Land at Spa Road, Bermondsey
London Borough of Southwark
A Post-Excavation Assessment Report

Planning Application Number: 07-AP-0804

National Grid Reference Number: SP 076 863

AOC Project No: 30165

Site Code: SRQ 07

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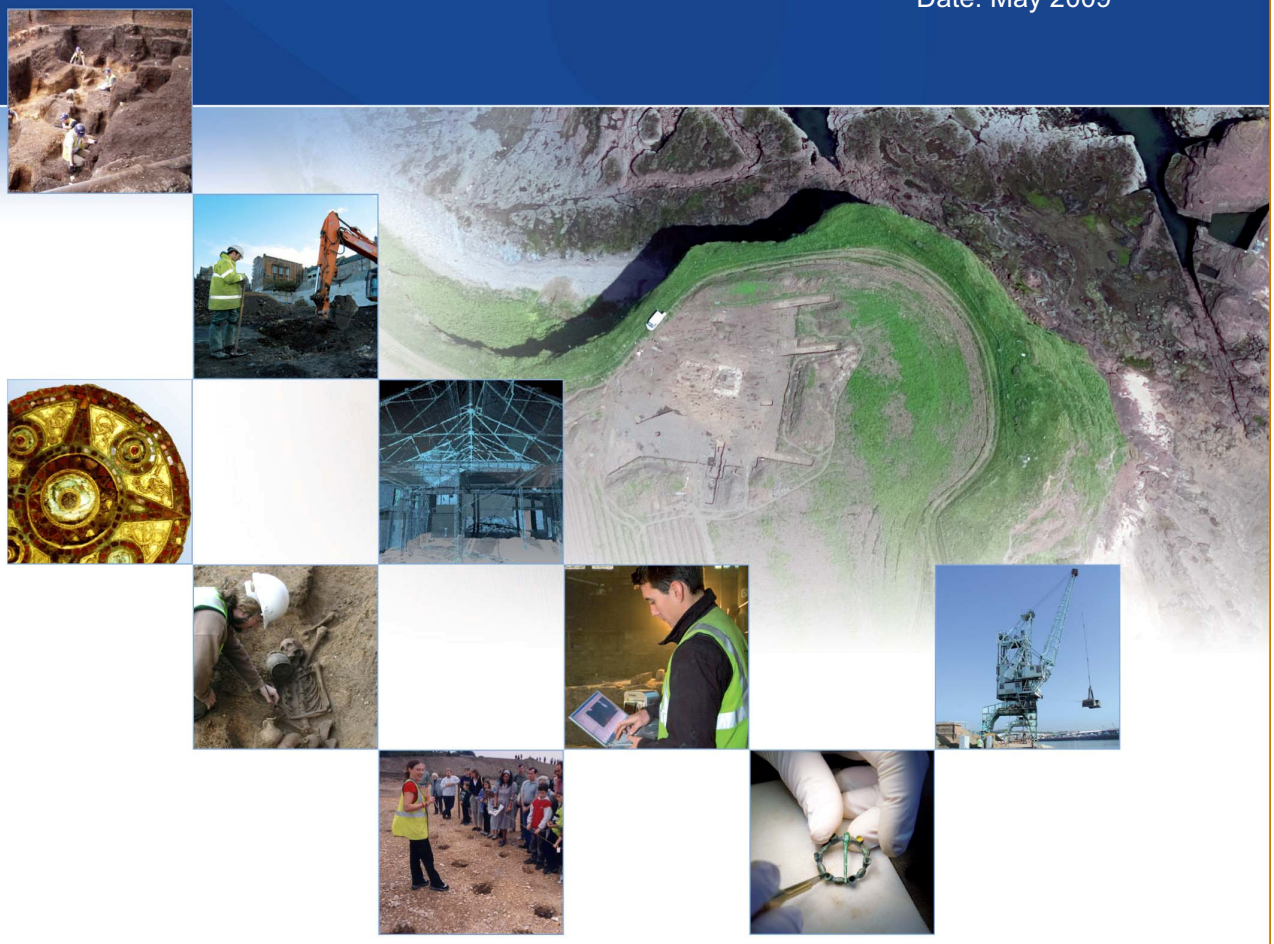

AOC Archaeology Group

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Land at Spa Road, Bermondsey, London Borough of Southwark

A Post-Excavation Assessment Report

On Behalf of:	**Bellway South East, London Road, Merstham, Surrey, RH1 3YU**
National Grid Reference (NGR):	**SP 076 863**
AOC Project No:	**30165**
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Date of Excavation:	**November 2007 – August 2008**
Date of Report:	**May 2009**

This document has been prepared in accordance with AOC standard operating procedures.

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Contents

List of illustrations

Non-Technical Summary

Between November 2007 and August 2008 AOC Archaeology Group, on behalf of Bellway South East, carried out a two phased archaeological programme at Spa Road, Bermondsey London Borough of Southwark, in advance of the redevelopment of the site. The archaeological programme comprised an evaluation by trenching and a subsequent open area excavation.

The archaeological investigation revealed the remains of four phases of occupation of the area. The earliest deposits and features encountered consisted of four ditches running northeast southwest that were dated to the roman period. These features were overlaid by a water lain deposit of clay alluvium within the south of the site, which contained artefacts dated to the Roman and medieval periods. The earliest post medieval remains comprised a series of 17th and 18th century field boundary ditches, which denote the lands agricultural use until the main period of occupation in the 19th and 20th century.

The 19th century occupation comprised the substantial remains of a tannery whose entire layout was exposed, and in the northwest corner of the site, the remains of some garden pits, cesspits and small wells. The structures of the tannery were partly demolished and partly reused at the beginning of 20th century during the construction of a Salvation Army Colony.

The material culture represented by the finds shows evidence of domestic activities and possibly some small scale business activities that could be associated with the presence of a chemist shop within the surrounding area.

This report presents an assessment of the archaeological investigation carried out at the site and describes the work undertaken on the archive. It refines the research aims on the basis of the findings and assesses the potential of the archive to address these research aims.

1. Introduction

1.1.1 This document aims to summarise the results of an archaeological excavation, conducted by AOC Archaeology, on land at Spa Road, Bermondsey, London Borough of Southwark, on behalf of Bellway South East.

1.1.2 The original research aims are discussed with reference to the results, to define revised research aims and enable full interpretation and publication. The resources needed to fulfil this work have been quantified in the light of the revised research objectives.

1.2 Site Location

1.2.1 The development site was centred on National Grid Reference (NGR) SP 076 863 (Figure 1). It was formerly occupied by the Salvation Army City Hostel and was cleared of buildings. It was located on the southern side of Spa Road and is defined by Dunlop Place on its western boundary; by residential properties on Goodwin Close to the south and by new development on Rouel Road to the east (Figure 2). The overall completed excavated area measured approximately 4500m² .

1.3 Planning Background

1.3.1 Bellway South East has been granted planning consent (Planning Application No. 07-AP-0804) to redevelop the site at Spa Road as part of a residential scheme, consisting of 174 units, which includes basement car parking.

1.3.2 The local planning authority is the Southwark Council. The site is not within an Archaeological Priority Zone. Archaeological advice to the council is provided by Chris Constable. The archaeological advisor recommended that an archaeological condition be placed on any planning permission in order to secure a programme of archaeological work. This is in accordance with *Planning Policy Guidance: Archaeology and Planning* (PPG 16) issued by the Department of the Environment in 1990 (DoE 1990). Condition 7 of the outline planning application (Ref. No. 03-AP-2385) states that:

> 'No development shall take place within the site until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority'.

1.3.3 In addition, Policy 3.19 of the Southwark Plan (UDP) July 2007 states:

- Policy 3.19-Archaeology

  (313) Planning applications affecting sites within Archaeological Priority Zones (APZs) as identified in Appendix 8, shall be accompanied by an archaeological assessment and evaluation of the site, including the impact of the proposed development. There is a presumption in favour of preservation in situ, to protect and safeguard archaeological remains of national importance, including scheduled monuments and their settings. The in situ preservation of archaeological remains of local importance will also be sought, unless the importance of the development outweighs the local value of the remains. If planning permission is granted to develop any site where there are archaeological remains or there is good reason to believe that such remains exist, conditions will be attached to

secure the excavation and recording or preservation in whole or in part, if justified, before development begins.

- Reasons
  (314) Southwark has an immensely important archaeological resource. Increasing evidence of those peoples living in Southward before the Roman and medieval period is being found in the north of the borough and along the Old Kent Road. The suburb of the Roman provincial capital (Londinium) was located around the southern bridgehead of he only river crossing over the Thames at the time and remains of Roman buildings, industry, roads and cemeteries have been discovered over the last 30 years. The importance of the area during the medieval period is equally well attested both archaeologically and historically. Elsewhere in Southwark, the routes of Roman roads (along the Old Kent Road and Kennington Road) and the historic village cores of Peckham, Camberwell, Walworth and Dulwich also have the potential for the survival of archaeological remains.
  (315) PPG 16 requires the Council to include policies for the protection, enhancement and preservation of sites of archaeological interest and of their settings.

1.3.4 The first stage in this process was the preparation of a desk-based assessment (Wardell Armstrong, 2005a) which assessed the site's archaeological potential. As a result of the findings of the desk-based assessment a phased programme of archaeological work was recommended by the archaeological advisor to Southwark Council. This consisted of an initial evaluation in November 2007, which revealed the remains of a previously identified Victorian tannery, followed by an open-are excavation in order to mitigate the impact of the development upon the post-medieval archaeological resource.

1.3.5 The majority of the excavation was undertaken between 27th May and 5th August 2008. However, the discovery of high levels of asbestos within the north-eastern corner of the site delayed the excavation of this area until between 8th and 24th September 2008.

1.3.6 This Assessment Report conforms to the requirements of Planning Policy Guidance: Archaeology and Planning (DoE 1990) (PPG16). It has been designed in accordance with the Wardell Armstrong Written Scheme of Investigation for an archaeological Eexcavation (Wardell Armstrong, 2005), current best archaeological practice and local and national standards and guidelines:

- English Heritage – Management of Archaeological Projects (EH 1991).
- Institute of Field Archaeologists – Standard and Guidance for Archaeological Field Excavations (IFA 1994).
- Institute of Field Archaeologists – Code of Conduct (IFA 1997).
- A Research Framework for London Archaeology (Museum of London 2002).

2 Topography and Geology

2.1.1 The geology of the application site comprises Kempton Park Gravels, fluvial in origin and dating from the end of the last glaciation; approximately 12,000 years ago. Where inspected in the area, the gravels have been identified at approximately 1.3 to 2m above Ordnance Datum. Present ground levels at the application site are approximately 2.6m above Ordnance Datum.

2.1.2 The gravels have been subject to much modification and marine incursions and changes in sea-level have produced a complex sequence. Studies of the ancient topography of the Bermondsey area have established the presence of a number of low lying sand and gravel islands or eyots located on the banks of the Thames. The application site lies centrally located on the Bermondsey eyot which has been estimated to have been 400ha in extent during the Roman period (Heard 1996).

2.2 Geotechnical Information

2.2.1 A programme of geotechnical trial pitting and the drilling of two boreholes was undertaken in February 2005 by Geotechnical and Environmental Associates on behalf of Bellway South East; the trial pits were not subject to archaeological monitoring.

2.2.2 A total of 16 trial pits were excavated and established that, with the exception of TP1, made ground deposits were encountered. The depths of these deposits varied from 0.6m to a maximum depth of 1.60m and comprised brick rubble and concrete fragments. The description of deposits below the made ground can not be interpreted archaeologically and therefore positive identification of ploughsoil was not possible.

2.2.3 The Compass Archaeology geotechnical report (2001) stated that based on previous archaeological evaluations in the area, the anticipated height of the naturally occurring sands and gravels lies between 1.35m and 2m AOD. The surface height of the boreholes was not logged although spot heights on Ordnance Survey maps and the conjectured contour plan produced by Compass Archaeology places the height AOD for the site at approximately 2.6m. The average depth of made ground across the site is approximately 1.4m which would place the surface of sand and gravel deposits at approximately 1.2m AOD.

2.2.4 The natural subsoils were inspected as part of the trial-trenching programme. This revealed a complex depositional sequence which was characterised by Kempton Park Gravel overlying London Clay or the Lambeth Group and Thanet Sands.

2.2.5 Organic silts were identified in two of the trial pits. Trial pit 12 identified mottled clayey silt with pockets of peat and decaying vegetation at 2.50m below the ground surface (approximately 0.10m AOD). A similar deposit was identified in trial pit 8, where the organic silts were identified at 2.70m below ground surface (approximately –0.10m AOD) This deposit was located below naturally occurring deposits and may indicate inundation episodes.

3. Archaeological and Historical Background

3.1 Prehistoric

3.1.1 The gravel terraces and alluvial lowlands are likely to have provided an attractive prospect for prehistoric peoples, situated as they were close to reliable sources of water. There is an abundance of artefactual evidence of earlier prehistoric activity in the area, although the focus of this has either been removed by later disturbance or awaits discovery.

3.1.2 Artefacts from the Palaeolithic period (c.50,000-10,000 BC) have been recovered from sites in the Southwark area, but the majority of earlier prehistoric finds are of Mesolithic or Neolithic date (c.8,000-2,500 BC). These represent the tools and weapons of nomadic hunter-gatherer groups, who were seasonally exploiting the resources of the lower Thames flood plain and its wooded gravel

uplands. The periods of marine regression created the small sand and gravel eyots above the surrounding marsh, which would have been ideal temporary camps for fishing, trapping and hunting expeditions (Raymond, 1999).

3.1.3 Finds from the Neolithic period represent the earliest encountered within the study area. The most complete evidence has come from two excavations carried out by DGLA at the Courage Brewery, on Park Street [TQ 3241 8020 SMR No's 091375/091159/091376]. Worked flint and pottery were recovered from both excavations, and from the second, conducted in 1988, the prehistoric Thames foreshore was encountered at c. -0.20m OD. These works also recorded hearths, burnt clay and animal bone, which suggests an area of occupation rather than transitory movement or redeposited material. Recent excavations at America Street (unpublished) by AOC Archaeology revealed a small amount of Neolithic and Iron Age pottery, recovered with a number of worked flints from a truncated sequence of pits, stake holes and buried soil horizons.

3.1.4 The Tilbury IV peat horizons, which formed during the Bronze Age, have been recorded at Park Street at depths of c. -2.00m OD [TQ 3241 8020 GLSMR 091193]. The site has provided concrete evidence of Bronze Age/Late Iron Age (c. 1300 BC - AD 43) settlement in the region, as both revealed post holes, some with timber still in situ. From the Courage Brewery a flint working site was recorded of the same date, and an Iron Age coin was recovered on Union Street, near borough High Street [SMR 09060201].

3.1.5 Archaeological work undertaken at Site H (Spa Road and Thurland Street) as part of the Bermondsey Spa Regeneration Project, recovered prehistoric flint and pottery. Many of the finds were residual indicating post-depositional activity; however abraded Iron Age pottery (c600BC-AD43) was recovered from subsoil and topsoil deposits. The site was considered to be marginal in the Roman period, probably salt marsh and was subject to marine incursions, which would account for the finds of residual pottery.

3.1.6 At 7–25 Bermondsey Street a watching brief carried out by MoLAS in 1998 revealed a thick, silty clay flood deposit, which appeared to contain peat horizons. Other entries relating to the discovery of the Tilbury Peat Horizons have been found at 74 - 90 Weston Street, Vine Land and Morgans Lane.

3.1.7 Neolithic flint tools and pottery were found at White Grounds Road in Southwark. The artefacts were found in a sandy soil which is believed to have been part of the Horsleydown Eyot.

3.1.8 Further evidence of prehistoric activity in the Southwark area has been discovered at Battle Bridge Lane, where an evaluation undertaken by MoLAS revealed artefacts from the Prehistoric period to the Saxon period.

3.2 Roman

3.2.1 During the Roman Conquest the invading army began to develop the strategic potential of the area. Southwark provided the first place upriver on the Thames where it was possible to construct a harbour and a bridge, which could be reached by road from the major invasion entry points on the coast (Sheldon and Schaaf 1984, 10).

3.2.2 Three military roads converged on Southwark, leading to the crossing point of the Thames near London Bridge. One provides a link with the upstream river crossing between Lambeth and

Westminster (Imber, 1979). The other roads merge at a point just east of the modern junction of Newington Causeway and Great Dover Street, and include Stane Street, leading from the Sussex coast at Chichester/Fishbourne and Watling Street, the main route from Dover.

3.2.3 The building of a military supply base at Southwark began c. AD 50 and by the end of the 1st century AD the settlement had become densely populated and covered an area of some 13 hectares. Construction of the roads was only made possible by the embankment of the river channels and inlets and extensive drainage of the marshes, bridging the eyots.

3.2.4 Some of the finds from the Roman settlement of Southwark attest to its military origin, and possibly to the continued presence of the army: in Southwark Street on the southern fringes of the Study Area, for example, fittings from both horses' and legionaries' armour have been found on domestic sites. Throughout the settlement, coins of Claudian date have been recovered in such proportions that a direct comparison can be made with other early military coastal or estuarine sites, such as Richborough and Hamworthy (MOL 1990). However very little in the way of military evidence has been discovered close to the site.

3.2.5 The standard practice in the Roman world was for cemeteries to be dispersed outside the boundaries of a settlement. These were mostly located within view of the major roads - as, for example, in the case of those alongside Aldgate, Bishopsgate, Newgate and so forth at *Londinium*. As in *Londinium*, the Southwark burials have been found in a wide arc around the notional perimeter of the settlement. Both inhumations and cremations have been recorded in the area, such as a 3rd century inhumation at Ewer Street, including burial goods such as a broken pot with at least 554 coins found between two skeletons and coins, a Samian bowl and fragments of a glass jar and bottle.

3.2.6 Archaeological evaluations have been undertaken at 74-76 Spa Road and at Alscot Road in 1993. These investigations revealed Roman and medieval pottery within a plough soil and a pair of late prehistoric-Roman ditches respectively. The presence of features and artefacts of this date extended the limit of Roman activity within Southwark to beyond the Borough High Street and have been interpreted as the remains of agricultural activity possibly associated with an outlying small scale settlement or farmstead

3.2.7 An excavation at 141-143 Tooley Street, undertaken by MoLAS in 1995 revealed natural gravels, cut by a large shallow depression thought to be part of a small inlet on the northern edge of the eyot of Horseleydown on the southern margins of the Thames which produced reworked timbers, four cow skulls and a small amount of unabraded pottery including on nearly complete miniature carinated bowl.

3.2.8 A watching brief recording geotechnical test pits, undertaken by MoLAS at 2 – 25 Bermondsey Street, in January 1998, discovered peat horizons that were recorded within a flood deposit, the uppermost of which may have been Roman. These were believed to correspond to periods of river 'regression'.

3.2.9 Sites producing evidence of Roman activity within Southwark include pottery found near to St. Thomas Street, ditches at White Grounds Road, Bethel Estate, Long Walk and Tower Subway.

Roman inscribed stone work has been discovered at Battle Bridge Land and coins from Barnham Street.

3.2.10 Excavations at 74-90 Weston Street revealed a series of ditches believed to be early attempts at land drainage, the back fill of which contained Roman pottery.

3.2.11 Entries relating to the discovery of a second Basilica building built 100-120AD include a watching brief in 1997 carried out by MoLAS within Southwark which revealed the eastern end of the basilica building and constructional make-up recorded within the area of the basilica.

3.3 Saxon

3.3.1 There is no archaeological evidence for any significant Saxon occupation in Southwark until the late 9th century AD. This is probably due to the general rise of the Thames water level in the area. It is also likely that the upheavals and general instability consequent upon the establishment of the new Saxon kingdoms was a cause of great insecurity to the newcomers. In addition, the removal of the *Londinium* settlement some miles upstream to the new *Lundenwic,* at the Strand, made the site of the former bridgehead less attractive.

3.3.2 This lack of interest in north Southwark is illustrated by the name the early Saxons gave to an established settlement at Walworth, in the southern part of the Borough. They called it WEALAWYRD and WALEORDE, meaning 'the farm of the Britons'. In other words, the site was so little regarded by the Saxons that they allowed the Britons to remain there (Raymond, 1999).

3.3.3 In AD 672-4 Frithuwald 'of the province of the men of Surrey, and sub-king of Wulfhere, king of the Mercians' granted land by charter to the Abbot of Chertsey, including:

"..... a separate part, of 10 hides is by the port of London, where ships come to land, on the same river on the southern side by the public way."

3.3.4 It has already been said that in the early Saxon period the 'southern side' of the river was effectively under water. The river could only be approached at Southwark on the relatively firmer ground that had been utilised by the Roman road builders; consequently, there is a strong presumption that any worthwhile grant of land near London in the seventh century AD would have been at this exceptional site of Southwark, and that the 'public way' was the Watling Street/Stane Street extension to the bridgehead (Dyson 1980, pp. 84-5). The fact that neither Southwark, nor any bridge was mentioned would seem to confirm that the area had effectively been abandoned at the end of the Roman occupation. The first version of the Southwark Cathedral was constructed in the 7th century, although it is held that this building was built by a ferryman who had sole access to the grounds that were otherwise inaccessible (Reilly & Marshall 2001).

3.3.5 The bridge was, however, almost certainly replaced by the early tenth century AD. The Burghal Hideage of c. AD 910 (a list of extant fortifications and the personnel required to defend them) implied a defensive circuit around the bridgehead of 2,225 metres, which was not dissimilar to the perimeter of the former Roman settlement. Southwark was named for the first time as SUTHRINGA GEWEORCH, meaning 'the defensive works of the men of Surrey', and it is unlikely that the defensive measures recorded in the document would have omitted a means of securing communications across the Thames.

3.3.6 By the end of the 10th century AD, Southwark had become an integral southern outpost of London, being described as SUDWERCA, the 'south work', to distinguish it from the city's own defences. There is numismatic evidence to suggest that Ethelred II had a mint in the Southwark area, and although this is thought to have been constructed as a defensible house, the exact location of the mint is unknown. By Domesday in 1086, Southwark had become an urban centre in its own right.

3.4 Medieval

3.4.1 Throughout the medieval period Southwark remained a fairly small but thriving City suburb with the river to the north, Horsleydown to the east, Bankside to the west and the church of St. George the Martyr to the south. As with its Roman predecessor, it grew, ribbon-like, along the major roads. At the same time, large houses and inns were established beyond its boundaries, where solid ground could be found in the marsh.

3.4.2 The major settlement area was situated north of Park Street, which was then known as Maidens Lane. In order to drain and protect their lands, a series of river walls or embankments were constructed, largely built during the 12th and 13th centuries, and included the area of Bankside (Raymond, 1999). Traces of occupation have also been recorded on Park Street. Remains from this excavation, conducted in 1989, included a square setting of chalk blocks, rubbish pits and chalk and mortar surfaces. These were sealed with a deposit of black silt which contained medieval pottery and tile.

3.4.3 In the 12th century, Southwark contained several important houses as a result of the quantity of road traffic from the south and south-east of England. Certain industries grew in response to this for example the brewing houses such as the Fleur de Lis Inn on Tooley Street/Stainer Street (Sloane et al 2000). Street frontage buildings were constructed to the west of the site, along the Borough High Street, which served as inns and taverns catering to people travelling into the City from the south (Weinreb and Hibbert, 1982). The area of Southwark by the 14th century was a notorious centre for prostitution, and Bankside in particular became synonymous with the seedier aspects of urban life. Borough High Street was lined with inns and brothels (Reilly 1998).

3.4.4 Southwark is mentioned in the Burghal Hidage, and refers to the defensive work of the men of Surrey. An excavation at 141-143 Tooley Street in 1995 by MoLAS revealed such defensive structures, including several pits and ditches dating to the medieval period.

3.4.5 Excavations at Abbots Lane have revealed a medieval channel with several different phases of wooded revetments and timbers from a clinker built boat, as well as the precinct wall of The Rosary, a moated house built by Edward II in 1325 along with associated domestic artefacts.

3.4.6 Excavations along Tooley Street have revealed evidence of river clays and mudflats that contain 11th century finds and a medieval Watergate. The site of the Maze Gate is also located along Tooley Street, as well as the site of the Abbot Battles Inn, various medieval stone walls and timber revetting and stone drains and water courses.

3.4.7 At Morgan's Lane excavations revealed the remains of a medieval mill stream and the remains of a chalk and stone medieval building as well as a large ditch or channel which was replaced by a brick culvert in the 17th century.

3.4.8 Excavations at 171 Bermondsey Street revealed two phases of drainage ditches cut into the alluvial layers. The ditches contained wooden bowls and seventeen leather shoes. At 39-49 Bermondsey Street, a watching brief revealed part of a chalk and mortar wall that is believed to be part of the Bermondsey Abbey precinct wall.

3.4.9 A burial ground of St. Olaves Church, established in 1586, also used by St. Johns Church is located at Tooley Street. The grounds were converted in to a recreational ground in 1888.

3.4.10 Excavations at Vine Lane revealed that the area was wet and marshy until the 16th century with no evidence of occupation.

3.4.11 An evaluation undertaken by MoLAS in 1995 revealed a channel of late or post-medieval date and latrine pits of a similar date.

3.5 Post-Medieval

3.5.1 By the Tudor period, the old parts of Southwark were fairly well built up. Stow, writing in 1598 (pp. 369 and 382), described Southwark as consisting of:

"....divers streets, ways and winding lanes, all full of buildings.... This borough at a subsidy to the king yieldeth about one thousand marks, or eight hundred pounds, which is more than any one city in England payeth, except the city of London."

3.5.2 The 17th century also saw the rise of a variety of non-conformist religions in the Southwark area, in addition to the parish churches, perhaps in response to the large number of travellers that were settling in the region. These different churches each used a separate burial ground. One of which was the Quaker Burial ground, on the northern corner of Ewer Street. This was destroyed by the construction of the railway viaduct in the mid 19th century, when all of the burials were exhumed. However it is known that 'dissenters' were reburied upon the site of the old Quaker burial ground, when the railway was constructed.

3.5.3 Land reclamation allowed for the land to be development in the 18th century, evidence of this is seen along Tooley Street where a series of evaluations and excavations have revealed 18th century brick foundations associated with cess pits and drains and timber water pipes. The 18th century saw large scale industrial development and dumps of domestic and industrial waste were used to raise the land above the flood levels There is evidence of occupation on Tooley Street from the 16th and 17th century onwards.

3.5.4 Further expansion of Southwark took place early in the 19th century, so that little remained of the semi-rural landscape to the south of the main town. In 1819 Southwark Bridge, designed by John Rennie, was constructed in cast iron. A number of new roads were also laid across the area, including Sumner Street, which was built in 1839.

3.5.5 A watching brief carried out at 2–10, Magdalen Street for MoLAS in 1998 revealed post-medieval land surfaces and at 7-25 Bermondsey Street evidence of a possible palaeochannel or deep feature was recorded.

3.5.6 Excavations at Abbots Lane revealed a variety of features and evidence of activity dating to the post-medieval period, including a pot house in production from 1618, timber and brick drains and water courses and timber revetments and cess pits. Excavations at Abbots Lane in 1992 by MoLAS revealed a series of lead pipes, further revetments, hollowed tree drains and the remains of later warehouses.

3.5.7 Several post–medieval buildings are recorded at White Grounds. These are Black Eagle Brewery, a small curriery, a small warehouse, a flour mill and a large brewery.

3.5.8 Several post-medieval warehouses have also been identified at Bermondsey Street. These are a small timber yard, a small distillery, a wool house, a small hop house and tanneries as well as shop fronts.

3.5.9 Sites at Tooley Street have revealed a range of artefacts, including kiln wasters, features associated with the construction of Unicorn Passage, off Tooley Street and various silt and sand deposits associated with the River Thames.

3.5.10 Excavations at Vine Lane have produced extensive deposits most likely relating to the nearby Delftware Pottery works, as well as a pot house and a kiln, various dumps of Delftware and kiln furniture. A watercourse and various post-medieval structures have also been recorded at Vine Lane, along with various brick buildings and cobbled surfaces with drainage gullies.

3.5.11 A number of listed buildings survive within the area. Five Grade II listed buildings are recorded on nearby Bermondsey Street. One listed building is situated on Counter Street. This building was rebuilt after Tooley Street Fire c.1861. Another building of post-medieval date is situated at 12, Abbots Lane.

3.6 Historical Development of the Investigation Area

3.6.1 The earliest detailed representations of the site date from the 18th century onwards. A plan accompanying a lease of land from the Earl of Salisbury to Thomas Steavens in 1716 records the earliest depiction of the site. The site is recorded as an area of open land, presumably under cultivation of the southern side of an east-west aligned street. Later eighteenth century plans, including Roque (1746) (Figure 3), Horwood (1799), Cary (1809) and Horwood (1819) all record the application area as largely unaltered, although the road name changes throughout this period from Rope Makers Walk to Grange Road to ultimately Spa Road by 1848.

3.6.2 The origin of Spa Road is attributable to the spa opened by Thomas Keyse in 1770. A spring was discovered in the grounds of his tea gardens and the site became a popular and fashionable entertainment venue, containing an art gallery and hosting concerts and fireworks displays (Boast 2003).

3.6.3 Following the death of Keyse in 1800 the pleasure grounds declined and the Spa Road area became extensively urbanised and by the production of the 1 to 25” 1st edition Ordnance Survey map in 1878 (Figure 4), the application area was largely occupied by a Tannery and was surrounded by a mixture of industrial buildings, including a Cotton Mill, Glue and Size Works and residential

properties. The Ordnance Survey records the presence of a system of tanning pits and troughs in the south-east corner of the application area. Further tanning pits were recorded in the north-west corner of the tannery site, which appear to straddle the application boundary in this location.

3.6.4 A detailed layout of the application area is provided on the 1887 Goad Insurance plan which records the extent of the works and identifies the activities which were undertaken in the various structures (Figure 5). At the time the site was owned by W.Powell and Sons. The north-western corner of the site was occupied by domestic properties to the west side of Active Place. Two semi-detached properties fronted the Spa Road in the north-western corner of the site and a public house was situated on the corner of Spa Road and Amelia Row (later Dunlop Place). By 1895-96 the Tannery was recorded as disused and by 1914 the application area was occupied by the Salvation Army City Colony. The site had been subject to some modifications, principally involving the building over of the areas of tanning pits and the demolition of the large fleshing shed in the south of the site.

3.6.5 The site remained relatively unchanged, despite experiencing bomb damage during the Second World War. Despite the proximity of the site to the railway line, the City Colony did not experience a direct hit, with damage assessed at 'General Blast Damage, not structural'. The large structure located in the south-eastern corner of the site was assessed as 'Seriously Damaged, but repairable at cost' (Compass Archaeology 2000). This structure was modified and was the only change to the arrangement of the buildings until their demolition in 2004. An OS map produced of the site in 1951 (Figure 7) shows the full extent of the post war Salvation Army colony site.

3.8 Previous Work

3.8.1 Prior to the commencement of the excavation a programme of trial trench evaluation was undertaken to establish the extent of the archaeological remains. A total of 22 trenches, each measuring 10m x 2m were excavated across the site. The investigation revealed an overview of the features examined in greater depth during the excavation, comprising several walls, tanning pits, lime vats and brick culverts related to a 19th century tannery within the east and south of the site and 18th to 19th century refuse pits and modern truncations, alongside concrete foundations for a public house in the northwest corner of the site. No Roman or earlier remains were revealed during the evaluation.

3.8.2 The results of the evaluation were not published, as it was decided by Chris Constable of Southwark Council that a full scale excavation would be needed to satisfying the sites planning condition.

4 Original Research Aims

4.1 The aims of further mitigation work at the site were defined within the WSI (Wardell Armstrong 2008) as being:

- *To provide a permanent record of the remains of the Tannery prior to development. In addition, the aim is to disseminate the results of the excavation through an appropriate level of publication subsequent to post-excavation analysis and assessment. These aims will be achieved through open area excavation in those parts of the site where the evaluation established the presence of buried remains.*

- *It is anticipated that the excavation will reveal a variety of archaeological remains, primarily of an industrial nature. In particular, it is expected that excavation commensurate with the full surviving extent of the Victorian Tannery will expose both external and internal structural elements which will*

provide information on the development of the Tannery and the way it functioned. The excavation has the potential to provide evidence of the industrial growth of this particular area of Southwark and of the industrial processes carried out in the 19th century buildings and associated structures which occupied this plot of land.

4.2 The overall purpose of the investigation was to provide a permanent detailed record of the Tannery's structural remains that were revealed during the previous evaluation and were depicted as extending across the development site within 19th century cartographic sources of the area, prior to the development of the site and to subsequently disseminate the results of the excavation through an appropriate level of publication.

4.3 It was anticipated prior to the commencement of the investigation that the excavation would reveal a variety of archaeological remains, primarily of an industrial nature. In particular, it was expected that excavation commensurate with the full *surviving* extent of the Victorian Tannery will expose both external and internal structural elements which will provide information on the development of the Tannery and the way it functioned. The excavation was identified as having the potential to provide evidence of the industrial growth of this particular area of Southwark and of the industrial processes carried out in the 19th century buildings and associated structures which occupied this plot of land.

5 Methodology

5.1.1 The site code of SRQ 07, also used for the initial archaeological evaluation of the site, was obtained from the London Archaeological Archive and Research Centre, Museum of London.

5.1.2 The previous geotechnical investigations and the 2007 archaeological evaluation identified a significant amount of contaminated overburden across the site, at depths ranging from 0.3m to 1.80m. Any material identified as highly contaminated was removed from the site. All material not requiring removal was stockpiled neatly, allowing a minimum of 2m between the base of the mound and the excavation edge. The overburden was excavated using a mechanical excavator under the close supervision of a suitably experienced archaeologist. In areas where the previous evaluation indicated there was a significant depth of overburden a mechanical excavator was fitted with a toothed bucket and, where appropriate, removed the overburden to a level of 300mm above the first archaeological horizon. The level was then further reduced using a mechanical excavator fitted with a flat bladed ditching bucket down to the first archaeological horizon. Due care was taken to ensure that, as far as is possible, structural remains, such as walls and *in situ* surfaces were not damaged by the machine. Allowance was made during machining for stepping the trench where it exceeded a depth of 1.2m.

5.1.3 Subsequent to the mechanical removal of the overburden all excavation was undertaken by hand by a field team of experienced archaeologists. The remains exposed within the excavation area were hand excavated, cleaned, recorded and sampled using appropriate hand tools. Investigations followed the normal principles of stratigraphic excavation. The structural remains associated with the 19th century tannery were subject to full recording, including a drawn and photographic record, with particular attention being paid to any evidence of successive phases of building activity.

5.1.4 A minimum of 50% of identified archaeological features were excavated - complete features, such as pits and postholes, were excavated by half-section and then subject to a 100% excavation if deemed

appropriate for interpretive or sampling reasons. Linear features, such as ditches and gullies, were sectioned appropriately (sampling no less than 25% of the feature).

5.1.5 During the excavation pro-forma recording sheets were used to compile a full and proper record of the fieldwork undertaken on site. Detailed written records were made of all structural remains and archaeological features and deposits encountered, comprising both factual data and interpretative elements. Written records were fully cross-referenced to all graphic and photographic records made. A single context recording system, such as that outlined in the Museum of London Archaeological Service Archaeological Site Manual (1994), was used.

5.1.6 Detailed scale drawings were produced at a scale of 1:10 or 1:20 for section drawings and 1:20 or 1:50 for plans. All plans and sections were drawn in relation to a 5 metre grid that was surveyed across the site using appropriate surveying equipment. The height of all principal strata and features was calculated in metres above Ordnance Datum (m AOD) and the values indicated on the appropriate plans and section drawings.

5.1.7 Upon completion of the fieldwork, a 'Harris Matrix' stratification diagram was compiled to record stratigraphic relationships.

5.1.8 An extensive photographic record of the excavation was constructed during the course of the fieldwork programme, comprising black and white prints, colour transparencies (on 35mm film) and digital photographs, illustrating the principal features and finds discovered in detail and in general context. In addition 'working shots' to illustrate more generally the nature of the archaeological works were also undertaken. All photographs included a clearly visible, graduated metric scale.

5.1.9 All artefacts revealed during the investigation were exposed, lifted, cleaned, marked, conserved, bagged, packaged, boxed and stored as appropriate and in accordance with recognised guidelines.

5.1.10 Environmental samples were taken in accordance with the English Heritage guidance (2002) Environmental Archaeology – A guide to the theory and practice of methods, from sampling and recovery to post-excavation. Bulk soil samples comprised 40 litres of soil from substantial features, or 100% of features with less sizeable deposits. Particular emphasis was paid to samples which were thought to contain industrial waste and materials. All of the bulk soil samples collected for environmental remains and industrial residues were processed by suitably qualified personnel and analysed by a specialist.

6. Results

6.1 Introduction

6.1.1 The excavation revealed a bi-partite archaeological sequence comprising discreet Roman features sealed in part below a Roman alluvial horizon and overlaid by extensive post-medieval deposits and structures. The later remains have been periodically categorised by their chronological association to the tannery site into four periods; 17th -18th century pre-tannery remains, 19th century tannery and domestic structural remains, 19th century tannery abandonment remains and the subsequent 20th century Salvation Army structures.

6.2 Period 1 - Natural Deposits

6.2.1 The natural sediments uncovered throughout the site comprised a friable, yellowish orange to orangey red, gravely sand, containing occasional pebble inclusions (23/002). Within the northeast of the site the natural sand deposits became more silty (185).

6.2.2 The average height of the sands was 1.40m Above Ordnance Datum (AOD). The site was generally flat throughout. The highest area of the site was in the southwest, which stood at 1.71m AOD, whilst within the northeast of the site the natural deposits were uncovered at the lowest point, 1.11m AOD.

6.3 Period 2 - Roman (Figure 8 and 9)

6.3.1 The Roman remains revealed during the excavation comprised nine sections of four ditches that extended across the site, cut into the natural sands (23/002) and (185). Four ditch sections were located within the northeast corner of the site and the remaining six within the centre and southwest of the investigation area. The ditches were uniform in character, being generally wide and shallow in dimension, linear in shape and orientated on a northeast – southwest alignment. The fills varied greatly in character for the features in the south and centre of the site, but comprised similar sandy clay for the ditches located in the northeast of the site. A single post hole of Roman date was found in the centre of the site, truncated by a later Roman ditch. A total of three sherds of non-residual Roman pottery were yielded by the fills of the features in the south and centre of the site.

6.3.2 As the ditches were heavily truncated across the site they were recorded as separate features within the field. Subsequent to the excavation they have been given feature numbers to aid identification and understanding. The most westerly of the ditches has been allotted Feature Number 1. It was 75.70m long, extending across the site in a northeast-southwest orientation. It was found at 0.72m AOD. In the north of the site it comprised ditch [191], which was wide and shallow, with steep sloping straight sides and a concave base. In the centre and south of the site, sections excavated through Feature 1 ([23/674]) continued to reveal a similar cut. Within the north, the ditch was filled with a mid greenish brown sandy clay (190), whilst in the south two distinct fills were found within the ditch cut [23/674], comprising a primary 0.35m thick deposit of mid brownish orange, firm, silty sand (23/673), overlain by a secondary 0.20m thick deposit of light greyish brown sand (23/672).

6.3.3 Running parallel, and to east of Feature 1, Feature 2 comprised a wider ditch extending 74.32m on the same northeast-southwest orientation. To the north of the site it appeared to split into two ditches. Within the south of the site, Feature 2 comprised ditch [23/583], which measured up to 0.85m in width and up to 0.45m in depth. The base of the cut was found at 0.89m AOD. The cut had steep flat sides that broke moderately from horizontal and sharply to its flat base. The ditch section contained four distinct fills. The primary fill (23/685) was 0.17m thick and comprised light brownish grey, loose, silty sand, with moderate sub rounded pebble inclusions, which clearly represented the re-deposition of the natural sands through slumping of the sides and accordingly did not contain any finds. The secondary fill within the ditch (23/668) was 0.05m thick and consisted of a dark brown, very firm, silty clay, with frequent charcoal flecks and organic inclusions. No finds were recovered from the deposit. The tertiary fill (23/695) was a 0.20m thick deposit of light brownish grey, firm, silty clay, with occasional pebble and charcoal fleck inclusions. The deposit contained struck, non diagnostic flints, which are probably residual. The Upper fill (23/582) measured up to 0.45m in thickness and comprised light grey, sandy silt, with frequent charcoal flecks, moderate pebble and occasional daub inclusions. A single pottery sherd of abraded Roman grey sandy ware (Appendix C) was recovered from the sediment, along with non diagnostic struck flints and fragments of poorly preserved animal bone that were not identifiable to any specific species.

6.3.4 Within the north of the site, Feature 2 was split into parallel ditches [199], which was 1.00m wide and 0.55m with steep sloping sides that broke moderately to a flat base (found at 0.63m AOD), and [201], which was also 1.00m wide but only 0.20m deep, had gently sloping sides that broke gradually to a flat base (found at 1.15m AOD). Both ditches contained a sequence of firm sandy clay that varied in colour between greenish, greyish, orangey brown, and contained occasional gravel and charcoal inclusions (198) and (200).

6.3.5 To the east of ditch [23/583], was a narrow ditch [23/763], which was assigned Feature Number 3. It extended 28.54 on a northeast-southwest orientation within the centre of the site. The cut had steep sloping sides that broke moderately throughout to a concave base, found at 1.30m AOD. It contained a single fill of greenish grey, firm, sandy silt (23/762).

6.3.6 To the east of Feature 3, Feature 4 ran on a parallel alignment, comprising [23/670] in the south and [193] in the north. The cut of [23/670] was wide (1.70m) and shallow (0.28m), with gently rounded sides, that broke gently from horizontal and to its gently concave base, which in the north of the site became narrow (0.80m wide) and deep (0.40m) with a steep sloping sides that broke sharply to its concave base. The base of the cut was revealed at 1.11m AOD. The fill of the feature also differed throughout, comprising mid orangey grey, loose, sandy silt (23/669) in the south and pale greyish green, moderately compacted sandy clay within the north (192). No finds were recovered from either fill.

6.3.7 Post-hole [23/780] was heavily truncated by ditch [23/670], with little remaining of the cut. It was circular in plan, measuring 0.60m in diameter and 0.15m in depth. The cut had gently rounded sides that broke gently from horizontal and to its concave base. It contained a single fill of mid orangey grey, loose, sandy silt (23/781), which is comparable to fill (23/669) of the ditch above, suggesting that the post held within the feature was extracted when ditch [23/670] was constructed and the remnants of the post-hole was filled with the same sediment as the ditch. This may suggest that ditch Feature 4 represents the replacement of a boundary post line by a ditch, although no other posts were found during the excavation.

6.3.8 When isolated from the surrounding later features (Figure 8), it is clear that the Roman ditches form the heavily truncated course of four continuous parallel linear ditches stretching across the site on a northeast –southwest alignment. The continuous form of the features is suggestive of a more complex structure such as a trackway. Unfortunately, no associated road deposits of Roman date were uncovered within the investigation area. The shallow depths of the Roman ditches found on the site and the significant quantity of the later remains revealed overlying them, suggests that truncation of such road deposits is probable, as the orientation of the feature runs in line with known Roman military roads emanating from the London bridge area, running through Southwark on a similar alignment. Alternatively it is possible that the features represent a significant land division, or a continuing process of ditch re-cuts. It is also probable that these ditches were part of land reclamation and management that took place in this area during the Roman period.

6.3.9 Environmental samples retrieved from ditch fills (23/7672), (23/673), (23/678) and (23/679) have produced a number of charred seed and plant remains which may, through further investigation, be able to date the ditches.

6.4 Period 3 - Post-Roman to Medieval (Not illustrated)

6.4.1 The period prior to the Roman occupation of the site through to the begging of post medieval activity is represented by an alluvial deposit, signifying a period of disuse. The alluvial sediment comprised greenish grey, firm, silty clay (23/033). The deposit varied in depth between 0.25 – 0.40m and was found between 0.89m and 1.47m AOD. It extended across much of the southern and central areas of the site, covering earlier Roman ditches [23/583] and [23/763].. The absence of the deposit within the northeast of the site implies that this part of the site was dry for much of the areas history.

6.4.2 Two (4g) abraded sherds of Roman Samian ware pottery, probably of late 1st to 2nd century date, and residual fragments of medieval ceramic building material (CBM) dated to 1240-1450 were recovered from the deposit. This suggests that the alluvial sediment was deposited from the Roman period through to and probably prior to the later medieval period, although it would have certainly ceased by 1716, when a plan of the site showed it under cultivation. Indeed, it is most likely that the documented land reclamation that took place further to the north of the site in the early post-medieval period ceased the deposition of alluvial material by at least the late 16th century.

6.4.3 In addition, throughout the site residual abraded sherds of Roman, medieval and Transitional pottery, six pieces (11g) of Roman dated iron concretion fragments, a small amount of medieval CBM and three fragments of Roman CBM were recovered, demonstrating small-scale activity in the wider area during this phase of inactivity on the site.

6.5 Period 4 - Post-Medieval. Phase 1 - Pre-Tannery (Figures 10 and 11)

6.5.1 Following the Roman activity, the first direct evidence of activity at the site dates to the post-medieval period. Post-medieval remains pre-dating the tannery complex comprising numerous ditches and pits were found throughout most the site, although it is notable that none were uncovered within the northeast of the investigation area. This may illustrate that this was an area of inactivity during this period or alternatively may indicate a high level of truncation by the extensive tannery and later Salvation Army remains within the area.

6.5.2 A dark grey, firm, sandy silt subsoil (23/005) / (23/348) / (23/640) that pre-dated the tannery site was found to cover most of the early post-medieval remains, at a height of between 1.33m AOD and 1.82m AOD, spreading across much of the investigation area, including the northeast corner of the site (147), where it was heavily truncated by later walls.

6.5.3 Structural remains dating to the pre-tannery period were only found within the southeast corner of the site. This comprised two structures; a red brick cellar wall [23/032] and rectangular structure [23/231] formed from a red and yellow stock brick wall [23/017] and large squared stone block [23/018] set upon a number of levelling layers (23/019) and (23/020) within a square construction cut [23/021].

6.5.4 A single service pre-dating the tannery was found in the form of an east-west orientated drain within [23/036], constructed from red stock bricks within an ochre coloured sandy mortar,

6.5.5 The most functionally diagnostic of the cut features found across the site came in the form of two large pits [23/016] (2.55m x 1.00m x 1.81m) [23/073] (6.00m x 2.80m x 1.00m) located within the southeast area of the site. Both pits were rectangular in plan, with straight sides that broke sharply

from horizontal and again to the features flat bases. The pits contained between three and five distinct fills, which were highly organic, suggesting the features had not been consciously backfilled, abandoned and backfilled at least partially naturally. The size and nature of the cuts, coupled with the natural sands they are cut into and their apparent abandonment would suggest that the features functioned as gravel and sand extraction pits and accordingly suggest a small scale post-medieval quarrying industry within the area.

6.5.6 Other cut features dating to the pre-tannery period comprised pits, ditches, post-holes and stake-holes. In total nine pits, that are thought not to be related to the previously described quarrying industry, were revealed across the site. Although no obvious relationship was found between them the pits were located within close proximity to each other in the southwest and southeast corners of the site. In the southeast corner of the site three circular [23/035], [23/057] and [23/067], a square [23/084] and an irregular [23/029] shaped pit were revealed. Pit [23/035] contained a powdered charcoal fill (23/036) denoting that it may have served an industrial function or that it may have been used as a fire pit. Alternatively, the dark greyish brown, silty clay fills (23/028), (23/056) and (23/083) found within pits [23/029], [23/057], [23/084] contained pot, CBM, glass and metal inclusions, suggesting that they may have been used as rubbish pits.

6.5.7 A total of 13 pre-tannery phase ditch segments were recorded across the investigation area, forming four distinct features, which for ease of description have been assigned feature numbers. The majority were located within the centre and western areas of the site. In the far western extent of the investigation area, Feature 5, a north-south aligned ditch [23/290] extended 14.45m in length. It was 0.90m wide and 0.23m deep. The cut had shallow sides that broke gradually to a concave base, which stood at a height of 1.28m AOD. The ditch contained a single fill of light brown sand (23/289), into which a later, pre tannery post hole had been cut [23/307], illustrating that a continuation of small scale cut feature construction had taken place prior to the construction of the tannery.

6.5.8 Four short ditch segments ran parallel on a north-south alignment ([23/078], [23/092] [23/234] and [23/313]), measuring between 3.15m and 15.9m in length and together forming continuous parallel ditch Feature 6. The cuts were characteristically bowl shaped in section and contained similar dark greyish brown, silty fills (23/077), (23/091), (23/233) and (23/312).

6.5.9 Three ditches ran on an east-west alignment ([23/075], [23/031] and [23/225]) measuring between 11.20m and 20.00m in length and were characteristically wide and shallow. The ditches were clearly set within a grid (Figure 10), most notably within the south, where [23/075] (Feature 7) appeared to connect to parallel ditch Feature 6. This suggests that they functioned as a previous agricultural boundary or irrigational system and may represent the continuation of land division throughout the early post-medieval period. When compared to the Rocque 1746 map (Figure 3) the position of ditch [23/025] correlates with the track running on an east-west alignment across the field, suggesting that it may have functioned as a track side gulley. Additionally [23/075] clearly correlates to the site boundary in the east, whilst the narrower, north-south orientated ditches within the centre of the site appear to correlate with the agricultural drainage system depicted by Rocque.

6.5.10 At the east of the site a ditch extended 4m on a north-south orientation [23/675]. The ditch was truncated by later structural remains at its north end. It contained a single fill of dark greyish blue sand (23/676), which was 0.32m thick, found between 1.12m and 1.40m AOD.

6.5.11 Within the southeast of the site a curvilinear ditch [23/023], ran on a north-south orientation from the southern limit of the excavation before sharply turning to an east-west alignment. It was truncated by quarry pit [23/016], as was linear ditch [23/025] to the north, which extended a further 13 metres to the north and may represent a continuation of [23/023], forming Feature 8, as both features were similarly steep sided with flat bases, implying that they functioned as boundaries rather than drainage features, and both contained similar dark blackish brown, soft, clayey silt fills (23/022) / (23/024). An east-west orientated ditch [23/027] was also found within the southeast of the site, adjacent to wall [23/032]. It had steep sloping sides that broke moderately to a flat base and contained a dark blackish brown, silty clay fill (23/026), which may suggest that it was contemporary to ditches [23/023] and [23/025] to the south. .

6.5.12 A total of 16 early post-medieval post-holes were revealed during the excavation. Fourteen of these were within close proximity to each other in the west of the site, comprising a line of 10 post-holes on a north-south alignment, running parallel to the east of ditch [23/312], a single post-hole [23/853] between parallel ditches [23/312] and [23/234], and a line of two post-holes [23/396] and [23/400] and a stake hole [23/398] to the west of ditch [23/234]. Only the seven southernmost post holes were excavated from the sequence, which revealed a similar fill of dark bluish grey, silty clay within each feature, further suggesting that they were contemporary. The position of the post-holes clearly relate to the associated ditches suggesting that they functioned as a fence line for a land boundary division, which reinforces the agricultural function of the site during the 16th to 18th centuries , but does not directly correlate to the depiction of the site within Rocques map of 1746 (Figure 3)

6.5.13 The early post-medieval pottery assemblage comprised 193 sherds, weighing 2,050g, recovered from 23 contexts (Appendix C). Virtually all of the pottery consisted of small abraded sherds of a wide range of fabrics, including redwares, slipped redwares, Borderware and notable quantities of tin-glazed wares, including a number of biscuit-fired pieces. The majority of the pottery was recovered from the ditches and clearly demonstrates material being brought out of the urban area for manuring of cultivated land on the city fringe. This appears to have been mainly during the 17th to early 18th centuries though some activity may have continued throughout the 18th century. In addition fragments of clay pipe dating as early as the first half of the 17th century were recovered from the site (Appendix C).

6.6 Period 4 - Post-Medieval. Phase 2 - Tannery and House Structures (Figure 12-19)

6.6.1 The tannery remains comprised an extensive range of square cut, wood lined tanning pits, closely set in a grid system across the south-western area of the site, three rectangular brick built structures internally divided to contain nine tanning pits, extensive buildings identified as air drying buildings, offices, store rooms, leather and skins warehouse, stables, a smithy and fleshing sheds, as well as an additional set of brick and wood lined tanning pits within the north and east of the site, numerous water and lime drainage systems, wells and various cut features, including a horn lined pit (Figure 12).

6.6.2 The Goad map of 1887 (Figure 5), depicts a layout of tannery structures comparative to those found during the investigation, with descriptive annotations that identify each structure's function. Accordingly this has been used as the primary guide for the functional interpretation of each of the structures uncovered. Additionally, the extensive tannery features found during the investigation also correlate with the OS maps of the site produced in 1878 (Figure 4) and 1898.

Tanning Pits (Figures 13, 14,17 and 18)

6.6.3 Three distinct groups of tanning pits were revealed during the investigation within the south-western, southern and eastern areas of the site. The pits were set in grids of varying sizes and were lined with either brick or wood. The presence or absence of residual chemical deposits recovered from the base of many of the pits have helped define the function of each group.

6.6.4 A grid of 89 rectangular and square, wood-lined tanning pits were found within the southwest corner of the site, extending 20m to the east and 18m to the north (Figures 13, 14, 15) . The position and layout of the grid directly corresponds with the late 19th century cartographic depictions of the site. The pits were within a single cut [23/431], within which the wooden structure or lining of the pits had been constructed around a dark greyish orange to yellowish orange, compacted, silty sand and clayey silt packing material (23/004). The pits were generally found to contain a primary fill of white lime residue, which measured up to 0.61m thick. Above this, as detailed within the archaeological sequence for the next phase, were a variety of fills dating to the tannery abandonment phase, comprising demolition rubble and clayey silts.

6.6.5 Three large brick built structures [23/502], [23/503] and [23/504], each divided to contain nine tanning pits were revealed directly adjacent to the eastern extent of wood lined tanning pits [23/431] (Figure 13). The features were each constructed from four outer brick walls and four internal brick walls, two dividing it on an east-west orientation and two on a north-south orientation. The structures were constructed from soft fired red bricks, measuring 220mm x 100mm x 60mm, bonded by an off white cemented mortar, held within English coursing. The pits within all the structures contained brick floors, but the pits within [23/504] and a single pit with [23/502] contained remnants of timber flooring supported by timber beams [23/510]. Within [23/503] a number of the walls had been removed and stone slabs inserted to repair to floor, suggesting that the function of some of the pits may have changed over time. On Goad's 1887 map of the area (Figure 5) the location of the features are depicted as being under a roof, of which no evidence survives, and are labelled as *"Open First Air Drying Floors over tan pits".*

6.6.6 The primary backfill of all the pits comprised lime residue, which had become concreted in places. This is comparable to the primary residue found within the wooden tanning pits to the west, suggesting that the pits were used for the same processes. However, the most northerly of the brick tanning pit structures [23/504] was found to be connected in the northeast to a brick built culvert [23/590], constructed from similar soft fired, red bricks in a similar off white mortar, but in stretcher coursing. The culvert extended to the east, connecting to a larger north-south orientated culvert [23/606], which may have also connected to brick tanning structure [23/502] in the south, where modern truncation has destroyed any evidence of a culvert. This suggests that the brick structures were used in conjunction with the wooden pits to drain the lime residue from the hides once they had been soaked. This is clearly asserted by the identification of the structures function by Goad as air drying.

6.6.7 Two smaller clusters of three wood lined tanning pits were found within a square cut [23/133] that extended 2.25m x 1.70m within the south of the site (Figure 17). The wooden structures [23/131], [23/137], [23/141] and [23/247], [23/248], [23/251] were found within a dark greyish brown sandy silt clay packing material (23/132) and (23/355). Unlike the pits within the [23/431] no lime residues were found within the features, suggesting that the pits functioned as a different part of the process

represented to the west. Within the Goad map of 1887 (Figure 5) this cluster of pits would be located within the large fleshing shed in the south of the site, which suggests that they were used during the initial de-fleshing of the hides to store waste material. To the west of the pits, a series of red brick plinths [23/196], [23/197], [23/198] and [23/199] denoted the location of an adjacent timber framed structure joined to the fleshing shed, identified as a *"Dye House, Dressing Over"*.

6.6.8 Within the east of the site a series of ten wooden lined tanning pits was found extending on a north-south alignment to the east of five brick built tanning structures (Figure 14). All of the pits were excavated into a greyish brown, firm, silty clay packing material (23/785). The wooden lined pits were regular in size measuring 1.05m east to west axis 1.46m north to south. Only three of the pits were excavated [23/481], [23/768], and [23/847] all of which became waterlogged at around 1m. However, through additional investigation it was asserted that [23/481] extended to a depth of 1.5m. Due to this significant depth of the pits wooden posts were set adjacent to the pits wood lining to support the structures both during construction and during their use. For most of the pits a squared wooden post was found supporting each wall. Wooden tanning pits [23/481] and [23/768] contained a primary deposit of white lime residue (23/891) / (23/775), similar to that found within the wooden tanning pits in the southwest of the site [23/431], indicating the undertaking of similar tanning processes. Within wooden pit [23/845] a blackish brown silt and rubble fill was revealed similar to that found within the brick pits [23/740] to the west, and characteristic of the pits [23/502], [23/503] and [23/504] in the southwest of the site. The brick tanning pits in the east of the site [23/740] comprised four external walls enclosing five tanning pits divided by four equally spaced walls running east-west. The structure was constructed from soft fired red bricks, measuring 220mm x 100mm x 60mm, bonded by a pale yellowish white mortar in rat trap coursing, with pale white rendering within the internal faces.

6.6.9 The division of the two groups of brick and wood lined tanning pits may suggest phases of construction, but may also show the functional variation relating to the movement of the hides within the tanning process. The rapid geochemical analysis of two samples taken from the tanning pit residues (23/241) and (23/891) illustrated high levels of lead and iron, whilst an additional 13 wood samples taken from the pits had extremely elevated levels of metal residues. This suggests the use of chemical-based treatments in the tanning industry which is known to have a number of metal-rich by products. There are several sources of these metals (i.e. multiple products/methods used for tanning). The nature of the chemicals is unknown at present but seems likely to be the result of non-alum treatments, or from an alum treatment that was produced from a heap roasted sequence (Appendix F).

6.6.10 Finds recovered from the fill of the tanning pits include over 100 fragments of clay pipe, a single shoe lace and 14 shoe fragments recovered from the secondary fills of pits from across the site. The majority of the shoes were men's (although examples of women's ankle boots were recovered) and dated to the 19th century.

Brick Buildings and Associated Structures (Figures 12, 14, 15 and 19)

6.6.11 Brick built structures associated with the tannery's occupation of the site were found exclusively within the central, eastern and northern areas of the site. From assessment of the structures varying forms and the late 19th century cartographic evidence the remains have been identified as representative of drying buildings, offices, storerooms, leather and skins warehouse, dying sheds,

stables, a smithy and fleshing sheds. Each of the structures has been assigned a feature number for ease of description.

6.6.12 Samples were taken from much of the masonry dated to the tannery's occupation of the site, but no clear phasing of the structures could be confirmed from the results. A rudimentary phasing of the features has been created from the stratigraphic positions of the masonry remains (Figures 12, 13 and 14), yet from the cartographic depictions of the site it appears that all of the tannery structures were built prior to 1878.

6.6.13 Within the centre of the site a line of pillars [23/713], [23/714], [23/715] and [23/716] (Figure 15) constructed from red bricks within a light grey sandy mortar, stepped at base and set upon a coarse concrete footing, represented the central supports for the Leather and Skin Warehouse depicted within Goads map of the site (Figure 5). Iron staining on the pillars suggests that they held metal roof supports. A narrow brick wall constructed from similar materials [23/718] represents the external north-south orientated western wall of the same structure.

6.6.14 Other brick built structures within the centre of the site were more clearly associated with the tanning process, as they were connected by brick culvert [23/122] and brick drain [23/153] to a much larger brick built culvert [23/606] that ran on a north – south alignment to the east of tanning pits [23/502], [23/503] and [23/504] draining the lime tanning solution from the pits.

6.6.15 Drain [23/153] was constructed from hard fired red stock bricks held within a soft sandy mid grey mortar. It was linear in shape, with an arched ceiling. The base of the feature stood at 1.35m AOD. It was 0.48m wide and extended 2.66m to the east before it became bonded to a manhole [23/114] built from similar bricks, measuring 1.12m x 0.81m x 0.68m. Within the manhole a wooden base and sluice gate were found [23/168], which controlled the flow of water sent through a sizable, arched culvert to the east [23/116]. It was constructed from red and yellow stock bricks within a pale greyish white sandy mortar, which was bonded to adjacent steam drying structure Feature 10 [23/171] (Figure 15). The culvert measured 1.20m wide and 0.70m tall. The drain structure was set upon a brick built floor [23/118] constructed from red stock bricks in a sandy mortar, which ran throughout Feature 9 [23/170], which consisted of a partially housed drainage system, comprising the aforementioned culverts, drains and floors, in addition to a contemporary enclosing brick wall [23/235] to the south and a heavily truncated earlier brick wall to the south and north [23/119]. This represents a continuation of basement structure Feature 10 [23/171] to the east, which like [23/119] was heavily truncated by later drainage system [23/170].

6.6.16 Feature 10 (Structure [23/171]) comprised a series of four basements measuring a total of 13.13m in length and each measuring 1.98m in width. Within the most westerly room or antechamber a redbrick floor [23/383] / [23/382] constructed from soft fired red bricks held within a sandy mortar, was cut by a linear slot [23/381] / [23/385] running through the centre of the room. The shape and size of the slot suggests that it held a beam, which probably functioned as a support for machinery. From consultation with Goad's map the room is identified as a "*Hide Store",* whilst further annotation states *"Steam drying over"* suggesting that steam was produced from machinery housed within the room, supplied by the large culvert to the west and pumped into the adjacent rooms to the east [23/171].

6.6.17 Evidence of machinery housed within the other rooms of Feature 10 (basement structure [23/171]) was found in the form of a red brick wall [23/369] running through the centre of the two central rooms on an east-west orientation and a rectilinear slot [23/365], which probably also contained a beam support for machinery, cut through brick floor [23/370] in the two most easterly rooms, truncating divisional brick walls [23/363] / [23/364]. The structural machinery supports truncate many of the north-south orientated dividing walls, suggesting that these may similarly have functioned as low wall supports for a single large piece of machinery. Goads map of 1887 depicts the rooms running as a single rectangular structure, but annotates the function as *"Air Drying",* which does not suggest the need for machinery and accordingly suggests that the function of the room may have differed before of after 1887.

6.6.18 A rectangular cellar structure (Feature 11) formed from walls of hard fired deep reddish purple brick [23/327] and [23/425] and containing a floor of similar partially frogged reddish purple bricks [23/393] was located to the east of the basement structures (Feature 10). Floor [23/393] contained two north-south aligned stone built drains [23/394] and [23/395], which were constructed into the floor, suggesting that drainage was needed for the processes taking place within the room. Drains [23/394] and [23/395] both contained a dark grey silty sand sediment (23/422) beneath a wooden cover that acted as a sluice gate for the room. This suggests that the structure was used to temporarily hold water before the waste liquid was pumped out. The location of a wood-lined, brick built drain [23/489], constructed from reddish purple bricks in a pale sandy mortar, found running beneath wall [23/425] denotes its function as the drainage outlet for the cellar structure. The drain contained a thick deposit of lime residue (23/428), which implicates its use within the tanning process and suggests that the lime found rendered to wall [23/327] was there as a result of the room being filled with a lime tanning mixture during its use. When compared to the Goad map of 1887 (Figure 5) it appears that the structure relates to a *"Splitting & Air Drying*" structure that would have served a similar function to [23/502], [23/503] and [23/504] to the west.

6.6.19 Culvert [23/122] ran from the centre of the site to the southwest corner of structure [23/688], into which the culvert was bonded, and within which was partially revealed as brick drains [23/730] and [23/777] (Figure 15). A smaller culvert [23/126] was found extending from [23/122] into the large east – west orientated culvert [23/116] to the south, illustrating that the drainage system within the centre of the site was contemporaneous.

6.6.20 Structure [23/688] (Feature 13) was located to the north of basement [23/171]. It comprised a rectangular building measuring 4.85m east to west and 8.50m north to south, formed from a northern, southern and western wall bonded to an earlier, smaller rectangular room [23/687] to the east. The wall was constructed from red bricks, coursed in English bond, within a friable loose whitish grey mortar. In the western extent a 2.50m wide gap was found in the northern end of the wall, which may have functioned as an entrance to the room. Structure [23/687] to the east of [23/688] comprised a room measuring 3.80m east to west and 9.20m north to south. The walls were constructed from yellow stock bricks in an English coursing, bonded by a hard whitish grey mortar. The western wall had three stepped pillars built into the wall, which are contemporary to a line of three brick pillars [23/684], [23/686] and [23/690] aligned north-south to the west of the structure. The pillars may suggest that the later room [23/688], within which they stood, was constructed almost immediately after room [23/687]. However, the construction materials varied significantly for the two structures, instead suggesting that earlier remains of a red and yellow stock brick built room [23/682], which were found to be truncated by both features may have continued to be used in

conjunction with [23/687] and the adjacent pillars prior to the construction of [23/688]. Structure [23/689] was orientated on a similar alignment to the early tannery basement structure [23/171] to the south, suggesting that the initial phase of tannery construction was limited in size within the centre and east of the site. Goads map of 1887 annotates the later structure within the centre of the site as *"Tanks on Brick Piers"*, which most probably held fuel for the machinery used on site and/or the lime solution used within the tanning process. The same structure is noted on the 1878 OS map of the area, which suggests that the later pillars and walls were constructed by this time.

6.6.21 The function of structure [23/689] is ambiguous, as the wall was not significantly sizable and contained no features related to the tanning processes. However, the features close proximity to and alignment with the air drying house [23/171] to the south suggests that it may have functioned as a store facility.

6.6.22 To the east of Feature 13 [23/687] and to the north of Feature 11 [23/327] a series of three east–west orientated walls [23/495], [23/496] and [23/497] were found between walls [23/326] and [23/343], forming a structure assigned Feature Number 12. The walls were evenly spaced 0.75m apart. All of the walls were constructed from hard fired purplish red, partially frogged bricks (220mm x 100mm x 65mm) bonded by a hard off white sandy lime mortar in English coursing and supported by a stepped brick foundation above a shallow concrete footing. Wall [23/326] to the south was bonded to earlier cellar wall [23/327] and later adjacent drain [23/325], whilst to the north wall [23/343] was bonded to a contemporary north-south orientated wall [23/344] which ran parallel to a wall [23/345] of similar makeup to those to the west. A brick drain [23/303] constructed from red and yellow stock, partially frogged bricks was located to the east of the walls, in the gap between [23/496] and [23/497]. The drain contained traces of lime residue as did the walls, suggesting that they functioned as part of the tanning process. The Goad map of the area annotates the structure as "*Drum Sheds",*.

6.6.23 Feature 14 was revealed within the northeast of the site. It was a large building comprising ten rooms of varying size and shape, denoting various functions, was found to the west and north of the previously described brick and wood lined tanning pits (Figure 14). Each of the rooms has been given a number for ease of description. Immediately to the west of the tanning pits, Room 1 of the structure was revealed. It was rectangular in shape, measuring 6.08m north to south by 5.09m east to west, formed by red brick walls [23/771], [23/783] and [23/787] bonded in English coursing by an off white mortar. To the south, an external wall [23/776] extended 1.74m from [23/771]. Within the centre of the room was a large brick built support or anchor for a sizeable piece of machinery [23/770]. The structure was formed from stepped courses of red bricks, bonded by a yellowish white mortar in English coursing, located above a sizable concrete base. In plan it took the form of two rectangular plinths, with a gap in-between, extending half their distance from the north, where the plinths were joined. To the northeast of [23/770] an iron pipe [23/772] ran from the machinery anchor through wall [23/783]. This indicates that the machinery needed a water supply to function, and coupled with the distinct shape of the plinth, suggests that the room housed a steam powered engine that had a fly wheel to the north. Within Goads map (Figure 5) the room is annotated as *"20 MPH"*, which most probably dictates the capacity of the machine housed within the structure

6.6.24 Room 1 was immediately bonded to a brick wall constructed in stretcher coursing by an off white lime mortar [23/788]. The wall sat upon two courses of stepped brick foundation, measuring 0.72m wide and extending 12.75m north to south, before turning to the west and stopping at a concrete

step, which functioned as a threshold before it was later filled in by brick wall [23/806]. Wall [23/788] formed the eastern and southern external wall to two rooms. The northern room (Room 2) [23/793] was the largest, measuring 10.00m north to south and 7.32m east to west. It was enclosed by a large mortar and rubble filled construction cut [23/876] to the north and west. To the east of this a brick built, linear, north–south orientated wall [23/837] separated two linear strips of floor [23/795], [23/838] forming two narrow channels. Similarly within the east of the room, to the west of [23/788], two north-south orientated walls [23/789] and [23/791] enclosed a wider brick channel [23/790]. The brickwork within all of the channels was blackened suggesting that processes using high intensity heat took place within the structure. Within the centre of the building, between the two sets of brick lined heat channels a rectangular brick built foundation for machinery [23/793] was revealed measuring 9.30m north to south and 0.98m east to west. The structure had lead pipes built into the foundation to the north [23/794] and south [23/796], indicating that the machinery held by brick support [23/793] was fuelled by water that was pumped through the machine, suggesting that the room housed a boiler, which is further asserted by the burnt channels to the east and west that would have function as aeration channels for the furnace. This is verified by Goads map (Figure 5), which depicts the room as *"Steam Drying Over"*.

6.6.25 To the south of Room 2, two smaller rooms or antechambers (Rooms 3 and 4) were enclosed by wall [23/788] to the east and south and similarly built brick walls [23/701] to the south, [23/702] to the west and [23/803] to the north. The room within these walls was partially divided by a north-south orientated brick wall [23/805] within the centre of the room, to the south of dark grey brick floors [23/703] and [23/804].

6.6.26 The south-western wall [23/701] of Room 3 continued to the west to form the external southern wall of Room 5. No wall was revealed within the west of the room, although a contemporary brick drain housing an iron pipe [23/705] was revealed orientated north-south, where an adjacent wall may have been prior to its truncation by colony structures. On Goads map (Figure 5) the rooms functioned as a *"Tan House"*, which contained two circular structures that were not found during the excavation.

6.6.27 Drain [23/705] was structurally incorporated into an east-west aligned wall [23/745] to the north, which formed the southern wall for two large rectangular buildings; Rooms 6 and 7. The wall was constructed from soft fired, red bricks bonded by a light grey sandy mortar. It was truncated and rebuilt in a number of later phases [23/761] and [23/798] to the east, set on an ENE–WSW orientation. The later rebuilds may have functioned to connect the original wall to a small east-west orientated wall [23/842] extending from the boiler room to the east.

6.6.28 Wall [23/754]/[119] was constructed from red bricks within a light grey sandy lime mortar, 12 courses high. It was orientated north-south, enclosing the western side of Room 6 and was adjoined to an east-west orientated wall [120] built from similar materials that enclosed Rooms 6 and 7 to the north. The east of Room 7 was enclosed by red brick wall [23/837], which extended 28.70m to the north from the south-eastern corner of the room, acting as a divisional wall between Rooms 7 and 2 and creating an eastern entrance to Room 7 to the north of Room 2. Externally bonded to the west of wall [23/754] was a small soak away, which drained into a brick built drain [23/709] that ran to the east through wall [23/754] and may have linked to a larger north-south aligned brick culvert [23/747]/[183], which ran through the centre of the room, abutting wall [23/745] to the south. Notable funnel and tube fragments were recovered from brick culvert [23/747] within Room 6, which may

have been used during the tanning process within the tan house to the south or the steam drying room to the east. Pottery from the backfill within this culvert dates to 1890-1920/40.

6.6.29 Rooms 6 and 7 were divided by a small north-south orientated brick wall that survived in two small sections [23/757] and [23/758], which may represent different phases of construction similar to the southern wall of Rooms 3 and 4. Within the north of both rooms a section of flag stone floor was found [115], bonded by a grey cement material. However, within the southeast of Room 7 an earlier floor constructed from red bricks in a hard white mortar [23/800] suggests that the function of the room, or possibly both rooms, may have changed during the tannery's occupation of the site. On Goad's map of 1887 (Figure 5) Rooms 6 and 7 form a single room that is internally divided with Room 10 to the north. The room is labelled as *"Air Drying"* and a pipe or culvert, which was not found during the excavation, is depicted leading from the adjacent "*Steam Drying"* room, suggesting that steam was pumped into the room in a similar process to that within structures [234/170] and [23/171] to the south.

6.6.30 Brick wall [120] was adjoined to a north–south orientated wall [122] of similar construction to, which formed the western wall of Rooms 8 and 9, and the eastern wall of Room 10. Wall [122] extended 9.39m, before a later phase of wall [189] was found overlying it within the north of Room 9. Room 8 was rectangular in shape, it contained two fragments of the same red brick floor [144]/[166] bonded in stretcher coursing by a white sandy lime mortar, which was built during the initial phase of the rooms construction, and a brick culvert that was later constructed from hard fired red bricks in a grey cement mortar [161]. The room was enclosed by a yellow stock brick wall, held within English coursing by a grey cement mortar [125] to the south and east overlaid by a later addition of a similar yellow stock brick wall [123], and a red brick wall, constructed in similar coursing by a white lime mortar [146] in the north, which was also overlain by a similar red brick wall which extended 0.84m to the east of the room before turning to a northeast-southwest orientation and forming the external wall to Room 9, which ran on an east-west orientation, fronting onto Spa Road [126].

6.6.31 To the south of [124] a wall of similar size, constructed from yellow stock bricks, held within English coursing by a lime mortar [127] abutted the earlier wall, extending 26.30m to the south. Additionally, a grey flagstone floor bonded in a pale lime mortar [118] was revealed abutting contemporary wall [124] to the north and [127] to the east. It was comparable to flagstone floor [23/784] to the south, which probably represents a continuation of the feature. These later structures appear to form a walled yard that may relate to a contemporary brick floor [158] found to the south of Room 8. Goad's map of the site (Figure 5) depicts the room as part of a stable which would account for this series of external yards and paths that led to the structure.

6.6.32 An earlier series of floors were found to the west of [118] abutting and truncated by wall [125], showing a continued use of Room 8 as a stable. The earliest floor [168] was constructed from yellow stock bricks, bonded in a lime mortar, which may have functioned as a walkway or yard surface, but was heavily truncated by later structures. Overlying this was a wall and floor contemporary and abutting wall [125]. The lower structure [156] was a small section of wall constructed from soft fired red bricks within a cement mortar, overlaid by the upper flagstone surface [157].

6.6.33 Room 9 was formed from the addition of later walls [124], [126] and [186] to walls [122] and [144], and accordingly can be assigned as functioning during the latest phase of tannery use. Within the centre of the room a red brick culvert bonded in cement mortar [160] ran on a northeast-southwest

orientation, adjoined to contemporary wall [124] in the south. A culvert of similar size [149], constructed from red brick in a lime mortar extended from [160] on an east-west alignment in the south of the room. In the west of Room 9, a brick wall bonded by a cement like mortar [150] was found beneath a concrete floor and later wall [122]. The function of Room 9 is unclear from the remains. It certainly did not house machinery and the limited size of its walls suggests that it was of no great height. Goad's map of the area annotates the structure as part of the stable complex, which includes Room 8. This may therefore represent an extension to the building before 1887.

6.6.34 Room 10 was heavily truncated by structural additions made to the building after the abandonment of the tannery, and the construction of the Salvation Army structures and modern intrusions. It was constructed from an early east-west orientated tannery wall [130] of red bricks bonded in English coursing by a lime mortar, which was sealed by soil layer (147). To the east this was replaced by a later tannery wall foundation [152], constructed from red bricks in a lime mortar, contemporary with a north-south aligned brick floor support [196] and insubstantial east-west orientated wall [151], which most probably functioned as a support for machinery held within the room. The Goad map of the site (Figure 5) indicates this structure was used for *"Air Drying"*

6.6.35 Within the northeast corner of the site, a line of three thin brick wall segments [178], [179] and [180], represented the same exterior wall to a cart shed depicted on the Goad map of 1887 (Figure 5). Together, the walls measured 6.15m on a north-south alignment.

6.6.36 From the backfill deposits infilling the brick tannery structures a large quantity of slag material was retrieved, most of which was derived from heating associated with the artificial drying and/or power production on site. Fuel ash slag dominates the assemblage, although a significant quantity of clinker was also recovered from this phase. Other material included iron concretion, some vitrified clay, tiny pieces of copper alloy slag and a single glassy lump of probable iron blast furnace slag. All of which suggests a

Associated Tannery Features

6.6.37 Three drainage structures were revealed within the southeast of the site (Figure 12). Close to the southern limit of the excavation was a wooden barrel [23/052] set within a construction cut [23/050], fed by a pipe trench [23/524]. It clearly functioned as a water storage device and may have been used during the initial preparatory stages of the tanning process, as it was found within a close proximity to the fleshing sheds depicted in Goads map (Figure 5). Another drainage feature in the form of a circular soak away [23/061] was found to the northeast of [23/050] and may have similarly function within the initial preparation stages of tanning work.

6.6.38 Towards to south-eastern corner of the excavation a brick built culvert [23/044] ran into a brick built manhole [23/048]. The culvert may have continued to the north servicing the air drying rooms or steam drying rooms, but was heavily truncated.

6.6.39 Within the north of the site a large squared pit [23/893] was revealed that contained a lining made from horns discarded during the tanning process (Figure 16). The pit measured 2.72m north to south, 2.50m east to west and was 0.40m deep. The cut had vertical sides that broke sharply to a flat base, at a height of 0.96m AOD. The lining of the pit was constructed from layered horns held in place by a light orangey brown sandy clay packing material. The pit was filled with a dark greyish

brown, soft sandy silt (23/892) that contained large amounts of animal bone, CBM, pottery and cobbles, suggesting that the feature functioned as a rubbish pit. The horn lining of the cut appears significant, but may have simply been an available material to sure the sides of a pit cut into the friable natural deposits. It represents the only faunal evidence of tannery waste. However, the few cattle horncores recovered from the feature were heavily fragmented providing few measurements, thus inhibiting the dating of the horns and the structure.

Housing Remains (Figure 12)

6.6.40 The late 19th century OS maps of the area and Goad's 1887 map of the site illustrate that within the northwest of the site, to the west of the Leather and Skin warehouse, and to the north of the tanning pits, a number of dwellings and a public house (which was revealed during the initial evaluation) were located fronting onto Spa Road to the north and onto a smaller ancillary road, named Active Place, which ran across the northern half of the site on a north-south alignment from Spa Road.

6.6.41 The only structural remains relating to the dwellings were found in the north of the site in the form of a 6.35m long, north-south orientated wall [23/851], which had an east-west aligned return wall [23/852] bonded to its northern end (Figure 12). Both walls were constructed from red bricks (230mm x 110mm x 70mm), standing 4 courses high, bonded in header coursing by a creamy yellowish grey sandy lime mortar. The structure would have formed a dwelling fronting onto active place to the east.

6.6.42 A number of garden features comprising brick built wells ([23/317], [23/332], [23/295] and [23/333]), pits (including cess pits) ([23/237], [23/246], [23/254], [23/293], [23/420], [23/318], [23/888], [23/890]) and post holes ([23/287], [23/327], [23/479], [23/870] and [23/874)] (Figure 12) were situated within the northwest of the site, which are invariably connected to the dwellings that occupied the area during the tannery period. The features do not form any identifiable larger structures and therefore cannot be assigned to any specific buildings depicted within the cartographic evidence for the site. It is notable that the wells are evenly spaced and may accordingly have been used privately by the separate dwellings that occupied the site.

6.6.43 The finds recovered from the garden features included a large group of glass sherds recovered from cesspit [23/293], comprising relatively large amounts of drinking vessels as well as complete clay tobacco pipe bowls, suggesting that it was used by the public house within the northwest of the site.

6.7 Period 4 - Post-Medieval. Phase 3 - Tannery Abandonment

6.7.1 Sources indicate that by 1894 the tannery had fell into disuse and that by 1914 the investigation area had become occupied by the Salvation Army City Colony. The archaeological remains datable to the period of time from the abandonment of the tannery to the construction of the colony mostly comprise, as expected, extensive backfill deposits of the tanning pits and tanning structures. In addition, there were demolition layers associated with the recorded destruction of the fleshing sheds prior to the construction of the colony structures and the installation of services for the rapidly developing urban community surrounding the site. However, structural remains in the form of walls and surfaces, and large demolition pits were also found throughout the site, most notably concentrated within the northeast of the site, which imply that the site was occupied and had a limited amount of development undertaken upon it during this period.

6.7.2 Backfill deposits, dating to the tannery' abandonment, were found within the extensive tanning pits and associated tannery structures throughout the south of the site. Wood-lined tanning pits [23/247], [23/141], [23/300], [23/815], [23/824], [23/088], [23/778], [23/830] and [23/847] within the south and southeast of the site each contained a single fill of dark greyish brown, sandy clayey silt. Unlike the other pits within the area no residual lime deposits were found near the base of the features, suggesting that the features may have ceased to be used by the time the tannery site was abandoned, or that the pits were used to undertake a different function within the tanning process. The heavily silty deposits found within the pits may suggest that they were originally water-filled. Only tanning pit [23/845], which similarly contained a primary deposit of dark brownish silt, also contained a secondary demolition rubble fill, deposited during the demolition of the tannery structures, as was the demolition backfill (23/130) within tanning pit [23/133].

6.7.3 Tanning pit [23/058] contained a single fill of yellow sand, which likely signifies that the feature was used for a different function to those containing lime, possibly relating to the use of chemicals that sand would be able to neutralise prior to abandonment of the tannery complex.

6.7.4 Post-tannery backfill deposits were most prominent within the southwest of the site, where the large multi-divided brick tanning pit structures contained a variety of fills, indicative of differing treatments prior to the site's abandonment. The large brick structures [23/431], [23/502], [23/503] and [23/504], which were divided to form numerous tanning pits contained a uniform primary deposit of a light, whitish yellow lime residue, used during the tanning operation that took place on the site. The residue was covered with a dark brownish black sandy silt deposit (23/514), (23/597), (23/006), (23/529), (23/007), (23/532), (23/535), (23/008), (23/508) within structures [23/502] and [23/503]. Alternatively, demolition rubble (23/543), (23/547), (23/564), (23/570), (23/576) covered the lime residue throughout the tanning pits within structure [23/504] linking the infilling of the pits with the demolition of the site and suggesting that upon the demolition of the adjacent tannery structures the debris produced by the process was used to infill the lime filled pits. Due to a lack of finds recovered from the demolition material it is unknown if this demolition and subsequent infilling took place at the time of the tannery's abandonment, or whether the lime material was left exposed until the Salvation Army Colony was built and the tannery demolished.

6.7.5 Although the form of tertiary backfill deposits varied within [23/502], [23/503] and [23/504], the material used was consistent throughout the structure suggesting that the infilling was conscious and contemporaneous. However, within the adjacent, brick-built tanning complex [23/431] the pits, which contained the same basal lime residues, contained up to three different phases of backfilling, comprising mid brownish silts, dark black sands containing large amounts of burnt wood and rubble demolition deposits. The rubble deposits were generally the latest phase of backfilling, but as within pit [23/216] did sometimes form the only fill (23/215). Similarly, the burnt sand deposit generally formed the secondary fill above the silts. The depositional location of the varying deposits showed no diagnostic pattern and suggests that the pits were haphazardly backfilled subsequent to the tannery's abandonment.

6.7.6 The most notable finds recovered from the backfill deposits included a pair of leather pouch like bags and a metal and leather oval case (Appendix C).

6.7.7 Additionally, within the south of the site, a wooden barrel [23/052] within a deep construction cut [23/050], and two brick lined wells [23/335] and [23/330], associated with the tannery phases of site

occupation were found to contain numerous distinct silt fills dating to the post tannery abandonment period, suggesting that the deposits at least partially accumulated following the sites abandonment, as one would expect within water filled features. Within well [23/335] it was notable that the primary fill comprised industrial waste material and demolition rubble, suggesting the feature was initially backfilled when the tannery was demolished.

6.7.8 A number of brick drains and culverts [23/485], [23/039], [23/663], [23/606] associated with the tannery, situated in the south of the site were found to contain deposits of white lime residue (23/428), (23/038)/(23/661), (23/665), (23/666) that had accumulated during and prior to the abandonment of the tannery site, when the lime held in the tanning pits and transported through the lime drainage system had filled them. A brick built soak-away [23/064] and manhole chamber [23/211] in the centre of the site, which were also contemporary with the tannery site, contained a dark bluish black, organic, sandy silt fills (23/085) and (23/210) laid through the silting of the feature, clearly indicating that the feature originally held water. Nearby culvert [23/747], contained only a rubble infill deposit (23/746) which is not indicative of the features original function.

6.7.9 Various demolition layers (23/720), (23/721), (23/722), (23/724) and (23/725), comprising masonry rubble within sandy, silt matrices were found across the centre of the site, representing the demolition that took place of the tannery structures during this period. Similarly, levelling deposits, laid prior to the construction of the colony site, comprising a light yellowish white sandy mortar (23/342) above a dark brown sandy silt (23/246) were found within tannery structure [23/344] in the centre of the site. In the southeast of the site a water-laid silt deposit (23/298), overlain by a layer of sand and clinker (23/297) and a layer of lime residue (23/296) were found within brick built room [23/380]. A dump of industrial waste material was also found within the centre of the site (23/349), which likely represents waste from the tannery, dumped during its abandonment. Within the northeast of the site a layer of demolition rubble (182) covered the structural remains dated to the tannery abandonment period, representing the demolition of tannery and post tannery structures immediately prior to the construction of the extensive Salvation Army structures found within this part of the site.

6.7.10 Evidence of ground raising, associated with the walls and structures within the northeast of the site, was represented by a mid greyish brown clay square (141) positioned between a tannery wall [122] and a contemporary concrete floor joist [133]. Within the northeast of the site this was one of three identified concrete floors joists [134], [167]. In addition a flagstone floor [131], external cobbled brick floor [132], a red stock brick base [129] and red and yellow stock brick base [135], which both presumably held wooden floor boards, were also revealed within this corner of the site, suggesting that the area held a structure occupied after the abandonment of the tannery, which fronted onto Spa Road (Figure 20). The structure appears to have re-used the walls of a tannery building that had previously stood within that location, constructing the aforementioned floors within the confines of the structure and building additional walls as way of repair, illustrated by red brick wall [153]. A small yellow stock brick wall [125], bonded by greyish cement like mortar, was also found extending 2.4m from the structure, which may represent a newly built enclosing wall (Figure 20).

6.7.11 Throughout the rest of the site the structural features dating to the tannery abandonment mostly comprised services, including a wooden lined gutter [23/404], three ceramic drain pipes [23/107], [23/769] and [23/377], two cast iron drain pipe [23/384] and [23/362] and a brick built manhole [23/109].

6.7.12 Within the centre of the site a semi-circular pit [23/737], measuring 0.40m x 0.50m x 0.30m was found adjacent to tannery wall [23/753]. It contained an initial lining of brick [23/738] set upon a dark brown clayey silt bedding layer (23/739). The brick lining was covered by dark greyish black silt (23/735), which was in turn overlain by a later red brick floor, bonded with a light grey mortar [23/729]. The glass and CBM identified within deposit (23/735) and the bricks used within both floors are datable to the tannery abandonment period, which suggests that a continuation of at least minor construction took place during this time, and more importantly that some of the tannery structures continued to be used, as the features close association with the adjacent wall suggests that it functioned in conjunction with the structure as a form of soak away or drain.

6.8 Period 5 - Modern. Phase 1 - Salvation Army Colony (Figures 21, 22 and 23)

6.8.1 By 1914 the application area was occupied by the Salvation Army City Colony. The occupation of the site by the Salvation Army (SA) brought about some modifications, principally involving the construction of SA building over of the areas of tanning pits and the demolition of the large fleshing shed in the south of the site.

6.8.2 The site remained relatively unchanged, regardless of experiencing bomb damage during the Second World War. Despite the proximity of the site to the railway line, the City Colony did not experience a direct hit, with damage assessed at 'General Blast Damage, not structural'. The large structure located in the south-eastern corner of the site was assessed as 'Seriously Damaged, but repairable at cost' (Compass Archaeology 2000).

6.8.3 Extensive remains of the Salvation Army Colony were uncovered within the north-eastern corner of the site (Figure 21 and 22). They comprised numerous floors and associated bedding layers, representing at least three phases of concrete and parquet floor construction, associated redbrick wall structures ([106], [116], [117], [121] and [128], and the concrete foundations for industrial mechanisms ([154] and [155]) such as furnaces. The earliest deposit associated with the Salvation Army's occupation of the site was the backfill of a tanning pit (174), laid to level the site prior to the construction of the colony buildings.

6.8.4 Throughout the rest of the site the structural remains associated with the colony mostly took the form of services and industrial features. Within the west of the site an area of intense industrial activity was represented by three brick chimney stacks [23/259], [23/263], [23/266] constructed from red bricks within a light - mid grey sandy mortar, associated with concrete and brick built floor (23/268), overlain by backfill contemporary to the disbandment of the colony site (Figure 23).

6.8.5 Three brick and concrete built drains ([23/080], [23/228], [23/700]) associated with the colony structures stretched across the site, connecting to three brick and concrete built manholes / inspection chambers ([23/601], [23/648], [23/760]). The scale of the drainage features is indicative of the colonies size.

6.8.6 More functionally ambiguous features dating to the colony period of the site's occupation include a 2.02m stretch of a red brick wall [23/201], bonded by a yellowish white mortar and an abutting concrete foundation pad measuring 2.27m x 1.02m, both constructed directly on top of tanning pit backfill (27/133). Similarly, within the centre of the site a spread of dark blackish grey, compacted silty sand made ground (23/193), measuring 4.60m x 5.00m, overlain by an irregular brick surface

[23/167], may represent a roughly constructed external yard surface, yet may also be representative of levelling or demolition processes.

6.9 Period 5 - Modern. Phase 2 - Demolition and Services (Not Illustrated)

6.9.1 Following the abandonment of the site by the Salvation Army colony the subsequent demolition of the associated structures in 2004 created a deposit of mixed made ground and demolition rubble (23/001) that covered the entire site. Below this a number of unidentifiable modern truncations ([23/094], [23/096], [23/144], [23/155], [23/207], [23/350], [23/388], [23/406], [23/635], [23/652] and [23/865]) containing concrete rubble fills, which are likely to be the result of the 21st century demolition, were found to truncate earlier deposits throughout the site. It is also possible that these modern truncations are the result of the bomb damage that the site is known to have suffered during the Second World War.

6.9.2 A modern manhole [23/607] and adjacent brick wall [23/599] situated within the southeast of the site represent the only 20th century structural remnants that post date the sites occupation by the Salvation Army. Within chimney stack [23/261] a brownish orange, sandy fill (23/262) contained refuse easily datable to the 1960's.

7. Archive

7.1 Post-excavation Review

7.1.1 The following tasks have been carried out to date on the stratigraphic archive:

- Site records were checked.
- A stratigraphic matrix was compiled.
- All the contexts were grouped into stratigraphic phases.
- Subgroups within particular phases were established.
- Plans were digitised and digital images were created.
- Finds were assessed by specialists.

7.2 The Stratigraphic Archive

7.2.1 The stratigraphic archive consists of the following:

Records	Quantity
Context Sheets	998
Context Register Sheets	30
Plans	79
Plan Register Sheets	4
Sections	118
Section Register Sheets	5
Level Sheets	67
Environmental Sample Register	5
Environmental Sampling Sheets	108
Photographic Register Sheets	39
Photographs, Black and White	438
Digital Photographs	896
Photographs, Colour slide	426
Small Finds Registers	2

8. Finds and Environmental Samples

Pottery

8.1 A total of 2,501 pottery sherds, weighing a little over 77.5kg, were recovered from 161 contexts. Sherd sizes vary greatly. There are many fragments, both from hand-collection and the environmental residues, of under 6mm across (1-2g) as well as numerous pieces over 200mm across. A number of periods are represented in the assemblage from the site though the vast majority of the material is of the 19th century. Earlier periods represented include insignificant amounts of Roman, medieval and Transitional wares with notably more material from the 17th to 18th centuries. Some 68 fabrics/fabric sub-groups are represented though many only by between one and five sherds. Of this total 34 fabrics can be ascribed a late post-medieval date (post 1750), 24 an early post-medieval date and five a general post-medieval date as they are common both sides of

the mid 18th century. The assemblage holds potential to give a broad overview of the ceramics in use within the area during the 19th century. The few abraded sherds of Roman, medieval and Transitional pottery are not considered to hold any potential beyond demonstrating small-scale activity in the area.

Glass

8.2 An assemblage of 2032 pieces, weighing 23920g, was recovered from 116 contexts. Both vessel and window glass were present. The earliest pieces date to the 17th to early 18th century and consist of window glass. The earliest vessel glass consists of wine bottles (mid 17th to 18th century). Other 17th to 18th century vessel glass is undiagnostic of form. The majority of the assemblage is of 19th century date. Only a small amount of glass is from primary contexts, such as the large quantity of drinking vessels within cesspit [23/293], associated with complete clay tobacco pipe bowls, which indicate the deposit comes from a public house, whilst funnel and tube fragments, the majority of which were recovered from brick culvert [23/747] (pottery date: 1890-1920/40) are related to the later post medieval on-site activities.

Clay Tobacco Pipe

8.3 The archaeological work produced an assemblage of 944 clay tobacco pipe fragments (wt 3592g) from 123 individual contexts. The majority were stem fragments. Only 197 bowls and bowl fragments were recovered during the investigation. Most pieces dated to the 19th century, though pieces from as early as the first half of the 17th century were also recovered. Close to a hundred fragments were recovered from the tanning pits. Two wooden pipes (wt 37g) and a bakelite mouthpiece fragment (wt 3g) were also recovered. The recovery of pipe fragments from tanning pit fills contemporary with the tannery, as well as 'domestic' features such as cesspit [23/293] help shed light on the material culture of the residents of Bermondsey and tie these features in with the location of the 19th-century houses, the public house and the tannery.

Leather

8.4 In total 433 leather fragments (wt 8338g) were recovered from 31 individual contexts. The majority of these were dry (310), with the remaining 123 pieces in a waterlogged condition. Most were located in the fill of tanning pits. The vast majority of leather recovered during the excavation comprised waste pieces without any cut marks, dated to the abandonment phase of the tannery (period 4, phase 3). A single thin and regular strip representative of a shoe lace was recovered from the backfill of a tanning pit. 14 shoe fragments were recovered from the secondary fills of tanning pits from across the site. The majority of the shoes were men's (although examples of women's ankle boots were recovered) and dated to the 19th century. A further 2 leather pouch like bags and a metal and leather oval case were recovered from post tannery deposits (period 4, phase 3). Due to the small size and late date of the assemblage it is of little significance.

Building Material

8.5 A total of 2507 fragments of ceramic building material (CBM) with a total weight of 583.708Kg were recovered from the site, along with mortar samples, plaster and render weighing a total of 21.586Kg. The material is predominantly of post-medieval date, with a small amount of medieval material and three fragments of Roman CBM. Evidence of a possible high status building was present in the form of a single tin-glazed delft ware wall tile. The brick samples suggest three probable post-medieval building phases on site: an early post-medieval phase pre 1700, a later post-medieval phase 1700-

1900 and a modern phase. The assemblage is of local significance as it provides evidence for the post-medieval industrial history of Bermondsey.

Slag

8.6 The excavations recovered 5,356 pieces labelled as slag, weighing a little under 42kg, from 67 contexts. The most common slag type in the assemblage (by weight) is fuel ash slag, which is post - medieval in date, but undiagnostic in form. The earliest material is potentially Roman, comprising six pieces (11g) of iron concretion derived from corroding ironwork and as such is not actually slag. Deposits dating to 17th and 18th centuries derive from industrial waste spread on the land during manuring, as suggested by the biscuit-fired tin-glazed ware sherds. Period 4, phase 2 deposits are predominantly derived from heating associated with the tannery (possibly associated with artificial drying and/or power production) though some may well derive from domestic hearths. Fuel ash slag dominates, most being derived from tanning pits. A significant quantity of clinker was also recovered from this phase. Other material includes more iron concretion, some vitrified clay, tiny pieces of copper alloy slag and a single glassy lump of probable iron blast furnace slag. The tannery demolition (Period 4, Phase 3) and 20th century occupational (Period 5) levels produced a significant assemblage of earlier residual/reworked material. The assemblage from Phase 4 holds potential for further study due to its association with contemporary activity on the site, though whether this relates to the tannery (most likely) or domestic activity is not absolutely certain.

Animal Bone

8.7 In total 1787 fragments of animal bone were recovered by hand and through the processing of flotation samples from 120 contexts. The assemblage varies considerably in the level of preservation. The limited animal bone from the Roman ditch contexts was poorly preserved and contained few identifiable pieces. A single human bone was recovered from residual material. The only faunal evidence of tannery waste was the horncore-lined pit where cattle horncores were reused as a cheap substitute building material. The few cattle horncores recovered from the feature were heavily fragmented providing few measurements and none were complete in length, inhibiting the dating of the horns and the structure. The rest of the animal bone is typical of domestic refuse with cattle, sheep/goat and pig as well as rabbit, hare, goose, chicken and occasional fish bone. There is evidence of the butchery process showing that saws were frequently used in the Phases 2 and 3 of the post-medieval period, in accordance with the 19th century date of these deposits. One off-cut from bone working was recovered from a Phase 3 fill of a tanning pit was found in the form of a large-mammal long bone shaft fragment from which rosemary beads had been cut.

Textiles

8.8 A total of 18 textile fragments were recovered from six separate contexts across the site. A small group of 20th century textiles was also recovered but has been excluded from this overview as it lacks any archaeological significance on the current site. The main group consists of Hessian-type rough-woven cloth (i.e. tanning pit [23/140] fill [23/138]) probably from sacks. In addition, a single fragment of wool knitting, possibly from a sock and a length of cotton thread were recovered from two separate tanning pits. The textiles were found exclusively within deposits associated to the abandonment of the tannery (period 4, phase 4) and are therefore not considered significant.

Prehistoric Flints

8.9 An assemblage of 96 worked flints, weighing 46g was recovered during the fieldwork. Many of the smallest pieces were recovered during the wet sieving of soil samples. The majority of the

assemblage comprised small chips and fragments smaller than 10mm in size, which are likely to have resulted from flint knapping. A small number of flakes, mostly small, were also present. There is little in this assemblage that is diagnostic or could provide any dating information, although a prehistoric date is most likely.

Environmental Remains

8.10 A total of 108 bulk samples were taken during the investigation, only four of which were taken during the initial evaluation. A rapid environmental assessment of the samples (Appendix G) has processed 23 of the bulk samples from Period 4, Phases 2 (2 samples) and 3 (twenty one samples) for a rapid pollen assessment and 23 bulk samples from Phases 2 (two samples) and 3 (twenty one samples) for waterlogged seeds and wood. In addition 53 timber and bulk soil samples were submitted for Geochemical anlysis and 136 processed flots and residues were rapidly assessed for charred plant macrofossils (seeds and wood), non-charred wood, Mollusca and bone from Period 2 (11 samples), Period 4; phases 1 (11 samples), 2 (11 samples) and 3 (43 samples), Period 5, phases 1 (3 samples) and 2 (2 samples), and Unphased (5 samples). The results of the initial analysis has shown that the potential for reconstructing past activities on the site during all Periods is generally high, particularly during Period 4, phases 1 and 2. The metal concentrations found in samples of primary tanning pit deposits screened suggests the use of chemical-based treatments in the tanning industry which is known to have a number of metal-rich by products. Further analysis of the samples would be able to specifically identify the chemicals used in the tanning process, which would be able to date the tannery's development.

9 Significance And Potential Of The Data

9.1 Potential of the Data

9.1.1 During the course of the fieldwork archaeological features were recorded in high density throughout the investigation area. The earliest remains on site appeared to form a large Roman trackway, series of land division trenches or land reclamation features constructed from four linear ditches running across the site. If the features can be positively identified as a trackway from subsequent research, it may suggest the presence of a farmstead within the area, as implied from by Roman agricultural features found within a nearby site.

9.1.2 A layer of alluvial clay containing both Roman and medieval finds was found overlying the Roman ditches, which suggests that the site was partially waterlogged or heavily prone to flooding prior to the Roman use of the site. This accounts for the lack of medieval and early post medieval remains within the site. Through further research into the level of flooding within the area during this time we will be able to establish the source of the flooding, which is most probably the Thames, and the extent to which it affected the surrounding area.

9.1.3 Post-medieval remains within the site show the development of the area from a waterlogged flood plain to agricultural land in the 17th–18th century, further developing into an urban industrial centre in the 19th century and finally declining during the early 20th century to become an impoverished inner city site.

9.1.4 The remains pre-dating the tannery site formed a series of ditches set within a grid system, denoting the agricultural use of the land during this time. The ditch system may have functioned as

drainage for the saturated ground or as irrigation for the crops. A map of the area produced by Rocque in 1746 correlates to the features and depicts a surrounding landscape of similar fields. The pottery recovered from the early post medieval features was greatly abraded, suggesting that it had been brought out of the urban area for manuring of cultivated land on the city fringe. From further analysis of the environmental remains and comparison with contemporary remains within close proximity to the site it will be possible to establish the type of crops grown within the area and in turn the precise function of the ditches.

9.1.5 The remains of the tannery site were found to be extensive, comprising brick built structures, wooden sheds, wood lined tanning pits and brick built tanning structures. The tanning activity appears to have focussed in two areas of the site away from the initial fleshing processes, which both incorporated an air drying room, steam drying room, wood lined tanning pits and brick lined tanning pits. From cartographic and documentary sources it is clear that the surrounding area was a focus of tanning activity during this period. From comparisons with the excavations of tannery sites situated close by, notably 151-153 Bermondsey Road, it will be clear if the layout of the site was standard for Victorian tannery sites.

9.1.6 The tannery site did not function for a significant period of time, falling into disuse by 1895, which may suggest that the local industry also fell into a period of decline, as the subsequent establishment of a Salvation Army colony indicates.

9.2 Significance of the Data

9.2.1 The data recovered from archaeological investigations at Spa Road, Bermondsey are of local and regional significance.

10 Realisation of the Original Research Aims

10.1 This section examines the extent to which preliminary assessment of the results of the excavation can contribute to the original research aims outlined in the written scheme of investigation (Wardell Armstrong, 2008), which are answered below;

10.2 *To provide a permanent record of the remains of the Tannery prior to development. In addition, the aim is to disseminate the results of the excavation through an appropriate level of publication subsequent to post-excavation analysis and assessment. These aims will be achieved through open area excavation in those parts of the site where the evaluation established the presence of buried remains.*

10.3 Through the archaeological remains recorded on site a clear chronological process of development was recorded within the site and through this document and subsequent publication will be satisfactorily disseminated.

10.4 *It is anticipated that the excavation will reveal a variety of archaeological remains, primarily of an industrial nature. In particular, it is expected that excavation commensurate with the full surviving extent of the Victorian Tannery will expose both external and internal structural elements which will provide information on the development of the Tannery and the way it functioned. The excavation has the potential to provide evidence of the*

industrial growth of this particular area of Southwark and of the industrial processes carried out in the 19th century buildings and associated structures which occupied this plot of land.

10.5 The earliest features on site comprised Roman remains of a trackway cut across the site, possibly leading from a nearby farmstead that is suggested by other investigations to have been located within the vicinity of the site, extending to the northeast, where three significant Roman roads ran through Southwark.

10.6 The discovery of an alluvial deposit containing both Roman and medieval pottery dictates that following the Roman period the site was prone to flooding, or may have in fact been partially underwater. However, the sequence of post-medieval remains shows that prior to the 17th century the site was drained and began to be used agriculturally, with a series of irrigation and land division ditches revealed on a grid pattern across the site corresponding to the Rocque map of 1746.

10.7 The excavations show that the subsequent tannery site was extensive, incorporating various brick buildings, some of which housed steam powered machinery, wooden sheds, wood lined tanning pits and brick lined tanning structures. There appeared to be a focus of activity within the southwest and northeast of the site where two sets of brick and wood lined tanning pits were found close to air drying rooms, steam drying rooms and machine houses. The initial fleshing process appears to have taken place in the south of the site. Goads annotated map produced in 1887 has allowed us to confidently identify the function of many of the structures found within the tannery site, as the remains clearly correspond with those depicted.

10.8 The extensive Salvation Army colony site and modern rubble filled intrusions relating to its demolition have both truncated the earlier tannery, pre tannery and Roman remains. However, the level of truncation was generally low throughout the site.

11. Revised Research Aims

11.1 Following the completion of the fieldwork and the initial post-excavation assessment of the site, a number of additional research questions and aims can be identified. These will be addressed as part of the work that will be undertaken in preparation for the publication of the site.

Period 2 - Roman

11.2 The Roman remains on site consisted of a series of heavily truncated ditches that ran in two parallel lines on an northeast–southwest orientation across the centre of the site, forming what appeared to be the deepest remnants of a road or droveway.

- How does the location of a Roman features relate to contemporary remains within the area? Do the sparse remains of Roman field systems previously found during excavations at Spa road relate to the ditches or respect their orientation?

- Through further research is it possible to identify the ditch feature as a trackway from its orientation and similarity to remains within the surrounding area? Does this section of represent

a track that was associated with one of the military roads known to have converged upon Southwark, leading to the Thames crossings at London Bridge or Westminster?

Period 4 – Post-Medieval. Phase 1 – Pre-Tannery

11.3 The post-medieval remains that pre dated the tannery structures comprised a number of ditches aligned on a grid system throughout the site, two large quarry pits, a number of non diagnostic pits of varying sizes, a brick built drain and two brick built structures, both of which were located within the southeast corner of the site. The features illustrate that the site served primarily as agricultural land during this period, but also suggests that a cottage industry of sand and gravel extraction was undertaken at this time. The structures within the southeast of the site may also denote that the site was occupied.

- Is there evidence of gravel extraction taking place within the surrounding area and can it be associated with the construction of nearby structures or any of those within the site?
- Can the finds assemblage from this period, in conjunction with contemporary features uncovered within the surrounding area help identify when the site was first drained sufficiently to be used for agricultural purposes?
- Can evidence of specific food production be found from further analysis of the geoarchaeological remains recovered from the environmental samples

Period 4 - Post-Medieval. Phase 2 - Tannery and House Structures

11.4 The 17th – 18th century remains of a large tannery were revealed across the site, except within the northwest corner, where contemporary garden features relating to victorian dwellings fronting onto Spa Road and Active Place were revealed. The tannery remains comprised two sets of wood and brick lined tanning pits, associated fleshing and drying sheds and brick built structures that housed steam powered machinery. A map of the area produced by Goad in 1887 clearly corresponded with the remains revealed during the excavation and helped identify the specific functions of each structure.

- Is the layout of the tannery site comparable to the earlier tannery situated on Spa Road, to the northwest of the site?
- Through further research can the owners of the site and tannery workers be identified and the tanneries general relationship with the surrounding community be established?
- From comparisons to other tanneries and the undertaking of further documentary research can the specific way that the site functione be ascertained?
- Is the date of the tannery's closure indicative of a general decline caused by mechanisation of the tanning industry regionally or nationally? Does this mirror a general decline within the industry in this area of London?

- Can the garden features found within the northwest of the site and contemporary features from other investigations within the surrounding area illustrate a level of poverty associated with living close to a tannery site?

- Does the location of this tannery and the aforementioned earlier and larger site to the north-west suggest that the area was a focus for this activity?

Period 4 - Post-Medieval. Phase 3 - Tannery Adandonment

11.5 Limited remains were found post-dating the tannery site. The majority of the archaeology features comprised backfill deposits of the tannery features, which tells us little about the site at this time. The only notable strcutural finds comprised floor joists, pillar supports and wall repairs for a room within the tannery structures in the northeast of the site. The room functioned as a stables during the tannery's occupation of the site, and may therefotre show that the stables continued to be used until the Salvation Army Colony was built.

- What were the stables used for after the abandonment of the site?

- When was the tannery structures demolished?

Period 5 - Modern. Phase 1 Salvation Army Structures

11.6 The Salvation Army colony comprised a large structure in the northeast of the site and a number of chimney stacks and surfaces in the west of the site.

- What do the industrial features dating to the colony site tell us about the activities that took place during this time?

- Does the existence of a colony on the site indicate a level of poverty within the surrounding area? Can this be attributed to the closure of the tannery or a decline within the local tanning industry?

12. Summary Of Further Work

Task	Description	Resource	Days
General			
1	Documentary research	PH	3
2	Further editing of matrix	PH	1
Analysis			
3	Further Geo Archaeological analysis	QUEST	5
4	Further finds analysis	ASE	25

5	Conservation - packing and archiving	AOC	8
Report, Publication and Archiving			
6	Liaison with specialists	MM	1
7	Completion of drawings for publication	JM	5
8	Liaison with illustrator	PH	0.5
9	Finds Illustration	LC	2
10	Preparation of publication text	PH	6
11	Editing and review of publication text	MM	1.5
12	Amendments resulting from external editor's comments to publication text and figures	PH	2
13	Final proof reading	MM	1
14	Archive preparation	PF	10
15	Archive microfilming	PF	2
16	Liaison with publication editor	MM	0.5
17	Project management	MM	4

13. Catalogue Of Further Work

Documentary Reserch

- Research of primary sources and documents concerning the site, including cartographic evidence that was unavailable at the time of this report.
- Further research of documentary evidence relating to the tanning processes during the Victorian period.
- Further research into the surrounding Roman archaeological remains.
- Research into comparison with other tannery sites, notably 151-153 Bermondsey Street.

Specialist Reports

13.2.1 Pottery

- Further Integrate existing text into final report.
- Preparation for deposition in archive

13.2.2 Ceramic Building Materials

- Final analysis and production of publication text.
- ASE will prepare and carry out a discard policy for the CBM material.
- Preparation for deposition in the archive.

13.2.3 Glass

- Preparation for deposition in the archive.

13.2.4 Geo-archaeological Environmental Samples

- Full analysis of samples taken on site, notably the geochemical analysis of the tannery deposits to
- Preparation for deposition in the archive.

13.2.5 Clay Pipe

- Intergrate text into final archive
- Preparation for deposition in the archive.

13.2.6 Metal work

- Preparation for deposition in the archive

13.2.7 Conservation

- Repackaging materials for archive
- Preparation for deposition in the archive

14. Illustrations

14.1 Plans and Sections

14.1.1 The digitised plans produced for the publication will require checking and correcting to ensure they are linked correctly with the contextual database. In the course of the analysis extra drawings may be needed, so time has been given to allow for extra work to aid the structural analysis.

14.1.2 The digitised site plans will be used to produce publication illustrations. These will accompany the site narrative, being annotated to identify the features discussed in the text, at an appropriate scale.

14.2 Overall Publication, Archiving and Project Management

14.2.1 The specialist reports will be integrated into the publication and the report will be read and edited. Time has been allocated for consultation and amendments to be made during this phase of work, involving both the editor and specialists.

14.2.2 Time has been allocated for liaison with the publication editor with regard to, submission of material and a summary of content.

14.2.3 Upon completion of the report, the written and material archives will be prepared, including microfiching, for accessioning with LAARC, Museum of London.

14.2.4 The management of the project includes monitoring task budgets, programming tasks, editing draft productions of the final report and publication for submission, and liaison with all members of the project team.

14.3 Potential for Publication

14.3.1 It is anticipated that an article of 25-35 pages will be produced, including site drawings, site location, plan of excavation area showing the main features with additional illustrations where needed. The publication will be submitted to the 'London and Middlesex Archaeology Society'

journal. Publication of the site data will also be made through the Archaeological Data Service OASIS form (Appendix H).

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Figure 1: Site Location

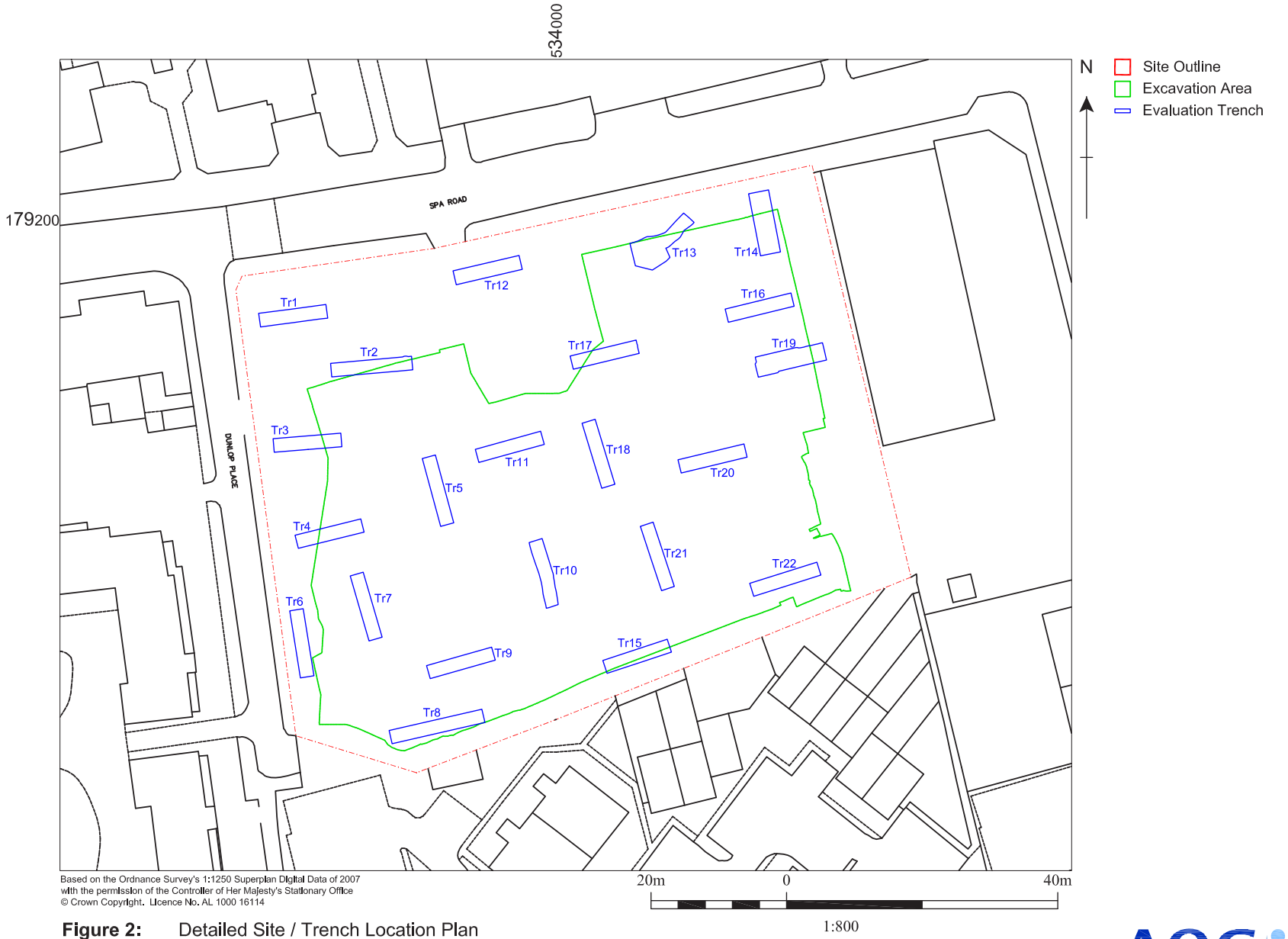

Figure 2: Detailed Site / Trench Location Plan

Not to Scale

Figure 3: Extract from Rocques Map of 1746

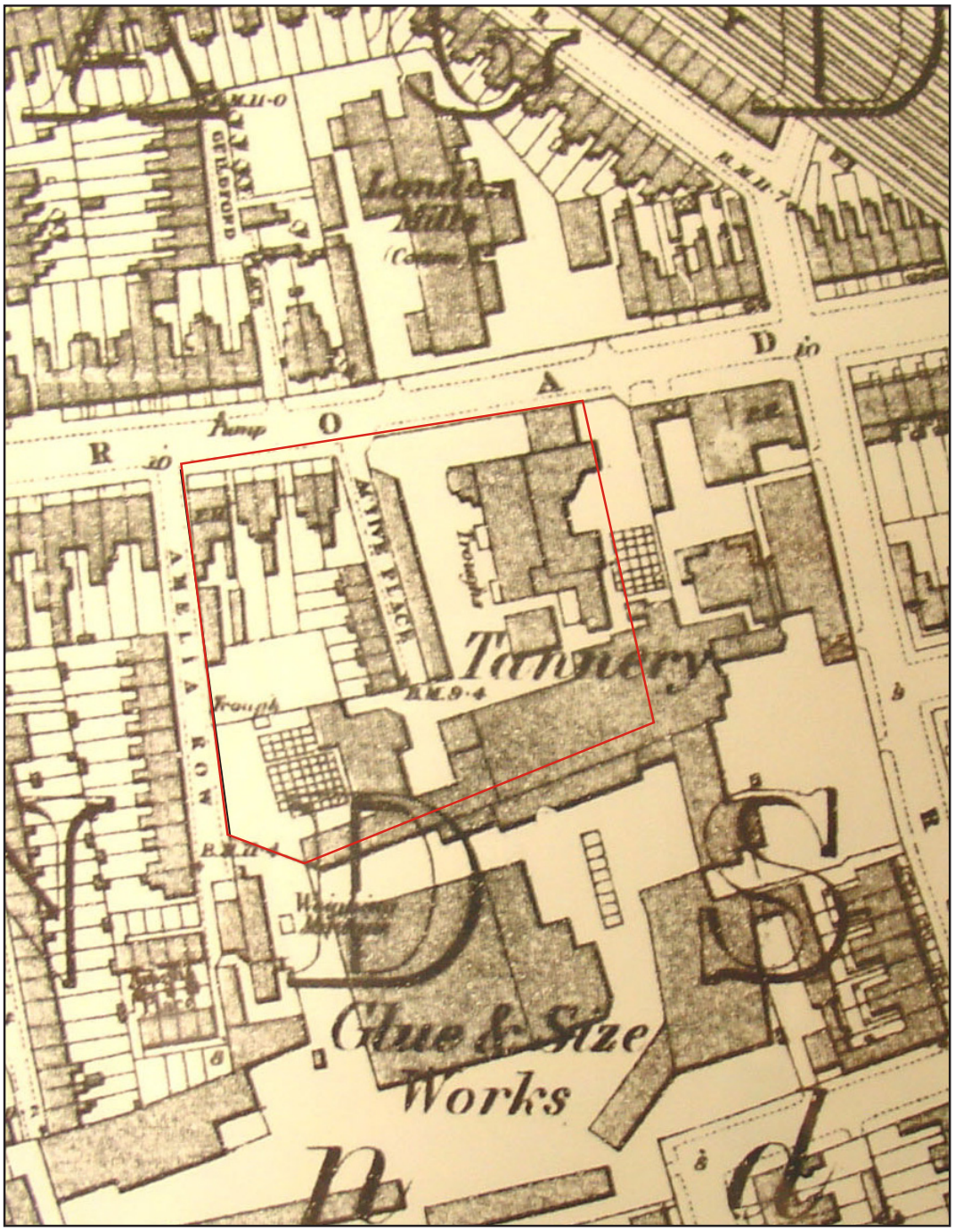

Figure 4: 25" 1st edition Ordnance Survey map 1878

Not to Scale

Figure 5 Goad Map of 1887

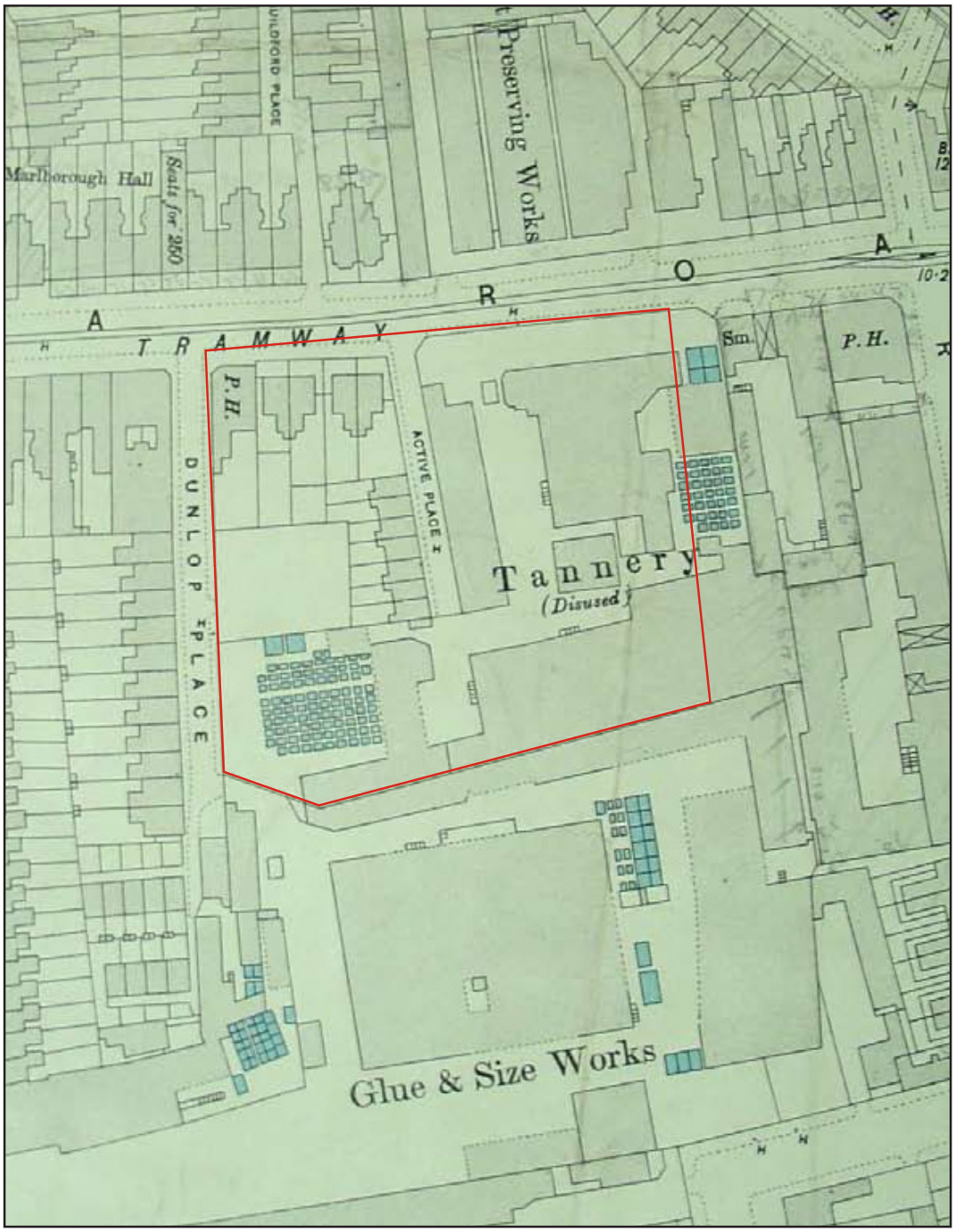

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Figure 6: 25" Ordnance Survey Map 1894

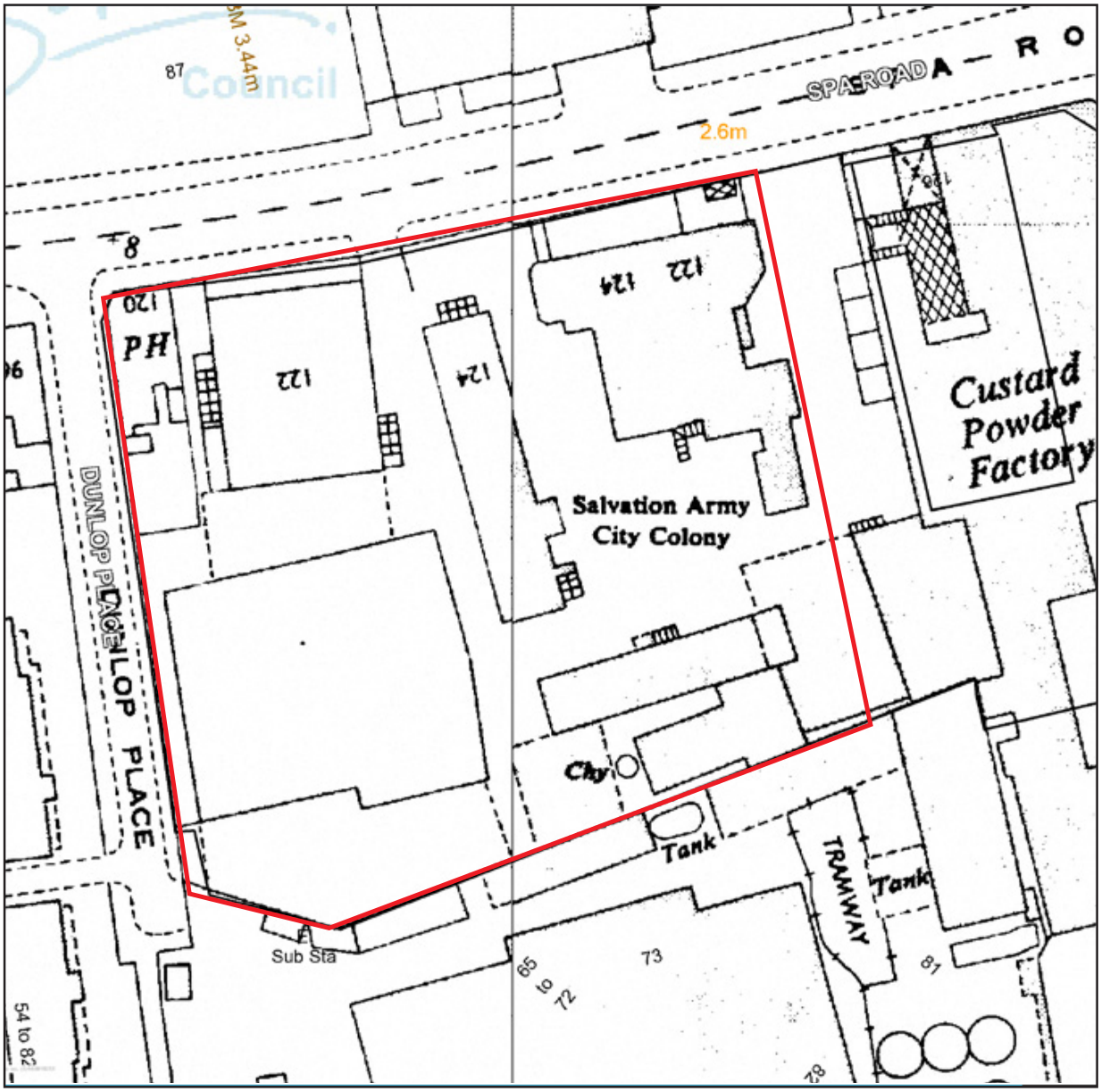

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Figure 7: 6” Ordnance Survey Map 1951

FIgure 8: Period 2: Roman Features

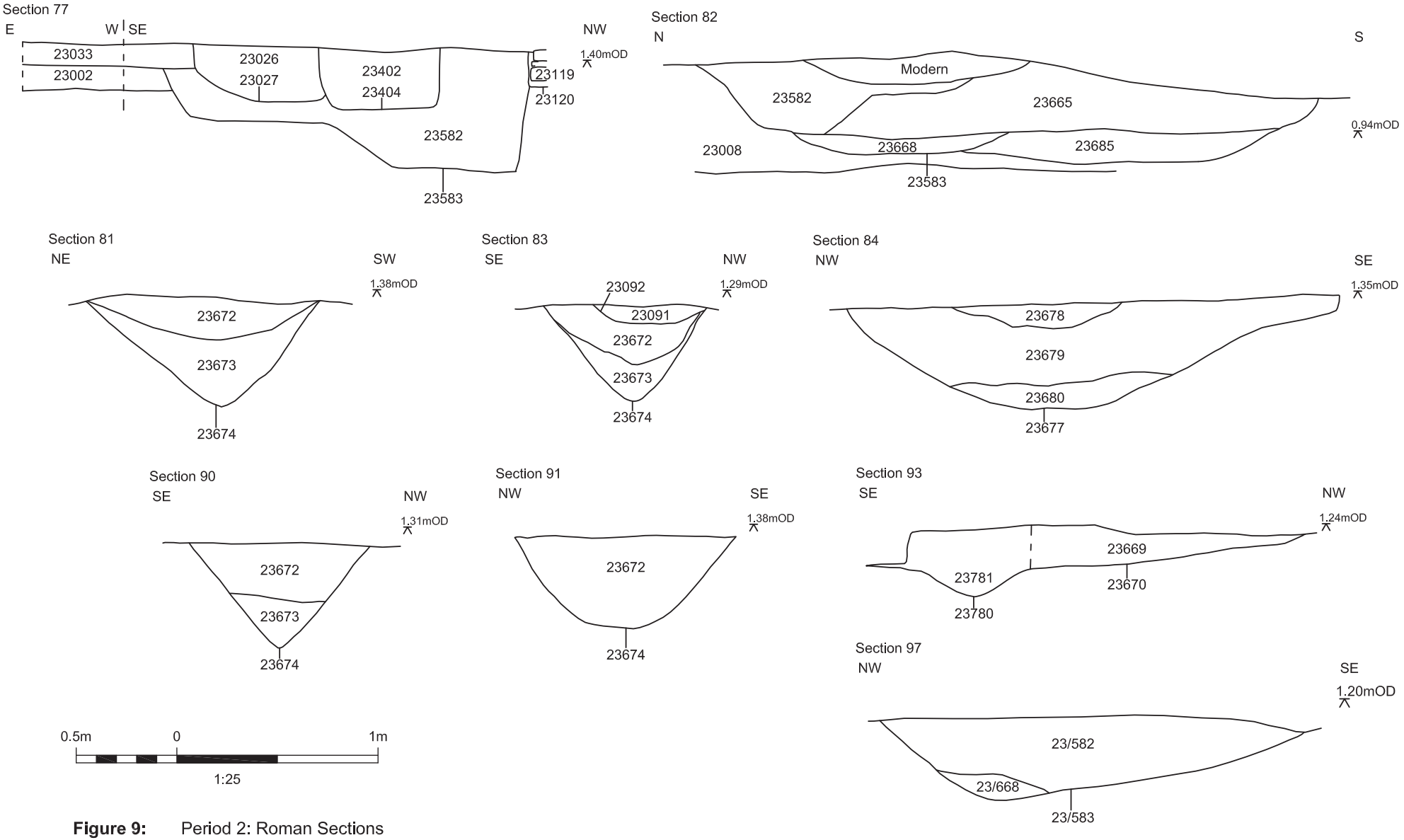

Figure 9: Period 2: Roman Sections

FIgure 10: Period 4 Phase 1: Pre-Tannery Features

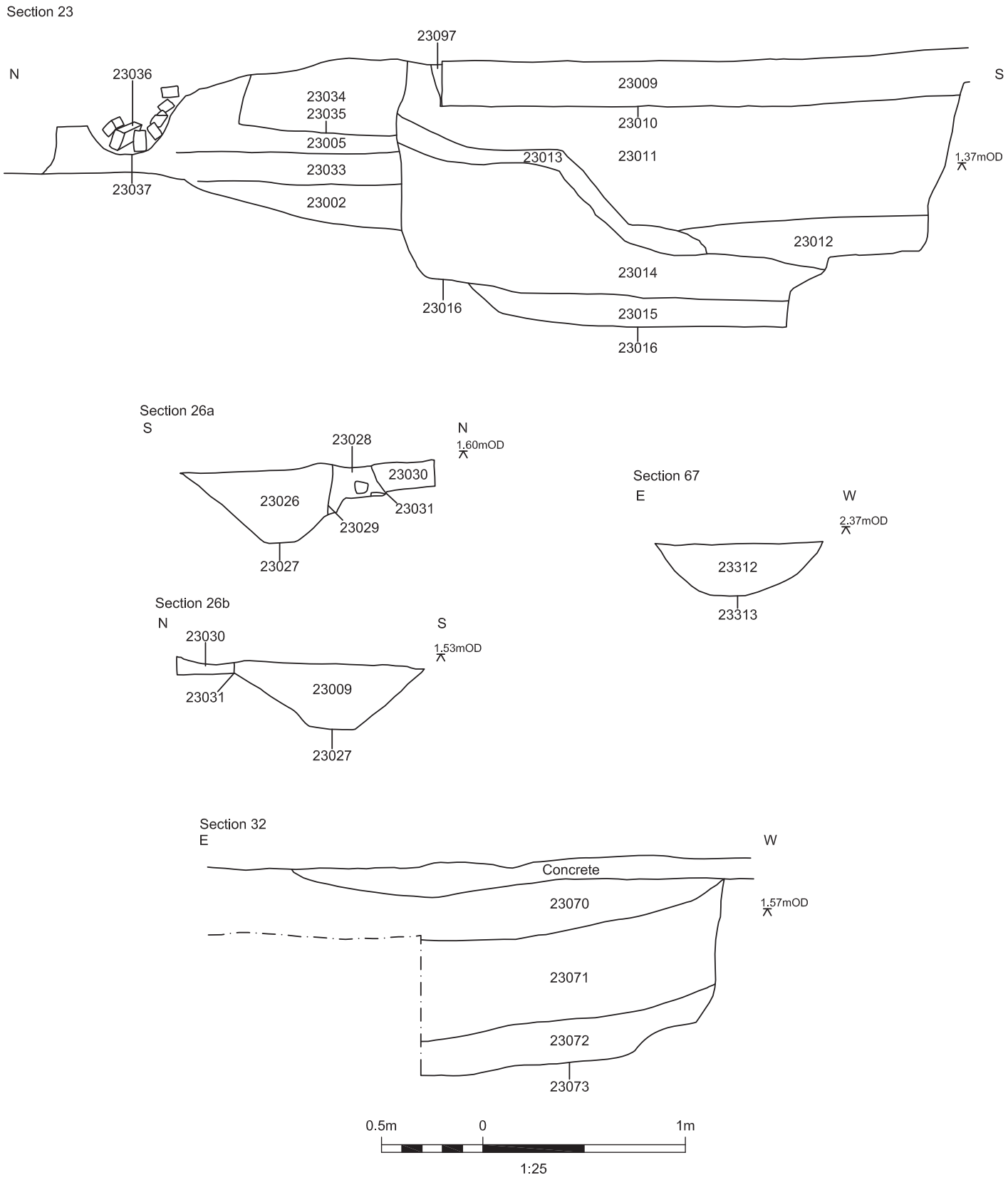

Figure 11: Period 4 Phase 1: Pre-Tannery Sections

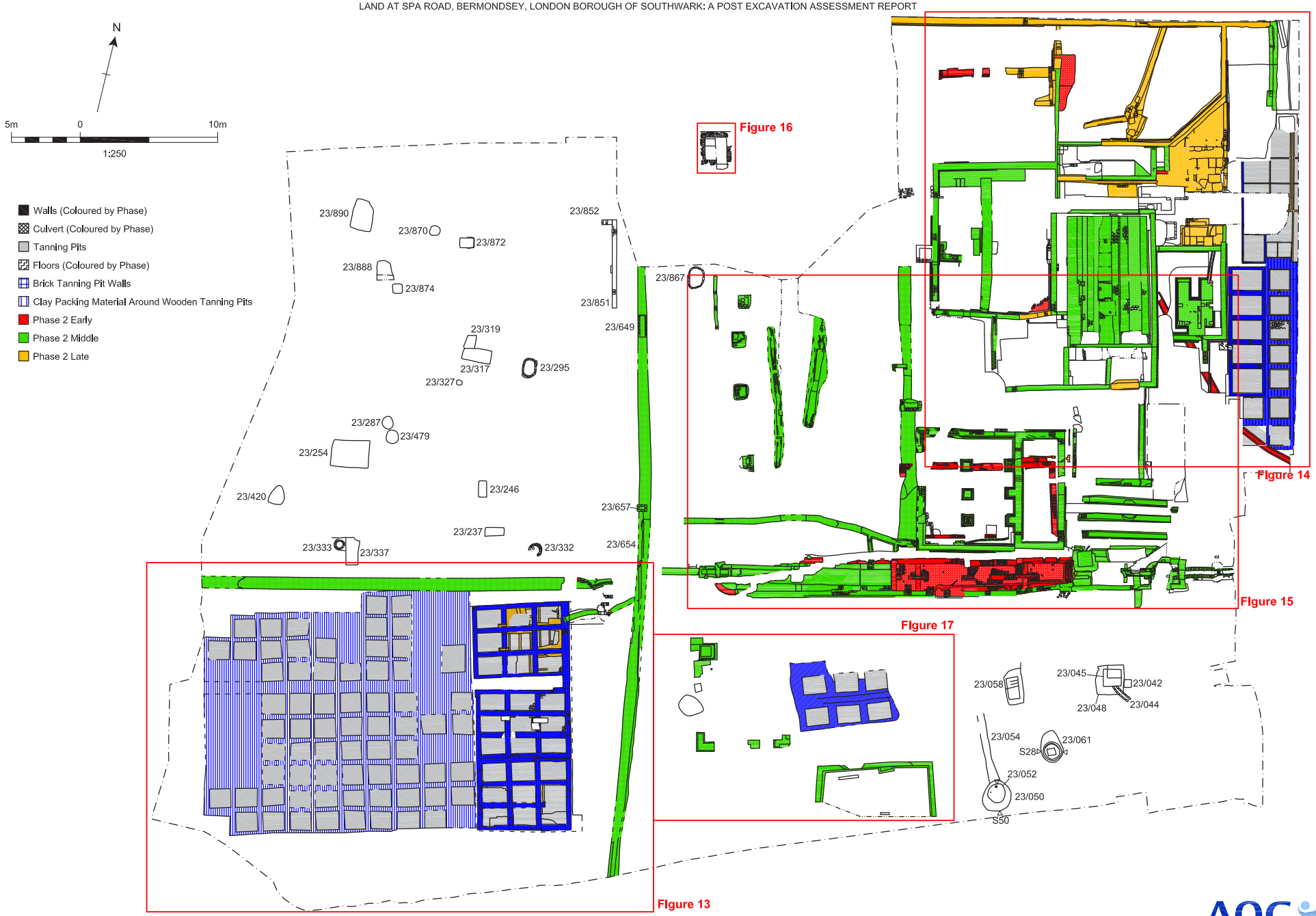

Figure 12: Period 4 Phase 2: Overview of Tannery Features

Figure 13: Period 4: Tanning Pits in the South-West of the Site

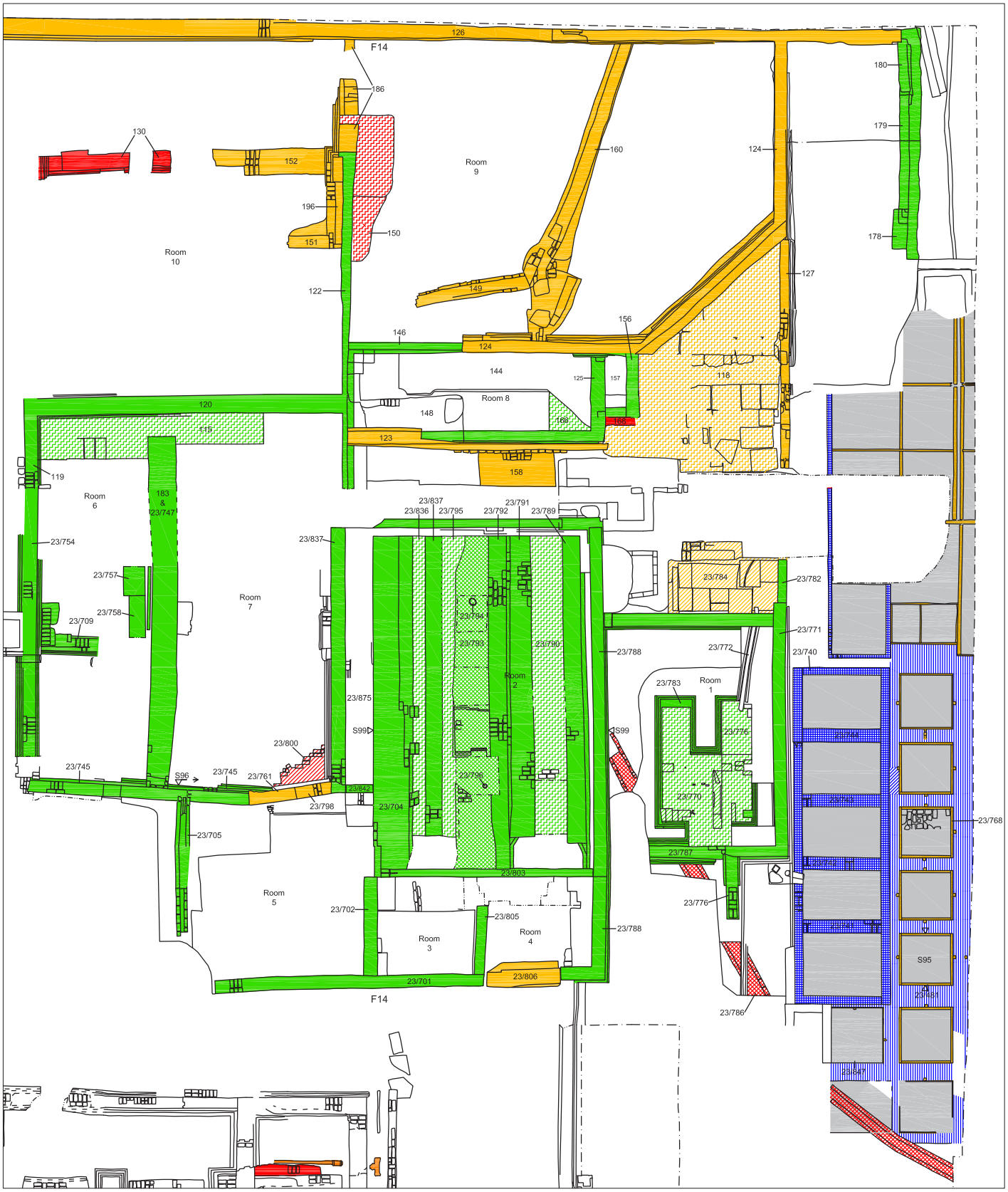

Figure 14: Phase 4: Tanning Pits and Large Building in the North East Site

Figure 15: Phase 4: Tannery Buildings in the Centre and East of the Site

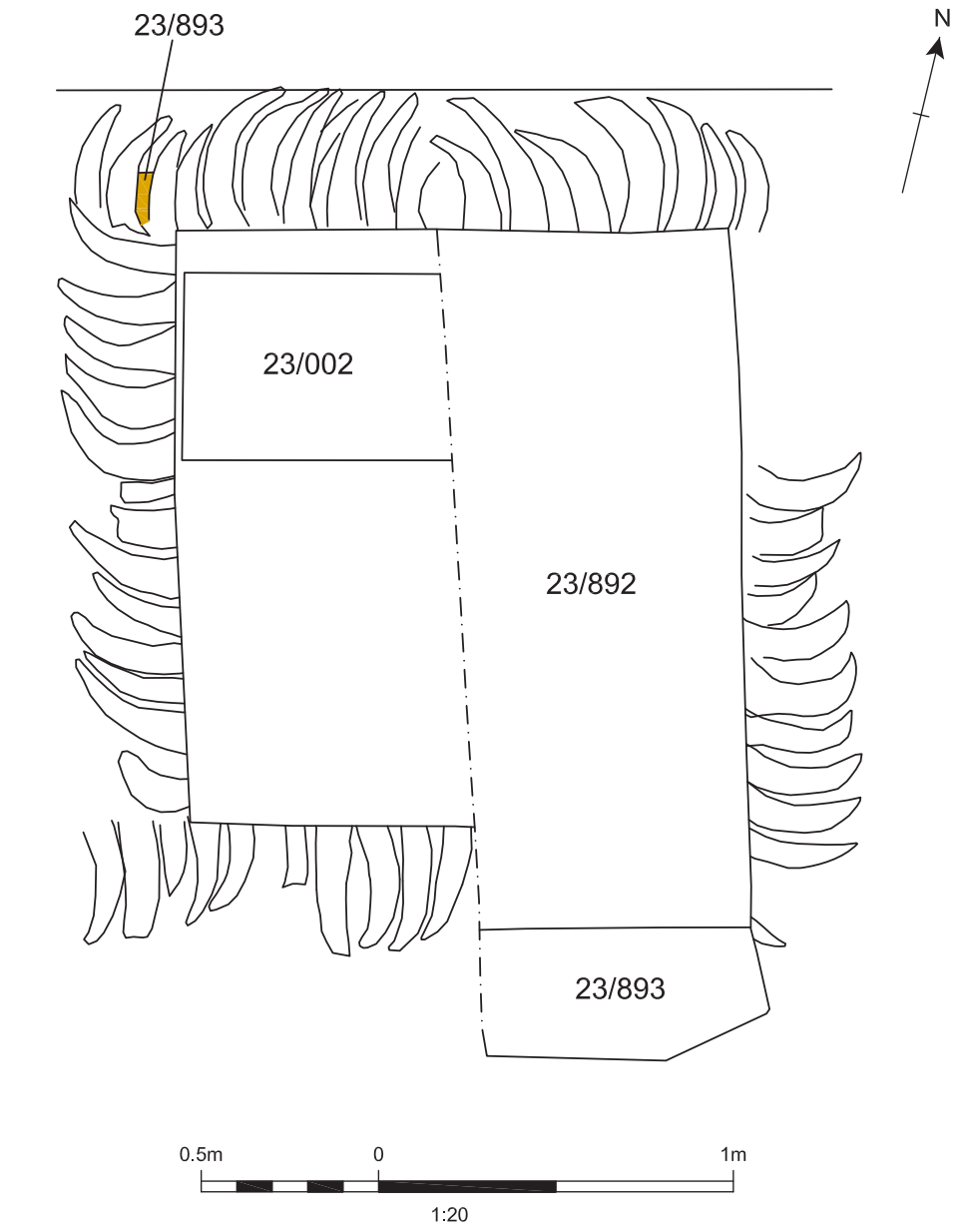

Figure 16: Period 4 Phase 2: Horn Lined Pit

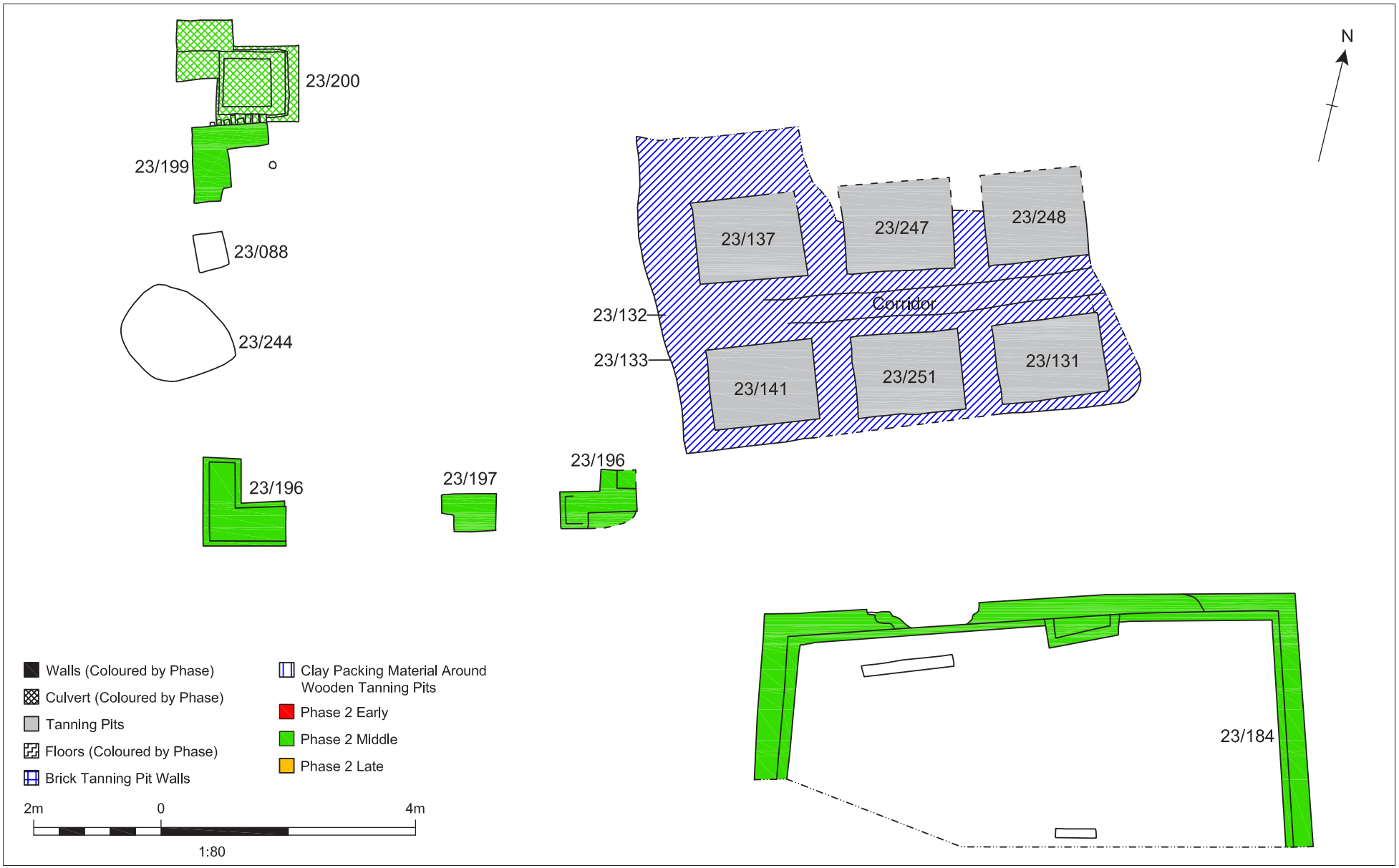

Figure 17: Period 4 Phase 2: Tanning Pits in the North-East of the Site

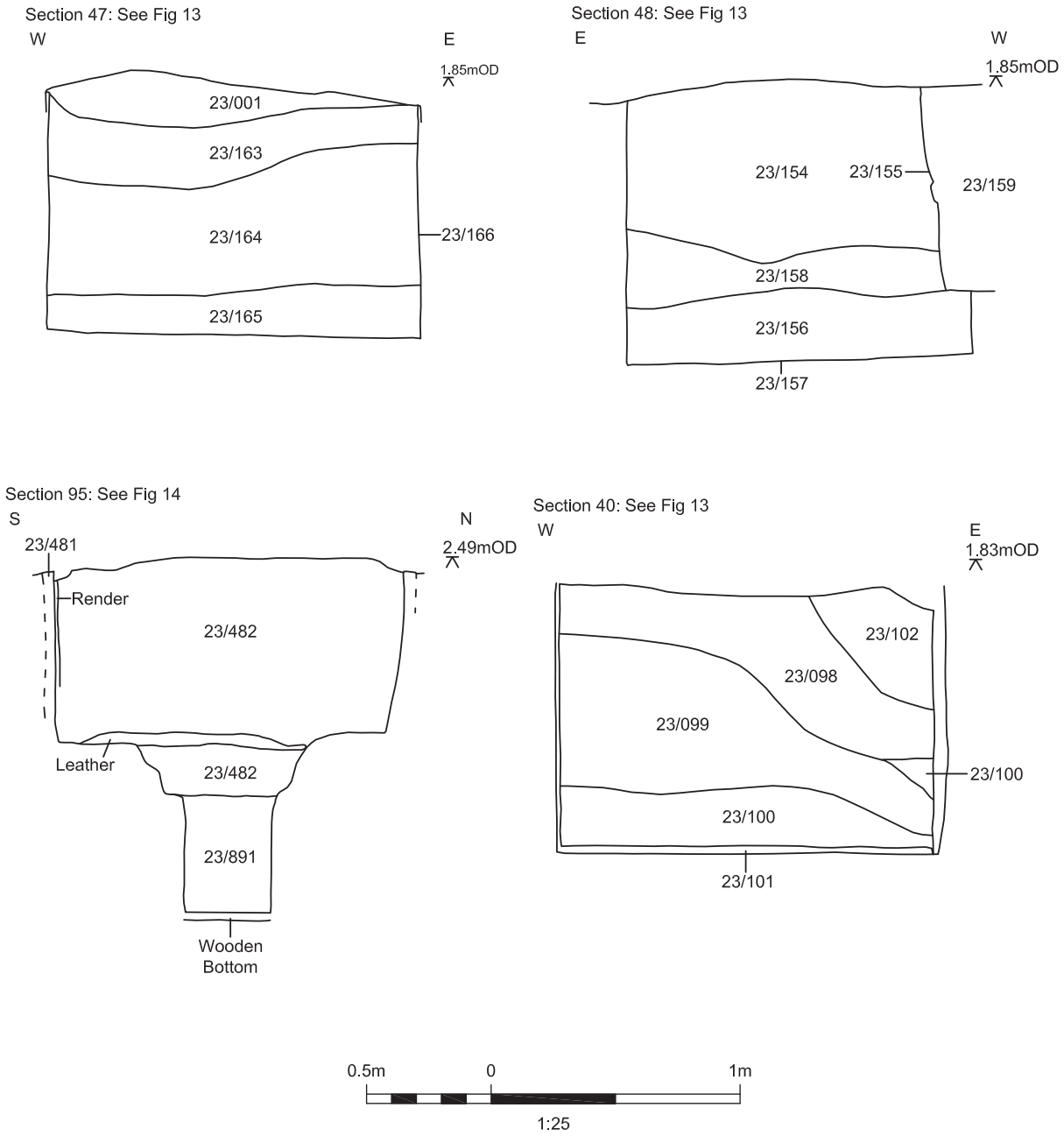

Figure 18: Period 4 Phase 2: Tannery Pit Sections

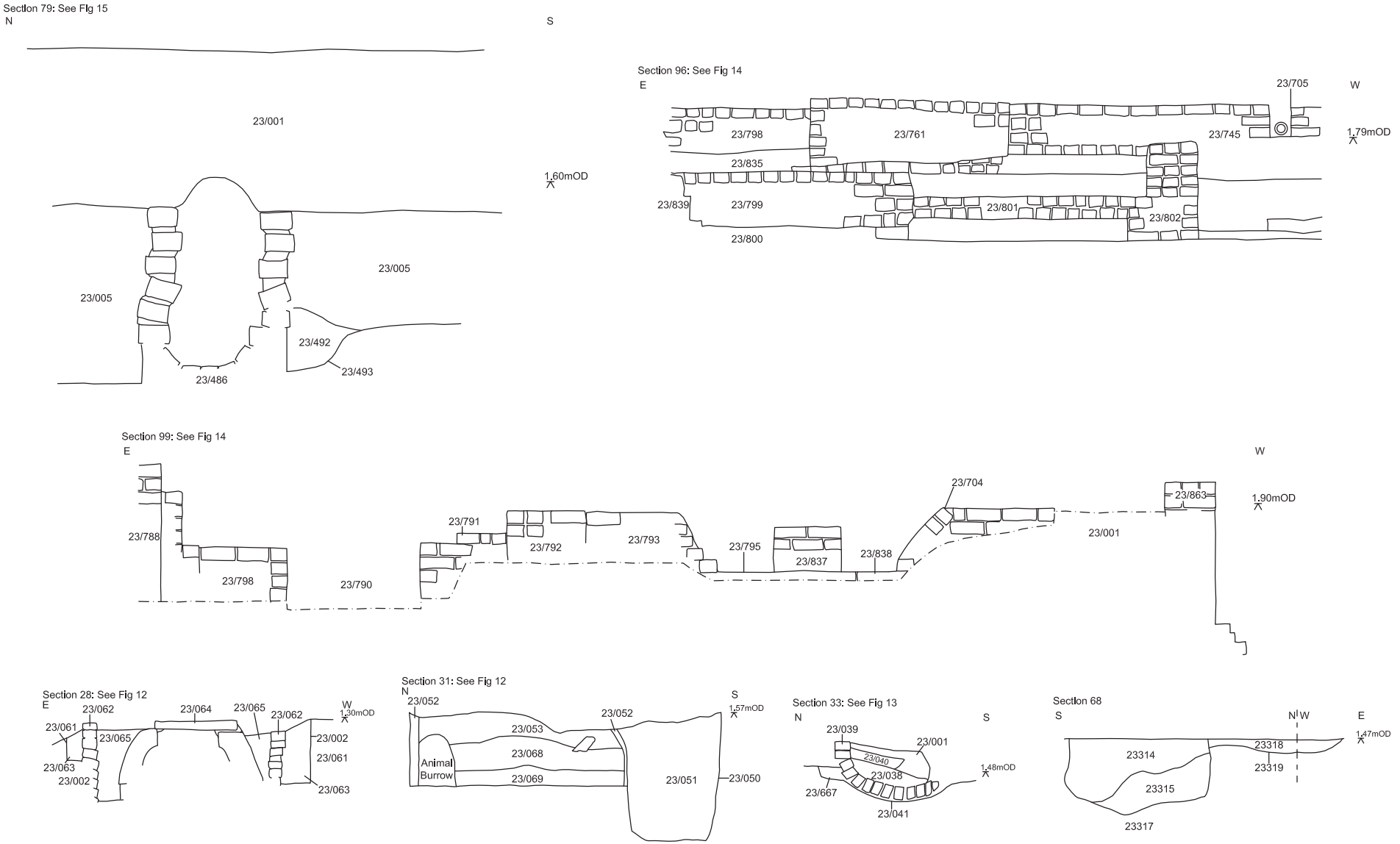

Figure 19: Period 4 Phase 2: Sections of Structural Tannery Features

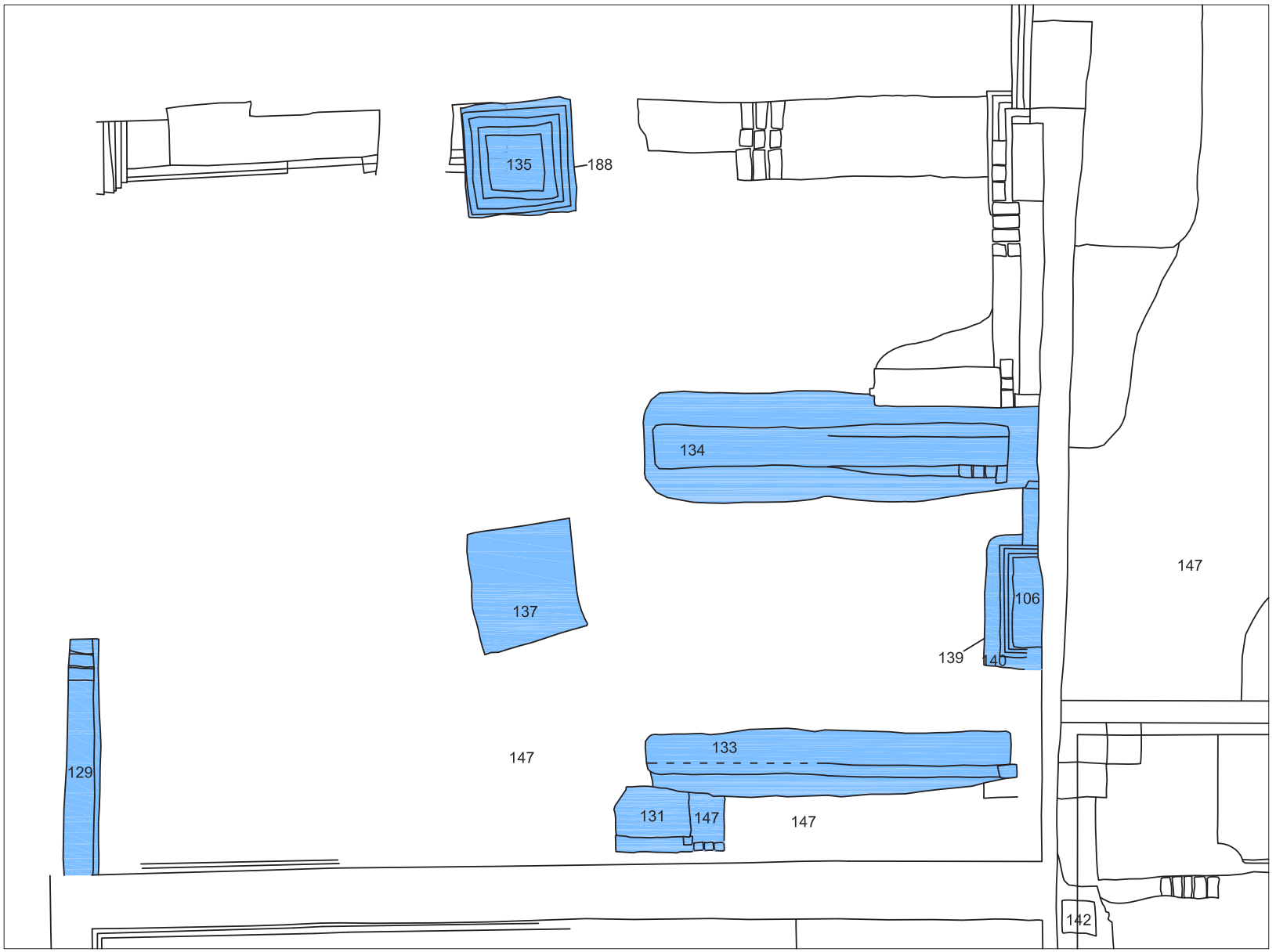

Figure 20: Period 4 Phase 3: Continued Use of Tannery Structure

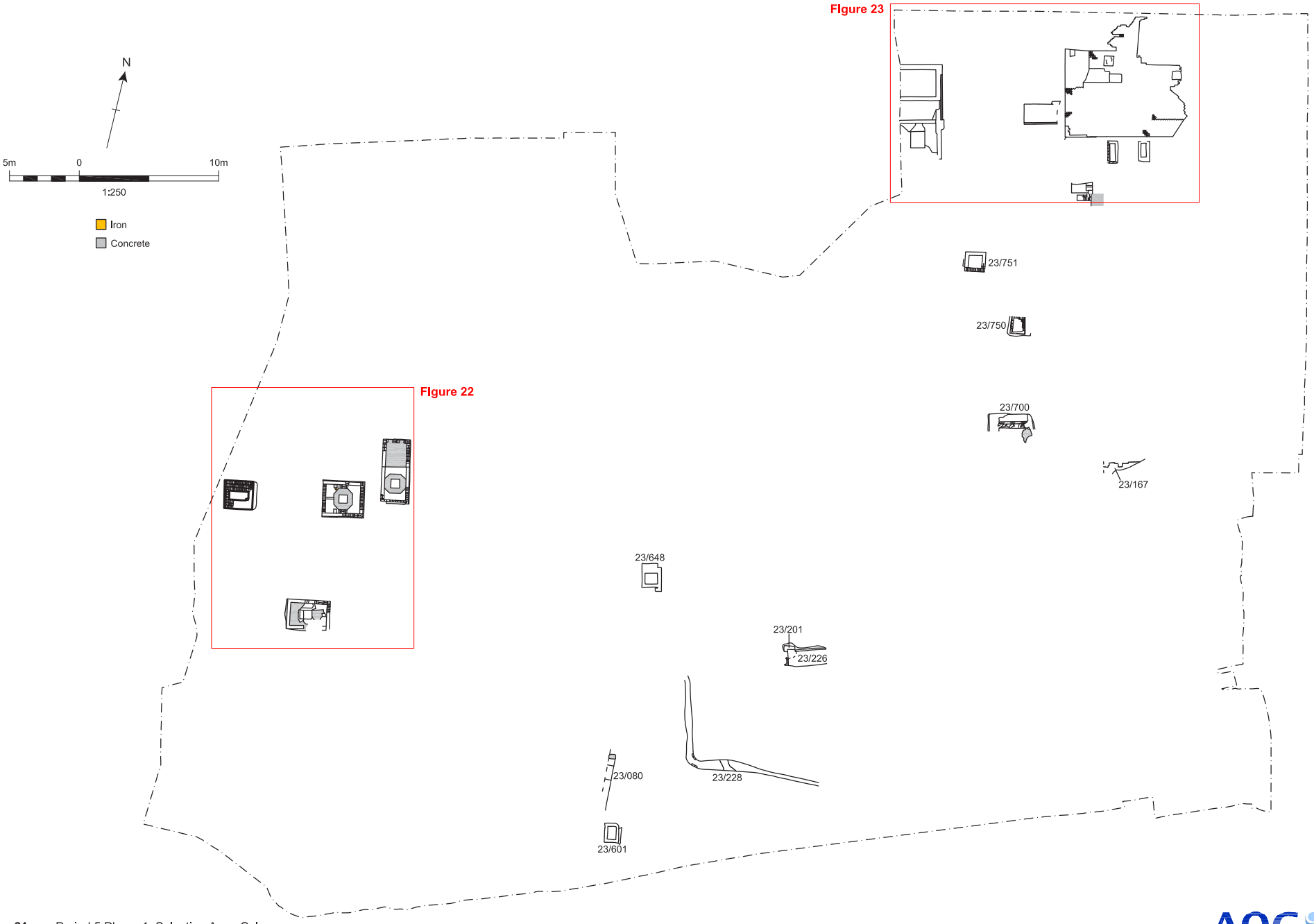

Figure 21: Period 5 Phase 1: Salvation Army Colony

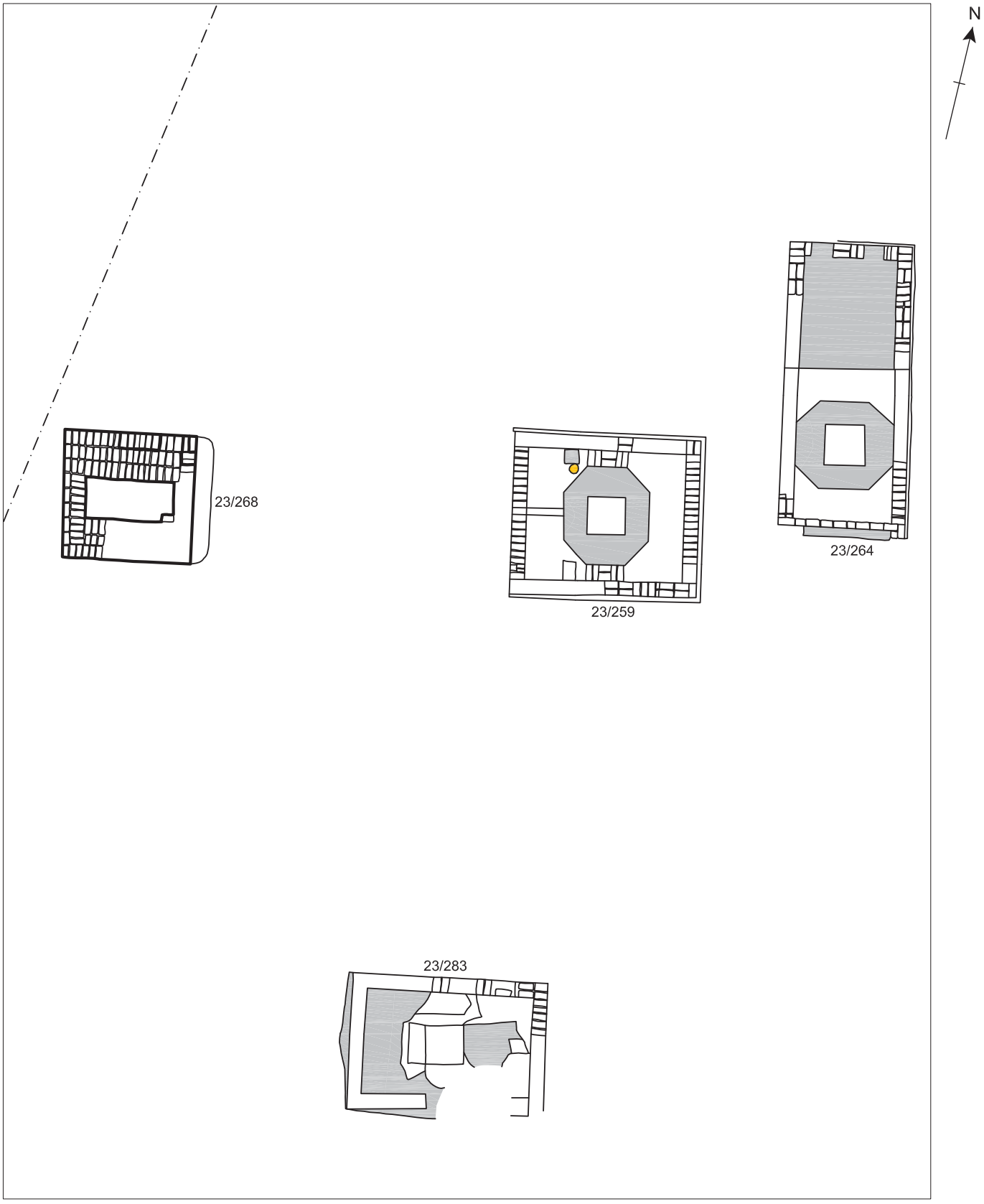

Figure 22: Period 5 Phase 1: Salvation Army Colony Industrial Features in the West of the Site

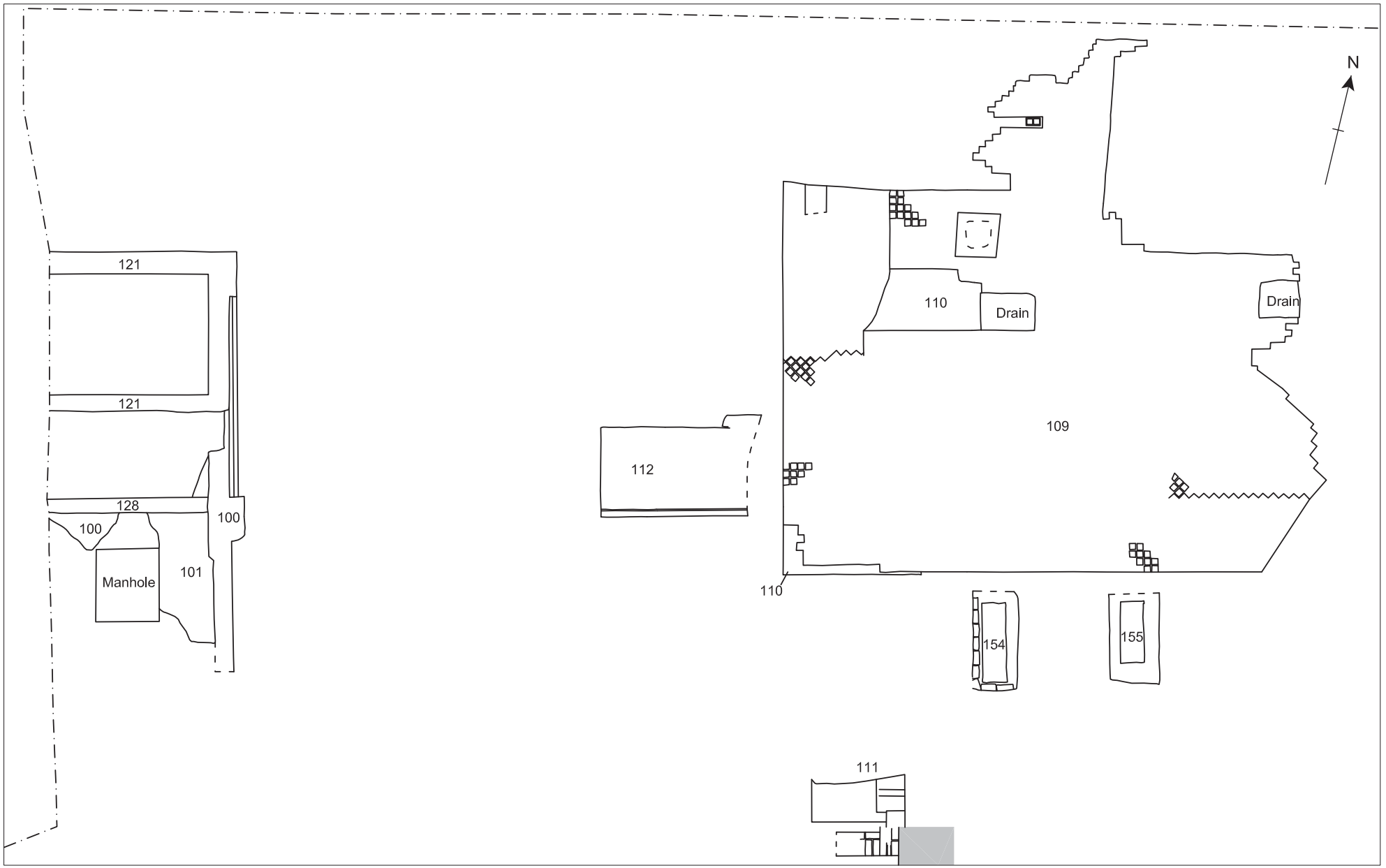

Figure 23: Period 5 Phase 1: Salvation Army Colony remains in the North of the Site

Iron

Concrete

AOC Archaeology Group

Appendices

Appendix A

Context Register

Context No.	Context Description	Length	Width	Depth	Dating					
23/001	Modern made ground	80m	70m	1.50m	7					
23/002	Natural Deposit	80m	70m	na	1					
23/003	Cut for tan-pits area	20m	18m	1.20m	4		Key			
23/004	Fill of [23/003]	20m	18m	1.20m	4		1	Natural		
23/005	Buried ground	80m	70m	1.00m	3		2	Roman		
23/006	Fill of tan-pit [23/503]C	1.80m	1.20m	0.20m	5		3	Post med pre-tannery		C17th-18th
23/007	Fill of tan-pit [23/503]B	1.80m	1.20m	0.10m	5		4	Tannery+ houses		C19th
23/008	Fill of tan-pit [23/503]E	1.80m	1.20m	0.15m	5		5	Tannery abandonment		C19th
23/009	Brick wall	2.95m	0.36m	2.30m	4		6	SA horizon		C20th
23/010	Construction cut for wall [23/009]	3.03m	0.43m	0.23m	4		7	Modern		
23/011	Fill of (23/016)	2.65m	1.00m	0.60m	3					
23/012	Fill of (23/016)	1.20m	1.00m	0.20m	3					
23/013	Fill of (23/016)	1.50m	1.00m	0.10m	3					
23/014	Fill of (23/016)	2.00m	1.00m	0.70m	3					
23/015	Fill of (23/016)	1.60m	1.00m	0.15m	3					
23/016	Cut of quarrying pit	10m	2.55m	1.30m	3					
23/017	Brick wall	0.89m	0.21m	0.64m	4					
23/018	Stone block	1.58m	0.64m	0.65m	4					
23/019	Deposit in [23/021]	1.90m	1.40m	0.05m	4					
23/020	Deposit in [23/021]	1.90m	1.80m	0.20m	4					
23/021	Construction cut for [23/017]-[18]	1.90m	1.80m	0.70m	4					
23/022	Fill of [23/023]	1.90m	1.90m	0.57m	3					

23/023	Cut, possibly same as [23/016]	1.90m	1.90m	0.57m	3					
23/024	Fill of ditch [23/025]	15m+	0.55m	0.25m	3					
23/025	Cut of ditch	15m+	0.55m	0.25m	3					
23/026	Fill of ditch [23/027]	1.00m	0.96m	0.34m	3					
23/027	Cut of ditch	40m+	0.96m	0.34m	3					
23/028	Fill of [23/029]	0.57m	0.20m	0.25m	3					
23/029	Irregular truncation	0.57m	0.20m	0.25m	3					
23/030	Fill of [23/031]	5.93m+	0.220m	0.22m	4					
23/031	Construction cut for wall [23/032]	5.93m+	0.70m	0.22m	4					
23/032	Brick wall	5.93m+	0.48m	0.22m	4					
23/033	Alluvial deposit	80m	70m	0.40m	1					
23/034	Fill of pit [23/035]	0.75m	0.40m	0.37m	3					
23/035	Cut of pit	0.75m	0.40m	0.37m	3					
23/036	Brick barrel culvert	2.17m	0.95m	0.65m	4					
23/037	Cut for culvert [23/036]	2.17m	0.95m	0.65m	4					
23/038	Fill of culvert [23/039]	10m+	0.49m	0.06m	5					
23/039	Brick barrel culvert	10m+	0.70m	0.40m	4					
23/040	Fill of culvert [23/039]	na	0.35m	0.07m	4					
23/041	Cut for [23/039]	10m+	0.70m	0.40m	4					
23/042	Brick pillar	0.57m	0.57m	0.08m	4					
23/043	Deposit	0.57m	0.57m	0.10m	4					
23/044	Brick culvert	1.35m	0.35m	0.14m	4					
23/045	Fill of [23/047]	1.29m	1.22m	1.16m	4					
23/046	Fill of [23/048]	2.09m	2.07m	1.16m	4					
23/047	Wooden lining of pit	1.29m	1.22m	1.16m	4					
23/048	Cut	2.09m	2.07m	1.16m	4					
23/049	Deposit above [23/284]	1.00m	1.00m	0.60m	6					
23/050	Construction cut for [23/052]	2.20m	2.20m	0.78m	4					
23/051	Fill of [23/050]	2.20m	2.20m	0.78m	4					

23/052	Wooden barrel	1.40m	1.40m	0.50m	4					
23/053	Fill of [23/052]	1.40m	1.40m	0.50m	5					
23/054	Cut for pipe trench	2.80m	0.50m	0.40m	4					
23/055	Fill of [23/054]	2.80m	0.50m	0.40m	4					
23/056	Fill of [23/057]	0.81m	0.41m	0.16m	3					
23/057	Cut of pit	0.81m	0.41m	0.16m	3					
23/058	Cut of wooden lined pit	2.50m	1.20m	0.15m	4					
23/059	Fill of [23/060]	1.60m	0.90m	0.12m	5					
23/060	Wooden lining of pit	1.60m	0.90m	0.12m	4					
23/061	Construction cut for soak away	2.30m	1.67m	0.80m	4					
23/062	Soak away lining	1.40m	1.30m	0.80m	4					
23/063	Fill of [23/061]	2.30m	1.67m	0.80m	4					
23/064	Domed soak away	1.05m	1.05m	2.30m	4					
23/065	Backfill around [23/064]	1.40m	1.30m	0.80m	4					
23/066	Fill of [23/067]	0.59m	0.57m	0.15m	3					
23/067	Cut of pit	0.59m	0.57m	0.15m	3					
23/068	Secondary fill of [23/052]	1.20m	1.20m	0.21m	5					
23/069	Tertiary fill of [23/052]	1.20m	1.20m	0.10m	5					
23/070	Fill of [23/073]	2.60m	2.30m	0.40m	3					
23/071	Fill of [23/073]	6.00m	2.80m	0.40m	3					
23/072	Fill of [23/073]	1.32m	0.50m	0.16m	3					
23/073	Cut of possible quarrying pit	6.00m	2.80m	1.00m	3					
23/074	Fill of [23/075]	11.20m	1.14m	0.34m	3					
23/075	Cut of ditch	11.20m	1.14m	0.34m	3					
23/076	Fill of [23/058]	2.50m	1.20m	0.13m	5					
23/077	Fill of [23/078]	40.00m	0.55m	0.19m	3					
23/078	Cut of ditch	40.00m	0.55m	0.19m	3					
23/079	Fill of [23/080]	17.00m	0.45m	0.23	6					
23/080	Cut of drain	17.00m	0.45m	0.23m	6					

23/081	Stone block	1.10m	1.10m	0.65m	5					
23/082	Brick pillar	0.55m	0.50m	0.84m	5					
23/083	Fill of [23/084]	0.59m	0.54m	0.13m	3					
23/084	Cut of pit	0.59m	0.54m	0.13m	3					
23/085	Fill of [23/064]	1.20m	1.20m	na	5					
23/086	Cut for soak away [23/064]	1.20m	1.20m	3.50m	4					
23/087	fill of [23/088]	0.56m	0.48m	0.10m	5					
23/088	Cut of pit	0.56m	0.48m	0.10m	4					
23/089	Fill of [23/090]	0.12m	0.10m	0.25m	5					
23/090	Stake hole	0.12m	0.10m	0.25m	4					
23/091	Fill of [23/092]	3.15m	0.50m	0.28m	3					
23/092	Cut of ditch	3.15m	0.50m	0.28m	3					
23/093	Fill of [23/094]	2.40m	1.10m	0.40m	7					
23/094	Modern truncation	2.40m	1.10m	0.40m	7					
23/095	Fill of [23/096]	1.80m	1.40m	0.40m	7					
23/096	Modern truncation	1.80m	1.40m	0.40m	7					
23/097	Fill of [23/010]	3.03m	0.43m	0.23m	5					
23/098	Fill of [23/101]	1.50m	1.40m	0.55m	5					
23/099	Fill of [23/101]	1.50m	1.40m	0.60m	5					
23/100	Fill of [23/101]	1.50m	1.40m	0.25m	5					
23/101	Wooden structure for tanning pit	1.50m	1.40m	1.10m	4					
23/102	Fill of [23/101]	0.50m	1.40m	0.50m	5					
23/103	Fill of [23/105]	1.30m	1.30m	0.55m	5					
23/104	Fill of [23/105]	1.30m	1.30m	0.12m	5					
23/105	Wooden structure for tanning pit	1.30m	1.30m	1.00m	4					
23/106	Fill of [23/108]	15.00m	0.50m	0.50m	5					
23/107	Drainage ceramic pipe	23.00m	0.28m	0.28m	5					
23/108	Cut for drainage trench	23.00m	0.50m	0.50m	5					
23/109	Manhole	0.84m	0.62m	0.28m	5					

23/110	Catch pit	2.10m	0.30m	0.30m	4					
23/111	Wooden plank in [23/114]	2.00m	0.56m	0.13m	4					
23/112	Fill in [23/114]	0.80m	0.32m	0.15m	4					
23/113	Fill in [23/114]	2.10m	0.33m	0.12m	4					
23/114	Brick drain	1.12m	0.84m	0.68	4					
23/115	Fill above [23/116]	12.50m	0.30m	0.40m	4					
23/116	Brick barrel culvert	11.60m	1.20m	0.70m	4					
23/117	Fill of [23/116]	5.00m	0.40m	0.25m	4					
23/118	Brick floor	12.40m	1.50m	0.70m	4					
23/119	Apsidal wall	2.20m	1.60m	0.34m	4					
23/120	Construction cut for [23/235]	12.90m	2.40m	0.40m	4					
23/121	Fill of [23/120]	13.00m	2.50m	0.10m	4					
23/122	Brick barrel culvert	18.00m	0.40m	0.40m	4					
23/123	Cut for [23/122]	18.00m	0.50m	0.20m	4					
23/124	Fill of [23/123]	18.00m	0.10m	0.20m	4					
23/125	Fill of [23/178]	0.29m	0.19m	0.30m	5					
23/126	Brick drain	2.00m	0.30m	0.10m	4					
23/127	Cut for [23/126]	2.00m	0.30m	0.10m	4					
23/128	Fill of [23/127]	2.00m	0.30m	0.10m	4					
23/129	Timber post	0.10m	0.10m	0.30m	4					
23/130	Fill of [23/131]	1.70m	1.24m	0.39m	5					
23/131	Wooden structure for tanning pit	1.70m	1.24m	0.39m	4					
23/132	Fill of [23/133]	7.00m	4.00m	0.60m	4					
23/133	Cut for tan-pits area	7.00m	4.00m	0.60m	4					
23/134	Fill of [23/141]	1.70m	1.25m	0.54m	5					
23/135	Fill of [23/141]	1.70m	1.25m	0.20m	5					
23/136	Fill of [23/137]	1.67m	1.26m	0.67m	5					
23/137	Wooden structure for tanning pit	1.67m	1.26m	0.67m	4					
23/138	Fill of [23/140]	1.60m	1.40m	0.60m	5					

23/139	Fill of [23/140]	1.60m	1.40m	0.25m	5					
23/140	Wooden structure for tanning pit	1.60m	1.40m	1.10m	4					
23/141	Wooden structure for tanning pit	1.70m	1.25m	0.55m	4					
23/142	Fill of [23/131]	1.70m	1.24m	0.18m	5					
23/143	Fill of [23/144]	1.50m	1.40m	0.95m	7					
23/144	Modern truncation	5.00m	3.00m	0.95m	7					
23/145	Fill of [23/146]	1.50m	1.40m	0.20m	5					
23/146	Wooden structure for tanning pit	1.50m	1.40m	1.10m	4					
23/147	Fill of [23/146]	1.50m	1.40m	0.60m	5					
23/148	Same as (23/132)	7.00m	4.00m	0.60m	4					
23/149	Same as (23/133)	7.00m	4.00m	0.60m	4					
23/150	Same as (23/132)	7.00m	4.00m	0.60m	4					
23/151	Same as (23/133)	7.00m	4.00m	0.60m	4					
23/152	Brick drain	1.24m	1.06m	0.56m	4					
23/153	Brick barrel culvert	2.70m	0.54m	0.54m	4					
23/154	Fill of [23/157]	1.20m	1.40m	0.70m	5					
23/155	Modern truncation	5.00m	2.00m	0.80m	7					
23/156	Fill of [23/157]	1.60m	1.40m	0.30m	5					
23/157	Wooden structure for tanning pit	1.60m	1.40m	1.05m	4					
23/158	Fill of [23/157]	1.20m	1.40m	0.30m	5					
23/159	Fill of [23/155]	5.00m	2.00m	0.80m	7					
23/160	Fill of [23/162]	1.60m	1.40m	0.40m	5					
23/161	Fill of [23/162]	1.60m	1.40m	0.26m	5					
23/162	Wooden structure for tanning pit	1.60m	1.40m	1.10m	4					
23/163	Fill of [23/166]	1.50m	1.32m	0.33m	5					
23/164	Fill of [23/166]	1.50m	1.32m	0.57m	5					
23/165	Fill of [23/166]	1.50m	1.32m	0.21m	5					
23/166	Wooden structure for tanning pit	1.50m	1.32m	0.95m	4					
23/167	Surface	4.60m	1.20m	0.10m	6					

23/168	Wooden plank in [23/114]	1.65m	0.33m	0.04m	4					
23/169	Construction cut for [23/116]	17.00m	0.90m	0.70m	4					
23/170	Structure	10.00m	3.50m	na	4					
23/171	Structure	15.00m	3.50m	na	4					
23/172	Fill 0f [23/176]	1.60m	1.40m	0.38m	5					
23/173	Fill 0f [23/176]	1.60m	1.40m	0.11m	5					
23/174	Fill 0f [23/176]	1.60m	1.40m	0.35m	5					
23/175	Fill 0f [23/176]	1.60m	1.40m	0.20m	5					
23/176	Wooden structure for tanning pit	1.60m	1.40m	0.85m	4					
23/177	Fill of [23/153]	2.70m	0.30m	0.20m	5					
23/178	Cut	na	0.60m	0.30m	4					
23/179	Fill of [23/184]	8.20m	7.54m	1.00m	5					
23/180	Brick wall	1.18m	0.22m	0.43m	4					
23/181	Brick wall	1.30m	0.48m	0.62m	4					
23/182	Brick plinth	0.60m	0.22m	0.73m	4					
23/183	Brick floor	4.54m	7.32m	0.25m	4					
23/184	Structure	8.20m	4.42m	1.10m	4					
23/185	Rendering of [23/183]	4.54m	7.32m	0.18m	4					
23/186	Construction cut for [23/184]	8.25m	4.48m	1.20m	4					
23/187	Wooden structure for tanning pit	1.60m	1.40m	1.00m	4					
23/188	Fill of [23/187]	1.60m	1.40m	0.85m	5					
23/189	Fill of [23/187]	1.60m	1.40m	0.30m	5					
23/190	Fill of [23/192]	1.60m	1.45m	0.70m	5					
23/191	Fill of [23/192]	1.60m	1.45m	0.20m	5					
23/192	Wooden structure for tanning pit	1.60m	1.45m	0.90m	4					
23/193	Deposit	4.60m	5.00m	0.10m	6					
23/194	Manhole	0.60m	0.20m	0.17m	4					
23/195	Post slot	0.57m	0.23m	0.16m	4					
23/196	Brick plinth	1.33m	1.30m	0.06m	4					

23/197	Brick plinth	0.81m	0.57m	0.06m	4					
23/198	Brick plinth	1.20m	1.10m	0.07m	4					
23/199	Brick plinth	1.20m	1.17m	0.06m	4					
23/200	Inspection chamber	1.10m	0.98m	0.56m	4					
23/201	Brick wall	2.02m	0.10m	na	6					
23/202	Fill of [23/206]	1.60m	1.40m	0.45m	5					
23/203	Fill of [23/206]	1.60m	1.40m	0.40m	5					
23/204	Fill of [23/206]	0.75m	1.40m	0.17m	5					
23/205	Fill of [23/206]	1.60m	1.40m	0.20m	5					
23/206	Wooden structure for tanning pit	1.60m	1.40m	1.05m	4					
23/207	Modern truncation	10.00m	5.00m	0.30m	7					
23/208	Fill of [23/209]	1.10m	0.20m	0.56m	4					
23/209	Construction cut for [23/200]	1.10m	0.20m	0.56m	4					
23/210	Fill of [23/211]	0.80m	0.77m	0.30m	5					
23/211	Floor of brick chamber [23/200]	0.80m	0.77m	0.30m	4					
23/212	Fill of [23/213]	1.10m	0.20m	0.56m	4					
23/213	Construction cut	1.10m	0.20m	0.56m	4					
23/214	Fill of [23/216]	1.50m	1.20m	0.15m	5					
23/215	Fill of [23/216]	1.50m	1.20m	0.45m	5					
23/216	Wooden structure for tanning pit	1.50m	1.20m	0.90m	4					
23/217	Fill of [23/216]	1.50m	1.20m	0.35m	5					
23/218	Wooden structure for tanning pit	1.75m	1.40m	0.95m	4					
23/219	Fill of [23/218]	1.75m	1.40m	0.20m	5					
23/220	Fill of [23/218]	1.75m	1.40m	0.60m	5					
23/221	Fill of [23/223]	0.36m	na	0.57m	5					
23/222	Fill of [23/223]	0.65m	na	0.20m	5					
23/223	Wooden structure for tanning pit	0.77m	na	0.80m	4					
23/224	Fill of [23/225]	2.00m	0.26m	0.14m	3					
23/225	Cut for ditch	2.00m	0.26m	0.14m	3					

23/226	Concrete foundation for [23/201]	2.77m	1.02m	0.25m	6					
23/227	Ceramic drain pipe	23.00m	0.10m	0.10m	6					
23/228	Brick support for [23/227]	23.00m	0.23m	0.16m	6					
23/229	Construction cut for [23/228]	23.00m	0.23m	0.16m	6					
23/230	Fill of [23/232]	0.50m	na	0.05m	5					
23/231	Fill of [23/232]	1.70m	1.40m	0.60m	5					
23/232	Wooden structure for tanning pit	1.70m	1.40m	1.50m	4					
23/233	Fill of [23/234]	40.00m	0.70m	0.26m	3					
23/234	Cut of ditch	40.00m	0.70m	0.26m	3					
23/235	Brick wall	10.47m	0.32m	0.23m	4					
23/236	Fill of [23/237]	1.40m	0.63m	0.85m	4					
23/237	Cut of pit	1.40m	0.63m	0.85m	4					
23/238	Fill of [23/240]	1.60m	1.30m	0.80m	5					
23/239	Fill of [23/240]	1.60m	1.30m	0.25m	5					
23/240	Wooden structure for tanning pit	1.60m	1.30m	1.10m	4					
23/241	Fill of [23/242]	1.01m	0.91m	0.56m	4					
23/242	Cut for service	1.01m	0.91m	0.56m	4					
23/243	Fill of [23/244]	1.58m	1.40m	0.58m	5					
23/244	Cut of pit	1.58m	1.40m	0.58m	4					
23/245	Fill of [23/246]	1.20m	0.60m	0.20m	4					
23/246	Cut of pit	1.20m	0.60m	0.20m	4					
23/247	Wooden structure for tanning pit	1.70m	0.95m	0.20m	4					
23/248	Wooden structure for tanning pit	1.60m	0.80m	0.20m	4					
23/249	Fill of [23/247]	1.70m	1.30m	0.05m	5					
23/250	Fill of [23/248]	1.60m	1.30m	0.05m	5					
23/251	Wooden structure for tanning pit	1.70m	1.30m	nfe	4					
23/252	Fill of [23/251]	1.70m	1.30m	nfe	4					
23/253	Fill of [23/254]	2.76m	1.92m	1.11m	4					
23/254	Cut of pit	2.76m	1.92m	1.11m	4					

23/255	Fill of [23/256]	6.00m	2.00m	0.40m	4					
23/256	Cut for tan-pits area	6.00m	2.00m	0.40m	4					
23/257	Concrete surface	2.45m	2.00m	0.20m	6					
23/258	Deposit	2.45m	2.00m	0.410m	6					
23/259	Brick structure	2.90m	2.50m	0.33m	6					
23/260	Construction cut for [23/259]	2.90m	2.50m	na	6					
23/261	Concrete surface	2.50m	1.75m	0.35m	6					
23/262	Deposit	2.50m	1.75m	0.40m	7					
23/263	Brick structure	2.70m	2.50m	0.50m	6					
23/264	Construction cut for [23/263]	2.95m	2.75m	na	6					
23/265	Brick structure	2.20m	2.20m	0.50m	6					
23/266	Brick and Concrete structure	2.00m	1.90m	0.80m	6					
23/267	Construction cut for [23/265]	2.20m	2.20m	nfe	6					
23/268	Construction cut for [23/266]	2.00m	1.90m	nfe	6					
23/269	Fill of construction cut [23/260]	2.90m	2.50m	nfe	6					
23/270	Fill of construction cut [23/264]	2.95m	2.75m	nfe	6					
23/271	Fill of construction cut [23/267]	2.20m	2.20m	nfe	6					
23/272	Fill of construction cut [23/268]	2.00m	1.90m	nfe	6					
23/273	Fill of [23/207]	10.00m	5.00m	0.30m	7					
23/274	Levelling Ground	10.00m	5.00m	0.80m	6					
23/275	Fill of [23/276]	30.00m	20.00m	0.30m	4					
23/276	Cut (nominal)	na	na	na	4					
23/277	Fill of [23/140]	1.60m	1.40m	0.25m	5					
23/278	Fill of [23/140]	1.60m	0.90m	0.10m	5					
23/279	Fill of [23/140]	1.60m	1.40m	0.20m	5					
23/280	Brick wall	0.76m	0.60m	0.34m	5					
23/281	Cut	3.00m	1.20m	na	6					
23/282	Fill of [23/281]	3.00m	1.20m	na	6					
23/283	Brick wall	3.00m	1.20m	0.68m	6					

23/284	Concrete surface	2.73m	1.85m	1.10m	6					
23/285	Deposit	0.60m	0.60m	nfe	7					
23/286	Fill of [23/287]	0.90m	0.90m	0.28m	4					
23/287	Cut of pit	0.90m	0.90m	0.28m	4					
23/288	Fill of [23/261]	0.60m	0.60m	nfe	7					
23/289	Fill of [23/290]	13.00m	0.90m	0.23m	3					
23/290	Cut of ditch	13.00m	0.90m	0.23m	3					
23/291	Brick wall	2.18m	0.33m	0.45m	4					
23/292	Fill of [23/293]	1.13m	0.78m	0,40m	4					
23/293	Cesspit	1.13m	0.78m	0,40m	4					
23/294	Fill of [23/295]	1.39m	1.10m	0.45m	4					
23/295	Construction cut for [23/293]	1.39m	1.10m	0.45m	4					
23/296	Deposit	1.00m	0.40m	0.28m	5					
23/297	Deposit	1.00m	0.40m	0.16m	5					
23/298	Deposit	1.00m	0.40m	0.08m	5					
23/299	Deposit	0.90m	0.80m	0.38m	5					
23/300	Cesspit	1.75m	0.90m	0.76m	4					
23/301	Floor	1.75m	0.90m	0.06m	4					
23/302	Construction cut for [23/300]	2.13m	1.43m	0.82m	4					
23/303	Brick drain	0.65m	0.62m	0.34	4					
23/304	Nominal cut for [23/303]	na	na	na	4					
23/305	Brick pier	0.87m	0.56m	0.51m	4					
23/306	Fill of [23/307]	0.20m	0.20m	0.20m	3					
23/307	Post hole	0.20m	0.20m	0.20m	3					
23/308	Fill of [23/309]	0.30m	0.15m	0.15m	3					
23/309	Post hole	0.30m	0.15m	0.15m	3					
23/310	Fill of [23/311]	0.35m	0.25m	0.20m	3					
23/311	Cut of pit	0.35m	0.25m	0.20m	3					
23/312	Fill of [23/313]	40.00m	0.80m	0.25m	3					

23/313	Cut of ditch	40.00m	0.80m	0.25m	3					
23/314	Fill of [23/317]	2.20m	1.00m	0.45m	4					
23/315	Fill of [23/317]	2.20m	1.00m	0.28m	4					
23/316	Fill of [23/317]	2.20m	1.00m	0.12m	4					
23/317	Cut of pit	2.20m	1.00m	0.73m	4					
23/318	Fill of [23/319]	1.15m	0.84m	0.09m	4					
23/319	Cut of pit	1.15m	0.84m	0.09m	4					
23/320	Fill of [23/321]	1.10m	0.62m	0.04m	4					
23/321	Cut of pit	1.10m	0.62m	0.04m	4					
23/322	Deposit	2.60m	0.58m	0.14m	5					
23/323	Deposit	2.60m	0.44m	0.08m	5					
23/324	Brick pier	1.03m	0.59m	0.44m	4					
23/325	Brick drain	3.40m	0.28m	0.32m	4					
23/326	Brick wall	4.38m	0.55m	0.47m	4					
23/327	Brick wall	1.00m	0.35m	0.94m	4					
23/328	Brick wall	1.50m	0.52m	0.23m	4					
23/329	Fill of [23/330]	0.80m	0.84m	0.14m	5					
23/330	Well	0.80m	0.84m	0.14m	4					
23/331	Fill of [23/332]	0.89m	0.86m	0.14m	4					
23/332	Construction cut for [23/330]	0.89m	0.86m	0.14m	4					
23/333	Fill of [23/335]	0.50m	0.50m	0.30m	5					
23/334	Fill of [23/335]	0.50m	0.50m	0.30m	5					
23/335	Well	0.50m	0.50m	0.84m	4					
23/336	Fill of [23/337]	0.78m	0.76m	0.84m	4					
23/337	Construction cut for [23/335]	0.78m	0.76m	0.84m	4					
23/338	Brick drain catch pit	0.56m	0.30m	0.10m	4					
23/339	Brick work	2.25m	0.70m	0.19m	4					
23/340	Puddling Clay	0.80m	0.60m	0.13m	4					
23/341	Brick work	0.63m	0.58m	0.14m	4					

23/342	Deposit	2.20m	1.30m	0.06m	5					
23/343	Brick wall	4.08m	0.56m	0.5m	4					
23/344	Brick wall	6.80m	0.38m	0.91m	4					
23/345	Brick wall	3.70m	0.35m	0.80m	4					
23/346	Deposit	2.33m	1.66m	0.05m	5					
23/347	Brick floor	3.00m	0.54m	0.08m	5					
23/348	Same as [23/005]	3.46m	na	0.24	3					
23/349	Deposit	1.07m	0.82m	0.64m	5					
23/350	Modern truncation	2.35m	1.04m	0.13m	7					
23/351	Fill of [23/350]	2.35m	1.04m	0.13m	7					
23/352	Fill of [23/353]	3.15m	0.20m	0.24m	4					
23/353	Construction cut for [23/354]	3.15m	0.50m	0.24m	4					
23/354	Brick wall	4.12m	0.34m	0.58m	4					
23/355	Cut of pit	1.10m	0.49m	0.44m	4					
23/356	Fill of [23/355]	1.10m	0.49m	0.44m	4					
23/357	Brick floor	2.14m	0.30m	0.06m	4					
23/358	Cast iron pipe	3.93m	0.12m	0.12m	4					
23/359	Brick floor	2.63m	1.35m	0.06m	4					
23/360	Brick wall	4.00m	0.34m	0.64m	4					
23/361	Deposit	11.97m	0.56m	0.67m	4					
23/362	Cast iron pipe	5.60m	0.30m	0.35m	4					
23/363	Brick wall	0.82m	0.36m	0.19m	4					
23/364	Brick wall	0.79m	0.34m	0.07m	4					
23/365	Cut	1.37m	0.22m	0.25m	4					
23/366	Brick footing	1.66m	0.44m	0.07m	4					
23/367	Brick floor	0.83m	0.51m	0.06m	4					
23/368	Brick floor	1.28m	0.44m	0.06m	4					
23/369	Brick wall	2.22m	0.45m	0.22m	4					
23/370	Brick floor	7.46m	1.88m	0.60m	4					

23/371	Brick floor	0.44m	0.35m	0.60m	4					
23/372	Fill of [23/373]	0.30m	0.25m	0.21m	5					
23/373	Cut for drain pipe	0.30m	0.25m	0.21m	5					
23/374	Brick floor	3.04m	0.34m	na	4					
23/375	Brick wall	1.09m	0.32m	0.21m	4					
23/376	Brick footing	1.73m	0.44m	0.15m	4					
23/377	Ceramic drain pipe	6.31m	0.18m	0.18m	5					
23/378	Brick wall	4.06m	0.36m	0.34m	4					
23/379	Cut for drain pipe	6.56m	0.09m	0.09m	4					
23/380	Brick wall	1.98m	0.34m	0.37m	4					
23/381	Cut	1.22m	0.25m	0.30m	4					
23/382	Brick floor	2.00m	1.42m	0.06m	4					
23/383	Brick floor	0.90m	0.54m	0.06m	4					
23/384	Cast iron pipe	4.32m	0.15m	0.15m	4					
23/385	Cut	0.39m	0.36m	0.26m	4					
23/386	Cut	0.48m	0.31m	0.20m	4					
23/387	Fill of [23/365]	1.37m	0.22m	0.25m	4					
23/388	Cut	0.85m	0.31m	0.15m	7					
23/389	Fill of [23/388]	0.85m	0.31m	0.15m	7					
23/390	Fill of [23/325]	in 325	in 325	in 325	5					
23/391	Construction cut for [23/328]	1.90m	0.78m	0.24m	4					
23/392	Cast iron pipe	3.50m	0.17m	0.17m	4					
23/393	Brick floor	4.45m	1.70m	0.06m	4					
23/394	Brick drain sluice	1.27m	0.25m	0.24m	4					
23/395	Brick drain sluice	2.25m	0.28m	0.29m	4					
23/396	Cut of pit	0.55m	0.35m	0.11m	3					
23/397	Fill of [23/396]	0.55m	0.35m	0.11m	3					
23/398	Post hole	0.24m	0.24m	0.16m	3					
23/399	Fill of [23/398]	0.24m	0.24m	0.16m	3					

23/400	Post hole	0.37m	0.26m	0.18m	3					
23/401	Fill of [23/400]	0.37m	0.26m	0.18m	3					
23/402	Fill of [23/404]	2.53m	0.53m	0.28m	5					
23/403	Wooden plank in [23/404]	0.40m	0.25m	0.08m	5					
23/404	Gutter drain	2.35m	0.53m	0.28m	5					
23/405	Fill of [23/406]	20.00m	3.50m	0.36m	7					
23/406	Modern truncation	20.00m	3.50m	0.36m	7					
23/407	Fill of [23/408]	1.90m	1.04m	0.68m	4					
23/408	Construction cut for [23/335]	1.90m	1.04m	0.68m	4					
23/409	Post hole	0.28m	0.28m	0.08m	3					
23/410	Fill of [23/409]	0.28m	0.28m	0.08m	3					
23/411	Cut	0.35m	0.30m	0.04m	3					
23/412	Fill of [23/411]	0.35m	0.30m	0.04m	3					
23/413	Cut	0.64m	0.43m	0.07m	3					
23/414	Fill of [23/413]	0.64m	0.43m	0.07m	3					
23/415	Brick floor of [23/502]C	1.70m	1.30m	0.06m	4					
23/416	Fill of tannin pit [23/502]C	1.70m	1.30m	0.25m	4					
23/417	Brick floor of [23/502]F	1.70m	1.30m	0.06m	4					
23/418	Fill of tannin pit [23/502]F	1.70m	1.30m	0.25m	4					
23/419	Fill of [23/420]	1.15m	1.04m	0.31m	4					
23/420	Cut of pit	1.15m	1.04m	0.31m	4					
23/421	Brick floor	?	?	?	4					
23/422	Fill of [23/424]	0.46m	0.18m	0.20m	4					
23/423	Wooden plank in [23/395]	1.60m	0.44m	0.10m	4					
23/424	Construction cut for [23/327-425]	?	?	?	4					
23/425	Brick wall	1.60m	0.45m	?	4					
23/426	Fill of [23/427]	0.40m	0.37m	0.12m	4					
23/427	Cut of pit	0.40m	0.37m	0.12m	4					
23/428	Fill of [23/489]	3.00m	0.70m	0.22m	5					

23/429	Brick wall	1.80m	0.20m	0.56m	4					
23/430	Brick floor	2.40m	2.00m	0.08m	4					
23/431	Structure of tan pits area in SW corner	20m	18m	1.20m	4					
Contexts from 23/431 to 23/478 were never used										
23/479	Cut of pit	0.74m	0.58m	0.07m	4					
23/480	Fill of [23/479]	0.74m	0.58m	0.07m	4					
23/481	Wooden structure for tanning pit	1.50m	1.50m	1.40m	4					
23/482	Fill of [23/481]	1.50m	1.50m	0.95m	5					
23/483	Fill of [23/395]	2.25m	0.28m	0.22m	4					
23/484	Chamber for iron pipe [23/362]	0.78m	0.58m	0.35m	4					
23/485	Brickwork	3.50m	0.65m	0.40m	4					
23/486	Brick culvert	1.50m	0.60m	0.50m	4					
23/487	Wooden plank	0.94m	0.45m	0.10m	4					
23/488	Wooden plank	3.50m	0.35m	0.02m	4					
23/489	Brick culvert	3.00m	0.70m	0.26m	4					
23/490	Fill of [23/491]	3.00m	1.00m	0.26m	4					
23/491	Construction cut for [23/489]	3.00m	1.00m	0.26m	4					
23/492	Fill of [23/493]	1.50m	0.90m	0.28m	4					
23/493	Construction cut for [23/486]	1.50m	0.90m	0.28m	4					
23/494	Brick structure	0.42m	0.10m	0.22m	4					
23/495	Brick wall	6.10m	0.34m	0.71m	4					
23/496	Brick wall	6.92m	0.35m	0.98m	4					
23/497	Brick wall	6.18m	0.34m	0.85m	4					
23/498	Fill of [23/499]	0.92m	0.35m	0.15m	4					
23/499	Metal structure	0.92m	0.92m	0.15m	4					
23/500	Fill of [23/501]	1.10m	0.35m	0.04m	4					
23/501	Cut for [23/499]	1.40m	1.10m	0.44m	4					
23/502	Brick structure	7.00m	5.30m	0.67m	4					
23/503	Brick structure	7.00m	4.75m	1.04m	4					

23/504	Brick structure	7.00m	5.15m	1.05m	4					
23/505	Fill of tanning pit [23/502]D - E	2.20m	1.50m	0.15m	4					
23/506	Brick floor of [23/502]D	1.70m	1.23m	0.06m	4					
23/507	Brick floor of [23/502]E	1.69m	1.31m	0.06m	4					
23/508	Fill of tanning pit [23/502]F	0.50m	0.40m	0.05m	5					
23/509	Fill of tanning pit in [23/502]G - H	1.88m	0.50m	0.80m	4					
23/510	Wooden plank in [23/502]G	1.88m	0.86m	0.05m	4					
23/511	Timber beam in [23/502]H	0.49m	0.08m	0.08m	4					
23/512	Timber beam in [23/502]H	1.36m	0.14m	0.06m	4					
23/513	Fill of tanning pit [23/502]G-H	1.70m	1.40m	0.10m	4					
23/514	Fill of tanning pit [23/503]A	1.76m	1.26m	0.20m	5					
23/515	Fill of tanning pit [23/503]A	1.76m	1.26m	0.05m	4					
23/516	Brick floor of [23/503]A	1.76m	1.26m	0.06m	4					
23/517	Fill of tanning pit [23/503]B	1.70m	1.32m	0.24m	4					
23/518	Brick floor of [23/503]B	1.70m	1.32m	0.06m	4					
23/519	Fill of tanning pit [23/503]C	1.75m	1.23m	0.30m	4					
23/520	Brick floor of [23/503]C	1.75m	1.23m	0.06m	4					
23/521	Fill of tanning pit [23/503]D	1.86m	1.24m	0.30m	4					
23/522	Brick floor of [23/503]D	1.86m	1.24m	0.06m	4					
23/523	Fill of tanning pit [23/503]E	1.78m	1.26m	0.10m	4					
23/524	Brick floor of [23/503]E	1.78m	1.26m	0.06m	4					
23/525	Stone Slab set into [23/524]	0.62m	0.23m	0.12m	4					
23/526	Stone Slab between [23/503]E and F	1.02m	1.02m	na	4					
23/527	Fill of tanning pit [23/503]F	1.85m	1.20m	0.30m	4					
23/528	Brick floor of [23/503]F	1.85m	1.20m	0.06m	4					
23/529	Fill of tanning pit [23/503]G	1.20m	0.30m	0.50m	5					
23/530	Fill of tanning pit [23/503]G	1.76m	1.26m	0.25m	4					
23/531	Brick floor of [23/503]G	1.76m	1.26m	0.10m	4					
23/532	Fill of tanning pit [23/503]H	1.00m	0.50m	0.10m	5					

23/533	Fill of tanning pit [23/503]H	1.00m	0.50m	0.25m	4					
23/534	Brick floor of [23/503]H	1.73m	1.24m	0.06m	4					
23/535	Fill of tanning pit [23/503]I	0.85m	0.60m	0.20m	5					
23/536	Fill of tanning pit [23/503]I	1.78m	1.15m	2.5m	4					
23/537	Brick floor of [23/503]I	1.78m	1.15m	0.06m	4					
23/538	Brick floor of [23/504]A	1.78m	1.30m	0.06m	4					
23/539	Fill of tanning pit [23/504]B	1.80m	1.40m	0.20m	4					
23/540	Fill of tanning pit [23/504]B	0.70m	0.20m	0.15m	4					
23/541	Brick floor of [23/504]B	1.80m	1.40m	0.06m	4					
23/542	Wooden trough	0.65m	0.24m	0.19m	4					
23/543	Fill of tanning pit [23/504]C	1.76m	1.30m	0.20m	5					
23/544	Fill of tanning pit [23/504]C	1.76m	1.30m	0.25m	4					
23/545	Fill of tanning pit [23/504]C	1.76m	1.30m	0.05m	4					
23/546	Brick floor of [23/504]C	1.76m	1.30m	0.06m	4					
23/547	Wooden trough	0.63m	0.24m	0.14m	4					
23/548	Fill of tanning pit [23/504]D	1.31m	0.78m	0.10m	4					
23/549	Brick floor of [23/504]D	1.02m	0.51m	0.06m	4					
23/550	Stone Slab set into [23/549]	0.71m	0.62m	0.06m	4					
23/551	Cut	1.27m	0.10m	0.05m	4					
23/552	Fill of tanning pit [23/504]E	1.84m	1.38m	0.10m	4					
23/553	Timber Floor of [23/504]E	1.84m	0.12m	0.03m	4					
23/554	Timber beam in [23/504]E	1.38m	0.12m	0.06m	4					
23/555	Timber beam in [23/504]E	1.38m	0.14m	0.04m	4					
23/556	Timber beam in [23/504]E	1.38m	0.12m	0.02m	4					
23/557	Fill of tanning pit [23/504]F	0.40m	0.25m	0.15m	5					
23/558	Fill of tanning pit [23/504]F	1.36m	0.30m	0.10m	4					
23/559	Timber Floor of [23/504]F	1.36m	1.40m	0.03m	4					
23/560	Timber beam in [23/504]F	1.90m	0.12m	0.08m	4					
23/561	Timber beam in [23/504]F	0.32m	0.13m	0.06m	4					

23/562	Timber beam in [23/504]F	0.26m	0.09m	0.03m	4					
23/563	Fill of tanning pit [23/504]F	1.38m	1.00m	0.15m	4					
23/564	Fill of tanning pit [23/504]G	1.70m	1.30m	0.20m	5					
23/565	Fill of tanning pit [23/504]G	0.35m	0.30m	0.05m	4					
23/566	Timber Floor of [23/504]G	1.20m	0.20m	0.03m	4					
23/567	Timber beam in [23/504]G	1.70m	0.15m	0.08m	4					
23/568	Timber beam in [23/504]G	0.15m	0.08m	0.08m	4					
23/569	Brick floor of [23/504]G	1.78m	1.26m	0.06m	4					
23/570	Fill of tanning pit [23/504]H	1.82m	1.40m	0.10m	5					
23/571	Timber Floor of [23/504]H	1.82m	1.40m	na	4					
23/572	Timber beam in [23/504]H	1.40m	0.10m	0.06m	4					
23/573	Timber beam in [23/504]H	1.40m	0.10m	0.06m	4					
23/574	Fill of tanning pit [23/504]H	1.40m	0.65m	0.10m	4					
23/575	Brick floor of [23/504]H	1.82m	1.40m	0.06m	4					
23/576	Fill of tanning pit [23/504]I	1.80m	1.30m	0.20m	5					
23/577	Fill of tanning pit [23/504]I	1.80m	1.30m	0.15m	4					
23/578	Fill of tanning pit [23/504]I	1.80m	1.30m	0.10m	4					
23/579	Timber Floor of [23/504]I	1.80m	0.43m	0.02m	4					
23/580	Timber beam in [23/504]I	1.35m	0.05m	0.08m	4					
23/581	Brick floor of [23/504]I	1.80m	1.30m	0.06m	4					
23/582	Fill of [23/583]	30.00m+	2.90m	0.45m	2					
23/583	Cut of ditch	30.00m+	2.90m	0.45m	2					
23/584	Modern made ground (same as 001)	8.00m	1.36m	0.28m	7					
23/585	Brick wall	8.00m	0.35m	0.12m	5					
23/586	Fill of [23/587]	8.00m	0.60m	0.28m	5					
23/587	Construction cut for [23/585]	8.00m	1.36	0.28m	5					
23/588	Brick wall	1.70m	0.30m	0.07m	5					
23/589	Construction cut for [23/588]	1.70m	0.40m	nfe	5					
23/590	Brick culvert	5.00m	0.50m	0.50m	4					

23/591	Construction cut for [23/590]	5.00m	1.30m	nfe	4					
23/592	Fill of [23/589]	1.70m	0.40m	nfe	4					
23/593	Modern made ground	5.00m	na	nfe	7					
23/594	Construction cut for [23/502]	7.10m	5.40m	nfe	4					
23/595	Fill of [23/594]	7.10m	5.40m	nfe	4					
23/596	Brick work	0.90m	0.85m	nfe	4					
23/597	Fill of tanning pit [23/503]D	1.86m	1.24m	0.20m	5					
23/598	Concrete slab	4.60m	0.55m	nfe	6					
23/599	Brick work	0.90m	0.07	0.10m	6					
23/600	Concrete slab	3.50m	0.60m	nfe	6					
23/601	Manhole	1.10m	1.40m	0.50m	6					
23/602	Construction cut for [23/601]	1.10m	1.40m	nfe	6					
23/603	Fill of [23/602]	1.10m	1.40m	nfe	6					
23/604	Construction cut for [23/606]	20.00m	0.80m	0.70m	4					
23/605	Fill of [23/604]	20.00m	0.80m	0.70m	4					
23/606	Brick culvert	20.00m	0.60m	0.60m	4					
23/607	Manhole	1.10m	1.10m	0.30m	6					
23/608	Soak away	0.80m	0.40m	0.08m	4					
23/609	Brick wall	4.85m	0.35m	0.45m	4					
23/610	Brick wall	7.00m	0.35m	0.67m	4					
23/611	Brick wall	3.05m	0.35m	0.25m	4					
23/612	Brick wall	6.70m	0.25m	0.38m	4					
23/613	Brick wall	5.90m	0.36m	0.46m	4					
23/614	Brick wall	5.05m	0.33m	0.46m	4					
23/615	Brick wall	2.03m	0.4m	0.02m	4					
23/616	Brick wall	6.70m	0.35m	0.28m	4					
23/617	Brick wall	4.45m	0.34m	0.45m	4					
23/618	Brick wall	6.70m	0.34m	0.38m	4					
23/619	Brick wall	4.75m	0.34m	1.04m	4					

23/620	Brick wall	6.50m	0.35m	1.05m	4					
23/621	Brick wall	1.40m	0.35m	0.47m	4					
23/622	Brick wall	4.65m	0.37m	0.44m	4					
23/623	Brick wall	6.70m	0.40m	0.43m	4					
23/624	Brick wall	6.70m	0.35m	0.50m	4					
23/625	Brick wall	5.43m	0.44m	0.56m	4					
23/626	Brick wall	6.56m	0.22m	1.13m	4					
23/627	Brick wall	5.15m	0.33m	1.05m	4					
23/628	Brick wall	4.78m	0.33m	0.50m	4					
23/629	Brick wall	4.25m	0.35m	0.37m	4					
23/630	Brick wall	2.08m	0.34m	0.27m	4					
23/631	Brick wall	6.30m	0.35m	0.57m	4					
23/632	Brick wall	6.30m	0.35m	0.60m	4					
23/633	Brick surface	2.70m	1.50m	0.10m	5					
23/634	Leveling ground	2.70m	1.50m	0.90m	5					
23/635	Modern truncation	3.50m	0.60m	nfe	7					
23/636	Fill of [23/635]	3.50m	0.60m	nfe	7					
23/638	Fill of [23/639]	2.00m	nfe	0.46m	5					
23/639	Cut of pit	2.00m	nfe	0.46m	5					
23/640	Plough soil	1.70m	nfe	0.10m	3					
23/641	Fill of land drain	0.20m	nfe	0.10m	3					
23/642	Cut for land drain	0.20m	nfe	0.10m	3					
23/643	Brick wall	1.80m	0.18m	0.18m	4					
23/644	Brick floor of [23/502]A	1.30m	0.72m	0.06m	4					
23/645	Brick floor of [23/502]B	1.78m	0.30m	0.06m	4					
23/646	Catch pit	0.27m	0.16m	0.36m	4					
23/647	Brick wall	1.00m	0.23m	0.50m	4					
23/648	Manhole	1.70m	1.40m	0.95m	6					
23/649	Brick culvert	4.10m	0.60m	0.60m	4					

23/650	Fill of [23/646]	0.27m	0.16m	0.36m	5					
23/651	Fill of [23/652]				7					
23/652	Cut of Modern truncation				7					
23/653	Deposit	12.36m	0.82m	0.10m	4					
23/654	Construction cut for [23/649]	4.10m	0.70m	0.60m	4					
23/655	Brick wall	1.43m	0.23m	0.10m	5					
23/656	Construction cut for [23/655]	1.43m	0.23m	0.10m	5					
23/657	Inspection chamber	0.70m	0.50m	0.30m	4					
23/658	Construction cut for [23/659]	8.00m	1.00m	0.35m	4					
23/659	Brick culvert	8.00m	0.70m	0.35m	4					
23/660	Fill of [23/658]	8.00m	1.00m	0.35m	4					
23/661	Fill of [23/659]	8.00m	0.70m	0.30m	5					
23/662	Construction cut for [23/663]	3.00m	1.40m	0.35m	4					
23/663	Brick culvert	3.00m	0.70m	0.30m	4					
23/664	Fill of [23/662]	3.00m	1.40m	0.35m	4					
23/665	Fill of [23/663]	1.20m	0.50m	0.30m	5					
23/666	Fill of [23/606]	20.00m	0.50m	0.20m	5					
23/667	Fill of [23/041]	10m+	0.70m	0.15m	4					
23/668	Fill of [23/583]	40.00m+	0.85m	0.05m	2					
23/669	Fill of [23/670]	20.00m+	1.70m	0.28m	2					
23/670	Cut of ditch	20.00m+	1.70m	0.28m	2					
23/671	Fill of [23/606]	20.00m	0.50m	0.20m	5					
23/672	Fill of [23/674]	50.00m+	1.54m	0.44m	2					
23/673	Fill of [23/674]	50.00m+	1.54m	0.35m	2					
23/674	Cut of ditch	50.00m+	1.54m	0.35m	2					
23/675	Cut of ditch	20.00m	1.14m	0.31m	3					
23/676	Fill of [23/675]	20.00m	1.14m	0.31m	3					
23/677	Cut of ditch (same as [23/583])	30.00m+	1.39m	0.61m	2					
23/678	Fill of [23/677]	30.00m+	0.85m	0.15m	2					

23/679	Fill of [23/677]	30.00m+	2.50m	0.35m	2					
23/680	Fill of [23/677]	30.00m+	1.10m	0.12m	2					
23/681	Construction cut for [23/377-362]	6.31m	0.46m	0.65m	4					
23/682	Brick wall	20.00m+	0.35m	0.40m	4					
23/683	Brick wall	1.60m	1.00m	0.41m	4					
23/684	Brick pillar	0.45m	0.45m	0.80m	4					
23/685	Fill of [23/583]	30.00m+	0.85	0.17m	2					
23/686	Brick pillar	0.45m	0.45m	0.80m	4					
23/687	Brick structure	9.20m	3.80m	0.80m	4					
23/688	Brick structure	6.00m	4.85m	0.95m	4					
23/689	Brick wall	1.95m	0.35m	0.25m	4					
23/690	Brick pillar	0.45m	0.45m	0.80m	4					
23/691	Fill of [23/692]	0.09m	0.08m	0.20m	3					
23/692	Post hole	0.09m	0.08m	0.20m	3					
23/693	Fill of [23/694]	0.80m	0.80m	0.26m	3					
23/694	Cut of pit	0.80m	0.80m	0.26m	3					
23/695	Fill of [23/583]	40.00m+	0.85m	0.20m	2					
23/696	Fill of [23/697]	2.00m	1.70m	0.30m	3					
23/697	Cut of pit	2.00m	1.70m	0.30m	3					
23/698	Fill of [23/698]	2.95m	1.40m	0.25m	3					
23/699	Cut of pit	2.95m	1.40m	0.25m	3					
23/700	Brick+concrete drain	2.00m	1.23m	na	6					
23/701	Brick wall	7.40m	0.35m	0.92m	4					
23/702	Brick wall	2.76m	0.38m	0.32m	4					
23/703	Brick floor	1.72m	1.00m	0.10m	4					
23/704	Brick wall	9.30m	1.10m	0.60m	4					
23/705	Brick drain	4.00m	0.35m	0.30m	4					
23/706	Construction cut for [23/429]	2.45m	0.15m	nfe	4					
23/707	Concrete wall	2.30m	0.35m	0.15m	6					

23/708	Brick wall	1.50m	0.23m	0.60m	4					
23/709	Brick wall	1.08m	0.22m	0.15m	4					
23/710	Fill of [23/706]	2.45m	0.15m	nfe	4					
23/711	Brick culvert	11.00m	0.50m	0.40m	4					
23/712	Brick drain	10.00m	0.30m	0.20m	4					
23/713	Brick pier	0.90m	0.90m	0.60m	5					
23/714	Brick pier	0.96m	0.92m	0.020m	5					
23/715	Brick pier	0.93m	0.93m	0.22m	5					
23/716	Brick pier	1.10m	0.75m	0.40m	5					
23/717	Construction cut for [23/643]	2.10m	0.35m	nfe	4					
23/718	Brick wall	3.00m	0.20m	0.20m	4					
23/719	Stone floor	2.80m	0.55m	0.10m	4					
23/720	Deposit	1.25m	na	0.20m	5					
23/721	Deposit	1.30m	na	0.12m	5					
23/722	Deposit	1.34m	na	0.12m	5					
23/723	Fill of [23/726]	0.22m	na	0.03m	5					
23/724	Deposit	0.54m	na	0.27m	5					
23/725	Deposit	0.72m	na	0.24m	5					
23/726	Cut of pit	1.60m	na	0.30m	5					
23/727	Brick floor	1.00m	0.30m	0.06m	4					
23/728	Brick floor	0.30m	0.20m	0.06m	4					
23/729	Brick floor	1.00m	0.50m	0.06m	4					
23/730	Brick wall	0.35m	0.11m	0.40m	4					
23/731	Fill of tanning pit [23/732]	1.20m	1.20m	na	5					
23/732	Wooden structure for tanning pit	1.20m	1.20m	na	4					
23/733	Construction cut for [23/788]	3.90mm	0.20m	0.06m	4					
23/734	Fill of [23/733]	3.90mm	0.20m	0.06m	4					
23/735	Deposit	2.60m	0.60m	0.10m	5					
23/736	Deposit	1.00m	0.50m	0.10m	5					

23/737	Cut	0.50m	0.40m	0.30m	5					
23/738	Fill of [23/738]	0.50m	0.40m	0.30m	5					
23/739	Fill of [23/738]	0.50m	0.40m	0.30m	5					
23/740	Brick structure	9.50m	2.74m	0.90m	4					
23/741	Brick wall	2.20m	0.36m	1.50m	4					
23/742	Brick wall	2.16m	0.36m	nfe	4					
23/743	Brick wall	2.20m	0.36m	1.50m	4					
23/744	Brick wall	2.00m	0.36m	1.50m	4					
23/745	Brick wall	6.40m	0.36m	1.06m	4					
23/746	Fill of [23/747]	9.20m	0.70m	0.50m	5					
23/747	Brick culvert	9.20m	0.70m	0.50m	4					
23/748	Cast iron pipe	6.00m	0.04m	0.04m	4					
23/749	Fill of [23/717]	2.10m	0.35m	nfe	4					
23/750	Brick pier	1.10m	1.00m	0.20m	6					
23/751	Inspection chamber	1.44m	1.36m	1.00m	6					
23/752	Deposit	2.50m	1.00m	0.25m	5					
23/753	Brick wall	2.60m	0.22m	0.40m	4					
23/754	Brick wall	7.00m	0.65m	0.60m	4					
23/755	Ceramic drain pipe	na	0.30m	0.30m	5					
23/756	Stone floor	1.20m	0.50m	0.16m	4					
23/757	Brick wall	0.90m	0.60m	0.57m	4					
23/758	Brick wall	1.10m	0.22m	1.20m	4					
23/759	Brick wall	1.70m	0.60m	0.45m	4					
23/760	Inspection chamber	1.40m	1.20m	0.30m	5					
23/761	Brick wall	1.16m	0.40m	0.40m	4					
23/762	Fill of [23/763]	30.00m+	1.15m	0.28m	2					
23/763	Cut of ditch	30.00m+	1.15m	0.28m	2					
23/764	Fill of tanning pit [23/768]	1.50m	1.50m	0.12m	5					
23/765	Fill of tanning pit [23/768]	1.50m	1.50m	0.06m	5					

23/766	Fill of [23/767]	1.50m	0.40m	nfe	4					
23/767	Cut of pit	1.50m	0.40m	nfe	4					
23/768	Wooden structure for tanning pit	1.50m	1.50m	1.00m	4					
23/769	Ceramic drain pipe	3.50m	0.25m	0.25m	5					
23/770	Brick structure	4.20m	2.86m	1.44m	4					
23/771	Brick wall	6.80m	0.36m	0.40m	4					
23/772	Cast iron pipe	2.12m	0.26m	0.26m	4					
23/773	Fill of tanning pit [23/778]	1.50m	1.50m	0.40m	5					
23/774	Fill of tanning pit [23/768]	1.50m	1.50m	0.46m	5					
23/775	Fill of tanning pit [23/768]	1.50m	1.50m	0.40m+	5					
23/776	Brick wall	1.74m	0.44m	0.45m	4					
23/777	Brick structure?	0.40m	0.22m	0.20m	4					
23/778	Wooden structure for tanning pit	1.50m	1.50m	nfe	4					
23/779	Fill of tanning pit [23/778]	1.50m	1.50m	nfe	5					
23/780	Cut of pit	0.60m	0.60m	0.35m	2					
23/781	Fill of [23/781]	0.60m	0.60m	0.35m	2					
23/782	Brick wall	1.30m	0.23m	0.45m	4					
23/783	Brick wall	4.76m	0.37m	0.25m	4					
23/784	Stone floor	3.08m	1.48m	0.05m	4					
23/785	Deposit	16.20m	2.35m	1.50m+	4					
23/786	Brick culvert	20.00m	0.40m	0.20m	4					
23/787	Brick wall	2.06m	0.74m	0.40m	4					
23/788	Brick wall	12.70m	0.72m	1.40m	4					
23/789	Brick structure	8.58m	0.50m	nfe	4					
23/790	Brick floor	6.82m	0.90m	0.08m	4					
23/791	Brick structure	8.42m	0.62m	nfe	4					
23/792	Brick wall	9.30m	0.60m	nfe	4					
23/793	Brick structure	9.30m	0.98m	nfe	4					
23/794	Cast iron pipe	nfe	0.15m	0.20m	4					

23/795	Brick floor	8.40m	0.64m	0.08m	4					
23/796	Lead pipe	nfe	0.14m	0.14m	4					
23/797	Brick floor	1.94m	0.96m	0.08m	4					
23/798	Brick wall	1.00m	0.35m	0.28m	4					
23/799	Brick wall	1,55m	nfe	0.30m	4					
23/800	Brick floor	1.20m	0.84m	0.06m	4					
23/801	Brick wall	1.56m	nfe	0.57m	4					
23/802	Brick wall	nfe	0.34m	0.65m	4					
23/803	Brick wall	5.92m	0.24m	nfe	4					
23/804	Brick floor	2.90m	0.79m	0.06m	4					
23/805	Brick wall	1.94m	0.33m	nfe	4					
23/806	Brick wall	2.04	0.44m	nfe	4					
23/807	Fill of tanning pit [23/808]	1.45m	1.30m	nfe	5					
23/808	Wooden structure for tanning pit	1.45m	1.30m	nfe	4					
23/809	Wooden post	0.06m	0.06m	nfe	4					
23/810	Wooden post	0.07m	0.07m	nfe	4					
23/811	Wooden post	0.07m	0.05m	nfe	4					
23/812	Wooden post	0.07m	0.07m	nfe	4					
23/813	Wooden post	0.06m	0.05m	nfe	4					
23/814	Fill of tanning pit [23/815]	1.40m	1.40m	nfe	5					
23/815	Wooden structure for tanning pit	1.50m	1.50m	nfe	4					
23/816	Wooden post	0.08m	0.07m	nfe	4					
23/817	Wooden post	0.08m	0.07m	nfe	4					
23/818	Wooden post	0.07m	0.05m	nfe	4					
23/819	Wooden post	0.08m	0.08m	nfe	4					
23/820	Wooden post	0.06m	0.06m	nfe	4					
23/821	Wooden post	0.07m	0.05m	nfe	4					
23/822	Wooden post	0.07m	0.05m	nfe	4					
23/823	Fill of tanning pit [23/824]	1.50m	1.40m	nfe	5					

23/824	Wooden structure for tanning pit	1.50m	1.40m	nfe	4					
23/825	Wooden post	0.08m	0.08m	nfe	4					
23/826	Wooden post	0.08m	0.07m	nfe	4					
23/827	Wooden post	0.08m	0.07m	nfe	4					
23/828	Wooden post	0.09m	0.08m	nfe	4					
23/829	Fill of tanning pit [23/830]	1.50m	1.50m	nfe	5					
23/830	Wooden structure for tanning pit	1.50m	1.50m	nfe	4					
23/831	Wooden post	0.08m	0.08m	nfe	4					
23/832	Wooden post	0.08m	0.08m	nfe	4					
23/833	Wooden post	0.08m	0.08m	nfe	4					
23/834	void	void	void	void	void					
23/835	Deposit	0.94m	0.30m	0.20m	4					
23/836	Brick wall	2.40m	0.70m	0.50m	4					
23/837	Brick wall	8.36m	0.46m	nfe	4					
23/838	Brick floor	8.36m	0.35m	0.08m	4					
23/839	Brick wall	3.70m	0.58m	0.08m	4					
23/840	Brick pier	1.01m	0.24m	0.70m	4					
23/841	Brick floor	1.50m	0.30m	0.12m	4					
23/842	Brick wall	0.76m	0.23m	nfe	4					
23/843	Fill of tanning pit [23/845]	1.02m	0.72m	nfe	5					
23/844	Fill of tanning pit [23/845]	1.02m	0.72m	nfe	5					
23/845	Wooden structure for tanning pit	1.46m	1.04m	nfe	4					
23/846	Fill of tanning pit [23/847]	1.50m	1.46m	0.70m	5					
23/847	Wooden structure for tanning pit	1.50m	1.46m	0.70m	4					
23/848	Wooden post	0.07m	0.07m	nfe	4					
23/849	Wooden post	0.07m	0.07m	nfe	4					
23/850	Brick wall	1.50m	1.20m	1.00m	4					
23/851	Brick wall	6.35m	0.34m	0.40m	4					
23/852	Brick wall	0.70m	0.34m	0.40m	4					

23/853	Post hole	0.20m	0.20m	nfe	3					
23/854	Post hole	0.25m	0.25m	nfe	3					
23/855	Post hole	0.22m	0.20m	nfe	3					
23/856	Post hole	0.40m	0.40m	nfe	3					
23/857	Post hole	0.25m	0.18m	nfe	3					
23/858	Post hole	0.25m	0.18m	nfe	3					
23/859	Post hole	0.18m	0.18m	nfe	3					
23/860	Post hole	0.20m	0.15m	nfe	3					
23/861	Brick floor	0.80m	0.80m	0.06m	4					
23/862	Brick wall	0.30m	0.23m	0.74m	4					
23/863	Brick wall	3.67m	0.54m	1.18m	4					
23/864	Fill of [23/865]	3.50m	0.60m	0.25m	7					
23/865	Modern truncation	3.50m	0.60m	0.25m	7					
23/866	Fill of [23/867]	1.36m	0.96m	0.40m	4					
23/867	Cess pit	1.60m	1.08m	0.40m	4					
23/868	Construction cut for [23/867]	1.60m	1.08m	0.40m	4					
23/869	Fill of [23/870]	0.80m	0.60m	0.20m	4					
23/870	Cut of pit	0.80m	0.60m	0.20m	4					
23/871	Fill of [23/872]	1.20m	0.78m	0.43m	4					
23/872	Cut of pit	1.20m	0.78m	0.43m	4					
23/873	Fill of [23/874]	0.72m	0.70m	0.28m	4					
23/874	Cut of pit	0.72m	0.70m	0.28m	4					
23/875	Fill of [23/876]	9.30m	1.10m	0.54m	4					
23/876	Construction cut for [23/704]	9.30m	1.10m	0.54m	4					
23/877	Deposit	nfe	0.35m	0.24m	4					
23/878	Deposit	nfe	0.70m	0.40m	3					
23/879	Fill of [23/880]	0.68m	0.52m	0.10m	3					
23/880	Cut of pit	0.68m	0.52m	0.10m	3					
23/881	Deposit	0.68m	0.52m	0.15m	4					

23/882	Deposit	0.68m	0.52m	0.16m	4					
23/883	Deposit	0.68m	0.52m	0.08m	4					
23/884	Deposit	0.68m	0.52m	0.12m	4					
23/885	Deposit	0.68m	0.52m	0.09m	4					
23/886	Deposit	0.68m	0.52m	0.06m	4					
23/887	Fill of [23/888]	1.48m	1.15m	0.63m	4					
23/888	Cut of pit	1.48m	1.15m	0.63m	4					
23/889	Fill of [23/890]	2.20m	1.60m	1.00m	4					
23/890	Cut of pit	2.20m	1.60m	1.00m	4					
23/891	Fill of [23/481]	1.50m	1.50m	0.45m	4					
23/892	Fill of [23/893]	1.96m	1.58m	0.40m	4					
23/893	Cut of pit	1.96m	1.58m	0.40m	4					
100	Concrete floor	1.00m	0.95m	0.08m	6					
101	Concrete floor	2.00m	0.80m	0.10m	6					
102	Concrete floor	2.80m	1.80m	0.10m	6					
103	Concrete floor	7.00m	3.60m	0.10m	6					
104	Concrete floor	2.60m	2.00m	0.10m	6					
105	Cement surface	11.50m	6.50m	0.15m	6					
106	Brick buttress	0.80m	0.20m	1.00m	6					
107	Tile floor	7.10m	2.20m	0.05m	6					
108	Under floor for 107	7.00m	3.00m	0.10m	6					
109	Brick floor	9.10m	8.00m	0.08m	6					
110	Under floor for 109	9.10m	8.00m	0.05m	6					
111	Cement surface	8.20m	3.80m	0.05m	6					
112	Cement slab floor	2.60m	1.40m	0.05m	6					
113	Cement slab floor	7.80m	1.50m	0.08m	4					
114	Cobbled road	5.50m	2.60m	0.10m	4					
115	Stone flag floor	6.30m	1.20m	0.05m	4					

116	Brick wall	1.70m	0.23m	0.07m	4					
117	Wooden beam	1.70m	0.10m	0.10m	4					
118	Stone flag floor	6.50m	4.50m	0.60m	4					
119	Brick wall	9.60m	0.45m	0.92m	4					
120	Brick wall	8.50m	0.70m	0.90m	4					
121	Brick wall	7.90m	0.40m	0.15m	6					
122	Brick wall	9.40m	0.30m	1.10m	4					
123	Brick wall	6.80m	0.40m	0.15m	4					
124	Brick wall	15.00m	0.50m	0.68m	4					
125	Brick wall	2.40m	0.35m		5					
126	Brick wall	28.00m	0.60m	0.87m	4					
127	Brick wall	6.70m	0.23m	0.57m	4					
128	Brick wall	2.40m	0.30m		6					
129	Brick wall	1.95m	0.30m	0.15m	5					
130	Brick wall	1.80m	0.80m		4					
131	Stone flag floor	0.60m	0.35m	0.05m	4					
132	Brick floor	1.30m	0.55m	0.10m	4					
133	Concrete surface	3.16m	0.70m	0.40m	5					
134	Concrete surface	3.20m	1.00m	0.40m	5					
135	Brick and concrete pillar	1.00m	0.90m	0.96m	5					
136	Fill of 137	0.90m	0.80m		6					
137	Cut	0.90m	0.80m		5					
138	Void	void	void	void						
139	Cut for 106	0.80m	0.20m		5					
140	Fill of 139	0.80m	0.20m		5					
141	Clay packing	0.19m	0.05m		6					
142	Concrete culvert	0.60m	0.65m		4					
143	Brick culvert	0.60m	0.54m	0.20m+	4					
144	Brick floor	2.80m	1.30m	0.07m	4					

145	Made ground	2.80m	1.05m		4					
146	Brick wall	3.00m	0.20m	0.06m	4					
147	Deposit	25.00m	15.00m	0.50m	3					
148	Made ground	3.20m	2.20m	nfe	6					
149	Brick culvert	2.35m	0.50m	0.20m	4					
150	Brick work	0.23m	0.33m	0.15m	4					
151	Brick wall	1.10m	0.36m	0.26m	4					
152	Brick wall	2.85m	0.70m	0.07m	4					
153	Brick wall	2.30m	1.10m	0.70m	6					
154	Concrete slab	1.23m	0.38m	0.16m	6					
155	Concrete slab	1.02m	0.40m	0.07m	6					
156	Brick wall	1.42m		0.42m	4					
157	Stone flag floor	0.59m	0.82m	0.07m	4					
158	Brick floor	2.08m	0.92m	0.07m	4					
159	Fill of 163	7.40m	0.60m		5					
160	Brick wall	2.30m	1.10m	0.70m	4					
161	Brick culvert	2.30m	1.10m	0.70m	4					
162	Brick wall	1.80m	0.22m	0.12m	4					
163	Construction cut for 161	2.30m	1.10m	0.70m	4					
164	Concrete slab	0.50m	0.45m		6					
165	Concrete flagstone	0.60m	0.50m	0.07m	4					
166	Brick floor	1.10m	0.80m	0.07m	4					
167	Concrete slab	0.82m	0.46m		5					
168	Brick floor	1.00m	0.90m	0.07m	4					
169	Manhole	0.60m	0.50m	0.40m	4					
170	Made ground	6.00m	5.00m	0.50m	6					
171	Fill of tanning pit 173	4.60m	0.40m	nfe	6					
172	Clay packing	5.00m	0.12m	nfe	4					

173	Structure of tanning pit	5.00m	0.40m	nfe	4					
174	Fill of tanning pit	0.90m	0.90m	nfe	6					
175	Clay packing	1.10m	0.12m	nfe	4					
176	Structure of tanning pit	1.10m	1.10m	nfe	4					
177	Made ground	6.80m	1.80m	nfe	5					
178	Brick wall	1.10m	0.40m	0.70m	4					
179	Brick wall	3.10m	0.23m	0.9m	4					
180	Brick wall	1.40m	0.30m	0.50m	4					
181	Wooden planks	1.90m	0.20m	0.30m	5					
182	Made ground	35.00m	12.00m	0.90m	5					
183	Brick culvert	0.80m	0.60m	0.60m	4					
184	Made ground	1.90m	0.34m	0.60m	4					
185	Natural Deposit	35.00m	12.00m	nfe	1					
186	Brick wall	2.10m	0.50m	0.80m	4					
187	Fill of 188	1.10m	1.10m	0.20m	5					
188	Construction cut for 135	1.10m	1.10m	0.20m	5					
189	Fill of 183	0.80m	0.40m	0.10m	5					
190	Fill of 191	40.00m+	1.00m	0.40m	2					
191	Cut of ditch	40.00m+	1.00m	0.40m	2					
192	Fill of 193	40.00m+	0.85m	0.10m	2					
193	Cut of ditch	40.00m+	0.85m	0.10m	2					
194	Fill of 195	0.40m	0.40m	nfe	4					
195	Construction cut for 120	0.40m	0.40m	nfe	4					
196	Brick support	1.50m	0.40m	0.15m	4					
197	Fill of 199	40.00m+	1.00m	0.45m	2					
198	Fill of 199	40.00m+	1.00m	0.45m	2					
199	Cut of ditch	40.00m+	1.00m	0.45m	2					
200	Fill of 201	1.00m	1.00m	0.20m	2					
201	Cut of ditch	1.00m	1.00m	0.20m	2					

202	Fill of gap between 179 and 178	0.40m	0.10m	0.10m	4					
203	Fill of 204	5.00m	0.40m	0.05m	4					
204	construction cut for 179 and 178	5.00m	0.40m	0.05m	4					

Appendix B

Matrix

Appendix C

Specialist Assessment Reports

Spa Road, Bermondsey (SRQ07)

AOC Project Number 30165

Specialist Post-Excavation Assessment Report prepared by Archaeology South-East on behalf of AOC Archaeology Group

April 2009

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The Pottery by Luke Barber

Introduction

The archaeological work at the site produced 2,501 sherds of pottery, weighing a little over 77.5kg, from 161 individually numbered contexts. These totals include the assemblages from the evaluation and the environmental residues. The material from the latter source, although sometimes producing the only ceramics from a specific context, are usually always composed of very small sherds. As part of the assessment the assemblage has been fully quantified (number, weight and ENV) on pro forma for the archive using Museum of London codes for both fabric and form. An initial excel database has also been created for the assemblage.

Sherd sizes vary greatly. There are many fragments, both from hand-collection and the environmental residues, of under 6mm across (1-2g) as well as numerous pieces over 200mm across. Sherd size tends to increase, with a decrease in abrasion, for the later phases of activity on site. However, even amongst the later 19th- century assemblage there is a general trend toward small sherds suggesting a notable degree of reworking in many contexts. This is most notable in the fine table/tea wares, the robust coarse stonewares unsurprisingly generally surviving as much larger sherds.

A number of periods are represented in the assemblage from the site though the vast majority of the material is of the 19th century. Earlier periods represented include insignificant amounts of Roman, medieval and Transitional wares with notably more material from the 17th to 18th centuries. Some 68 fabrics/fabric sub-groups are represented though many only by between one and five sherds. Of this total 34 fabrics can be ascribed a late post-medieval date (post 1750), 24 an early post-medieval date and five a general post-medieval date as they are common both sides of the mid 18th century. A preliminary breakdown of the whole assemblage by period (including all residual/intrusive material) is given in Table 1:

2.1 Period	**No.**	**Weight**	**Average sherd size**	**Comments**
Roman	6	25g	4.2g	
Medieval	2	9g	4.5g	
Transitional	9	196g	21.8g	Av. Sherd size high due to complete Raeren base

Early post-medieval	239	1,684g	7.0g	
Post-medieval general (Fabrics which extensively span the mid C18th)	291	15,573g	53.5g	Includes PMR and LONS coarsewares
Late post-medieval	1,954	60,070g	30.7g	
Totals	**2,501**	**77,557g**	**-**	

Table 1. Chronological division of entire pottery assemblage (based on fabrics)

Due to the size and nature of the assemblage it has been considered most appropriate to give an overview of the pottery using the initial site phasing rather than ceramic fabrics due to the high level of residuality in later deposits. Although the current quantifications by phase may change slightly during analysis, particularly if the evaluation finds are integrated/phased, a reliable overview can be gained from the initial work.

3 The Assemblages

Phase 1: Natural

A single context produced two (4g) abraded sherds of Roman Samian ware (alluvial deposit [23/033]) probably of late 1st- to 2nd- century date.

Phase 2: Roman

This phase produced only three (8g) sherds of pottery. One of these is probably an intrusive abraded piece of Borderware (BORDY) in ditch [23/674] but the other two consist of abraded Roman grey sandy wares (ditches [23/763] and [23/583]). All the pottery from this phase consists of small and abraded sherds and the quantities are too small to identify residual or intrusive material on the ceramics alone. A little Roman material is residual in later phases such as [23/026] dated to Phase 3.

Phase 2b: Medieval and Transitional

Although no features of these periods were located during the excavations there are a few, generally abraded, residual sherds of this date residual in later deposits. These include two (9g) sherds of 13th- to mid 14th- century sandy ware cooking pots located in Phase 4 and 5 deposits (contexts [23/121] and [23/482] respectively). The few sherds of Transitional (mid 15th to mid 16th century) material include seven sherds (26g) of early post-medieval redware (PMRE) (residual in Phase 5), a complete Raeren stoneware frilled mug base (RAER) (residual in Phase 4/5) and a possible sherd of Langewehe stoneware (LANG) (residual in a Phase 4 deposit).

Phase 3: 17th to 18th centuries

Twenty three contexts containing pottery have provisionally been ascribed to this phase. These, which mainly consist of ditches, produced 193 sherds weighing 2,050g. Virtually all of the pottery from deposits of this phase consist of small abraded sherds which probably derived from manuring of cultivated land. None are suitable for illustration. Although some of the material may be as early as the mid 16th century the majority would better fit a 17th- to early 18th- century date. A wide range of fabrics are represented including post-medieval redwares (PMR), slipped redwares (PMRST), Borderware (BORDY, BORDG, BORDO, BORDB, RBOR) and notable quantity of tin-glazed wares (TGW) including a number of biscuit-fired pieces. Although the 18th century is not as well represented many of the RBOR and TGW sherds may be of this period as probably are the London stonewares (LONS). Non-local wares are also represented such as combed slipware (STSL) and white salt-glazed stoneware (SWSG) from Staffordshire, and Frechen (FREC) and Westerwald (WEST) stonewares from the Rhineland. There is also a scattering of Chinese porcelain (CHPO).

The context groups for this phase are always very small. Typical groups are represented by [23/676], fill of ditch [23/675] which produced 12 sherds weighing 55g dominated by Borderware, and [23/026], fill of ditch [23/027] which produced 20 sherds weighing 91g. All in all the 17th- to early/mid 18th- century assemblage is mainly domestic in nature with a range of plates, bowls, jars, tankards and other household forms (eg a Borderware saucer candlestick from [23/397]) being present though some manufacturing waste was obviously becoming incorporated. A number of later fabrics such as late creamware (CREA), yellow ware (YELL), pearlware (PEAR & PEAR TR) and transfer-printed wares (TPW) are often present in the Phase 3 contexts and in most instances are most likely to be intrusive. However, the small and abraded nature of the 17th- to mid 18th- century pottery in the Phase 3 deposits often make it difficult to be certain exactly what is residual/intrusive on the ceramics alone.

Phase 4: 19th- century housing and tannery

Forty seven contexts containing pottery have provisionally been ascribed to this phase. These, which consist of a range of features including pits and construction trenches, produced 762 sherds weighing 21,082g. Residuality from Phases 2-3 is usually low to moderate with Roman, medieval and Transitional sherds occasionally being present and 17th- to 18th- century material being quite common (including a bodysherd from a Spanish olive jar in pit [23/420]). However, residual sherds are almost always small and abraded.

The assemblage appears to be predominantly of the early 19th century, though some groups are from the 1850s-1870s. The early material appears to relate to domestic activity spanning *c.* 1810-1830/40 and a

wide variety of wares are present. Late creamware (CREA) is well represented, predominantly as plain dinner/side plates, though bowls and chamber pots are also represented along with a few industrially slipped vessels. The other major ware of the early part of this phase is pearlware (PEAR). Dinner/side plates with blue shell-edged decoration and hand painted tea bowls, tea cups and saucers decorated with floral designs are quite common. Transfer-printed pearlware (PEARL TR) is even more in evidence and a whole range of dinner, tea, kitchen and sanitary vessels is present normally with blue Chinese landscape (including willow pattern), English landscape and floral designs. Although a number of early vessels, with distinctly blue glazes, are present later paler vessels are more common. There is a scattering of English and Chinese porcelain vessels, usually plates and tea wares, though a few English porcelain figurine fragments are present. Kitchen wares are also represented with moderate quantities of post-medieval redwares (PMR) (mainly jars, bowls and flower pots), Sunderland slipped redwares (SUND) (large bowls and baking dishes), English stonewares (ENGS) (jars and bottles) and yellow ware (YELL) (bowls and jugs). Other less common wares include black basalts (BBAS, BBASG) and a few fragments from German stoneware seltzer bottles. Although there are a number of context groups of this earlier 19th- century occupation most are small and highly fragmented. Perhaps two of the best are represented by pit [23/317], fills [23/314, 23/315 and 23/316] which contained 71 sherds weighing 1,088g and pit [23/767], fill [766] which contained 30 sherds weighing 710g. Both are dated to an 1810-1830/40 range. It is unfortunate very few maker's marks are present on this early 19th- century assemblage though some help comes from the coarsewares sometimes, notably an English stoneware Warrens blacking bottle from [23/766] dated to between 1817 and 1834 (Askey 1998).

The mid to later 19th- century assemblages are difficult to define due to the high degree of residuality in most features. In these groups the earlier creamwares and pearlwares are residual/or from old vessels and have been replaced by larger numbers of refined white earthenwares / ironstone china (REFW) and transfer-printed wares (TPW). Although the transfer-printed wares mainly consist of blue willow pattern, English scenes and floral decoration a number of floral designs are present in green and purple (TPW 4). As before, a full range of table, tea and sanitary wares are present together with kitchen wares similar to those of the first half of the century. Without doubt the best group from the middle of the 19th century is from cess pit [23/293], fill [23/292] which was the only Phase 4 feature to produce a domestic group containing notable conjoining sherds suggesting the material had not been reworked to any great extent. This pit produced 162 sherds weighing 5,112g (ENV 59) including an English stoneware dog's head whistle and a number of maker's marks on the tablewares confirming a mid 19th- century date. Pit [23/888], fill [23/887] is also of interest in containing two fragmented but otherwise complete large handled slipped bowls and a divided baking dish in Sunderland coarseware (SUND). Up to 16 vessels from this phase cold be used for illustration.

Phase 5: Late 19th- tannery abandonment

Fifty one contexts containing pottery have provisionally been ascribed to this phase. These, which principally consisted of backfill in the tannery pits, produced 604 sherds weighing 28,024g. Residuality from Phases 3-4 is usually moderate to high. Although the residual Phase 3 sherds are easily isolated separating the Phase 4 material is more problematic, particularly for the later Phase 4 material. There is a large quantity of residual creamware and pearlware though there is also a good number of the transfer-printed and refined white earthenware and ironstone china vessels. Certainly the latter appear more commonly in this phase. Some of the pieces are definitely late, including a notable increase in the number of china and English stoneware preserve jars, including at least two James Keiller marmalade jars (fill [23/779] in tanning pit [23/778]. Overall there is a notable increase in the amount of English stoneware, particularly stoppers and Bristol glazed large jars and bottles presumably used by the tannery as well as salt glazed ginger beer bottles. A number of these vessels have owner's/manufacturer's stamps. For example a large London stoneware jar stamped Union Potteries. C. BASTIN, Vauxhall Walk, Lambeth (dated 1878-1881) from [23/008], fill of tanning pit [503] and several ginger beers including BATEY'S and BANKS of DEPTFORD ([23/774], fill of tanning pit [23/768]). It is likely that the majority of domestic table/tea wares in this phase are residual. Pieces from at least three water closets (in English stoneware, yellow ware and blue transfer-printed ironstone china), recovered from [19/010 eval], tanning pits [23/157] and [23/166], and tanning pit [23/232] respectively, may be derived from the nearby domestic housing as much as the tannery itself. The most notable context groups, apparently with no/little residual material and dominated by stonewares, consist of 17 sherds (1,683g) from [23/774], pit [23/768] and 60 sherds (2,019g) from [23/779], pit [23/778]. Up to seven vessels are suitable for illustration.

Phase 6: Post tannery

Only one context containing pottery has been placed in this phase. Drain [23/080], fill [23/079] contained 55 sherds weighing 168g. The pottery from this deposit consists of small sherds in a range of 19th-century domestic wares. All are likely to be residual.

Phase 7: Modern overburden

Eight contexts accounted for 176 sherds weighing 7,288g. The deposits consist in the main of modern made ground and overburden. Unsurprisingly the ceramics show a complete chronological spread from at least the 17/18th to the 20th centuries. Most of the material is of mid 19th- to mid 20th- century date and includes residual transfer-printed wares, ironstone china and English stoneware. The latter includes seven fragments (2,184g) from a single water filter with lion-head handles as well as a few pieces of salt-glazed drainage pipe.

Unphased/Evaluation

Some 706 sherds, weighing 18,933g, from the evaluation (and one excavation context [23/637]) have yet to be ascribed a phase and integrated with the main excavation data. The material spans at least the 17th to early 20th centuries and shows a similar range of wares to those already noted. Some of the material is from modern overburden (Phase 7) and includes a number of ginger beer bottles with maker's stamps (eg. BONNER ROTHERHITHE, WOLLAND BERMONDSEY and H. CLARKE & Co CHISWICK).

3.1.1 Potential for Analysis

Overall the assemblage has mixed potential for further work. There are no particularly large well sealed groups and residuality is common. The wares represented are also already well known/common and principally consist of industrially produced ceramics of the 19th century. As such the assemblage does not hold any potential to further our knowledge of the wares/fabrics themselves. There is considered to be more potential for the assemblage to give a broad overview of the ceramics in use though this varies with phase.

The few abraded sherds of Roman, medieval and Transitional pottery are not considered to hold any potential beyond demonstrating small-scale activity in the area as the numbers are too small and residuality too high. The early post-medieval assemblage (Phase 3) is of slightly more interest in that it clearly demonstrates material being brought out of the urban area for manuring of cultivated land on the city fringe. This appears to have been mainly during the 17th to early 18th centuries though some activity may have continued throughout the 18th century. The ceramics, although helping to date individual features to this 'agricultural' phase, are too small and abraded to warrant any further detailed study though a summary of them should be included in the final report.

The Phase 4 assemblage is considered to hold more potential as it will help shed light on the nature and status of the first domestic occupation at the site, particularly for the earlier part of the 19th century. Residual material in these groups is generally easily isolated though some wares, such as the late tin-glazed material, will need to be individually assessed for abrasion to be more certain. Intrusive material is a little more problematic but in most instances can be isolated. As such although a general overview of the assemblage is worth giving, only the most secure deposits will be described in any detail. The study of 19th- century assemblages has lagged well behind those of the earlier periods though this is now changing (Hughes 1992; Webber 1991 and Whittingham 2004). The study of such assemblages from different parts of the City will be crucial in understanding the material culture of this period and how it may vary with area and social status. Broader patterns of changing refuse disposal can also be studied, particularly in conjunction with historical sources (Jefferies 2006). The current Phase 4 assemblage is considered to have some potential to add to this growing corpus of data and specifically, the range of wares in use in

Bermondsey at this time. The value of the Phase 4 assemblage will be greatly enhanced if historical work is undertaken on the social setting of the site at this time as part of the general site analysis.

The assemblage from Phase 5 is considered to hold less potential for further analysis. The fact that a large part of the material cannot definitely be sourced as coming from the tannery – much of probably coming from nearby domestic middens/refuse - significantly decreases its value. Despite this, amidst the large quantity of residual material, there is the notable increase of different coarseware forms which undoubtedly reflect tannery useage. These are worth considering separate from the residual domestic refuse in order to begin to formulate the range of coarseware vessels that may have been in use at such a site.

The material from Phases 6 and 7 is too mixed, containing large quantities of residual material, to warrant further analysis. The wares are well represented in the earlier stratified deposits and only occasional vessels, such as the water filter, merit mentioning in the final report.

3.1.2 Further Work

The majority of basic analysis has been undertaken at the assessment stage. The further work required will help refine dating and demonstrate the general nature of the assemblages in both choice of wares, vessel function and disposal. It is hoped that historical work carried out as part of the general post-excavation analysis program will shed light on the social status of the 19th- century occupation thus allowing the ceramic assemblage to be linked more closely with the society that used it. A report will be prepared for publication. This will be in two parts. The first will provide text for the publication site narrative on the best ceramic groups as well as a select number which are important for the dating of crucial features. This element of the report will also include some vessels for illustration (up to 25-30 to draw/photograph). The second part of the report will give a broad site overview of the assemblage by period concentrating on Phases 4 and 5. The range of wares and forms will be given for each phase along with quantifications at a general level. Other published 19th- century groups from the City will be compared to the current assemblage in order to set it in its wider context. A number of tasks are still to be undertaken:

> ***NB*** *– prior to any further ceramic analysis the following would be needed from AOC: a final decision on phases of contexts, phasing of the evaluation contexts (if AOC wish this assemblage to be brought into play), a list of key contexts which the author requires some narrative on the ceramics any historical data regarding status and site plans showing relation of structures to pits etc*

Tasks

1. Go through pot excel amending phases/adding eval phasing and recalculate all totals – 1 day
2. Check a few minor fabric/forms at MoLAS – 1 day, travel and ½ day fee for MoLAS
3. Amend archive and do fabric table – 1 day
4. Trying to refine dating on maker's marks – ½ day
5. Write brief narratives for key contexts for site description & select items for illustration – 1.5 days
6. Write summary overview of assemblage by period – outlining fabrics, forms, status – 2 days

Total: 7 days

The Ceramic Building Materials by Sarah Porteus

Introduction

A total of 2507 fragments of ceramic building material (CBM) with a total weight of 583.708Kg were examined. In addition mortar samples, plaster and render weighing a total of 21.586Kg were also examined. Any pottery found within the assemblage was noted and passed to the pottery specialist. The material is predominantly of post-medieval date, with a small amount of medieval material and three fragments of Roman CBM. The quantity of material is given in table 2 and a full quantification by context is available in the archive.

Material	Count	Weight (g)	% of total CBM weight
Roman CBM	4	552	<1
Medieval CBM	46	4485	<1
Late medieval early Post-medieval CBM	365	15305	3
Post-Medieval CBM	2092	563366	96
Total CBM	2507	583708	
Mortar, render, plaster	847	21586	N/A

Table 2. Quantification of material examined.

Methodology

The CBM has been recorded on a recording form based upon that of the Museum of London (MoL) and quantified by fabric, form, weight and fragment count. Fabrics have been identified with the aid of a X10 binocular microscope and cross referenced with the MoL building materials database where possible. The data has been entered onto an Excel database. Fabric samples and items of interest have been retained; the majority of the material, approximately 90% has been discarded.

The Fabrics and Forms

Roman

Fabric: MoL 2452 near 2459

Contexts: 197, 23/055, 23/669, 23/762

A small quantity of Roman and possibly Roman, material was identified within the assemblage (table 3). All the Roman material is of a soft brown fabric MoL 2452 near 2459 with a probable date of AD50 to 160. An abraded fragment of flue tile with combed keying and remains of a square vent from context 23/669 is possibly residual as medieval peg tile was found within the same context. A single fragment of possible tessera from context 23/055 has not been positively identified. A flake from context 197 and a piece of tile from context 23/762 may also be of Roman date.

Form	Count	Weight (g)
Roman tessera?	1	24
Roman flue tile	1	176
tile	2	15

Table 3. Breakdown of Roman CBM by form

3.1.2.1.1.1.1 Medieval

Fabrics: MoL2587, 2504, 3031

Contexts: 19/010, 23/026, 23/033, 23/046, 23/055, 23/074, 23/079, 23/113, 23/121, 23/210, 23/236, 23/401, 23/419, 23/482, 23/676, 23/669, 23/871, 23/892.

Medieval brick, peg tile and floor tile were all represented within the assemblage (table 4) and are almost entirely residual with the exception of peg tile from context 23/669. Medieval brick is represented by Flemish-type fabric 3031, the bricks appear to have been cut down from original size to imitate 'Clinker' bricks (see below). Unglazed Flemish floor tile from context 23/236 in calcareous fabric 2504, had an abraded upper surface and chamfered edge with a thickness of 33mm. The medieval peg tile was represented by fabric 2587.

Form	Count	Weight (g)	MoL Fabrics	Date
Medieval peg tile	35	539	2587	1240-1450
Medieval floor tile	1	352	2504	1300-1550
Medieval brick	5	936	3031	1350-1450

Table 4. Breakdown of Medieval CBM by form

Late Medieval to early post-medieval

Fabric: MoL3033, 3065

Contexts: 23/012, 23/014, 23/022, 23/024, 23/026, 23/034, 23/056, 23/066, 23/067, 23/071, 23/074, 23/077, 23/312.

Brick in orange 'Tudor' fabric 3033 represents a late medieval or early post-medieval phase. These are found in London from the late 15th century to the late 17th century; some contain clay pipes which dates them to the late 16th or 17th centuries. The bricks were most likely made using clay from a local brickfield. In the 13 contexts listed above the brick type corresponds roughly with phase 3, post-medieval, pre tannery phase. Where occurring in other contexts, it is likely the brick is reused or residual. Brick in fabric 3065, a local variant of the 'Tudor' brick was identified reused in five contexts.

Post-medieval

A wide range of post-medieval CBM forms were recovered from site and are summarised in table 5.

Form	Count	Weight (g)	Fabrics
Post-medieval peg tile	86	5092	
Post-medieval pantile and nibbed pantile	584	35469	
Post-medieval flanged tile	31	2204	
Post-medieval tile	273	3924	
Post-medieval chimney pot	14	1625	
Post-medieval wall tile	14	1041	
Post-medieval brick	1076	500510	
Post-medieval floor tile	4	9160	
Post-medieval pipe	9	3341	
Post-medieval tile edging	1	600	

Table 5. Breakdown of post-medieval CBM by form

Post-medieval to Modern brick

Fabrics: MoL3031, 3032, 3033, 3034, 3035, 3036, 3038, 3073, 3224. Fire brick, perforated brick, and 'B9' a brick fabric not yet numbered in the MoL series were also present.

Both early and later post-medieval bricks fabrics are present. The brick from numbered samples are summarised below in table 6. The earliest bricks present are in soft red fabric 3033 and 3065 (see above). Also early post-medieval in date are the small Dutch paving bricks 'Clinkers' which were in use in London between 1600 and 1800, these were small durable bricks sometimes laid in herringbone pattern to form a pavement (Smith 2001). In the later 17th century the red 'Tudor' bricks were replaced by

harder dark red bricks (3034) with some types containing domestic rubbish such as bone and ashes (3032). The earlier examples are unfrogged, with frogs becoming more common after c. 1750 AD. Both the reddish purple brick fabrics were made at brickfields close to London. By the end of the 18th century, yellow Kentish 'stock' bricks, fabric 3035, were in use. A pale coloured brick in calcareous fabric 3073 and a single brick in fine orange fabric 3224, with a broad date range of 1400 to 1900 were also present. Fabric B9 (contexts 23/220, 23/333, 23/505) is a fine sanded, unfrogged, thin, high fired brick with sharp arises in an orange fabric with abundant calcareous speckling and swirls, with sparse fine white mica and black and red iron rich inclusions and is most likely of 1700-1950 in date. Late post-medieval or modern machine made bricks were also represented by fabrics 3038, fire brick, perforated brick (see below).

'Clinker' bricks (MoL 3036)

Contexts: 23/007, 23/009, 23/118, 23/177, 23/188, 23/764, 23/892.

Partial 'clinker' bricks were identified from seven contexts. These date from between the beginning of the 17th century the end of the 19th century and were used as paving cobbles. Clinker pavements require maintenance and replacement of loose or dislodged bricks (Smith 2001), for this reason, softer paler possible medieval bricks in fabric MoL3031 from four contexts (19/010, 23/419, 23/892) appear to have been cut to size and used as floor bricks similar to the later 'clinker' bricks.

Fire Bricks

Contexts:127, 144, 160, 16/008, 23/045, 23/138, 23/160, 23/210, 23/703, 23/746, 23/791, 23/837.

Fire bricks are made to withstand very high intense heat in kilns or furnaces, the clay is found associated with coal seams and is traditionally found in parts of Wales, Stourbridge and Newcastle-upon-Tyne (see maker's marks). Fire bricks date from the early 19th century to the mid 20th century.

Perforated Brick

Contexts: 9/012, 23/099, 23/158, 23/174, 23/188, 23/190, 23/203, 23/214, 23/217, 23/221, 23/278.

Fragmentary perforated engineering bricks were present in eleven contexts. These are machine made and post 1830 in date.

Context	Sample	Fabric	Details	Date
119	19	3032	Frogged	1750-1900
120	20	3034	Frogged	1750-1900
122	18	3034	Soft. Frogged	1750-1900
124	21	3032	Frogged	1750-1900
126	16	3032	Frogged	1750-1900

127	25	fire brick	Unfrogged	1850-1950
130	17	3033	Unfrogged	1450-1700
135	12	3034	Soft, Unfrogged	1750-1900
144	22	fire brick	Unfrogged	1850-1950
146	23	3034	Unfrogged	1666-1900
149	14	3034	Frogged	1750-1900
152	13	vitrified	Unfrogged	unknown
160	15	fire brick	Unfrogged	1850-1950
178	26	3035	Frogged	1770-1940
179	27	vitrified	Frogged	unknown
180	28	3034	Soft. Frogged	1750-1900
186	24	3034	Unfrogged	1666-1900

Table 6. Numbered brick samples by context, fabric and date.

Brick Walls and Structures

The earliest structures are likely to be context 130, though re-use of the brick cannot be ruled out and appears to be the case with the brick in fabric 3065. The vast majority of walls were constructed of fabric 3032 or 3034, deep reddish purple brick types and are likely to be contemporary with the industrial tannery phase. The fire brick and fabrics MoL3035 are generally later in date range though likely to also be contemporary with the tannery. The fabric, date and context of brick from walls and structure are given in table 7.

Fabric	**Details**	**Date**	*3.1.2.1.1.1.1.1 Contexts*
3032	Unfrogged	1666-1900	124, 23/327, 23/363, 23/380, 23/496, 23/704, 23/783, 23/798, 23/836
3032	Frogged	1750-1900	119, 126, 23/496, 23/682, 23/757, 23/758
3035	Frogged	1770-1950	178, 23/328, 23/704, 23/798, 23/280, 23/687 (structure), 23/770 (structure)
3033	Unfrogged	1450-1700	130
3034	Unfrogged	1666-1900	135, 146, 180, 186, 23/032, 23/326, 23/328, 23/343, 23/354, 23/360, 23/369, 23/378, 23/425, 23/485, 23/495, 23/745, 23/759, 23/761, 23/788, 23/836. 23/485 (brickwork) 23/494 (structure), 23/688 (structure)
3034	Frogged	1750-1900	120, 122, 23/032, 23/119, 23/280, 23/354, 23/497, 23/682, 23/753, 23/376 (footing), 23/688 (structure), 23/777 (structure)
Fire brick	Unfrogged	1827-1950	127, 160, 23/837, 23/791 (structure)

Vitrified	Unfrogged	unknown	152, 179
3065	Unfrogged, indented margin	1450-1700	23/119 (reused), 23/116 (reused)

Table 7. Brick fabric from structures by context, fabric and date.

Brick Flooring

The majority of the bricks used in flooring are of fabric 3032 and 3034, the unfrogged version of this fabric has a broad date range of between 1666 and 1900, the frogged version probably dates from the latter part of the date range, between 1750 and 1900. Three floors are made of frogged bricks of MoL 3035 dating from between 1770 to 1950 and two floors contained unfrogged softer bricks of MoL3035. Two floors were constructed of heat resistant fire bricks (23/703 and 144), these bricks date from between 1827 and 1950 (see below). Context 23/118 contained a mix of 3032 and 3036 unfrogged bricks, and 23/703 contained a mix of fire brick and 3035 brick. A brick from the floor of pit A was too vitrified to permit identification of fabric type and date. The fabric, date and context of brick used in flooring is given in table 8.

Fabric	**Contexts**	**Date range**	**Details**
Fire Brick	23/703, 144	1827-1950	Unfrogged heat resistant dense bricks
3034	23/118, 23/347, 23/359, 23/370, 23/374, 23/393, 23/507, 23/644, 23/800, 23/841	1666-1900	Unfrogged bricks, some warped.
3034	23/421, 23/727, 23/841, 23/861	1750-1900	Frogged.
3032	23/370, 23/374, 23/359	1666-1900	Unfrogged
3035	23/703, 23/727, 23/756, 23/800	1770-1950	Frogged
3036	23/118	1600-1800	Unfrogged
Vitrified	23/644	Unknown	Unfrogged and abraded on upper surface.

Table 8. Brick used in flooring with date and context.

Cesspits

Cesspits had been constructed using well made frogged brick of fabric MoL3035 in context 23/300 probably of 19th or 20th century date and less well made bricks in fabric 3032 in context 23/867, dating to between 1666 and 1900.

Drainage, culverts and services

Brick culverts were mainly constructed of frogged bricks in fabrics 3035, 3032 or 3034 and probably date from between 1750 and 1940. Where unfrogged bricks were used this was usually in conjunction with frogged brick suggesting a post 1750 date. Late post-medieval or modern brick 3038 had been used in three contexts for drain, culvert and inspection chamber construction. In addition two unfrogged bricks in MoL 3033 fabric and a brick in fabric had been reused to construct culvert 23/122. It is likely all the services are of later post-medieval date with some re-use of earlier bricks. Table 9 details the fabric, context and date of brick used in drainage, culverts and services.

Fabric	*3.1.2.1.1.1.1.2 Contexts*	**Date range**	**Details**
3033	23/122	1450-1700	Reused. Unfrogged. Culvert.
3032	23/395, 23/064,23/122	1666-1900	Unfrogged. Drain sluice, soakaway, culvert
3032	23/395, 23/751, 23/062, 23/484	1750-1900	Frogged. Drain sluice, Inspection Chamber, soak away, pipe chamber.
3034	23/486, 23/325, 23/062	1666-1900	Unfrogged. Culvert, drain, soakaway
3034	149, 23/486, 23/489, 23/747, 23/751, 23/064	1750-1900	Frogged. Culvert, drain, inspection chamber, soakaway.
3035	23/687, 23/122, 23/747, 23/303, 23/705	1770-1940	Frogged. Drain, culvert.
3038	23/700,23/760	1850-1950	Frogged, machine made. Drain, culvert and inspection chamber.

Table 9. brick used in drain and service construction with date and context

Brick dimensions

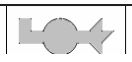
Average dimensions of the bricks by fabric type were calculated where complete bricks were present (table 10).

Fabric	Count	Ave. length (mm)	Ave. Breadth (mm)	Ave. thickness (mm)
3031	1	105+	67+	45.00
3032	32	224.91	100.03	63.51
3033	2	226.50	106.00	54.00
3034	82	216.93	97.50	61.80
3035	28	229.96	107.14	65.03
3036	2	133+	91.00	51.50
3038	5	228.2	116.80	70.00
3065	2	200	102.50	55.00
3224	1	200+	110.00	47.00
Fire brick	9	231.33	111.77	65.66

Table 10. Average brick dimensions by fabric type.

Maker's Marks

Maker's marks (table 11) are often found either stamped onto the surface of the brick or formed from a stamp set on the 'kick' for making the frog of a brick. Bricks from contexts 178, 180 and 23/687 had illegible maker's marks. At the assessment stage the location and maker of origin of most of the stamped bricks is unknown, however the origin of the fire brick maker's can be identified. The 'Hickman' and 'Rufford' works are both based in Stourbridge in the Midlands, and the 'Ramsay' brickworks were based in Newcastle-Upon-Tyne and operational between 1789 and 1925 (Gurke 1987). The Stourbridge examples were most likely transported to London by rail and post-date the mid 19th century construction of the railways. The Newcastle 'Ramsay bricks may have been transported down the east coast and to London by sea and may potentially have arrived at an earlier date.

Brick fabric	Maker's Mark	Context
V		14/005
3035	'….B'	23/158, 23/099
3035	'BE..'	23/687
Fire brick	'HICKMAN STOURBRIDGE'	23/210
3032	'L'	23/757

3034	'L'	23/279, 23/682, 23/777
3035	'L'	23/122
3035	'H S'	23/328
3032		23/484, 23/122
Fire brick	'RUFFORD STOURBRIDGE'	23/703
3035	←→	23/703
Fire brick	'GREEN & BROUGH'	23/791
3032	'G.W.'	23/758
Fire brick	'RAMSAY'	23/837, 23/703
Fire brick	'E&M'	127, 23/791
3035	'C'	23/704
3032	'S'	23/783

Table 11. Maker's marks on bricks with context and fabric.

Roofing Tile

Pantile

Contexts: see archive table for individual contexts.

Fabrics:MoL 2275, 3202, 3203, 3225, near 2586, near2587, T11.

Post medieval nibbed pantile was present within the sample. Some of the nibbed pantile had a small circular peg hole below the nib. Pantile is in use in London from around 1630 onwards. The fabric of some pantiles was similar to that of the peg tile fabrics 2586 and 2587. A single fragment of black glazed pantile was present in context 23/091, in a fabric similar to 3225, this type of tile is usually found in the Norfolk area and dates to around 1720 to 1740 (Clifton-Taylor 1987). Fabric T11 is a 20th century peg tile fabric from context 23/006, The fabric is pinkish red and mottled with abundant coarse quartz and moderate coarse black and red iron rich inclusions.

Peg tile

Contexts: see archive for individual contexts.

Fabrics:MoL 2276, 2586, 2587, 3094, near2275, near3202.

Post medieval peg tile was identified with both circular and squared peg holes. Some of the peg tile fabrics were similar to those of the pantile fabrics 2275 and 3202. An accurate date could not be assigned for the fabric types which change little from the medieval period onwards though the form of the peg tile and regular fine sanding suggests a date between the 17th and 19th century.

Flanged Tile

Contexts: 23/007, 23/160, 23/188, 23/190, 23/203, 23/214, 23/217, 23/278, 23/405.

Fragments of machine made flanged tile were present in nine contexts, most of the tile was completely vitrified. The exact function of the tiles is unknown though it is possible they are a modern pantile type of late 19th or early 20th century date.

Wall tile

Contexts: 23/160, 23/258, 23/154, 23/288, 23/405, 23/676.

A single fragment of tin-glazed delft ware tile was present in context 23/160, the backfill of a tanning pit. The tile pictures a Dutch coastal scene with part of a boat with castle or house and spider's head corners. The tile is believed to be Dutch in origin and dates to the 1800's. These tiles are generally used in high status buildings.

All other wall tile appeared to be of later porcelain, mostly modern with the possible exception of a transfer printed black and white tile from context 23/258 which may date to the late 1800's.

Chimney Pot

Contexts: 23/138, 23/158, 23/160, 23/217, 23/236.

Fabric: near 2275, near 3203

Probable fragments of chimney pot were recovered from five contexts.

Decorative Edging

A single piece of decorative path edging with interlinking pattern along the top edge was recovered from context 3/002. The piece had a reduced core and was under fired leaving it soft and prone to weathering and probably dates to the 19th or 20th century.

Pipe

Contexts: 19/010, 23/022, 23/428

Pipe with some brown salt glaze were recovered from three contexts and are most likely 19th century in date.

Floor tile

Context: 23/704, 23/147, 23/889, 8/007

Fabrics: MoL 3063L, 2318L, FT2

Unglazed silty Flemish floor tile fragments in fabric 3063L and 2318L were present in context 23/147, and 23/889, 8/007 and are thought to date from 1600 to1800. A heavy industrial machine made floor tile of fabric FT2 measuring 313mm square by 48mm thick was recovered from context 23/704 and is most likely late 19th or 20th century in date.

Vitrified Material

Contexts: 152, 179, 9/010, 9/012, 9/014, 9/016, 14/005, 19/010, 20/002, 23/007, 23/008, 23/014, 23/045, 23/046, 23/098, 23/099, 23/012, 23/143, 23/147, 23/160, 23/164, 23/165, 23/174, 23/188, 23/190, 23/191, 23/203, 23/210, 23/214, 23/217, 23/220, 23/221, 23/231, 23/236, 23/238, 23/253, 23/278, 23/333, 23/334, 23/387, 23/482.

A large amount of totally vitrified post-medieval roof tile and brick was present within the assemblage (table 12) with 41 contexts containing some vitrified material. The CBM had become vitrified post-firing in a high temperature event; in some cases iron had melted onto the surface of the fragment. The material may have originated from a furnace associated with the tannery process or resulted from bomb damage during the Second World War. The vitrified nature of the material prevents identification of fabric, only the form of the material can be identified.

Form	Count	Weight (g)
Brick	74	14958
Flanged tile	29	2059
Pantile	344	14909
Peg tile	10	336
Tile	36	524
Total	493	32786

Table 12. Breakdown of vitrified material by form

Mortar, Render and Plaster

Mortar from the site could be broadly classified into loose sandy lime mortar, sandy mortars and concrete mortars. There is some variation within the groups though these may be due to varying proportions of additives within a batch of mortar. In general the loose lime mortar is the earliest with the harder sandy version being slightly later and the concrete mortar being of modern date, though accurate dating is not possible. Some fragments of render and plaster were recovered, these were small

fragments and generally undiagnostic in appearance. Table 13 shows the weight and count of mortar and render recovered.

Material	*3.1.2.1.1.1.1.3 Count*	**Weight (g)**
mortar	525	14398
Possible render	314	7092
plaster	8	96
Total	847	21586

Table 13. Quantity of mortar, plaster and possible render.

Summary

Most of the building material on site can be dated to the post-medieval period. A small amount of Roman building material was identified and had been recovered from within a ditch. The medieval material is mostly abraded and may have been reused as replacement 'Clinker' bricks or introduced to the site from the local area. Three possible phases of construction are suggested by the brick samples. A possible early post medieval building phase may be represented by material in fabric 3033. The majority of the material is brick in the slightly later dated dark reddish purple fabric 3032 and 3034 (both frogged and unfrogged). A small amount of brick in fabric 3035, perforated brick and fire brick are also represented and may be contemporary with the later date of the 3032 brick. Modern building is represented by modern brick 3038 and wall tile. Evidence of a possible high status building was present in the form of a single tin-glazed delft ware wall tile.

Material for Illustration

The tin-glazed wall tile from context 23/160, the decorative path edging from context 3/002, eight good examples of brick maker's marks (two from 23/791, 23/758, two from 23/703, 23/484, 23/878, 23/210), the combed flue tile from context 23/669 and possibly the post-medieval flanged tile from context 23/160 are all recommended for illustration in the publication.

Analysis of potential

The ceramic building material provides broad dating evidence for the features in which it occurs.

The brick samples suggest three probable post-medieval building phases on site: an early post-medieval phase pre 1700, a later post-medieval phase 1700-1900 and a modern phase.

Significance of the data

National and international

The assemblage is not of national or international significance.

Regional and local

The assemblage is of local significance as it provides evidence for the post-medieval industrial history of Bermondsey.

Further work required

Publication

1. Combine building materials and stratigraphic data and analyse. Specialist time = 2 person days.

2. Write publication text. Specialist time = 2 person days.

Total building materials specialist time = 4 person days.

Preparation for deposition of the archive

The building materials should be re-boxed in stable cardboard boxes to meet the requirements of the museum store in which it is to be deposited. The tin glazed wall tile should be given an accession number.

Conservation requirements

None.

Tobacco Pipes by Elke Raemen

Introduction

The archaeological work produced an assemblage of 944 clay tobacco pipe fragments (wt 3592g) from 123 individually numbered contexts. The majority of these consist of stem fragments, with a further 197 bowls and bowl fragments. As can be expected, most pieces date to the 19th century though pieces from as early as the first half of the 17th century were also recovered. Often however, earlier fragments prove to be residual. Fragments were mainly located in pits, ditches and deposit layers. Close to a hundred pieces were recovered from features identified as tanning pits or possible tanning pits.
In addition to these clay tobacco pipes, two wooden pipes (RF <233> and <271>) (wt 37g) and a bakelite mouthpiece fragment (wt 3g) were also recovered.

All tobacco pipe fragments have been recorded in full on pro forma sheets for archive. Where they were decorated or showed maker's marks they were assigned an individual registered finds number (RF <00>). In order not to split them from their functional type, these have been recorded together with the bulk tobacco pipe fragments rather then on individual record sheets.

Overview of the Assemblage

Clay Tobacco Pipes

Stem Fragments

The majority of stem fragments are undecorated. The earliest pieces date to the first half of the 17th century and are all residual (i.e. quarrying pit [23/016] (fill [23/011]), ditch [23/075] (fill [23/074]). Fragments of all periods through to the 19th century are represented.

Decorated stem fragments (seven in total) are all of 19th-century date. Decoration invariably consists of leaf or floral decorative motifs. A piece from brick culvert [23/747] (fill [23/746]) exhibits a collar shaped like a doublet with two belts going across. The fragment dates to the second half of the 19th century and is likely to form the start of a figure-head bowl.

A total of 17 mouthpieces was recovered. The earliest of these were located in quarrying pit [23/016] (fill [23/011]) and pit [23/890] (fill [23/889]), with the former dating to the first half of the 17th century and the latter dating to the second half of the same century. All others are of mid 18th- to 19th-century

date. Mouthpieces are usually fairly crude. However, in three cases the mouthpiece was collared; two of these belong to a complete clay pipe (RF <107> and <186>).

The largest group of stem fragments was recovered from pit [23/427] (fill [23/426]), which contained 66 fragments, including 2 mouthpieces. The group dates to the mid 18th to 19th century.

Bowls

Bowls were where possible classified according to the typology by Atkinson and Oswald (1969). The earliest bowls date to the mid 17th to early 18th century and include Type 15, 18, 19, 20 and 21, as well as bowls closely resembling these types or forming an intermediate type between established types. The most common form is the "briar"-type (type 30). Cesspit [23/293] contained the largest group of bowls, with 45 examples, most of which are complete and dating to the second half of the 19th century.

A total of 86 bowls and bowl fragments exhibit some form of decoration. The most common and popular decorated type is the plain bowl with leaf or oak leaf decoration along the seams. The earliest of these date to the late 18th century. Over 20 different types of decoration were identified. Included is an incomplete bowl (RF <108>) with a moulded military figure on the side of the bowl and with a seated Britannia on the reverse (partially missing). The military figure probably represents Nelson or Wellington. The pipe itself dates to the 1820s to 1830s. Although the heel exhibits the maker's marks "EL", these can not be identified with a maker of this period. Other fragments include two RAOB (Royal Antideluvian Order of Buffalo's) bowls, both of mid 19th- to early 20th- century date (RF <183> and <224>), rose and thistle decorated bowls (i.e. RF <152>) and bowls in the shape of an acorn (i.e. RF <156>). Figure-heads were represented as well. RF <103>, recovered from brick chamber floor [23/211] (fill [23/210]), consists of a three-piece mould figure-head of a very detailed female bust with lace veil. The piece is a French import, made for the British market, and possibly representing Queen Alexandra. The two-piece moulded head of a Turk (RF <150>) was located in cesspit [23/293] ([23/292]). Another two-piece mould pipe fragment was recovered from tanning pit [23/768] (fill [23/774]) and consists of a partial Negro-head (RF <273>; often used to advertise tobacco). All are of late 19th- to early 20th-century date. RF <158> consists of a bowl with the contours of the Crystal Palace moulded around it. The piece was again recovered from cesspit [23/293] ([23/292]). A stamp on the stem refers to W. Williams, who worked in Kent Street up to 1864 (Oswald 1975), dating the clay tobacco pipe between 1851 and 1864.

Maker's Marks

A total of 86 clay tobacco pipe fragments exhibit maker's marks. Usually they can not be attributed to an individual maker, as for most initials there are multiple possible makers for each period. Often the maker's marks consist of only a moulded symbol on the spur or heel, such as a flower (i.e. RF <201>), a lyre (i.e. RF <130>) or fleur-de-lis (RF <222>). Most of the makers are likely to work locally. A total of three pipe fragments are with certainty from James Critchfield, who was working in Bermondsey between 1828 and 1894 (Oswald 1975). RF <198> exhibits both the maker's initials "JC" on the heel and a stamp on the stem reading "CRITCHFIELD" with "SOUTHWARK" on the reverse. Identical pipes RF <138> and <139> from cesspit [23/293] (fill [23/292]) both exhibit a stamp on the bowl with "J. CRITCHFIELD" in a decorative circle and the initials "JC" on the heel. A further seven bowls show the maker's makers "IC" on the heel and could also have been the work of James Critchfield.

The only other maker who can be identified with certainty is William Williams from Kent Street, where he worked between 1823 and 1864 (Oswald 1975). A clay tobacco pipe stem fragment (RF <166>) and the bowl mentioned above (RF <158>) can both be attributed to him.

Other Materials

A complete wooden pipe (RF <233>) with only its mouthpiece (which would have been in a different material) missing, was recovered from tanning pit [23/157] (fill [23/154]). The piece dates to the later 19th to early 20th century and retains traces of the copper alloy ferrule connecting the mouthpiece. An illegible gilt stamp is visible under the stem.

A second, plain wooden bowl (RF <271>), dating to the early 20th century, was recovered from brick culvert [23/747] (fill [23/746]). The same context also contained a partial bakelite mouthpiece.

Significance and Potential

Tobacco pipe fragments recovered from features relating to the tannery are usually from fills originating during the abandonment rather than operation of the tannery. As is apparent from pottery, glass as well as the clay tobacco pipes from this assemblage, the fill of these features contains a mixture of material, often including a high proportion of residual finds. This high level of residuality implies that the origin of the fill can not with certainty be identified as tannery-related, domestic or even off-site material. Any material from these contexts is therefore of limited significance. Assemblages from the few tanning pit fills contemporary with the tannery i.e. [23/252] and [23/505] however, as well as 'domestic' features such as cesspit [23/293] are of more interest as they shed light on the material culture of the residents of Bermondsey. The latter feature is of particular interest as the unusually large bowl assemblage may have

originated from the local public house or alternatively from a cesspit used by the workers from the tannery.

The current assemblage will add to the growing database of 19th-century assemblages from the capital. Its importance however will be greatly enhanced if historical work can tie these features in with the location of the 19th-century houses, the public house and the tannery, particularly if individual households can be identified.

Methodology for Further Work

All tobacco pipe fragments have been recorded in full on pro forma sheets for archive. It is recommended a brief summary of the general assemblage is given, followed by a more detailed overview of the assemblages from sealed contexts. The latter should be accompanied by a catalogue including the maker's marks, stamps and decoration descriptions. In addition, the tobacco pipes from sealed contexts should be looked at in the larger context of the site. This will include a spatial analysis based on the attribution of contexts to domestic, tannery or other commercial features and a discussion of any possible differentiations between these various assemblages.

Comparison will be made with the few accessible and similar assemblages available from London and the South East i.e. Ropetackle, Shoreham. Between five and eight bowls are recommended for (photographic) illustration.

Further Work: 4 days.

The Glass by Elke Raemen

Introduction

A medium-sized assemblage of 2032 pieces, weighing 23920g, was recovered from 116 different contexts. This includes both hand-collected glass and glass from environmental residues. The latter however often consists of small, undiagnostic chips. Both vessel and window glass were present. The earliest pieces date to the 17th to early 18th century and consist of window glass. The earliest vessel glass consists of wine bottles (mid 17th to 18th century). Other 17th- to 18th- century vessel glass is undiagnostic of form. The majority of the assemblage is of 19th-century date.

Bottles

Wine Bottles

A total of 123 wine bottle fragments representing a minimum number of 81 bottles was recovered during the excavations. Three different contexts (i.e. ditch [23/027] (fill [23/026]), ditch [23/675] ([23/676])) contain seven fragments dating to the mid 17th to 18th century. Pieces are fairly small and undiagnostic. A further 33 fragments date to the 18th to mid 19th century, with sherds of 19th- to mid 20th-century date dominating the assemblage. An oval seal with the embossing "HAUT SAUTERNE" was recovered from cesspit [23/293].

Beer Bottles

A total of 22 definite beer bottle fragments was recovered, all dating to the 19th to mid 20th century. The pieces represent a minimum of 14 individual bottles from nine different contexts. Most are in green glass, although amber fragments are present as well. The only embossed examples were recovered from tanning pit [8/010] (fill [8/007]). Two have "BONNERS ROTHERHIDE" embossed across the body. This probably refers to Samuel Bonner who worked in Bermondsey, Rotherhithe as a mineral water maker in the late 19th century (1891 census). Bonner & co worked up to ca. 1902/03 at Dodd's Place.
A third bottle fragment contains the partial embossing "(…)GE(…)" "BOTT[LE]".

Wine/Beer Bottles

A number of fragments can not be identified as either wine or beer bottle sherds, as they are too small to be diagnostic. These include 70 fragments from 14 different contexts, representing a minimum number of 32 bottles. All are of 19th- to early 20th-century date.

Spirit Bottles

Liquor bottle fragments were recovered from two individually numbered contexts (i.e. pit [23/237], fill [23/236] and cesspit [23/293], fill [23/292]). Seven pieces were recovered representing four different vessels. Of interest is the fragment of an oval, aqua bottle (cesspit [23/293], fill [23/292]) containing a seal with "W. ROBBINS WINE&SPIRIT MERCHANT THE CROWN SPA ROAD BERMONDSEY" in relief. The same context also contained the fragment of a pistol-shaped bottle, which may have contained liquor as well.

Mineral Water Bottles

A total of 87 pieces can be identified as mineral water bottles. These were recovered from 31 different contexts and represent a minimum of 54 individual vessels. Only four of these are complete. Included are Hamilton bottles (5), codd bottles (10), plain cylindrical vessels as well as a large number of fragments undiagnostic of form. A few codd bottle marbles were recovered as well (i.e. tanning pits [23/162] (fill [23/160]) and [23/192] (fill [23/190])).
Maker's names, often only partially surviving, were found on 13 individual bottles. Represented examples include Bonner (Rotherhithe), the Pure Water Co. Ltd. (working in Battersea (Queens Road) during the late 19th to early 20th century) and Western & Wolland (working in Bermondsey during the late 19th century (Grange Walk & Grange Road) and possibly into the 20th century).

Medicine Bottles

Medicine bottles are not easily distinguishable from household or toiletry bottles unless they contain embossed information or spoon measurements. Only two bottle fragments with spoon measurements were recovered from the site. One of these is hexagonal (cesspit [23/293]) whilst the second example is from a panelled bottle (pit [3/003] fill [3/002]).

"Quack" medicines are represented by a green glass fragment from a 19th-century rectangular panelled Daffy's elixir bottle from cesspit [23/293].

Bottle Stoppers

Four bottle stoppers (i.e. well [23/335] fill [23/333], brick culvert [23/747] fill [23/746]) were recovered, all in clear glass. All date between the mid 19th to mid 20th century. These may have been for bottles for a wide range of liquids, including sauces and toiletries.

Miscellaneous Bottles

A total of 78 pale green to green fragments belonging to a large bulbeous flask were recovered. Represented are four vessels from four different contexts (i.e. drain [23/080] fill [23/079], pit [23/420] fill [23/419]). They are reminiscent of large distillery bottles. These date to the 19th to early 20th century.

Inkbottles were represented as well, with five in total, and including a barrel-shaped example from tanning pit [23/131] (fill [23/142]). All date between the mid 19th and mid 20th century. Perfume bottles were recovered as well. Most of these date to the 20th century. A complete clear example with a four-lobed section may be of 19th- century date (pit [23/317] fill [23/316]). Two kobold blue poison bottle fragments were recovered from tanning pit [23/503] (fill [23/008]) and [23/001].

A large number of fragments are from bottles with a multitude of purposes, including toiletries, household products and sauces. These bottles are too undiagnostic to establish their previous content. Various shapes and colours are represented, including cylindrical, rectangular, hexagonal and panelled bottles in aqua, clear, pale blue and pale green glass. Dates range between the 19th and early 20th century.

Drinking Vessels

Drinking vessels recovered include liquor glasses (a minimum of nine glasses, all from cesspit [23/293]), wine glasses (i.e. tanning pit [23/131] fill [23/142]) and a tumbler (cesspit [23/293]. A teacup handle was also recovered from cesspit [23/293].

Other Vessels

Bowl fragments (i.e. deposit [23/001]), a goblet fragment (cesspit [23/293]), jars (including "Hayward's Military Pickle" from structure [23/184] (fill [23/179])), jar stoppers (i.e. [23/637]) and meat paste jars were recovered as well. Some thin opaque white fragments may have formed part of vases.

Window and Floor Glass

The earliest window glass fragment is of early post-medieval date and consists of a clear glass fragment with two painted red bands. The piece was recovered from [19/010] and is residual. Other early window glass fragments date to the 17th to 18th century (i.e. ditch [23/027] fill [23/026]). Most however are of 19th- to 20th- century date. Included are clear, pale blue, pale green and pale yellow fragments, ranging in thickness between 0.75 and 7.3mm. Glass with one ribbed surface is fairly common in the late 19th- to early 20th-century assemblage.

An aqua glass panel (27mm thick) from tanning pit [23/232] (fill [23/233]) is likely to represent a floor fragment from a cellar lightwell. The piece dates to the late 19th to mid 20th century.

Miscellaneous Glass Objects

Roughly cut, round, flat, clear glass fragments (di. 28 to 32mm) may have been lenses for glasses. Tanning pit [23/503] (fill [23/006]) and cesspit [23/293] (fill [23/292]) both contained one of these.

Possible funnels and funnel fragments (minimum number of four individuals) were recovered from brick culvert [23/747] (fill [23/746]). All are in clear glass and date to the mid 19th to 20th century. Two of these consist of a complete, phial-like funnel. A minimum of 10 hollow pipes was recovered as well. Most are in clear glass, although [14/004] contained pale green glass fragments. Diameters range between 10 and 50mm. Only one example, from [14/004] is complete. Funnels and tubes may form distillery or laboratory equipment.

An unidentified glass fragment (pit [3/003] fill [3/002]), dating to the late 19th to 20th century, may have formed part of a clear glass candle holder.

Two glass marbles, toys rather then codd bottle marbles, were recovered from cesspit [23/293].

In addition, a large amount of glass waste was recovered, especially from tanning pit [23/240] (fill [23/238]) which contained 113 pieces. These represent burnt glass vessels and window glass rather then glass working waste.

Significance and Potential

As with the clay tobacco pipe, only a small amount of glass is from primary contexts. Key assemblages will have a greatly increased potential if they can be attributed to either the tannery, domestic areas or the public house. By far the best group was recovered from cesspit [23/293]. The origins of the dumped material from this context should be established as the relatively large amount of drinking vessels as well as complete clay tobacco pipe bowls may indicate it comes from the public house. However, this needs to be corroborated by the historical evidence as it clearly does not form the main dump.

The purpose and origin of the funnel and tube fragments, the majority of which were recovered from brick culvert [23/747] (pottery date: 1890-1920/40), needs to be established as they may be related to on-site activities.

Methodology for Further Work

All glass has been recorded in full on pro forma sheets for archive. It is proposed to include a cursory overview of all glass, mainly to summarize the range of vessels present and to catalogue the few makers represented. This will be followed by an overview of the assemblage from key contexts, subdivided by domestic, tannery and other origin. A brief discussion of the differentiation between these groups will also be included. Comparison to assemblages from other sites is deemed to be superfluous, as the assemblage is of fairly poor quality. However, if cesspit [23/293] proves to be from the public house, it is recommended to compare the assemblage as a whole, including other material, with other, similar assemblages. Parallels should be sought for the funnel and tube fragments in order to establish whether their presence is related to activities on the site. A maximum of five pieces are recommended for illustration.

Further work: 3 days.

The Leather Waste by Elke Raemen

Introduction and Overview of the Assemblage

A small assemblage of 433 leather fragments (wt 8338g) was recovered from 31 individually numbered contexts. The majority of these are dry (310), with the remaining 123 pieces in waterlogged condition. Most were located in the fill of tanning pits.

The pieces mainly consist of waste without any cut marks. Off-cuts with straight or concave edges were recovered, as well as a few thin strips (i.e. tanning pit [23/251] fill [23/252]; tanning pit [23/768] fill [23/774]) and triangular scraps (i.e. tanning pit [23/251] fill [23/252]). Tanning pit [23/140] (fill [23/279]) contained a large piece of leather from which various irregular shapes had been cut.

A single thin and regular strip from tanning pit [23/192] (fill [23/190]) probably represents a shoe lace. Two pieces located in tanning pit [23/481] (fill [23/482]) show some grain/flesh stitching. They are however too small and lacking in diagnostic features to attribute them to any type of object.

All off-cuts and leather fragments are likely to represent secondary rather then primary waste. Some of the thin strip fragments may represent tertiary waste. The largest groups were located in tanning pit [23/192] (fill [23/190]) and tanning pit [23/481] (fill [23/482]), each containing 54 pieces.

Significance and Potential

The vast majority of pieces were recovered from the fill of tanning pits. However, in almost every case the fill dates to the abandonment phase of the tannery (i.e. phase 5). Furthermore, some of these fills also contain shoes (i.e. tanning pit [23/503] (fill [23/008]) and may therefore have originated from domestic contexts. The mixed nature of these fills dating to the abandonment means that, although most leather is likely to represent waste originated during the working life of the tannery, this can not be ascertained for every piece. Only four features contain fills currently attributed to phase 4. However, none of these features is closely dated (i.e. pit [23/048] fill [23/046]; tanning pit [23/251] fill [23/252]) and tanning pit [23/502]F (fill [23/418]) does not contain any material dating evidence at all.

The majority (360) of the leather assemblage consists of pieces of waste not exhibiting any cut marks. Furthermore, none of them originate from well-dated, sealed contexts. They do however suggest some secondary leatherworking went on near or on the site. As such it is recommended to include only a brief summary in the report for publication. It is proposed to identify the species of a small sample of the leatherwork, in order to establish the main species used at this particular tannery.

Methodology for Further Work

All leatherwork has been recorded on pro forma sheets for archive during the assessment. It is proposed to include a concise overview of the assemblage as well as to undertake the identification of a small sample of the leatherwork, focussing on primary contexts. No illustrations are recommended.

Further Work: 2 days

Leather Objects by Elke Raemen

Introduction

All leather objects have been assigned a unique Registered Finds number (RF <00>) and were recorded individually on pro forma sheets for archive. A total of 19 objects, including shoes, bag and strap fragments are represented. Two further shoes have not been included as they are of 20th- century date (i.e. [19/009]).

Overview of the Assemblage

The Shoes

All 14 registered shoe fragments are of 19th- century date. Of these, the majority are men's shoes or boots. Included are three complete or near complete ankle boots, consisting of two laced and one slip-on boot (RF <241>). A further four soles and sole fragments were recovered including a large example (L290mm) with a maker's stamp under the base, consisting of a circle with seven concentric grooves around it (RF <243>). Upper fragments were recovered as well (RF <252>). Three left and three right shoes were identified. All others are undiagnostic.

A lady's boot or shoe heel and sole fragment (left) was recovered from tanning-pit [23/503]E (fill [23/008]; RF <240>). Another sole fragment (RF <256>) and part of the upper from a lady's boot (RF <247>) were also recovered.

Three more shoe fragments are too small and undiagnostic to attribute to a gender, although all are for adults.

The largest group was recovered from tanning pit [23/503]E (fill [23/008]), which contained five boots and shoes for men and women. The nature of the backfill for this pit is therefore likely to be domestic. Only tanning pit [23/157] (fill [23/154]) contained another two examples. All other contexts contained a maximum of one shoe apiece.

Bags

Two bag or pouch fragments were recovered during the excavations. RF <244> ([23/142]) consists of fragments of a probable small leather pouch with suspension strap. Rough cut-outs suggest some of the leather from the bag was later reused. RF <249> (Structure [23/184], fill [23/179]) contained a heavy duty rectangular bag fragment strengthened with copper-alloy studs along the edge.

Other Objects

Brick culvert [23/747] (fill [23/746]) contained a leather oval case (RF <255>) on a white metal frame. The piece, dating to the late 19th to early 20th century, exhibits an attachment slit on one end. The case itself resembles a medallion and pendant, with a piece of glass to cover the contents and a leather flap to reach behind the glass. Its function has not been established.

Other objects include a leather strap or pouch fragment (RF <248>) with copper alloy rivet in situ. Ten fragments of a long adjustable strap with copper alloy connector studs and leather thong adjuster was recovered from [19/010].

Significance and Potential

The assemblage is of little significance given its small size and the mixed nature of most contexts. It does however demonstrate the domestic nature of at least one tannery pit backfill. It is recommended that no separate report for publication is produced. However, it is proposed that key observations be extracted from the current assessment for use in the site narrative.

Methodology for Further Work

All objects have been recorded individually on pro forma sheets for archive. No further work is required and no pieces are proposed for illustration.

Miscellaneous Objects by Elke Raemen

A small range of other objects of 19th- century date was recovered during the excavations. The only object of personal adornment consists of a probable tropical shell with the surface deliberately removed to reveal the mother of pearl and with two piercings to allow suspension. A wooden brush (RF <258>), wooden tool handle (RF <261>) and bone comb fragment (RF <270>) were recovered, as well as a bone tool or pen handle (RF <274>). Slate pencils (i.e. RF <262>, <268>), white porcelain marbles with painted decoration (i.e. RF <263>-<265>) and a ceramic possible spinning top fragment (i.e. RF <269>) were found as well as a few small glass beads (i.e. from cesspit [23/293], fill [23/292])

A small amount of 20th-century objects, mainly in plastic and including buttons, beads and a lamp fragment, have been deemed archaeologically insignificant and thus been discarded.

Significance and Potential

As virtually all finds were recovered from mixed, later contexts, the assemblage is not considered to hold any potential for further analysis. This includes finds recovered from the backfill of tanning pits (phase 5), the contents of which appear to be a mixture of domestic and tannery deposits. As such, their origin can not be established with absolute certainty.

Methodology for Further Work

Finds have been recorded individually on pro forma sheets for archive. No report is recommended for publication. No further work is required.

The Textiles by Elke Raemen

Overview of the Assemblage

A small assemblage of 18 fragments of textiles was recovered from six individually numbered contexts. A small group of 20th-century textiles was also recovered but has been excluded from this overview as it lacks any archaeological significance on the current site.

The main group consists of Hessian-type rough-woven cloth (i.e. tanning pit [23/140] fill [23/138]) probably from sacks. In addition, a single fragment of wool knitting, possibly from a sock, was recovered from tanning pit [23/251] (fill [23/252]) and a length of cotton thread was located in tanning pit [23/481] (fill [23/482]).

Significance and Potential

Given the small size of the assemblage as well as its presence mainly in mixed tanning pit backfills of phase 5 and therefore uncertain origin, the textiles are not considered to merit any further research. No report is proposed for publication.

Methodology for Further Work

Textiles have been recorded on pro forma sheets for archive. No further work is required.

Prehistoric Flintwork by Chris Butler

A small assemblage of 96 pieces of worked flint weighing 46g was recovered during the work, and is summarised in Table 14. Many of the smallest pieces were recovered during the wet sieving of soil samples.

The assessment comprised a visual inspection of each bag, counting the number of pieces of each type of worked flint present, noting details of the range and variety of pieces, general condition, and the potential for further detailed analysis. A hand written archive and excel database of the assemblage was produced at this stage. Classification follows Butler (2005). A number of pieces of flint that were obviously not worked were discarded during the assessment.

The raw material comprises mostly shades of light grey to dark grey, some being lightly patinated, with a few pieces having a reddish-orange staining.

Type	Number
Hard hammer-struck flakes	2
Soft hammer-struck flakes	2
Bladelet fragment	1
Flake fragments	18
Chips	73
Total	***96***

Table 14. The Flintwork

The majority of this assemblage comprises small chips and fragments smaller than 10mm in size, which are likely to have resulted from flint knapping. A small number of flakes, mostly small, were also present. There is little in this assemblage that is diagnostic or could provide any dating information, and therefore the chips could be the result of flint knapping in prehistory or due to the use of flint for building in more recent times. Given the patination on many of the pieces, a prehistoric date is most likely.

This small residual assemblage has no potential for further study. It is recommended that no further work be undertaken on this assemblage, although the flintwork could be retained for possible further study in the future. A short summary paragraph should be included in the report and the handwritten assessment summary retained in the archive.

The Metallurgical Remains by Luke Barber

4 Factual

The excavations recovered 5,356 pieces labelled as slag, weighing a little under 42kg, from 67 individually numbered contexts. The assemblage, which does not solely consist of slag, has been fully listed by context and type on metallurgical pro forma sheets, which are housed with the archive. The assemblage is characterised in Table 15 by initial site phase.

4.1 Initial Phase	**4.1.3 Undated**	**Phase 2: Roman**	**Phase 3: C17th – 18th**	**Phase 4: C19th tannery & houses**	**Phase 5: C19th tannery demolition**	**Phase 6: C20th**	**Totals**
No. contexts	*5*	*2*	*11*	*13*	*35*	*1*	**67**
4.2 Fuel Ash slag	6/161g	1/13g	32/444g	1,370/16,507g	397/6,345g	7/58g	**1,813/23,528g**
4.2.3.1 Fuel Ash spheres	-	-	1/4g	7/10g	6/8g	2/3g	**16/25g**
Clinker	208/225g	-	505/816g	1,435/4,710g	552/1,010g	99/155g	**2,799/6,916g**
Copper alloy slag	-	-	-	2/2g	15/57g	-	**17/59g**
Blast furnace (iron)	-	-	-	1/27g	-	-	**1/27g**
Vitrified clay	2/88g	-	-	1/17g	29/31g	-	**32/136g**
4.3 Lime	-	-	-	-	100+/1,322g	-	**100+/1,322g**
Iron concretion	176/1,546g	6/11g	10/1,044g	11/206g	269/6,732g	-	**472/9,539g**
Limescale	-	-	-	-	106/290g	-	**106/290g**
Totals	**392/2,020g**	**7/24g**	**548/2,308g**	**2,827/21,479g**	**1,474/15,795g**	**108/216g**	**5,356/41,842g**

Table 15: Characterisation of 'slag' assemblage.

The most common slag type in the assemblage (by weight) is fuel ash slag. This type of slag is not diagnostic of process and can be derived from any number of high temperature processes, including domestic hearths. The presence of significant quantities of coal (see geological material assessment) and clinker (burnt coal/coke/ fused ash) strongly suggests much of the fuel ash slag is derived from processes using this fuel to heat ie water etc for domestic and/or industrial purposes. The vitrified flow structure and presence of a few spherical droplets, together with a dense almost metallic feel to some pieces, certainly suggest a high temperature was involved, perhaps more indicative of an industrial source.

The earliest material is from Phase 2 deposits, thought to be of potential Roman date. Ditch [23/674], fill [23/672] which includes early post-medieval ceramics, contained six pieces (11g) of iron concretion. This material, which is more common in later phases, is composed of concreted oxide/rust deposits derived from corroding ironwork and as such is not slag. The only other early fragment from this phase consists of a single piece of fuel ash slag (13g) in ditch [23/583], fill [23/582] which could be intrusive.

More material was recovered from the Phase 3 deposits of the 17th and 18th centuries. The source of this material is difficult to ascertain with certainty. Some industrial waste appears to have been spread on the land during potential manuring as the biscuit-fired tin-glazed ware sherds suggest. It is quite possible the slag material derives from the same, or other industries, which used high temperature processes fuelled by coal. However, the material involved is identical to that located in later phases and it cannot be ruled out that the majority/all of the assemblage of this phase is indeed intrusive. The largest group by weight consists of iron concreted material (1,044g) which, as noted above, is not derived from high temperature processes. The 505 pieces of clinker are all small (average 1.6g) and could therefore easily be intrusive – the largest single group coming from ditch [23/075], fill [23/074] which produced 163 pieces weighing 387g. The fuel ash slag has a slightly larger average size (13.9g) but could still be intrusive from Phase 4. As such the assemblage of this phase is ambiguous.

There is a marked increase in the amount of slag in Phase 4 deposits. The material is probably predominantly derived from heating associated with the tannery (possibly associated with artificial drying and/or power production) though some may well derive from domestic hearths. Fuel ash slag dominates, most being derived from pits: by far the largest assemblage coming from pit [23/047], fill [23/045] which produced 1,312 pieces weighing 15,883g and may be near the heating source which created the material. A significant quantity of clinker was also recovered from this phase, again mainly from infilled tannery pits – the largest consisting of over 1,100 pieces (3,766g) from fill [23/253] of pit [23/254]. Other material includes more iron concretion (a piece from pit [23/893] with an encrusted sherd of London stoneware

adhering), some vitrified clay (probably burnt brick fragments), tiny pieces of copper alloy slag and a single glassy lump of probable iron blast furnace slag (pit [23/893], fill [23/892].

The tannery demolition (Phase 5) produced a significant assemblage of material though by now all is likely to be residual/reworked material from Phase 4. The majority of the assemblage is from the infill of tannery pits and is not likely to bear any relationship to its original area of deposition. A small assemblage of copper alloy slag is present but is of uncertain origin. Although some pieces may represent melted fragments from objects (eg tanning pit [23/223]) some at least appear to be true slag (eg tanning pit [23/232]). There are also a number of other substances represented in this phase. These include a significant number of pieces of iron concretion many of which have taken on the form of the inside of the barrel in which they formed through the downward leaching of the iron oxides from corroding tins etc. A number encapsulate fragments of iron tin/sheeting. In addition there is a small assemblage of limescale from fill [23/671] of brick culvert [23/606], a little vitrified clay and crushed lime granules either from the tanning process or unwanted building material (all in tanning pit [23/166], fill [23/165]).

The Phase 6 assemblage consists residual material of the same types already noted. Similarly the assemblage from unphased deposits holds nothing new.

5 Potential

The assemblage of slag holds variable potential for further analysis work. The assemblages from Phases 2 and 3 are too small and of uncertain origin to warrant any further analysis. The assemblage from Phase 4 is of a little more interest as it does at least appear to be associated with contemporary activity on the site, though whether this relates to the tannery (most likely) or domestic activity is not absolutely certain. A little further work is considered worthwhile in an attempt to clarify this situation by limited further study of some of the slag samples and, more importantly, their spatial distribution on site in relation to the known former buildings. The material from Phases 5 and 6 is almost certainly heavily reworked and as such does not warrant any further detailed analysis, particularly considering virtually all types are represented in the Phase 4 assemblage.

6 Methodology

The slag was recorded on pro forma for the archive during the assessment and no separate specialist report is proposed for publication. Additional work will involve a little further comparative and spatial analysis work on the fuel ash slag from Phase 4 deposits in an attempt to better define its likely source.

Some very brief text will subsequently be produced for inclusion in the site narrative for the most notable assemblages from the site.

Tasks:

Checking for parallels for fuel ash slag – 1 day

Spatial distribution and text – 0.75 days

The Geological Material by Luke Barber

6.1 Factual

The excavations at the site produced 1,972 pieces of stone, weighing just over 11kg, from 67 individually numbered contexts. The material, which was predominantly collected from the environmental residues, has been fully quantified by context and stone type on pro forma for the archive with the assemblage being characterised by initial phase in Table 16.

6.2 Initial Phase	**6.2.4 Undated**	**Phase 2: Roman**	**Phase 3: C17th – 18th**	**Phase 4: C19th tannery & houses**	**Phase 5: C19th tannery demolition**	**Phases 6 &7: C20th/ modern**	**Totals**
6.2.4.1.1.1 No. contexts	*9*	*4*	*10*	*11*	*31*	**2**	**67**
6.3 Fire-cracked flint	-	16/58g	-	-	2/54g	-	**18/112g**
6.3.4.1 Downland flint	3/140g	-	-	-	-	-	**3/140g**
6.3.4.2 ?Thanet sandstone	1/339g	-	-	-	-	-	**1/339g**
6.3.4.3 Greensand	-	-	-	-	1/332g	-	**1/332g**
6.3.4.4 Medium sast	-	-	-	6/137g	2/286g	-	**8/423g**
Medium/coarse sast	-	-	-	-	1/441g	-	**1/441g**
Micaceous sast	-	-	-	-	1/429g	-	**1/429g**
White sast	-	-	-	-	14/882g	-	**14/882g**
Coal	111/179g	183/14g	516/328g	186/294g	504/635g	40/37g	**1,540/1,487g**
Coal shale	3/41g	-	6/102g	5/420g	2/68g	1/7g	**17/638g**

6.4 Quartzite	-	-	-	-	1/121g	-	**1/121g**
6.5 Granite	-	-	-	-	1/30g	-	**1/30g**
6.6 West Country slate	-	1/1g	-	1/19g	34/134g	-	**36/154g**
Welsh slate	78/551g	-	1/353g	49/2,825g	170/1,502g	20/38g	**318/5,269g**
Slate (silver sheen)	-	-	-	1/109g	9/30g	1/21g	**11/160g**
Slate (granular)	-	-	-	-	1/192g	-	**1/192g**
Totals	**196/1,250g**	**200/73g**	**523/783g**	**248/3,804g**	**743/5,136g**	**62/103g**	**1,972/11,149g**

Table 16. Characterisation of stone assemblage (no. pieces/weight in grams).

The earliest contexts on the site to produce stone consist of a number of ditch features preliminary ascribed to Phase 2 (Roman). The assemblage includes 16 pieces (58g) of fire-cracked flint from ditch [23/674], fills [23/672] and [23/673] which may be of the period, if not of prehistoric origin. The remainder of stone from Phase 2 is almost certainly intrusive from Phases 2, and/or 3. This includes numerous tiny granules of coal (average 0.08g each) in ditches [23/583], [23/674], [23/677]. Most coal came from [23/674], fill [23/672] (134 pieces weighing 11g). In addition this deposit also contained a 1g intrusive piece of medieval/early post-medieval West Country slate.

The 10 Phase 3 contexts produced more material, but again only a limited range of types is present. Coal fragments are by far the most common. As in the preceding phase, most of this material was recovered from ditches though some was also recovered from pit [23/035]. The largest group is from ditch [23/078], fill [23/077], which produced 143 pieces weighing 114g. The small amount of coal shale will have derived from a similar source to the coal. The material is difficult to interpret as it could either derive from the spreading of industrial or domestic waste on cultivated land during the 17th to 18th centuries or be intrusive from Phase 3 activity. Although the average size of the coal pieces is notably larger than for Phase 2 (0.6g) they are still easily small enough to work their way down the soil profile very easily. The only other stone from this phase consists of a 163mm wide piece of Welsh roofing slate (quarry pit [23/016], fill [23/011]). Although initially grouped in Phase 3, the ceramic date is late in the phase (*c.* 1760-1820) suggesting the slate may not be intrusive.

A similar number of context from Phase 4 produced stone and although the assemblage is less than that for Phase 3 by number, it is notably larger by weight. Coal represents the largest group again though the average size is now notably larger (1.6g). The largest group, from tanning pit [23/047], consists of 42

pieces (195g) and there are a number of larger coal shale pieces present. Although a single piece of residual West Country slate and a piece of unprovenanced slate with silver sheen were recovered from cut [23/048] the vast majority of the slate is of 19th- century Welsh origin. Although a few pieces may derive from roofing slates the majority (all from pit [23/254], fill [23/253]) appear to be off-cuts from slabs, potentially for table tops or exterior floor surfacing etc. This context produced 47 pieces (2,791g) of Welsh slate, 20 of which (153g) 'could' be from roofing material – the remainder consisting of slab off-cuts. These normally take the form of square-sectioned rods (eg 14 x 10 and 26 x 22mm in section) but there is at least one 20mm thick triangular piece present with an oblique 4mm wide sawn groove. The only other stone consists of a few pieces of medium grained non-calcareous thin bedded sandstone, possibly from flagstones (eg from pit [23/246]), some of which show signs of having been mechanically sawn.

Phase 5 produced by far the largest assemblage though residuality is likely to be considerably greater and indeed may include material brought to the site from elsewhere for infilling operations. Coal and coal shale are again well represented and was recovered predominantly from the fill of tanning pits though material was also recovered from other features (eg well [23/335]). The largest group is from tanning pit [23/166] which produced 218 pieces of coal (137g). Small quantities of residual West Country slate are present but, with the exception of the unprovenanced silver sheen and granular slates, most of the slate is of Welsh type. This material is virtually exclusively from roofing slates of *c.* 4mm thickness though at least a couple of slab fragments are also present (tanning pit [23/223]) and a shaped piece with pierced hole was recovered from tanning pit [23/131]. A number of other stone types are represented including a fragment of a water-rounded quartzite boulder (drainage trench [23/108]) and a piece of granite (tanning pit [23/223]). A number of different types of sandstone are also present but often as individual unworked pieces. The only exception to this consisted of a tapering whetstone fragment in glauconitic greensand from barrel [23/052], fill [23/053].

Very few contexts of Phases 6 and 7 produced stone, and that which is present appears to consist of residual material of the same types represented in the earlier deposits. Similarly the as yet unphased contexts (evaluation) produced similar material: the only new types consisting of some fresh downland flint from [11/009] and a piece of possible Thanet sandstone from [8/006].

6.7 Potential

The geological material assemblage from the site is small and generally lacks diversity, possibly due in part to most only being collected from the environmental residues. It is also clear that there is a significant,

though unquantifiable, degree of residual and intrusive material in the deposits. The presence of coal for post-medieval industrial and domestic use is to be expected, as is the importation of roofing slate from the West Country, and in the 19th century, from Wales. The presence of Welsh slab fragments is interesting as it shows the material being put to a different use but too little is present to be certain if this was for furniture tops or flooring. The unprovenanced slate types may represent variations in Welsh seams but other sources cannot be ruled out. It is unfortunate none are from well sealed deposits associated with specific structures. The other material hints at the presence of possible ballast from the south-west (the quartzite and granite) as well as some importation of material from the east/south-east coast (flint and certain sandstones) but the quantities are too small to draw any conclusions and again may be residual or imported to the site specifically for backfilling the pits. As such the assemblage is not considered to hold any potential for further analysis.

6.8 Methodology

The assemblage has already been fully recorded for archive as part of the assessment phase of works. The majority of the assemblage has been discarded with only stone type samples and worked pieces being retained. No separate report is proposed for publication though it is considered worthwhile noting the presence of the greensand whetstone and Welsh slate slab fragments in the site narrative. No material is proposed for illustration.

Resources:
Listing for archive: LB - (completed during assessment)
Narrative text: can be extracted from px assessment by AOC staff

The Shell by Elke Raemen

Introduction

An assemblage consisting of 529 shells and shell fragments (945g) was recovered from 51 individually numbered contexts, resulting in a minimum number of individuals of 222. Although this may appear a large assemblage, it should be noted that 488 pieces (364g) were recovered from the residues of environmental samples and consist of only small fragments. The majority of pieces were recovered from tanning pits, although this may only reflect the level of sampling. All pieces were recorded on pro forma sheets for archive.

Marine Shell

A total of 429 shell fragments can be identified as marine shell. Most of these consist of the Common Oyster (*Ostrea Edulis*), which was recovered from 35 individually numbered contexts. Most pieces are undiagnostic (220 fragments), although sixteen lower and 23 upper valves were identified. Of the identifiable valves, 23 are immature (i.e. levelling ground [20/009]; pit [23/237] fill [23/236]), four exhibit traces of parasitic activity (i.e. made ground [20/011]) and two show signs of overcrowding (i.e. tanning pit [9/013] (fill [9/012]). A minimum number of 50 individuals is represented.

A total of 83 periwinkles (*Littorina Littorea*) and periwinkle fragments was recovered (minimum number of individuals 70) from 18 different contexts (i.e. tanning pit [23/251], fill [23/252]) as well as 50 Common Mussel (*Mytilus Edulis*) fragments (minimum number of 18 individuals) from 18 individual contexts (i.e. pit [23/237] (fill [23/236]). Other species represented include two Auger-Shells (*Turritella Communis*) from brick culvert [23/747] (fill [23/746]), a minimum number of two individual Common Cockle-Shells (*Cardium Edule*; i.e. tanning pit [9/013], fill [9/012]), a minimum number of ten individual Slipper-Limpets (*Crepidula Fornicata*; all immature) from seven different contexts (i.e. tanning pit [23/240] (fill [23/238]) and a minimum number of ten individual Whelks (i.e. tanning pit [23/503]C; fill [23/006]). Four Elliptical Trough-Shells (*Spisula Elliptica*) and a Common Top-Shell (*Calliostoma Zizyphinum*) were also present on the site. In addition, a possible tropical gastropod was recovered from modern made ground [23/584]. The piece may be a Scotch Bonnet or *Phalium Granulatum*.

Freshwater Shell

Sixty eight fragments of freshwater shell were recovered from three different contexts (i.e. tanning pit [23/251], fill [23/252]; feature [23/365], fill [23/387] and tanning pit [23/481], fill [23/482]). Species include Pea-Mussel (*Sphaerium Corneum*), freshwater snails (*physa*) and Ramshorn (*Planorbis Planorbis*).

Land Snails

A total of eight land snail fragments was recovered from three individually numbered contexts (i.e. [19/010]). Represented are a minimum of six individuals.

Eggshell

Tanning pit [23/131] (fill [23/142]) contained 24 (bird probably chicken) egg shell fragments (minimum 1 egg).

Significance and Potential

The assemblage is too small to give a representative reflection on diet. Non-edible shell could come from a variety of sources, as again the majority was recovered from mixed contexts. The assemblage is therefore not considered to be of any potential for further analysis.

Methodology for Further Work

All shell has been recorded in full on pro forma sheets for archive. No further work is required.

The Wood and Charcoal by Lucy Allott

Introduction and Methodology

Wood charcoal fragments from 15 contexts and uncharred wood from 36 contexts were submitted for assessment. These were hand collected during excavation and retrieved in bulk samples from features including the fills of ditches, pit features, a post hole, well and tanning pits. The majority are associated with the 19th Century tannery although Roman and 17th-18th Century features were also sampled.

Charcoal fragments from 12 of the 15 contexts, were analysed to provide identifications while wood, bark and other organic components were documented (Table 17). Where available at least ten charcoal fragments from each of these contexts were fractured and viewed using an incident light microscope at x50, 100, 200 & 400 magnifications. For contexts containing fewer than 10 fragments all charcoal fragments were identified. Identifications were made using modern comparative material and reference atlases (Hather 2000, Schweingruber 1990, Schoch *et al.* 2004). Identifications have been given to species where possible however genera, family or group names are given when inherent anatomical differences between taxa are too small for satisfactory identification. Where identifications are uncertain due to poor preservation or limited size of charcoal specimens the identification is preceded by cf., denoting 'compares with'.

Results

The results of the assessment of both the uncharred and charred wood are presented together because several fragments were part charred and the assemblages are not necessarily derived from clearly differentiated sources. Charcoal and wood fragments included in the assessment were taken from four phases of land use; Roman, Post-medieval and two 19th century phases

***Phase 2*:** Roman

A small piece of wood, two charcoal fragments, and coal/clinker were collected from samples <91> and <92> taken from fills of a Roman ditch [23/674] (**Phase 2**). These were too small to identify and the assemblages provide no potential to assist in characterising Roman land use activities.

Phase 3: Post-medieval (pre-tannery) 17th-18th Century

Pit features [23/057] and [23/035] contained small wood flecks and a bird bone fragment respectively. The fill of ditch [23/078] produced iron stained wood fragments only, while pine (*Pinus* sp.) wood and charcoal fragments were present in context [23/091], the fill of ditch [23/092]. Post hole fill [23/691], feature [23/692] contains small wood and bark fragments. Some of these are iron stained with grit and slag like deposits on their surfaces. These assemblage are too limited to assist in characterising post-medieval / pre-tannery land use although it should be noted that the assemblages are similar to those from the 19th century deposits.

Phase 4: Tannery and houses 19th Century and ***Phase 5:*** Tannery abandonment 19th Century.
Pine (*Pinus* sp.) wood fragments were recorded in each of the charcoal assemblages included in the assessment and in the majority of instances it was the only taxon present. Two contexts, [23/238] (the fill of tanning pit [23/240]) and [19/010] contained other taxa including common buckthorn (cf. *Rhamnus catharticus*), sweet chestnut (cf. *Castanea sativa*), heather (*Calluna vulgaris*), oak (*Quercus* sp.), willow/poplar (*Salix*/*Populus* sp.) and birch (cf. *Betula* sp.) in addition to pine wood specimens. Pine (*Pinus* sp.) wood and perhaps other soft woods are also evident in the uncharred assemblage although further analysis may reveal additional taxa. Charred wood fragments varied greatly in size. The assemblage included several large pieces that may derive from timbers such as in [23/138]. Vitrified charcoal as well as coal and other industrial debris were relatively common and were removed for inclusion in the industrial remains assessment (see Barber).

Uncharred assemblages from the 19th Century phases of land use produced fragments of wood, including wood shavings, worked wood pieces and infrequent pieces of bark. Several different states of preservation that may be a result of the deposition environment were noted in the uncharred assemblage. Sample <5>, context [23/006] from the fill of tan pit [23/503]C contained fragile pieces of wood that were very pale and fibrous. Similar preservation was noted in the wood assemblage from [23/100] from the fill of tanning pit [23/101]. It is unclear whether this results from natural in situ decay or deposition conditions. Iron stained wood fragments were relatively common and in some instances, particularly where iron nails were still present such as in [23/046], the wood fragments were hard and almost mineralised.

'Worked' or converted wood fragments were not prominent in this assemblage however a block measuring 150 x 80 x 30mm was noted in context [23/218]. One surface of this object is flat while the other retains a regular curve along its length and grain. The function and identification of this piece are currently unknown. It retains two nail holes driven from the curved surface and one of these is apparent as a rupture on the flat surface of the object although neither of the nails is present. The lateral surfaces of the wood are parallel and coated in a hard, white substance with a crystalline structure. It is unclear

whether this is a result of preservation conditions within the pit, salt or other chemical deposits, substances leaching from the wood and/or post excavation decay. It should be possible to identify this wood if sectioned and viewed at higher magnification (see recommendations below).

Softwood fragments (probably pine) present in sample <100>, [23/774] from tanning pit structure [23/769] that are squared in section may derive from larger planks or objects. Gritty mineral/industrial deposits similar to those noted in [23/691] (phase 3) are present on further un-worked iron stained wood fragments from this context.

A large piece of part charred bark (with a wet weight of 880g) was collected from [23/190] from the fill of tanning pit structure [23/192]. The majority of the object was uncharred however a small charred fragment was removed from this and identified as pine (*Pinus* sp.). Further bark fragments, including one from a round wood specimen were present in context [23/252], <52> from the fill of [23/251]. No sapwood or heartwood is present on these fragments and they may therefore be difficult to identify.

Significance and Potential

The wood and charcoal assemblages from this site are of interest for several reasons. They have potential to provide evidence for the wood and bark used in the tanning industry during the 19th Century. They also have potential to document the structural components of these pits. The value and depth of the data available will depend upon whether, once the spot dating evidence has been assimilated, any of the fills are considered primary deposits directly associated with the tannery and its abandonment rather than industries post dating the tannery.

The wood and charcoal assemblage is predominantly derived from tanning pits and associated features of 19th Century date and it is therefore likely that much of the wood also results from either the tanning industry or other industrial activities following the abandonment of the tannery. Based on this assumption it is possible to identify several sources from which wood and bark may derive. These include bark fragments used for tanning, wooden pit linings and other wooden objects/tools as well as wood used for fuel and to produce ash (used to assist removal of hairs from the hides). The assessment has revealed a prominence of pine which, if these assemblages can be directly associated with the use of the tannery, suggests that pine bark may have been preferentially used. This is interesting because there are very few formal references to the use of pine bark in Britain although there are several anecdotal accounts to the use of pine in Europe in areas where oak trees are not abundant. *Quercus robur*

(deciduous oak) bark is relatively high in tannins (9-12%) (Wilson & Thomas 2003) and its use is frequently noted whereas the tannin content of *Pinus sylvestris* bark (4-5%) (Wilson & Thomas 2003) is significantly lower. There are however references to the use of bark from trees such as pine and chestnut in the contemporary tanning industry in North America.

The Spa Road assemblage is dominated by wood rather than bark which could be interpreted in several ways. It is possible that the deposits derive from secondary land use rather than the primary tanning activity of leather soaking. It is also possible that wood, which contains tannins albeit in lower concentrations than bark, was used instead of bark. This second suggestion seems improbable as timber would have been an important commodity. It is more likely that the tanning industry was sufficiently large by this stage to make use of prepared bark and its relative scarcity in this assemblage indicates that it has been removed in antiquity, discarded or that it is located outside the current investigation area.

A literature search has found no reference to taxa used to line the pits. Although samples taken directly from the pit linings were not included in this assessment available samples should be identified to document the taxa used and to establish that the pine wood is not derived from the linings. Pine does not naturally grow in southern Britain and therefore any pine used must have been imported either from further North in Britain or from Scandinavia. In either instance there is a possible link between the use of pine bark and the 19th Century timber industry that could be further explored.

Recommendations for Further Work and Revised Methodology

It is recommended that a selection of the uncharred wood and bark fragments are hydrated by soaking and boiling the specimens in water. This will facilitate sectioning and identification.

Samples taken from the pit linings should be treated as above (unless charred) and identified to document the taxa used.

It will be of key importance to consider the current assemblages in their wider context through reference to context descriptions, section drawings, plans and spot date information from the other assessment reports. It will also be necessary to establish whether these 'abandonment' remains are derived from the tannery industry or whether they relate to later industries at the site. A more intensive literature search should then be undertaken to establish clear evidence for the use of pine wood and bark in the tanning industry in Britain and to explore the possible link, discussed above, between the tanning and timber industries.

Time requirements prior to publication

Sample analysis	**1 day**
Literature	**1 day**
Reporting	**1 day**
Total	**3 days**

Context No.	Phase Number	Sample number	Context Description	Charcoal	Wood	Other
23/006	5	5	Fill of tan-pit [23/503]C		** small wood frags/shavings (some pale, fibrous) and bark frags, some poss idable but very fragile	
23/007	5		Fill of tan-pit [23/503]B	*Pinus* sp. (22), & including some part charred *Pinus* sp., clinker/coal & vitrified charcoal		
23/008	5	7	Fill of tan-pit [23/503]E	*Pinus* sp. (10), vitfified charcoal (2) & clinker/coal & large piece *Pinus* sp. part charred	1 small wood frag	
23/034	3	10	Fill of pit [23/035]			1 bird bone
23/045	4		Fill of wooden pit lining [23/047]		1 twig, 1 wood with iron frag	coal/clinker
23/046	4		Fill of [23/048]		2 wood fragments - iron stained and almost mineralised?	
23/053	5	14	Fill of wooden barrel [23/052]		* wood frags (1 poss lg enough to id)	
23/056	3	13	Fill of pit [23/057]		* very small wood flecks	
23/059	5		Fill of wooden lining of pit [23/060]		*** wood shavings (curved), wood fragments and occasional iron stained wood	1 frag wood with metalwork, 1 frag slag & cattle horn core
23/077	3		Fill of ditch [23/078]		*iron stained wood frags	1 glass frag.
23/085	5		Fill of [23/064]		* small wood frags	

Context No.	Phase Number	Sample number	Context Description	Charcoal	Wood	Other
			(Cut for soak away)			
23/091	3		Fill of ditch [23/092]	Large charcoal frags *Pinus* sp.(10) & some uncharred		
23/099	5		Fill of [23/101] (Wooden structure for tanning pit)	*Pinus* sp. (10)	part charred wood frag (with bark?)	
23/100	5		Fill of [23/101] (wooden structure for tanning pit)		* small wood frags, very poorly preserved - white and friable (Fungal attack or lime wash?)	
23/138	5		Fill of [23/140] (wooden structure for tanning pit)	1 large piece *Pinus* sp.		
23/142	5	22	Fill of [23/131] (wooden structure for tanning pit)		** wood and bark (2 types? incl. cf. *Pinus* sp.) fragments	
23/158	5		Fill of [23/157] (Wooden structure for tanning pit)		2 frags round wood with bark	
23/160	5	41	Fill of [23/162] (Wooden structure for tanning pit)		** wood frags of various sizes, some curved pieces although not shavings, some iron stained	small iron rust spall
23/161	5		Fill of [23/162] (Wooden structure for tanning pit)		* uncharred wood frags (?sapwood) very friable	
23/164	5	37	Fill of [23/166] (Wooden structure for tanning pit)	*Pinus* sp. (1)	3 small wood frags, 1 iron stained & 1 bark and sapwood frag	coal/clinker
23/165	5	38	Fill of [23/166] (Wooden structure for tanning pit)	* fragments of chalk/lime coated charcoal and part charred wood, not identifiable	1 wood frag, very poor preservation, white and very friable (see also (23/100)	
23/174	5	34	Fill 0f [23/176]	cf. *Pinus* sp. (1)	v. small indet wood frags	

Context No.	Phase Number	Sample number	Context Description	Charcoal	Wood	Other
			(Wooden structure for tanning pit)			
23/188	5	35	Fill of [23/187] (Wooden structure for tanning pit)	*Pinus* sp. (11) & bark frags	**wood and bark fragments (some charred)	1 nail?
23/190	5		Fill of [23/192] (Wooden structure for tanning pit)		Large bark frag weighing 880g (wet). Small charred fragment viewed under low mag appears to be softwood so probably *Pinus* sp. but needs checkng	
23/220	5		Fill of [23/218] (Wooden structure for tanning pit)		Worked wood measuring 150 x 80 x 30. One surface is curved, while the other is flat, nail holes are present towards one end and these appear to have been driven through from the curved surface. Function unknown.	
23/231	5	25	Fill of [23/232] (Wooden structure for tanning pit)	*Pinus* sp. (3)wood frags, 1 twig *Pinus* sp.	small fragments of wood and bark (1 iron stained)	
23/238	5		Fill of [23/240] (Wooden structure for tanning pit)	*Pinus* sp. (15) & 1 large original piece (1), cf. *Rhamnus* sp. (1), cf. *Castanea sativa* (3), cf. *Calluna vulgaris* (1) sm round wood/twig. Includes frags from possible converted timber with uncharred surfaces	nail/metal with wood adhering	

Context No.	Phase Number	Sample number	Context Description	Charcoal	Wood	Other
23/252	4	31	Fill of [23/251] (Wooden structure for tanning pit)		3 small wood frags (1 with iron staining), *** wood and bark frags, including one from round wood specimen (no wood adhering to bark so possibly not identifiable)	
23/253	4		Fill of [23/254]		* wood flecks	
23/334	5	76	Fill of well [23/335]	* fragments of vitrified charcoal and a small twig fragment, no ids done		
23/402	5		Fill of gutter [23/404]		1 wood/bark frag (possibly identifiable)	
23/403	5		Wooden plank in gutter [23/404]		** wood and bark frags (med sized) generally friable and poorly preserved, some identifiable	
23/482	5	94	Fill of [23/481] (Wooden structure for tanning pit)		*wood frags (some idable) various sizes, 1 wood frag with bark remaining (identifiable)	1 bone frag indet
23/505	4		Fill of tanning pit [23/502]D - E		* wood frags	
23/597	5		Fill of tanning pit [23/503]D		** wood frags, some cf. *Pinus* sp.	
23/672	2	92	Fill of [23/674]		1 small wood frag	
23/673	2	91	Fill of ditch [23/674]	2 charcoal frags, no ids done		clinker/coal frags
23/691	3		Fill of posthole [23/692]		* wood and bark frags, some iron stained and with industrial deposit/gritty deposit adhering to surface	
23/774	5	100	Fill of tanning pit [23/768]		**wood frags (worked?, long and almost square in section, poss frags from larger worked wood), iron stained with gritty mineral/industrial deposits on, some wood idable	

Context No.	Phase Number	Sample number	Context Description	Charcoal	Wood	Other
19/009					**wood frags including some with metal work, 1 possible cork/peg	
19/010		1		cf. *Rhamnus* sp. (3), *Quercus* sp. (4), *Salix/Populus* (1), cf. *Betula* sp. (1), *Pinus* sp. (1), some round wood specimens present and some uncharred wood & twigs	wood frags, including cf. *Pinus* sp., & cf. pine needles, * twigs, and 2 pieces poss worked wood (1 square in section)	
22/006		5	Scanty remains of brick wall	cf. *Pinus* sp. & vitrified charcoal	uncharred wood fragments	cf. pine needles

Table 17: Wood and Charcoal quantification (* = 1-10, ** = 11-50, *** = 51-250 fragments) and identification.

6.8.4.1.1.1 Bibliography

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Fabric	105	201	202	205	207	215	226	301	303	401	402	403	404	407	Grand Total
BBG	6	15	1		25		2	1	5	1	7	2	2		67
CREAM						1			1						2
DRABST				1											1
EWLPW												1		1	2
MIDP										1	1				2
MIDY		5			4						1				10
MOCHA										1					1
MOTTW		7			1						4	2	1		15
NDGFW		2													2
NDGTW		6			4										10
PEARL	10							2				2			14
PORCBW										2					2
SCBW								7		1				1	9
SLIP	8	1								1	1	1			12
SPOJ											1				1
STONEW								1		1		1			3
TGEW		1			1						2	1			5
TUDGW					2										2
UNGRE		2							1	1		1			5
WESTSW										1	1				2
WSGST												1			1
Grand Total	24	39	1	1	37	1	2	11	7	10	18	12	3	2	168

Table 1: Pottery fabrics by count

Fabric	105	201	202	205	207	215	226	301	303	401	402	403	404	407	Grand Total
BBG	426	266	26		178		8	4	780	162	240	72	50		2212
CREAM						2			2						4
DRABST				14											14
EWLPW												8		8	16
MIDP										14	66				80
MIDY		48			20						4				72
MOCHA										2					2
MOTTW		48			6						38	12	8		112
NDGFW		6													6
NDGTW		58			72										130
PEARL	232							3				4			239
PORCBW										2					2
SCBW								46		2				2	50
SLIP	214	4								2	6	10			236
SPOJ											36				36
STONEW								70		114		96			280
TGEW		4			1						28	4			37
TUDGW					2										2
UNGRE		6							6	10		4			26
WESTSW										2	34				36
WSGST												1			1
Grand Total	872	440	26	14	279	2	8	123	788	310	452	211	58	10	3593

Table 2: Pottery fabrics by weight

Key to Pottery Fabric codes:

Fabric Code	Fabric	Date
BBG	Black & brown glazed ware	16th to 19th century
CREAM	Cream ware	c.AD 1760+
DRABST	Drab Stoneware	17th to 18th century
EWLPW	Ewloe pink/white ware	Late 14th/16th century
MIDP	Midlands Purple	16th to 18th century
MIDY	Midlands Yellow	17th to 18th century
MOCHA	Mocha ware	Late 18th to 20th century
MOTTW	Mottled ware	c.AD 1680+
NDGFW	North Devon Gravel free ware	17th to 18th century
NDGTW	North Devon Gravel tempered ware	17th to 18th century
PEARL	Pearl ware	c.AD 1780+
PORCBW	Porcelaineous bodied ware	18th to 19th century
SCBW	Slip Coated Buff ware	18th century
SLIP	Slip ware	17th to 19th century
SPOJ	Spanish Olive Jar	17th to 18th century
STONEW	Stoneware	19th to 20th century
TGEW	Tin-glazed earthenware	17th to 18th century
TUDGW	Tudor Green ware	15th to 17th century
UNGRE	Unglazed red earthenware	18th to 19th century
WESTSW	Westerwald Stoneware	17th to 18th century
WSGST	White salt-glazed stoneware	c.AD 1720+

Appendix D

Animal Bone Report

Animal bone

7 Introduction

This report provides an assessment of the animal bone recovered from 120 contexts, including faunal material from 36 flotation samples, during the excavations at Spa Road (SRQ07). The number of fragments and weight of the animal bone is summarised in Table 1. The assessment highlights the research potential of the assemblage taking into consideration the quantity, preservation and number of bones recovered containing information on the stature and age at death of the animals from different stratigraphic phases of the archaeological sequence.

	Weight (kg)	No. fragments	No. boxes
Animal bone (hand-collected)	1.689	1111	
Animal bone (recovered from flotation samples)	14.377	676	
Total	16.066	1787	2 large and 5 standard archive boxes

Table 1: Animal bone archive summary

7.1 Methodology

The animal bone was recorded onto a excel spreadsheet noting the number and weight of the animal bone, preservation, species identifiable and body-part as well as the number of bones that would provide dental aging or fusion data, evidence of butchery, osteometric information and the number of complete bones.

8 Potential of Assemblage

The animal bone assemblage is varies in preservation considerably. The limited animal bone from the Roman ditch contexts is poorly preserved and contains few faunal remains identifiable to species. A single human bone was also recovered and probably represents redeposited residual material. The animal bone from later phases was slightly better preserved apart from three contexts (23/165, 23/214 and 23/416) which contained bone that displayed a white leached appearance probably as a result the lime deposits in the tanning pit fills that they were recovered from.

Most of the faunal material from the post-medieval deposits is not waste from the tanning industry on the site. Animal bone refuse associated with tanneries has a distinctive body-part representation since skins where transported with the horns and hides attached resulting in large assemblages of metapodials and horncores (MacGregor 1998; Serjeantson 1989). The only faunal evidence of tannery waste was the horncore-lined pit where the cattle horncores were reused as a cheap substitute building material. Only a few of the cattle horncores were recovered from this feature and these are all heavily fragmented providing few measurements and none were complete in length. The length of the horncores is also needed to apply the Armitage (1982) system for aging post-medieval horncores based on the variation in porosity along the length of the horncores. The horncores recovered from the horn-lined are therefore of minimal value in determining the ages of cattle whose hides were tanned or the variation in the horncore morphology of the animals. From the photographs of the horncore lined pit, the method used in its construction is typical for these post-medieval features with the horncores attached to half of the frontal bone set so that the tips pointed towards the edge of the pit. One horncore recovered displayed a hole in

the posterior side just above the base and is evidence of damage associated with pegging hides up. Similar modifications have been frequently been found on horncores associated with tanneries. At the site of a tannery at Willemstraat, Bruges, cattle horncores either had iron nails driven into their bases or the physical traces of this process (Ervynck 2002 *et al*). One similar example of this was found at Kings's Lynn (Noddle 1977). Horncores of male goats from the tannery of s-Hertogenbosch had been punctured on the medial side by a square hole between 4 and 10mm in size and were tentatively attributed as the result of hanging the dead animal up for butchering or drying the skin (Prummel 1978).

Much of the rest of the animal bone is typical of domestic refuse with cattle, sheep/goat and pig as well as rabbit, hare, goose, chicken and occasional fish bone. In terms of the use of the animal bone to reconstruct more detailed aspects of the economy, there is minimal potential. No sheep/goat mandibles and only one cattle mandible was recovered preventing the reconstruction of mortality profiles throughout the lifespan of the animals. Fusion data was present but insufficient in quantity to provide meaningful estimates of the contribution of young animals to the diet. Occasional bones provided osteometric data, and very few of these were complete allowing the reconstruction of statures of the cattle, sheep and pigs consumed.

There is evidence of the butchery process showing that saws were frequently used in the Phases 4 and 5 fitting with the 19th century date of these deposits.

One off-cut from bone working was recovered from a Phase 5 context (23/482), the fill of a tanning pit. This was a large-mammal long bone shaft fragment from which rosemary beads had been cut.

8.1 Summary

In view of the lack of substantial animal bone associated with the tannery, and the domestic refuse animal bone being a relatively small assemblage with minimal evidence for the reconstruction of age and size of animals, no further work is recommended for this assemblage although the results of this assessment report should be included in the final publication of the site.

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8.2.5 Phase

Taxon	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	7	Phase 8
Horse	2	1	2				
Cattle	3	7	117*	29		1	
Pig		3	6	9		1	
Sheep/goat	1	32	16	14	4	1	3
Dog		1	3	1			
Cat				2			
Hare?				1			
Rabbit			9	2			
Goose			3				
Chicken		1	1	2			
Gadid			1	5			
Human	1			1			

Table 3: Preliminary species distribution by phase (*dominated by highly fragmented horncore fragments).

Context	Sample	Recovery	WT (g)	Pres	Nos	Lmam	Smam	Fish	Bird	Amph	Mand	Meas	Epi	Complete
02/005		H/C	30	Good	11	5	0	1	5	0	0	0	0	0
03/004		H/C	38	Good	1	1	0	0	0	0	0	0	0	0
08/006		H/C	2	Good	1	1	0	0	0	0	0	0	0	0
08/007		H/C	17	Average	2	1	0	0	1	0	0	1	1	1
08/008		H/C	99	Average	9	9	0	0	0	0	0	0	2	0
09/014		H/C	151	Average	1	1	0	0	0	0	0	0	0	0
09/016		H/C	14	Average	1	1	0	0	0	0	0	0	0	0
11/009		H/C	3	Average	1	1	0	0	0	0	0	0	0	0
12/005		H/C	178	Good	9	9	0	0	0	0	0	1	0	0
12/013		H/C	35	Average	3	3	0	0	0	0	0	0	0	0
16/005		H/C	38	Good	1	1	0	0	0	0	0	1	0	0
19/001		H/C	16	Good	16	2	0	12	2	0	0	0	0	0
19/009		H/C	37	Good	6	5	1	0	0	0	0	1	3	2
19/010	1	Flotation	150	Good	148	146	0	1	1	0	0	0	4	0
19/010		H/C	226	Good	8	8	0	0	0	0	0	0	4	0
20/007		H/C	47	Average	3	3	0	0	0	0	0	0	0	0
20/009		H/C	92	Average	3	3	0	0	0	0	0	1	0	0
20/011		H/C	20	Average	1	1	0	0	0	0	0	0	0	0
20/012		H/C	3	Average	3	3	0	0	0	0	0	0	0	0
20/013		H/C	724	Good	15	15	0	0	0	0	1	2	1	0
20/014		H/C	9	Average	1	1	0	0	0	0	0	0	1	0
20/081		H/C	16	Good	3	3	0	0	0	0	0	2	2	1
21/009		H/C	14	Average	1	1	0	0	0	0	0	0	0	0
23/001		H/C	302	Average	9	9	0	0	0	0	0	3	2	0
23/006	5	Flotation	3	Average	4	4	0	0	0	0	0	0	0	0
23/007		H/C	1	Poor	1	1	0	0	0	0	0	0	0	0
23/014		H/C	110	Average	6	5	0	0	1	0	0	1	1	0
23/021		H/C	95	Good	2	2	0	0	0	0	0	0	0	0
23/024	8	Flotation	30	Average	65	62	1	1	0	0	0	1	1	1
23/026	9	Flotation	46	Average	87	86	0	1	0	0	0	0	0	0
23/026		H/C	148	Average	22	22	0	0	0	0	0	2	3	0
23/028		H/C	8	Average	2	2	0	0	0	0	0	0	0	0

23/030		H/C	7	Good	1	1	0	0	0	0	0	1	1	1
23/034	10	Flotation	2	Average	2	2	0	0	0	0	0	0	0	0
23/046	12	Flotation	24	Average	103	102	0	1	0	0	0	0	1	1
23/046		H/C	9	Poor	3	3	0	0	0	0	0	0	1	0
23/053	14	Flotation	2	Average	15	0	0	0	0	0	0	0	0	0
23/053		H/C	46	Poor	8	8	0	0	0	0	0	1	2	0
23/056	13	Flotation	1	Average	22	22	0	0	0	0	0	0	0	0
23/056		H/C	18	Average	2	1	0	0	1	0	0	1	1	0
23/059		H/C	5	Average	1	1	0	0	0	0	0	0	0	0
23/067	16	Flotation	4	Average	1	1	0	0	0	0	0	0	0	0
23/071		H/C	48	Poor	8	8	0	0	0	0	0	2	2	0
23/074	18	Flotation	39	Average	62	60	1	1	0	0	0	0	0	0
23/074		H/C	235	Average	57	57	0	0	0	0	0	3	8	3
23/077	19	Flotation	8	Average	35	0	0	0	0	0	0	0	0	0
23/077		H/C	4	Average	35	35	0	0	0	0	0	1	1	1
23/079	20	Flotation	7	Average	26	26	0	0	0	0	0	1	1	1
23/079		H/C	2	Average	1	1	0	0	0	0	0	0	0	0
23/087		H/C	29	Average	3	3	0	0	0	0	0	0	1	0
23/098		H/C	54	Average	1	1	0	0	0	0	0	0	0	0
23/099	58	Flotation	3	Average	10	10	0	0	0	0	0	0	0	0
23/106		H/C	60	Good	2	2	0	0	0	0	0	0	0	0
23/115		H/C	16	Good	1	1	0	0	0	0	0	0	1	0
23/134		H/C	31	Average	2	2	0	0	0	0	0	0	0	0
23/138		H/C	28	Poor	1	1	0	0	0	0	0	0	0	0
23/143		H/C	117	Good	2	2	0	0	0	0	0	0	0	0
23/147		H/C	32	Average	27	27	0	0	0	0	0	0	1	1
23/154		H/C	2437	Good	25	25	0	0	0	0	0	5	0	0
23/158	47	Flotation	2	Good	1	1	0	0	0	0	0	1	0	0
23/160	41	Flotation	7	Average	9	8	0	1	0	0	0	1	0	0
23/160		H/C	12	Average	2	2	0	0	0	0	0	0	0	0
23/164	37	Flotation	1	Poor	3	3	0	0	0	0	0	0	0	0
23/165		H/C	6	Poor	4	4	0	0	0	0	0	0	0	0
23/174		H/C	1	Average	6	0	0	0	1	0	0	0	0	0
23/177	77	Flotation	8	Good	10	9	0	0	1	0	0	1	1	0
23/197		H/C	37	Poor	2	2	0	0	0	0	0	0	0	0
23/202		H/C	30	Average	2	2	0	0	0	0	0	0	0	0
23/210		H/C	5	Average	12	10	0	2	0	0	0	0	0	0
23/214	60	Flotation	3	Poor	7	7	0	0	0	0	0	0	0	0
23/217	32	Flotation	111	Poor	1	1	0	0	0	0	0	0	0	0
23/220		H/C	6	Average	15	13	1	1	0	0	0	0	0	0
23/221		H/C	1	Average	1	1	0	0	0	0	0	0	0	0
23/224		H/C	32	Poor	1	1	0	0	0	0	0	1	1	0
23/231	25	Flotation	2	Poor	3	2	0	1	0	0	0	0	0	0
23/233	24	Flotation	17	Good	32	32	0	0	0	0	0	0	0	0
23/233		H/C	33	Good	18	17	0	0	0	0	0	0	0	0
23/236	27	Flotation	20	Average	10	10	0	0	0	0	0	0	0	0
23/236		H/C	27	Average	5	5	0	0	0	0	0	2	2	1
23/238		H/C	7	Average	1	1	0	0	0	0	0	0	0	0
23/252	31	Flotation	6	Poor	3	3	0	0	0	0	0	0	0	0
23/253		H/C	4	Average	1	1	0	0	0	0	0	0	0	0
23/286		H/C	54	Good	7	7	0	0	0	0	0	0	0	0
23/289	62	Flotation	22	Poor	41	39	0	2	0	0	0	0	1	0
23/289		H/C	22	Average	4	4	0	0	0	0	0	0	2	0
23/292		H/C	190	Average	25	23	0	2	0	0	0	4	4	4
23/297	64	Flotation	19	Average	150	0	0	0	0	0	0	0	0	0
23/298	65	Flotation	10	Average	105	105	0	0	0	0	0	0	0	0
23/299	67	Flotation	1	Average	2	2	0	0	0	0	0	0	0	0
23/312	74	Flotation	4	Average	18	16	0	2	0	0	0	0	0	0

23/314		H/C	185	Average	11	10	0	0	1	0	0	0	1	0
23/315		H/C	86	Average	1	1	0	0	0	0	0	0	0	0
23/316		H/C	13	Average	3	3	0	0	0	0	0	2	2	2
23/318		H/C	10	Average	2	2	0	0	0	0	0	0	0	0
23/322		H/C	17	Average	2	2	0	0	0	0	0	0	0	0
23/333		H/C	24	Average	3	3	0	0	0	0	0	0	0	0
23/334	76	Flotation	3	Average	18	13	0	5	0	0	0	0	0	0
23/351		H/C	6	Poor	3	3	0	0	0	0	0	0	0	0
23/356		H/C	27	Average	3	0	0	0	0	0	0	0	0	0
23/382		H/C	14	Poor	4	4	0	0	0	0	0	0	0	0
23/387	103	Flotation	9	Average	19	14	5	0	0	0	0	0	0	0
23/389		H/C	8	Average	2	2	0	0	0	0	0	0	0	0
23/397		H/C	1	Average	1	1	0	0	0	0	0	0	0	0
23/399		H/C	11	Average	2	2	0	0	0	0	0	0	0	0
23/402		H/C	13	Average	2	2	0	0	0	0	0	0	0	0
23/416		H/C	37	Poor	1	1	0	0	0	0	0	0	0	0
23/418		H/C	29	Good	1	1	0	0	0	0	0	1	0	0
23/419		H/C	394	Average	17	17	0	0	0	0	0	1	3	1
23/480	79	Flotation	2	Average	25	20	0	2	3	0	0	0	1	0
23/482	94	Flotation	65	Good	22	21	0	0	1	0	0	1	1	1
23/482		H/C	231	Good	10	10	0	0	0	0	0	3	4	0
23/557		H/C	6	Poor	1	1	0	0	0	0	0	0	1	0
23/582		H/C	24	Average	1	1	0	0	0	0	0	0	0	0
23/669		H/C	122	Poor	1	1	0	0	0	0	0	0	0	0
23/672		H/C	1274	Poor	47	47	0	0	0	0	0	1	2	1
23/676		H/C	94	Average	9	9	0	0	0	0	0	1	2	0
23/679		H/C	230	Poor	1	1	0	0	0	0	0	0	0	0
23/734		H/C	1	Poor	1	1	0	0	0	0	0	0	0	0
23/746	96	Flotation	2	Average	4	2	1	1	0	0	0	0	0	0
23/746		H/C	160	Poor	11	9	0	1	1	0	0	0	2	0
23/752		H/C	10	Poor	5	5	0	0	0	0	0	0	0	0
23/762	102	Flotation	1	Average	9	9	0	0	0	0	0	0	0	0
23/762		H/C	139	Poor	13	13	0	0	0	0	0	0	0	0
23/764	95	Flotation	5	Average	2	2	0	0	0	0	0	0	0	0
23/766		H/C	9	Average	1	1	0	0	0	0	0	0	0	0
23/774		H/C	110	Average	5	5	0	0	0	0	0	0	0	0
23/869		H/C	6	Average	1	1	0	0	0	0	0	0	1	0
23/871		H/C	5	Average	2	1	0	0	1	0	0	0	0	0
23/873		H/C	18	Average	2	1	0	0	1	0	0	0	1	0
23/887		H/C	91	Average	3	3	0	0	0	0	0	0	2	0
23/889		H/C	60	Average	6	6	0	0	0	0	0	0	1	0
23/892	105	Flotation	1050	Good	37	35	0	0	2	0	0	2	1	1
23/892		H/C	4024	Good	53	53	0	0	0	0	0	9	6	1
23/893		H/C	694	Average	14	14	0	0	0	0	0	0	0	0
Unstrat		H/C	76	Average	3	3	0	0	0	0	0	0	0	0

Table 4: Summary of animal bone by context and recovery method.

Context	Sample	Taxon	Part	Age	State
02/005		Chicken	Tarso-metatarsus	Adult	
02/005		Chicken	Tarso-metatarsus	Adult	
02/005		Chicken	Tarso-metatarsus	Adult	
02/005		Chicken	Tarso-metatarsus	Adult	
02/005		Chicken	Phalanx1		
03/004		Cattle	Scapula		
08/007		Sheep/goat	Metacarpal		
08/007		Chicken	Humerus		
08/008		Sheep/goat	Metatarsal		
08/008		Sheep/goat	Phalanx1		
08/008		Sheep/goat	Ilium		
08/008		Sheep/goat	Metatarsal		
08/008		Pig	Ilium		
08/008		Hare	Humerus		
08/008		Hare	Tibia		
12/005		Sheep/goat	Pelvis	Adult	
12/005		Cattle	Carpal	Adult	
12/005		Cat	Femur	Adult	
12/013		Sheep/goat	Tooth		
12/013		Cattle	Tooth		
12/013		Pig	Skull		
16/005		Sheep/goat	Horncore		
19/001		Gadid	Vertebra		
19/001		Gadid	Vertebra		
19/001		Gadid	Vertebra		
19/001		Cattle	Tooth		
19/001		Cattle	Tooth		
19/009		Dog	Femur	Adult	
19/009		Dog	Metapodial		
19/009		Cattle	Tooth		
19/009		Dog	Metapodial		
19/010		Sheep/goat	Radius		
19/010			Metatarsal		
19/010			Metatarsal		
19/010			Scapula		
19/010		Cattle	Skull		
19/010		Rabbit	Pelvis		
19/010	1	Sheep/goat	Phalanx1		
19/010	1		Phalanx1	Adult	
19/010	1		Phalanx2	Adult	
19/010	1		Phalanx2		
19/010	1		Calcaneous		
19/010	1		Hyoid		
19/010	1		Metapodial		
19/010	1	Rabbit	Humerus	Adult	
19/010	1	Goose	Tibio-tarsus		
19/010	1	Gadid	Vertebra		
20/007		Cattle	Radius		Butchered
20/007		Sheep/goat	Metacarpal		
20/009		Cattle	Tooth		
20/013		Cattle	Metatarsal		
20/013		Cattle	Mandible		Butchered
20/013		Pig	Mandible	Young adult	
20/013		Sheep/goat	Humerus		
20/014		Sheep/goat	Ulna		

20/081		Large mammal	Rib		Butchered
20/081		Sheep/goat	Phalanx1	Adult	
20/081		Sheep/goat	Ulna		
21/009		Sheep/goat	Femur		
23/001		Sheep/goat	Humerus		
23/001		Sheep/goat	Metacarpal	Adult	
23/001		Sheep/goat	Metatarsal	Adult	
23/002		Large mammal	Rib		Butchered
23/006		Dog	Tooth		
23/014		Sheep/goat	Femur		
23/014		Cattle	Phalanx2		
23/021		Cattle	Mandible		
23/024	8	Pig	Phalanx3	Juvenile	
23/024	8	Sheep/goat	Phalanx2	Adult	
23/024	8	Sheep/goat	Tooth		
23/024	8	Sheep/goat	Sesamoid		
23/026	9	Cattle	Tooth	Adult	
23/026	9	Sheep/goat	Tooth	Adult	
23/026	9	Sheep/goat	Distal fibula		
23/026	9	Cattle	Tooth		
23/026		Sheep/goat	Astragalus		
23/026		Sheep/goat	Tooth		
23/026		Cattle	Phalanx2	Adult	
23/026		Cattle	Pelvis		
23/026		Cattle	Tooth		
23/030		Sheep/goat	Phalanx1		
23/046		Sheep/goat	Ulna		
23/046		Sheep/goat	Tooth	Adult	
23/046		Pig	Phalanx2	Juvenile	
23/053		Pig	Calcaneous		
23/053		Pig	Metapodial		
23/056		Sheep/goat	Metatarsal		
23/056		Chicken	Femur		
23/071		Sheep/goat	Radius		
23/071		Sheep/goat	Radius		
23/071		Sheep/goat	Phalanx1		
23/074	18	Sheep/goat	Tooth		
23/074		Sheep/goat	Femur		
23/074		Sheep/goat	Phalanx1	Adult	
23/074		Sheep/goat	Phalanx1	Adult	
23/074		Sheep/goat	Phalanx2	Adult	
23/074		Sheep/goat	Radius		
23/074		Sheep/goat	Radius		
23/074		Sheep/goat	Tibia	Adult	
23/074		Sheep/goat	Hyoid		
23/074		Cattle	Phalanx3		
23/074		Horse	Metapodial	Adult	
23/074		Sheep/goat	Phalanx3		
23/074		Sheep/goat	Tooth		
23/074		Sheep/goat	Phalanx2		
23/074		Sheep/goat	Metacarpal		
23/077		Sheep/goat	Phalanx1		
23/077		Pig	Phalanx3	Juvenile	
23/077		Dog	Metapodial		
23/079	20	Sheep/goat	Phalanx1		
23/106		Sheep/goat	Femur		
23/106		Sheep/goat	Femur		
23/106		Sheep/goat	Tibia		

23/115		Sheep/goat	Femur		
23/134		Sheep/goat	Metatarsal		
23/134		Human	Vertebra		
23/143		Sheep/goat	Scapula		
23/143		Cattle	Astragalus		Butchered
23/147		Sheep/goat	Maxilla		
23/147		Sheep/goat	Phalanx2	Adult	
23/147		Pig	Tooth		
23/147		Dog	Metapodial		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
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23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		
23/154		Cattle	Horncore		Punctured by hole
23/158	47	Pig	Metapodial		
23/160	41	Gadid	Vertebra		
23/160	41	Hare?	Ulna		
23/174		Chicken	Ulna		
23/177	77	Cat	Radius		
23/177	77	Chicken	Humerus		
23/197		Horse	Pelvis		
23/197		Horse	Tooth		
23/202		Medium mammal	Longbone		Butchered
23/210		Gadid	Vertebra		
23/210		Gadid	Vertebra		
23/220		Rabbit	Tooth		
23/224		Sheep/goat	Humerus		
23/231	25	Gadid	Vertebra		
23/236		Sheep/goat	Radius		
23/236		Sheep/goat	Phalanx1		
23/236	27	Sheep/goat	Tooth		
23/286		Cattle	Carpal		
23/286		Cattle	Tooth		
23/289	62	Sheep/goat	Metatarsal	Adult	
23/289		Sheep/goat	Metatarsal		
23/289		Sheep/goat	Metatarsal	Adult	

23/292		Gadid	Vertebra		
23/292		Cattle	Phalanx1	Adult	
23/292		Cattle	Phalanx1	Adult	
23/292		Cattle	Phalanx1	Adult	
23/292		Cattle	Phalanx1		
23/292		Cattle	Maxilla		
23/292		Cattle	Maxilla		
23/292		Rabbit	Metapodial		
23/292		Pig	Tibia		
23/292		Large mammal	Longbone		Butchered
23/292		Large mammal	Longbone		Butchered
23/292		Large mammal	Longbone		Butchered
23/298	65	Rabbit	Phalanx3		
23/312	74	Pig	Phalanx3		
23/314		Sheep/goat	Atlas		
23/314		Sheep/goat	Metatarsal		
23/314		Cattle	Tooth		
23/314		Cattle	Tooth		
23/314		Chicken	Sternum		
23/314		Cattle	Metacarpal		
23/315		Cattle	Pelvis		Butchered
23/316		Sheep/goat	Phalanx1	Adult	
23/316		Sheep/goat	Phalanx2	Adult	
23/316		Sheep/goat	Ischium		
23/322		Pig	Skull		
23/333		Cattle	Skull		
23/356		Large mammal	Rib		Butchered
23/389		Pig	Skull		
23/399		Sheep/goat	Metatarsal		
23/416		Sheep/goat	Horncore		Butchered
23/418		Sheep/goat	Horncore		Butchered
23/419		Large mammal	Rib		Butchered
23/419		Cattle	Ulna		
23/419		Cattle	Tooth		
23/419		Pig	Humerus	Juvenile	
23/419		Pig	Humerus	Juvenile	
23/419		Dog	Metapodial		
23/419		Cattle	Humerus		Butchered
23/419		Cattle	Ilium		
23/480	79	Rabbit	Calcaneum		
23/480	79	Rabbit	Metapodial		
23/480	79	Rabbit	Metapodial		
23/480	79	Rabbit	Metapodial		
23/480	79	Rabbit	Metapodial		
23/480	79	Rabbit	Ulna		
23/480	79	Rabbit	Ulna		
23/480	79	Rabbit	Pelvis		
23/482	94	Sheep/goat	Maxilla		Butchered
23/482	94	Sheep/goat	Pelvis		
23/482	94	Pig	Metacarpal		
23/482	94	Pig	Phalanx1		
23/482	94	Large mammal	Longbone		Worked
23/482		Sheep/goat	Femur		
23/482		Sheep/goat	Femur		
23/482		Sheep/goat	Tibia		
23/482		Sheep/goat	Humerus		
23/482		Sheep/goat	Humerus		
23/482		Pig	Femur		

23/557		Cat	Tibia	Adult	
23/582		Sheep/goat	Radius	Adult	
23/669		Cattle	Humerus		
23/672		Cattle	Metacarpal	Adult	
23/672		Cattle	Humerus		
23/672		Human	Humerus		
23/672		Horse	Humerus		
23/679		Horse	Tibia		
23/746	96	Gadid	Vertebra		
23/746		Large mammal	Rib		Butchered
23/746		Large mammal	Rib		Butchered
23/746		Large mammal	Rib		Butchered
23/752		Sheep/goat	Tooth		
23/764	95	Pig	Tooth		
23/774		Sheep/goat	Horncore		Butchered
23/774		Cattle	Pelvis		
23/869		Pig	Ulna	Juvenile	
23/871		Goose	Tibio-tarsus		
23/873		Sheep/goat	Radius		
23/873		Goose	Femur		
23/887		Cattle	Tibia		
23/887		Pig	Calcaneous		
23/887		Goose	Carpo-metacarpus		
23/889		Sheep/goat	Tibia		
23/889		Cattle	Ulna		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Frontal		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Horncore		
23/892		Cattle	Tibia		
23/892	105	Sheep/goat	Axis		
23/892	105	Dog	Metapodial		
23/892	105	Cattle	Tibia		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		
23/892	105	Cattle	Horncore		

23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
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23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
23/892	105	Cattle	Horncore	
23/892		Sheep/goat	Scapula	Adult
23/892		Sheep/goat	Tibia	Adult
23/892		Sheep/goat	Radius	
23/892		Cattle	Tibia	
23/892		Cattle	Phal1	Adult
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
23/892		Cattle	Horncore	
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23/892		Cattle	Horncore	
23/893		Cattle	Horncore	
23/893		Cattle	Horncore	
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23/893	Cattle	Horncore	
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23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
23/893	Cattle	Horncore	
Unstrat	Cattle	Scapula	Adult

Table 5: Detailed summary of identifiable and butchered bone by context.

Appendix E

Human Bone Report

Report on the Human Bone from Spa Road
Rachel Ives, AOC Archaeology Group. January 2009.

1.0 Summary

1.0.1 Four disarticulated fragments of human bone were recovered during excavations at Spa Road, Bermondsey, London undertaken by AOC Archaeology Group during summer 2008. The bones represented adult individuals although it was not possible to provide more specific age-at-death and sex estimates for any of the contexts. No articulated burials were identified during the excavations and it is likely that the human bone represents disarticulated material disturbed during historical works on the site or else was brought onto site in spoil from elsewhere for land levelling during post-medieval site development works.

2.0 Introduction

2.0.1 Four fragments of disarticulated human bone were recovered from the excavations at Spa Road, Bermondsey, London, by AOC Archaeology Group during summer 2008 in advance of residential development on the site. This report presents an assessment of the human bone following the methods outlined in section 3.0. The desk-based assessment of the site predicted that archaeological remains from the prehistoric or Roman periods were likely to be evident on the site, as well as evidence of post-medieval farming, market gardening activities and tanning activities (AOC 2005). The latter activity was considered likely to have resulted in significant truncation across the site. No previous evidence for burials was known for the site from previous archaeological works or from historical documentation.

3.0 Methodology

3.0.1 The human bone was processed using water to remove soil residue and was left to air dry at room temperature prior to analysis. An inventory of the bones present was undertaken, together with an assessment of bone preservation following McKinley (2004). Consideration was given to the potential for the determination of age-at-death and sex estimation following standard methods as outlined in Buikstra & Ubelaker (1994) and Brickley & McKinley (2004), although the disarticulated nature of the material was very likely to limit this analysis. Any evidence for pathological alterations evident on the human bone was also evaluated but the incomplete nature of the individual remains present can significantly limit potential diagnoses and interpretations.

4.0 Results

4.0.1 Four disarticulated pieces of human bone were identified from the excavations at Spa Road. The bones are described individually below.

4.0.2 One adult left radius was found from context (23/482) and comprised the majority of the shaft and the proximal (upper) joint surface articulation the elbow. The proximal joint surface was fully fused,

which occurs between the ages of 14-17 years in males and 11.5-13 years in females (Scheuer & Black 2000, 295). This indicates that this individual was at least 13-17 years or older. It was not possible to determine a more specific age-at-death or sex estimation from these remains. Damage, most likely occurring during excavation, had removed the distal (lower) portion of the shaft and joint surface for articulation with the wrist. The bone surface was stained dark brown, likely a normal influence from the burial environment on site. In addition, the external bone surface was well preserved (Grade 0, McKinley 2004).

4.0.3 There were no pathological changes such as joint disease, trauma or infection on the bone. Rugged and raised spurs of lameller cortical bone formation were however present at the lateral midshaft as well as at the posterior margin of the radial tuberosity. Such bone formation is a normal variant that can occur at the site of soft tissue insertions in to the bone surface. This bone formation occurs most frequently as a result of localised muscle exertion or enlargement of associated muscles and intense or repeated physical activity can often result in bone formation at these sites (Roberts & Manchester 2005). These changes indicate some repeated muscle exertion at the pronator teres and biceps insertions in the radius.

4.0.3 An incomplete adult left scapula was also found from context (23/482). The scapula had been broken post-mortem into two pieces, one comprising a small piece of the blade and one larger piece of the glenoid fossa joint articulation at the shoulder as well as the inferior base of the acromion process and inferior border. The glenoid fossa was completely fused, which occurs between the ages of 15-20 years (Scheuer & Black 2000, 269), providing a minimum age estimate for the individual. It was not possible to determine a more accurate age-at-death or sex estimate for these remains. The bone surface preservation was good (Grade 0, McKinley 2004) despite the fragmentation and the bone was also stained dark brown. Due to the incomplete nature of the remains it was not possible to determine whether the scapula and radius described above (section 4.0.2) originally came from the same individual. There was no evidence for pathological changes on the adult scapula.

4.0.4 One adult thoracic vertebra was recovered from context (23/154) at Spa Road. The vertebra is a T12, located towards the inferior (lower) aspect of the spine and immediately above the large lumbar vertebrae. The T12 vertebra displayed a lack of costal body facets as well as inferior apophyseal joints that were aligned antero-posteriorly, which indicates articulation with similarly aligned facets of the lumbar vertebrae and in contrast with the remainder of the thoracic vertebrae. This vertebra also displayed transitional rotation of the superior apophyseal joints, with the left facet aligned antero-posteriorly and the right facet aligned medio-laterally. Such variation often occurs in the twelfth thoracic vertebra given its position at the border between the thoracic and lumbar spine and is unlikely to have had any functional or other implications for the individual.

4.0.5 The vertebra from Spa Road was well preserved (Grade 0, McKinley 2004) and the superior (upper) and inferior (lower) endplates or annular rings had completely fused onto the body surface. This process has been shown in one study to be completed by approximately 25 years of age as reviewed in Scheuer & Black (2000, 210). This indicates that the remains were from an adult individual although it was not possible to provide a more accurate age-at-death or sex estimate.

4.0.6 The superior (upper) surface of the thoracic centrum presented an irregularly oval, smooth-walled indentation, the base of which comprised normal lamellar cortical bone derived from the centrum surface. This trait is a Schmorl's node, which occurs following herniation of material from the intervertebral disk and subsequent impaction into the vertebral body. Schmorl's nodes are frequently identified in archaeological skeletal remains and can result from a variety of conditions. Increased age or conditions that can cause bone structural weakness (eg. osteoporosis) may exacerbate the effects that disk compression during load-bearing have in forming Schmorl's nodes (Roberts & Manchester 2005, 141). Alternatively, a localised traumatic episode can also cause the disk to suddenly rupture impacting disk material into the vertebral body. There were no other pathological changes on the vertebra from Spa Road.

4.0.7 A poorly preserved fragment of probable adult humerus shaft was found in context (23/672). The bone surface had undergone severe taphonomic alteration with complete removal of the external cortical lamellar bone layer and flaking and ridging of the remaining lamellar cortical bone. The bone preservation was recorded as a Grade 5 indicating extensive damage (McKinley 2004). The cortex was thinned owing to the post-mortem bone removal although no exposure of trabecular bone through the shaft had occurred. Post-mortem damage at both ends of the long bone shaft had enabled soil to extensively infiltrate the medullary cavity. As neither the proximal or distal epiphyses were present, it was not possible to determine whether the bone had undergone complete fusion, although the broad dimensions of the shaft would suggest an adolescent or adult individual. It was not possible to determine a more accurate age-at-death or sex estimate from the remains. It was also not possible to identify any pathological changes on the bone due to poor preservation and bone surface damage.

5.0 Conclusions

5.0.1 The disarticulated nature of the human bone recovered from excavations at Spa Road, Bermondsey, London significantly limited the potential of the osteological analysis despite the good preservation of the remains in three of the four contexts. Whilst some evidence for pathological alterations and morphological variations were identified on several bones, the interpretation of these features is also constrained by the incompleteness of the remains and the lack of a secure archaeological context for the remains from the site. No articulated burials were identified during the excavations. Considerable truncation of the site had occurred during the post-medieval period due to farming practices and market gardening (AOC 2005). It is possible that disturbance of the human remains had occurred during these works, although spoil brought onto site for landscaping work may also have included disturbed human remains.

6.0 References

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Appendix F

Metalwork Report

Spa Road Metal Assessment

Andy Heald

April 2009

OVERVIEW

All finds were individually examined and, where discernible, contextualised. A summary of finds, by context, is detailed in Appendix A. What follows is an overview, by material, with specific comments only on the more diagnostic types.

COPPER ALLOY

DOMESTIC ACCESSORIES

Buckle
The buckle was associated with the wearing of clothes, possibly breeches.

Multi-foil mount
Half of a multifoil mount was recovered. Such mounts are often described as dress accessories, perhaps for ornamenting belts, although it is not impossible that some were attached to items of furniture, book covers or caskets (see Egan & Pritchard 1991, 162).

Buttons and rivets
Three buttons (one four-holed; two with surviving stems, of which one is decorated) were recovered. Three rivets were also recovered. Three other possible objects may also be buttons.

Bell, Rumbler
One rumbler bell was recovered. The bell may have been attached to an animal or been worn by individuals, suspended from costume. Similar bells are known from medieval and post-medieval contexts with the form continuing into the modern period.

Pins
Fifty-two fragments of pins and/or shafts were recovered. Where discernible the majority appear to have conical heads, and are similar to types common in the post-medieval period (e.g. Tylecote 1972). These pins would have had a range of uses, in fixing garments (including shrouds), upholstery etc.

Tacks
Twenty-three fragments of tacks and/or shafts were recovered. Examples found on other medieval and post-medieval sites have been associated with leather and wood.

Spoons
4 spoons were recovered; three which have handles.

Mount
A mount, probably for decorating furniture, was recovered.

Miscellaneous

Discs – some possibly coins
Nine round, badly corroded, objects were recovered; some may be coins. These will be discernible after conservation.

Other miscellaneous finds were recovered, often mixed with modern finds such as screws. These included rolled sheets, safety pins, and a metal protractor. These are all listed in Appendix A.

IRON

The majority of the ironwork was corroded and could only be identified with the aid of X-radiographs. Some material is unrecognisable without full cleaning.

STRUCTURAL IRONWORK AND MISCELLANEOUS FITTINGS

Many objects were associated with structural fittings such as nails (including screws), tacks, rings, hinges, staples and brackets. Such objects would have been associated with wooden items, either structural components or portable wooden objects such as boxes. Many appear to have been associated with wooden structures associated with the tanning activity. A number of amorphous, corroded pieces of iron sheet and/or binding were also found. Some may also have been associated with wooden structures, fixtures or fittings.

TOOLS

A shovel was recovered from the site. Four other corroded objects may be tools: a pair of shears; a file; a knife, and a possible large pair of tweezers. These four objects can only be identified after conservation.

DOMESTIC ACCESSORIES

One buckle was recovered. It may have either been part of personal dress or worn as part of a harness.

MISCELLANEOUS

Much of the assemblage is corroded and fragmentary making further discussion difficult. However, the remaining assemblage contains numerous fragments of curved sheet which may be the remains of vessels; and it is likely that some of the handles were associated with them.

AN IRON BARREL HOOP PIECE

A large surviving band from what is presumed to be a barrel hoop (to secure the wooden staves of the barrel construction) was recovered from context (23/499). Its width is approximately 50-52mm <2" imperial> and has a length along its arc of 0.88metre.
Its thickness on the least rust affected areas is only 1.5mm.

Other small fragmentary pieces of the hoop were also recovered, though the incompleteness of the piece as a whole would not warrant any form of reattachment in conservation.

The predicted circumference of the hoop is suggestive that it came from a standard size ale or wine keg. It is not known if the keg/barrel was being reused in a tannery.

LEAD

The small lead assemblage included amorphous lumps and fragments of sheet and/or binding. Two objects can be classified more closely: the toy soldier and the lead seal. Lead seals were used in the medieval and post-medieval period as a means of identifying goods such as cloth, textiles, and bales of trade goods. Further analysis is needed to identify the specific type of seal.

SIGNIFICANCE OF DATA

The majority of the copper alloy objects from Spa Road are associated with the domestic sphere and are common finds on post-medieval sites. The majority of diagnostic iron objects are associated with structural fittings. Although finds such as nails and sheet are common on contemporary sites the association with features assigned to the tanning industry gives them particular note.

RECOMMENDATIONS FOR FUTURE WORK

CATALOGUING AND WIDER DISCUSSION

Copper alloy
A regional discussion of the diagnostic objects listed above should take place, following conservation of the relevant objects.

Iron
A regional discussion of the tools listed above should take place, following conservation of the relevant objects.

It would not be normal to fully catalogue all of the structural fittings, particularly the nails. However, if it was shown contextually that many of the iron objects were likely to be associated with wooden objects associated with the tanning industry then it may be worthwhile, for example, further study of the nails and bindings in an attempt to tease out further details of the wooden components and their construction.

Lead
The seal need to be identified to type and placed within a wider regional context.

Total for future work: 1 day [excluding further analysis of structural fittings]
3 days [including further analysis of structural fittings]

CLEANING TO AID IDENTIFICATION

Objects that require cleaning are listed in Appendix A. Cleaning is necessary to aid identification. The spoon handles need cleaned to see if there are any maker's marks.

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Appendix G

Environmental Rapid Assessment Report

SPA ROAD, BERMONDSEY LONDON BOROUGH OF SOUTHWARK: ENVIRONMENTAL ARCHAEOLOGICAL RAPID ASSESSMENT

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological rapid assessment undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development of land at Spa Road, Bermondsey, London Borough of Southwark (Site Code: SRQ07; National Grid Reference: NGR SP 076 863). During recent archaeological investigations at the site undertaken by AOC Archaeology, bulk and timber samples were obtained from a series of archaeological contexts dated to the Roman (Phase 2), Post Medieval (Phase 3), 19th century (Phases 4 and 5), 20th century (Phase 6) and Modern (Phase 7) periods. However, samples were mainly collected from Phases 4 and 5 for the environmental archaeological rapid assessment and possible future analysis of features associated with industrial Tanning activities.

The aims of the environmental archaeological rapid assessment was to evaluate the potential of the samples for reconstructing the past activities, of the site. In order to achieve this aim, the environmental archaeological assessment consisted of:

1. Rapidly assessing the potential of pollen samples for reconstructing the vegetation conditions surrounding the site during Tannery Phases 4 and 5 (bulk samples)
2. Rapidly assessing the subfossil biological remains (charred and waterlogged plant macrofossils and Mollusca) preserved in order to provide preliminary reconstructions of vegetational and hydrological conditions, and the exploitation of resources during the Roman and Tannery phases of activity (bulk samples)
3. Rapidly assessing the potential of the timber and bulk samples for providing a geochemical signature that might indicate tanning methods on the site during Phases 4 and 5 (bulk samples)

GEOLOGICAL CONTEXT

The site is in the valley of the Lower Thames, to the south of the estuarine reach of the river known as The Pool and about 0.7km from the modern waterfront. The site is underlain by the Kempton Park Gravel (British Geological Survey 1:50,000 Sheet 270 South London 1998) resting on bedrock London Clay. The Kempton Park Gravel is a deposit of sand and gravel of Mid Devensian Age dated to between 45,000 and 30,000 BP (Gibbard, 1995). Thicknesses of up to 7.5m of Kempton Park Gravel are recorded in the Southwark area where it forms a low gravel terrace rising slightly above the level of the floodplain alluvium. Near the site, the edge of the alluvium is immediately to the north of Spa Road and parallel with the road, which forms the northern boundary of the site. The alluvium here occupies the valley floor of the Neckinger River a minor south bank tributary of the Thames that originally flowed from west to east, along the present line of Abbey Street, roughly parallel with Spa Road and about 0.25km north of the site (Barton 1992).

The slightly higher ground underlain here by the Kempton Park Gravel outcrop forms the 'island' or 'eyot' of Bermondsey, which will have offered dryland conditions for much of the prehistoric period. The site is on the northern edge of the 'island', close to the dryland margin. Previous investigations towards the western end of Spa Road, noted by Hodgkinson (2005), record ploughsoil containing Roman artefacts at 1.32m OD. Hodgkinson concludes that the surface of the Kempton Park Gravel across the site is likely to be encountered at levels between 1.3m and 2.0m OD.

The investigation undertaken by Compass Archaeology for the Bermondsey Spa Regeneration Project records the presence within the site and apparently within the Kempton Park Gravel, of thin horizons of peat and decaying vegetation at levels between 0.1m above and 0.1m below OD.

Figure 1: Location of Spa Road, Bermondsey, London Borough of Southwark

METHODS

Rapid pollen assessment

Two and twenty two samples from Phases 4 and 5 respectively, were sub-sampled from bulk samples and processed for a rapid pollen assessment (Table 1). 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 rapid assessment procedure consisted of scanning the prepared slides, and recording the concentration and preservation of pollen grains and spores on four transects (10% of the slide) (Table 1).

Rapid waterlogged plant macrofossil assessment (seeds and wood)

Bulk samples from Phases 4 (two samples) and 5 (twenty one samples) were processed and rapidly assessed for waterlogged seeds and wood. A 1-litre subsample was extraced from each of the bulk samples and was processed by wet-sieving using 300 micron, 500 micron and 1mm mesh sizes. The residues from each sieve size were then scanned using a low power zoom-stereo microscope. The quantities of waterlogged seeds and wood were recorded for each sample (Table 2). The quantities of charcoal and charred seeds were also noted.

Rapid charred plant macrofossil (seeds and wood), Mollusca and bone assessment

One hundred and thirty six flots and residues processed by AOC Archaeology were rapidly assessed for charred plant macrofossils (seeds and wood), non-charred wood, Mollusca and bone from Phases 2 (11 samples), 3 (11 samples), 4 (11 samples), 5 (43 samples), 6 (3 samples), 7 (2 samples), and Unphased (5 samples). The quantities of each class were recorded for each sample (Tables 3 and 4).

Rapid geochemical assessment

A rapid geochemical assessment was carried out on twenty-two bulk samples from Phases 4 (two samples) and 5 (twenty one samples), one cloth sample from Phase 5 and twenty timber samples from Phases 4 (14 samples), 5 (5 samples) and 7 (1 sample). The process consisted of analysing the samples with a NI|TON portable x-ray fluorescence spectrometer (XRF) on each sample to provide an initial indication of the chemistry of the materials, and identify any elevated chemicals (such as Cr, Pb, Zn, Cu etc), that may identify the presence of 'alum' (sodic, potassic or calcic) or chrome and metal-rich fills, which represent only a few of many different types of tanning process (Tables 5 and 6; Figures 1 and 2).

RESULTS OF THE RAPID POLLEN ASSESSMENT

Twenty-three samples from Phases 4 (2 samples) and 5 (twenty one samples) were processed for a rapid pollen assessment. Pollen was not preserved in any sample from Phases 4 and 5. The presence and concentration of microscopic charred particles was variable throughout the samples rapidly assessed (Table 1).

Table 1: Results of the pollen rapid assessment, Spa Road, Bermondsey

Sample Number	Context	Description	Phase	Concentration	Preservation	Microscopic charcoal
<30>	(23/241)	Fill of [23/242]	4	0	N/A	1
<104>	(23/891)	Fill of [23/481]	4	0	N/A	4
<17>	(23/059)	Fill of [23/060]	5	0	N/A	0
<59>	(23/100)	Fill of [23/101]	5	0	N/A	0
<44>	(23/104)	Fill of [23/105]	5	0	N/A	1
<53>	(23/139)	Fill of [23/140]	5	0	N/A	0
<45>	(23/145)	Fill of [23/146]	5	0	N/A	2
<48>	(23/156)	Fill of [23/157]	5	0	N/A	0
<47>	(23/158)	Fill of [23/157]	5	0	N/A	3
<42>	(23/161)	Fill of [23/162]	5	0	N/A	1
<38>	(23/165)	Fill of [23/166]	5	0	N/A	2
<35>	(23/188)	Fill of [23/187]	5	0	N/A	2
<55>	(23/191)	Fill of [23/192]	5	0	N/A	0
<50>	(23/204)	Fill of [23/206]	5	0	N/A	2
<51>	(23/205)	Fill of [23/206]	5	0	N/A	1
<60>	(23/214)	Fill of [23/216]	5	0	N/A	0
<57>	(23/219)	Fill of [23/218]	5	0	N/A	0
<44>	(23/222)	Fill of [23/105]	5	0	N/A	0
<29>	(23/239)	Fill of [23/240]	5	0	N/A	0
<36>	(23/416)	Fill of [23/187]	5	0	N/A	0
<78>	(23/416)	Fill of tanning pit [23/502]C	5	0	N/A	0
<87>	(23/574)	Fill of tanning pit [23/504]H	5	0	N/A	1
<86>	(23/597)	Fill of tanning pit [23/503]D	5	0	N/A	1

Key: 0 = 0 estimated grains per slide; 1 = 1 to 75; 2 = 76 to 150; 3 = 151 to 225; 4 = 226-300; 5 = 300+. Estimated number based on assessment of 10% of total number of slide transects (4 of 40 transects)

RESULTS OF THE WATERLOGGED PLANT MACROFOSSIL ASSESSMENT (BULK SAMPLES)

Twenty three bulk samples from Phases 4 (two samples) and 5 (twenty one samples) were rapidly assessed for waterlogged seeds and wood; charred seeds and wood were also noted (Table 2).

Phase 4: 19th Century tannery and houses

Two bulk samples were assessed from Phase 4. Neither sample contained waterlogged wood or seeds. However, both samples <30>, (context (23/241); fill of [23/242]), and <104> (context (23/891); fill of [23/481]), contained a low concentration of charcoal suitable for identification.

Phase 5: 19th Century tannery abandonment

Twenty one bulk samples were assessed from Phase 5. Of these, only three samples contained waterlogged or charred seeds: sample <86>, (context (23/592); fill of tanning pit [23/503]D), contained a low concentration waterlogged seeds; sample <47>, (context (23/158); fill of [23/157]), contained a low concentration of charred seeds, and sample <50> (context (23/204); fill of [23/206]) contained a low concentration of both charred and waterlogged seeds.

Seven samples contained waterlogged wood suitable for identification: sample <29>, (context (23/239); fill of [23/240]), sample <55>, (context (23/191); fill of [23/192]) and sample <59>, (context (23/100); fill of [23/101]) contained low numbers of fragments; samples <17> (context (23/059); fill of [23/060]), <35> (context (23/188); fill of [23/187]) and <42> (context 23/161); fill of [23/162]) contained moderate quantities of fragments; and sample <86> (context (23/592); fill of tanning pit [23/503]D) contained moderately high numbers of fragments.

With the exception of sample <78> (context (23/146); fill of tanning pit [23/502]C), all samples from Phase 5 contained fragments of charcoal. Of these, the samples with the greatest abundances were samples <35>, (context (23/188); fill of [23/187]), <50> (context (23/204); fill of [23/206]), and <60> (context (23/214); fill of [23/216]) contained the highest number of identifiable charcoal fragments.

Table 2: Waterlogged plant macrofossil rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

Sample number	Context number	Description	Phase number	Volume processed (litres)	Fraction	Waterlogged Seeds	Waterlogged Wood	Charred wood	Charred seeds
<30>	(23/241)	Fill of [23/242]	4	1.0	>300µm	-	-	-	-
					>1mm	-	-	1	-
<104>	(23/891)	Fill of [23/481]	4	1.0	>300 µm	-	-	1	-
					>1mm	-	-	2	-
<17>	(23/059)	Fill of [23/060]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	2	2	-
<29>	(23/239)	Fill of [23/240]	5	1.0	>300µm	-	1	1/2	-
					>1mm	-	1	1/2	-
<35>	(23/188)	Fill of [23/187]	5	1.0	>300µm	-	-	1/2	-
					>1mm	-	2	5	-
<36>	(23/416)	Fill of [23/187]	5	1.0	>300µm	-	-	1/2	-
					>1mm	-	-	1/2	-
<38>	(23/165)	Fill of [23/166]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	-	1/2	-
<40>	(23/222)	Fill of [23/223]	5	1.0	>300 µm	-	-	1/2	-
					>1mm	-	-	2	-
<42>	(23/161)	Fill of [23/162]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	2	2	-
<44>	(23/104)	Fill of [23/105]	5	1.0	>300 µm	-	-	1/2	-
					>1mm	-	-	1/2	-
<45>	(23/145)	Fill of [23/146]	5	1.0	>300µm	-	-	1/2	-
					>1mm	-	-	1	-
<47>	(23/158)	Fill of [23/157]	5	1.0	>300µm	-	-	2	1
					>1mm	-	-	1	-

<48>	(23/156)	Fill of [23/157]	5	1.0	>300µm	-	-	1	-
					>1mm	-	-	1	-
<50>	(23/204)	Fill of [23/206]	5	1.0	>300µm	1	-	1/2	1
					>1mm	-	-	2/3	-
<51>	(23/205)	Fill of [23/206]	5	1.0	>300µm	-	-	1	-
					>1mm	-	-	1	-
<53>	(23/139)	Fill of [23/140]	5	1.0	>300 µm	-	-	1/2	-
					>1mm	-	-	1/2	-
<55>	(23/191)	Fill of [23/192]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	1	1	-
<57>	(23/219)	Fill of [23/218]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	-	1/2	-
<59>	(23/100)	Fill of [23/101]	5	1.0	>300µm	-	-	1	-
					>1mm	-	1	1/2	-
<60>	(23/214)	Fill of [23/216]	5	1.0	>300 µm	-	-	1	-
					>1mm	-	-	2/3	-
<78>	(23/146)	Fill of tanning pit [23/502]C	5	1.0	>300µm	-	-	-	-
					>1mm	-	-	1	-
<86>	(23/592)	Fill of tanning pit [23/503]D	5	1.0	>300 µm	1	-	1/2	-
					>1mm	-	3	1	-
<87>	(23/574)	Fill of tanning pit [23/504]H	5	1.0	>300 µm	-	-	1	-
					>1mm	-	-	1	-

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 OF THE CHARRED PLANT MACROFOSSIL AND MOLLUSCA ASSESSMENT (FLOTS AND PICKED RESIDUES)

One hundred and thirty six flots and residues processed by AOC Archaeology were rapidly assessed for charred plant macrofossils (seeds and wood), non-charred wood, Mollusca and bone from Phases 2 (11 samples), 3 (11 samples), 4 (11 samples), 5 (43 samples), 6 (3 samples), 7 (2 samples), and Unphased (5 samples) (Table 3). For the charred macrofossil assessment, each sample is recorded once in Table 4, incorporating the flot and residue for each sample (where both were provided, and if the context numbers were not different).

Phase 2: Roman

With the exception of sample <108> (context (198); fill of [199]), all samples from Phase 2 contained fragments of charcoal. Of these, sample <92> (context 23/672); fill of [23/674]) contained up to 50 fragments of charcoal suitable for identification. Two samples from Phase 2 contained seeds: sample <91> (context (23/673); fill of [23/674]) contained low numbers of waterlogged seeds, and sample <93> (contexts (23/678) and (23/679); fill of [23/677]) contained a moderate amount of charred seeds. Three samples from Phase 2 contained low numbers of Mollusca: samples <98> (context (23/669); fill of [23/670]), <101> (context (23/582); fill of [23/583]) and <107> (context (197); fill of [199]).

Phase 3: Post Medieval, pre-tannery (17th-18th Century)

All the samples from Phase 3 contained fragments of charcoal. Of these, ten samples contained high quantities of charcoal suitable for identification: samples <8>, <9>, <10>, <13>, <18>, <19>, <24>, <62>, <74> and <97>. Seeds were present in three of the flot samples from Phase 3: sample <9> (context (23/026); fill of a ditch), sample <19> (context (23/077); fill of [23/078]) and sample <97> (context (23/699); cut of pit) contained low numbers of charred seeds, while sample <19> contained low numbers of waterlogged seeds. Low quantities of Mollusca were present in two samples from Phase 3: samples <13> (context (23/056); fill of [23/057]) and <19> (context (23/077); fill of [23/078]).

Phase 4: 19th Century tannery and houses

8.2.6 With the exception of sample <104> (context 23/891); fill of [23/481]), all samples from Phase 4 contained fragments of charcoal. Of these, samples <5> (context (23/006); fill of tan pit), <7> (context (23/008); fill of tan pit), <12> (context (23/046); fill of [23/048]), <15> (context (23/055); fill of [23/054]) and <31> (context (23/252); fill of [23/251]) contained abundant fragments of charcoal suitable for identification. Sample <31> (context (23/252); fill of [23/251]) contained a high quantity of dried wood fragments. Two samples from Phase 4 contained charred seeds: sample <27>

(context (23/236); fill of [23/237]), and sample <31> (context (23/252); fill of [23/251]). Mollusca suitable for identification were present in three samples from Phase 4, samples <5> (context (23/006); fill of tan pit), <12> (context (23/046); fill of [23/048]) and <103> (context (23/387); fill of [23/365]).

Phase 5: 19th Century tannery abandonment

With the exception of samples <21>, <59> and <78>, all samples from Phase 5 contained fragments of charred wood. Twenty-nine out of a total of forty-four samples contained moderate to abundant quantities charcoal suitable for identification (Table 3).

Table 3: Flot and picked residue samples from Phase 5 containing charred wood suitable for identification

Sample number	Context	Description	Charred wood
<22>	(23/142)	Fill of [23/131]	5
<22>	(23/174)	Fill of [23/176]	4/5
<22>	(23/238)	Fill of [23/240]	5
<23>	(23/210)	Fill of [23/210]	2
<25>	(23/231)	Fill of [23/232]	5
<28>	(23/238)	Fill of [23/240]	5
<29>	(23/239)	Fill of [23/240]	2
<32>	(23/217)	Fill of [23/216]	5
<33>	(23/174)	Fill of [23/176]	4
<35>	(23/188)	Fill of [23/187]	5
<36>	(23/189)	Fill of [23/187]	3/4
<37>	(23/154)	Fill of [23/166]	5
<37>	(23/164)	Fill of [23/166]	5
<39>	(23/221)	Fill of [23/223]	5
<41>	(23/160)	Fill of [23/162]	5
<42>	(23/161)	Fill of [23/162]	2
<46>	(23/147)	Fill of [23/146]	3
<47>	(23/158)	Fill of [23/157]	5
<49>	(23/203)	Fill of [23/206]	5
<52>	(23/138)	Fill of [23/140]	5
<56>	(23/220)	Fill of [23/218]	4
<58>	(23/099)	Fill of [23/101]	5
<60>	(23/214)	Fill of [23/216]	3
<66>	(23/323)	Deposit	2
<75>	(23/333)	Fill of [23/335]	3
<85>	(23/505)	Fill of tanning pit [23/502]D-E	4
<95>	(23/764)	Fill of tanning pit [23/768]	3
<96>	(23/746)	Fill of tanning pit [23/768]	5

<100>	(23/774)	Fill of tanning pit [23/768]	4

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

Six samples from Phase 5 contained low numbers of charred seeds: samples <14> (context (23/053); fill of [23/052]), <22> (context (23/142); fill of [23/131]), <23> (context (23/210); fill of [23/211]), <66> (context (23/323); a deposit), <76> (context (23/334); fill of [23/335]) and <94> (context (23/482); fill of [23/481]). Only one sample from Phase 5 (sample <14> (context (23/053); fill of [23/052]) contained non-charred seeds. Mollusca suitable for identification were present in eleven samples from Phase 5, samples <22>, <39>, <46>, <56>, <64>, <66>, <76>, <77>, <94>, <96> and <100> each containing low numbers of specimens.

Phase 6: 20th Century SA horizon

Three samples were assessed from Phase 6. Picked seeds from context (23/238) (fill of [23/240]) contained low numbers of charred seeds suitable for identification, and fragments of charred wood. Sample <20> (context (23/079); fill of [23/080]), contained up to 50 fragments of charred wood suitable for identification, while sample <26> (context 23/079); fill of [23/080]) contained low numbers of fragments.

Phase 7: Modern

One sample was assessed from Phase 7; sample <11> (context (23/405); fill of [23/406]). This contained a large quantity of charcoal fragments suitable for identification, and a low number of charred seeds.

Unknown phase

Five of the samples assessed for charred macrofossil remains were of unknown Phase: samples <1> (context (19/010)), and unassigned sample numbers from contexts (19/009), (19/012) and (23/522). Of these, sample <1> contained abundant charred seeds and high amounts of charcoal suitable for identification. The flot samples from contexts (19/009) and (19/012) contained high amounts of charcoal suitable for identification. The flot sample from context (19/009) also contained a hazelnut (*Corylus avellana*). A fragment of charcoal identified previously as a burnt seed from context (23/522) was suitable for identification.

Table 4: Charred plant macrofossil rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

Sample number	Context number	Description	Phase number	Charred wood	Charred seeds	Waterlogged Seeds	Non-charred Wood	Mollusca
'Flot sample'	(19/009)	N/A	-	2/3	-	-	-	-
'Nut'	(19/009)	N/A	-	-	1	-	-	-
'Flot sample'	(19/012)	N/A	-	3	-	-	-	-
'Burnt seed'	(23/522)	N/A	-	1	-	-	-	-
<1>	(19/010)	N/A	-	2/3	5	-	-	-
<90>	(23/672)	Fill of [23/674]	2	1	-	-	-	-
<91>	(23/673)	Fill of [23/674]	2	1	-	1	-	-
<92>	(23/672)	Fill of [23/674]	2	2	-	-	-	-
<93>	(23/678), (679), (680)	Fill of [23/677]	2	1	2	-	-	-
<98>	(23/669)	Fill of [23/670]	2	1	-	-	-	1
<99>	(23/672)	Fill of [23/674]	2	1	-	-	-	-
<101>	(23/582)	Fill of [23/583]	2	1		-	-	1
<102>	(23/762)	Fill of [23/763]	2	1	-	-	-	-
<106>	(190)	Fill of 191	2	1	-	-	-	-
<107>	(197)	Fill of 199	2	1	-	-	-	1
<108>	(198)	Fill of 199	2	-	-	-	-	-
<8>	(23/024)	Fill of Ditch	3	2	-	-	-	-
<9>	(23/026)	Fill of Ditch	3	3	2	-	-	-
<10>	(23/024)	Fill of Pit	3	4	-	-	-	-

<13>	(23/056)	Fill of [23/057]	3	2	-	-	1	1
<16>	(23/066)	Fill of [23/067]	3	1	-	-	1	-
<18>	(23/074)	Fill of [23/075]	3	4	-	-	-	-
<18>	(23/077)	Fill of [23/078]	3	2	-	-	-	-
<19>	(23/077)	Fill of [23/078]	3	3	1	1	-	1
<24>	(23/233)	Fill of [23/234]	3	2/3	-	-	-	-
<62>	(23/289)	Fill of [23/290]	3	2	-	-	-	-
<74>	(23/312)	Fill of [23/313]	3	1/2	-	-	-	-
<97>	(23/699)	Cut of pit	3	1/2	1	-	-	-
<5>	(23/006)	Fill of Tan pit	4	4	-	-	-	1
<6>	(23/007)	Fill of Tan pit	4	1/2	-	-	-	-
<7>	(23/008)	Fill of Tan pit	4	5	-	-	-	-
<12>	(23/046)	Fill of [23/048]	4	2/3	-	-	-	1
<15>	(23/055)	Fill of [23/054]	4	2/3	-	-	-	-
<27>	(23/236)	Fill of [23/237]	4	1/2	1/2	-	-	-
<31>	(23/252)	Fill of [23/251]	4	5	1	-	3	-
<88>	(23/253)	Fill of [23/254]	4	1	-	-	-	-
<103>	(23/387)	Fill of [23/365]	4	1	-	-	-	4
<104>	(23/891)	Fill of [23/481]	4	-	-	-	-	-
<105>	(23/892)	Fill of [23/893]	4	1	-	-	-	-
<14>	(23/053)	Fill of [23/052]	5	1	1	1	2	-
<21>	(23/085)	Fill of [23/064]	5	-	-	-	-	-
<22>	(23/142)	Fill of [23/131]	5	5	1	-	1	1
<22>	(23/174)	N/A	5	4/5	-	-	1	-
<22>	(23/238)	N/A	5	5	-	-	-	-
<23>	(23/210)	Fill of [23/211]	5	2	1	-	-	-
<25>	(23/231)	Fill of [23/232]	5	5	-	-	2	-
<28>	(23/238)	Fill of [23/240]	5	5	-	-	-	-

<29>	(23/239)	Fill of [23/240]	5	2	-	-	-	-
<32>	(23/217)	Fill 0f [23/176]	5	5	-	-	1	-
<33>	(23/174)	Fill 0f [23/176]	5	4	-	-	-	-
<35>	(23/188)	Fill of [23/187]	5	5	-	-	1	-
<36>	(23/189)	Fill of [23/187]	5	3/4	-	-	1	-
<37>	(23/154)	Fill of [23/166]	5	5	-	-	-	-
<38>	(23/165)	Fill of [23/166]	5	1/2	-	-	-	-
<39>	(23/221)	Fill of [23/223]	5	5	-	-	-	1
<41>	(23/160)	Fill of [23/162]	5	5	-	-	1	-
<42>	(23/161)	Fill of [23/162]	5	2	-	-	1/2	-
<46>	(23/147)	Fill of [23/146]	5	3	-	-	-	1
<47>	(23/158)	Fill of [23/157]	5	5	-	-	-	-
<48>	(23/156)	Fill of [23/157]	5	1/2	-	-	1	-
<49>	(23/203)	Fill of [23/157]	5	5	-	-	-	-
<51>	(23/205)	Fill of [23/206]	5	1	-	-	1	-
<52>	(23/138)	Fill of [23/140]	5	5	-	-	-	-
<55>	(23/191)	Fill of [23/192]	5	1/2	-	-	-	-
<56>	(23/220)	Fill of [23/218]	5	4	-	-	-	1
<57>	(23/219)	Fill of [23/218]	5	1	-	-	-	-
<58>	(23/099)	Fill of [23/101]	5	5	-	-	1	-
<59>	(23/100)	Fill of [23/101]	5	-	-	-	-	-
<60>	(23/214)	Fill of [23/216]	5	3	-	-	2	-
<61>	(23/175)	Fill 0f [23/176]	5	1/2	-	-	-	-
<63>	(23/296)	Deposit	5	1	-	-	-	-
<64>	(23/297)	Deposit	5	1	-	-	-	1/2
<66>	(23/323)	Deposit	5	2	1	-	-	1
<67>	(23/299)	Deposit	5	1/2	-	-	-	-
<75>	(23/333)	Fill of [23/335]	5	3	-	-	-	-

<76>	(23/334)	Fill of [23/335]	5	2	1	-	-	1
<77>	(23/177)	Fill of [23/153]	5	1	-	-	-	1
<78>	(23/416)	Fill of tanning pit [23/502]C	5	-	-	-	-	-
<85>	(23/505)	Fill of tanning pit [23/502]D - E	5	4	-	-	-	-
<86>	(23/597)	Fill of tanning pit [23/503]D	5	1	-	-	-	-
<89>	(23/671)	Fill of [23/606]	5	1	-	-	-	-
<94>	(23/482)	Fill of [23/481]	5	1/2	1	-	-	2
<95>	(23/764)	Fill of tanning pit [23/768]	5	3	-	-	-	-
<96>	(23/746)	Fill of tanning pit [23/768]	5	5	-	-	-	2
<100>	(23/774)	Fill of tanning pit [23/768]	5	4	-	-	-	1
'Seeds'	(23/238)		6	1	1	-	-	-
<20>	(23/079)	Fill of [23/080]	6	2	-	-	-	-
<26>	(23/079)	Fill of [23/080]	6	1	-	-	-	-
<11>	(23/045)	Fill of [23/406]	7	5	1	-	-	-

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 OF THE RAPID GEOCHEMICAL ASSESSMENT

All the samples on which a rapid geochemical assessment was carried out can be seen in Tables 5 and 6. Table 6 is the key for Figure 2, which has been plotted to display all the sample fills for each phase, along-side the wooden structures. Multiple readings were taken on certain bulk samples; when this has taken place, each reading is displayed in all Tables and Figures. All the data are reported in parts per million (ppm) unless otherwise stated, and have uncertainty values ranging from 1.4-4.9%. Details of these can be made available if required.

Phase 4: 19th Century tannery and houses

Two samples <30> (23/241; fill of [23/242]) and <104> (23/891; fill of [23/242]) were chosen for analysis with only sample <30> showing values of Pb and Fe higher than the modern phase (Phase 7; Table 5; Figure 1). Fourteen samples of wood were also analysed from Phase 4 (Table 5, Figure 1). These samples were extremely elevated in metals (Table 5) with the timber floor and wooden planks elevated in Fe and Pb. However, the wooden structure for the tanning pit showed much lower concentrations.

Phase 5: 19th Century tannery abandonment

Thirty four samples were chosen for rapidly assessed from Phase 5 with seven coming from the fill of tanning pits (Table 5). Figure 1 shows that there are some samples that show very high concentrations of elements (sample <35>, <17>, <47> and <30>) with varying degrees of difference. For example, sample <35> is high in Pb but extremely high in Zn, whereas sample <17> is very high in Zn and only moderately high in Pb.

Phase 7: Modern

One sample was chosen for chemical analyses (from context 23/001) which gives a good background set of analyses for comparison of the historical samples. The analyses for this sample (Table 5, Figure 1) show it to be very low in all elements.

Table 5: Chemical analysis rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

Sample number	Context number	Description	Phase	Pb	Zn	Fe	Fe/Pb	Pb/Zn
Wooden timbers								
<11>	(23/559)	Timber Floor of [23/504]F	4					
	(23/487)	Wooden plank	4	494.87		12075.90	24.40	
	(23/423)	Wooden plank in [23/395]	4	429.49		77351.96	180.10	
	(23/423)	Wooden plank in [23/395]	4	872.10	183.52	11841.46	13.58	4.75
<10>	(23/510)	Wooden plank in [23/502]G	4	49.48		1342.05	27.12	
	(23/232)	Wooden structure for tanning pit	4	23.83	59.02	7441.16	312.26	0.40
<5>	(23/101)	Wooden structure for tanning pit	4			616.88		
<6>	(23/166)	Wooden structure for tanning pit	4	90.04		3548.69	39.41	
<3>	(23/216)	Wooden structure for tanning pit	4	27.81				
<1>	(23/218)	Wooden structure for tanning pit	4			556.45		
<7>	(23/162)	Wooden structure for tanning pit	4	88.85	49.47	1577.36	17.75	1.80
<2>	(23/187)	Wooden structure for tanning pit	4	314.41	71.55	535.80	1.70	4.39
<4>	(23/232)	Wooden structure for tanning pit	4					
	(23/542)	Wooden trough	4					
	(23/394)	Brick drain sluice	4	492.94	235.79	27046.37	54.87	2.09
	(23/085)	Fill of [23/064]	5	15.84	221.97	3057.65	193.03	0.07
	(23/135)	Fill of [23/141]	5	41.17		4106.04	99.73	
	(23/418)	Fill of tanning pit [23/502]F	5	16.64			0.00	
	(23/514)	Fill of tanning pit [23/503]A	5	14.75		1419.48	96.24	
	(23/570)	Fill of tanning pit [23/504]H	5	45.27		15568.39	343.90	
Bulk samples								
<30>	(23/241)	Fill of [23/242]	4	223.16		19620.69	87.92	
<104>	(23/891)	Fill of [23/481]	4			388.84		
<17>	(23/059)	Fill of [23/060]	5	6971.42	563.32	64075.74	9.19	12.38
<59>	(23/100)	Fill of [23/101]	5			634.90		
<59>	(23/100)	Fill of [23/101]	5			698.26		
<44>	(23/104)	Fill of [23/105]	5	241.04	109.49	1430.34	5.93	2.20
<53>	(23/139)	Fill of [23/140]	5	31.78				
<45>	(23/145)	Fill of [23/146]	5	47.09		542.57	11.52	
<47>	(23/158)	Fill of [23/157]	5	2838.7	1734.2	27426.72	9.66	1.64

				9	7			
<48>	(23/156)	Fill of [23/157]	5	124.93		449.45	3.60	
<42>	(23/161)	Fill of [23/162]	5	221.58		417.81	1.89	
<38>	(23/165)	Fill of [23/166]	5	82.57				
<36>	(23/189)	Fill of [23/187]	5					
<35>	(23/188)	Fill of [23/187]	5	3607.07	5395.27	32005.76	8.87	0.67
<55>	(23/191)	Fill of [23/192]	5	328.51		1192.81	3.63	
<55>	(23/191)	Fill of [23/192]	5	156.58		421.86	2.69	
<51>	(23/205)	Fill of [23/206]	5			610.33		
<51>	(23/205)	Fill of [23/206]	5					
<51>	(23/205)	Fill of [23/206]	5			828.80		
<50>	(23/204)	Fill of [23/206]	5	778.13	239.56	18248.94	23.45	3.25
<50>	(23/204)	Fill of [23/206]	5	756.09	225.91	21792.65	28.82	3.35
<60>	(23/214)	Fill of [23/216]	5	132.89	131.12	1180.39	8.88	1.01
<60>	(23/214)	Fill of [23/216]	5	93.51	114.99	1944.22	20.79	0.81
<57>	(23/219)	Fill of [23/218]	5	169.54	54.62	3571.12	21.06	3.10
<40>	(23/222)	Fill of [23/223]	5	2672.26	137.13	8015.23	3.00	19.49
<29>	(23/239)	Fill of [23/240]	5					
<29>	(23/239)	Fill of [23/240]	5			309.72		
<78>	(23/416)	Fill of tanning pit [23/502]C	5	78.04		715.31	9.17	
<86>	(23/597)	Fill of tanning pit [23/503]D	5	1566.19	692.62	25128.38	16.04	2.26
<87>	(23/574)	Fill of tanning pit [23/504]H	5			26199.70		
<87>	(23/574)	Fill of tanning pit [23/504]H	5	59.15		28318.57	478.76	
	(23/001)	Modern made ground	7	99.06	35.84	9380.93	94.70	2.76

Table 6. Sample order for interpretation of Figure 2, rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

Sample number	Context number	Description	Phase	Sample type	Order Number as displayed in Figure 2
<17>	(23/059)	Fill of [23/060]	4	Bulk	1
	(23/085)	Fill of [23/064]	5	Timber	2
<59>	(23/100)	Fill of [23/101]	5	Bulk	3
<59>	(23/100)	Fill of [23/101]	5	Bulk	4
<44>	(23/104)	Fill of [23/105]	5	Bulk	5
<53>	(23/139)	Fill of [23/140]	5	Bulk	6
	(23/135)	Fill of [23/141]	5	Timber	7
<45>	(23/145)	Fill of [23/146]	5	Bulk	8
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	(23/418)	Fill of tanning pit [23/502]F	5	Timber	32
	(23/514)	Fill of tanning pit [23/503]A	5	Timber	33

<86>	(23/597)	Fill of tanning pit [23/503]D	5	Bulk	34
<87>	(23/574)	Fill of tanning pit [23/504]H	5	Bulk	35
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	(23/570)	Fill of tanning pit [23/504]H	5	Timber	37
	(23/001)	Modern made ground	7	Timber	38
<11>	(23/559)	Timber Floor of [23/504]F	4	Timber	39
	(23/487)	Wooden plank	4	Timber	40
	(23/423)	Wooden plank in [23/395]	4	Timber	41
	(23/423)	Wooden plank in [23/395]	4	Timber	42
<10>	(23/510)	Wooden plank in [23/502]G	4	Timber	43
	(23/232)	Wooden structure for tanning pit	4	Timber	44
<5>	(23/101)	Wooden structure for tanning pit	4	Timber	45
<6>	(23/166)	Wooden structure for tanning pit	4	Timber	46
<3>	(23/216)	Wooden structure for tanning pit	4	Timber	47
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<7>	(23/162)	Wooden structure for tanning pit	4	Timber	49
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<4>	(23/232)	Wooden structure for tanning pit	4	Timber	51
	(23/542)	Wooden trough	4	Timber	52
	(23/394)	Brick drain sluice	4	Timber	53

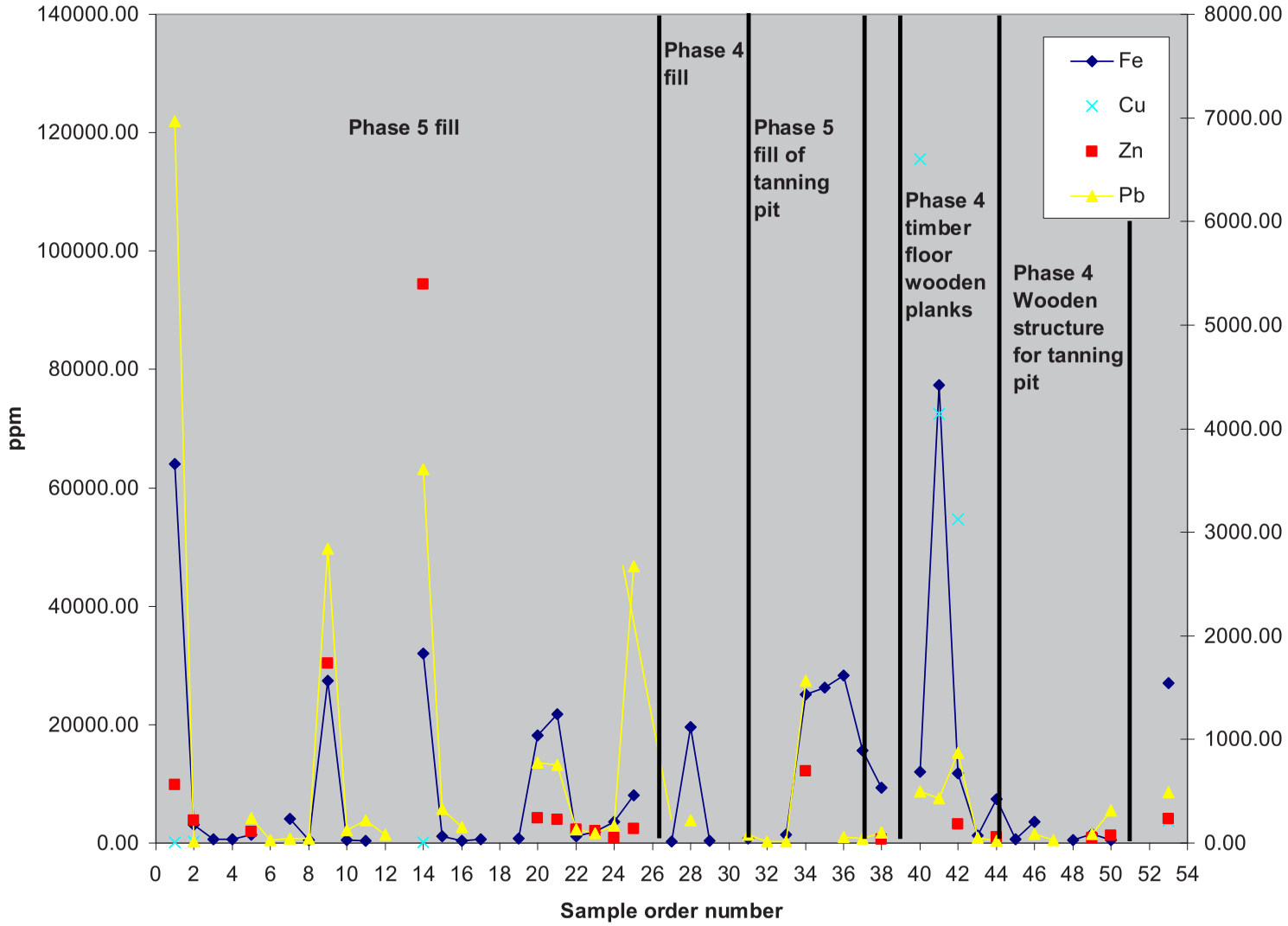

Figure 1: Chemical analysis rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

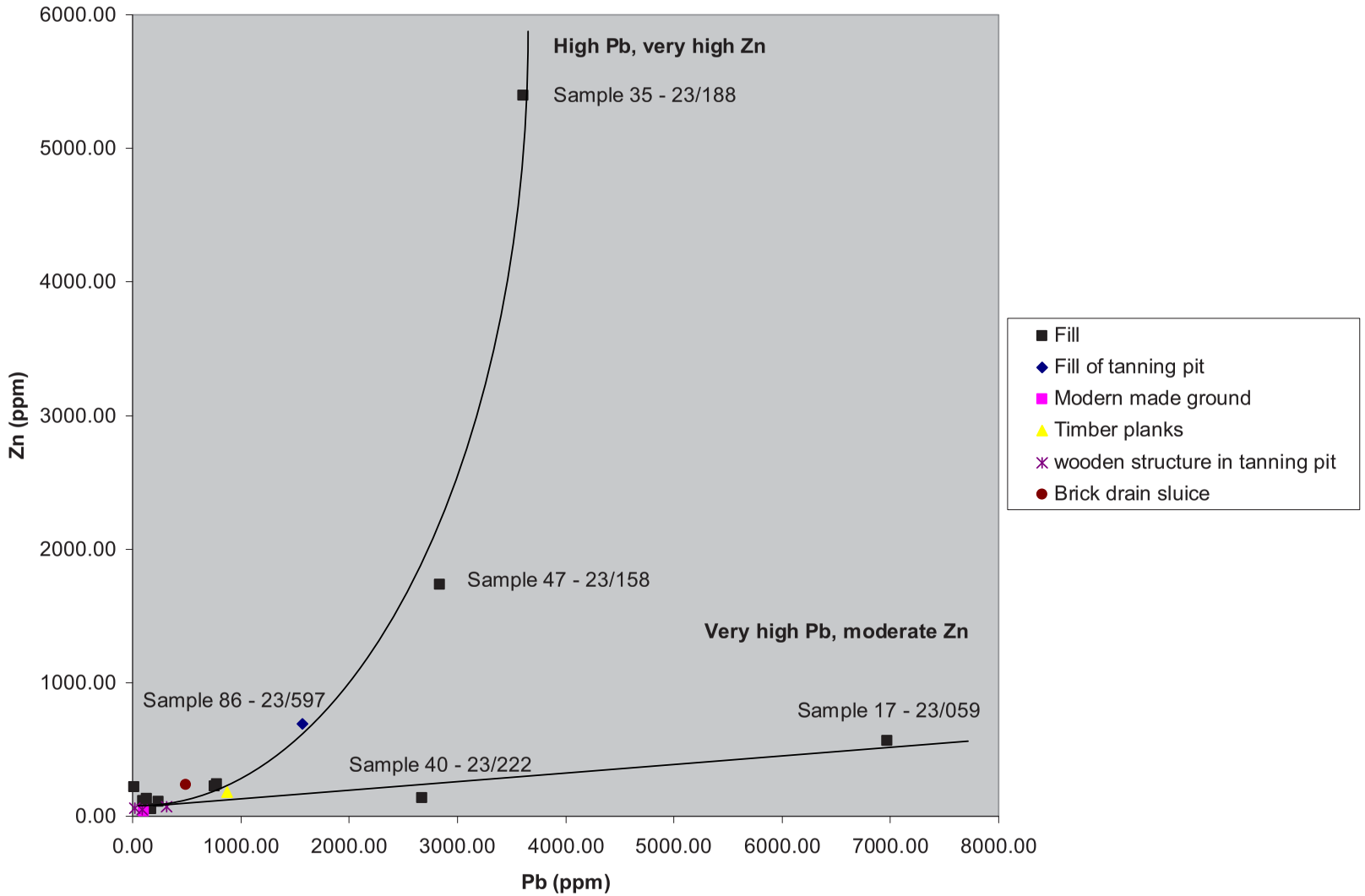

Figure 2: Chemical analysis rapid assessment, Spa Road, Bermondsey (Site Code: SRQ07)

CONCLUSIONS AND RECOMMENDATIONS

The aims of the environmental archaeological rapid assessment was to evaluate the potential of the samples for reconstructing the past activities of the Spa Road, Bermondsey, London Borough of Southwark. Each of the aims are addressed below based upon the results of the rapid assessment:

1. The potential of pollen samples for reconstructing the vegetation conditions surrounding the site during Tannery Phases 4 and 5

No pollen was preserved in any of the samples from Phases 4 and 5. Therefore there is no potential of reconstructing vegetation conditions surrounding the site during this period.

2. The potential of the subfossil biological remains (charred and waterlogged plant macrofossils and Mollusca) to provide preliminary reconstructions of vegetational and hydrological conditions, and the exploitation of resources during the Roman and Tannery phases of activity

The potential for reconstructing past activities on the site during all Phases is generally high, particularly during Phases 4 and 5. Identifiable charred seeds and Mollusca were mainly absent, but preserved in a few samples from all Phases 2 to 7. The quantity of charcoal fragments was generally low in samples from Phase 2 and moderate to high in samples from Phases 3, 4, 5, 6 and 7. Very little waterlogged material was preserved in any of the bulk samples assessed from Phases 4 and 5.

All those samples containing an estimated 50 or more identifiable remains should be considered for further work. However, the selection of samples should be made in collaboration with AOC Archaeology, considering all other archaeological and specialist assessment reports; for example, those samples containing less than 50 identifiable remains may still provide valuable information if from contexts of archaeological significance. Further investigations should also incorporate species identifications of the wooden timbers.

3. The potential of the timber and bulk samples for providing a geochemical signature that might indicate tanning methods on the site during Phases 4 and 5 (bulk samples)

The metal concentrations in the suite of samples screened as a part of this rapid assessment suggests the use of chemical-based treatments in the tanning industry which is known to have a number of metal-rich by products. Figure 2 suggests that there are several sources of these metals (i.e. multiple products/methods used for tanning). The nature of the chemicals is unknown at present but seems likely to be the result of non-alum treatments, or from an alum treatment that was produced from a heap roasted sequence. The latter method often involved metal concentration from volcanic or shale material (Singer, 1948). This however, can only be investigated by further analysis of the samples. For example, a detailed set of chemical analyses

on samples using ICP-OES and ICP-MS would distinguish the source of these metals and their major element associations and will indicate if they form part of an alum addition or a chemical-rich formula as indicated currently. A potential source of these materials may also be possible to differentiate from these analyses.

A selection of the samples exhibiting high concentrations (all those samples >1000 ppm on the right hand vertical scale of Figure 1 (12 samples)) should be subjected to a further set of analyses. The further set of analyses would involve digestion of the sample in mineral acid followed by analyses on an ICP-OES and ICP-MS for complete chemical analyses, as well as x-ray diffraction [XRD] in order to identify the phases of the chemical components. This in addition to examination of the wooden samples via Scanning Electron Microscopy [SEM], to determine the nature of the particles that have contaminated the wood with metal elements would be a comprehensive undertaking to identify all the available products and sources of these metals. The source, nature and type of chemical treatment as part of the tannery process could then be determined. It is also recommended that the pH of all the fill samples be analysed, this a relatively straightforward analysis but could reveal the presence of alum (Aluminium Sulphate) as even a 5% mixture of alum and water creates solutions of extreme acidity (pH *ca*. 2.5) and a signal that alum is present. In addition, alum reacts strongly with phosphate (which may be present as organic matter) and can produce Aluminium hydroxide (a distinctive white precipitate) which would be identifiable under SEM. It should also be noted that such low acidity and reactions with phosphate also give rise to poor archaeological preservation conditions and this may be of interest for the conservation of the site.

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Appendix H

OASIS Form

8.3 OASIS ID: aocarcha1-55496

Project details

Project name	Spa Road,Bermondsey
Short description of the project	an area excavation following on from an evaluation in 2007 produced evidence of a 19th century tannery on the site. Roman ditches were also recorded.
Project dates	Start: 12-11-2007 End: 11-08-2008
Previous/future work	No / Not known
Any associated project reference codes	SRQ07 - Sitecode
Any associated project reference codes	30165 - Contracting Unit No.
Any associated project reference codes	7964 - Contracting Unit No.
Any associated project reference codes	7994 - Contracting Unit No.
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Vacant Land 1 - Vacant land previously developed
Monument type	TANNERY Post Medieval

Monument type	DITCH Roman
Significant Finds	POTTERY Roman
Significant Finds	POTTERY Post Medieval
Significant Finds	METALWORK Post Medieval
Investigation type	'Full excavation'
Prompt	Direction from Local Planning Authority - PPG16

Project location

Country	England
Site location	GREATER LONDON SOUTHWARK BERMONDSEY ROTHERHITHE AND SOUTHWARK 122-124 Spa Road
Postcode	SE16 3QT
Site coordinates	TQ 3400 7916 51.4949796785 -0.06946233856080 51 29 41 N 000 04 10 W Point

Project creators

Name of Organisation	AOC Archaeology Group
Project brief originator	Southwark Council
Project design originator	AOC Archaeology Group
Project director/manager	Andy Leonard

Project supervisor	Paolo Guarino
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Bellway Homes (South East) Ltd

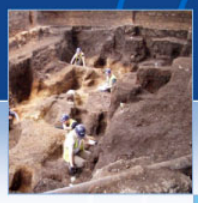
Project archives

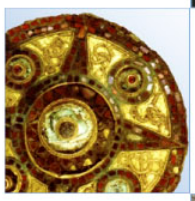
Physical Archive recipient	LAARC
Physical Archive ID	SRQ07
Physical Contents	'Animal Bones','Ceramics','Glass','Industrial','Leather','Metal'
Digital Archive recipient	LAARC
Digital Archive ID	SRQ07
Digital Contents	'Ceramics','Metal','Stratigraphic'
Digital Media available	'Images raster / digital photography','Spreadsheets','Text'
Paper Archive recipient	LAARC
Paper Archive ID	SRQ07
Paper Contents	'Ceramics','Stratigraphic'
Paper Media available	'Context sheet','Correspondence','Drawing','Matrices','Microfilm','Notebook - Excavation',' Research',' General Notes','Photograph','Plan','Report','Section'

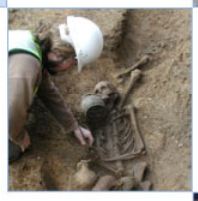
Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Land at Spa Road,Bermondsey. An archaeological post-excavation assessment
Author(s)/Editor(s)	Guarino,P. Harris, P.
Date	2009
Issuer or publisher	AOC Archaeology
Place of issue or publication	AOC London
Description	A4 assessments/datastructure report with illustrations.

Entered by	Paul Harris (paul.harris@aocarchaeology.com)
Entered on	6 May 2009









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