

# LAND TO THE REAR OF 50-62 CHURCH STREET, DAMSIDE STREET, LANCASTER, LANCASHIRE

Archaeological Excavation



Client: Holmere Projects

NGR: 347651 461874 (centre)

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## Non-Technical Summary

Following the submission of a planning application for the construction of student accommodation on land to the rear of 50-62 Church Street, Damside Street, Lancaster, a condition was placed for a programme of archaeological work. This followed on from an archaeological evaluation and watching brief, which recorded a considerable depth of deposits including *in situ* Roman, medieval, and post-medieval material, set within phases of riverine deposits. Greenlane Archaeology was commissioned to carry out limited excavation of the site, following the installation of piled foundations, which was undertaken between the 19<sup>th</sup> and 27<sup>th</sup> June 2014.

The site is situated on the north side of Lancaster, close to the main focus of the Roman *vicus*, on the edge of the river line as it was during the Roman and probably medieval periods, as revealed during the previous phases of work and on a nearby site to the west.

The excavation yielded Romano-British, medieval, and post-medieval finds, which is to be expected given the long history of this part of Lancaster. Most of the material came from mixed deposits as much of the site has been heavily disturbed to the depth of the current excavations (particularly towards the outside of the site) by later, post-medieval activity, some of which probably relates to the 18<sup>th</sup> century development of the wider quayside and a later phase of backfilling and redevelopment along Damside Street in the 19<sup>th</sup> to 20<sup>th</sup> century. Possible riverine deposits, which contained post-medieval and residual Romano-British and/or medieval material, were encountered at the base of two trenches.

The coarse ware Roman pottery from the site dates from the 3<sup>rd</sup> to early 4<sup>th</sup> century, but some of the finer Samian ware is earlier and broadly dates to the second half of the 2<sup>nd</sup> century to the early 3<sup>rd</sup> century AD. That the assemblage includes fine and imported wares probably results from the Roman military presence at Lancaster, however, the assemblage is more consistent with a basic rural site than what might be expected from a site within a Roman town.

The more central area was seemingly less intrusively developed in later periods and an *in situ* timber drain was exposed and recorded in this area. The result of tree-ring dating on one sample indicates that the drain was 12<sup>th</sup> century or later, which is also suggested by associated pottery finds. The drain cut through a possibly Romano-British deposit and the bulk of the material from this period was from this area, which is partly a result of the fact that excavation in this area was slightly deeper to accommodate a new lift shaft. The timber boards, roundwood stakes, and axe chippings in two trenches had been preserved by burial in a waterlogged deposit but were not diagnostic of any specialist woodworking practice. The woodworking technology used would be consistent with a medieval date, broadly 10<sup>th</sup> to 15<sup>th</sup> century AD but the tools attested would also have been available from the Roman period. The *in situ* drain demonstrates the potential for medieval features to be preserved in this part of Lancaster. More finds and possibly also features of Romano-British date could also be present, although no features of this period were encountered during the current excavation.

The clay tobacco pipe assemblage most notably includes a rare stamp stem with the rolled mark of Elizabeth Savage; it is only the second site to produce a stamp of this type, raising the possibility that this maker may have worked in the Lancaster area for a time during the 18<sup>th</sup> century.

## Acknowledgements

Greenlane Archaeology would like to thank Holmere Projects for commissioning the project, in particular Russell Green and to their contractors on site for their assistance during the groundworks. Further thanks are due to Doug Moir, Planning Officer (Archaeology) for his comments on the project design, and Andrew Stanyon of Hay Carr Estates who dealt with project at an initial stage.

The excavation was carried out by Dan Elsworth and Ric Buckle at Greenlane Archaeology. This report was compiled by Dan Elsworth, Ric Buckle, and Tom Mace (Greenlane Archaeology), the latter of whom also produced the figures. The finds were processed by Ric Buckle. The medieval pottery and animal bone was examined by Tom Mace. The clay tobacco pipe was examined by Peter Davey (Curragh

Environmental Consultancy). The post-medieval pottery and glass was examined by Jo Dawson (Greenlane Archaeology). The industrial residues were examined by Dan Elsworth. The Roman pottery was examined by Ruth Leary, although Samian ware was assessed by Gwladys Monteil, with an additional comment by Chris Cumberpatch. The metal and woodwork was examined by L Vere-Stevens and Steve Allen at the York Archaeological Trust (YAT), the latter of whom also produced the illustrations of the timber, with additional comment from Nicky Rogers, Artefact Researcher, YAT. The Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray (EDX) analysis was carried out by Richard Allen, Department of Archaeology at The University of Durham. The dendrochronological assessment was carried out by Ian Tyers of Dendrochronological Consultancy Ltd and the assessment of the environmental remains from the samples was carried out by Laura Bailey at Headland Archaeology. Additional thanks are due to Dot Boughton, Finds Liaison Officer for Cumbria and Lancashire, for her help with regard to the metal alloy find. Jo Dawson edited the report and the project was managed by Dan Elsworth.

# 1. Introduction

## 1.1 Circumstances of the Project

1.1.1 Following the submission of a planning application (Planning ref. 12/01159//FUL) for the erection of student accommodation on Land to the Rear of 50-62 Church Street, Damside Street, Lancaster, Lancashire (NGR 347651 461874), a condition (No. 6) was placed by Lancashire County Council (LCC) for a programme of archaeological work. This followed on from an earlier programme of archaeological evaluation (OA North 2008) and watching brief (OA North 2012), which revealed a considerable depth of deposits including *in situ* Roman, medieval, and post-medieval material, set within phases of riverine deposits. Following a request by Holmere Projects (hereafter 'the client') Greenlane Archaeology produced a project design in response to the current development proposals, which include limited excavation of the site following the installation of piled foundations. Following its acceptance by Doug Moir, Planning Officer (Archaeology) at Lancashire County Council, Greenlane Archaeology was commissioned to carry out the excavation, which was undertaken between the 19<sup>th</sup> and the 27<sup>th</sup> of June 2014.

1.1.2 The proposed development site is on the north side of Lancaster, close to the main focus of the Roman *vicus*, which included Church Street. It is located directly on the edge of the river line as it was in the Roman and probably medieval period, as revealed during the previous phase of work (OA North 2012) and a nearby site to the west (Greenlane Archaeology 2010).

## 1.2 Location, Geology, and Topography

1.2.1 The site is to the rear (north) of properties on Church Street and accessed from Damside Street on the western edge of Lancaster city centre conservation area and close to the River Lune. It is at approximately 10m above sea level (Figure 1; Ordnance Survey 2004), on a relatively level area that was evidently formerly part of the channel or flood plain of the River Lune and is at a considerably lower level than Church Street to the south.

1.2.2 The underlying geology largely comprises coarse grained sandstones of the Pendle grit formations which are overlain with stony till deposits derived from the Lake District through fluvo-glacial action (LCC and ELC 2006, 8).

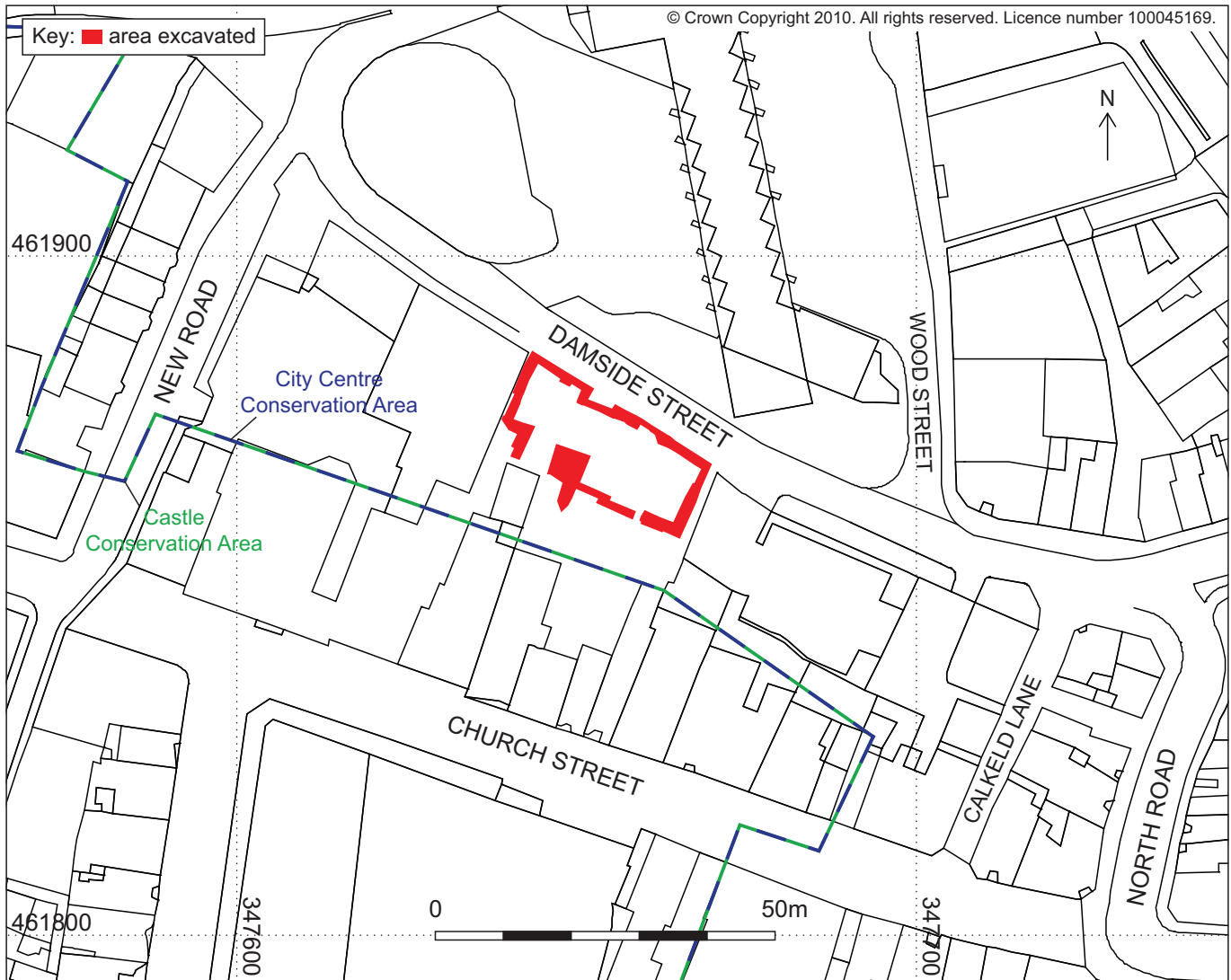
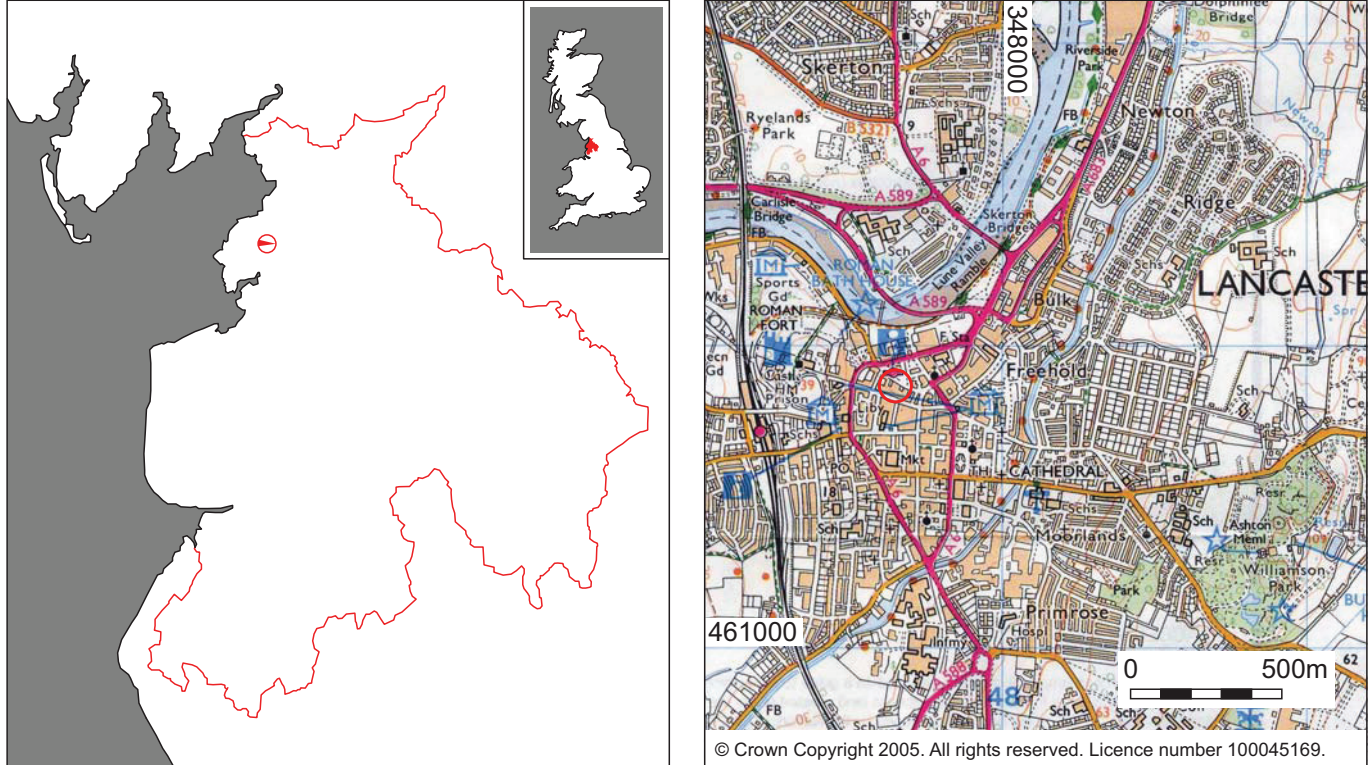


Figure 1: Site location

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## 2. Methodology

### 2.1 Introduction

2.1.1 All aspects of the excavation were carried out according to the standards and guidance of the Institute for Archaeologists (IfA 2008) and according to Greenlane Archaeology's own excavation manual (Greenlane Archaeology 2007).

### 2.2 Desk-Based Assessment

2.2.1 An earlier desk-based assessment for a site at the junction of Damside Street with New Road (Greenlane Archaeology 2010) was consulted in order to provide information about the development of the site, relevant sections of which are referred to in this report, most prominently in *Section 3*.

### 2.3 Archaeological Excavation

2.3.1 The excavation area comprised the foundation trenches between the piles around the outer edge of the structure and had a combined area of approximately 147m<sup>2</sup> (Figure 2). The trenches were numbered from 1 to 16 in a clockwise direction starting at the west end. Excavation was no deeper than 0.8m from the current ground surface, which was the necessary depth of the footings following piling, apart from Trench 16, the location of the lift shaft, which was 2m deep.

2.3.2 The overburden was removed using a mechanical excavator with a toothless bucket. Deposits below this were subsequently cleaned and further investigated by hand. The location of each trench was recorded relative to nearby property boundaries and other structures that were evident on the site plans and Ordnance Survey mapping utilising a total station. All finds were collected from all deposits, as far as was practical, and the trenches and spoil were scanned periodically with a metal detector in order to locate smaller metal finds. The following recording techniques were used during the excavation:

- **Written record:** descriptive records of all deposits and features (see *Appendix 2*) were made using Greenlane Archaeology *pro forma* record sheets. In addition, a general record was made of the day's events;
- **Photographs:** photographs in both 35mm colour print and colour digital format (as RAW files) were taken of all archaeological features uncovered during the excavation, as well as general views of the site, the surrounding landscape, and working shots. A selection of the colour digital photographs is included in this report and the remainder are included in the archive. A written record of all of the photographs was also made using Greenlane Archaeology *pro forma* record sheets (Greenlane Archaeology 2007);
- **Instrument survey:** the trenches were surveyed using a Leica reflectorless total station coupled to a portable computer running AutoCAD 2006 LT and TheoLT, which captures the survey data in AutoCAD in real-time at a scale of 1:1. This enabled the location of each trench to be positioned and allowed levels above Ordnance Datum to be provided through reference to a nearby spot height. Spot heights were established by reference to a bench mark on the east boundary, which could only be approximately located. As such the spot heights have only been presented to a single decimal place;
- **Drawings:** trench plans and sections were drawn at a scale of 1:10 or 1:20 as appropriate and additional sketches were made on trench record sheets.

### 2.4 Finds

2.4.1 **Collection:** all of the finds were recovered by hand and stored in self-seal bags with white write-on panels on site before being removed for processing and assessment.

2.4.2 **Processing:** artefacts were washed (or dried and dry brushed in the case of glass and metal), naturally air-dried, and packaged appropriately in self-seal bags with white write-on panels.

**2.4.3 Assessment and recording:** the finds were assessed, identified where possible, and a list of them was compiled (see *Appendix 3*).

**2.4.4 Roman pottery:** the coarse ware Roman pottery was examined in context groups and catalogued in *Appendix 4* according to the *Guidelines of the Study Group for Romano-British Pottery for basic archiving* (Darling 2004). The fabrics were recorded in broad groups and source suggested where appropriate. Reference was made to the National Fabric Collection where appropriate (Tomber and Dore 1998). The fabric of each sherd of Samian ware was examined, after taking a small fresh break, under a x20 binocular microscope and was catalogued by context number (*Appendix 5*).

**2.4.5 Medieval pottery:** the medieval pottery is described in generic terms (e.g. *gritty ware*) with no attempt to link to specific fabrics or specific sources. Brief descriptions of the sherds are given in *Appendix 3* following *Guidelines for the Processing and Publication of Medieval Pottery from Excavations* (Blake and Davey 1983) and *Pottery in Archaeology* (Orton *et al* 2008). Vessel forms are classified using terminology provided by the *Medieval Pottery Research Group* (1998).

**2.4.6 Metal objects:** metal finds from contexts considered to be of post-medieval date were assessed in house (*Appendix 3*). Metal objects from earlier contexts were X-rayed using standard procedures and equipment. One plate was used, and the plate was given a reference number. The X-ray number was written on each recorded find bag. Each image on the radiograph was labelled with its context number. The plate was packaged in an archival paper pocket. All of the finds were examined under a binocular microscope at x20 magnification and the condition and stability of the finds was noted (*Appendix 6*). A small area at one end of an object which was thought to be possibly silver (later found to be a lead/tin alloy, possibly an early type of pewter) was lightly cleaned of silt using a cotton wool swab soaked in acetone. This was carried out to aid visual identification and revealed a compact, shiny, thin black/grey/brown slightly iridescent surface indicative of silver sulphation. The lead/tin alloy and copper alloy objects were both cleaned and conserved (*Appendix 7* and *Appendix 8* respectively) and investigative conservation work was carried out to help identify the form of both objects and to confirm material identification. In general corrosion was removed mechanically using a scalpel and porcupine quill under magnification, with soil and dust was removed using Industrial Methylated Spirit (IMS) swabs. Following surface cleaning of the copper alloy find it was protected with Incralac lacquer, applied with a brush. Following mechanical removal of corrosion find the suspected silver alloy object it was treated with acidified Thiourea solution, rinsed with deionised water and degreased with acetone. Scanning Electron Microscopy with Energy Dispersive X-Ray Analysis (SEM/EDX analysis) was undertaken to confirm the alloy composition of the metal initially thought to be silver, and it was found to be mainly tin with lead and a small amount of copper (*Appendix 9*). SEM provides detailed high resolution images of the sample by rastering a focussed electron beam across the surface and detecting secondary or backscattered electron signal (Lucideon 2014). An Energy Dispersive X-Ray Analyser (EDX or EDA) is also used to provide elemental identification and quantitative compositional information (*ibid*).

**2.4.7 Wood:** the wooden finds were recorded and assessed in line with current IfA standards and guidance for the collection, documentation, conservation and research of archaeological materials (IfA 2013) and with current English Heritage Guidelines (English Heritage 2010) (see *Appendix 10*). Each piece of wood was washed under clean cold running water, recorded, and sampled for species identification. The species identification samples were examined under x40, x100 and x200 binocular magnification. Species identifications follow Schweingruber (1982). Each dendrochronological sample was supplied as a complete cross section, assessed for the wood type, the number of rings it contained, and whether the sequence of ring widths could be reliably resolved (*Appendix 11*).

**2.4.8 Clay tobacco pipe:** the clay pipe was recorded and studied according to nationally agreed guidelines (Davey and Higgins 2004; *Appendix 12*). Casts have been made of both the stamped pieces for the National Stamp Catalogue in Liverpool.

**2.4.9 Industrial residue and slags:** the industrial residues and slags were examined in house and recorded following guidelines issued by English Heritage (Anon 2001, 7). The material was visually examined and classified based solely on morphology and is listed in *Appendix 3*.

2.4.10 **Animal bone:** the animal bones were identified, where possible, using Schmid's *Atlas of Animal Bones* (1972), quantified, and catalogued (*Appendix 3*). The condition, erosion and fragment size was noted, as were any signs of gnawing and butchery marks.

## 2.5 Environmental Samples

2.5.1 **Strategy:** samples were taken from any negative cut feature or deposit that was deemed to have the potential for the preservation of organic matter. A total of 95L of samples were retained and a summary of the three samples taken is provided in *Appendix 13*.

2.5.2 **Processing:** Sample 1, which was not initially thought to be particularly waterlogged, was processed using flotation techniques, with 250µm and 500µm sieves used for the flot, and a 1mm mesh used for the retent. The flots and retents were then naturally air dried. Sub-samples of the other two samples, and latterly Sample 1, were also taken for assessment as being waterlogged. A 500ml sub-sample taken from each of the waterlogged deposits was sieved through meshes of 1mm and 500µm in order to remove any plant macrofossils.

2.5.3 **Assessment and recording:** all of the samples were scanned using a binocular microscope. Identifications, where provided, were confirmed using modern reference material and seed atlases including Cappers *et al* (2006). Any charred plant remains were recorded using a simple four-point scale as follows: + = rare, ++ = occasional, +++ = common, ++++ = abundant (*Appendix 13*). Artefacts and ecofacts were recovered by hand from the retent and recorded and this information is summarised in *Appendix 13*.

## 2.6 Archive

2.6.1 The archive, comprising the drawn, written, and photographic record of the excavation, formed during the project, will be stored by Greenlane Archaeology until it is completed (see archive index in *Appendix 14*). Upon completion it will be deposited with the Lancashire Record Office in Preston (LRO(P)). The archive has been compiled according to the standards and guidelines of the IfA (Brown 2007), and in accordance with English Heritage guidelines (English Heritage 1991). In addition details of the project will be submitted to the Online Access to the Index of Archaeological Investigations (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

2.6.2 A copy of the report will be deposited with the archive at the LRO(P), one will be supplied to the client, and within six months of the completion of fieldwork, a copy will be provided for Lancashire County Council Historic Environment Record (LCCHER). In addition, Greenlane Archaeology will retain one copy and a digital copy will be deposited with the LCCHER and OASIS scheme as required.

2.6.3 The client will be encouraged to transfer ownership of any finds suitable for retention to an appropriate museum, most likely City Museum in Lancaster. If no suitable repository can be found the finds may have to be discarded, and in this case as full a record as possible would be made of them beforehand.

### 3. Historical and Archaeological Background

#### 3.1 General Background

3.1.1 Remains of Neolithic date have been recovered from Church Street, which runs immediately to the south of the current site (White 2003, 26), but prehistoric remains are otherwise relatively rare in Lancaster, typically comprising stray finds and the occasional evidence for burial (Penney 1981, 40; Iles 2009). An actual settlement of Lancaster is known to have existed from at least the end of the first century AD and the site was probably on the edge of the Roman *vicus* or civil settlement attached to the fort situated on the site of the later castle (Shotter and White 1990). The forts situated atop Castle Hill would have '*afforded a commanding position, overlooking the lowest fording point of the River Lune [which] almost certainly flowed further to the south and closer to the site of the forts than it does today; possibly along, or near the line of North Road and Damside Street*' (LUAU 1991b, 1), '*and it has been suggested that a harbour may have existed in this area, protected by the fourth century fort, which was aligned parallel to the river.... [The area] is regarded as being of archaeological interest due to the proximity of known Roman archaeology, and possible waterfront activity of this and subsequent periods*' (LUAU 1992, 1).

3.1.2 The growth of post-Roman Lancaster undoubtedly owed a great deal to the arrangement of the existing Roman fort and *vicus* and it is likely that some buildings survived from the Roman period into the early medieval and therefore that there was some degree of continuity (White 2001, 33). The town may have developed from two dependent villas of the manor of Halton mentioned in the Domesday Survey, one based on the Castle Hill area (*Chercalonastre* or Church Lancaster) and the other perhaps in the Stonewell area (LUAU 1991b, 1). Actual archaeological evidence for this period is very slight, however, although it is apparent from the discovery of fragments of cross shafts that the site of the former Roman fort was occupied by an early religious site in the 8<sup>th</sup> or 9<sup>th</sup> century AD, which has been interpreted as a monastery (White 2001, 35). Lancaster certainly developed as a town in the medieval period and it is apparent from documentary sources what the extent of its topography was by the 15<sup>th</sup> century (Penney 1981, 42). Specific details relating to the area including the site are not certain, but the map evidence indicates that it is situated at the rear of burgage plots running off Church Street, which are recorded in the 13<sup>th</sup> century (*ibid*). Of additional interest is the line of the mill leat, which is clearly recorded on Speed's plan of 1610 (Plate 1) and probably fed the mill recorded in the borough charter of 1193 (White 2001, 54), which must have run close to the site (for a more detailed discussion of this see Horsfield 2001). A port is recorded in Lancaster during the medieval period although there are no details concerning the position or nature of early wharves (LUAU 1992, 3).

3.1.3 During the 16<sup>th</sup> and 17<sup>th</sup> centuries the growth of Lancaster seems to have stalled somewhat (LUAU 1991b, 2). However, much of the area once called Green Ayre, which formerly comprised flat meadows surrounded by the River Lune (Bathgate and Pye 1997, 12), was developed as part of the creation of St George's Quay, which came into existence following an Act of Parliament in 1749 (*op cit*, 27). This soon led to the construction of a dock and associated buildings such as warehouses, inns, and private dwellings, initially in a somewhat disorganised fashion, although with ground set aside for important buildings such as the Custom House (*ibid*).

3.1.4 The area retained much of its original form until substantial clearances took place between 1938 and 1939 to provide improved access to the bus station (White 2003, 22). This, coupled with the widening of China Street that had already occurred in 1896 (*ibid*), changed the character of the area and paved the way for the development of the present one-way system. The area to the north is now dominated by the bus stop and taxi rank.

## 3.2 Map and Image Regression

3.2.1 **Early maps:** although there are earlier maps of Lancaster that show the site, these are typically of little use in understanding its development because of the relatively poor detail. Speed's map of 1610 and Docton's plan of 1654 are the most relevant as they show the course of the former mill leat and the line of the River Lune by this date, but they are otherwise of generally limited use (Plate 1 and Plate 2). Discrepancies are apparent in the depiction of the river between these two maps, with Docton's plan showing a much wider section immediately north of the site. The site appears to lie within what appear to be burgage plots to the north of what is now Church Street.



Plate 1: Extract from Speed's map of Lancaster, 1610 (from Penney 1981, 43)

Plate 2: Extract from Docton's map of Lancaster, 1654 (from Penney 1981, 44)

3.2.2 **Map of 1754:** this map, produced as part of a legal dispute regarding the fishing rights on the Lune belonging to William Bradshaw and reproduced by Horsfield (2001, 16). Although not especially detailed it is of interest for its depiction of the River Lune at the time, which seems to have had a number of small islands within in it to the east of the site, and it also shows the line of the mill leat, which was becoming built over by this time.



Plate 3: Extract from a plan of 1754 showing the area of the mill race and the course of the River Lune

3.2.3 **Mackreth's map, 1778:** this map shows the early development of the quayside in the 18<sup>th</sup> century and the layout of New Road, joining Church Street and 'Dam Side', currently known as Damside Street (Plate 4).

3.2.4 **Clark's map, 1807:** this map is taken from Clark's (1807) *Historical and Descriptive Account of the Town of Lancaster* and shows further development along 'Dam Side' (Plate 5).



Plate 4 (left): Mackreth's map, 1778



Plate 5 (right): Clark's map, 1807

3.2.5 **Binns' map, 1821:** this map is more detailed than the earlier maps and shows property divisions along Damside Street more clearly (Plate 6).

3.2.6 **Atkinson's map, 1824:** this map is taken from Baines's (1824) *History, Directory, and Gazetteer of the County Palatine of Lancaster* (Plate 7). There is some discrepancy between this plan and Binns' map in the arrangement of the buildings along 'Dam Side Street' (cf. Plate 6).

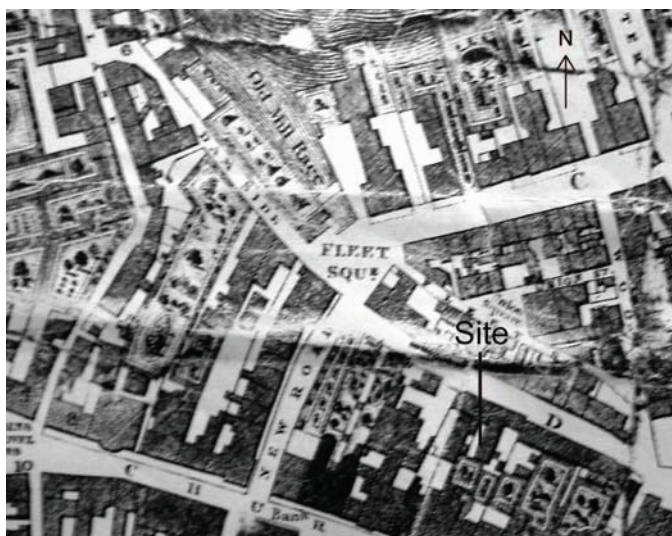


Plate 6 (left): Binns's map, 1821

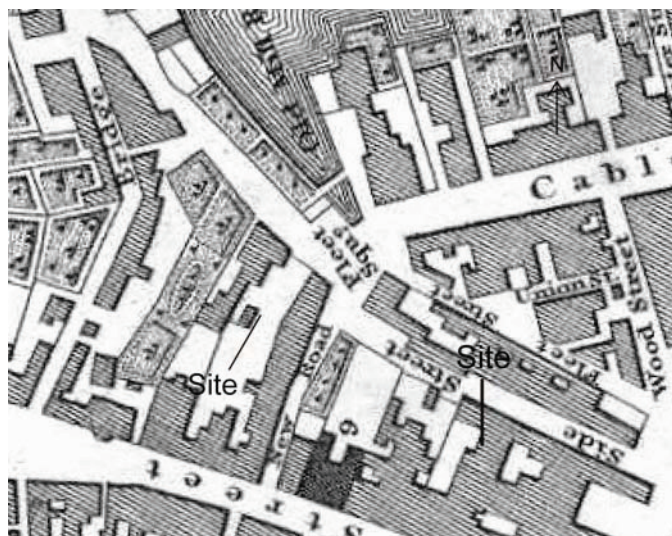


Plate 7 (right): Atkinson's map, 1824

3.2.7 **Ordnance Survey, 1848:** this map shows limited detail of the buildings on site (Plate 8).

3.2.8 **Ordnance Survey, 1893:** this map is considerably clearer than the preceding ones due to the scale at which it was produced, and shows the footprint of structures along Damside Street. Again, the arrangement of the buildings is much changed (Plate 9).



Plate 8 (left): Ordnance Survey map, 1848



Plate 9 (right): Ordnance Survey map, 1893

3.2.9 **Ordnance Survey, 1913:** this map shows a similar arrangement of buildings to the earlier edition of the Ordnance Survey (Plate 10; cf. Plate 9), although some more infilling of the space behind the properties along Damside Street has occurred.

3.2.10 **Ordnance Survey, 1938:** this map records the demolition carried out under the Corporation Clearance Scheme in the 1930s of the buildings to the north side of Damside Street (Bathgate and Pye 1997, 9; Plate 11).



Plate 10 (left): Ordnance Survey map, 1913



Plate 11 (right): Ordnance Survey map, 1938

### 3.3 Previous Archaeological Investigation

3.3.1 **15 Damside Street, 1990:** trial trenches excavated by Lancaster University Archaeology Unit (LUAU) at 15 Damside Street in November 1990 revealed almost 4m of undisturbed deposits which indicated activity from the early Roman period to the present day, including well preserved medieval remains about which little was then known for Lancaster (LUAU 1991a, 20). The Roman deposits were sealed by an accumulation of silts caused by a post-Roman marine transgression, evidence for which has been found elsewhere along the Fylde coastline (*op cit*, 15); the silts were 'deposited by the river either as it changed its course, or the river may have been enhanced during the post-Roman period by a

*marked rise in sea level* (LUAU 1991b, 1). A medieval ditch with at least one re-cut was thought to possibly represent a northern boundary to the burgage plots associated with properties erected along Church Street, shown on John Speed's map of 1610 and Kenneth Docton's reconstructed map of 1684 (LUAU 1991a, 13 and 16).

**3.3.2 Car and Coach Park East of Damside Street, 1991:** trial trenches were excavated to the north-east side of Damside Street, near to the River Lune, by LUAU in November 1991 (LUAU 1991b). Recent deposits of industrial residues (c19<sup>th</sup> century) and features likely associated with the construction of the Green Ayre railway line as well as 3.5 to 4m of made-ground deposits were encountered above dark grey river silts containing traces of organic material, the general sequence of which suggested systematic reclamation of the river mud-flats within a relatively short period of time (LUAU 1991b, 6).

**3.3.3 West of Damside Street, 1992:** an archaeological evaluation carried out to the west side of Damside Street in June 1992 recorded the presence of Romano-British and late medieval to 18<sup>th</sup> century objects as well as more modern finds up to the 20<sup>th</sup> century, indicating '*activity on, or near, the site over a long, but not unbroken, period*' (LUAU 1992, 1-2, 9). The lowest depths of excavation recorded '*a sticky, very dark grey gritty clay*' above the grey shale bedrock, which was noted to slope sharply down to the east (LUAU 1992, 4). This layer was in turn overlain by various silty sand and sandy silt lenses containing sherds of Romano-British pottery, dating from the late second to third centuries AD (LUAU 1992, 9). An 18<sup>th</sup> to 19<sup>th</sup> century structure with a cobble surface was recorded in the centre trench, and similar deposits were encountered to the east, including a '*grey silt which became darker toward the base of the profile*' (LUAU 1992, 5-6). '[These] *deposits may well reflect alterations in the course of the River Lune and subsequent silting or scouring of that course [and] could infill an earlier river channel*' (LUAU 1992, 6). There was also evidence for land reclamation in the 18<sup>th</sup> century and further structural remains of a retaining wall in the east trench were exposed, but the dating evidence for this wall was not secure (LUAU 1992, 6-7). Waterlogged wood-working debris suggested the possibility of possibly large-scale structural carpentry during both the Roman and late medieval phases, but given the location of the site the possibility of ship-building could not be ruled out (LUAU 1992, 9).

**3.3.4 Millennium Bridge, 2000:** an archaeological watching brief carried out on the excavations associated with the construction of Millennium Bridge in January and February 2000 (LUAU 2000a) recorded various deposits which were part of the estuarine environment within the River Lune but no archaeological features were found.

**3.3.5 Bus Station, north-east of Damside Street and south of Cable Street, 2000:** an archaeological evaluation and watching brief carried out by LUAU in June 2000 to the east of the current site recorded a number of 18<sup>th</sup> century house cellars with cobbled floors; the associated houses were demolished in 1938 (LUAU 2000b). The cellars had been cut into levelling deposits, below which segments of very dark grey humic silt deposits were encountered, probably relating to mud-flats associated with the previous course of the Lune (*ibid*, 12-14).

**3.3.6 Former Pye's Warehouse, Fleet Square, 2002:** evaluation trenches were excavated in August 2002 and a watching brief was maintained on the groundworks between September and October of the same year ahead of the construction of new housing on the site of the former Pye's Warehouse (OA North 2003). Layers of building debris and domestic waste from the early to mid-18<sup>th</sup> century had intentionally been dumped over the soft alluvial deposits of the river's edge to build up and stabilise the ground and later accumulations of post-medieval and modern make up or levelling layers were also recorded (*ibid*, 4). The estuarine deposits were a mix of mid to dark grey, clayey silt and silty clay deposits above which were various tipped deposits that had been dumped with the intention of extending the stable ground along the edge of the river; the consistency of the angle of dumping suggested that this had been done in a relatively short time period (*ibid*, 16).

**3.3.7 Dye House Lane, 2006:** an archaeological watching brief carried out by OA North in July 2006 recorded the backfilled cellars below the hard standing of limestone chippings at which point the excavation was discontinued (OA North 2006).

**3.3.8 Development at Damside Street to the Rear of 54-56 Church Street, 2007:** a desk-based assessment was carried out by OA North ahead of a watching brief, which monitored geotechnical



boreholing and test-pitting at the site, and archaeological evaluation of the site undertaken in November 2007 (OA North 2008). The watching brief recorded apparently riverine deposits and more mixed deposits near the street frontage that potentially related to backfilling cellars. The trial trenches revealed late medieval and post-medieval archaeological remains that were heavily truncated by industrial period cellars to a depth of around 1.7m, but it was thought likely that Roman and early medieval deposits might be preserved *in situ* below these (*ibid*). Further archaeological work was carried during the stabilisation of the Church Street embankment between January and April 2009 (OA North 2012). This recorded deposits which had been washed or dumped from Church Street and from the Damside Street side. These deposits were sometimes undisturbed but elsewhere had been truncated, resulting in the mixing of Roman, medieval and post-medieval material. Industrial-period structural remains were identified at the top of the sequence and putative evidence of wooden structural remains was identified on the eastern side of the site, but this could not be examined in detail (*ibid*).

**3.3.9 Fleet Square Garages, 2010:** an archaeological watching brief was carried out during the course of groundworks associated with the construction of a block of flats at Fleet Square (Greenlane Archaeology 2010). The excavation of a small open area revealed the former edge of the River Lune on a north-west/south-east alignment across the north side. A large piece of a window arch, which probably housed a leaded light, was recovered, but estimates for its date range from the 12<sup>th</sup> to the 17<sup>th</sup> century and its origins cannot be determined. Some late medieval pottery was also recovered from this deposit, with a broad date range from the 15<sup>th</sup> to the 17<sup>th</sup> century, but other finds from this deposit were more consistently 17<sup>th</sup> to 18<sup>th</sup> century in date, after which time the area was known to have been built on as part of the quayside.

**3.3.10 Damside Street and Bulk Road, 2013:** a watching brief was carried out during the construction of a large water detention tank and revealed remains primarily of post-medieval date, including a large arched culvert and other structures, but also smaller amounts of Roman and medieval pottery (Wardell Armstrong Archaeology 2013).

## 3.4 Conclusion

3.4.1 The long history of this part of Lancaster means that there is potential for undisturbed features to be present on the site, especially as deposits above natural are thought to be up to six feet deep in this part of the city (Penney 1981, 45). Riverine deposits and material of Roman, medieval and post-medieval date were found during archaeological work carried out at the site by OA North in 2008 and 2009 (OA North 2008; 2012) and similar estuarine deposits have been encountered during the course of groundworks associated with the redevelopment of this part of Lancaster in the past (see Greenlane Archaeology 2010 for a discussion), however, the exact course of the River Lune during the medieval and earlier periods is unknown. Putative evidence of wooden structural remains, identified on the eastern side of the site, may indicate early waterfront activity, however, systematic reclamation of the land along the edge of the Lune during the 18<sup>th</sup> century, which allowed development of the quayside (of which the buildings along Damside Street formed part), has completely obscured the former line of the river and mill leat.

## 4. Fieldwork Results

### 4.1 Introduction

4.1.1 The excavation was carried out following the installation of the piles and concrete pile caps that were positioned around the tops of these, which had led to some disturbance of upper deposits. Trenches were therefore excavated between each of the piles with each section referred to as a separate trench. In each case excavation was only continued to the depth to which the ring beam foundations were to be positioned, which was generally no more than 0.8m below the surface. This meant that in most cases deposits of archaeological interest were only just exposed and not therefore subject to any real excavation as such. There was also considerable disturbance across the site caused by previous buildings and in places thick deposits and concrete structures, and the whole area was covered by an upper layer of tarmac and associated bedding material. Given the nature of the upper deposits and these areas of disturbance, a mechanical excavator was used throughout to remove the upper deposits meaning that in some trenches very little hand digging was actually done. In addition, the waterlogged conditions meant that trenches along the south side of the site also soon filled up with ground water, which was difficult to remove even with a pump running continually, meaning that excavation was also very limited in these areas.

### 4.2 Trench 1

4.2.1 The upper deposit in Trench 1 comprised a modern tarmac 0.05m thick (**100**) and gravel bedding layer 0.7m thick (**101**) and extending to the base of the trench, which sandwiched a layer of concrete. Cutting through this deposit were two modern cuts (**102** and **104**), the former of which was associated with retaining wall and initially sloping at 45°, the latter with the new pile cap and vertical. The cut for the retaining wall was backfilled with a modern gravel deposit (**103**) divided by a sheet of Terram, while the cut for the pile cap was filled with a dark grey-black silt (**105**; Figure 3), presumably material brought back up during the installation of the piles.

### 4.3 Trench 2

4.3.1 The excavation of Trench 2 revealed a layer of tarmac 0.1m thick (**200**) laid on a loose pale pink gravel 0.3-0.4m thick (**201**), below which was a concrete slab (**202**), probably relating to the modern retaining wall, at which point excavation ceased.

### 4.4 Trench 3

4.4.1 The uppermost layers encountered in Trench 3 were modern, comprising a layer of tarmac 0.05m thick (**300**) above a deposit of pale pink gravel 0.3m thick forming a bedding layer (**301**) and modern concrete (**302**). The concrete butted against a yellow sandstone wall (**303**) comprising various sized blocks and bonded with lime mortar, which was encountered partially within the westernmost limit of excavation although a later red brick wall on a concrete foundation, which had evidently been standing above the tarmac surface, was also positioned directly against the west edge of the trench and stratigraphically above **303**. The concrete layer (**302**) did not continue as far as the pile to the south where there was a deposit of dark grey-black silt (**304**). This was probably disturbed material generated during the installation of the pile, but it was not possible to distinguish it from the material encountered beneath concrete **302** when it was removed, although this concrete was considerably deeper on the east side (beyond the depth of the excavation), presumably having been poured into a subterranean cavity. Below **304** was a small area of cobbled surface (**305**) apparently associated with an edge-set yellow gritstone slab (**306**) and butting against wall **303** to the west (Figure 5). The purpose of the edge-set stone is unclear but the concrete (**302**) extended to depth immediately adjacent to it, perhaps suggesting the slab was a paving flag tipped on its side by associated excavation. The removal of the cobbles (**303**) revealed another deposit of dark-grey silt, essentially the same as **304** but this was not examined as it was below the area of excavation.



Plate 12 (left): Gritstone wall (303) with cobbled surface (305) and upright slab (306), viewed from east

Plate 13 (right): General view of Trench 3, viewed from south

## 4.5 Trench 4

4.5.1 The upper deposit comprised a layer of tarmac 0.05m thick on a thin layer of underlying gravel also 0.05m thick (400). Below that was a layer of mixed rubble, which comprised gritstone cobbles in mid-brown silty clay (401). This sealed a mid-brown silty clay that extended to the base of the trench (402), at which point it was becoming darker and blacker. Against the south-west side of the trench was the remains of a red brick wall on a concrete footing, like that in Trench 3 and the possible remnants of an earlier stone wall were visible below this but as they were only visible in the section it was not possible to fully examine them. The last c1m north-east end of the trench was truncated to considerable depth, apparently due to the removal of a pay and display machine from the car park that had been on the site.

## 4.6 Trench 5

4.6.1 The upper deposit (500) comprised modern tarmac with a thin gravel bedding 0.1m thick, which was above two deposits of rubble, 501 to the south-east and 502 to the north-west, created by a vertical cut across the trench (503). 501 comprised a mixed deposit containing mostly sub-angular cobbles and 0.2m thick, while 502 was also contained fragments of reinforced concrete, slabs and other blocks as well as gravel and was also 0.2m thick. The cut dividing these deposits (503) was evidently quite modern, and these deposits appear to represent two separate periods of backfill. Below these was a mid brown sandy silt (504) that extended to the depth of excavation, which was only 0.5m in this trench, where it became darker and siltier.

## 4.7 Trench 6

4.7.1 The upper deposit (600) was again was modern tarmac above a thin layer of gravel bedding no more than 0.05m thick. This in turn covered a layer of dumped pinkish white gravel 0.15-0.2m thick (601). Below this was a further deposit of mid-orange sand containing 60% sub-angular cobbles up to 0.1m thick. On the west side this was deposited against what appeared to be the truncated remains of a wall made of yellow gritstone (604) approximately 0.20m thick and with only three courses remaining (Plate 14), which, although not evident in the north-west section, otherwise crossed the whole width of the trench. Butting against this was a loose orange sand with angular gravel inclusions, 0.35m thick and extending to the base of the trench (603). This presumably represents the remains of a partially demolished and then backfilled cellar. At the east and west ends a dark brownish grey silt (605 and 606) was encountered extending from beneath the tarmac to the base of the trench, which is probably disturbed material associated with installation of the new concrete pile and pile cap (see Figure 3).



Plate 14 (left): General view of Trench 6, viewed from west

Plate 15 (right): General view of Trench 7, viewed from south-west

## 4.8 Trench 7

4.8.1 The upper deposit (**700**) again comprised was modern tarmac and was 0.05m thick on top of a pale pink gravel bedding layer 0.2-0.3m thick (**701**). Below this was a dark brown and orange, firm, sandy-clay (**702**), with sub-angular brick inclusions, which extended to the base of the trench, which was only 0.5m below the surface in this case.

## 4.9 Trench 8

4.9.1 The upper deposit (**800**) again comprised modern tarmac and was 0.05m thick and sat on a pale pink angular gravel 0.05m thick (**801**). In general, the deposit below this comprised a dark brown sandy clay that was 0.20-0.3m thick (**802**). However, a large area was in fact covered by a thick dumped deposit of rubble containing stone blocks and concrete housing pieces of timber and iron posts (**805**), which in places extended to the base of the trench (0.8m below the surface) and was apparently the back fill of a cut (**806**). These deposits sealed a yellow gritstone wall (**803**), constructed of roughly dressed blocks bonded with mortar, with at least four courses remaining. Against north-west side of this was a small area of stone flagged floor comprising three gritstone flags, that were heavily stained by coal dust, and edged by smaller gritstone blocks (all included as part of **803**; Figure 6). A thin layer of clinker (**808**) was revealed beneath the flags when these were removed. Elsewhere, below **802/805** was a dark grey silt **804** to the south-east of wall **803**, with an identical deposit (**807**) at the base of the trench elsewhere (Plate 16).

## 4.10 Trench 9

4.10.1 The upper deposit (**900**) again comprised a modern layer of tarmac 0.05m thick. Below this were the remains of a demolished modern structure (**901**), evidently a floor, comprising timber framing and concrete, covered with lino and forming a layer 0.15m thick. Associated with this structure was wall (**902**) two bricks thick (0.2m) and constructed from machine made frogged red bricks marked 'CLAUGHTON MANOR BRICK Co CATON' sat on a concrete footing. The remainder of the deposits comprised a layer of brown sandy silt containing 20% angular cobbles (**903**), which had been cut through in order to construct wall **902** (Plate 17).



Plate 16 (left): General view of Trench 8, viewed from west

Plate 17 (right): General view of Trench 9, viewed from north

#### 4.11 Trench 10

4.11.1 The uppermost context was again a modern layer of tarmac approximately 0.05m thick (**1000**). Below this was a layer of reinforced concrete sandwiching a layer of asphalt(?) finished with vinyl tiles (**1001**), evidently demolition from a modern building. Beneath this was a mixed deposit with dark brownish grey sandy clay with 10% angular cobble inclusions (**1002**), which in turn covered a dark grey silt (**1003**) at least 0.1m thick, that had been cut by a modern drain along the north-west section (Plate 18).

#### 4.12 Trench 11

4.12.1 The uppermost deposit comprised modern tarmac (**1100**) that was 0.05m thick, below which was a mixed deposit (**1101**), containing reinforced concrete sandwiching asphalt and timber joists (presumably part of a floor), below it. Below this was a mixed sandy clay containing 20% angular cobbles **1102** 0.1-0.2m thick. At the base of the trench was a dark grey silt at least 0.1m thick (**1103**) (Plate 19).

#### 4.13 Trench 12

4.13.1 The uppermost deposit comprised a layer of modern tarmac 0.05m thick (**1200**) on top of a layer of reinforced concrete (**1201**) that was 0.1-0.15m thick. Below this was a small square structure (**1203**) comprising a concrete platform placed centrally within the trench, defined by a rough stone wall on the north-west side and a machine made brick wall on the south-west side. Below this was a loose sandy material with angular stone and plastic (**1204**), that was clearly redeposited and occupying the space between the brick wall of **1203** and the new concrete pile foundation. At the base of the trench was a waterlogged dark grey silt (**1205**).



Plate 18 (left): General view of Trench 10, viewed from north

Plate 19 (right): General view of Trench 11, viewed from north

#### 4.14 Trench 13

4.14.1 The upper deposit (**1300**) again comprised a modern tarmac layer 0.05m thick, above a mixed deposit (**1301**) that contained sub angular boulders in a sandy gravel up to 0.7m thick and therefore extending to the base of the trench.

#### 4.15 Trench 14

4.15.1 The uppermost deposit was again modern tarmac 0.1m thick (**1400**) sat on a layer of crushed rubble (**1401**) that was 0.20m thick. Below this was more modern rubble backfill (**1402**), up to 0.4m thick. On the north-east side of the trench was a possibly structural feature made of a mixture fragments of sandstone and concrete (**1403**) that was first observed on removal of the tarmac (**1400**) and was still visible at the base of the trench once the required depth had been reached. Its dimensions were 1.60m by 0.50m. This cut through a dark organic silt deposit containing Roman and medieval pottery at the base of the trench (**1404**) that was present throughout the trench underlying **1402**. Below **1404** and set into the underlying deposit (**1408**) was a timber structure (**1405**) (Plate 20) that comprised two edge-set planks set at 45°, with a flat wide plank on top (Figure 3 and Figure 7). In addition to this, two roundwood stakes were placed within the structure to support the side planks from the inside, one of which had a rounded pebble apparently wedged against it. Within this feature was a pale yellowish green sandy silt deposit (**1407**). Also driven into **1408** was the remains of a single roundwood stake (**1406**) in poor condition. The deposit underlying structures **1405** and **1406** was a dark grey silt (**1408**) very similar in colour and texture to **1404**, but more waterlogged.



Plate 20 (left): Timber feature (1405) within Trench 14

Plate 21 (right): Timber feature (1405) after removal of horizontal plank

## 4.16 Trench 15

4.16.1 This trench was only excavated in order to find the edge of the modern retaining wall and was clearly heavily disturbed. It had an upper layer of tarmac 0.05m thick (**1500**), overlying a layer of loose pale pink gravel (**1501**) extending to a depth of 0.6-0.7m, both of which were modern and contained no finds.

## 4.17 Trench 16

4.17.1 Unlike the other trenches this comprised a relatively large square area excavated to a more considerable depth in order to house a lift shaft. However, four concrete piles were already present within this area and the area had obviously seen a considerable amount of disturbance before these were inserted. Again, the uppermost deposit **1600** was a layer of modern tarmac, 0.05m thick above a layer of modern loose pale pink gravel divided by a sheet of Terram (**1601**) and filling a near vertical cut (**1602**) that cut through and removed almost all of the earlier deposits on the north side. However, as this trench was the deepest and widest area excavated on site it gave an opportunity to observe and record the undisturbed older deposits/layers, which survived only in a relatively narrow strip along the south side (Figure 3). Below the gravel **1601** was dark grey silt (**1603**) 0.5m thick and with a lense of large stones and firm grey clay with lumps of moss preserved amongst them. Beneath this was a mid-brown peaty silt typically 0.3m thick (**1604**) containing fragments of wood and also three vertical wooden stakes, which were driven through into the underlying deposit (**1605**). This was a dark greyish-black firm silt containing 30% rounded cobbles and two very large boulders (Plate 22); the appearance of this layer seems to suggest the deliberate tipping of deposits. Below **1605** the deposits were difficult to observe due to considerable amounts of ground water and the depth of the trench (c2m from the surface), but the lowest deposit (**1606**) comprised a yellowish-green sandy clay, although this alternated with a firm blue-grey clay on the north side. These presumably represent natural sands and clays at the base of the river.



**Plate 22 (left): Timber stakes within context 1604 (Trench 16)**

**Plate 23 (right): General view of Trench 16 from the north**





Figure 2: Trench location plan

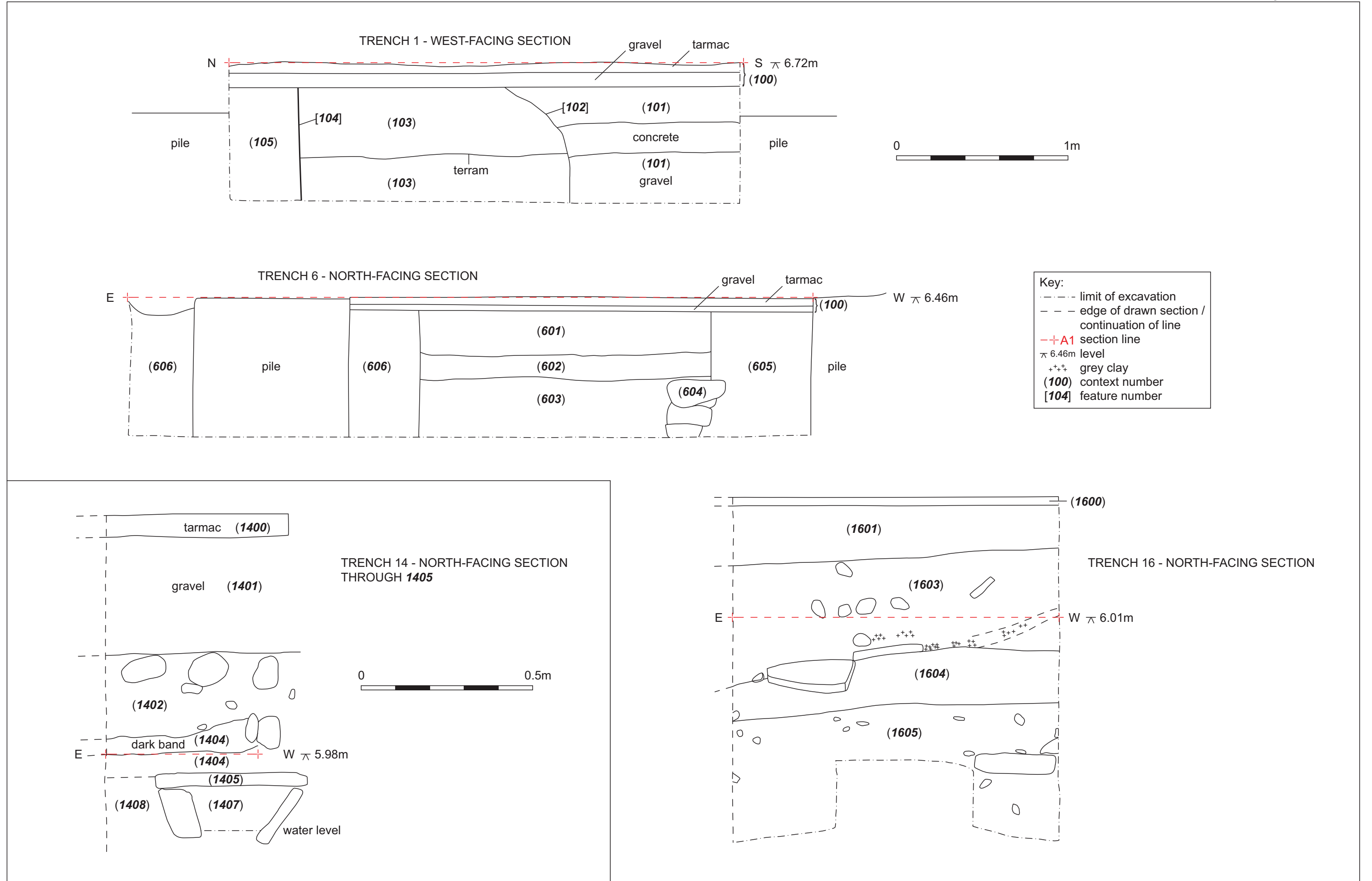


Figure 3: Trench sections (Trenches 1, 6, 14 and 16)

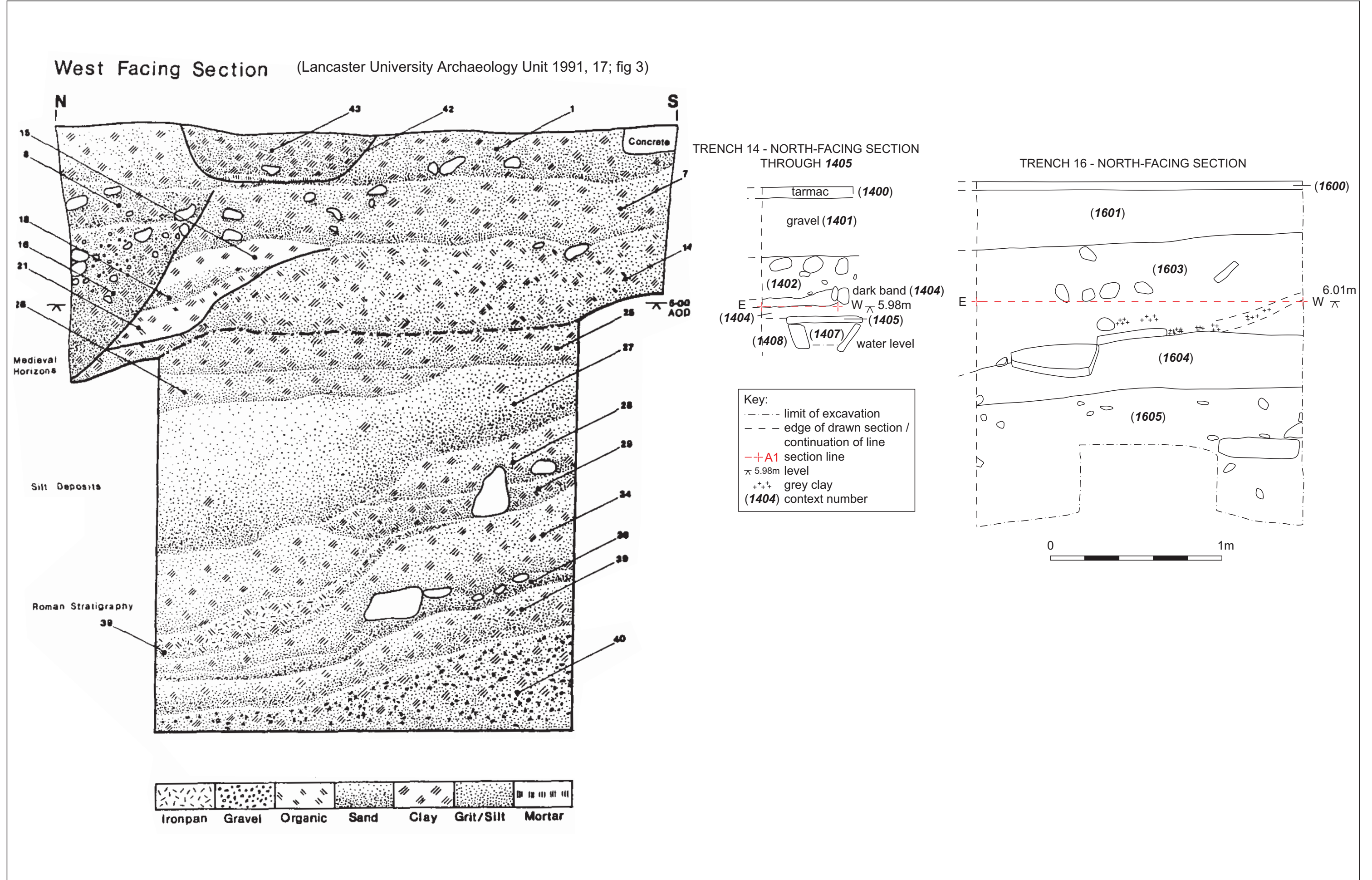
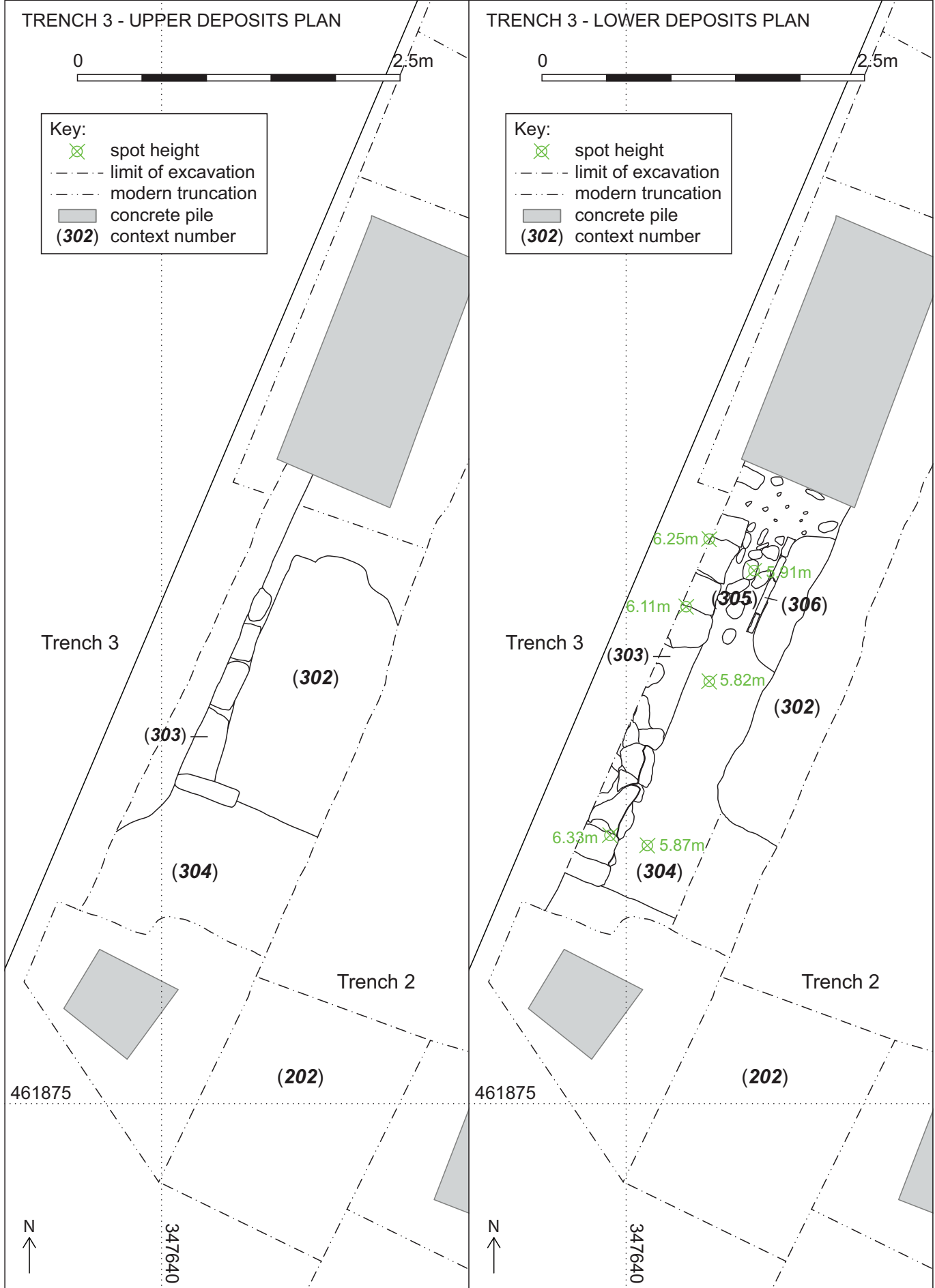


Figure 4: Comparable trench sections from 1991 and 2014





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Figure 5: Detailed plans of Trench 3

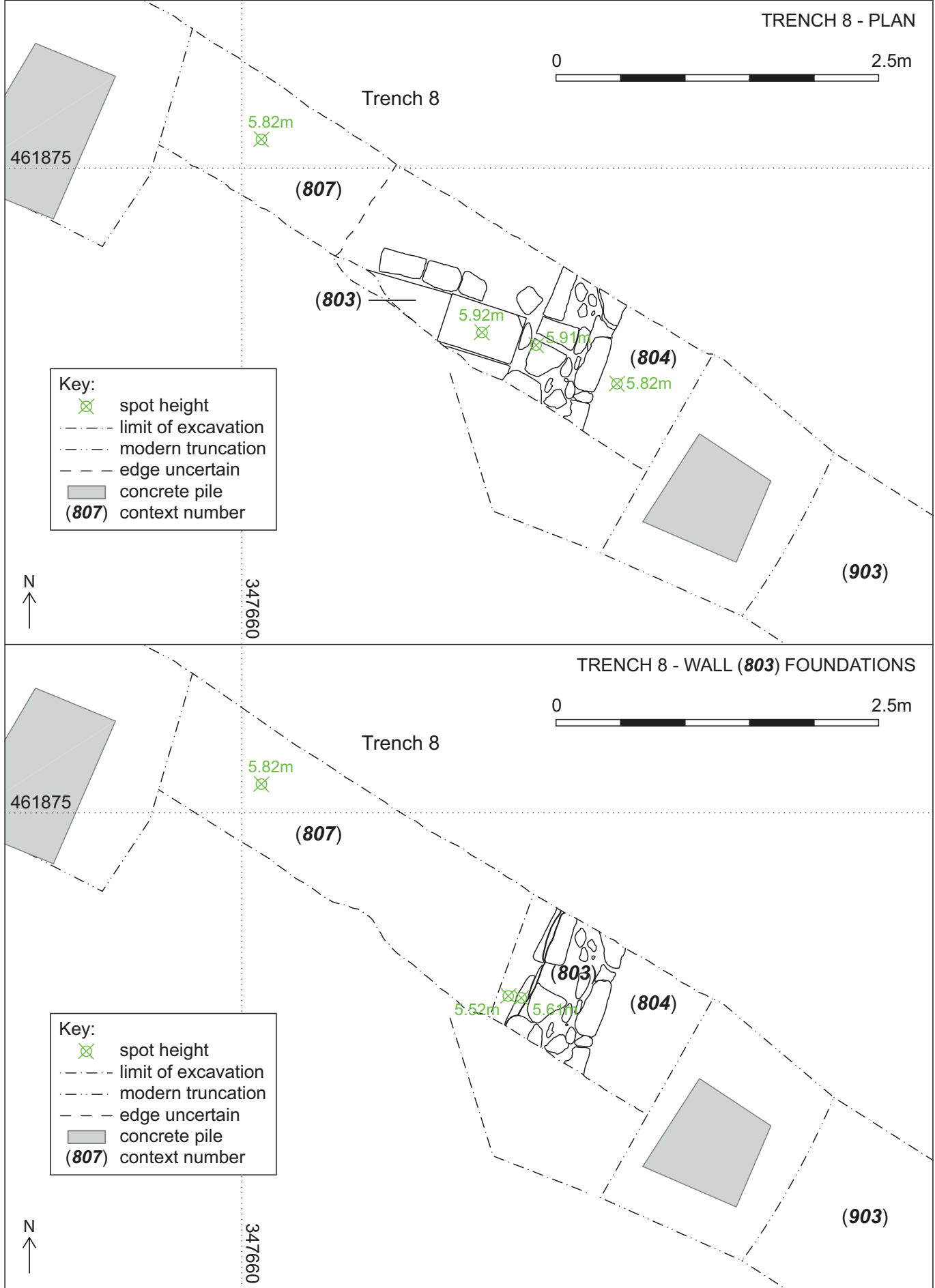
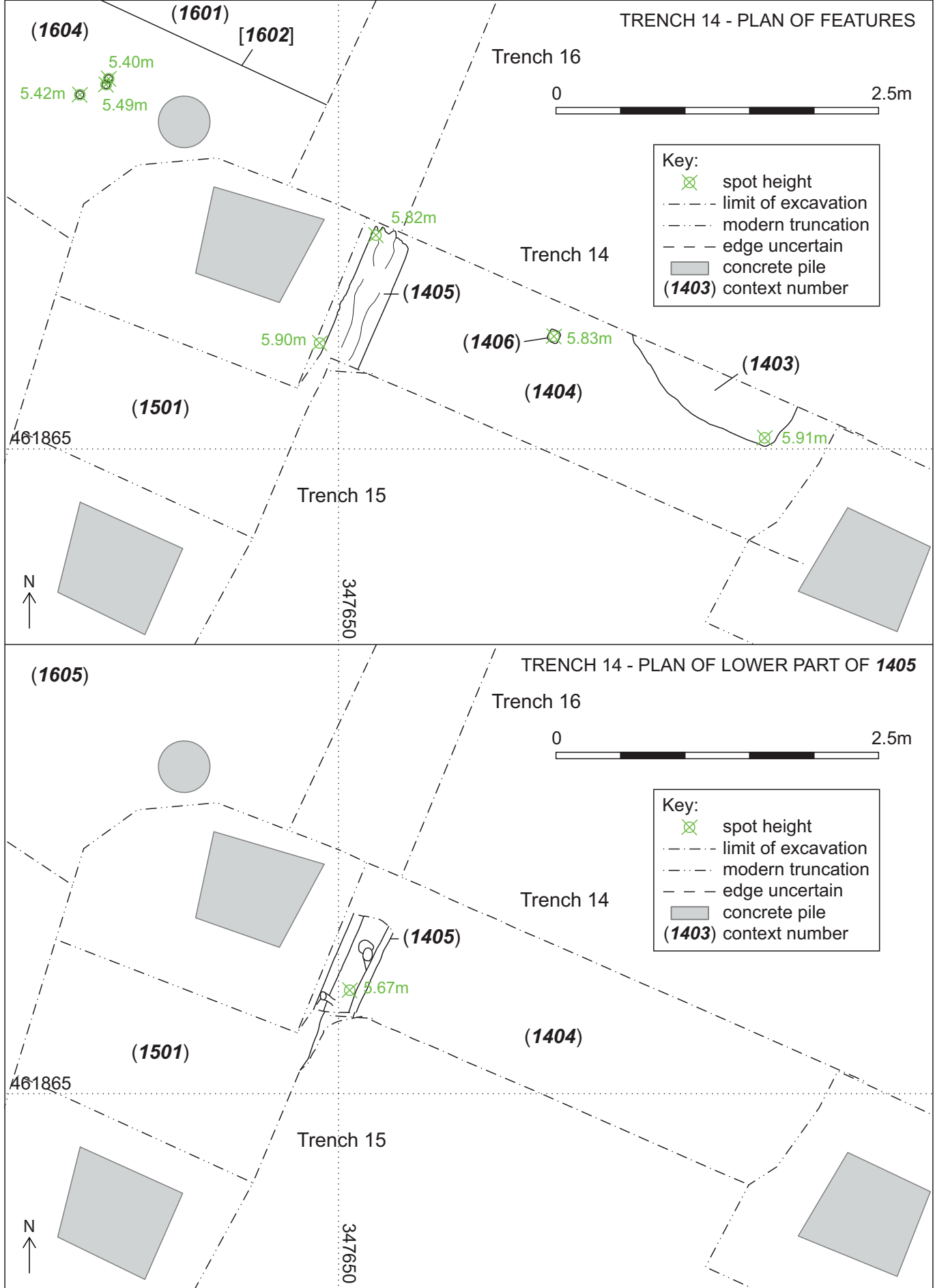


Figure 6: Detailed plans of Trench 8

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Figure 7: Detailed plans of Trench 14

## 5. Finds and Samples

### 5.1 Introduction

5.1.1 In total, 215 artefacts were recovered during the excavation. These are dealt with by material in the following sections. A complete list is provided in *Appendix 3*.

### 5.2 Roman pottery

5.2.1 In total, 58 sherds datable to the Roman period were recovered, including Samian ware and a variety of coarse wares (see *Appendix 4* and *Appendix 5*).

5.2.2 A total of 13 sherds of Samian ware were recovered, representing 13 vessels (e.g. forms Dr.30, Dr.31, Dr.33 and Dr.45) in a variety of South, Central and East Gaulish fabrics, with a total weight of 32g and a total rim Estimated Vessel Equivalent (EVE) figure of 0.09 (Table 1). The Samian ware group mostly consists of fairly small and abraded sherds and the average weight is c.3g, a very low figure but typical of a residual assemblage on a rural site. The range of forms is poor and consists mostly of dishes and cups. The limited range of types and the clear emphasis on plain forms makes this group more consistent with a basic rural site (Willis 2005, chart 17) than one in a Roman town. The bulk of the Samian group (with 11 fragments) comes from Lezoux in Central Gaul and includes three cups (form Dr.33), a dish (form Dr.31), a beaded rim from a bowl, and several scraps that cannot be assigned to a specific type. A Central Gaulish cup (form Dr.33), which was burnt on its internal surface, was recovered from context **1605** along with another one with evidence of internal wear – a thin band at the internal junction of the base and base.

	South Gaulish		Central Gaulish			East Gaulish			Total		
	Sherd count	Weight	Sherd count	Weight	Rim EVE	Sherd count	Weight	Rim EVE	Sherd count	Weight	Rim EVE
bowl			1	1	0.01				1	1	0.01
dish			1	1					1	1	
Dr.30	1	3							1	3	
Dr.31			1	3					1	3	
Dr.33			3	9					3	9	
Dr.45						1	5	0.05	1	5	0.05
Unid.			5	10	0.03				5	10	0.03
<b>Total</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>24</b>	<b>0.04</b>	<b>1</b>	<b>5</b>	<b>0.05</b>	<b>13</b>	<b>32</b>	<b>0.09</b>

**Table 1: Samian fabrics and forms present**

5.2.3 In addition to the Samian ware, the following coarse wares were represented:

- *Amphora*

Bodysherds of Dressel 20 amphora (Tomber and Dore 1998 BAT AM) came from contexts **402**, **1408** and **1605**. These date from the mid-1<sup>st</sup> to 3<sup>rd</sup> century and come from the Roman province of Baetica in south Spain where they were used to transport olive oil levied by the Romans as a tax in kind (Williams and Keay 2006, Dressel 20).

- *Black burnished ware*

Three body and rim sherds of Dorset BB1 came from context **1605**. These sherds all came from jars, possibly the same jar, and the rim was a splayed type with offset rim tip dating to the 3<sup>rd</sup> century (Gillam 1976, no. 10) and probably the early or mid-3<sup>rd</sup> century. The bodysherds were burnished and had wipe marks internally, a feature typical of the 3<sup>rd</sup> century BB1 jars.

- *Grey wares*

Several grey ware fabrics were identified but their source is uncertain and none were diagnostic forms:



GRA1 medium grey, hard, fine, smooth with smooth fracture. Micaceous surface. Sparse, medium rounded quartz. Bodysherd on **1404**;

GRB1 lead grey, hard, smooth with irregular fracture. Plain jar base from **1603** and bodysherd from **1604**. Sparse, medium, sub-angular quartz and rounded black/grey inclusions;

GRC1 grey, bumpy feel, hard with hackly fracture. Moderate, ill-sorted, coarse quartz grits and granitic inclusions. Likely to be Cumbrian fabric. Bodysherd from **1404**;

CRA RE Crambeck grey ware, sherd from **1604**. Late 3<sup>rd</sup> to 4<sup>th</sup> century. Tomber and Dore 1998 CRA RE.

- *Oxidised wares*

OAA1 bodysherds in a fine oxidised ware with rare, medium quartz. Possibly a Severn Valley ware or a fine Lancashire Plain ware. Bodysherds from **1404** and **1605**;

OAB1 oxidised orange ware with sandy feel and irregular fracture. Moderate, medium, sub-angular quartz. Local Lancashire ware. Bodysherds from **807**, **1404**, **1603**, **1604** and **1605**;

OBB1 as OAB1 but a more biscuit colour. From **1605**.

- *White ware*

FLA fine, hard off white with pinkish core and internal surfaces. Moderate, medium, sub-angular quartz. Micaceous. Unknown source. Bodysherd from **1404**. Flagon.

- *Colour-coated ware*

NV Nene Valley colour coated wares (Tomber and Dore 1998 LNV CC). Sherds from beakers in contexts **1404**, **1603**, **1604** and **1605**. These are unlikely to be earlier than the late 2<sup>nd</sup> century and one sherd came from a funnel necked beaker of the mid- to late 3<sup>rd</sup> century (Perrin 1999, 94). Another scrap had rouletting decoration similar to a beaker type made in the late 2<sup>nd</sup> to early 3<sup>rd</sup> century (Perrin 1999, 93) and another scrap was from an indented beaker with a date range in the late 2<sup>nd</sup> to 3<sup>rd</sup> century.

- *Mortarium*

MH2 Mancetter-Hartshill white ware with grog trituration grits. Tomber and Dore 1998 MAL WH. Small sherd in **807** dating after c. AD 140;

MOAB1 two small scraps in context **1604**. Very fine buff fabric with rare quartz inclusions and white quartz and one black trituration grits;

MOAB2 oxidised fabric with grey core, similar to OAB1 in fabric with quartz and pinkish sandstone trituration grits. One small scrap in context **1605**.

5.2.4 Most of the fragments within the group as a whole are small, moderately abraded bodysherds which could not be closely dated (Table 2). Exceptions to this are the sherds of Samian, black burnished ware (BB1) and colour-coated ware from the Nene Valley industry (Nene Valley CC).

Ware	Sherd Count	Sherd Weight	Rim %
Amphora	9	331.5	
BB1	3	53.5	20
Grey ware	5	61.9	
Mortarium	4	13.6	
Nene Valley CC	6	5	
Oxidised ware	16	52.5	
Samian	13	32.1	3

Ware	Sherd Count	Sherd Weight	Rim %
White ware	1	9.2	
(blank)	1	13.8	
<b>Grand Total</b>	<b>58</b>	<b>573.1</b>	<b>23</b>

Table 2: Roman pottery assemblage by ware type

5.2.5 The incidence of each fabric in each context is summarised in Table 3:

Context	Fabric									Total
	Amphora	BB1	Grey ware	Mortarium	Nene Valley CC	Oxidised ware	Samian	white ware	Blank	
<b>402</b>	1	0	0	0	0	0	0	0	0	<b>1</b>
<b>807</b>	0	0	0	1	0	1	1	0	0	<b>3</b>
<b>1404</b>	0	0	2	0	1	4	2	1	0	<b>10</b>
<b>1408</b>	1	0	0	0	0	0	0	0	0	<b>1</b>
<b>1603</b>	0	0	1	0	1	2	1	0	0	<b>5</b>
<b>1604</b>	0	0	2	2	2	6	2	0	0	<b>14</b>
<b>1605</b>	7	3	0	1	2	3	7	0	1	<b>24</b>
<b>Total</b>	<b>9</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>6</b>	<b>16</b>	<b>13</b>	<b>1</b>	<b>1</b>	

Table 3: Incidence of fabrics by context

5.2.6 The coarse wares suggest a date range in the 3<sup>rd</sup> century perhaps continuing into the early 4<sup>th</sup> century. None of the coarse material had to date earlier than the 3<sup>rd</sup> century although some of the Samian ware is earlier (Table 4). The Samian ware group is too small to attempt any kind of statistical or functional analysis but largely dates to the second half of the 2<sup>nd</sup> century to the early 3<sup>rd</sup> century AD. There is a single 1<sup>st</sup> century AD decorated fragment from La Graufesenque in South Gaul (from context **1404**), but too little of the decoration remains for it to be dated precisely and it was found mixed with later material. The latest Samian vessel recovered from the site is an East Gaulish mortarium (form Dr.45) recovered from context **1605**.

Context	Sherd Count	Sherd weight	Rim %	Dated sherds	References for forms	Date range of coarse ware	Date range of Samian
<b>402</b>	1	8.4		Dr 20 amphora	Williams and Key 1995, Dressel 20	Mid 1 <sup>st</sup> to 3 <sup>rd</sup> century	
<b>807</b>	3	17.4	3	Undiagnostic		Romano-British	AD150-200
<b>1404</b>	10	31		Nene Valley colour-coated beaker sherds	Perrin 1999	Late 2 <sup>nd</sup> century or later	AD120-200 and AD150-200
<b>1408</b>	1	3.4		Dr 20 amphora	Williams and Key 1995, Dressel 20	Mid 1 <sup>st</sup> to 3 <sup>rd</sup> century	
<b>1603</b>	5	48.8		Nene Valley colour-coated rouletted beaker sherd	Perrin 1999, 93	Late 2 <sup>nd</sup> to early 3 <sup>rd</sup> century	AD120-200

Context	Sherd Count	Sherd weight	Rim %	Dated sherds	References for forms	Date range of coarse ware	Date range of Samian
<b>1604</b>	14	30.9		Nene Valley colour-coated indented beaker sherd and a Crambeck grey ware sherd	Perrin 1999, 93-4; Bidwell and Croom 2010, table 4.1	Mid-to-late 3 <sup>rd</sup> century and AD270+	AD70-100 and Ad120-200
<b>1605</b>	24	433.4	20	BB1 splayed rim jar and Nene Valley colour-coated funnel-neck beaker sherd	Gillam 1976, no. 10; Perrin 1999, 94	3 <sup>rd</sup> century; early-to-mid 3 <sup>rd</sup> century and mid-to-late 3 <sup>rd</sup> century	AD120-200 and AD170-260
<b>Total</b>	<b>58</b>	<b>573.1</b>	<b>23</b>				

**Table 4: Quantities of Romano-British pottery by context with dating**

5.2.7 The site probably obtained most of its coarse ware Roman pottery locally, but traded vessels were present from the Mancetter-Hartshill kilns near Coventry, the Nene Valley kilns near Peterborough and the black burnished ware kilns in Dorset, as well as imported goods from Gaul and Baetica. The quantities of fine wares and imported wares, even in such a small group, must be related to the presence of the fort nearby and are consistent with the presence of the military at Lancaster (Evans 2001 table 11 and Willis 2005 chapter 7).

### 5.3 Medieval pottery

5.3.1 In total, 20 fragments of medieval pottery were recovered from six contexts, including gritty wares, lightly gritted/sandy wares, partially-reduced wares and more fully reduced late medieval grey wares. The material is broadly similar to excavated material recovered from elsewhere in the region (e.g. McCarthy and Brooks 1992) and potentially dates from the mid-11<sup>th</sup> to early 17<sup>th</sup> century. Another small fragment with the impression of a leaf caught within the fabric of a sherd from context **1604** was also identified as being of possible medieval or early post-medieval date (Chris Cumberpatch pers comm.).

5.3.2 Late medieval reduced grey ware was recovered from contexts **304**, **402**, and **1603** (amounting to four fragments). This ware type was introduced possibly in the late 13<sup>th</sup> or 14<sup>th</sup> century, becoming the dominant 15<sup>th</sup> to 16<sup>th</sup> century ware, and persisted into the early 17<sup>th</sup> century (summarised in Greenlane Archaeology 2013, 9; Mace and Dawson 2013, 74).

5.3.3 Two fragments of partially-reduced ware were recovered, including an obtuse-angled, flat base from context **304** and a rim fragment, probably from a bowl or dish, in a similar fabric from context **402**. Partially reduced grey wares were the dominant late 13<sup>th</sup> to 14<sup>th</sup> century ware (summarised in Greenlane Archaeology 2013, 9).

5.3.4 The remaining fragments represent several different fabrics which can be grouped more generally as lightly gritted/sandy and gritty wares. Lightly gritted/sandy wares date from the late 12<sup>th</sup> to 14<sup>th</sup> century (summarised in Greenlane Archaeology 2013, 9; Mace and Dawson 2013, 72) and gritty wares date from the mid-11<sup>th</sup> to 13<sup>th</sup> century (Chris Cumberpatch pers comm.). Amongst the sandy wares was a possibly pinched rim or thumbled base from context **1404**, a rim and possibly lip also from context **1404**, and a large, flat, obtuse-angled base fragment of a lightly-gritted sandy or gritty fabric was recovered from context **1603**. The earliest medieval ceramic material, represented by the gritty wares, came from contexts **807**, **1404**, and **1603**, and included a slightly clubbed rim with part of a pouring lip from context **807**, a lid-seated rim fragment from the same context, and a flat obtuse-angled base from context **1404**.

5.3.5 Unfortunately, the majority of the material came from mixed assemblages, i.e. the contexts from which the material was recovered contained a range of medieval wares and often also included post-medieval material, suggesting that some of the material is likely to be residual or that the post-medieval finds are perhaps intrusive.

## 5.4 Early ceramic building material

5.4.1 A total of 12 pieces of ceramic building material or small fragments of what it thought to be ceramic building material were recovered from contexts **1404**, **1603**, **1604**, and **1605**, although the fragment from context **1604** is very small and may not be ceramic building material. Fragments from **1604** and **1605** may be Roman on the basis of associated finds of known date and by the same logic the fragments from **1404** could be either Roman or medieval; however, these fragments are unlikely to be closely dateable. By the same token, the fragment from context **1603** is perhaps more likely to be medieval.

## 5.5 Early metalwork

5.5.1 A catalogue of the metal finds recovered from Trenches 14 and 16 is produced in *Appendix 6*. The find from context **1404** is likely to be medieval in date on the basis of other finds recovered from the same context and the material from contexts **1604** and **1605** is likely to be medieval or earlier in date. Dateable finds from the latter two contexts were Romano-British but the dating of other finds was uncertain.

5.5.2 The iron was corroded and in fair condition, including a nail from context **1604** and a headless nail from **1605**. Active orange corrosion was noted and patches of blue Vivianite (iron phosphate) were seen, particularly on the find from context **1604**, which is indicative of waterlogged deposits; it is formed in anoxic waterlogged conditions, slightly acidic and rich in phosphate, conditions which favour organic preservation.

5.5.3 The 'silver' alloy object from context **1404** is in good condition with blackened, sulphide deposits on its surface. Tool marks are evident throughout its exposed surface. Following SEM/EDX analysis the object was found not to be silver but to be mainly tin with lead and a small amount of copper (*Appendix 7*), probably pewter.



Plate 24 (left): Side 1 of metal alloy strip from context **1404** after treatment

Plate 25 (right): Side 2 of metal alloy strip from context **1404** after treatment

5.5.4 The copper alloy disc from context **1604** was in a mineralised condition, and also showed signs of being from a waterlogged deposit with black coloured tenorite (copper oxide) corrosion above gold coloured sulphides (see *Appendix 8*; Plate 26 and Plate 27). The identity and function of this object is unclear, it is possibly a fitting (Nicky Rogers pers comm.).

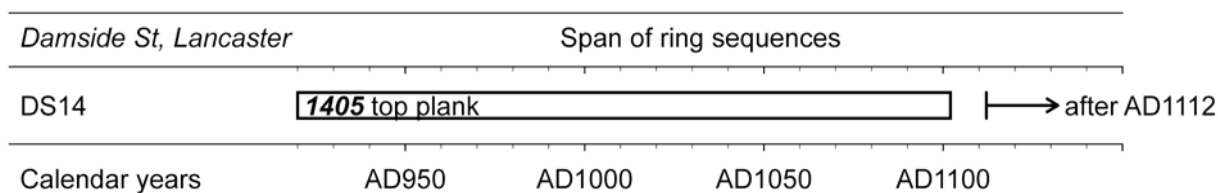


Plate 26 (left): Perforated copper alloy disc from context **1604**

Plate 27 (right): Reverse side of perforated copper alloy disc from context **1604**

## 5.6 Wood

5.6.1 Most of the material (issued identification numbers W 01 to W 14; see *Appendix 10*) was recovered from Trench 14 and includes timber boards and roundwood stakes from context **1405** (Figure 9, Figure 10, and Figure 11), a roundwood stake from context **1406** (Figure 11), and axe chippings from context **1407** (Figure 12). The rest of the wood finds were from Trench 16, including several roundwood stakes from context **1604** and **1605? U/S** (Figure 13). All of the wood had been preserved by burial in a waterlogged anaerobic environment and these conditions had been maintained up until exposure during excavation. Individual condition assessments are included in *Appendix 10*. Axe hewing marks are evident on several of the cut facets created to fashion the tips of the stakes and on the stumps of trimmed away side shoots. Augers of 20mm diameter and 32 mm diameter have been used to cut peg holes in two of the boards. Not directly attested but evident from the existence of these timbers are wedges and mallets used to convert the boards, and felling tools used to cut down the trees. The existence of redundant peg holes in two of the boards indicates reuse of these timbers. The technology used is consistent with a medieval date, broadly 10<sup>th</sup> to 15<sup>th</sup> century AD, but the tools attested would have also been available from the Roman period. Two oak samples from the timber drain (**1405**) were submitted for dendrochronological assessment and analysis; one was successfully dated and the result indicates that the feature dated from the 12<sup>th</sup> century or later (*Appendix 11*; Figure 8). All of the wood species are native to North West Europe and there is no need to suggest the woodland sources are anything but local. The axe chippings are indicative of woodworking in the vicinity but are not diagnostic of any specialist woodworking practice.



**Figure 8: Bar diagram showing the dating position of the oak tree-ring sample**

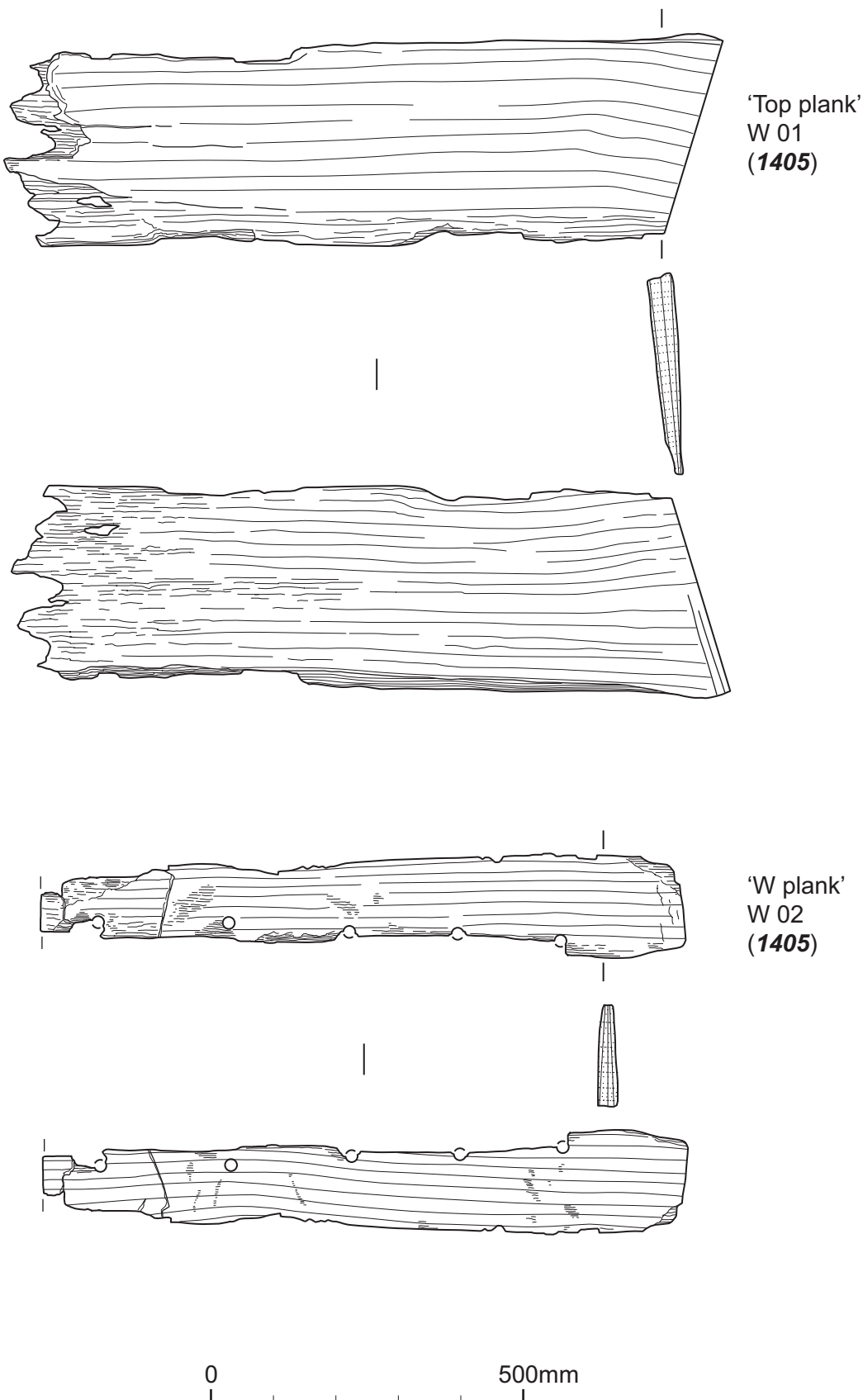
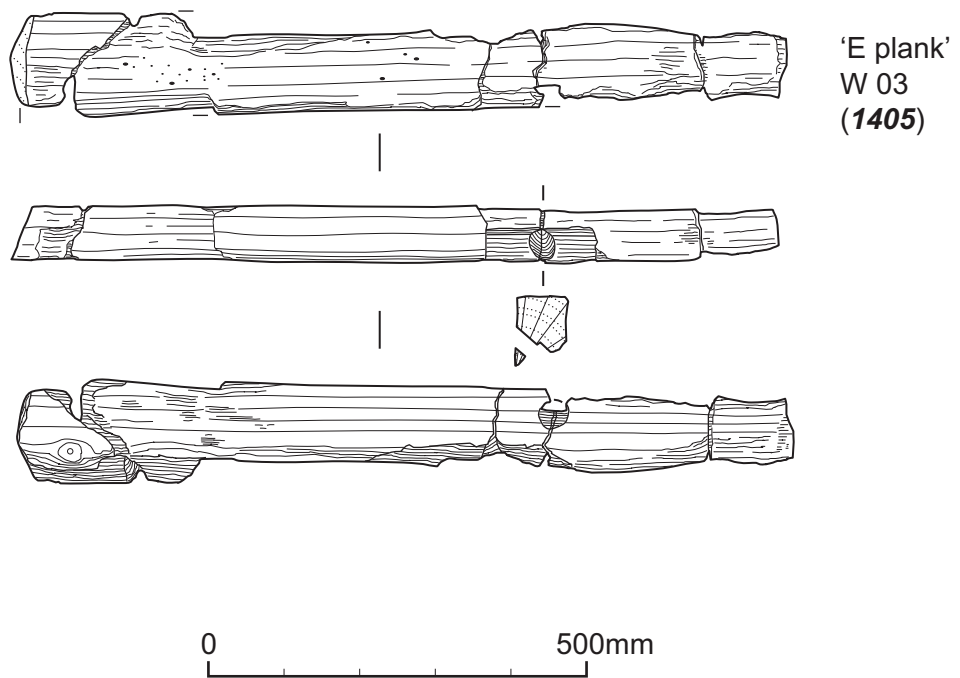


Figure 9: Timber boards W 01 and W 02 from context 1405



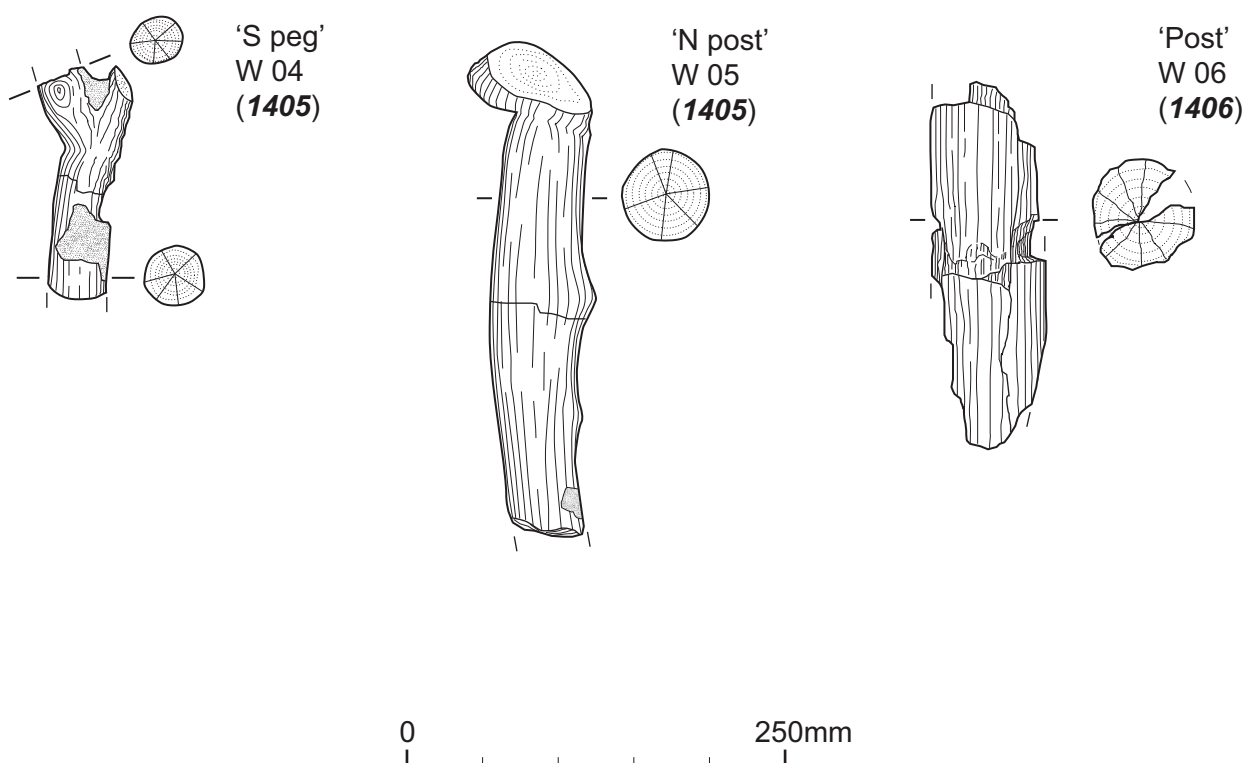
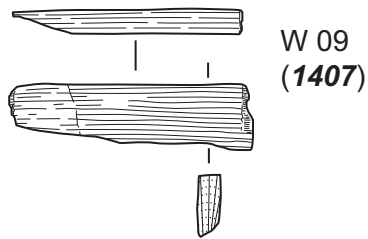
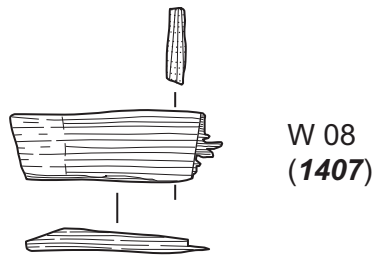
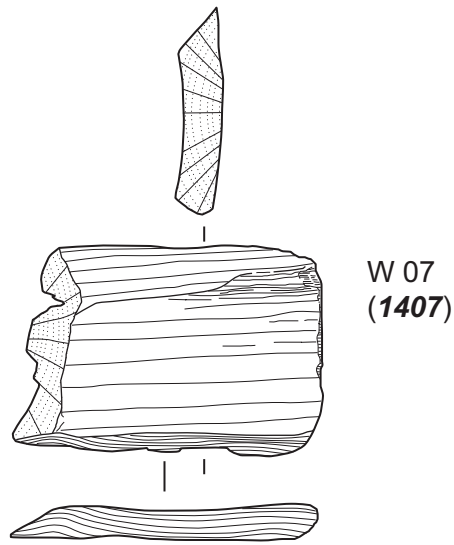


Figure 11: Roundwood stakes (W 04-06)  
from context 1405 and 1406





0 100mm

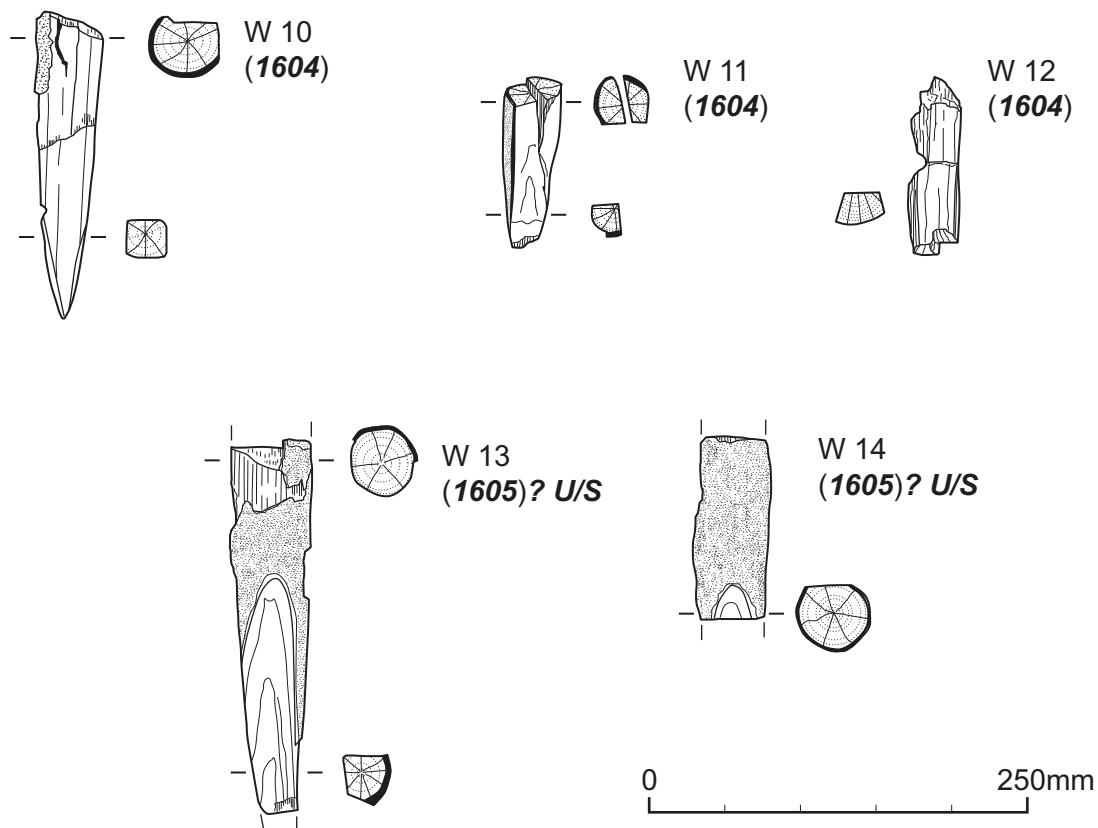


Figure 13: Stakes (W 10-14) from context 1604 and 1605? U/S

## 5.7 Post-medieval pottery

5.7.1 A total of 29 post-medieval flatware and hollow-ware vessel fragments was recovered from across the site from Trenches 1, 3, 4, 5, 6, 7, 8, 9, 10 and 11. Overall the assemblage potentially ranges in date from the late 17<sup>th</sup> to 20<sup>th</sup> century and reflects typical domestic ware types, including black- and brown-glazed red earthenware, white earthenwares, trail and combed slipware, mottled ware, creamware, factory produced slipware, factory produced glazed buff-coloured earthenware, and tin glazed earthenware. The potential date range for many of these wares is very broad due to the persistence of the styles and fabrics, however, the more closely dateable types, including the Staffordshire style slipware, creamware, and tin-glazed earthenware, and the later white earthenware and factory produced slip ware, show noticeable concentrations of late 17<sup>th</sup> to 18<sup>th</sup> century and 19<sup>th</sup> to 20<sup>th</sup> century groups within the assemblage and these are probably better indicators of dating for the other fabrics within each context.

## 5.8 Post-medieval glass

5.8.1 A total of 10 pieces of glass were recovered, comprising five (three colourless, one brown, one green) from **1001**, fragments of dark green glass bottles (from contexts **402**, **606**, and **1103**), a flat piece of dark green glass from context **702**, and a very degraded fragment of window glass from context **1003**. All of the glass is of post-medieval in date, with the fragments from **402** and **1103** probably earliest and likely to be from globular bottles of late 17<sup>th</sup> to 18<sup>th</sup> century date (Morgan nd, 24; Fletcher 1974, 47). All of the other fragments are likely to be late 19<sup>th</sup> to 20<sup>th</sup> century, the marked bottle base marked UGB A is from the Alloa plant of the United Glass group and therefore post-dates 1956 (Toulouse 1971, 510-513). The small fragment of glass from **702** is difficult to date but is potentially medieval.

## 5.9 Other post-medieval finds

5.9.1 Five fragments of ceramic building material were recovered, including red earthenware brick, from contexts **105**, **702**, **808**, and **1103**. The machine-made brick from contexts **105** and **702** probably dates from the 19<sup>th</sup> to 20<sup>th</sup> century but the other material is not closely dateable. The brick fragment from context **808** may be mid-18<sup>th</sup> to early 20<sup>th</sup> century and the fragment of possible ceramic building material from context **1103** is also likely to be post-medieval by association with other post-medieval finds.

## 5.10 Clay tobacco pipe

5.10.1 Eight fragments of tobacco pipe from five contexts were recovered from the excavations including six stem and two bowl fragments (joining). They represent at least six separate pipes. Details of the pieces are recorded in *Appendix 12*.

5.10.2 Two pipes, involving three of the fragments are of recognisable Lancashire types:

- **The IB bowl:** the refitting bowl from context **807** has a narrow pedestal spur and 'IB' stamped on the rear of the bowl. This is a typical Rainford/south Lancashire form and an equally typical stamp. It dates from the period 1660-1680 (Davey 1978, 7, B; Atkinson and Oswald 1969). The IB stamps are very common on south Lancashire-style pipes and there are many possible makers known with these initials (King 1982, 255-265). They are widely distributed in north-west England and northern and eastern Ireland (Davey 2009, 191, 198-9). It is possible that this particular set of initials was used as a marketing symbol by different makers over a wide region. Such appropriation of the initials of a well-known maker is in evidence at later periods, for example the TD and VG marks used at St Quentin-la-Poterie from the early 19<sup>th</sup> century (Leclaire 2013, 65-69).
- **The rolled stamp:** this is a rare find (**807**). Only two further examples are known, one extremely fragmentary, both from excavations in Warrington (Davey and Pierce 1977, 108-109, Fig. 42, Nos. 5 & 6; Plate 28). There is also a single surface find from allotments at Halton, Lancaster in the Plint Collection in the Museum of Lakeland Life and Industry at Kendal (Accession No 10.89). In addition, there is a group of six ELIZ: SAUAIG stems in private possession, all said to be from

the Warrington area. Ten or possibly 11 makers in the north-west are known to have used this very distinctive style of marking (Davey 2011, 17-20). In some cases they have been recovered from production sites in Rainford, such as Orretts Nook (Dagnall 1990, 19); most can be documented as being Rainford makers, active between around 1700 and 1730.

The Lancaster example is missing the upper toothed frame, although part of the lower edge of it is just visible above the G of the surname. Whilst in overall design it is the same as the Warrington finds it differs from the published drawing in a number of respects. In the Lancaster example the outer edge of the toothed frame, shown on the Warrington drawings as single line, consists of a series of fine, small, tooth impressions. Similarly the inner edge of the outer frame is not shown in the Warrington drawings, but in the Lancaster fragment this, too, consists of a series of fine toothed indentations. There is a gap in the outer toothed border below the letters AI of the surname in the Lancaster find which also has a larger gap between the upper border and the rest of the design than in the Warrington drawing. These differences may represent an alternative die used by the same maker, but it is also possible that the 1970s drawing may not have paid sufficient attention to the fine detail that would be expected today. In that case the gap in the lower border might indicate damage in use and that, therefore, the Lancaster pipe was stamped after the Warrington one.

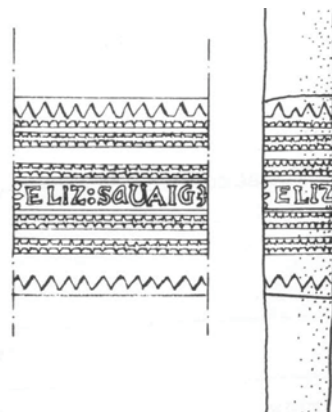


Plate 28: The Warrington stamp (Davey and Pierce 1977, No. 6)

There is no Elizabeth Savage recorded as a pipe-maker in Rainford or in neighbouring townships, though the deaths of two women of this name, not ever recorded as pipe-makers, are recorded in south Lancashire parish registers; one was born in Warrington in 1728, the other in Lancaster in 1732 (Dagnall *in litt* 4<sup>th</sup> August 2014). Whilst there is no doubt that this stamp and the two from Warrington belong to the highly distinctive Rainford series and are indistinguishable from it, at least one Rainford maker who used this style of marking, Thomas Marsh of Windle, appears to have moved for a period to Cumbria and produced the same stamped stems there (Davey 2011, 19). So it is possible that an Elizabeth Savage, a Rainford pipe-maker, may have worked either in Warrington or Lancaster itself and has yet to be identified in the records in those localities.

5.10.3 The largest group was from context **807**, with four fragments; however, there are too few fragments from too many contexts for any reliable use of the stem-bore data or typological details for dating the archaeological contexts from which these pieces were derived (Davey 1975). The fabric, thickness and bore widths suggest that the stems from **304**, **504** and the plain example from **807** are of 17<sup>th</sup> century date. The stems from **401** and **802** are most probably 19<sup>th</sup> century products.

5.10.4 This group provides a further example of a Rainford-style IB stamp from the region, but is most important as only the second site to produce an Elizabeth Savage rolled stamp stem, raising the possibility that this maker may have worked in the Lancaster area for a period.

## 5.11 Industrial residue

5.11.1 Large fragments of industrial residue were recovered, deriving from either ironworking or manufacture. These comprised a fragment of possible tap slag and a very heavy rectangular block of slag with vitrified surfaces of unknown origin. While this might suggest that industrial activity connected with ironworking or manufacture was taking place nearby, the small quantity and relative durability of such material means that these finds are of no real significance.

## 5.12 Animal bone

5.12.1 A total of 36 animal bones and animal bone fragments were recovered from nine contexts. Most of the bone was very fragmentary and could not be identified. A small amount of the bone from contexts **1404**, **1604** and **1605** had been burnt (five fragments). There were no obvious signs that the bone had been gnawed. The unidentified material comprised cattle- and sheep-sized material and the material which was more readily identifiable included: sheep (*Ovis* sp.) metacarpals from context **402**, a cow (*Bos* sp.) metapodial from context **1605**, and a scapula, probably from a deer, from context **1603**. The presence of sheep and cattle bones suggests the exploitation of domesticated animals for food, although no obvious butchery marks were recorded on these small fragments and the secondary products of milk, fleeces and hides may also have been utilised. The probable deer scapula might suggest that the diet was being supplemented by hunting activities, but again no obvious butchery marks were noted.

## 5.13 Undated Metalwork

5.13.1 A number of iron objects comprising a probable nail or latch and a bolt, were recovered, along with a squashed cylindrical metal pot or tin, and an unidentified crescent-shaped flat iron object. These are probably all post-medieval to modern in date and of limited significance. A broken fragment of metal, shown by XRF analysis to be an alloy of tin of lead, was also recovered from context **1404**. The purpose of this is unknown as is the exact type of metal, but the composition of elements within it (see *Appendix 7*) is suggestive of it being an early type of pewter (see Brownsword and Pitt 1984; 1985), in which case it was presumably originally part of a pewter vessel of some form, of which there were various types (Weinstein 2011).

## 5.14 Environmental Samples

5.14.1 Three bulk environmental samples were recovered during the excavation (see *Appendix 13*), all of which were waterlogged. In addition, a sample of preserved moss was recovered by hand from a lens of clay and stones within context **1603**. Of the three bulk samples, part of Sample 1 was also wet sieved and material recorded in the flot and retent. The detailed results are tabulated in *Appendix 13*, but are summarised below.

### 5.14.2 *Plant remains*:

- **Sample 1** – deposit **1407** from drain (**1405**) contained the largest variety and abundance of plant remains. These include a single blackthorn/sloe (*Prunus spinosa*) stone, and ‘seeds’ of brambles (*Rubus fruticosus*) and mustard family (*Brassica/cruciferae* sp.). Several weed seeds, including chickweed (*Stellaria media*), corn marigold (*Chrysanthemum segetum*), elder (*Sambucus nigra*), nettle (*Urtica dioica*) and sedges were also present together with woody stem and moss fragments. The weed ‘seeds’ from this sample are typical of agricultural fields and nitrogen-rich disturbed ground. Charred and waterlogged cereal grains including oat (*Avena* sp.), barley (*Hordeum vulgare*), bread/club wheat (*Triticum aestivo-compactum*) and rye (*Cereale secale*) were also recovered from context **1407**, together with a small amount of hazelnut shell.
- **Context 1603** – moss, preserved by waterlogging, was recovered from a peaty deposit (**1603**) overlying **1604**. The moss is probably *Pleurocarpous* type.
- **Sample 2** – deposit **1604** contained waterlogged wood fragments, charcoal, and plant remains including the ‘seeds’ of bramble (*Rubus fruticosus*), sedges (*Carex* sp.), cinquefoil (*Potentilla* sp.)

and fat hen (*Chenopodium* sp.), all of which are indicative of disturbed ground. A single charred cereal grain was also recovered from this deposit.

- **Sample 3** – few plant remains were present in context **1605**, a deposit containing Roman pottery, and underlying peaty deposit **1604**. Occasional buttercup (*Ranunculus* sp.) and thistle (*Cirsium* sp.) seeds were present together with small waterlogged wood fragments (Table 1). The weed 'seeds' are typical of disturbed nitrogen-rich soil.

5.14.2 **Fish bone**: a small number of fish vertebrae were present in the flots from the fill (**1407**) of timber drain (**1405**).

5.14.3 **Beetle fragments**: a small number of beetle exoskeleton fragments were present in deposits **1407** and **1604**.

## 5.15 Discussion

5.15.1 **Finds**: the earliest dateable material dates to the Romano-British period, dated to the late 1<sup>st</sup> century AD. The medieval period is represented by a variety of wares, potentially covering the 12<sup>th</sup> to early 17<sup>th</sup> century, and the post-medieval period is also well represented. The periods represented by finds from each trench are summarised below:

- finds from Trench 1 were all post-medieval and late post-medieval;
- there were no finds from Trench 2;
- finds from the riverine deposit (**304**) in Trench 3 were mixed and included finds of both medieval and post-medieval date;
- finds from the uppermost deposits in Trench 4 were all clearly quite late post-medieval; the lower possible riverine or buried topsoil deposit (**402**) was again mixed and included one fragment of Romano-British pottery amongst otherwise medieval and post-medieval finds. The earlier finds were presumably residual;
- finds from Trench 5 were post-medieval, generally 17<sup>th</sup> to early 18<sup>th</sup> century;
- finds from Trench 6 were post-medieval, from the 18<sup>th</sup> century onwards, but these were recovered from backfill associated with the piling;
- finds recovered from a modern dumped deposit (**702**) in Trench 7 were again mixed, with a single medieval sherd amongst otherwise post-medieval finds. Modern plastic finds were also observed in the same deposit but not retained;
- finds from the upper deposits (**802** and **808**) in Trench 8 were post-medieval, finds from **802** being 19<sup>th</sup> to 20<sup>th</sup> century in date. The silt at the north-east end of the trench (**807**) contained residual Romano-British and medieval material together with post-medieval pottery and clay tobacco pipe fragments;
- Trench 9 contained only a very small amount of 19<sup>th</sup> to 20<sup>th</sup> century finds;
- Trench 10 contained only post-medieval finds;
- finds from Trench 11 were post-medieval;
- there were no finds from Trench 12;
- there were no finds from Trench 13;
- the dark organic layer (**1404**) in Trench 14 contained residual 1<sup>st</sup> to 2<sup>nd</sup> century Romano-British pottery and medieval pottery, possibly of mid-11<sup>th</sup>/12<sup>th</sup> century and perhaps no later than 14<sup>th</sup> century in date. The wood from the timber drain (**1405**) was dated to the 12<sup>th</sup> century and cut a lower dark grey silt (**1408**) at the base of the trench from which a single piece of late 1<sup>st</sup> to 3<sup>rd</sup> century Romano-British pottery was recovered;

- there were no finds from Trench 15;
- the upper soft, dark grey, silt deposit (**1603**) in Trench 16 contained a mix of Romano-British and medieval pottery. The mid brown peaty layer below that (**1604**) contained predominantly Romano-British finds of 1<sup>st</sup> to 2<sup>nd</sup> and 3<sup>rd</sup> to 4<sup>th</sup> century date and some undated, possibly medieval material. The lower firm, dark, greyish-black, silt (**1605**) also contained predominantly Romano-British and some undated, possibly medieval material.

5.15.2 **Samples:** organic plant remains were preserved in the three samples as a result of waterlogging, the site being located on the former course of the River Lune. The plant remains from the fill (**1407**) of timber drain (**1405**) were very well preserved. In general the natural element from the samples is typical of disturbed nitrogen-rich soils that would be expected around a muddy water course particularly in an urban environment. Only one sample, from the fill (**1407**) of timber drain (**1405**), contained unequivocally economic indicators that potentially indicate domestic material in the catchment of the drain. The drain fill included rye, wheat, barley and oat grains, frequent weed seeds, hazel nutshell, fishbone, a blackthorn stone, bramble seeds and charcoal. The achenes of corn marigold, a common weed of cereal fields, and rye would be consistent with a medieval date for the deposit. It is possible that the moss from **1603** grew *in situ*, but this sort of material is also used for bedding, packing etc.

## 6. Discussion

### 6.1 Results

6.1.1 It is apparent that, despite the later disturbance across much of the site, there are still stratified deposits of Roman and medieval date present, some of which were encountered during the excavation, although in many cases these were only revealed at the very limit of the excavation depth. However, no finds or features of archaeological interest were encountered in Trenches 2, 12, 13, or 15. These trenches were perhaps among the most disturbed by post-medieval and modern development at the site, which presumably had erased traces of earlier activity at the site: Trench 2 contained only modern deposits relating to the car park and a concrete slab; Trench 12 features mostly related to the car park, concrete structures, and backfill; Trench 13 only encountered the tarmac from the car park and a backfill deposit, and Trench 15 only contained the tarmac and bedding layer. Similarly, only post-medieval material was recovered from Trenches 1, 5, 6, 9, 10 and 11. Contexts in Trench 1 only related to modern activity; Trench 5 contained overburden and backfill and a possible riverine deposit, all presumably dating from the 17<sup>th</sup> to early 18<sup>th</sup> century; Trench 6 deposits were all 'backfill' and only finds from the 18<sup>th</sup> century onwards were recovered; Trench 9 contained a modern floor surface, brick wall, and dumped deposit of 19<sup>th</sup> to 20<sup>th</sup> century date; Trench 10 contained a concrete floor from a modern building and overburden, all of post-medieval date (but no finds were recovered from the silt at the base of the trench) and similar finds and deposits were recorded in Trench 11. Generally, the outer areas of the site seem to have been the most disturbed by wall building, concrete flooring, overburden, and backfilling.

6.1.2 Earlier material in Trenches 3 and 4, to the west side of the site, also seems to have been disturbed by later walls, concrete floor surfaces, and backfilled deposits. Finds from the possible riverine or buried topsoil deposits at the base of Trenches 3 and 4 were mixed and included finds of both medieval and post-medieval date and in the case of **402** residual Romano-British material as well. Trench 7 and Trench 8 also contained residual Romano-British and/or medieval material (in a modern dumped deposit beneath the bedding layer for the tarmac in Trench 7 and in a silt deposit at the base of the trench in Trench 8) but no deposits earlier than post-medieval in date were encountered. It seems likely that the depth of excavation was just touching upon earlier (medieval) deposits in these areas, although the possible extent of these potentially earlier deposits and the level of disturbance below this depth are unknown.

6.1.3 Trenches 14 and 16, away from the edges of the site and more central to the area of land to the rear of 50-62 Church Street, were less disturbed and contained some of the earlier and more interesting finds and features:

- below the modern rubble and backfill deposits in Trench 14 there was a dark organic deposit (**1404**) of mid-11<sup>th</sup>/12<sup>th</sup> to 14<sup>th</sup> century date above a timber drain (**1405**), the timbers of which have been dated to the 12<sup>th</sup> century, and the lowest deposit (**1408**) cut through by the drain contained a fragment of late 1<sup>st</sup> to 3<sup>rd</sup> century Romano-British pottery. Of additional interest was the piece of metal from context **1404**, which was apparently a lead alloy and possibly an early type of pewter;
- below the gravel and tarmac layers in Trench 16 there was a sequence of silt and peaty layers which also contained predominantly Romano-British finds of 1<sup>st</sup> to 2<sup>nd</sup> and 3<sup>rd</sup> to 4<sup>th</sup> century date, but also some medieval finds, and some undated, possibly medieval, material. Unfortunately, the finds from each context in Trench 16 potentially represented a number of periods, suggesting some mixing had again taken place. Three wooden stakes were recovered from Trench 16, c.0.5m lower down than finds or deposits encountered elsewhere, within the footprint of the new lift shaft.

6.1.4 A broad phasing of the deposits encountered can be described as follows:

- **Phase 1:** the earliest deposits encountered on the site comprise the mixed sandy clays (**1606**) only glimpsed at the base of Trench 16. These are presumably natural deposits laid down at what became the bottom of the River Lune some time after the last Ice Age.



- **Phase 2:** in several trenches dark silty deposits were encountered that clearly represent riverine material settling in the bottom of the River Lune as it was at that time, the deepest of which were found in Trench 16 (**1604** and **1605**), but also probably including **1408**. These contained Roman pottery of 1<sup>st</sup> to 4<sup>th</sup> century date and seem to represent the gradual infilling of the course of the river at this time, perhaps with some deliberate attempt at backfilling, as suggested by the larger stones present in **1605**, although nothing as structural as that encountered during the 1990 excavation was revealed (LUAU 1991b).
- **Phase 3:** overlying these deposits were later layers of silty material, again to some degree representing riverine material, but typically drier and sandier (Phase 4). However, in Trench 14 the timber drain (**1406**) represents a brief phase of activity that occurred before these deposits were laid down. The dendrochronological dating of the top plank of this feature shows that it cannot have been constructed before the early 12<sup>th</sup> century, more likely the later part of the 12<sup>th</sup> century (it is worth noting that at least one of the side timbers was re-used and so may be much earlier). It therefore probably represents some of the first activity on the site in the medieval period, perhaps coinciding with the development of burgage plots in the town following the granting of a borough status in 1193 (White 2001, 35-36). The environmental remains recovered from the sample of the contents of the drain (**1407**) are consistent with it relating to domestic activity taking place in the locality. The remains of a possible post revealed in the same trench at the same stratigraphic position (**1406**) probably also belongs to this phase, although its function is unknown.
- **Phase 4:** overlying the drain in Trench 14, the Phase 2 Roman deposits in Trenches 14 and 16, but also often at the base of the trench, is a more mixed, browner and drier but still generally silty material again suggestive of riverine deposition but clearly subject to some disturbance (**402**, **804/807**, **1103**, **1404**, **1603** and possibly **1003** and **1205**). Finds from these deposits were mixed with some residual Roman material (**402**, **804/807**, **1404** and **1603**) but more often medieval and post-medieval, although typically only 17<sup>th</sup> and 18<sup>th</sup> century. These deposits probably represent what are essentially garden soils being repeatedly reworked within the burgage plots established in the 12<sup>th</sup> century.
- **Phase 5:** more substantial activity in the post-medieval period is represented by a number of structural remains and deposits stratigraphically above those of Phase 4, probably largely of later 18<sup>th</sup> and 19<sup>th</sup> century date and corresponding to structures shown on the early maps of the area (see Section 3.2 above). These comprise a stone wall and associated cobbled surface and edge-set stone slab in Trench 3 (**303**, **305** and **306**), a fragmentary stone wall in Trench 6 (**604**), and a stone wall and associated area of paving in Trench 8 (**803**), as well as dumped deposits **401**, **603**, and **702**. Dating of all of these is difficult, but in all cases they seem to be clearly post-date Phase 4 deposits but are earlier than Phase 6 deposits, which are typified by the use of machine made red brick and concrete.
- **Phase 6:** several trenches contained structural remains that were clearly later than those of Phase 5, either because they directly overlay them or because of the materials present within them; concrete, in some cases reinforced with iron bars or with timber framing remaining, or red machine made brick. These included concrete surface **302**, brick wall **604**, and structure **1203**, as well as deposits **805**, **1001** and **1101**. These deposits evidently represent a later phase of buildings present on the site, probably in the 20<sup>th</sup> century.
- **Phase 7:** the most recent deposits (apart from areas of disturbance caused by the present construction scheme) relate to the use of the site as a car park and comprise a tarmac or concrete surface with gravel bedding. Associated with this are other areas of disturbance represented by layers of clean pinkish gravel, in particular the deep deposit of this in Trench 16 (**1601**, which fills cut **1602**). This clearly represents a concerted attempt to remove large amounts of material from the site, perhaps in order to stabilise the ground, which was very waterlogged in this area. It is not known when this was carried out but it must have been before the archaeological evaluation of 2007 (OA North 2008). At least some of the car park surface must have been laid after this date, but not necessarily all of it.

## 6.2 Conclusion

6.2.1 Although upper deposits of much of the site have been heavily disturbed, there is evidence of Romano-British, medieval, post-medieval and modern activity at the site, although typically only where excavation was deep enough to reach it. The presence of such deposits is perhaps not surprising given the location of the site, but there is clearly considerable potential for important remains, in part due to the waterlogged conditions, to be present at depth and untouched by the current development. The waterlogged nature of the early deposits is further indicative of this area being on the former line of the River Lune, something that has been shown by previous archaeological work on this site and nearby. Indeed, it is only recently that the actual position of the edge of the river, as it seemingly was in the Roman and medieval period, has been clearly identified (see Greenlane Archaeology 2010). Many of the deeper and better preserved deposits encountered can be compared to the previous work carried out on the site in 1990 (LUAU 1991a) and there are obvious points of similarity, although there was greater subdivision of deposits during the earlier work.

6.2.2 In addition, some of the later structural elements recorded in the more recent elevation phase (OA North 2008) were also evident during the excavation, such as the wall in Trench 8 and other structures and deposits in Trenches 4-6, although without stripping a much larger part of the site the full extent and character of these is difficult to determine.

6.2.2 However, around the edges of the development area, which was the area in which excavation was concentrated, there was considerable disturbance relating to more modern structures. Some of the many backfilled deposits perhaps relate to 18<sup>th</sup> century land reclamation which allowed development of the wider quayside (backfilled deposits in Trenches 5 and 6, along Damside Street, most notably contained finds of this date) but the presence of buildings on the site from at least the late 18<sup>th</sup> century must also account for some of the more structural remains.

## 6.3 Recommendations

6.3.1 It is recommended that the more significant elements of results of the archaeological work should be written up for publication as a short note in a suitable place, such as the local journal *Contrebis* or nationally in *Medieval Archaeology*. In addition, the 'Elizabeth Savage' rolled stamp stem should be drawn by a professional archaeological draftsman and submitted for publication to a specialist journal.

6.3.2 The more significant finds, those of Roman and medieval date and the 18<sup>th</sup> century 'Elizabeth Savage' marked pipe, should be transferred to the City Museum in Lancaster, although in the case of timber items this will depend on their suitability for storage and display. The other finds can be discarded.

6.3.3 Further scientific dating (such as radio carbon dating) would be beneficial, in particular in order to better understand the timber drain (**1405**), which is potentially relatively early for the medieval period in Lancaster. In addition, the small roundwood stakes would be suitable for radiocarbon dating (from context **1405**, **1406**, **1604** and **1605? U/S**), if required.

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## Appendix 1: Project Design

# LAND TO THE REAR OF 50-62 CHURCH STREET, DAMSIDE STREET, LANCASTER, LANCASHIRE

Archaeological Excavation Project Design



Client: Holmere Projects

Planning ref: 12/01159/FUL

NGR: 347651 461874

May 2014

## 1. Introduction

### 1.1 Project Background

1.1.1 Following the submission of a planning application (Planning ref. 12/01159//FUL) for the erection of student accommodation on Land to the Rear of 50-62 Church Street, Damside Street, Lancaster, Lancashire (NGR 347651 461874), a condition (No. 6) was placed by Lancashire County Council (LCC) for a programme of archaeological work. This followed on from an earlier programme of archaeological evaluation (OA North 2008) and watching brief (OA North 2012), which revealed a considerable depth of deposits including *in situ* Roman, medieval, and post-medieval material, set within phases of riverine deposits. Following a request by Holmere Projects (hereafter 'the client') Greenlane Archaeology produced this project design in response to the current development proposals, which include excavation to only a limited depth across a limited part of the site following the installation of piled foundations; this project design is intended to provide mitigation for the resulting damage that would be caused to archaeology on site.

1.1.2 The proposed development site is on the north side of Lancaster, close to the main focus of the Roman *vicus*, which included Church Street. It is located directly on the edge of the river line as it was in the Roman and probably medieval period, as revealed during the previous phase of work (OA North 2012) and on a nearby site to the west (Greenlane Archaeology 2010a).

### 1.2 Greenlane Archaeology

1.2.1 Greenlane Archaeology is a private limited company based in Ulverston, Cumbria, and was established in 2005 (Company No. 05580819). Its directors, Jo Dawson and Daniel Elsworth, have a combined total of over 18 years continuous professional experience working in commercial archaeology, principally in the north of England and Scotland. Greenlane Archaeology is committed to a high standard of work, and abides by the Institute for Archaeologists' (IfA) Code of Conduct. The excavation will be carried out according to the Standards and Guidance of the Institute for Archaeologists (IfA 2008).

### 1.3 Project Staffing

1.3.1 The project will be managed and supervised by **Dan Elsworth (MA (Hons), AifA)**, depending on timetabling constraints. Daniel graduated from the University of Edinburgh in 1998 with an honours degree in Archaeology, and began working for the Lancaster University Archaeological Unit, which became Oxford Archaeology North (OA North) in 2001. Daniel ultimately became a project officer, and for over six and a half years worked on excavations and surveys, building investigations, desk-based assessments, and conservation and management plans. These have principally taken place in the North West, and Daniel has a particular interest in the archaeology of the area. He has recently managed a wide variety of projects including building recordings of various sizes, watching briefs, and excavations, including an excavation and evaluation in the centre of medieval Kendal (Greenlane Archaeology 2009b; 2010b), evaluation in the Roman *vicus* at Stanwix (Greenlane Archaeology 2010c), and watching briefs in Preston (Greenlane Archaeology 2009c; 2010d) and Lancaster, only a short distance from the Damside site (Greenlane Archaeology 2010a).

1.3.2 All artefacts will be processed by Greenlane Archaeology, and it is envisaged that they will initially be assessed by Jo Dawson, who will fully assess any of post-medieval date. Medieval pottery will be initially assessed by **Tom Mace (BA (Hons), MA, MifA)** at Greenlane Archaeology, with further specialist input from sub-contractors, expected to be Ian Miller and Jeremy Bradley at OA North, as appropriate. Roman pottery will be assessed by a specialist sub-contractor, expected to be Ruth Leary. Lancashire County Council's Historic Environment Service will be notified of any other specialists, other than those named, whom Greenlane Archaeology wishes to engage.

1.3.3 Environmental samples and faunal remains, should significant deposits of these be recovered, will be processed by Greenlane Archaeology. It is envisaged that charred plant remains will be assessed by staff at Headland Archaeology Ltd, and faunal remains by Jane Richardson at ASWYAS. Should any human remains be recovered for assessment it is envisaged that these will be examined by Malin Horst at York Osteoarchaeology, following appropriate advice on initial processing. In addition, any preserved timber on site will be assessed by Ian Tyers for its suitability for dendrochronological dating.

## 2. Objectives

### 2.1 Excavation

2.1.1 To reveal and fully excavate any surviving archaeological remains to the depth of the footings.



## 2.2 Report

2.2.1 To produce a report detailing the results of the excavation, which will outline the nature, form, extent, and date of any archaeological remains discovered.

## 2.3 Archive

2.3.1 Produce a full archive of the results of the excavation.

## 3. Methodology

### 3.1 Excavation

3.1.1 The foundation trenches running between the piles around the outer edge of the structure will be investigated, although it is anticipated that excavation will be no deeper than 0.6m from the current ground surface, which is the necessary depth of the footings following piling.

3.1.2 The excavation methodology will be as follows:

- Overlying deposits, expected to comprise a tarmac surface and associated bedding layers but also probably including modern overburden, will be excavated by a machine fitted with a toothless ditching bucket under supervision by staff from Greenlane Archaeology;
- All deposits of archaeological significance below the initial layer of tarmac/overburden will be examined by hand in a stratigraphic manner, using shovels, mattocks, or trowels as appropriate for the scale. All features will be fully exposed and characterised;
- The position of any features, such as ditches, pits, or walls, will be recorded and where necessary these will be investigated in order to establish their full extent, date, and relationship to any other features. If possible, negative features such as ditches or pits will be examined by sample excavation, typically 50% of a pit or similar feature and approximately 10% of a linear feature;
- All recording of features will include detailed plans and sections at a scale of 1:20 or 1:10 where practicable or sketches where it is not, and photographs in both colour print and colour digital format;
- All deposits, drawings and photographs will be recorded on Greenlane Archaeology *pro forma* record sheets;
- All finds will be recovered during the excavation for further assessment as far as is practically and safely possible. Should significant amounts of finds be encountered an appropriate sampling strategy will be devised;
- All faunal remains will also be recovered by hand during the excavation as far as is practically and safely possible, but where it is considered likely that there is potential for the bones of fish or small mammals to be present appropriate volumes of samples will be taken for sieving;
- Deposits that are considered likely to have, for example, preserved environmental remains, industrial residues, and/or material suitable for scientific dating will be sampled. Bulk samples of between 20 and 60 litres in volume (or 100% of smaller features), depending on the size and potential of the deposit, will be collected from stratified undisturbed deposits and will particularly target negative features (e.g. gullies, pits and ditches) and occupation deposits such as hearths and floors. An assessment of the environmental potential of the site will be undertaken through the examination of samples of suitable deposits by specialist sub-contractors (see *Section 1.3.4* above), who will examine the potential for further analysis. All samples will be processed using methods appropriate to the preservation conditions and the remains present;
- Any articulated human remains discovered during the excavation will be left *in situ*, and, if possible, covered. The client will be immediately informed as will the local coroner. Should it be considered necessary to remove the remains this will require a Home Office licence, under Section 25 of the Burial Act of 1857, which will be applied for should the need arise;
- Any objects defined as 'treasure' by the Treasure Act of 1996 (HMSO 1996) will be immediately reported to the local coroner and securely stored off-site, or covered and protected on site if immediate removal is not possible;
- Where practicable spoil will be visually checked for finds and scanned with a metal detector in order to recover metal finds;

- At the base of each trench in which archaeological deposits and features are present a layer of Terram or similar membrane will be placed in order to cover and protect them prior to the installation of the foundations.

## 3.2 Report

3.2.1 The results of the excavation will be compiled into a report, which will contain the following sections as necessary:

- A front cover including the appropriate national grid reference (NGR);
- A concise non-technical summary of results, including the date the project was undertaken and by whom;
- Acknowledgements;
- Project Background;
- Methodology, including a description of the work undertaken;
- Results of the excavation including descriptions of any deposits identified, their extent, form and potential date, and an assessment of any finds or environmental remains recovered during the excavation;
- Discussion of the results, with specific reference to their relationship with previous discoveries at the site;
- Illustrations at appropriate scales including:
  - a plan showing the location of the ground works;
  - plans and sections of the ground works, as appropriate, showing any features of archaeological interest;
  - photographs of the excavation, including both detailed and general shots of features of archaeological interest and the trenches;
  - photographs of individual artefacts as appropriate.

3.2.2 Dependant on the results of the excavation the need for publication of the results of it and the proceeding pieces of archaeological work on the site will need to be considered, in discussion with the Lancashire County Council Historic Environment Service. Should this be required it would be subject to a further cost and new project design.

## 3.3 Archive

3.3.1 The archive, comprising the drawn, written, and photographic record of the excavation, formed during the project, will be stored by Greenlane Archaeology until it is completed. Upon completion it will be deposited with the Lancashire Record Office (LRO) in Preston. The archive will be compiled according to the standards and guidelines of the IFA (Brown 2007), and in accordance with English Heritage guidelines (English Heritage 1991). In addition details of the project will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

3.3.2 A copy of the report will be deposited with the archive at the LRO, up to three copies will be supplied to the client as necessary, and within six months of the completion of fieldwork, one copy will be provided for the LCC Historic Environment Record (HER). In addition, Greenlane Archaeology will retain one copy, and a digital copy will be deposited with the OASIS scheme as required.

3.3.3 The client will be encouraged to transfer ownership of the finds to a suitable museum. Any finds recovered during the excavation will be offered to an appropriate museum, most likely the City Museum in Lancaster. If no suitable repository can be found the finds may have to be discarded, and in this case as full a record as possible and necessary would be made of them beforehand.

## 4. Work timetable

4.1 Greenlane Archaeology will be available to commence the project on **16<sup>th</sup> June 2014**, or at another date convenient to the client. It is envisaged that the project will involve tasks in the following order:

- **Task 1:** excavation;
- **Task 2:** post-excavation work on archaeological excavation, including processing and assessment of finds and environmental samples, and production of draft report and illustrations;

- **Task 3:** feedback, editing and production of final report, completion of archive.

## 5. Other matters

### 5.1 Access

5.1.1 Access to the site will be organised through co-ordination with the client and/or their agent(s).

### 5.2 Health and Safety

5.2.1 Greenlane Archaeology carries out risk assessments for all of its projects and abides by its internal health and safety policy and relevant legislation. Health and safety is always the foremost consideration in any decision-making process.

### 5.3 Insurance

5.3.1 Greenlane Archaeology has professional indemnity insurance to the value of **£1,000,000**. Details of this can be supplied if requested.

### 5.4 Environmental and Ethical Policy

5.4.1 Greenlane Archaeology has a strong commitment to environmentally- and ethically-sound working practices. Its office is supplied with 100% renewable energy by Good Energy, uses ethical telephone and internet services supplied by the Phone Co-op, is even decorated with organic paint, and has floors finished with recycled vinyl tiles. In addition, the company uses the services of The Co-operative Bank for ethical banking, Naturesave for environmentally-conscious insurance, and utilises public transport wherever possible. Greenlane Archaeology is also committed to using local businesses for services and materials, thus benefiting the local economy, reducing unnecessary transportation, and improving the sustainability of small and rural businesses.

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## Appendix 2: Summary Context List

Context	Type	Description	Interpretation
<b>100</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>101</b>	Deposit	Pale grey white loose gravel, becoming darker where it is associated with concrete footings for a retaining wall; 0.7m thick	Gravel bedding layer for car park ( <b>100</b> )
<b>102</b>	Cut	Cut extending beyond the base of the trench, associated with the retaining wall, with sides sloping at 45° at the top and then vertical	Cut for extant wall
<b>103</b>	Deposit	Pale pink orange loose gravel, with a terram sheet midway through	Modern gravel deposit
<b>104</b>	Cut	Vertical cut from concrete pile foundation	Modern cut from piling
<b>105</b>	Deposit	Dark grey/black soft silt, 0.7m thick to the base of the trench	Riverine deposit
<b>200</b>	Deposit	0.1m thick modern tarmac layer	Car park
<b>201</b>	Deposit	Loose, pale pink gravel, 0.3-0.4m thick	Gravel bedding layer for car park ( <b>200</b> )
<b>202</b>	Deposit	Concrete slab	Concrete slab
<b>300</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>301</b>	Deposit	Pale pink gravel and rubble, 0.3m thick	Gravel bedding layer for car park ( <b>300</b> )
<b>302</b>	Deposit	Pale buff concrete	Concrete against wall ( <b>303</b> )
<b>303</b>	Structure	Pale buff gritstone wall, sealed below <b>301</b> , with later brick upper course on edge	Post-medieval wall
<b>304</b>	Deposit	Dark grey/black silt	Riverine deposit
<b>305</b>	Surface	River-rounded cobbles of varying sizes forming a surface between contexts <b>303</b> and <b>306</b>	Floor surface
<b>306</b>	Structure	Upright sandstone flags, laid on end, enclosing <b>305</b> ; 0.80 by 0.06m	Damaged part of floor or drain?
<b>400</b>	Deposit	0.05m thick modern tarmac layer and thin gravel underlay, totalling 0.1m	Car park
<b>401</b>	Deposit	Mixed rubble containing mostly local gritstone cobbles in amid brown silty clay matrix, 0.4-0.5m thick	Backfill
<b>402</b>	Deposit	Mid brown silty-clay becoming blacker (dark grey) silt at the base	Riverine deposit or buried post-medieval soil?
<b>500</b>	Deposit	Modern tarmac layer, 0.05m thick, and gravel bedding c.0.1m thick	Car park
<b>501</b>	Deposit	Mixed, but mostly cobble-sized and sub-angular rubble, 0.2m thick; cut by <b>503</b>	Overburden
<b>502</b>	Deposit	Loose rubble, reinforced concrete blocks and slabs, and gravel; 2m to pile at north-east end; 0.5m deep at base of trench	Backfill
<b>503</b>	Cut	Vertical cut	Vertical cut
<b>504</b>	Deposit	Firm, mid brown sandy-silt/silty-clay, becoming dark grey, 0.5m thick; cut by <b>503</b>	Riverine deposit
<b>600</b>	Deposit	0.05m thick modern tarmac layer and gravel bedding, 0.05m thick	Car park
<b>601</b>	Deposit	Pinkish-white gravel inside wall <b>604</b> , 0.15-0.2m thick	Bedding layer
<b>602</b>	Deposit	Firm, mid-brown sandy-clay with 60% sub-angular cobbles, 0.1m thick	Dumped backfill
<b>603</b>	Deposit	Loose, mid orange, sand, with 30% angular gravel inclusions, 0.35m thick, extending to base of trench	Backfilled sand
<b>604</b>	Structure	Three courses of angular yellow gritstone, 0.2m thick; face on north-east side, not the south-west	Remains of wall? Possibly partially removed and backfilled cellar

Context	Type	Description	Interpretation
<b>605</b>	Deposit	Dark, brownish-grey silt, 0.6m thick, below <b>600</b> , to the south-west side of cut for wall <b>604</b>	Modern backfill associated with piling
<b>606</b>	Deposit	Dark, brownish-grey silt, disturbed by pile but 0.6m thick; below tarmac <b>600</b> at the north-east end	Modern backfill associated with piling
<b>700</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>701</b>	Deposit	Pale pink gravel, 0.2-0.3m thick, loose on terram	Gravel bedding layer for car park ( <b>700</b> )
<b>702</b>	Deposit	Mixed, dark brown and orange, firm, sandy-clay, with 30% sub-angular stone and brick inclusions; 0.2m thick to base of trench (0.5m deep); also contained plastic	Modern dumped deposit
<b>800</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>801</b>	Deposit	Pale pink angular gravel, 0.5m thick	Gravel bedding layer for car park ( <b>800</b> )
<b>802</b>	Deposit	Firm, dark brown, sandy-clay, 0.2-0.3m thick to base of trench	Dumped deposit
<b>803</b>	Structure	North-west/south-east aligned wall with flags on the south-west side, edged by stones or narrow wall; the wall is 0.5m wide and the area of flags was 0.5 by 1.0m; at least four courses remain of the roughly-dressed, yellow gritstone wall (ea. 0.1m by 0.3m by 0.1m thick), with mortar bonding to the wall, and faced on the north-east/south-west side; the neatly finished stone flags measure 0.4 by 0.2m by 0.05m thick; the wall widened at the bottom but could not be excavated further due to water in the trench	Boundary wall? Continuation of wall to south-east, running up hill to Church Street, with small outbuilding attached?
<b>804</b>	Deposit	Soft, dark grey silt at the base of the trench (0.8m deep)	Riverine deposit
<b>805</b>	Deposit	Mixed concrete and stone rubble, large blocks and concrete holding timber and metal posts, 0.8m thick, just below tarmac ( <b>800</b> ) but on top of structure <b>803</b> and silt <b>807</b> ; contained thick roof slat and dressed/moulded piece (former door surround?)	Backfill
<b>806</b>	Cut	Linear, vertical sided	Cut for <b>805</b>
<b>807</b>	Deposit	Soft, dark grey silt at the base of the trench (0.8m deep)	Silt at the north-east end of the trench
<b>808</b>	Deposit	Very thin layer of clinker-like material, 0.02m thick, with lots of lumps of iron below flags ( <b>803</b> )	Presumably bedding for flags ( <b>803</b> ) on top of <b>807</b>
<b>900</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>901</b>	Structure	Timber frame (floor) on concrete slab, totalling 0.15m thick, covered with lino? tiles	Modern floor surface
<b>902</b>	Structure	Brick wall, two bricks thick, ea. c.0.2m and machine-made, frogged 'CLAUGHTON MANOR BRICK C <sup>o</sup> , CATON'; cut for this cuts through <b>901</b> ; reinforced concrete below	Brick wall
<b>903</b>	Deposit	Mixed, mid-brown sandy-clay, with 20% angular cobble inclusions; cut by <b>902</b>	Dumped deposit
<b>1000</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>1001</b>	Structure	Reinforced concrete, 0.2m thick, sandwiching layer of asphalt, finished with vinyl tiles	Concrete floor from a modern building
<b>1002</b>	Deposit	Mixed deposit, dark brownish-grey sandy-clay, with 10% angular cobble-sized inclusions; 0.5m thick; ceramic drain cuts through it 0.8m from the north-west end of the trench and there is large boulder at north-west end, although this is not obviously part of a wall	Overburden
<b>1003</b>	Deposit	Dark grey silty, at least 0.1m thick, extending beyond base of trench	Riverine deposit
<b>1100</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>1101</b>	Structure	Reinforced concrete, 0.4m thick, sandwiching layer of asphalt between timber 'joists'	Concrete floor

Context	Type	Description	Interpretation
<b>1102</b>	Deposit	Mixed sandy clay with 20% angular cobble-sized inclusions, 0.1-0.2m thick	Overburden
<b>1103</b>	Deposit	Dark grey, soft and wet silt, 0.1m to base of trench (0.9m deep)	Riverine deposit
<b>1200</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>1201</b>	Structure	Reinforced concrete, 0.1-0.15m thick	Concrete
<b>1202</b>	n/a	Context number not issued	n/a
<b>1203</b>	Structure	Concrete floor bonded by stone wall (rough blocks, ea.0.2-0.3m) on the north-west side and brick wall, two bricks thick, on the south-east side; machine made Claughton bricks	Concrete platform
<b>1204</b>	Deposit	Loose sandy material with angular stone and plastic filling space between brick wall and pile to the north-east	Backfill
<b>1205</b>	Deposit	Waterlogged, dark grey, silt at the base of the trench, 0.8m deep	Riverine deposit
<b>1300</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>1301</b>	Deposit	Mixed deposit, 0.6-0.7m thick; sub-angular boulders in sandy gravel to base of trench; east end disturbed by modern manhole and backfilled with softer silty-clay backfill	Dumped backfill
<b>1400</b>	Deposit	Layer of tarmac, 0.1m thick	Car park
<b>1401</b>	Deposit	Crushed rubble, 0.2m thick	Bedding layer for <b>1400</b>
<b>1402</b>	Deposit	Rubble, 0.4m thick	Backfill
<b>1403</b>	Structure	Sandstone and concrete on upper part, lower part sandstone; 1.6 by 0.5m; cuts <b>1404</b>	Buttress
<b>1404</b>	Deposit	Dark organic layer containing Roman and med pottery; cut by <b>1403</b>	Dark organic deposit
<b>1405</b>	Structure	North/south aligned timber trough with pegs on the side – the timber planks and round wood are in fair condition; the worked timber plank, 0.3m wide, runs into the baulk on either side; within <b>1404</b>	Timber drain – fixed/supported internally with stakes and clogged with silt ( <b>1407</b> )
<b>1406</b>	Structure?	Timber upright post, 1.3m south-east of <b>1405</b> ; 0.1 by 0.1m	Remains of timber post
<b>1407</b>	Deposit	Fill of <b>1405</b> ; pale yellowish-green, loose, sandy-silt, 0.1m deep	Fill of timber drain <b>1405</b>
<b>1408</b>	Deposit	Dark grey soft silt below and cut by <b>1405</b>	Riverine deposit
<b>1500</b>	Deposit	Layer of tarmac, 0.05m thick	Car park
<b>1501</b>	Deposit	Loose, pale pink gravel, 0.6-0.7m thick to base; only excavated to find concrete edge – part of retaining wall / work done previously	Gravel bedding layer
<b>1600</b>	Deposit	0.05m thick modern tarmac layer	Car park
<b>1601</b>	Deposit	Loose pink gravel with sheet of Terram mid-way, extending to depth of trench; only 0.3m thick over <b>1603</b> on south side	Gravel backfilling <b>1602</b>
<b>1602</b>	Cut	Vertical cut, 1.2m deep, filled with <b>1601</b> ; sloping at base	Vertical cut
<b>1603</b>	Deposit	Soft, dark grey, silt, cut by <b>1602</b> ; 0.5m thick lens of large stones and grey clay on west side with moss	Riverine deposit
<b>1604</b>	Deposit	Mid brown peaty silt with soft wood fragments, including at least three stakes in it, driven into the underlying <b>1605</b>	Riverine deposit
<b>1605</b>	Deposit	Firm, dark, greyish-black, silt, with 30% rounded cobbles (more in first c.0.1m and lower) – probably bands of tipped material; large boulders on west side near base of trench; extends to base of trench	Dumped deposit
<b>1606</b>	Deposit	Yellowish-green sandy-clay observed at the base of the trench, below <b>1605</b> , c2m below tarmac surface; more bluish on the north side	Natural; river bed

## Appendix 3: Summary Finds List

Context	Type	Qty	Description	Suggested date range
105	Pottery	1	Black glazed red earthenware body fragment	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
105	Ceramic building material	1	Machine made red brick fragment with concrete attached	Late 19 <sup>th</sup> to 20 <sup>th</sup> century
304	Pottery	1	Sandy ware – fragment of a soft, sandy light orange fabric with a light grey core.	Late 12 <sup>th</sup> to 14 <sup>th</sup> century
304	Pottery	1	Obtuse-angled, flat base fragment of a slightly coarse vessel, in a partially-reduced sandy fabric. It has a light/pale grey inner margin, mid-grey core, and light orange outer margin and surface ('sandwich-effect' section) and a uniform, shiny, light olive green glaze applied internally. It is a fairly soft, dry, sandy fabric with infrequent, mica and small angular inclusions (including quartz), generally less than 1mm but up to 2mm in size	Late 12 <sup>th</sup> to 14 <sup>th</sup> century
304	Pottery	1	Late medieval reduced grey ware fragment with a uniform, reduced, mid-to-light-grey fabric, with very infrequent small grit inclusions, and light orange patches on the outer surface beneath a mottled dark-grey/green glaze applied externally.	Late 13 <sup>th</sup> to 17 <sup>th</sup> century
304	Pottery	2	Refitting Staffordshire style trail and combed slipware, hollow ware base fragments, cream coloured fabric	Late 17 <sup>th</sup> to early 18 <sup>th</sup> century
304	Pottery	3	2 x Black glazed red earthenware, 1 x brown glazed red earthenware body fragments	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
304	Clay Tobacco pipe	1	Plain stem fragment; 31mm long, maximum diameter 8mm; lightly burnished; 8/64" stem bore	17 <sup>th</sup> century
304	Animal bone	1	Unidentified fragment	Uncertain
401	Clay tobacco pipe	1	Plain fragment; stem/bowl junction; 31mm long, 8mm wide; 5/64" stem bore	19 <sup>th</sup> century
401	Animal bone	1	Unidentified fragment	Uncertain
402	Pottery	1	Bodysherd of Dressel 20 amphora (Tomber and Dore 1998, BAT AM) from the Roman province of Baetica in south Spain (Williams and Keay 2006, Dressel 20).	Late 1 <sup>st</sup> to 3 <sup>rd</sup> century
402	Pottery	1	Small fragment of a fine, thin-walled vessel, with pale, very light grey or whitish outer margins and a dark grey core and a dull, thin, dark green to almost grey glaze applied to the surfaces which is mostly flaked off	12 <sup>th</sup> to 14 <sup>th</sup> century
402	Pottery	2	Two fragments of lightly-gritted, sandy fabrics (possibly gritty ware); one a hard, pale buff to light orange fabric with a dull, dark brown glaze applied externally, the other has orange outer margins and light grey core and a similar dull brown glaze applied externally	12 <sup>th</sup> to 14 <sup>th</sup> century
402	Pottery	1	Hard, partially-reduced rim fragment, probably from a bowl or dish, with a similar fabric to the partially-reduced fragment from context <b>304</b> (above); it has a slightly darker green glaze internally and some glaze drizzled or trailed in places externally, probably as decoration (e.g. a stripe around the underside of the rim)	Late 12 <sup>th</sup> to 14 <sup>th</sup> century

Context	Type	Qty	Description	Suggested date range
402	Pottery	2	Two fragments of hard, reduced greyware (probably different fabrics); one from a thin-walled vessel with a uniform light grey fabric and flaky, light greenish-yellow glaze applied internally and externally and one with a dark grey fabric and dull, drab brownish-green glaze surviving on the internal surface (the outer surface is missing)	Late 13 <sup>th</sup> to 17 <sup>th</sup> century
402	Pottery	4	3 x black glazed red earthenware, 1 x brown glazed red earthenware body fragments	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
402	Glass	1	Dark green bottle base from wide globular vessel	Late 17 <sup>th</sup> – 18 <sup>th</sup> century
402	Animal bone	4	Large mammal fragment and other smaller fragments, including two sheep ( <i>Ovis</i> sp.) metacarpals (one complete) probably from the same animal	Uncertain
502	Pottery	2	Mottle ware body fragments	Late 17 <sup>th</sup> to early 18 <sup>th</sup> century
504	Pottery	1	Staffordshire style trailed and combed slipware, hollow ware, cream coloured fabric	Late 17 <sup>th</sup> to early 18 <sup>th</sup> century
504	Clay tobacco pipe	1	Plain stem fragment; 24mm long, maximum diameter 7mm; 7/64" stem bore	17 <sup>th</sup> century
605	Pottery	1	Creamware body fragment	Mid to late 18 <sup>th</sup> century
606	Pottery	1	White earthenware with blue transfer print, Willow pattern flat ware rim	19 <sup>th</sup> to early 20 <sup>th</sup> century
606	Glass	1	Dark green bottle fragment, straight sided vessel	19 <sup>th</sup> – early 20 <sup>th</sup> century
702	Pottery	1	A very small, fragment of lightly-gritted sandy or gritty ware. This hard fabric has thin olive-green glaze on the outer? Surface and the section is split roughly fifty-fifty between an oxidised orange inner surface and margin to a light grey outer margin and surface	12 <sup>th</sup> to 14 <sup>th</sup> century
702	Pottery	1	Slip trailed and incised decorated cream coloured fabric, hollow ware	Late 17 <sup>th</sup> to early 18 <sup>th</sup> century
702	Ceramic building material	2	Small red earthenware brick fragments, probably machine made, one over fired	Late 19 <sup>th</sup> to 20 <sup>th</sup> century
702	Glass	1	Dark green flat fragment, lots of bubbles and rough surface	Not closely dateable
802	Pottery	2	White earthenware, one with blue transfer printed 'Willow' pattern flatware rim	19 <sup>th</sup> to early 20 <sup>th</sup> century
802	Clay Tobacco pipe	1	Plain stem fragment; 32mm long, maximum diameter 7mm; 5/64" stem bore	19 <sup>th</sup> century
807	Pottery	1	Oxidised ware (OAB1) bodysherd; local Lancashire ware	Romano-British
807	Pottery	1	Small sherd of MH2 Mancetter-Hartshill white ware mortarium with grog trituration grits (Tomber and Dore 1998, MAL WH)	After cAD140
807	Pottery	1	Samian ware (SAMCG) rim fragment	AD150-200
807	Pottery	2	Gritty ware rim fragments: one slightly clubbed rim with part of a pouring lip from a fine, thin-walled vessel in a hard fabric, with frequent small grit inclusions (including quartz up to 2mm), pale buff margins, reddish-orange surfaces (slip?), and a light grey core; the chunkier lid-seated rim fragment has a pronounced external thickening and has orange-brown margins and surfaces and a reduced dark grey core	Mid-11 <sup>th</sup> to 13 <sup>th</sup> century



Context	Type	Qty	Description	Suggested date range
807	Pottery	1	Mottleware, hollow ware body fragment	Late 17 <sup>th</sup> to early 18 <sup>th</sup> century
807	Pottery	3	2 x black glazed red earthenware, 1 x brown glazed red earthenware	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
807	Plaster	3	Lime wall plaster, one finished with pale blue paint and from lath and plaster wall	Post-medieval?
807	Clay tobacco pipe	2	Two joining, spurred, bowl fragments, height 39mm, burnished, poorly executed and damaged IB stamp in a semi-circular frame on the bowl facing the smoker, a small nick in the inside of the bowl opposite the stem bore indicates where the wire was pushed slightly too far in the mould, 6/64" stem bore	AD1660-1680
807	Clay tobacco pipe	1	Stem fragment; 57mm long, maximum diameter 10mm; burnished; 8/64" stem bore	17 <sup>th</sup> century
807	Clay tobacco pipe	1	Stem fragment; 71mm long, maximum diameter 9mm; rolled stamp reads ELIZ:SAUAIG, between two lines of cord impressions within a toothed frame; the lettering is a mixture of capital and cursive – the first 'A' and the 'U' in the surname are in cursive script, the rest in capitals; the maximum width of the stamp that survives is 20.8mm; 6/64" stem bore	18 <sup>th</sup> century
808	Pottery	1	Factory produced slipware, glazed buff coloured earthenware with a white slip band, mocha	Mid 18 <sup>th</sup> to early 20 <sup>th</sup> century
808	Ceramic building material	1	Red earthenware brick fragment	Not closely dateable
808	Industrial residue	8	Concreted iron working slag, perhaps smithing waste?	Not closely dateable
903	Pottery	1	Factory produced glazed buff-coloured earthenware with white slip coated interior, hollow ware	19 <sup>th</sup> to 20 <sup>th</sup> century
1001	Pottery	1	Blue transfer printed white earthenware, hollow ware fragment	19 <sup>th</sup> to 20 <sup>th</sup> century
1001	Glass	5	3x colourless; 1x brown; 1x green base with stamp: 'UGB   A4   S 7X', all straight-sided vessels	Late 19 <sup>th</sup> to 20 <sup>th</sup> century. Marked piece after 1956
1103	Pottery	2	Black glazed red earthenware, including crock rim	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
1103	Pottery	1	Brown GRE, dish base, with white slip trailed decoration	Late 17 <sup>th</sup> to early 20 <sup>th</sup> century
1103	Pottery	1	Tin glazed earthenware? Burnt on surfaces, flat ware base, very hard fabric, over fired?	18 <sup>th</sup> century
1103	Ceramic building material	1	Oxidised reddish-orange fabric	Post-medieval?
1103	Glass	1	Fragment of window glass, very degraded	Post Medieval
1103	Glass	1	Dark green bottle base from wide globular vessel	Late 17 <sup>th</sup> – 18 <sup>th</sup> century
1103	Animal bone	2	Unidentified large mammal fragment and another unidentified fragment	Uncertain
1404	Pottery	1	Grey ware (GRA1) bodysherd	Romano-British

Context	Type	Qty	Description	Suggested date range
1404	Pottery	1	Grey ware (GRC1) bodysherd - likely to be Cumbrian fabric	Romano-British
1404	Pottery	1	Oxidised ware (OAA1) bodysherd; possibly a Severn Valley ware or a fine Lancashire Plain ware	Romano-British
1404	Pottery	1	Oxidised ware (OAB1) bodysherd; local Lancashire ware	Romano-British
1404	Pottery	1	Oxidised ware (OAB2) bodysherds	Romano-British
1404	Pottery	1	White ware bodysherd from flagon	Late 1 <sup>st</sup> to 2 <sup>nd</sup> century
1404	Pottery	1	NV Nene Valley colour coated ware (Tomber and Dore 1998 LNV CC); sherd from beaker	Late 2 <sup>nd</sup> century or later
1404	Pottery	2	Samian ware (SAMCG) bodysherd (Dr.31 form) and beaded rim of a bowl (Dr.38 or Dr.37 form)	AD150-200, AD120-200
1404	Pottery	3	Large body fragment of thin-walled vessel in a hard gritty fabric, with light brown-orange margins and surfaces and a reduced dark grey core; a very small, thin, fragment of a hard, gritty oxidised orange fabric with light brown-orange inner margin and surface and a thin dark brown glaze applied externally; a fragment of a flat, obtuse-angled base with an oxidised orange outer surface, buff outer margin, light grey core and light brown-orange inner margin and surface	Mid-11 <sup>th</sup> to 13 <sup>th</sup> century
1404	Pottery	1	Small fragment (possibly a pinched rim or thumbled base) in a hard, sandy fabric (similar to that from <b>304</b> ), with a light orange inner margin and surface and light grey outer margin and oxidised, brown outer surface, with thin pale, olive green glaze applied externally	12 <sup>th</sup> to 14 <sup>th</sup> century
1404	Pottery	1	Fine, hard, sandy fabric rim and possible lip with a reduced grey inner margin and greyish-brown inner surface and lighter orangey-brown outer margin and surface, with boss (raised part of the clay body pressed outwards from the inside of the vessel) forming a pointed stripe around the outside; no glaze apparent	12 <sup>th</sup> to 14 <sup>th</sup> century
1404	Ceramic building material?	1	Fragment of a soft, light pinkish/reddish orange, sandy fabric. Possibly ceramic building material.	12 <sup>th</sup> to 14 <sup>th</sup> century?
1404	Ceramic building material	1	Oxidised, reddish orange with white gritty inclusions	Not closely dateable
1404	Tin/lead alloy	1	Strip with 'V'-shaped section, bent and scratched with 'nicks' and tool marks throughout; scratches show a shiny white metal, silver-coloured core; probably pewter	Medieval? Uncertain
1404	Animal bone	5	Fragments, including large mammal and two small burnt fragments	Uncertain
1405	Wood	5	Three planks and two stakes [one sample was successfully tree-ring dated to after AD1112 (see <i>Appendix 11</i> )]	Top plank 12 <sup>th</sup> century, rest uncertain
1406	Wood	1	Stake	Uncertain
1407	Wood	3	Axe chippings	Uncertain
1407	Animal bone	1	Large mammal fragment	Uncertain

Context	Type	Qty	Description	Suggested date range
1408	Pottery	1	Bodysherd of Dressel 20 amphora (Tomber and Dore 1998, BAT AM) from the Roman province of Baetica in south Spain (Williams and Keay 2006, Dressel 20)	Late 1 <sup>st</sup> to 3 <sup>rd</sup> century
1603	Pottery	2	Oxidised ware (OX/FC) bodysherds; local Lancashire ware	Romano-British
1603	Pottery	1	Samian ware (SAMCG) flake	AD120-200
1603	Pottery	1	Grey ware (GRB1) plain jar base	2 <sup>nd</sup> century or later
1603	Pottery	1	NV Nene Valley colour coated ware (Tomber and Dore 1998 LNV CC); sherd from beaker with rouletting decoration similar to a beaker type made in the late 2 <sup>nd</sup> to early 3 <sup>rd</sup> century (Perrin 1999, 93)	Late 2 <sup>nd</sup> to early 3 <sup>rd</sup> century
1603	Pottery	1	Body fragment of a hard, gritty, pale, off-white to yellowy fabric	Mid-11 <sup>th</sup> to 13 <sup>th</sup> century
1603	Pottery	1	Large, flat, obtuse-angled base fragment of a lightly-gritted sandy or gritty fabric with partially-reduced section. It has an orange outer-surface and margin, grey core, and light buff to pale brown inner margin and surface	12 <sup>th</sup> to 14 <sup>th</sup> century
1603	Pottery	1	Body fragment with a uniform, hard, grey fabric with very few visible inclusions and a dark green to grey (almost metallic) glaze applied externally	Late 13 <sup>th</sup> to 17 <sup>th</sup> century
1603	Ceramic building material	1	Red earthenware fragment with one flat surface, possibly a piece of brick	Not closely dateable
1603	Wood	4	Fragments of a single thin piece, probably a wood shaving	Not closely dateable
1603	Animal bone	3	Two small fragments and scapula of a large mammal, probably deer ( <i>Cervus</i> sp.)	Uncertain
1604	Pottery	1	Grey ware (GRB1) bodysherd	Romano-British
1604	Pottery	6	Oxidised ware (OAB1) bodysherds; local Lancashire ware	Romano-British
1604	Pottery	2	Samian ware (SAMLG) bodysherd (Dr.30 form) with very little decoration left (AD70-100) and flake (SAMCG) (AD120-200)	AD120-200, AD70-100
1604	Pottery	2	Mortarium (MOAB1) - two small scraps	Late 2 <sup>nd</sup> century or later
1604	Pottery	2	NV Nene Valley colour coated wares (Tomber and Dore 1998 LNV CC); sherds from beakers	Late 2 <sup>nd</sup> to 3 <sup>rd</sup> century
1604	Pottery	1	Grey ware (CRA RE) Crambeck grey ware sherd (Tomber and Dore 1998, CRA RE)	Late 3 <sup>rd</sup> to 4 <sup>th</sup> century
1604	Pottery	1	A soft, light orange sandy fabric; possibly red earthenware or ceramic building material, with the cast of a plant leaf (fern?) caught in the clay (within the broken face of the fabric)	Medieval to early post-medieval?
1604	Ceramic building material?	2	Two very small fragments, one is thought to not be Romano-British pottery (possibly ceramic building material) and the other is possibly also ceramic building material	Uncertain / Not closely dateable
1604	Copper alloy	1	Circular disc with round central perforation; identity and function of this object is unclear, possibly a fitting (Nicky Rogers pers comm.)	Uncertain
1604	Iron	1	Nail	Uncertain
1604	Wood	3	Stakes	Uncertain
1604	Animal bone	10	Fragmentary, including large mammal fragments and a small burnt fragment	Not closely dateable
1604	Industrial residue	1	Small fragment of non diagnostic iron working slag	Not closely dateable

Context	Type	Qty	Description	Suggested date range
1605	Pottery	1	Oxidised ware (OAA1) bodysherd; possibly a Severn Valley ware or a fine Lancashire Plain ware	Romano-British
1605	Pottery	1	Oxidised ware (OAB1) bodysherd; local Lancashire ware	Romano-British
1605	Pottery	1	Mortarium (MOAB2) – one small scrap	Romano-British
1605	Pottery	7	Bodysherds of Dressel 20 amphora (Tomber and Dore 1998, BAT AM) from the Roman province of Baetica in south Spain (Williams and Keay 2006, Dressel 20)	Late 1 <sup>st</sup> to 3 <sup>rd</sup> century
1605	Pottery	1	Bodysherd	Late 1 <sup>st</sup> to 3 <sup>rd</sup> century
1605	Pottery	7	Samian ware: bodysherds and flakes (SAMCG) (2x flakes, 3x Dr.33 form (one burnt and one with wear at junction of wall and base), and 1x dish fragment), all AD120-200, and a rim (SAMEG) form Dr.45 (AD170-260)	AD170-260, AD120-200
1605	Pottery	3	Two body and one rim sherd of Black burnished ware (Dorset BB1); these sherds all came from jars, possibly the same jar, and the rim was a splayed type with offset rim tip dating to the 3 <sup>rd</sup> century (Gillam 1976, no. 10) and probably the early or mid-3 <sup>rd</sup> century; the bodysherds were burnished and had wipe marks internally, a feature typical of the 3 <sup>rd</sup> century BB1 jars	3 <sup>rd</sup> century
1605	Pottery	2	NV Nene Valley colour coated wares (Tomber and Dore 1998 LNV CC); body sherd from a beaker and another sherd from a funnel necked beaker of the mid- to late 3 <sup>rd</sup> century (Perrin 1999, 94)	Mid- to late 3 <sup>rd</sup> century
1605	Pottery	1	Oxidised ware (OBB1, as OAB1 but a more biscuit colour)	Late 3 <sup>rd</sup> to 4 <sup>th</sup> century
1605	Ceramic building material	7	Various oxidised sandy fabrics	Not closely dateable
1605	Iron	1	Headless nail	Uncertain
1605	Industrial residue	3	Iron working slag, including possible smithing hearth bottom	Not closely dateable
1605	Animal bone	9	Several small unidentified fragments, including two burnt fragments, and cow ( <i>Bos</i> sp.) metapodial	Uncertain
1605? U/S	Wood	2	Stakes	Uncertain

## Appendix 4: Summary Roman Pottery Index

Context	Ware group	Ware	Fabric	Count	Weight	Abrasion	Part of vessel	Form	Vessel	Rimd	Rimp	Condition	Spot date	Comments	Decorative technique	Decorative motif	Decorative position
402	Amphora	AMP	DR20	1	8.4	M	BODY	A	A				L1-3				
807	Mortarium	MOR	MH2	1	6	M	BODY	M	M				130/40+				
807	Oxidised ware	Ox	OAB1	1	4.4	U	BODY	CV	CV				RB				
807	Samian	TS	TS	1	7		R+B		D	18	3		150-200				
1404	Nene Valley CC	CC	NV1	1	1	M	BODY	CV	BKR				L2+				
1404	Grey ware	GW	GRA1	1	4.3	M	BODY	CV	CV				RB				
1404	Grey ware	GW	GRC1	1	3.1	M	BODY	CV	J				RB				
1404	Oxidised ware	Ox	OAB2	2	5.3	M	BODY						RB				
1404	Oxidised ware	Ox	OAB1	1	2.4	M	BODY						RB				
1404	Oxidised ware	Ox	OAA1	1	1.5	V	SCR						RB				
1404	Samian	TS	TS	2	4								150-200, 120-200				
1404	White ware	WW	FLA	1	9.2	M	BODY	CV	F				L1-2				
1408	Amphora	AMP	DR20	1	3.4	M	BODY	A	A				L1-3				
1603	Nene Valley CC	CC	NV2	1	0.2	M	SCR		BKR				L2-E3		ROU	DAH	OSB
1603	Grey ware	GW	GRB1	1	47.4	U	BASE AND BODY	J	J				2+		BNH		OSB
1603	Oxidised ware	OX/FC		2	1.1	V	SCR										
1603	Samian	TS		1	0.1								120-200				
1604	Nene Valley CC	CC	NV2	1	0.2	V	SCR	CV	BKR								
1604	Nene Valley CC	CC	NV2	1	0.4	M	SCR	INDENTED	BKR				L2-3				
1604	Grey ware	GW	GRB1	1	5	M	BODY	CV					RB				
1604	Grey ware	GW	CRA RE	1	2.1	M	BODY	CV					280+				
1604	Mortarium	MOR	MOAB	2	4.2	A	BODY		M				L2+				
1604	Oxidised ware	Ox	OAB1	6	16	M	BODY	CV					RB				
1604	Samian	TS	TS	1	0.2								120-200				

Context	Ware group	Ware	Fabric	Count	Weight	Abrasion	Part of vessel	Form	Vessel	RimD	RimP	Condition	Spot date	Comments	Decorative technique	Decorative motif	Decorative position
1604	Samian	TS	TS	1	2.8								70-100				
1605	Amphora	AMP	DR20	1	8.8	M	BDX	A	A				L1-3				
1605	Amphora	AMP/W W?		1	0.4	V	SCR						L1-3				
1605	Amphora	AMP?	DR20?	5	310. 5	M	BODY	A?	A?				L1-3				
1605	BB1	BB1	BB1	1	44.9	M	RIM	Gillam 1976, no. 10	J	16	20		3, OPT E-M3		burnished		
1605	BB1	BB1	BB1	2	8.6	U	BODY		J				3	some wiping inside	burnished		
1605	Nene Valley CC	CC	NV1	1	2.1	M	BODY										
1605	Nene Valley CC	CC	NV1	1	1.1	U	BODY	FUNNEL NECKED BEAKER?	BKR ?				M-L3				
1605		M/AMP	M/AMP	1	13.8	M	BODY	M/A	M/A				L1-3				
1605	Mortarium	MOR	MOAB2	1	3.4	M	BODY	M	M								
1605	Oxidised ware	Ox	OAB1	1	14.2	A	BODY	CV	J				L3-4				
1605	Oxidised ware	Ox	OAA1	1	1.5	U	BODY	CV	J				RB		GRV	DBE	OSB
1605	Oxidised ware	Ox	OBB1	1	6.1	M	BODY	CV	J				RB				
1605	Samian	TS	TS	7	18								170-260, 120-200				

## Appendix 5: Samian Ware Index

Each archive entry consists of a context number, fabric, form and decoration identification, condition, sherd count, rim EVEs (Estimated Vessel Equivalents), rim diameter, weight, notes and a date range:

Context	Vessel part	Fabric	Form	Funct	Decoration	Condition	Graffito	Wear	Number of vessels	Sherd count	Weight	Rim EVE	Rim Diameter	Stamp	Potter	Die	Early date (AD)	Late date (AD)	Comments	Joins with
807	rim	SAMCG							1	1	7	0.03	180				150	200		
1404	bodysherd	SAMCG	DR31						1	1	3						150	200		
1404	rim	SAMCG	bowl						1	1	1	0.01					120	200	beaded rim-Dr38 or 37	
1603	flake	SAMCG				ext abr			1	1	<1						120	200		
1604	bodysherd	SAMLG?	DR30		DEC				1	1	3						70	100	very little dec left	
1604	flake	SAMCG							1	1	<1						120	200		
1605	bodysherd	SAMCG	DR33						1	1	5						120	200		
1605	bodysherd	SAMCG	dish						1	1	1						120	200		
1605	flake	SAMCG							1	1	2						120	200		
1605	rim	SAMEG	DR45			abr			1	1	5	0.05	260				170	260	TR	
1605	bodysherd	SAMCG	DR33					Y-int	1	1	2						120	200	band of internal wear at junction of wall and base	
1605	bodysherd	SAMCG	DR33			burnt			1	1	2						120	200	burnt internally	
1605	flake	SAMCG							1	1	1						120	200		

## Appendix 6: Conservation Assessment for Metal Finds

### Iron

X-ray	Context	Assessment
8405	1604	Nail with flat head. Stored in grip top bag. Incomplete, broken and lost at the tip of the shank. Covered in thick crust of blue vivianite corrosion. Plus localised spots of active corrosion. X-ray shows a mineralised shank with metallic core surviving at the head. Condition fair. <b>Recommendation: no further work required.</b>
8405	1605	Headless nail, complete. Stored in grip-topped bag. Covered in thin crust of silt and mixed iron corrosion with small patch of blue vivianite corrosion. Plus localised spots of active corrosion. X-ray shows a severely mineralised shank with little metal core surviving. Condition fair. <b>Recommendation: no further work required.</b>

### Copper alloy

X-ray	Context	Assessment
8405	1604	Circular disc with round central perforation. Stored in grip top bag within small clear plastic box, wrapped with acid free tissue. Complete. Covered in silt above pitted gold coloured sulphide corrosion products. X-ray shows denser outer rim which has localised corrosion pustules and the central area is mineralised Condition fair. <b>Recommendation: no further work required.</b>

**'Silver' alloy** [later found to be mostly tin and lead alloy; possibly pewter – see *Appendix 7 and Appendix 9*]

X-ray	Context	Assessment
8405	1404	Silver alloy strip [later found to be tin/lead alloy, possibly pewter], 'V' form in section. Stored in grip topped bag, wrapped with acid free tissue. Bent, scratched with 'Knicks' and tool marks throughout. Incomplete? Lightly covered with silt and thin dark grey corrosion products, scratches show a shiny white metal, silver core. No signs of active corrosion. X-ray shows dense opaque image Condition good. <b>Recommendation: clean to reveal surface, test for silver using potassium chromate and/or XRF to confirm composition.</b>



## Appendix 7: Tin/Lead Alloy Object Conservation Record Sheet



YORK ARCHAEOLOGICAL TRUST CONSERVATION RECORD SHEET			
SITE: DAMSIDE LANCASTER		SITE CODE: DS 14	
CLIENT: Greenlane Archaeology		SF NUMBER/CONTEXT NO: 1404	
SIMPLE NAME: Bar/Strip		MATERIAL: Silver? or tin? lead? alloy	
MATERIAL: Silver? or tin? lead? alloy		X-RAY: X8405	
WORK REQUIRED: Clean revealing surface and tool marks; use XRF to determine alloy composition			
CONSERVATOR: L Vere-Stevens		DATE: 06/08/14	
CARE GUIDE	RH: <35%	LIGHT: 300	TEMP: Stable



*Side 1 before treatment*



*Side 1 after treatment*



*Side 2 before treatment*



*Side 2 after treatment*

Weight before treatment 34.5g

The object is a bent rectangular strip which is 'v' shaped in section and slightly tapered at one end. There is a torn ridge on the wider upper edge, the thin edge is chamfered. There are two holes located within the structure at the blunt end. There are numerous striation tool marks and nicks throughout the surface.

Black coloured silt and soil deposits were removed using a blunt bamboo skewer and porcupine quill. The underlying metal surface is very soft so initially scalpel cleaning was avoided. Removal of soil revealed a number of corrosion products:

- a thin mottled slightly iridescent blue/black layer
- a thin iridescent yellow coloured oxidised layer
- a localised thin crusty black corrosion, which is gritty and can cleave off from the surface either with a scalpel or porcupine quills revealing a thin shiny black surface beneath
- a black and grey coloured waxy corrosion which is uneven and very tenacious with little or no cleavage from the underlying metal surface. This is particularly evident scattered throughout side 2, but particularly focussed along the thin edge.

Cleaning with swabs of Industrial Methylated Spirits (IMS) applied with cotton wool swabs followed. Porcupine quills were also used to remove soil deposits from within pits and striated interstices of the surface together with a soft brush soaked in IMS. The object was then placed in a solution of acidified thiourea, the immersion time lasted five minutes, and during immersion the surface of the object was

brushed. Following removal from the thiourea solution the find was rinsed with de-ionised water followed by acetone. There was little change in the surface and although there was a slight lessening of the black slightly iridescent layer (that was thought to be a silver sulphation product), there was not the expected marked change and the abraded areas which had shown a shiny silver metal had become greyer in colour. Further light mechanical cleaning followed using a paste composed of IMS and calcium carbonate applied with a cotton wool swab. Following this application the find was washed with deionised water followed by immersing in acetone. The grey slightly shiny surface appears more like a tin/lead or pewter surface rather than silver.

Due to the uncertainty of the alloy composition further surface cleaning was halted until the results of XRF analysis could be obtained.

Once dry the find was re-packed in a pierced grip topped bag, supported with jiffy foam.

## Appendix 8: Copper Alloy Object Conservation Record Sheet



YORK ARCHAEOLOGICAL TRUST CONSERVATION RECORD SHEET			
SITE: DAMSIDE LANCASTER		SITE CODE: DS 14	
CLIENT: Greenlane Archaeology		SF NUMBER/CONTEXT NO: 1604	
SIMPLE NAME: Disc with central perforation			
MATERIAL: Copper Alloy		X-RAY: 8405	
WORK REQUIRED: Remove silt and excess corrosion to reveal surface			
CONSERVATOR: L Vere-Stevens		DATE: 06/08/14	
CARE GUIDE	RH: <35%	LIGHT: 300	TEMP: Stable



Side 1: before treatment      after treatment      Side 2: before treatment      after treatment

Complete circular disc, with round central perforation, covered in silt above pitted gold coloured sulphide corrosion products.

Black coloured silt/soil deposits were first removed using a scalpel. Removing soil revealed a number of corrosion products:

- a black powdery mineral deposit
- a cream/grey layer which appears powdery and is particularly evident within pits
- localised warty reddish copper deposits
- localised warty areas of a mass of cubical metallic shiny copper/gold coloured minerals, particularly evident on the outer edge

Cleaning progressed with swabs of IMS applied with cotton wool swabs followed by further mechanical cleaning with a scalpel. Areas of compact 'original surface' can be seen throughout the front outer edge and interior area of the disc and is dark brown in colour, however generally the surface is very pitted with areas of loss of 'original surface' and the loss reveals a pitted gold/copper coloured layer. The reverse surface (side 2 above) is irregular, pitted and uneven. A warty area on the outer edge shows extruded minerals which are clustered together but are individually cubical shaped and shiny coppery/gold in colour – these disrupt areas of the edge and reverse surface but were not removed as it was thought that the underlying structure was too fragile. Following cleaning the object was coated with incralac laquer applied via a brush.

The object was re-packed within a pierced grip topped bag with a jiffy foam insert.

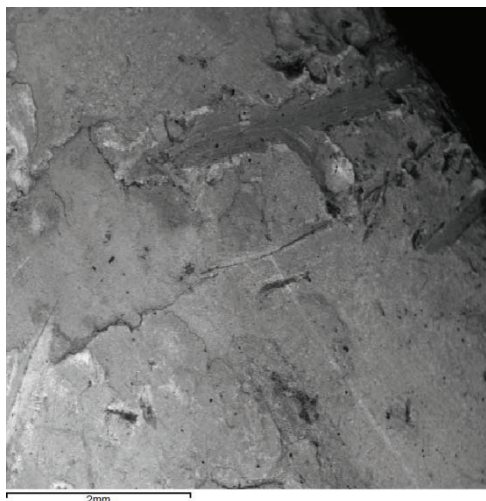
## Appendix 9: Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray (EDX) Analysis

### SEM/EDX Spectrum details

Project DS14(1404)x8405.ipj      Spectrum name Sum Spectrum

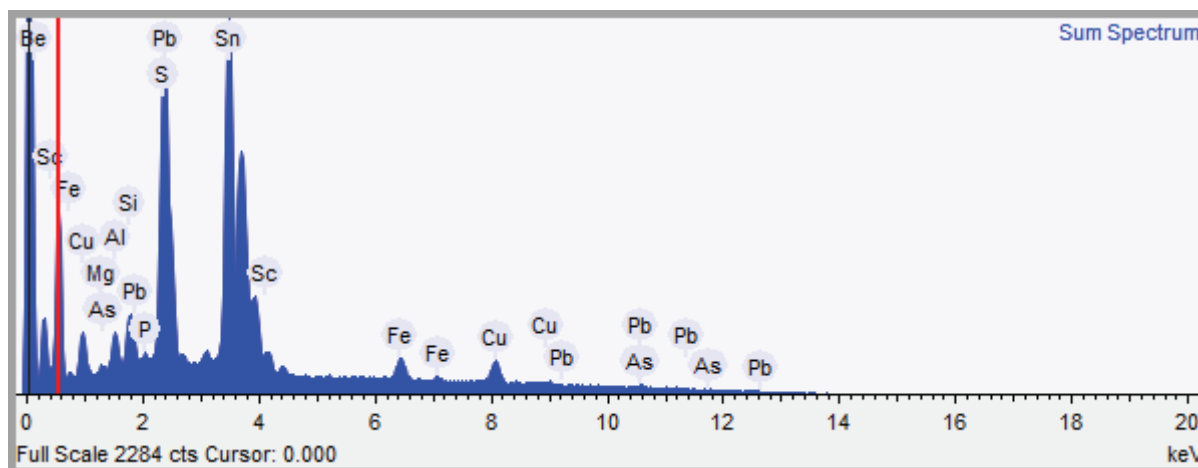
### Electron Image

Image Width: 5.191 mm



### Acquisition conditions

Acquisition time (s) 72.1      Process time 5  
Accelerating voltage (kV) 15.0



### Quantification Settings

Quantification method All elements (normalised)  
Coating element None

**Summary results**

<b>Element</b>	<b>Weight %</b>	<b>Weight % <math>\sigma</math></b>	<b>Atomic %</b>
Tin	54.727	0.586	40.434
Lead	21.082	0.537	8.923
Copper	8.398	0.439	11.590
Sulphur	6.545	0.202	17.901
Iron	4.245	0.266	6.666
Silicon	1.960	0.107	6.121
Aluminium	1.332	0.102	4.329
Scandium	0.661	0.169	1.289
Phosphorus	0.440	0.100	1.246
Magnesium	0.324	0.116	1.167
Arsenic	0.285	0.208	0.334

## Appendix 10: Conservation Assessment for Wood

Lab no.	Context	Assessment
W 01	1405	<p>"Top Plank". Radially faced board, no fittings or fixings present. Abraded surfaces. One end recently sawn away, other end lost to erosion. Sapwood edge broken away and missing. 1.136m l, 3223w, 39 th. <i>Quercus</i> sp.</p> <p>Condition: Fair.</p> <p><b>Recommendation: sample for dendrochronology if sample not taken already and discard after analysis.</b></p>
W 02	1405	<p>"W Plank". Radially faced board with five complete or near complete 20mm dia. through auger holes evenly spaced in a row parallel to the thicker edge of the board. Abraded surfaces. Part of thicker edge broken away and missing. Minor damage at broader end. Narrower end damaged with two detached but refitting pieces and some loss. Partially sawn through at this end. Minor excavation damage to both faces. 1.029m l, 160 w, 27 th. <i>Quercus</i> sp.</p> <p>Condition: Fair.</p> <p><b>Recommendation: discard.</b></p>
W 03	1405	<p>"E Plank". Section of box quartered timber, sub rectangular cross section. One diagonal 32 dia. through auger hole from face to adjacent edge. Abraded surfaces. One edge very badly damaged, opposing edge slightly damaged. Both faces have minor surface damage. Both ends broken away and missing. In five refitting sections. 1.010m l, 150 w, 66 th. <i>Alnus</i> sp.</p> <p>Condition: Poor.</p> <p><b>Recommendation: discard.</b></p>
W 04	1405	<p>"S Peg". Section of roundwood, partial bark present. One main side shoot hewn away just beyond junction with main stem. Both ends of main stem broken away and missing. 156 l, 37 dia. <i>Alnus</i> sp. 11 annual rings, winter felled.</p> <p>Condition: Poor.</p> <p><b>Recommendation: suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 05	1405	<p>"N Post". Roundwood stake, no bark present. Very knotty. Tip broken away and missing, compression damage at upper end. 314 l, 51 dia. <i>Alnus</i> sp. 17 annual rings, winter felled.</p> <p>Condition: Poor.</p> <p><b>Recommendation: suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 06	1406	<p>"Post". Fragment of roundwood ?stake, no bark present. Abraded surfaces. Tip and upper end broken away and missing. In three partially refitting sections. 283 l, 75 dia. <i>Quercus</i> sp. 12 annual rings, spring felled.</p> <p>Condition: Poor.</p> <p><b>Recommendation: suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 07	1407	<p>Tangentially faced axe chipping. One end has hewn bevel other end lost to erosion. 83 l, 55 w, 12 th. <i>Quercus</i> sp.</p> <p>Condition: Fair.</p> <p><b>Recommendation: discard.</b></p>
W 08	1407	<p>Radially faced axe chipping. One end has hewn bevel, other end broken away and missing. 50 l, 17 w, 06 th. <i>Quercus</i> sp.</p> <p>Condition: Fair.</p> <p><b>Recommendation: discard.</b></p>
W 09	1407	<p>Radially faced axe chipping. One end has hewn bevel, other end broken away and missing. 68 l, 17 w, 07 th. <i>Quercus</i> sp.</p> <p>Condition: Fair.</p> <p><b>Recommendation: Discard.</b></p>
W 10	1604	<p>"Stakes". Roundwood stake, bark present. Three hewn facets cut to create sub rectangular cross section tip. Some surface damage. Upper end broken away and missing. In two refitting sections. 202 l, 56 dia. <i>Alnus</i> sp. 9 annual rings, early spring felled.</p> <p>Condition: Fair.</p> <p><b>Recommendation: Suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>

Lab no.	Context	Assessment
W 11	1604	<p>"Stakes". Roundwood stake tip, bark present. Three hewn facets cut to create sub rectangular cross section tip. Minor surface damage. Upper end broken away and missing. 107 l, 46 dia. <i>Alnus</i> sp. 10 annual rings, winter felled. Condition: Fair. <b>Recommendation: Suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 12	1604	<p>"Stakes". Fragment from ?roundwood stake? Three hewn facets cut to start ?sub rectangular cross section tip. End of tip and upper end broken away and missing. Much surface damage. 112 l, 40 dia. <i>Alnus</i> sp. 8 annual rings, winter felled. Condition: Poor. <b>Recommendation: Suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 13	1605? U/S	<p>Roundwood stake, bark present. Four hewn facets cut to create sub rectangular cross section tip. Upper end and end of tip broken away and missing. Faint axe signature present on facets. 248 l, 54 dia. <i>Alnus</i> sp. 7 annual rings, winter felled. Condition: Fair. <b>Recommendation: Suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>
W 14	1605? U/S	<p>Roundwood stake, bark present. Start of single hewn facet cut to start tip at one end. Remainder of tip and upper end broken away and missing. 121 l, 51 dia. <i>Alnus</i> sp. 8 annual rings, winter felled. Condition: Fair. <b>Recommendation: Suitable for <sup>14</sup>C if needed, otherwise discard.</b></p>

## Appendix 11: Tree-ring Spot Dates

### Tree-ring spot dates from archaeological samples: Land to the Rear of 50-62 Church Street, Damside Street, Lancaster (Site Code DS14)

Two samples from oak timbers excavated from land to the rear of 50-62 Church Street, Damside Street, Lancaster (Site Code DS14, site centre approx. NGR c. SD 4765 6187) were submitted for dendrochronological assessment and analysis. This material was derived from a timber drain, one sample was successfully dated, and the result indicates that this is a 12<sup>th</sup> century, or later, feature.

#### Methodology

Each dendrochronological sample was supplied as a complete cross section, it is assumed in the absence of other information that these were obtained from the optimum location for outermost rings or sapwood survival from these timbers.

Each sample was assessed for the wood type, the number of rings it contained, and whether the sequence of ring widths could be reliably resolved. For dendrochronological analysis samples usually need to be oak (*Quercus* sp.), to contain 50 or more annual rings, and the sequence needs to be free of aberrant anatomical features such as those caused by physical damage to the tree whilst it was still alive. Standard dendrochronological analysis methods (see e.g. English Heritage 1998) were applied to each suitable sample. The sequence of ring widths in each sample was revealed by preparing a surface equivalent to the original horizontal plane of the parent tree with a variety of bladed tools. The width of each successive annual growth ring was revealed by this preparation method. The complete sequence of the annual growth rings in the suitable samples was then measured to an accuracy of 0.01mm using a micro-computer based travelling stage. The sequence of ring widths was then plotted onto semi-log graph paper to enable visual comparisons to be made between the sequences and reference data. In addition cross-correlation algorithms (e.g. Baillie & Pilcher 1973) were employed to search for positions where the ring sequences were highly correlated. Highly correlated positions were checked using the graphs and where these were satisfactory, these locations were used to identify the calendar dates of the measured series.

The *t*-values reported below were derived from the original CROS algorithm (Baillie & Pilcher 1973). A *t*-value of 3.5 or over is usually indicative of a good match, although this is with the proviso that high *t*-values at the same relative or absolute position needs to have been obtained from a range of independent sequences, and that these positions were supported by satisfactory visual matching.

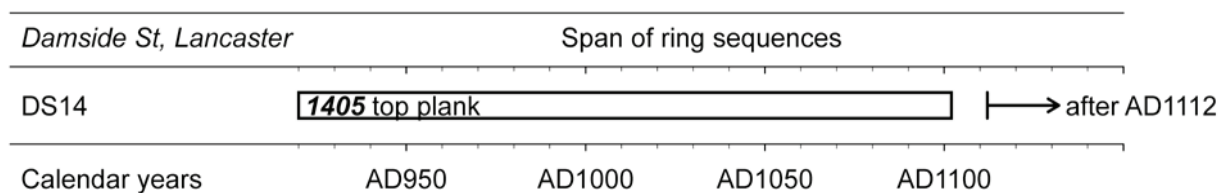
The tree-ring analysis initially dates the rings present in the sample. The interpretation of these dates relies upon the nature of the final rings in the sequence. Oak timber contains two types of wood, heartwood and sapwood, the latter is on the outside of the tree and thus contains the most recent growth rings. Sapwood is softer and is not always preserved under archaeological conditions. If the sample ends in the heartwood of the original tree, a *terminus post quem* (*tpq*) date for the felling of the tree is indicated by the date of the last ring plus the addition of the minimum expected number of sapwood rings which are missing. This *tpq* may be many decades prior to the actual date that a tree was felled, particularly where poor preservation or other loss of outer heartwood has occurred. Where some of the outer sapwood or the heartwood/sapwood boundary survives on the sample, a date range for the felling of a tree can be calculated by using the maximum and minimum number of sapwood rings likely to have been present. The sapwood estimates used here are a minimum of 10 and maximum of 46 annual rings, where these figures indicate the 95% confidence limits of the range. If bark-edge survives then a felling date can be directly utilised from the date of the last surviving ring.

#### Results

The submitted material comprised 2 oak (*Quercus* sp.) samples, these were both planks from a drain. Both of these samples contained suitable tree-ring sequences for measurement and analysis (Table 1), and complete sequences were successfully recovered from these samples. Neither of the samples retained sapwood.



Cross-matching to reference chronologies identified that the larger top plank indicated a date no earlier than AD1112 for this feature (Table 2). This *tpq* date may be many decades prior to the actual date that this tree was felled if poor preservation or erosion of outer heartwood has occurred. The smaller west plank was not dated.



**Figure 1. Bar diagram showing the dating position of the oak tree-ring sample; interpretation based on the minimum typical amounts of sapwood for oaks, using a 10-46 ring sapwood estimate. Heartwood (white bar)**

Context, sample, etc.	Size (mm)	Rings	Sap	Date of measured sequence	Interpreted result
1405 top plank W 01	c. 310 x 40	183	-	AD920-1102	after AD1112
1405 west plank W 02	c. 160 x 25	89	-	undated	-

**Table 1. Two oak (*Quercus* sp.) samples; interpretation using a 10-46 ring sapwood estimate**

	1405 top AD920-1102
Lincolnshire, Barton on Humber coffins (Tyers 2001)	6.39
Yorkshire, Beverley Eastgate (Groves 1992)	5.76
Peterborough, Cathedral Nave (Tyers 1999)	5.73
Lancashire, Preston BCP07 coffins (Tyers 2011)	5.63
Cumbria, Carlisle The Lanes north area (Groves 1996)	5.38
Cheshire, Nantwich Lamb Hotel (Tyers 2004)	5.34

**Table 2. Showing example *t* values (Baillie and Pilcher 1973) between the sample from 1405 top plank and six independent site series**

## Appendix 12: Clay Tobacco Pipe Catalogue

Site Code	Cxt <sup>1</sup>	B <sup>2</sup>	S <sup>3</sup>	M <sup>4</sup>	H/S <sup>5</sup>	64 <sup>6</sup>	Decoration	Comments	Suggested date range
DS14	<b>304</b>		1			8			17 <sup>th</sup> century
DS14	<b>401</b>		1			5		stem/bowl junction	19 <sup>th</sup> century
DS14	<b>504</b>		1			7			17 <sup>th</sup> century
DS14	<b>802</b>		1			5			19 <sup>th</sup> century
DS14	<b>807</b>	2			pedestal spur	6	complete, plain bowl with narrow pedestal spur; burnished; poorly executed and damaged 'IB' stamp in a semi-circular frame on the rear of the bowl (facing the smoker)		1660-1680
DS14	<b>807</b>		1			8		burnished	17 <sup>th</sup> century
DS14	<b>807</b>		1			6	rolled stamp (around the stem) reads ELIZ:SAUAIG, between two lines of cord impressions within a toothed frame	the lettering is a mixture of capital and cursive – the first 'A' and the 'U' in the surname are in cursive script, the rest in capitals; the maximum width of the stamp that survives is 20.8mm	18 <sup>th</sup> century?

**Notes:** 1. Context; 2. Bowl; 3. Stem; 4. Mouthpiece; 5. Heal / spur; 6. Borehole diameter in sixty-fourths of an inch

## Appendix 13: Contents of Environmental Samples

### Summary sample list

Sample No.	Context	Description	Sample size
1	1407	Fill of timber drain 1405	35L
2	1604	Waterlogged Peaty deposit	40L
3	1605	Waterlogged Roman deposit	20L

### Volume and contents of retent (Key: + = 1-9, ++ = 10-20, +++ = 21-50, ++++ = >51)

Sample number	1
Charred organic	++++
Ceramic building material	+
Uncharred organic	+++
Bone	+

### Volume and contents of flot (Key: + = 1-9, ++ = 10-20, +++ = 21-50, ++++ = >51)

Sample Number	1	
Context Number	1407	
Total flot volume (ml)	150	
Feature	Fill of drain 1405	
Cereal grain	Avenasp.	++
	Hordeum vulgare	++
	Triticumsp.	+
	Cerealialia indet.	+
Other plant remains	<i>Corylus avellana</i> nutshell +, <i>Ranunculus</i> sp. +, <i>Polygonum aviculare</i> +, <i>Potentilla</i> sp. +, <i>Galaeopsis tethraet</i> +, <i>Carex</i> sp. +, <i>Rubus fruticosus</i> , <i>Chrysanthemum segetum</i> +, <i>Chenopodium album</i> ++, <i>Stellaria media</i> +, <i>Atriplex</i> sp. +, <i>Prunus spinosa</i> stone +, <i>Brassica</i> sp. ++, <i>Sambucus nigra</i> ++, <i>Cirsium</i> sp. +, <i>Brassica</i> sp. +, Small legumes +, <i>Lapsana communis</i> +, <i>Urtica dioica</i> +	
Uncharred wood fragments	++++	
Charcoal Quantity	++	
Charcoal Max size (cm)	1	
Material available for AMS	Yes	

**Volume and contents of waterlogged sub-samples** (Key: + = 1-9, ++ = 10-20, +++ = 21-50, ++++ = >51)

<b>Context No.</b>	<b>1407</b>	<b>1604</b>	<b>1605</b>
<b>Sample No.</b>	1	2	3
<b>Sample Vol. (ml)</b>	500	500	500
<i>Potentilla</i> sp.		++	
<i>Polygonum aviculare</i>	+		
<i>Rubus fruticosus</i>	+	+	
<i>Chenopodium album</i>	++	+	
<i>Carex</i> sp.	++		
<i>Ranunculus</i> sp.			+
<i>Stellaria media</i>	+		
<b>Moss leaves and stems</b>	++		
<b>Wood fragments</b>	+++	++++	++
<b>Fish vertebrae</b>	+		
<b>Burnt bone</b>	+		
<b>Charcoal</b>	++		

## Appendix 14: Archaeological Project Archive Index

<b>Project name:</b>	Land to the Rear of 50-62 Church Street, Damside Street, Lancaster, Lancashire: Archaeological Excavation		
<b>Project Code:</b>	G1249	<b>Site Code:</b>	DS14
<b>Description</b>	<b>Material</b>	<b>Size</b>	<b>Quantity</b>
Report	Paper, comb-bound	A4	45 sheets, single- and double-sided
Dendrochronological Consultancy Limited report	Paper, comb-bound	A4	6 sheets, single-sided
Day record sheet	Paper	A4	5 sheets, single- and double-sided
Trench record sheet	Paper	A4	16 sheets, single- and double-sided
Masonry record sheet	Paper	A4	1 sheet, single-sided
Timber record sheet	Paper	A4	1 sheet, single-sided
Film index	Paper	A4	1 sheet, single-sided
Photo record sheet	Paper	A4	3 sheets, double-sided
Environmental sample record sheet	Paper	A4	3 sheets, double-sided
Drawing index	Paper	A4	1 sheet, double-sided
Drawings	Drafting film	29 x 32cm	7 sheets, single-sided
Miscellaneous working drawings	Paper	A4	5 sheets, single-sided
Retent sorting sheet	Paper	A4	1 sheet, single-sided
Findings and samples discard policy	Paper	A4	1 sheet, single-sided
Negatives	Negative film	7½ x 1 <sup>3</sup> / <sub>8</sub> inch strips	15 strips
Colour prints	Colour print film (gloss)	4 x 6 inch	56 prints
Digital archive index	Paper	A4	1 sheet, single-sided
Digital archive	DVD	-	1