hordeum* or *Triticum* spp.). In addition, sample <62>, fill of construction cut for ditch [1013], contained between 51 and 75 fragments of charred bone. Sample <63>, also fill of construction cut for ditch [1013], contained 26 to 50 mollusc shells and over 100 fragments of burnt bone and sample <243>, fill of a timber lined well, contained between 26 and 50 fragments of waterlogged wood, 26 to 50 mollusc shells and between 76 and 100 fragments of bone, as well as leather, pottery and a nail.

Phase 7/8
It was unclear whether two samples (<14> and <152>) assessed for macrofossils originated from Phase 7 or 8. One of these samples, timber structure fill sample <152>, contained between 51 and 75 waterlogged seeds (main taxa: *Ranunculus* sp., Cyperaceae) and 51 to 75 fragments of waterlogged wood. Sample <14>, fill of revetment structure [1766], contained between 26 and 50 mollusc shells.

Phase 8: Very Late Roman AD 350+
Six samples were assessed from Phase 8. Of these, two samples contained large numbers of seeds. Sample <35>, a dump/levelling waste layer, contained between 26 and 50 waterlogged seeds and 26 to 50 charred seeds. Sample <42>, primary fill of a cesspit, contained 26 to 50 charred seeds and between 51 and 75 waterlogged seeds.

Phase 9: Medieval
Two samples were assessed for macrofossil remains from Phase 9. Sample <14>, fill of a cut for posthole [646], contained between 26 and 50 waterlogged seeds. Sample <36>, fill of N-S linear ditch [586], did not contain seeds, but between 51 and 75 mollusc shells and 51 to 75 fragments of bone were present.

In conclusion, of the 152 bulk samples assessed, forty nine contained reasonable amounts of charred or waterlogged seeds (25 or more specimens per sample). Preservation of the macrofossils in these samples was generally very good, but the main taxa consisted of relatively few species: *Ranunculus* sp., *Carex* sp. and Cyperaceae were the most common taxa in most of these samples. Several samples contained cereal grain (*Hordeum* or *Triticum*), all but one of these originating from Phase 5.

Table 13: Waterlogged plant macrofossil assessment, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Description	Volume processed (litres)	Charred seeds	Waterlogged Seeds	Waterlogged Wood	Mollusca	Bone	Comments
252	4940	2	Natural alluvium	1	0	0	1	0	0	
238	4776	3a	Fill of [4777]	1	0	0	1	0	0	
244	4916	3a	Fill of [4917]	1	2	2	1	1	1	*Carex* sp. Apiaceae
245	4875	3a	Fill of [4561]	<1	0	1	2	0	0	
246	4563	3a	Fill of [4561]	1	0	1	3	0	0	
247	4952	3a	Fill of [4864]	1	1	1	0	0	0	
249	4931	3a	Dump/levelling layer	<1	1	0	0	0	0	
251	4932	3a	Dump/levelling layer	1	1	1	1	0	0	
253	4929	3a	Dump/levelling layer	1	0	1	3	0	0	
222	4553	3b	Fill of amphora (4546)	1	0	1	2	0	0	
237	4706	3b	Fill of [4783]	<1	0	0	3	2	0	
239	4706	3b	Fill of [4783]	1	0	3	2	2	0	*Chenopodium* Carex *sp.* Leaf fragments
155	3111	4	Fill of [3329]	0.5	0	3	1	1	2	*Carex* sp. Cyperaceae Pottery 1
164	3279	4	Secondary fill	0.5	0	2	2	0	1	Carex sp. *Ranunculus* sp.
210	4211	4	Fill of [4225]	0.5	1	3	1	0	0	Cyperaceae Caryophyllaceae Apiaceae
47	764	5a	Dump/flood layer	0.5	0	0	3	0	0	
56	939	5a	Dark organic layer	0.4	0	2	2	0	0	*Ranunculus* subgenus *batrachium* Cyperaceae
57	954	5a	Silty Layer.	0.4	1	2	2	0	0	Cyperaceae

			Dump layer. Roman.							
60	982	5a	Primary fill of [966]. Ditch. Roman.	0.5	1	2	0	1	0	*Chenopodium* *Carex* sp. *Ranunculus* sp. Caryophyllaceae
108	2521	5a	Fill of revetment structure [671]	0.5	1	3	0	1	0	*Ranunculus* sp. *Hordeum* (charred)
122	2606	5a	Dump/levelling layer	0.4	0	1	1	0	0	
191	3981	5a	Fill of [3982] Pit. Roman	0.5	0	0	2	0	0	
193	4001	5a	Fill of [4002]	0.5	0	3	0	1	0	*Carex* sp.
194	4015	5a	Fill of [4016]	0.5	0	1	1	1	1	
195	4031	5a	Fill of [4032]	0.5	0	0	0	0	0	
196	4042	5a	Fill of [4043]	0.5	1	0	0	0	1	
198	4045	5a	Fill of [4048]. Tertiary fill. Roman.	0.5	0	0	2	0	0	
199	4047	5a	Primary fill of [4048]. Roman.	0.4	0	1	1	0	0	
200	4063	5a	Fill of [4064] Pit. Roman.	0.5	0	2	1	0	0	*Ranunculus* sp.
201	4072	5a	Primary fill of [4073]. Construction cut for pit. Roman.	0.5	0	0	3	1	0	
202	4079	5a	Primary fill of [4080]. Construction cut for pit. Roman.	0.5	0	1	0	2	0	Moss
203	4075	5a	Cut of charcoal pit. Roman.	0.5	0	1	1	1	0	
204	4089	5a	Primary fill of [4090]	0.5	0	0	0	0	0	

205	4068	5a	Fill of [4069]. Ditch cut. Roman.	0.5	0	2	3	0	0	*Ranunculus* sp. *Carex* sp. Moss
206	4091	5a	Fill of [4069]	0.6	0	1	4	1	0	Moss
208	4144	5a	Fill of [4145]	0.7	2	0	0	0	1	
220	4406	5a	Fill of [4385]	1	0	5	2	3	0	Apiaceae *Ranunculus* sp. *Carex* sp. Moss cf. *Urtica*
11	253	5b	Fill of revetted ditch/channel [321]	1	0	0	3	2	0	
24	331	5b	Fill of revetted ditch/channel [321]	1	0	0	3	0	1	
25	493	5b	Fill of revetted ditch/channel [321]	<1	0	1	1	1	0	
51	868	5b	Backfill of posthole [863]	0.5	1	0	3	0	0	
93	1897	5b	Ashy deposit	0.5	0	0	0	0	1	
98	2036	5b	Clay layer	0.45	0	0	0	2	0	
107	2309	5b	Demolition debris	0.4	0	0	0	0	1	
111	2391	5b	Charcoal fill of pit [2392]. Roman.	0.5	0	0	0	0	0	
114	2494	5b	Ash layer	0.4	0	0	0	0	0	
116	2150	5b	Dump/levelling layer	1	0	2	2	1	0	Moss
124	2789	5b	Fill of [2790]. One of group of pits. Roman	0.4	0	0	0	0	0	
129	2781	5b	Fill of [2782].	0.55	0	3	0	1	0	*Carex* sp. Cyperaceae Pottery 1
130	2784	5b	Fill of [2786].	0.5	0	0	0	0	0	

			Construction cut for pit. Roman.							
131	2789	5b	Fill of [2790]. One of group of pits. Roman	0.5	2	2	0	2	0	*Carex* sp. *Ranunculus* sp.
132	2799	5b	Gravel layer	0.55	2	2	2	1	1 (charred)	
133	2795	5b	Fill of [2796]. Construction cut for pit. Roman.	0.5	0	2	2	0	0	Cyperaceae
135	2791	5b	Fill of [2791]	0.5	0	0	0	0	0	
136	2771	5b	Fill of [2770]	0.4	1	3	0	1	0	*Carex* sp.
137	2785	5b	Fill of [2790]. One of a group of pits. Roman.	0.5	1	3	0	2	0	*Ranunculus* sp. *Carex* sp.
138	2805	5b	Fill of [2806]. Construction cut for Pit. Roman.	0.5	0	0	4	0	0	
139	2803	5b	Fill of [2804]. Pit. Roman	0.5	3	2	2	1	0	*Carex* sp.
142	2937	5b	Fill of [2936]. Pit. Roman.	0.45	0	0	3	0	0	
145	3010	5b	Fill of [3021]. Pit. Roman	0.55	0	0	2	0	0	
146	3016	5b	Fill of [3033] Pit. Roman.	0.45	2	2	1	0	1	*Ranunculus* sp. Cyperaceae Pottery 1
147	2985	5b	Fill of [2986]	0.5	0	0	0	0	0	
148	3041	5b	Fill of [3042]	0.5	0	0	2	0	1	
149	3003	5b	Demolition debris. Burnt deposit. Roman.	0.5	0	0	0	1	0	
151	3032	5b	Fill of [2804]. Pit. Roman	0.55	0	3	1	0	0	*Ranunculus* sp. Cereal grain (*Hordeum* or *Triticum*)

157	3187	5b	Fill of [3162]	0.55	0	2	0	1	0	
158	3164	5b	Fill of [3165] Pit. Roman.	0.5	0	0	1	1	2	Pottery 1
160	3189	5b	Fill of [3190]	0.5	0	0	1	0	0	
161	3204	5b	Fill of [3165]. Pit. Roman.	0.4	0	3	1	0	0	*Carex* sp. *Ranunculus* sp. Poaceae Cereal grain
163	3254	5b	Fill of pit [3253]	0.6	2	1	2	0	0	
165	3292	5b	Fill of [3293]. Roman.	0.5	1	3	0	0	0	Charred cereal grain
167	3506	5b	Fill of [3507]. Roman.	0.5	0	2	2	0	0	*Carex* sp.
168	3371	5b	Demolition debris	0.6	1	2	0	0	0	*Ranunculus* sp.
169	3413	5b	Fill of [3414] Charcoal filled pit. Roman.	0.5	1	1	0	3	0	Pottery 1
171	3256	5b	Fill of [3527]. Pit. Roman.	0.5	0	2	0	0	0	*Prunus* Cyperaceae Moss
175	3471	5b	Fill of [3589]	0.5	1	1	5	0	0	
176	3617	5b	Fill of [3618] Pit. Roman	0.5	0	2	2	1	0	Cyperaceae
177	3620	5b	Fill of [3621]. Roman.	0.6	0	1	2	0	0	
178	3644	5b	Secondary fill of [3621] Pit. Roman.	0.5	0	0	0	0	0	
179	3649	5b	Fill of [3650]	0.5	1	1	0	2	0	
180	3670	5b	Fill of [3671]	0.5	2	1	2	0	0	
182	3885	5b	Fill of [3886]	0.5	1	0	0	0	0	
183	3877	5b	Dump/levelling layer	1	0	1	4	2	0	Moss
185	3909	5b	Fill of [3910] Pit. Roman.	0.5	1	0	1	0	0	
187	3935	5b	Fill of [3936]. Pit. Roman	0.8	0	0	2	0	0	

188	3961	5b	Fill of [3962]	0.5	0	1	1	0	0	
189	3964	5b	Fill of [3965]. Infilling deposit. Possibly domestic refuse. Roman	0.35	2	0	2	3	2	Caryophyllaceae
190	3905	5b	Fill of [3906]. Roman	0.5	0	0	3	0	0	Moss
192	3915	5b	Beamslot?	0.55	1	2	2	0	1	*Triticum* (charred)
207	4083	5b	Fill of [4082]	0.5	0	1	1	2	2	
94	1895	5, 6	Fill of revetment structure [1998]	0.5	0	0	0	0	0	
156	3126	5, 6a	Fill of box drain	1	0	0	1	3	1	
8	222	6a	Clay layer	0.5	0	0	0	0	0	
27	509	6a	Demolition/collapsed deposit	0.5	0	4	2	1	0	*Carex* sp.
126	2820	6a	Woodchip layer	0.5	0	0	2	0	0	
3	43	6b	Backfill of barrel	1	0	0	3	3	2	Leather 2
5	195	6b	Possible surface	0.4	0	0	1	0	0	
10	244	6b	Rubbish pit	1	0	0	0	0	0	
12	292	6b	Construction cut for pit	1	0	0	0	3	0	
58	964	6b	Floor	0.5	1	0	1	0	0	
64	878	6b	Hearth	0.3	0	0	0	0	0	
68	893	6b	Charcoal based clay layer	0.4	0	0	0	0	0	
71	1260	6b	Floor	0.4	0	0	0	2	4	Pottery 1
77	1322	6b	Fill of structure 1378	0.5	0	0	0	1	0	
78	1322	6b	Fill of structure 1378	0.5	0	0	0	0	0	
91	1640	6b	Charcoal rich layer	0.5	0	0	0	1	1	
96	1876	6b	Tile structure	0.4	1	0	0	0	0	Pottery 1
99	2064	6b	Demolition debris	0.5	0	0	0	0	0	Pottery 1
102	2192	6b	Fill of [2193]	0.5	0	0	0	0	0	

104	2196	6b	Fill of [2197]	0.5	0	0	0	0	0	
105	2242	6b	Fill of beamslot [2243]	0.5	0	0	0	0	0	
106	2135	6b	Clay and mortar layer	0.5	0	0	1	1	0	
109	2218	6b	Demolition debris	0.5	0	0	0	0	0	
117	2544	6b	Floor	0.5	0	0	0	0	0	
125	2691	6b	Timber post	0.45	1	3	0	0	0	*Carex* sp. Cyperaceae
172	3541	6b	Layer of burnt material	0.4	0	0	1	0	0	
26	494	6, 7	Fill of revetment structure [853]	1	0	0	0	0	0	
112	1583	6, 7	Fill of revetment structure [2221]	0.6	0	2	0	1	1	Apiaceae Moss Cyperaceae
4	189	7	Fill of revetment structure [404]	1	0	2	1	0	0	
6	172	7	Dump/levelling layer	<1	0	0	0	3	0	
9	104	7	Dump/levelling layer	0.5	0	0	0	0	0	
17	305	7	Fill of [306]	0.5	0	0	0	1	2	
30	598	7	Demolition debris	0.5	0	0	0	1	1	
32	615	7	Occupational layer	0.5	0	0	0	2	0	
37	645	7	Fill of posthole [646]	0.4	0	0	0	0	0	
62	1012	7	Fill of [1013]	0.5	0	0	0	1	3	Burnt bone
63	1032	7	Fill of [1013]	0.5	0	0	0	2	5	
65	998	7	Demolition debris	0.4	0	0	0	1	0	
69	1235	7	Demolition debris	0.3	0	0	0	0	0	
70	1279	7	Demolition debris	0.3	0	0	0	1	0	
80	1485	7	Burnt deposit	0.5	0	0	0	1	0	

			layer							
82	1385	7	Dump/levelling layer	0.3	0	0	0	1	0	
85	1506	7	Dump/levelling layer	0.3	0	0	0	0	1	
90	1699	7	Demolition debris	0.5	0	0	0	0	1	
243	4667	7	Fill of [4251]	<1	0	0	2	2	4	Pottery 1 Leather 1
14	332	7, 8	Fill of revetment structure [1766]	0.65	0	1	0	2	1	Pottery 1
152	3026	7, 8	Timber structure	0.5	0	3	3	1	0	*Ranunculus* sp. Cyperacaeae
23	297	8	Dump/levelling layer	0.4	0	0	0	2	0	
29	605	8	Upper fill of cut [614]	0.5	0	0	0	0	0	Pottery 1
33	499	8	Primary fill of [500]	0.55	0	0	0	1	2	
35	606	8	Lower fill of [614]	0.45	0	0	0	2	2	
39	650	8	Dump/levelling layer	0.3	0	1	0	1	0	Pottery 1
42	676	8	Primary fill of [677]	1	2	3	1	2	0	
36	585	9	Fill of N-S linear ditch [586]	0.5	0	0	0	0	3	

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; 1 = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

Table 14: Charred plant macrofossil assessment, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Volume processed (litres)	Volume remaining (litres)	Description	Charred seeds	Waterlogged Seeds	Waterlogged Wood	Mollusca	Comments
233	4555	3a	-	0	Timber coffin. Roman timber coffin containing infant remains [4579]	0	0	0	0	
235	4733	3a	10	0	Fill of [4986]. Fill of Roman timber coffin [4986] containing decayed infant remains [4991]	2	0	0	0	
236	4734	3a	-	-	Fill of [4987]. Fill of Roman timber coffin.	1	0	0	0	
254	4733	3a	10	0	Fill of [4986]. Fill of Roman timber coffin containing decayed infant remains [4991]	0	0	0	0	
255	4733	3a	10	0	Fill of [4986]. Fill of Roman timber coffin containing decayed infant remains [4991]	0	1	5	0	
210	4211	4	30	20	Fill of [4225]. Fill of square timber lined pit [4225]/[4226]. Roman.	0	0	0	2	
228	4504	4	20	10	Timber coffin. Roman timber coffin containing degraded infant remains.	1	0	0	0	
57	954	5a	10	0	Silty Layer. Dump layer. Roman.	0	0	0	1	
60	982	5a	10	0	Primary fill of [966]. Ditch. Roman.	0	1	0	0	
191	3981	5a	10	0	Fill of [3982] Pit. Roman	1	0	0	1	
192	3995	5a	10	0	Fill of [3996 (= Construction cut for pit). Roman.	1	0	1	0	Charred cereal grain

198	4045	5a	10	0	Fill of [4048]. Tertiary fill. Roman.	1	0	0	0	Nut shell
199	4047	5a	10	0	Primary fill of [4048]. Roman.	0	0	0	0	
200	4063	5a	10	0	Fill of [4064] Pit. Roman.	1	0	2	0	Nut shell
201	4072	5a	20	10	Primary fill of [4073]. Construction cut for pit. Roman.	0	0	0	0	Nut shell
202	4079	5a	10	0	Primary fill of [4080]. Construction cut for pit. Roman.	1	0	0	0	
203	4075	5a	10	0	Cut of charcoal pit. Roman.	1	0	0	2	
205	4068	5a	20	10	Fill of [4069]. Ditch cut. Roman.	0	0	0	0	
227	4581	5a	50	0	Fill of [4593] Ditch cut. Roman	3	0	1	2	
51	868	5b	10	0	Fill of [643]. Ditch. Roman.	2	0	5?	0	
78	3644	5b	10	0	Fill of [3621]. Roman.	1	0	0	0	
95	1954	5b	<10	0	Ash deposit. possible in situ burning. Sealed by a black ash layer [1897]. L Roman.	0	0	0	0	
108	2321	5b	20	10	Fill of [2322] Pit. Roman.	0	0	0	2	
111	2391	5b	10	0	Charcoal fill of pit [2392]. Roman.	0	0	0	1	
113	2490	5b	10	0	Ash layer. Probably associated with tiled structure [2308]. Roman.	0	0	0	0	

124	2789	5b	10	0	Fill of [2790]. One of a group of pits. Roman.	0	2	0	0	
129	2781	5b	10	0	Fill of [2782].	0	0	0	1	
131	2789	5b	10	0	Fill of [2790]. One of group of pits. Roman	1	0	0	0	
132	2800	5b	10	0	Fill of [2800]. Roman	0	1	0	0	
133	2795	5b	10	0	Fill of [2796]. Construction cut for pit. Roman.	0	0	0	1	
137	2785	5b	10	0	Fill of [2786]. Construction cut for pit. Roman.	1	0	0	0	
138	2805	5b	10	0	Fill of [2806]. Construction cut for Pit. Roman.	1	0	1	0	
139	2803	5b	10	0	Fill of [2804]. Pit. Roman	0	2	0	0	
142	2937	5b	10	0	Fill of [2936]. Pit. Roman.	0	0	0	0	
145	3010	5b	20	10	Demolition debris. Burnt deposit. Roman.	1	0	0	2	Nut shell
146	3016	5b	10	0	Fill of [3021]. Pit. Roman	1	0	0	0	
147	2985	5b	10	0	Fill of [2986]	0	1	1	0	
151	3032	5b	10	0	Fill of [3033] Pit. Roman.	0	0	0	1	
158	3164	5b	10	0	Fill of [3165] Pit. Roman.	1	0	0	0	Nut shell
161	3204	5b	10	0	Fill of [3165]. Pit. Roman.	2	2	0	0	Nut shell
165	3292	5b	10	0	Fill of [3293]. Roman.	1	0	0	0	
167	3506	5b	10	0	Fill of [3507]. Roman.	1	1	0	0	Nut shell
168	3371	5b	10	0	Fill of [3414] Charcoal filled pit. Roman.	0	0	0	0	

169	3413	5b	10	0	Fill of [3589]	1	1	0	0	Nut shell
171	3526	5b	10	0	Fill of [3527]. Pit. Roman.	0	0	0	0	
175	3471	5b	20	10	Demolition debris. Burnt deposit. Roman.	0	0	1	0	
176	3617	5b	10	0	Fill of [3650]. Pit. Roman.	1	0	0	0	
177	3620	5b	10	0	Fill of [3618] Pit. Roman	1	0	0	0	
182	3885	5b	10	0	Secondary fill of [3621] Pit. Roman.	0	0	0	0	
185	3909	5b	10	0	Fill of [3910] Pit. Roman.	0	0	0	0	
187	3935	5b	10	0	Fill of [3936]. Pit. Roman	0	0	0	0	
189	3964	5b	10	0	Fill of [3965]. Infilling deposit. Possibly domestic refuse. Roman	0	0	1	0	
190	3905	5b	10	0	Fill of [3906]. Roman	1	0	1	0	Nut shell
207	4082	5b	10	0	Pit. Possible ash pit relating to oven feature [4044]. Roman.	4	0	0	0	
94	1895	5, 6	30	20	Fill of revetment structure [1998]	1	0	0	1	
27	509	6a	10	0	Demolition/collapsed deposit. Poss. Collapsed wall. Roman	1	0	0	1	Nut shell
58	964	6b	20	10	Layer. Floor surface or hearth. Part of building [943]	0	0	0	1	

64	878	6b	10	0	Hearth. Prob associated with [877] floor surface.	0	0	0	0	
77	1322	6b	10	0	Fill of structure [1378]. Clay/tile rich fill of structure [1378]. Dump. Roman.	1	0	0	0	
78	1322	6b	10	0	Fill of structure [1378]. Clay/tile rich fill of [1378]. Dump.	0	0	0	1	
91	1640	6b	10	0	Layer. Charcoal rich layer within Roman house structure 942	0	0	0	0	
104	2196	6b	10	0	Fill of [2197] Beamslot part of group [2371]. Roman.	0	0	0	0	
106	2135	6b	10	0	Clay and mortar layer. Rendered wall associated with structure [942]. Roman	0	0	1	1	
109	2218	6b	10	0	Demolition debris. Burnt deposit. Roman.	0	0	0	1	
117	2544	6b	20	10	Timber post. Posthole [2924]	0	0	0	0	
165	2242	6b	10	0	Layer. Floor. Burnt clay floor surface. Roman.	0	0	0	1	
172	3541	6b	10	0	Layer of burnt material.	0	0	0	0	
112	1583	6, 7	10	0	Fill of rivetment structure [2221]	2	1	0	2	Nut shell
6	172	7	20	10	Dump/levelling layer.	0	0	0	0	
17	305	7	20	10	Fill of [306]. Drain.	4	0	0	2	
30	598	7	20	10	Layer. Burnt demolition debris.	0	0	0	0	
32	615	7	20	10	Occupational layer	0	0	0	2	

37	645	7	10	0	Fill of [646]. Cut of Posthole	0	0	0	1	
65	998	7	10	0	Layer. Demolition debris. Fire debris within building [942].	0	0	0	0	
69	1235	7	10	0	Demolition debris. Hearth sweepings?	0	0	0	0	
70	1249	7	10	0	Layer. Dump/levelling layer. Domestic waste.	0	0	0	0	
70	1249	7	10	0	Demolition debris. Hearth Deposit.	0	0	0	0	
73	1314	7	2	0	Layer. Demolition debris. Hearth deposit	1	0	0	0	
75	1335	7	<5	0	Demolition debris. Burnt layer, base of hearth.	0	0	0	0	
76	1342	7	<5	0	Dump/levelling layer. Makeup layer for hearth.	1	0	0	0	Nut shell
80	1362	7	<5	0	Burnt deposit layer. Poss relating to hearth feature [964]	0	0	0	0	
82	1385	7	10	0	mixed clay/silt layer. Prob. levelling up for build of firebox [1506] or previous phase. Roman.	1	0	0	0	Charred cereal grain
85	1506	7	10	0	Dump/levelling layer. External large Roman dump/made up ground.	0	0	0	0	
86	1485	7	10	0	Fill of revetment structure [1766]	0	0	0	1	
23	297	8	40	30	Upper fill of cut [614]. Poss refuse pit.	0	1	0	1	
29	605	8	10	0	Lower (primary) fill of [614] Pit.	0	1	0	1	

35	606	8	30	20	Dump/levelling layer. Waste.	2	2	0	1	
39	650	8	20	10	Fill of N-S Linear ditch [586]. MED.	0	0	1	1	
14	332	9	40	30	Fill of [646]. Cut of Posthole	2	0	0	1	
36	585	9	10	0	Fill of N-S linear ditch [586]	0	0	0	3	

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; 1 = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

RESULTS AND INTERPRETATION OF THE CHARCOAL AND WATERLOGGED WOOD ASSESSMENT

A substantial quantity of charcoal and waterlogged wood was recovered from the site. A total of 85 samples were assessed representing contexts from Phases 3a, 4, 5a, 5b, 5/6, 6a, 6b, 6/7, 7, 7/8, 8 and Phase 9. A single un-phased Sample [3805], recorded as 'void', was also assessed but is not considered further. A summary of all the taxa identified and the phases in which each taxon is represented is presented in Table 15. Table 16 presents the full results for each sample along with an evaluation of the potential for further analysis.

Phase 3: AD 50-70 Early Roman: Courdroy Structure, Channel and Infant Burials

A total of 4 samples, all from sub-phase 3a, were assessed resulting in the identification of 4 taxa. The condition of fragments, which included many that were both part-charred and waterlogged, was generally poor in all 4 samples and consequently identification proved difficult to establish. For this reason, only 2 of the 4 samples are considered suitable for further work. Though the potential for recovering further information of use is limited given the poor condition of the remains it is considered of worthwhile because the deposits appear to contain wood representing functional and possibly ritual wood use.

Phase 4: AD 70-120 Consolidation Channel Construction

Only 2 samples from this phase were examined. Only 1 taxon was identified. As with samples from coffin deposits in Phase 3a fragment condition was poor and included charred/waterlogged wood. Both samples however are recommended for further work because of the context from which the remains were recovered.

Phase 5: AD 120-160 Road Layout and First Buildings

A total of 45 samples, over half of all the samples provided, were from this phase. For phase 5 as a whole 16 taxa were identified.

Sub-phase 5a: 11 taxa were identified. In addition to many samples containing material in good to very good condition some material was both charred and waterlogged and in poor condition. Most of the samples derived from pit contexts and are likely to provide information concerning fuel use and the local vegetation. A total of 12 samples from sub-phase 5a were examined of which 11 are recommended for further analysis.

Sub-phase 5b: 13 taxa were identified. The samples from this phase were also predominantly from pit contexts and in similar states of preservation. Again, information concerning possible domestic fuel use and the local vegetation could be recovered through detailed analysis. A total of 33 samples from sub-phase 5b were examined of which 29 are suitable for further analysis.

Phase 5/6

It is unclear if this sample is from phase 5 or phase 6. Only 2 taxa were recovered from the single sample examined. The material was in good condition and suitable for further work. This should provide evidence of structural wood use.

Phase 6: AD 160-250 Continued Development of Buildings

A total of 12 samples were assessed from this phase: 1 sample only from sub-phase 6a and 11 samples from sub-phase 6a. In total, 11 taxa were identified for this phase as a whole.

Sub-phase 6a: 5 taxa were identified. The remains included fragments that were both charred and waterlogged. Otherwise, the condition of the remains was good and further work is recommended.

Sub-phase 6b: 9 taxa were identified. The charcoal from this phase derives from a number of structural contexts, including possible domestic structures, and will provide information regarding structural wood, fuel wood and the local vegetation. All the samples are suitable for further analysis.

Phase 6/7

Only 2 taxa were identified from the 1 sample examined. It is unclear if this sample relates to phase 6 or phase 7. The material in this sample were in very poor conditon, being both charred and waterlogged. No further work is recommended on this sample.

Phase 7: AD 250-350/400
A total of 13 samples were examined from phase 7 resulting in the identification of 6 taxa. More or less all the samples are suitable for further work though the condition of the remains in some samples was poor. Samples from hearth deposits are of particular interest because of the information they retain regarding the use of wood for fuel.

Phase 7/8
Only 1 sample was examined resulting in identification of 2 taxa. It is unclear if this context relates to phase 7 or phase 8, The material from this sample was in good condition and should provide information concerning structural wood use comparable with that of the sample from phase 5/6. Further analysis is recommended on this sample.

Phase 8: Very Late Roman AD 340+
In total 4 samples were examined from this phase resulting in identification of 6 taxa. All the material examined was in good condition and is recommeded for further analysis.

Phase 9: Medieval
Only 1 sample was available for this, the only non-Roman, phase. A total of 3 taxa were identified. Preservation of the remains was very good and this sample is recommended for detailed analysis.

For the majority of samples preservation was very good. Where fragments were part-charred and/or waterlogged preservation was noticably poorer. Some samples, more often those from hearth-like deposits, contained charcoal that displayed greater degrees of thermal degradation than typical for the assemblage as a whole.

The quantity of taxa identified during this assessment is relatively high and clearly indicates the exploitation of a broad range of tree and shrub species. Further taxa may be identified following more detailed analysis and also help clarify the apparent disparities in the range of taxa represented within and between the different context types and phases of occupation.

Full analysis of the samples recommended for further work should provide an overview of the various modes of wood use over the time the site was occupied, and help better identify which woods, if any, were favoured for particular purposes e.g. for structural use or as fuel wood.

The assessment identified wood probably derived from relatively local sources and at least one taxon, *Pinus sylvestris* (Scots Pine) that is unlikely to have been available locally. Detailed analysis should provide a clearer insight into the nature of the woody vegetation from which the wood represented was procured, if exploited woodlands were local or not, and if these resources were sustained or managed as the site evolved.

Table 15: Charcoal and waterlogged wood assessment, summary taxa list, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Genus/species	Common name	Phases present											
		3a	4	5a	5b	5,6	6a	6b	6,7	7	7,8	8	9
Acer campestre	Field Maple			λ	λ			λ		λ		λ	
Alnus glutinosa	Alder			λ	λ			λ		λ		λ	λ
Betula sp.	Birch				λ					λ			
Corylus avellana	Hazel	λ		λ	λ		λ	λ	λ	λ	λ	λ	
Euonymus europaeus	Spindle Tree				λ								
Fagus sylvatica	Beech	λ										λ	
Fraxinus excelsior	Ash			λ	λ								
Ilex aquifolium	Holly			λ									
cf Ligustrum/*Lonicera*	Privet/Honeysuckle						λ						
cf Ligustrum ovalifolium	Privet				λ								
Sub-fam: Maloideae	Hawthorn, Apple, Pear, Rowan, Whitebeams, Wild Service tree			λ	λ								
cf Pinus sylvestris	Scots Pine			λ									
Prunus spp.	Blackthorn; Cherries							λ					λ
Quercus spp.	Oak	λ	λ	λ	λ	λ	λ	λ	λ	λ	λ	λ	λ
Quercus/*Castanea*	Oak/Sweet Chestnut			λ	λ		λ						
Salix spp.	Willow			λ	λ		λ	λ		λ		λ	
Salix/*Populus spp.*	Willow/Poplar	λ			λ	λ		λ					
Ulmus spp.	Elm			λ				λ					
Viburnum sp.					λ			λ					

Table 16: Charcoal and waterlogged wood assessment, taxon identification, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
233	4555	3a	Timber coffin. Roman timber coffin containing infant remains [4579]	*Fagus sylvatica* (1) *Quercus* sp. (4) Indet. (inc. bark) (5)	3	N N N	Poor condition
235	4733	3a	Fill of [4986]. Fill of Roman timber coffin [4986] containing decayed infant remains [4991]	cf *Corylus avellana* (1) *Quercus* sp. (2) cf *Salix*/*Populus* (2) Indet. (5)	N	1 N (1) N	Charred and/or waterlogged. Poor condition.
254	4733	3a	Fill of [4986]. Fill of Roman timber coffin containing decayed infant remains [4991]	*Quercus* sp. (4) Indet. inc. twig (6)	N	N (1)	Charred and/or waterlogged
236	4734	3a	Fill of [4987]. Fill of Roman timber coffin.	*Corylus avellana* (1) *Quercus* sp. (2) cf *Quercus* sp. (4) Indet. (bark) (2)	2	1 N N N	Inc. charred and/or waterlogged
210	4211	4	Fill of [4225]. Fill of square timber lined pit [4225]/[4226]. Roman.	*Quercus* sp. (7) Indet. twig (1) Non wood (2)	2	N 1 N	charred and/or waterlogged
228	4504	4	Timber coffin. Roman timber coffin containing degraded infant remains.	*Quercus* sp. (5) Indet. (4) Non wood (1)	2	N N N	Poor condition
57	954	5a	Silty Layer. Dump layer. Roman.	*Alnus glutinosa* (1) *Corylus avellana* (1) *Quercus* sp. (5) Not wood (soil) (3)	1	(1) 1 N -	Good condition
60	982	5a	Primary fill of [966]. Ditch. Roman.	*Alnus glutinosa* (1) *Corylus avellana* (1) *Ilex aquifolium* (1) *Quercus* sp. (6) Indet. (bark) (1)	1	(1) 1 (1) N N	Therm deg high
191	3981	5a	Fill of [3982] Pit. Roman	*Corylus avellana* (4) *Fraxinus excelsior* (1) *Quercus* sp. (4) *Salix* sp. (1)	1	1 N N (1)	Inc. charred and/or waterlogged

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
192	3995	5a	Fill of [3996] (= Construction cut for pit). Roman.	*Acer campestre* (1) *Corylus avellana* (3) *Quercus* sp. (6)	1	(1) 1 -	Excellent condition
198	4045	5a	Fill of [4048]. Tertiary fill. Roman.	*Corylus avellana* (1) *Quercus* sp. (8) Indet. (1)	2	1 N N	Charred and/or waterlogged
199	4047	5a	Primary fill of [4048]. Roman.	*Corylus avellana* (1) *Quercus* sp. (7) Indet. (2)	1	1 N N	Charred and/or waterlogged
200	4063	5a	Fill of [4064] Pit. Roman.	*Acer campestre* (1) cf *Alnus glutinosa* (1) *Quercus* sp. (2) cf *Quercus* sp. (1) Indet. (4) Not wood (soil) (1)	N	1 N N N N -	Charred and/or waterlogged. V poor condition
205	4068	5a	Fill of [4069]. Ditch cut. Roman.	*Acer campestre* (1) *Corylus avellana* (1) *Fraxinus excelsior* (1) *Quercus* sp. (2) cf *Ulmus* sp. (1) Indet. (inc. bark) (4)	3	(1) 1 N N N N	Charred and/or waterlogged. Poor condition
201	4072	5a	Primary fill of [4073]. Construction cut for pit. Roman.	*Alnus glutinosa* (1) *Pinus sylvestris* (1) *Quercus* sp. (6) Indet. (2)	1	1 N N N	Charred and/or waterlogged
203	4075	5a	Cut of charcoal pit. Roman.	*Acer campestre* (1) *Corylus avellana* (4) *Quercus* sp. (5)	1	(1) 1 N	V good condition. Large frags
202	4079	5a	Primary fill of [4080]. Construction cut for pit. Roman.	*Acer campestre* (1) *Corylus avellana* (3) *Quercus* sp. (5) Indet. (1)	1	(1) 1 N N	V good condition

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
227	4581	5a	Fill of [4593] Ditch cut. Roman	cf Maloideae (2) *Prunus* sp. (2) *Quercus* sp. (3) *Viburnum* sp. (1) Indet. (inc. Bark) (2)	1	(1) (1) N 1 N	Good condition
51	868	5b	Fill of [643]. Ditch. Roman.	*Alnus glutinosa* (4) *Quercus* sp. (6)	1	1 N	Inc. charred and/or waterlogged
95	1954	5b	Ash deposit. possible in situ burning. Sealed by a black ash layer [1897]. L Roman.	*Corylus avellana* (8) *Quercus* sp. (2)	1	1 N	Frags soft/friable
108	2321	5b	Fill of [2322] Pit. Roman.	*Acer campestre* (1) *Corylus avellana* (3) *Quercus* sp. (6)	1	(1) 1 N	Frags friable
111	2391	5b	Charcoal fill of pit [2392]. Roman.	*Corylus avellana* (3) *Quercus* sp. (3) *Quercus*/*Castanea* sp. (2) *Prunus* sp. (1) *Salix* sp. (1)	1	**1** N N (1) (1)	Good condition
113	2490	5b	Ash layer. Probably associated with tiled structure [2308]. Roman.	*Corylus avellana* (2) *Quercus* sp. (2) cf *Quercus* sp. (1) Indet. (2) Non wood (soil) (3)	2	1 N N N N	Poor condition
129	2781	5b	Fill of [2782].	cf *Corylus avellana* (1) *Quercus* sp. (2) Indet. (7)	N	1 N N	Charred and/or waterlogged. Poor condition
137	2785	5b	Fill of [2786]. Construction cut for pit. Roman.	*Corylus avellana* (3) *Fraxinus excelsior* (1) *Quercus* sp. (4) *Salix* sp. (1) Not wood (stone) (1)	1	1 N N (1) -	Inc. charred and/or waterlogged
131	2789	5b	Fill of [2790]. One of a group of pits. Roman.	*Corylus avellana* (1) *Quercus* sp. (6) *Salix* sp. (3)	*1*	1 N (1)	Good condition

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
124	2789	5b	Fill of [2790]. One of group of pits. Roman	*Acer campestre* (1) *Corylus avellana* (6) *Quercus* sp. (2) Indet. (1)	1	(1) 1 N N	Good condition
133	2795	5b	Fill of [2796]. Construction cut for pit. Roman.	*Quercus* sp. (3) Indet. (inc. bark) (7)	N	N N	V. poor condition
132	2799	5b	Fill of [2800]. Roman	*Alnus glutinosa* (1) *Corylus avellana* (2) *Quercus* sp. (3) *Salix*/*Populus* (3) Indet. – not wood (1)	1	(1) 1 N (1) N	Good condition
139	2803	5b	Fill of [2804]. Pit. Roman	*Acer campestre* (1) *Corylus avellana* (2) Cf *Quercus* sp. (2) Indet (inc. bark) (4) Not wood (bone) (1)	N	**(1)** 1 N N -	**Charred and/or waterlogged. V poor condition**
138	2805	5b	Fill of [2806]. Construction cut for Pit. Roman.	*Corylus avellana* (2) *Quercus* sp. (3) cf *Quercus* sp. (1) cf *Salix*/*Populus* sp. (3)	2	1 N N\ (1)	Inc. charred and/or waterlogged
142	2937	5b	Fill of [2936]. Pit. Roman.	*Corylus avellana* (5) Maloideae cf *Sorbus* sp. (1) *Quercus* sp. (4)	1	1 (1) N	Good condition
145	3010	5b	Demolition debris. Burnt deposit. Roman.	*Alnus glutinosa* (1) *Corylus avellana* (3) *Euonymous europaeus* (1) cf *Ligustrum* (2) *Quercus* sp. (3)	1	(1) 1 (1) (1) N	Good condition
146	3016	5b	Fill of [3021]. Pit. Roman	*Acer campestre* (1) *Fraxinus excelsior* (3) *Quercus* sp. (3) *Salix* sp. (3)	1	(2) N (2) 1	Good condition

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
151	3032	5b	Fill of [3033] Pit. Roman.	*Acer campestre* (1) *Alnus glutinosa* (4) *Corylus avellana* (2) *Quercus* sp. (1) Indet. (2)	1	(1) (1) 1 (2) N	Some frags 'vitrified'
158	3164	5b	Fill of [3165] Pit. Roman.	*Acer campestre* (1) *Alnus glutinosa* (4) *Corylus avellana* (3) Not wood (1)	**1**	(1) (1) 1 N	Good condition
161	3204	5b	Fill of [3165]. Pit. Roman.	*Alnus glutinosa* (2) *Corylus avellana* (4) *Quercus* sp. (1) Indet. (inc. bark) (2)	1	(1) 1 N N	Inc. Charred and/or waterlogged
165	3292	5b	Fill of [3293]. Roman.	*Alnus glutinosa* (6) *Corylus avellana* (3) Non wood (soil) (1)	1	(1) 1 N	Charred and/or waterlogged
169	3413	5b	Fill of [3414] Charcoal filled pit. Roman.	*Corylus avellana* (8) Maloideae (1) *Quercus* sp. (1)	1	1 (1) N	Good condition
175	3471	5b	Fill of [3589]	Indet. all ?bark	N	N	Charred and/or waterlogged. V poor condition
167	3506	5b	Fill of [3507]. Roman.	*Corylus avellana* (1) *Quercus* sp. (7) *Quercus*/*Castanea* sp. (1) *Salix*/*Populus* sp. (1)	1	1 N N (1)	Good condition
171	3526	5b	Fill of [3527]. Pit. Roman.	*Fraxinus excelsior* (1) *Quercus* sp. (4) cf. *Quercus* sp. (2) Indet. (bark) (1) Not wood (soil) (1)	3	(2) N N N -	Inc. charred and/or waterlogged. Poor condition.
179	3649	5b	Fill of [3650]. Pit. Roman.	*Corylus avellana* (3) *Quercus* sp. (6) Indet. (1)	1	1 (2) N	Inc. charred and/or waterlogged

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
176	3617	5b	Fill of [3618] Pit. Roman	*Acer campestre* (1) *Alnus glutinosa* (1) *Corylus avellana* (3) *Quercus* sp. (4) *Viburnum* sp. (1)	1	(1) (1) 1 N (1)	Inc. charred and/or waterlogged
177	3620	5b	Fill of [3621]. Roman.	*Quercus* sp. (8) Indet. (2)	1	(1) N	Charred and/or waterlogged
178	3644	5b	Secondary fill of [3621] Pit. Roman.	*Acer campestre* (2) *Betula* sp. (2) *Corylus avellana* (5) *Quercus* sp. (1) *Salix* sp. (2)	1	(1) (1) 1 N (1)	V good condition. ?100% id
90	3905	5b	Fill of [3906]. Roman	*Acer campestre* (1) *Corylus avellana* (3) *Quercus* sp. (4) *Salix* sp. (1) Indet. (1)	2	(1) 1 N (1) N	Inc. Part-charred and/or waterlogged
185	3909	5b	Fill of [3910] Pit. Roman.	*Acer campestre* (1) *Corylus avellana* (1) *Quercus* sp. (7) *Salix* sp. (1)	2	(1) 1 N (1)	Inc. charred and/or waterlogged
187	3935	5b	Fill of [3936]. Pit. Roman	*Alnus glutinosa* (1) *Quercus* sp. (5) cf *Quercus* (1) Indet. (2) Non wood (stone) (1)	2	1 N N N -	Inc. charred and/or waterlogged
189	3964	5b	Fill of [3965]. Infilling deposit. Possibly domestic refuse. Roman	*Corylus avellana* (3) *Quercus* sp. (7)	**1**	1 N	Good condition
207	4082	5b	Pit. Possible ash pit relating to oven feature [4044]. Roman.	*Corylus avellana* (2) *Quercus* sp. (6) Indet. (bark) (2)	2	1 N N	Inc. charred and/or waterlogged Bone frag x1
94	1895	5,6	Fill of revetment structure [1998]	*Quercus* sp. (9) *Salix*/*Populus* (1)	1	1 N	Good condition

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
27	509	6a	Demolition/collapsed deposit. Poss. Collapsed wall. Roman	*Corylus avellana* (2) *Ligustrum*/*Lonicera* sp. (1) *Quercus* sp. (1) *Quercus*/*Castanea* sp (2) *Salix* sp. (1) Indet (3)	2	1 (1) N N (1) N	Inc. Part-charred and/or waterlogged
64	878	6b	Hearth. Prob associated with [877] floor surface.	*Quercus* sp. (10)	1	N	Therm deg high
58	964	6b	Layer. Floor surface or hearth. Part of building [943]	*Corylus avellana* (4) *Prunus* sp. (cf *spinosa*) (4) *Quercus* sp. (2)	1	1 (1) N	
77	1322	6b	Fill of structure [1378]. Clay/tile rich fill of structure [1378]. Dump. Roman.	*Quercus* sp. (8) *Salix* sp. (2)	2	(3) 1	Poor condition
78	1322	6b	Fill of structure [1378]. Clay/tile rich fill of [1378]. Dump.	*Quercus* sp. (9) Indet. (1)	2	(2)	Poor condition
91	1640	6b	Layer. Charcoal rich layer within Roman house structure [942]	*Acer campestre* (1) *Alnus glutinosa* (1) *Corylus avellana* (2) *Quercus* sp. (5) Indet. (cf bark) (1)	1	(1) (1) 1 N N	Good condition
106	2135	6b	Clay and mortar layer. Rendered wall associated with structure [942]. Roman	*Quercus* sp. (9) Maloideae cf *Sorbus* sp. (1)	1	N 1	Good condition
104	2196	6b	Fill of [2197] Beamslot part of group [2371]. Roman.	*Alnus glutinosa* (1) *Corylus avellana* (3) *Quercus* sp. (4) *Salix*/*Populus* (1) *Ulmus* sp. (1)	1	(1) 1 N (1) N	Good condition
109	2218	6b	Demolition debris. Burnt deposit. Roman.	*Acer campestre* (1) *Quercus* sp. (8)	1	1 N	Good condition
117	2544	6b	Layer. Floor. Burnt clay floor surface. Roman.	*Corylus avellana* (1) *Quercus* sp. (6)	(1)	1 N	?100% ID?
147	2925	6b	Timber post. Posthole [2924]	*Acer campestre* (1) *Corylus avellana* (1) *Quercus* sp. (7) *Viburnum* (1)	1	(1) 1 N (1)	Inc. Part-charred and/or waterlogged

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
172	3541	6b	Layer of burnt material.	*Quercus* sp. (8) *Salix*/*Populus* (1) Indet. (1)	1	(1) 1 N	Inc. large frags
112	1583	6,7	Fill of rivetment structure [2221]	*Corylus avellana* (1) *Quercus* sp. Indet. (6)	N	1 N N	Charred and/or waterlogged. V poor condition
6	172	7	Dump/levelling layer.	*Quercus* sp. (6) Not wood (soil) (4)	2	N -	Small fragments
17	305	7	Fill of [306]. Drain.	*Alnus glutinosa* (1) *Quercus* sp. (7) Indet. (1) Not wood (stone) (1)	2	1 N N -	Frags soft/friable
30	598	7	Layer. Burnt demolition debris.	*Quercus* sp. (8) Not wood (soil) (2)	2	(2) -	Good condition
37	645	7	Fill of [646]. Cut of Posthole	*Quercus* sp. (5) *Salix* sp. (4) Indet. (1)	2	N 1 N	Frags v. friable
65	998	7	Layer. Demolition debris. Fire debris within building [942].	*Quercus* sp. (8) Indet. (2)	2	(2) N	Poor condition
69	1235	7	Demolition debris. Hearth sweepings?	*Betula* sp. (3) *Corylus avellana* (1) Non wood (soil) (6)	3	(1) 1 N	Poor condition
70	1249	7	Layer. Dump/levelling layer. Domestic waste.	*Quercus* sp. (9) Not wood (soil) (1)	2	(2) N	Poor condition
75	1335	7	Demolition debris. Hearth Deposit.	*Quercus* sp. (8) Non wood (2)	2	N N	Therm deg high. Poor.
76	1342	7	Layer. Demolition debris. Hearth deposit	*Quercus* sp. (9) Indet. cf bark (1)	1	(2) N	Good condition
80	1362	7	Demolition debris. Burnt layer, base of hearth.	*Betula* sp. (3) *Quercus* sp. (2) Indet. (5)	1	1 N N	Good condition
82	1385	7	Dump/levelling layer. Makeup layer for hearth.	*Acer campestre* (1) *Corylus avellana* (1) *Quercus* sp. (7) *Salix* sp. (1)	1	(1) 1 N (1)	Good condition

Sample number	Context number	Phase number	Description	**Taxon ID (Qty)**	**Further analysis**	C14 **potential**	Remarks
86	1485	7	Burnt deposit layer. Poss relating to hearth feature [964]	*Quercus* sp. (8) Indet. (bark) (2)	2	(2) N	Poor condition
85	1506	7	Mixed clay/silt layer. Prob. levelling up for build of firebox [1506] or previous phase. Roman.	*Corylus avellana* (2) *Quercus* sp. (7) *Salix* sp. (1)	1	1 (1) N	Therm deg high
14	332	7, 8	Fill of revetment structure [1766]	*Corylus avellana* (6) *Quercus* sp. (3) Indet. (bark) (1)	1	1 N N	Good condition
23	297	8	Dump/levelling layer. External large Roman dump/made up ground.	*Alnus glutinosa* (1) *Corylus avellana* (2) *Quercus* sp. (6) *Salix* sp. (1)	1	(1) 1 N (1)	V. good condition
29	605	8	Upper fill of cut [614]. Poss refuse pit.	*Alnus glutinosa* (1) *Corylus avellana* (1) *Quercus* sp. (3) Indet. (bark) (1) Not wood (inc. ?bone) (3)	1	(1) 1 N N -	Good condition
35	606	8	Lower (primary) fill of [614] Pit.	*Acer campestre* (1) *Alnus glutinosa* (1) *Fagus sylvatica* (1) *Quercus* sp. (6) Indet. (1)	2	(1) 1 N N N	Frags friable
39	650	8	Dump/levelling layer. Waste.	*Quercus* sp. (9) Indet. (1)	2	N N	Good condition
36	585	9	Fill of N-S Linear ditch [586]. MED.	*Alnus glutinosa* (1) cf *Prunus* sp. (1) *Quercus* sp. (8)	1	1 (1) N	V. good condition
182	3805	?	VOID	*Corylus avellana* (4) *Quercus* sp. (4) *Salix* sp. (1) Indet (cf bark) (1)	1	1 N (1) N	Good condition

RESULTS AND INTERPRETATION OF THE INSECT ASSESSMENT

Phase 2: Palaeochannel and Overbank Alluviation
Context [4940] sample <252> taken from the natural alluvium was the only sample assessed from Phase 2 and contained a small beetle fauna. This fauna was dominated by water beetles. These include the predaceous diving beetle *Rhantus*. This genus is typically found in shallow ponds and drainage ditches. Likewise the water scavenger beetle *Helophorus* is typically found in shallow, muddy ponds. The rove beetle *Anotylus* is often found in rotting vegetation or carrion, where it preys on maggots.

Phase 3: AD 50-70 Early Roman: Courdroy Structure, Channel and Infant Burials
Insect remains from context [4952], sample <247>, taken from the fill of ditch [4864] give evidence of running water from predaceous diving beetle *Dytiscus*. There is also evidence of dung from the dung beetle *Aphodius* and of cattle dung in context [4952] from the dung beetle *Aphodius distinctus*.

Insect remains from context [4776], sample <238> from the fill of ditch [4777] include evidence of standing water, indicated by the presence of the water beetles *Hydraena* and *Cercyon.* There is also evidence of rotting organic matter (possibly dung), indicated by the rove beetle *Oxytelus*. Upland meadow habitat must have been nearby, as indicated by the herb and shrub-feeding leaf beetle *Chrysolina*.

Insect remains from context [4875], sample <245> from the fill of fill of ditch [4561] include evidence of well-vegetated standing water, as indicated by the water beetles *Coelostoma orbiculare, Cercyon marinus*, and *Ochthebius*. Large mammal dung was being eaten by the dung beetle *Aphodius*, and stored products were being consumed by the grain pest *Oryzaephilus surinamensis*. Hardwood trees such as hawthorn or beech must have been quite nearby, because a bark beetle *Vincenzellus ruficollis* was found in this assemblage, and it lives under the bark of such trees.

Insect remains from context [4916], sample <244> taken from the fill of a rubbish pit [4917] indicate standing water sediments indicated by presence of water beetle *Helophorus*. There is evidence of riparian environments from the ground beetle *Bembidion* in context [4916]. There is evidence of standing water with floating vegetation from the water beetles *Helophorus*, *Hydrobius fuscipes, Coelostoma orbiculare Cercyon* and *Ochthebius* in context [4916]. There is evidence of cattle dung from the dung beetle *Aphodius distinctus* in context [4916]. There is evidence of rotting or mouldly vegetation in context [4916] from the minute brown scavenger beetle *Dienerella*. There is evidence of rotting vegetation or meat from fly puparia in context [4916].

Insect remains from dump fills context [4929] and context [4932] provide evidence of running water from the predaceous diving beetle *Colymbetes* in context [4929] and from *Hydroporus* is context [4932]. There is evidence of standing water with floating vegetation from the water beetles *Hydrobius fuscipes* and *Cercyon* in context [4929]. There is evidence of dung from the dung beetle *Aphodius* in context [4932]; evidence of cattle dung in context [4929] from the dung beetle *Aphodius distinctus.* There is evidence of rotting or mouldly vegetation in context [4929] from the minute brown scavenger beetle *Dienerella*.

Context [4563], sample <246> taken from the fill of [4561] shows evidence of well-vegetated standing water, as indicated by the water beetles *Coelostoma orbiculare* and *Cercyon marinus*. Large mammal dung was being eaten by the dung beetle *Aphodius*.

Context [4553], sample <222> taken from the fill of Amphora [4546] contained sediments from the local environment, as riparian ground beetles (*Trechus* and *Bembidion*), riparian rove beetle (*Stenus*), and sand-dune dwelling scarab (*Psammodius*) are present, as well as water beetles *Helophorus* and *Cercyon.* There is evidence of dung from the dung beetle *Aphodius*. There is evidence of rotting deciduous wood from the small bark beetle *Rhizophagus* and the narrow-waisted bark beetle *Vincenzellus ruficollis*. There is evidence of rotting vegetation or meat from fly puparia.

Context [4706] sample <239> taken from the fill of [4783] fauna contains water beetles indicative of well-vegetated standing water, such as *Hydrobius fuscipes*, *Hydraena*, and *Cercyon*. Large mammal dung was being eaten by the dung beetle *Aphodius*, The presence of dead hardwood is indicated by the deathwatch beetle, *Anobium punctatum.* Hardwood trees such as hawthorn or beech must have

been quite nearby, because a bark beetle *Vincenzellus ruficollis* was found in this assemblage, and it lives under the bark of such trees.

Phase 5: AD 120-160 Road Layout and First Buildings
There is evidence of riparian habitats from the rove beetle *Stenus* in context [4406] sample <220> from the fill of [4385]. There is evidence of standing shallow water with floating vegetation from the water beetle *Helophorus*, *Hydrobius fuscipes, Coelostoma orbiculare*, and *Cercyon*. There is evidence of rotting deciduous wood from the furniture beetle, *Anobium punctatum* and the cylindrical bark beetle *Bothrideres*. Evidence of rotting or mouldly vegetation from the minute brown scavenger beetle *Dienerella*.

In context [3877], sample <183> there is evidence of rotting deciduous wood from the furniture beetle, *Anobium punctatum* and the cylindrical bark beetle *Bothrideres.* There is also evidence in this sample of stored grain in context [3877] from the sawtoothed beetle, *Oryzaephilus surinamensis*.

In contexts [253], [331], [493] and [2510] taken from ditch/channel [321] there is evidence of sandy banks or dunes from the scarab beetle *Psammodius*. Riparian environments are represented by the ground beetles *Bembidion* and *Trechus* and the rove beetle *Stenus*. There is evidence of running water in context [493] from predaceous diving beetle *Hydroporus* and of shallow, fast river from the long-toed water beetle *Pomatinus substriatus* (context [2510]). There is evidence of standing shallow water with floating vegetation from the water beetles *Helophorus, Anacaena,* and *Cercyon*. There is evidence of dung from the dung beetle *Aphodius*. There is evidence of rotting deciduous wood from the furniture beetle, *Anobium punctatum,* the narrow-waisted bark beetle *Vincenzellus ruficollis,* and from the small bark beetle *Rhizophagus.* There is evidence of stored grain in contexts [331] and [2510] from the sawtoothed beetle, *Oryzaephilus surinamensis* and the rusty grain beetle *Cryptolestes ferrugineus* (context [253]). There is evidence of rotting or mouldly vegetation from the minute brown scavenger beetle *Dienerella*.

Phase 5/6
Context [3126] sample <156> taken from the fill of a box drain contains evidence of standing water with rich vegetation, as indicated by the water beetle *Cercyon marinus*. *Aphodius* dung beetles were also present, feeding on large mammal dung. The deathwatch beetle *Anobium punctatum* was living in galleries inside dead hardwood, and stored grains were being eaten by the stored-product pest *Oryzaephilus surinamensis*.

Phase 6: AD 160-250 Continued Development of Buildings
Context [244] sample <10> surprisingly contained evidence of standing water, as indicated by the water beetle *Helophorus*. These often congregate in shallow, muddy pools. No other environmental indicators were found in this small sample.

Context [292] sample <12> gives evidence of running water from predaceous diving beetle *Hydroporus* and of shallow, fast river from the long-toed water beetle *Pomatinus substriatus*; evidence of standing water from water beetle *Cercyon* and from the aquatic leaf beetle *Donacia*; and evidence of dung from *Aphodius* dung beetle. There is evidence of rotting wood from the furniture beetle, *Anobium punctatum.*

Insect remains from context [43] sample <3> from the fill of a barrel give evidence of standing water from the water scavenger beetle, *Cercyon*. There is evidence of dung from the dung beetle *Aphodius*. Another scarab, *Aegialia sabuletti*, lives on sandy river banks. There is evidence of rotting wood from the furniture beetle, *Anobium punctatum.* There is evidence of stored grain from the sawtoothed beetle, *Oryzaephilus surinamensis*. There is also evidence of rotting vegetation or meat from fly puparia and histerid beetle (preys on maggots).

Phase 6/7
Context [494] sample <26> from the fill of revetment structure [853] shows evidence of sandy banks or dunes from the scarab beetle *Psammodius*. Riparian environments are represented by the ground beetles *Bembidion* and *Trechus* and the rove beetle *Stenus*.

Phase 7: AD 250-350/400

The insect remains from context [4667] from the timber-lined fill of well [4251], gives evidence of shallow standing water from the water beetles *Helophorus* and *Cercyon*. There is evidence of dung from the dung beetle *Aphodius*. Another scarab, *Aegialia sabuletti*, lives on sandy river banks. There is evidence of rotting deciduous wood in from the furniture beetle, *Anobium punctatum,* the fan-bearing wood borer *Ptilinus pectinicornis,* and the weevil *Dryophthorus corticalis*. There is evidence of stored grain from the sawtoothed beetle, *Oryzaephilus surinamensis* and the rusty grain beetle *Cryptolestes ferrugineus*. There is evidence of rotting vegetation or meat from fly puparia.

Context [189] sample <4> from the fill of revetment structure [404] gives evidence of standing water from the water beetles *Cercyon* and *Laccobius*. However, running water must have been nearby, because the stream-dwelling beetle *Pomatinus substriatus* was present. This beetle lives under stones in fast shallow rivers. Large mammal dung was present, as indicated by *Aphodius* dung beetle remains. The deathwatch beetle *Anobium punctatum* was living in galleries inside dead hardwood, and stored grains were being eaten by the stored-product pest *Oryzaephilus surinamensis*.

Phase 8: Very Late Roman AD 350+
Insect remains from context [676] sample <42> from the primary fill of cesspit [677] gives evidence of running water from predaceous diving beetle *Hydroporus* and of shallow, fast river from the long-toed water beetle *Pomatinus substriatus*; evidence of standing water from water beetle *Cercyon* and from the aquatic leaf beetle *Donacia*; and evidence of dung from *Aphodius* dung beetle. There is evidence of rotting wood from the furniture beetle, *Anobium punctatum.*

Insect remains from sample <174> gives evidence that standing water was in close proximity to the site, as indicated by the water beetles *Cercyon* and *Hydraena*. Large mammal dung was present, as indicated by *Aphodius* dung beetle remains. The deathwatch beetle *Anobium punctatum* was living in galleries inside dead hardwood.

Table 17: Insect assessment, taxon identification, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Context numbers	4940	4952	4776	4563	4875	4916	4932	4929	4553	4706	4406	3877	253	2510	331	493	3126	244	292	43	494	4667	189	676	STC64C
Sample numbers	252	247	238	246	245	244	251	253	222	239	220	183	11	116	24	25	156	110	112	3	26	?	4	42	174
Phase number	2	3a	3a	3a	3a	3a	3a	3a	3b	3b	5a	5b	5b	5b	5b	5b	5,6a	6b	6b	6b	6,7	7	7	8	?
	Natural alluvium	Fill of [4864]	Fill of [4777]	Fill of [4561]	Fill of [4561]	Fill of [4917]	Dump/levelling layer	Dump/levelling layer	Fill of amphora (4546)	Fill of [4783]	Fill of [4385]	Dump/levelling layer	Fill of revellted ditch/channel	Fill of revetted ditch/channel [321]	Fill of revetted ditch/channel [321]	Fill of revetted ditch/channel [321]	Fill of box drain	Rubbish pit	Construction cut	Backfill of barrel	fill of revetment structure (853)	Fill of [4251]	Fill of revetment structure 404	primary fill of [677]	?
COLEOPTERA								x2					x2												
Dytiscidae																									
Agabus sp.															+										
Colymbetes sp.								+		+															
Rhantus sp.	+						+																		
Dytiscus sp.		+																							
Hydroporus sp.							+									+								+	
Carabidae																									

Dyschirius sp.																							+		
Trechus spp.									+		+		+	+	+	+	+						+		
Bembidion bruxellense (Wesm.)																						+			
Bembidion spp.		+				+			+					+	+		+				+			+	
Pterostichus minor (Gyll.)											+														
Pterostichus spp.									+	+			+		+	+	+					+		+	
Agonum spp.								+					+												
Amara spp.		+		+		+		+							+		+					+			
Harpalus sp.						+																			
Microlestes maurus (Sturm)		+					+																		
Helophoridae																									
Helophorus spp.	+	+				+	+		+		+	+	+	+	+	+		+	+			+			
Histeridae																									
Genus et sp. indet.																				+					
Hydrophilidae																									
Hydrobius fuscipes (L.)						+		+		+	+														
Coelostoma orbiculare (F.)		+		+	+	+	+				+		+											+	
Anacaena sp.		+														+									
Cercyon marinus Thoms.				+	+	+					+				+	+						+			
Cercyon spp.		+	+				+	+	+	+		+	+	+			+			+	+	+	+	+	+
Laccobius sp.						+																	+		
Histeridae																									
Genus et sp.					+			+			+		+										+		

indet.																									
Hydraenidae																									
Hydraena sp.			+							+									+						
Ochthebius sp.		+			+	+					+		+		+	+									+
Silphidae																									
Silpha sp.															+										
Staphylinidae																									
Lesteva longelytrata (Goeze)		+											+												+
Lesteva sp.			+						+						+		+								
Anotylus spp.	+														+		+					+			+
Oxytelus spp.			+	+	+	+			+	+	+	+	+	+		+				+	+		+		
Bledius spp.		+				+				+			+		+										
Stenus spp.			+		+			+	+		+		+	+	+	+	+					+		+	
Lathrobium spp.			+		+			+	+	+	+			+	+		+					+	+		
Staphylinus sp.						+																			
Quedius spp.		+			+	+		+	+	+	+		+		+		+			+		+			
Tachinus spp.								+					+								+		+		
Tachyporus spp.							+	+	+		+		+		+		+			+				+	
Rybaxis sp.																								+	
Aleochara spp.			+	+	+		+							+						+					
Atheta spp.	+	+							+		+				+	+	+	+						+	
Xantholinus sp.		+						+							+	+									
Scarabaeidae																									
Aegialia sabuleti (Panz.)																				+		+			
Aphodius distinctus (Müll.)		+				+		+																	
Aphodius spp.				+	+		+		+	+	+		+	+	+	+	+		+	+		+	+	+	+

Psammodius sp.					+				+					+								+			
Scirtidae																									
Cyphon sp.																							+		
Dryopidae																									
Pomatinus substriatus (Müller)													+			+	+						+	+	
Elateridae																									
Ctenicera sp.						+																			
Athous sp.				+											+										
Anobiidae																									
Anobium punctatum (DeG.)										+	+	+	+	+	+	+	+		+	+		+	+	+	+
Ptilinus pecticornis (L.)																						+			
Nitidulidae																									
Epuraea sp.						+				+															
Genus et sp. indet															+										
Monotomidae																									
Rhizophagus spp.		+			+		+		+				+	+	+	+	+			+		+	+		+
Silvanidae																									
Oryzaephilus surinamensis (L.)					+							+		+	+		+			+		+	+		
Cucujidae																									

Cryptolestes ferrugineus (Steph.)													+									+			
Bothrideridae																									
Bothrideres sp.												+					+								
Corylophidae																									
Corylophus cassidoides (Marsh.)																								+	
Corylophus sp.					+												+			+		+	+		
Latridiidae																									
Dienerella sp.						+		+			+		+	+		+	+		+			+			
Corticaria sp.										+		+	+									+			
Stephostethus angusticollis (Gyll.)													+												
Colydiidae																									
Synchita humeralis (Fab.)													+												
Salpingidae																									
Vincenzellus ruficollis (Panz.)					+				+	+						+									
Chrysomelidae																									
Donacia sp.																								+	
Chrysomela sp.											+														
Chrysolina sp.			+										+												
Prasocuris phellandrii (L.)																								+	

Apionidae																									
Apion spp.						+		+	+	+	+		+	+	+		+						+		
Erirhinidae																									
Notaris sp.											+														
Curculionidae																									
Dryophthorus corticalis (Payk.)													+						+			+			
Rhyncolus sp.		+																							
Pityophthorus sp.													+												
Scolytus intricatus (Ratz.)																						+			
Xyleborus sp.													+												
DIPTERA																									
Genus et sp. indet. (Puparia)				+	+	+			+	+	+		+		+				+	+		+			+
HYMENOPTERA																									
Formicidae																									
Formica sp.								+														+			
Lasius sp.						+																			
Myrmica sp.							+	+																	

RESULTS AND INTERPRETATION OF THE POT CONTENTS

The samples consisted of dark brown well-compacted silty clay soil, with the weight of the internal and external samples being 90g and 20g respectively. Both samples produced small flots, the internal sample measuring 10ml and the external sample being less than 1ml.

Both samples contained identifiable plant remains, with most of the material being in the internal sample. A characteristic feature of both small botanical assemblages was the presence of similar small leaf fragments although no complete specimens were present which makes identification of these remains difficult.

A moderate amount of identifiable fruits and seeds were also noted, largely in the internal sample, with this material mainly representing plants of wetland habitats and disturbed (including cultivated) ground and waste places. Wetland (aquatic as well as bankside/marshland) species included water plantain (*Alisma* spp.), celery-leaved crowfoot (*Ranunculus sceleratus*), marshworts (*Apium* spp.), gypsy-wort (*Lycopus europaeus*), and rushes (*Juncus* spp.), while disturbed/waste ground plants included pale persicaria (*Persicaria lapithofolia*), docks (*Rumex* spp.), goosefoots etc (*Chenopodium* spp.), stinging nettles (*Urtica dioica*) and chickweeds (*Stellaria media*), the latter two being particularly indicative of nutrient rich soils.

Other botanical remains consisted of very fragmented wood and rootlets in both flots, while a small amount of degraded charcoal and several moss fragments were also present in the internal sample. The only other biological remains in the two samples were a moderate amount of insect (beetle) fragments in the internal sample with a few insect fragments also present in the external sample.

Both samples only produced very small biological assemblages with small leaf fragments being a large component of both flots and other botanical remains being from a range of wild plants, largely found in wetland and disturbed/waste ground environments. The presence of seeds of weeds/wild plants in the two samples suggests that none of the botanical remains are likely to be related to the initial use or function of the pot, with the material probably accumulating within the vessel after it had been discarded.

The wild plant (and indeed also the insect) remains could still provide information on the character of the local environment in the vicinity of the sampled feature if the pot had been recovered from a primary fill. The vessel, however, was found in a context with re-deposited material, in the fill of a timber revetment structure [1773]; as such the precise origins of the fill cannot be known and thus, the value of the plant remains in examining the nature of the local habitat is limited. Therefore, no further work on the botanical material is recommended.

Table 18: Assessment of a roman pottery vessel, Drapers' Gardens, 12 Throgmorton Avenue (Site Code: DGT06)

Sample number	Context number	Location	Charred wood		Waterlogged seeds		Waterlogged roots		Waterlogged wood		Waterlogged leaf		Waterlogged insects		Waterlogged moss		Comments
			A	D	A	D	A	D	A	D	A	D	A	D	A	D	
513	1934	Inside pot	2	1	3	2	1	1	2	1	3	1	3	1	1	1	degraded leaf fragments; wetland/disturbed & waste ground; moderate nos beetle fragments
513	1934	Outside pot			1	1	1	1	1	1	2	1	1	1	1		Mainly very fragmentary leaf

Key: A (abundance): 1 =1-10; 2 = 11-50; 3 =50 items
D (species diversity): 1 = 1-4; 2 =5-10; 3 =10+ species

DISCUSSION AND CONCLUSIONS

The environmental archaeological assessment of samples from a range of features, contexts and phases at Drapers' Gardens has indicated generally good preservation and concentration of bioarchaeological remains, with the exception of diatoms (unicellular algae). The geoarchaeological study of specific sedimentary sequences has indicated that the natural ground surface occurred at *c.* 6.0m OD and was consistently overlain by semi-natural sediments, deposited both naturally in an alluvial environment and by human activities during floodplain and valley floor management (upper surface between *c*. 6.5m OD and *c*. 7.3m OD). The overlying deposits, seen in all the sequences examined, are rich in anthropogenic material, principally CBM, mortar, charcoal and the remains of edible shellfish, and are very similar to those recorded at nearby Copthall Avenue (Batchelor *et al.* 2008).

During Phase 2 (Palaeochannel and Overbank Alluviation), the pollen assessment has unfortunately provided no evidence for the former vegetation cover, which may be attributed to the local depositional environmental, in particular physical destruction and oxidation during alluvial sedimentation. This is consistent with the results of the plant macrofossil assessment, which indicate only preservation of waterlogged wood. In contrast, the small insect fauna provide some useful information and suggest shallow, muddy ponds, as well as rotting vegetation or carrion.

During Phase 3 (Early Roman), the pollen assessment indicates an environment heavily modified by anthropogenic activities comprising grassland and disturbed ground taxa. The plant macrofossil assessment supports this interpretation with both charred and waterlogged plant remains, Mollusca and wood. Woodland utilisation is indicated by the presence of waterlogged wood and charcoal of beech, hazel and oak wood. The diverse insect fauna present in Phase 3 provide evidence for running and standing water, cattle dung, tall herb grassland (meadow), woodland (especially hawthorn and beech) and rotting dead wood. During Phase 4 (AD 70-120), there is better evidence for the former vegetation cover, with indications of open woodland, shrubland and grassland. However, due to the overwhelming evidence for human activities during this Phase, it is difficult to establish whether the pollen is truly contemporaneous with the period of occupation. The plant macrofossil assessment indicates that during Phase 4, waterlogged seeds are well preserved, along with bone, waterlogged wood and Mollsuca. Woodland utilisation is indicated by the presence of charcoal and waterlogged wood of hazel and oak.

During Phase 5 (AD 120-160), the pollen assessment indicates damp, mixed deciduous woodland, probably on the margins of the streams, and grassland. There is evidence from the plant macrofossil assessment for waterlogged seeds, as well as charred grain of *Hordeum* and *Triticum*. Woodland utilisation of a wide range of taxa is indicated by the presence of charcoal and waterlogged wood of alder, hazel, holly, ash, willow, elm, pine and oak. The insect fauna indicate standing shallow and running water, rotting deciduous wood, stored grain, dung and sandy riverside deposits. The presence of beetles indicative of shallow, fast flowing water is particularly interesting and may indicate flooding or at least higher energy fluvial conditions. During Phase 6 (AD 160-250), the pollen preservation is poorer than in Phases 3, 4 and 5, which is consistent with the lower organic matter content of the sediments. Nevertheless, the pollen taxa indicate grassland and open woodland. Waterlogged plant macrofossils are well preserved in Phase 6, as well as Mollusca. Woodland utilisation is indicated by charcoal and waterlogged wood of hazel, oak, willow, alder and maple. The insect fauna indicates standing water, shallow muddy pools, dung stored grain and shallow, fast flowing water. The latter is again especially interesting and may suggest increased flooding during the later Roman period.

During Phase 7 (AD 250-350/400), the pollen preservation is once again poor, but with general evidence for waste and disturbed ground. There is evidence from the plant macrofossil assessment for waterlogged seeds, as well as charred grain of *Hordeum* and *Triticum*. Woodland utilisation is indicated by charcoal and waterlogged wood of oak, alder, willow, birch, maple and hazel. The insect fauna indicate shallow standing water, dung, rotting deciduous wood, stored grain, and nearby running water. During Phase 8 (Very Late Roman AD 340+) and Phase 9 (medieval), the pollen preservation was generally very poor, although the plant macrofossil evidence indicates preservation of charred and waterlogged seeds, and

cereal grain. Woodland utilisation is indicated by charcoal and waterlogged wood of alder, oak, hazel, maple and willow in Phase 8. The insect fauna in Phase 8 indicate running water, shallow fast flowing water, standing water, dung, rotting wood and dead wood.

RECOMMENDATIONS

Based upon the results of the environmental archaeological assessment, further analysis of pollen grains and spores, plant macrofossils and insects is highly recommended due to the quality of preservation, and the suitability of these sub-fossil biological remains for addressing the following research questions:

1. What was the nature of the environment in the immediate pre-Roman period, in particular the vegetation cover, fluvial regime and land-use?
2. What evidence if there for changes in the vegetation cover during the Roman occupation, and what factors influenced these changes e.g. abandonment, changes in land-use?
3. What is the sedimentological evidence for flooding during the Roman period, and how do the events recorded compare with other sites in the Walbrook Valley? What was the impact of the flooding on the general environment, and did they lead to notable changes in human activity?
4. What was the nature of human occupation during the Roman period, in particular what evidence is there for changing Roman subsistence practices and resource exploitation?
5. During phases of settlement, what can the environmental archaeological remains tell us about the specific use and function of individual buildings and features?
6. How does the information generated by points 4 and 5 compare with other sites in Roman London, and Roman Britain in general, especially in terms of resource exploitation and subsistence, and living conditions?
7. What information can be obtained from the environmental archaeological investigation with respect to our knowledge and understanding of the taphonomy of sub-fossil biological remains in an urban context?

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APPENDIX 23: OASIS FORM

OASIS ID: preconst1-58347

Project details

Project name	An Archaeological Excavation at Drapers' Gardens, 12 Throgmorton Avenue, City of London, EC2
Short description of the project	An Archaeological Excavation which recorded a palaeochannel, a full sequence of multi-phase Roman activity dating from AD 62 to early 5th century. This included a group of infant burials within timber 'coffins', a timber corduroy structure dated via dendrochronology to AD 62 representing some form of boundary or embankment, a channel running parallel and a slightly later palisade enclosure. Subsequently the ground was reclaimed and consolidated being raised around 2m in height. Installed upon this consolidation in the early 2nd century was a road running c. north-south and associated parallel timber revetted channels. developed alongside this road both on the eastern and western sides were c. 7 phases of various timber framed buildings with the latest phase existing into the 4th century AD. These structures appeared to have mixed usage of industrial and domestic activities. Industrial activity seems to be well represented from the finds assemblages relating to these structures. Of particular note is a timber framed well constructed in the mid 4th century from within which was recovered a hoard of 20 copper alloy and pewter vessels representing a domestic kitchen or tableware assemblage. This hoard was deposited sometime after AD 375. Post-Roman activity was represented by deeper cut features such as medieval chalk foundations for a building alongside a fenceline and a collpased timber revetment which dated, via dendrochronolgy, to the late 12th century. A timber barrel well dating to the early post-medieval period was one of only a handful of later features. This was due to horizontal truncation across the site and the fact that the area of the site remained as open gardens until the late 19th century.
Project dates	Start: 20-09-2006 End: 29-10-2007
Previous/future work	Yes / No
Any associated project reference codes	DGT 06 - Sitecode
Type of project	Recording project
Site status	Area of Archaeological Importance (AAI)
Current Land use	Industry and Commerce 2 - Offices

Monument type	PALAEOCHANNEL Late Prehistoric
Monument type	TIMBER CORDUROY STRUCTURE Roman
Monument type	CHANNEL Roman
Monument type	PALISADES Roman
Monument type	DITCHES Roman
Monument type	PITS Roman
Monument type	POSTHOLES Roman
Monument type	ROAD Roman
Monument type	REVETTED CHANNELS Roman
Monument type	TIMBER FRAMED BUILDINGS Roman
Monument type	OVENS Roman
Monument type	HEARTHS Roman
Monument type	FOOTBRIDGES Roman
Monument type	WELLS Roman
Monument type	FLOORS Roman
Monument type	BOX DRAINS Roman
Monument type	WATER TANKS Roman
Monument type	TANNING PIT Roman
Monument type	FOUNDATIONS Medieval
Monument type	BARREL WELL Post Medieval

Significant Finds	COPPER-ALLOY HOARD Roman
Significant Finds	INTAGLIO Roman
Significant Finds	WOODEN RULER Roman
Significant Finds	WRITING TABLETS Roman
Significant Finds	HAIRPINS Roman
Significant Finds	STYLI Roman
Significant Finds	TOILET SET Roman
Significant Finds	AMETHYST BEAD Roman
Significant Finds	BROOCHES Roman
Significant Finds	LEATHER SHOES Roman
Significant Finds	BALLISTA BOLT Roman
Significant Finds	WOODEN DOOR Roman
Significant Finds	COINS Roman
Significant Finds	KEYS Roman
Significant Finds	KEYHOLE PLATES Roman
Significant Finds	BEAR SKULL Roman
Significant Finds	INFANT REMAINS Roman
Significant Finds	ADZE HAMMER Roman
Significant Finds	KNIVES Roman

Significant Finds	RINGS Roman
Investigation type	'Full survey','Open-area excavation','Watching Brief','Full excavation'
Prompt	Direction from Local Planning Authority - PPG16

Project location

Country	England
Site location	GREATER LONDON CITY OF LONDON CITY OF LONDON Drapers' Gardens
Postcode	EC2
Study area	0.34 Hectares
Site coordinates	TQ 3282 8140 51.5153906757 -0.08560862085080 51 30 55 N 000 05 08 W Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: 4.70m Max: 7.30m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Mills Whipp
Project design originator	Mills Whipp
Project director/manager	Tim Bradley
Project supervisor	Neil Hawkins
Type of sponsor/funding	Exemplar Developments LLP and Canary Wharf Developments

body

Project archives

Physical Archive recipient	LAARC
Physical Contents	'Worked bone','Worked stone/lithics','Animal Bones','Ceramics','Environmental','Glass','Human Bones','Industrial','Leather','Metal','Wood'
Digital Archive recipient	LAARC
Digital Contents	'Ceramics','Environmental','Glass','Human Bones','Industrial','Leather','Metal','Stratigraphic','Survey','Wood','Worked bone','Worked stone/lithics','Animal Bones'
Digital Media available	'Database','Survey','Text'
Paper Archive recipient	LAARC
Paper Contents	'Animal Bones','Ceramics','Environmental','Glass','Human Bones','Industrial','Leather','Metal','Stratigraphic','Survey','Wood','Worked bone','Worked stone/lithics'
Paper Media available	'Context sheet','Diary','Drawing','Matrices','Miscellaneous Material','Notebook - Excavation',' Research',' General Notes','Photograph','Plan','Report','Section','Survey ','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
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