



Archaeological Investigations at Stonebow, Pavement and Fossgate, York

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Abbreviations

AAI	Area of Archaeological Importance
AF	Architectural Fragment
AOD	Above Ordnance Datum
AY	The Archaeology of York
BGS	British Geological Survey
CBM	Ceramic Building Material
CifA	Chartered Institute for Archaeologists
CYC	City of York Council
EAU	Environmental Archaeology Unit
GBA	General Biological Analysis
LOE	Limit of Excavation
NGR	National Grid Reference
OS	Ordnance Survey
OSA	On Site Archaeology
RCHME	Royal Commission on the Historic Monuments of England

SF	Small Find
ST	Structural Timber
SUERC	Scottish Universities Environmental Research Centre
VCHY	Victoria County History York
WPR	Waterlogged Plant Remains
WSI	Written Scheme of Investigation
YAT	York Archaeological Trust

NON-TECHNICAL SUMMARY

Between the 18th February and the 29th April 2019 York Archaeological Trust (YAT) conducted a watching brief at Stonebow, Pavement and Fossagate, York (SE 60515 51825), following provision of an Operations Notice by City of York Council (CYC).

The work was undertaken for CYC during a programme of road resurfacing works. The archaeological programme was based on a Written Scheme of Investigation produced by YAT. The works involved monitoring of exploratory test pits on Stonebow, dug with the intention of locating live services, and pits dug for tree planting on Fossagate and Pavement (see Figures 1 and 2). The next stage of the works involved ground reduction at the western end of Stonebow in preparation for resurfacing. This stage of watching brief works took place between 25th February and 15th March 2019, and involved hand excavation and recording of deposits, structures and features over an area measuring approximately 43 x 8.5m, to a depth of approximately 0.8m below the top of the existing road surface following its removal.

At the western end of the Stonebow excavation area post-medieval and modern buildings, which had formerly fronted onto the east side of Fossagate close to its junction with Saint Saviourgate, were encountered. To the east of the buildings backyard deposits, structures and features, including drains, soil accumulation and timber lined refuse and cess pits dating to the 9th to 14th century were encountered, a small selection of which were sampled. Much of the backyard deposition included a significant organic element, including worked timber, wicker, leather and other organic material, preserved by waterlogged conditions present at the site. Also at the eastern end of the site an area rich in gravel may be remains of the medieval Stonebow Lane.

KEY PROJECT INFORMATION

Project Name	Stonebow, Pavement, Fossagate York
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NGR	NGR SE 60515 51825
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1 INTRODUCTION

Between the 18th February and the 29th April 2019 York Archaeological Trust conducted a watching brief at Stonebow, Pavement and Fossgate, York (NGR SE 60515 51825) (Figure 1).

The investigations (Figure 2) were undertaken for CYC during a programme of road resurfacing works in accordance with a Written Scheme of Investigation (WSI) produced by YAT.

The first phase of the works involved monitoring and recording three test pits on Stonebow, designed to expose the position of expected services prior to resurfacing works. Additional pits for tree planting were also excavated, one on Pavement and two on Fossgate. The second phase of works required the complete removal of a damaged stretch of road situated at the western end of Stonebow before reconstruction work could take place. A depth of approximately 0.8m of material was removed from the top of the road surface, across the full road width of around 8.5m along approximately 43m of the road.

During the stripping post-medieval and modern cellar and building foundations were uncovered at the western end of the site, while in the central and eastern parts of the site well-preserved organic medieval deposits were revealed. The medieval deposition included structural timbers as well as pits containing leather and other organic material. The discovery of well-preserved organic remains required revision to the WSI to outline an appropriate course of action to mitigate damage to these deposits, structures and features. These revisions (see Appendix 3, Section 5) stipulated the rapid recording of the post-medieval and modern buildings, and the targeted excavation of areas where medieval activity and deposition was of high potential or importance. The subsequent excavation across the central and eastern area of the site proceeded by hand removing a depth of 0.3m of deposits (which were the best preserved in terms of the archaeological remains identified), down to the formation level for the new road surface. Targeted excavation was carried out on three features; two pits and a probable timber lined drain, which were selected for complete excavation.

All excavation and monitoring was carried out in accordance with the WSI and its later revisions.

2 METHODOLOGY

The methodology followed the WSI (Appendix 3).

2.1 Small Scale Interventions - Test Pits and Tree Planters

A total of six small interventions were excavated (Figure 2):

No.	Size (m)	Rationale
1	4.3 x 2.2	Identification of live services on Stonebow
2	1.8 x 1.4	Identification of live services on Stonebow
3	5.2 x 2.15	Identification of live services on Stonebow
4	2. x 2	Tree planting on Fossgate
5	2 x 2	Tree planting on Fossgate
6	2 x 2	Tree planting on Pavement

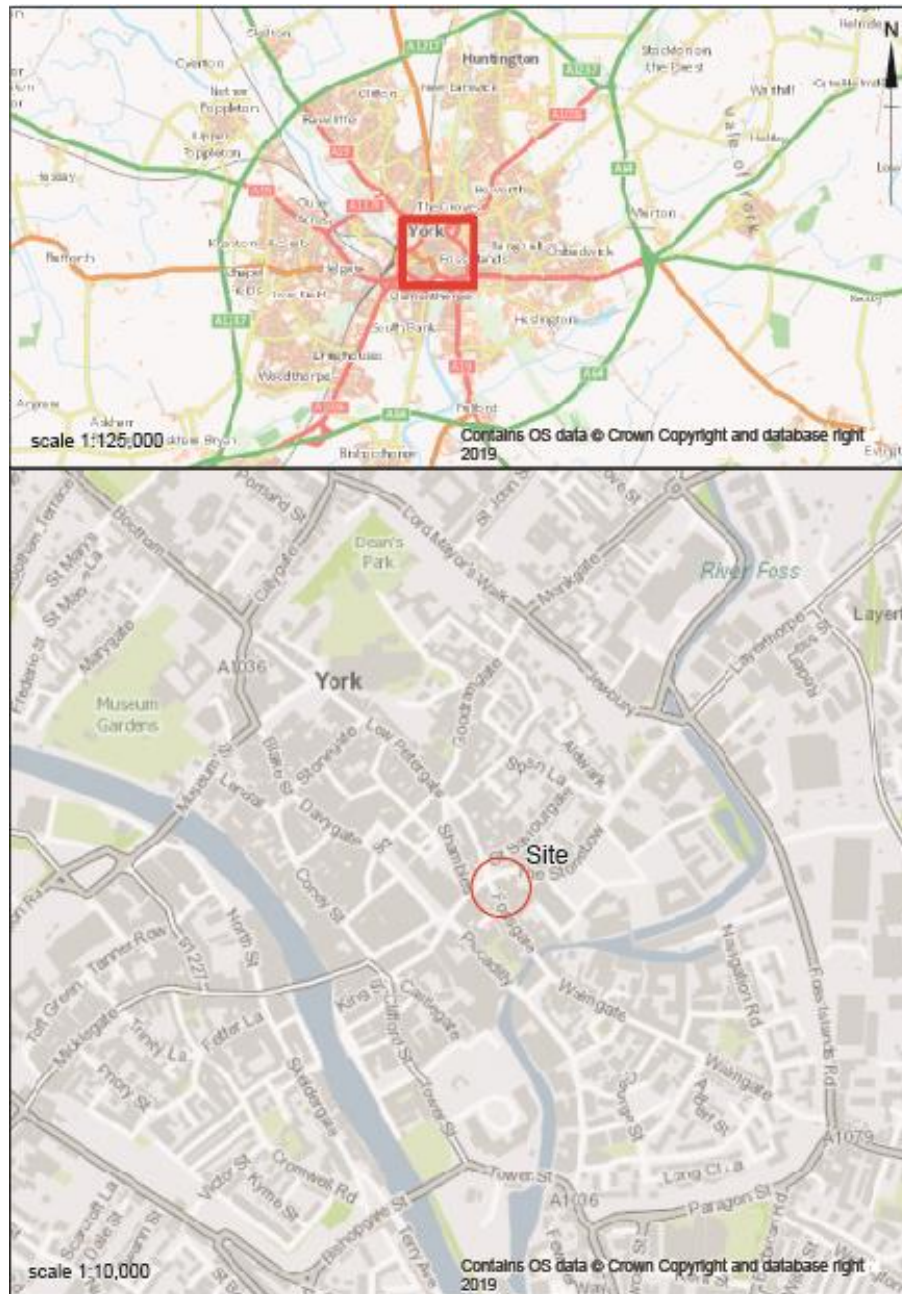


Fig. 1 Site location

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Figure 1 Site location

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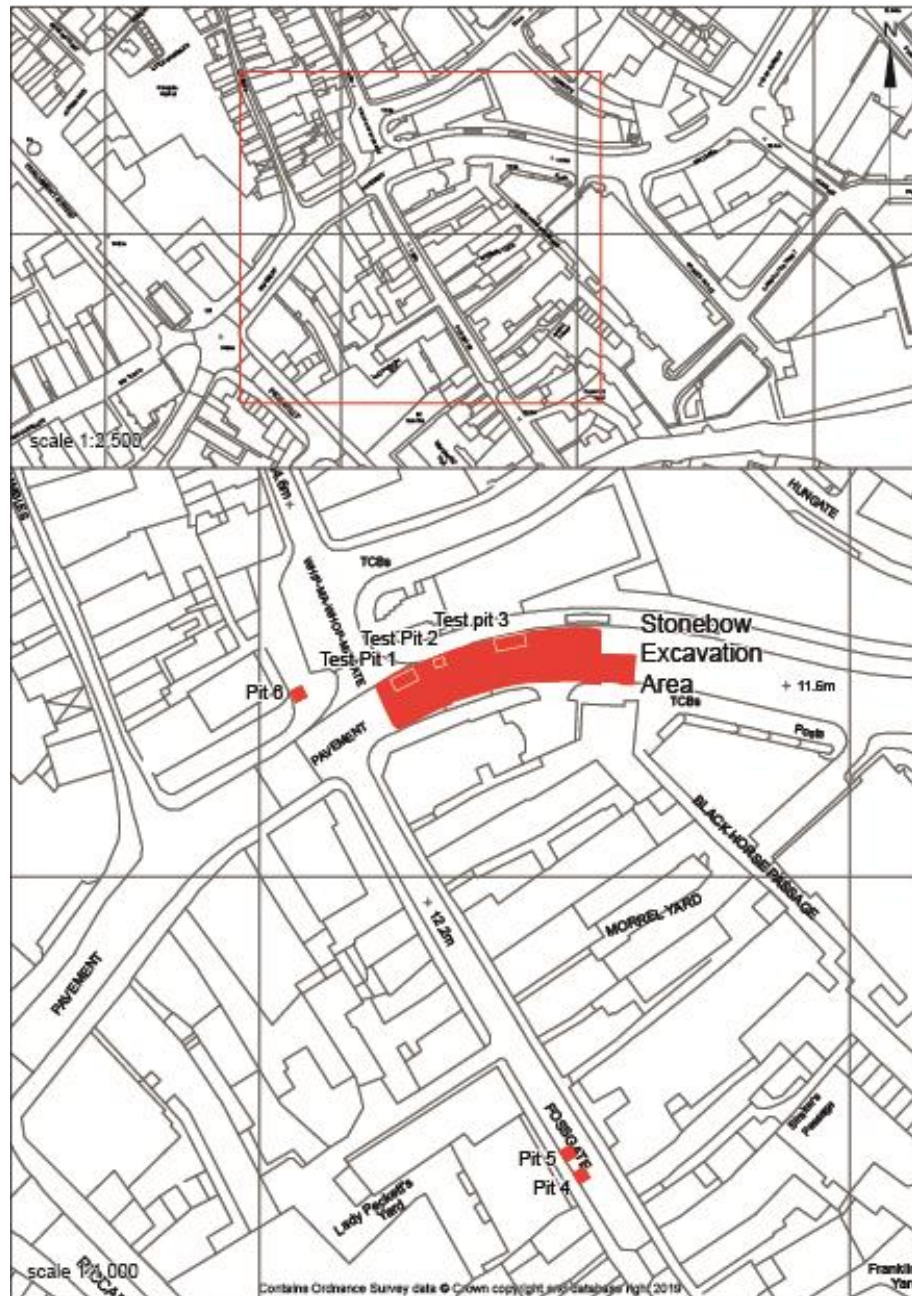


Fig. 2 Works location

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Figure 2 Works location

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Test Pits

Test pits 1, 2 and 3 were situated on Stonebow and were subject to archaeological monitoring. Excavation was carried out with a 5 tonne tracked mechanical excavator, equipped with a breaker to remove the road surface and reinforced concrete below, a 0.4m wide toothed bucket for removal of material related to the existing road surface, and either a 0.6m or a 1.2m wide flat bladed ditching bucket when digging through or cleaning over the top of archaeological deposits. Mechanical excavation was supplemented with hand excavation by ground workers.

Tree Planters

Interventions 4–6 were excavated in preparation for tree planting. Interventions 4–5, located on Fossgate, were excavated prior to a request for archaeological monitoring being made. They were left open for inspection by an archaeologist before being backfilled. Intervention 6 was located on the north side of Pavement, at the junction with Whip-Ma-Whop-Ma-Gate and Stonebow, here excavation was carried out with a 5 tonne tracked mechanical excavator, equipped with a breaker to remove concrete and a 0.4m wide toothed bucket for removal of concrete and rubble within the extent of the test pit. Mechanical excavation was supplemented with hand excavation by ground crew.

2.2 Open-Area Excavation

Following the location of services on Stonebow a 43m long stretch of the road was de-surfaced in preparation for resurfacing works. The area of excavation comprised the full width of the road, approximately 8.5m wide, from the south-west end of Stonebow at the junction with Pavement and Whip-Ma-Whop-Ma-Gate along 37m of the previously de-surfaced area. Due to the method of the original road construction an additional 6m stretch of the west-bound carriageway was also removed, giving the north-east end of the trench a stepped edge in plan. The excavation followed the gentle south-west to easterly curve of the street. The removal of the existing road surface, bedding material and reinforced concrete sub-surface was carried out with a 14 tonne tracked mechanical excavator equipped with a breaker and 1.2m wide toothed bucket. Further mechanical ground reduction below the level of the road make-up was undertaken with a 2m wide flat bladed ditching bucket to a maximum depth of 0.8m below the top of the road surface, or where the top of archaeological deposits were encountered.

At the south-western end of the excavation area the formation level was reached by mechanical excavation. A series of cellar walls and building foundations were manually cleaned and recorded using the standard YAT recording system (YAT 2009). At approximately 20m from the south-western end of the trench and continuing north-eastwards an area of well-preserved organic deposition was identified. It was evident that these deposits contained structural timbers, leather and other organic remains of high archaeological potential. Revisions were made at this stage to the WSI and were agreed by the client CYC, and these required both hand and mechanical excavation across the remaining central and eastern parts of the site, in the first instance to the formation level for the road reconstruction. Typically, between a 0.2–0.3m depth of archaeological deposits were excavated to reach the formation level. Three features were then selected for more detailed investigation in order to develop a better characterisation and understanding of past activity at the site. A timber-lined drain and two apparently timber-lined pits were selected. Given the tight schedule selection was based on criteria including potential for the recovery of organic material, which included plant and invertebrate microfossils and

macrofossils, and timber. In addition, the presence of dateable artefacts, and the clarity and definition of the extent of the feature, as well as the likelihood of useful insight into the character of deposition and activity on the site were taken into account.

2.3 General Recording and Recovery Methods

All identified contexts were assigned a unique number and were recorded on a base plan at a scale of 1:20. Additionally, all excavated contexts were planned and photographed individually. Hand-drawn plans were supplemented with GPS survey, undertaken with a Leica GS18, at an accuracy of no less than 100mm.

Digital photography was used to capture work in progress and individual contexts at a resolution of no less than 10 mega-pixels. In addition, digital photography was used for photogrammetry, following which Agisoft Photoscan was used for image processing and production of orthorectified images.

Where artefacts and ecofacts were recovered they were handled in accordance with the guidelines set out in the CIFA guidance for archaeological materials, and in the manual *Fist Aid for Finds* (Leigh et al. 1998).

A group of suspected human bones recovered from the Stonebow excavation area were bagged and reburied on the site as close to the find location as was practicable. No in situ human remains were encountered during the course of excavation.

A soil sampling programme was instigated with the purpose of establishing baseline conditions for the preservation of organic remains contained within those features selected for more thorough investigation. Nine General Biological Analysis (GBA) samples were taken from individually identified contexts with the purpose of assessing the presence and preservation of plant and invertebrate microfossil and macrofossil remains.

Where structural timbers were encountered each was sampled for specialist cleaning, examination, recording, species identification and assessment. The work was carried out in accordance with ClfA Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (ClfA 2014). Of the 137 objects submitted five pieces were selected for radiocarbon dating.

3 LOCATION, GEOLOGY AND TOPOGRAPHY

The site comprised limited areas of excavation, test pits and small trenches for tree planting, on Stonebow, Pavement and Fossgate, and an open area excavation of approximately 350m² from the western end of Stonebow at its junction with Pavement and Whip-Ma-Whop-Ma-Gate (See Figure 1). The site is centred on NGR SE 60515 51825.

The superficial geology consists of Vale of York Formation clay, sand and gravel which overlies sandstone bedrock of the Sherwood sandstone group (British Geological Survey).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Roman

Located approximately 170m south-east of the *Porta principalis sinistra*, the main gateway providing access to the Roman fortress from the south-west, the site lies mid-way between the Roman fortress and the west bank of the River Foss, and in close proximity to one of the main approach roads (Road 2 from Brough or PETVARIA) into the Roman city (RCHMY 1962, 1)

A Roman burial ground lay to the east of the site at Hungate, while to the south-west, at 16–22 Coppergate, evidence for Roman glass-working, ditches, stone buildings and six burials were recovered archaeologically.

4.2 Anglian and Anglo-Scandinavian

Archaeological investigations in the surrounding area have shown that remains from this period are substantial and survive at various depths below ground level, often in waterlogged conditions. The previous investigations include the Lloyds Bank (Addyman 1991, 237) and 16–22 Coppergate in the 1970–1980s (Hall et al. 2014), the Hungate development from 2007-2012 (Connelly 2010, 1–3), while more recently various watching briefs and a small scale excavation have taken place along Fossgate and Stonebow, including an excavation by On Site Archaeology (OSA) at 19–22 Fossgate which produced evidence for a succession of timber structures, pit digging activity and a property boundary of Anglo-Scandinavian date (McCluskey 2018, 6).

The names of streets ending in ‘-gate’ such as Fossgate, Hungate, Saviourgate etc. all denote Anglo-Scandinavian origins. Property boundaries forming tenements are likely to have been first established in the 10th century (Hall 1984, 49). On Fossgate, where the original street would have been narrower, the survival of the old tenement layout is indicated by the approximately 5.5m wide units visible in the shop fronts on the street today, which closely corresponds to the 16.5-foot-wide measurement found elsewhere in medieval York (Hall and Hunter-Mann 2002, 686).

4.3 Medieval, Post-medieval and later

The Stonebow, Pavement, Fossgate area continued to developed in the medieval and post-medieval periods. Evidence for buildings and occupation uncovered at 19–22 Fossgate included stone pads and foundations thought to have supported a timber-framed building of 13th/14th century date (McCluskey 2018, 33). Close to the street front at 24 Fossgate a series of laminated deposits have been interpreted as medieval floors (Kendall and Rimmer 2016, 7).

In addition to the construction of domestic dwellings the nearby churches of St Crux and St Saviour were also built in the medieval period. St Crux and its church yard extended south-east to the River Foss before it was demolished due to instability in 1887 (Brunton Knight 1951, 117; VCHY 1961, 378). The current parish hall was constructed using stonework from the demolition of St Crux church and the land south to south-east of the church was sold to the City of York Corporation, meaning the extent of St Crux church today is much smaller than it was in the past. The area around the Whip-Ma-Whop-Ma-gate, Pavement, Stonebow, Fossgate junction has produced evidence from a number of watching briefs for the continuation of church land by the discovery of both in situ burials and disarticulated human remains (Coates 2018).

The medieval predecessor to The Stonebow was a narrow lane which connected Pavement to Hungate, depicted on the 1st edition OS map of York (1852) as Stonebow Lane. The first mention of this street was in 1275 as ‘Le Staynebowe’ (also known as Stainbow) and it has been suggested, but

not corroborated by evidence, that the name derives from a possible Roman archway that once stood in the area (Raine 1955, 62). In conjunction with Blossom Street, Micklegate, Ouse Bridge, High and Low Ousegate and Pavement, the Stonebow/Le Staynebowe forms part of a key axial route through York (Hall and Hunter-Mann 2002, 686), before continuing towards one of the eastern entry points to the city at Layerthorpe postern via St. Saviourgate (Rees Jones 2013, 40).

By the late 13th century a maison dieu (House of God), or hospital, for both men and women stood on the north side of Stonebow Lane. A newspaper report from 1857 records the discovery by workmen of large stones, thought to be remains of the Carmelite Friary, the entrance to which was just below Stonebow Lane (Raine 1955, 62; Brunton Knight 1951, 118). The OS map of York (1852) shows Stonebow Lane was bounded by numerous small buildings with probable back yards, alleyways and ancillary buildings to the rear.

The area continued to develop with more dwellings being constructed. In the 20th century, particularly in the areas of Walmgate and Hungate, a programme of buildings clearance was undertaken before redevelopment began following the Second World War. The Stonebow was constructed in the mid-1950s, and in the process the medieval lane of '*Stainbow*', and any surviving buildings lining this ancient thoroughfare were demolished.

5 RESULTS

The results of the small scale interventions are described in section 5.1, the results of the open area excavation are outlined in section 5.2.

5.1 Small scale interventions – Test Pits and Tree Planters

Test Pit 1

Test Pit 1 was situated at the west end of Stonebow close to the kerb on the north side of the street (Figure 2). It measured 4.3 x 2.2m and was dug to a depth of approximately 1m. Excavation ceased at the point where a glazed ceramic pipe ducting for a live service was discovered. Above this was a 0.5m wide brick wall, aligned roughly east-west, constructed from red bricks measuring 230 x 120 x 80mm bonded with pale grey lime mortar laid in a stretcher bond, which continued beyond the limit of excavation. To either side of the wall were deposits of mixed brick rubble, mortar, concrete in a matrix of mid grey brown slightly silty sand (Plate 1). The uppermost deposit was the present road surface which consisted of tarmac laid on a bed of crushed limestone and sand overlying a reinforced concrete slab laid on a bed of mixed rubble and sandy soil.

Test Pit 2

Test Pit 2 was situated approximately 3.6m from the east end of Test Pit 1, again on the north side of the street (Figure 2). It was 1.8 x 1.4m in plan and was dug to a depth of approximately 1m. A sequence of 20th century road deposits similar to those seen in Test Pit 1 were removed, revealing more mixed brick rubble, mortar and concrete in a matrix of mid-grey brown slightly silt sand (Plate 2).



Plate 1 Test Pit 1. Modern services and elements of buildings formerly fronting Fossgate. Facing south-west, 0.1m scale units



Plate 2 Test Pit 2, north side of Stonebow. Facing south-west, 0.1m scale units

Test Pit 3

Test Pit 3 was situated approximately 9m from the east end of Test Pit 2 and also on the north side of Stonebow (Figure 2). It was 5 x 2.15m in plan and was dug to a maximum depth of approximately 1m where a service trench running perpendicular to the line of the street was encountered. Above the service trench was a slightly organic soil comprised of friable-to-firm, mid-to-dark brownish grey silty clay (Contexts 302–3: Plate 3), which were in turn sealed by the present road surface.



Plate 3 Test Pit 3, north side of Stonebow. Facing north-west, 0.1m scale units

Intervention 4

Intervention 4 was situated approximately 80m from the north-west end of Fossgate, on the south-east side of the road (Figure 2). It measured 2 x 2m in plan and was 1m deep. The earliest features seen were two horizons; the upper comprised of mid brown silty sand, the lower mid brown silty sand mixed with dark grey gritty sand and cinder (Plate 4). These were truncated by service trenches aligned with the north-west/south-east axis of the road. The uppermost 0.5m of deposits consisted of the existing pavement and associated bedding material.

Intervention 5

Intervention 5 was situated approximately 75m from the north-west end of Fossgate, on the south-east side of the road (Figure 2). It measured 2 x 2m in plan and was 1m deep. The earliest context was a deposit of mid-brown silty sand mixed with dark grey gritty sand and cinder, which was present across the southern part of the pit base. Above this was a brick-built vaulted culvert which ran across the north half of the pit north-west/south-east, perpendicular to the street (Plate 5). Above this were service trenches aligned with the north-west/south-east axis of the

road. uppermost 0.5m of deposits consisted of the existing pavement and bedding material onto which paving slabs had been laid.



Plate 4 Tree planter, Intervention 4, west side of Fossgate. Facing north-west, 0.1m scale units



Plate 5 Tree planter, Intervention 5, west side of Fossgate. Facing west, 0.1m scale units

Intervention 6

Intervention 6 was situated in the pavement at a point close to the boundary wall of St. Crux church on the junction of Pavement and Whip-Ma-Whop-Ma-Gate (Figure 2). It measured 2 x 2m in plan and was 1m deep. No in situ archaeological deposits were observed. The earliest deposit comprised of mixed dark brown silts and clays filling service trenches, which were sealed under poured concrete up to 0.8m thick.

5.2 Open area excavation

The phases below are described in relation to Stonebow Lane and the three tenements and visible on the OS map of York of 1852 (see Figure 3), which for convenience are labelled the Northern Tenement, Central Tenement, and Southern Tenement in the remainder of the report. The results are described from north to south within each phase. The phasing for the open area excavation was based on stratigraphic analysis, dated by the artefactual evidence (Figures 4–5) and radiocarbon analysis.

5.2.1 Phase 1 - Roman activity

No deposits or features could be definitively dated to the Roman period, but 84 sherds of residual Roman pottery (16.77% of the entire site pottery sherd count), were recovered from 16 contexts. Four features containing only Roman residual CBM and pottery are illustrated on Figures 4–5.

5.2.2 Phase 2 - Undated features, possibly Anglo-Scandinavian (Figure 6)

Phase 2 details those contexts across the backyards and lane area which were earliest in the stratigraphic sequence but from which no dateable artefacts were recovered, and consequently for which dating is uncertain. The organic nature of these deposits is suggestive of an Anglo-Scandinavian date, though they could represent earlier features.

Group 1001 - Northern Tenement

Located towards the north-eastern end of Northern Tenement was part of a pit, Set 1025, with a mixed backfill.

Group 1002 - Central Tenement

Ranging across the Central Tenement at the site formation level, Set 1049, comprised numerous features, dumps, backfills and layers. Although some variation in content and composition was evident, generally this material was of firm to friable, dark brown and grey sandy silt with an obvious organic content, usually visible as small fragments of roundwood and fibrous organic matter. A large number of wooden stakes were also visible, perhaps forming parts of pit linings. Unfortunately, the limited scope of investigation did not allow for detailed examination and recording of these features. It was possible to identify, albeit tentatively, a number of features cutting into Set 1049, establishing it as the earliest in the stratigraphic sequence, associated with Set 1025 in the Northern Tenement and Set 1052 in Southern Tenement.

Six probable pits (Sets 1039, 1045, 1046, 1047, 1048 and 1054) were recorded in the Central Tenement all with dark silty organic fills. These features were not excavated and no artefacts were recovered with which to date them, although they appeared to be stratigraphically later than Set 1049.

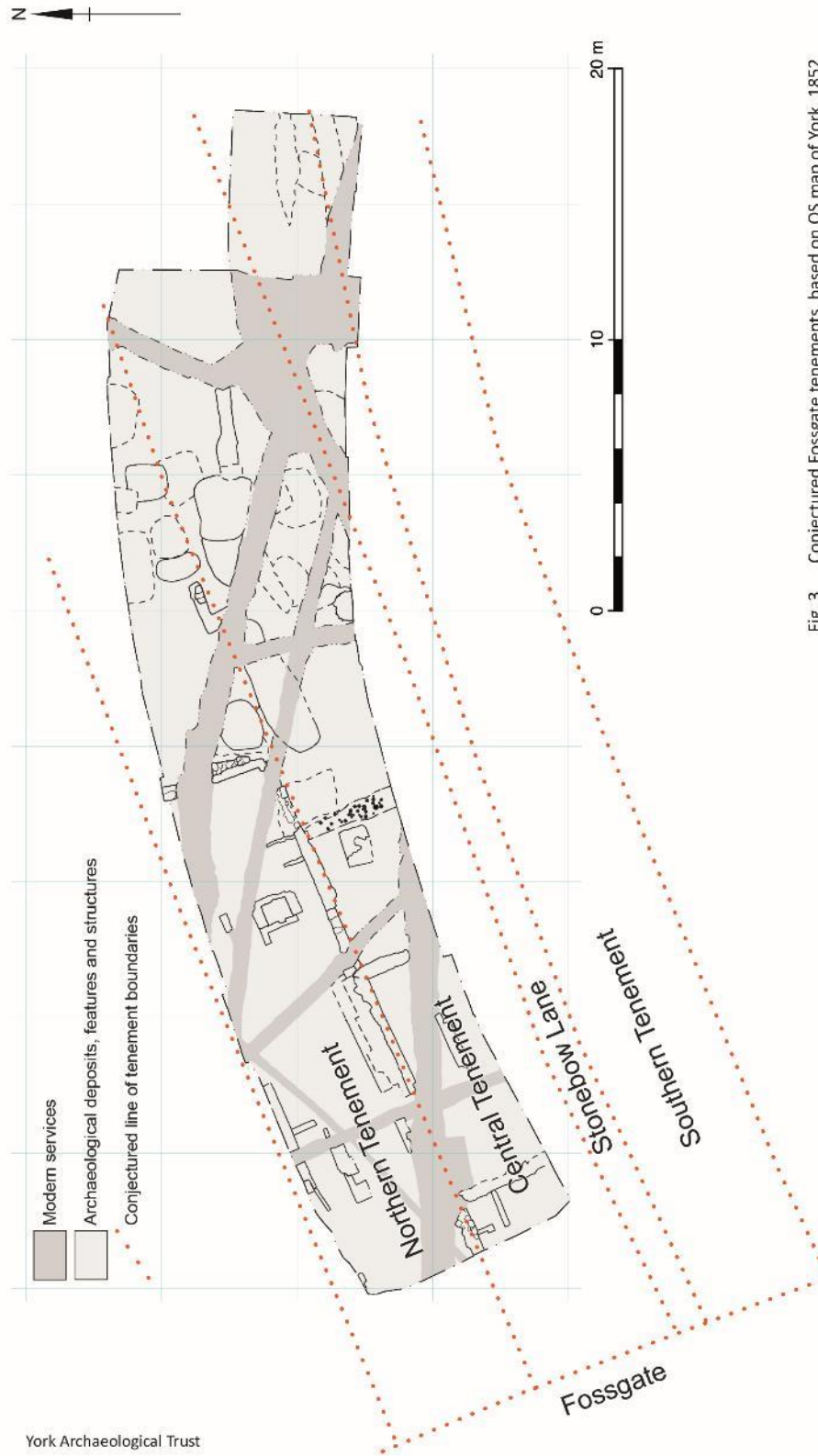


Fig. 3 Conjectured Fossgate tenements, based on OS map of York, 1852

Figure 3 Conjectured Fossgate tenements based on OS map of York, 1852



Fig. 4 Pottery spot dates, by Set, and other dated features

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Figure 4 Pottery spot dates, by Set, and other dated features

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Figure 5 Ceramic Building Material dates, by Set, and other dated features

Fig. 5 Ceramic Building Material dates, by Set, and other dated features

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Figure 6 Phase 2 - Undated features, possibly Anglo-Scandinavian

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A single feature, Set 1046 (a probable wall foundation), contained artefactual material that was exclusively dated to the Roman period, but these were probably residual. Due to the uncertainty over dating, Set 1046 has been assigned here.

Group 1003 - Stonebow Lane

Stratigraphically the earliest deposits in Group 1003 belong to Set 1052 which are similar to the silty organic deposits of Sets 1035 and 1049, though more mixed due to modern disturbance.

Above Set 1052 were large patches of dark grey silty sand with a high gravel content, together forming Set 1055. This is the only location where gravel-rich deposits were encountered on the site, and although they also held an organic content, possibly resulting from recent disturbance and mixing with other deposits in the vicinity. These gravelly patches are in the correct position to be remnants of the medieval Stonebow Lane.

Above parts of Set 1052 and Set 1055, were two large fragments of timber (Set 1051) aligned on the same south-west/north-east axis as the lane and tenements. Their function is unclear.

Group 1004 - Southern Tenement

Set 1056, in the far south-eastern corner of the site, was a small area of friable dark brown sandy silt similar to Set 1052 in Group 1003, but separated from it by a later wall line (see Phase 5, Group 1014). This suggests that Set 1056 was located in the backyard of the Southern Tenement.

5.2.3 *Phase 3 Anglo-Scandinavian, 9th to mid-11th century (Figures 4 and 7)*

A range of Anglo-Scandinavian artefacts, including pottery, glass, antler working debris and a decorated antler tine (Plate 6), occurred residually in numerous features across the tenement backyards.



Plate 6 Decorated antler tine object (SF6). Recovered from a refuse pit (Phase 3, Set 1044)

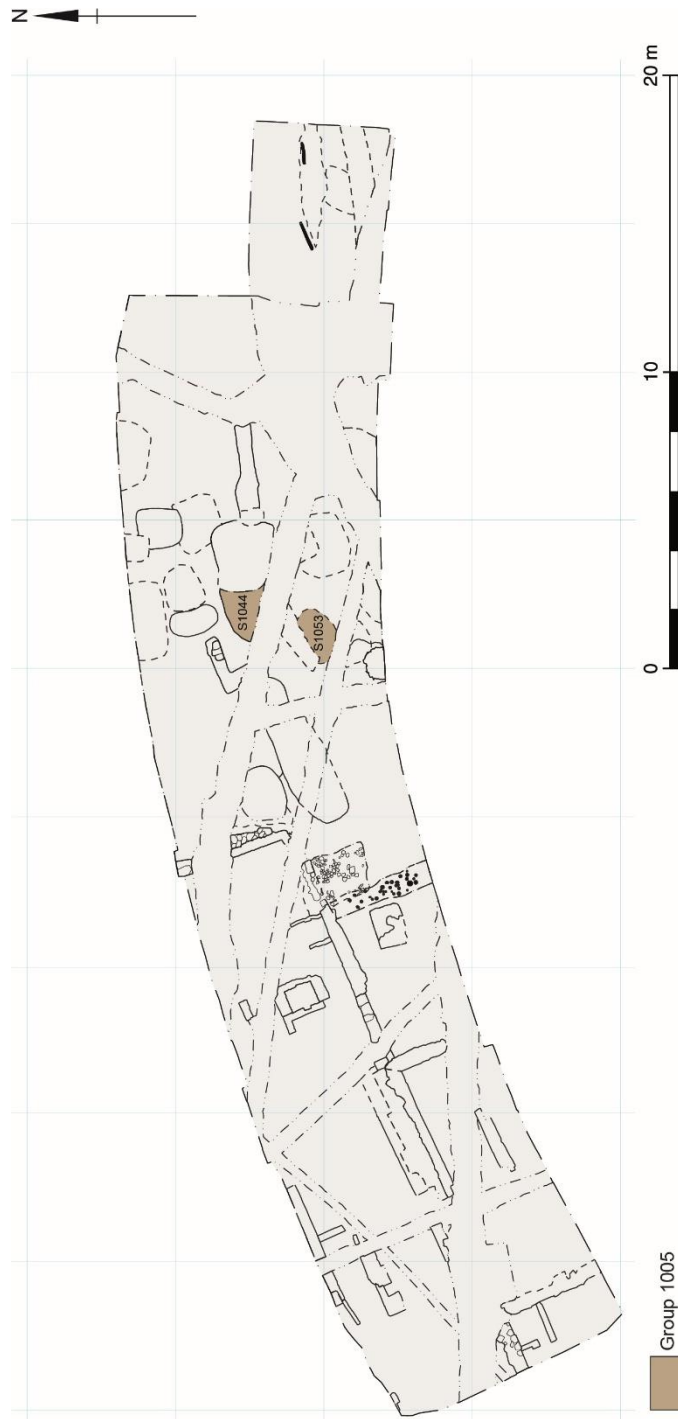


Fig. 7 Phase 3 - Anglo-Scandinavian activity, 9th to mid-11th century

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Figure 7 Phase 3 - Anglo-Scandinavian activity, 9th to mid-11th century

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Group 1005 - Central Tenement

The only feature which could be definitively assigned to this period was Set 1044, a sub-oval clay-lined refuse pit containing ten timber posts which formed a lining (Plate 7). The top 0.2m of backfill, consisting of a friable, dark brown slightly clayey silt with an organic appearance, was excavated down to the top of the site formation level. Pottery of the 9th–11th centuries and a decorated antler tine, SF6 (Plate 6), were recovered from this feature.

Set 1053 was a possible sub-oval pit. Although unexcavated, the backfill was a soft, dark grey red-brown silty clay with an organic appearance which included charcoal flecks and frequent fragments of small roundwood interpreted as the likely remains of a wicker lining. Eleventh century pottery was recovered from the top of this feature and it has been tentatively attributed to this phase.



Plate 7 Pit Set 1044. Facing north-west, 0.1m scale units

5.2.4 *Phase 4 – Medieval activity, late 11th to 14th century (Figures 4-5 and 8)*

Most of the features in the backyards of the tenements appear to have been pits related to the disposal of domestic refuse and waste (Plate 8), dating to the 11–14th century. It should be noted that there are some discrepancies between dating from CBM and the pottery, probably due to later disturbance. In particular, the heavy machinery employed during the clearance of the site in the 1950s, and the subsequent construction of Stonebow, undoubtedly caused significant damage to these relatively damp and soft archaeological deposits, resulting in the mixing of deposits and the occurrence of intrusive material within the dateable assemblages.



Plate 8 A general view across the site. Tenement backyards in the foreground with remains of buildings formerly fronting onto Fossgate in the background. Facing west, 0.5m scale units

Group 1006 - Northern Tenement

The earliest deposit in the Northern Tenement (Set 1035) comprised a slightly organic silty clay, often with fragments of stone, charcoal and fragments of wood. It is highly probable that Set 1035 represents an amalgamation of numerous depositional events, but there was insufficient time and scope to investigate this in detail. Some dateable artefacts were recovered, including late 11th/12th century pottery and 14th-16th century CBM, although some caution should be applied to these dates as some of the later material may be intrusive.

Stratigraphically above Set 1035 were five features, (Sets 1026, 1029, 1030, 1033 and 1034), interpreted as pits. Of these Set 1030 was selected for more detailed investigation, being fully excavated.

Set 1030 was a pit which was sub-rectangular in plan with rounded corners, that was 1.4 x 1.2m in extent and 0.5m deep (Plate 9). A small deposit of friable, dark brownish grey, silty sandy clay less than 50mm thick at the base of the pit, was interpreted as trample created during the original cutting. Analysis of an environmental sample of this deposit found it was especially rich in well-preserved insect remains. Around all four sides was a 50-80mm wide deposit of mid-brown clayey silt, interpreted as a very degraded wicker lining.



Fig. 8 Phase 4 - Medieval activity, mid-11th to 14th century

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Figure 8 Phase 4 – Medieval activity, mid-11th to 14th century

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Plate 9 Medieval pit Set 1030. Facing north-east, 0.1m scale units

This pit was filled by two distinct backfill deposits. The first of these, at only approximately 50mm thick, was a firm, light-mid-greenish blue, silty clay with laminations of sand, occasional fragments of wood and matted fibrous organic matter. The uppermost backfill was firm to friable, organic laminated dark brown clayey silt, 0.4m thick (Plate 10), containing frequent wood fragments and other organic remains such as seeds. Study of environmental samples showed that these two deposits contained a range of food plants (including apple, plum and cherry), weed/wild taxa, as well as quantities of wood/bark fragments and charcoal fragments (see Appendix 10). Pottery recovered was late 11th/12th century, and fragments of shoe leather were stylistically dated to the 11th–13th century, while the CBM was 13th–16th century.

Of the remaining four features three, Sets 1029 and 1033–34, were partially excavated to the top of the site formation level, while Set 1026 was identified in plan but not excavated. All have been interpreted as pits with broadly similar backfills, comprising dark brown or grey brown silts and silty clays often with an organic content which usually included small roundwood fragments. The remains of an in situ wicker and post arrangement were found in Set 1033. In terms of dating Set 1029 contained late 12th–early 13th century pottery and 13th–16th century CBM, while Set 1033 contained 12th/13th century pottery and 11th–early 13th century CBM, and Set 1034 contained late 11th century pottery.

The pits described above were truncated by three further pits (Sets 1027, 1028 and 1032). Set 1027 cut the north-east side of Set 1029. Although not excavated, the size, form, position and content of this feature suggests the likelihood of its being another refuse or cess pit. This feature was of 13th century date containing 12th/13th century pottery and 13th–16th century CBM.



Plate 10 Medieval pit Set 1030 prior to excavation. Facing west, 0.1m scale units

Cutting into the north-west corner of Set 1030 was Set 1028, although this was not apparent until the excavation of Set 1030 was well underway (Set 1028 can be seen in Plate 9 on the left side of the image in the north-west corner of pit, Set 1030). Set 1028 was unexcavated, apart from the backfill extending into the corner of Set 1030. Some 13th–16th century CBM and 12th/early 13th pottery was recovered from the exposed surface of this feature.

Towards the south-west extent of the backyard was a pit (Set 1032, which was partially excavated) that truncated Sets 1033–34. Set 1032 was clearly originally lined, the remains of four wooden stakes being present adjacent to the east and south sides of the pit. The backfill was laminated dark grey-brown gritty sandy silt suggestive of a gradual accumulation. CBM of 13th–16th century date and late 11th/12th century pottery were recovered from the backfill.

Also within this pit, grouped towards the centre of the feature, were eleven wooden posts designated as Set 1031 (Plate 11). It is unclear whether they formed a structure within the pit, or related to activity post-dating Set 1032. One of these wooden posts, Context 1114 was radiocarbon dated to 1044–1154 (at 68.2% probability) and 1034–1160 (at 95.4% probability).

Group 1007 - Central Tenement

Set 1049 (Group 1002), comprised an indeterminate number of features, dumps, backfills and layers, which were observed at the site formation level and these were recorded but not investigated further. A number of features cutting into Set 1049 were investigated in more detail.



Plate 11 Wooden stake structure Set 1031 within pit, Set 1032. Facing north-east, 0.1m scale units

Group 1007 is made up of five features, all of which truncated or accumulated above either Set 1049 or other undated features in Group 1002. These included a midden, a timber lined drain, a cluster of piles and two pits.

The midden, Set 1037, is unusual as it is the only apparent surface accumulation of waste material identified and excavated as a discreet deposit in any of the tenement backyards. This dump comprised friable, mid to dark brown grey, silty clay with lenses of blue grey clay with a large content of cobbles, animal bone, and oyster shell capped with a soft light grey clay with lenses of ash (Plate 12). Pottery has provided an 11th/12th century spot date.

A timber-lined drain capped with wooden boards (Set 1043) was one of three features on the site investigated in detail. The drain consisted of two parallel roundwood logs, covered at the west end by three wooden boards laid side by side. The drain was aligned almost east-west, and measured 2.9m long, 0.84m wide and up to 0.26m deep. The parallel roundwood logs were 2.74m long. At their east end the timbers had rotted away (a process perhaps affected by the proximity of a nearby modern drain encased in concrete). The easternmost 1.9m channel of the drain was 0.3m wide, while the remaining 0.84m of the length of the drain was sinuous in plan (reflecting natural bends in both logs mirrored on either side of the drain) tapering the channel to 0.23m in width, and ultimately to 0.12m in width at the western end (Plate 13). Samples for radiocarbon analysis were taken from the roundwood log lining the southern side of the drain (Context 1036), and two of the wooden boards covering the west end of the feature (Contexts 1038 and 1042). All of the sampled elements of the drain produced dates ranging from the early 11th to mid-12th century (Appendix 15, Table 25).



Plate 12 A medieval dump, or midden Set 1037. Facing south, 0.5m scale units



Plate 13 A log lined drain Set 1043. Facing west, 0.1m scale units

Inside the drain was an accumulation of friable, dark grey brown, sandy silt interspersed with lenses of white silt, orange silt, light yellow and light orange sand. Environmental samples taken from the fill of the drain produced an assemblage with low quantities of weed/wild taxa and

small quantities of what is likely to be cereal bran. Pottery dated to the 11th century and late 11th to early 13th century CBM were recovered from the silt backfilling the drain.

Situated at the west end of the drain was Set 1040, a tight cluster of 24 stakes and piles covering an area measuring 0.68m north-south and 0.51m east-west (Plate 14). Three of the stakes/piles were reused timbers (illustrated in Appendix 10). Sherds of late 11th/12th century pottery, and what may be an unfinished attempt at making a spindle whorl were recovered from silt which had accumulated around and between the stakes and piles. The apparently unfinished spindle whorl (SF14) was made from a cattle femoral head, sawn at the neck and cut on top, presumably it had been discarded when the tip of an iron nail or drill bit stuck in the centre and broke off.



Plate 14 A cluster of 24 stakes and piles Set 1040. Facing west, 0.1m scale units

Immediately to the west of the drain was a pit, Set 1042, which was the third of the features on the site selected for detailed investigation, though the depth of this feature prevented full excavation (Plate 15). Set 1042 was roughly square shape in plan (though the entire southern side had been removed by a modern service trench), measuring 2.4m x 2.2m in area and it was excavated to a maximum depth of 1m in its north-east corner. The sides were almost vertical, except on the west side which was slightly eroded creating a shallower angle. This had the effect of leaving part of a cluster of earlier stakes, Set 1040 (see above), protruding into the pit. The uppermost 0.4-0.5m of the north and east sides of the pit were revetted with wicker and timber secured by a series of wooden posts (Plates 16-18), one of which, ST77, had been cut from a reused timber (see Appendix 10). No evidence of a similar lining was found on the west side of the pit (the southern side having been truncated by a later feature).



Plate 15 Medieval cess pit Set 1042. Facing north-west, 0.1m scale units



Plate 16 Wicker and post lining on the north side of pit Set 1042. Facing north, 0.1m scale units



Plate 17 West side of pit, Set 1042, retained by a timber and wicker. Facing west, 0.1m scale units



Plate 18 A 3D photogrammetric image of pit Set 1042, following the removal of the upper fills. The earliest fill in the pit was firm to friable dark grey silt which graded through to a dark brown, increasingly sandy silt, towards the base. Abundant fragments of cereal bran were recovered from environmental samples of this material, suggesting that it was derived from cess. Several

large undressed fragments of limestone were observed on the east side of this deposit. No dateable artefacts were recovered.

Set 1041 appears to represent the final use of pit Set 1042, and the erosion identified at the top of the east side of the pit may have occurred at this time. The wicker and timber lining on the west side of the pit was found to have fallen towards its centre, an event which seems to coincide with a change in the character of the material backfilling the pit. To the west of the collapsed timber lining a friable, laminated, largely dark grey clayey silt accumulated, while to its east, within the main body of the pit, the upper 0.4m of backfill consisted of large fragments of wood and a series of five distinct highly organic, deposits, which seem to have been the capping off and making good of the top of the pit (Plate 19).

Large quantities of domestic refuse, including animal bone, horn core, leather, CBM, and pottery, were recovered from the backfill, including an elaborate York Glazed ware tubular spouted jug depicting a hunting scene with hounds and deer (SF26), probably dating to the late 12th/early 13th century (Plates 20–21). The environmental samples were rich in organic content, including cereal grains, significant quantities of bran, corncockle seeds and cereal or grass straw, as well as some fruits such as apple, cherry, plum and sloe. Both the pottery and the leather indicate a date of deposition around the late-12th to 13th century, while the bulk of the CBM was 13th-16th century, with a single intrusive sherd of 16th-18th century date.



Plate 19 The upper backfills within pit Set 1041. Facing south, 0.1m scale units

The westernmost medieval pit at the site was Set 1036. This feature measured 55.3 x 1.67m in area. Evidence of a lining was represented by the survival of six wooden stakes. The pit backfill was soft mid brown grey silty clay with lenses of light blue grey clay. Around 0.2m of the uppermost fill was excavated as the site formation level was reached at that depth. A range of domestic refuse was recovered, including animal bone, horn core, oyster shell, CBM, pottery

and leather. Fourteenth century pottery and 13th–16th century CBM were recovered, together with a single sherd of intrusive mid-18th to mid-19th century brick.



Plate 20 York Glazed ware Tubular Spouted jug, SF26, showing hound and part of a deer



Plate 21 York Glazed ware Tubular Spouted jug, SF26, depicting a deer

Set 1038 was a firm to friable dark brown sandy silt, with an extensive organic content including large and small wood fragments and fibrous organic matter, possibly straw, located across much of the central part of the Central Tenement. The defining characteristic of these deposits was their disturbed nature, undoubtedly caused by the construction of the modern road surface directly above.

Group 1008 - Stonebow Lane

Only a single medieval feature, tentatively interpreted as a pit, was identified in this area (Set 1050) comprising a deposit of soft, dark grey brown, silty clay, interpreted as a pit fill and small fragments of roundwood, perhaps representing part of a wicker lining. Although this was not excavated, animal bone and oyster shell pottery were recovered from the surface, together with 14th century and later pottery.

5.2.5 *Phase 5 - Post-medieval activity, 16th to 18th century (Figures 9 and 12)*

Activity dated to the post-medieval period onwards was largely related to structures at the western end of the site close to the former Fossgate street frontage. The limited scope of excavation meant that establishing a date for the structures relied upon the retrieval of CBM samples from each structural element.

Some elements of the buildings in each tenement plot could not be dated, either because the safe retrieval of samples could not be achieved, or dateable material was not present. A number of stone-built structures and related features have been included here due to their close physical association with date post-medieval structures, though it should be noted that they could be of earlier, or indeed later date.

Groups 1009 and 1010 - Northern Tenement, undated structures

Groups 1009 and 1010 comprise stone-built structures in the central part of the site within the Northern Tenement. Group 1009 was part of a structure 4.7m to the rear of the back wall of a building fronting onto Fossgate (Group 1010).

The remains of the building in Group 1009 appear to have been part of a stand-alone structure separate from the building that fronted on to Fossgate in this tenement. Set 1024 of Group 1009 consisted of three roughly-dressed limestone blocks laid at the base of an L-shaped construction cut aligned with the principle axes of the tenement. Plain tile of 13th–16th century date recovered from the construction backfill (or perhaps robbing backfill) may be residual.

Set 1014 of Group 1010 was a wall or buttress foundation forming the rear and rearmost south-eastern section of the building fronting onto Fossgate in this tenement. It was largely made up of fragments of Magnesian Limestone bonded with lime mortar. On the exterior side of the rear wall undressed fragments of Magnesian Limestone filled the extent of what may be the wall foundation's construction cut (Plate 22). Part of a Magnesian Limestone capital, dated 1350–1550, was recovered from the north-west end of the rear wall (Plate 23). These stone-built elements at the back of the building measure 3.63m north-east/south-west, and 4.44m north-west/south-east, enclosing an area of approximately 10m².

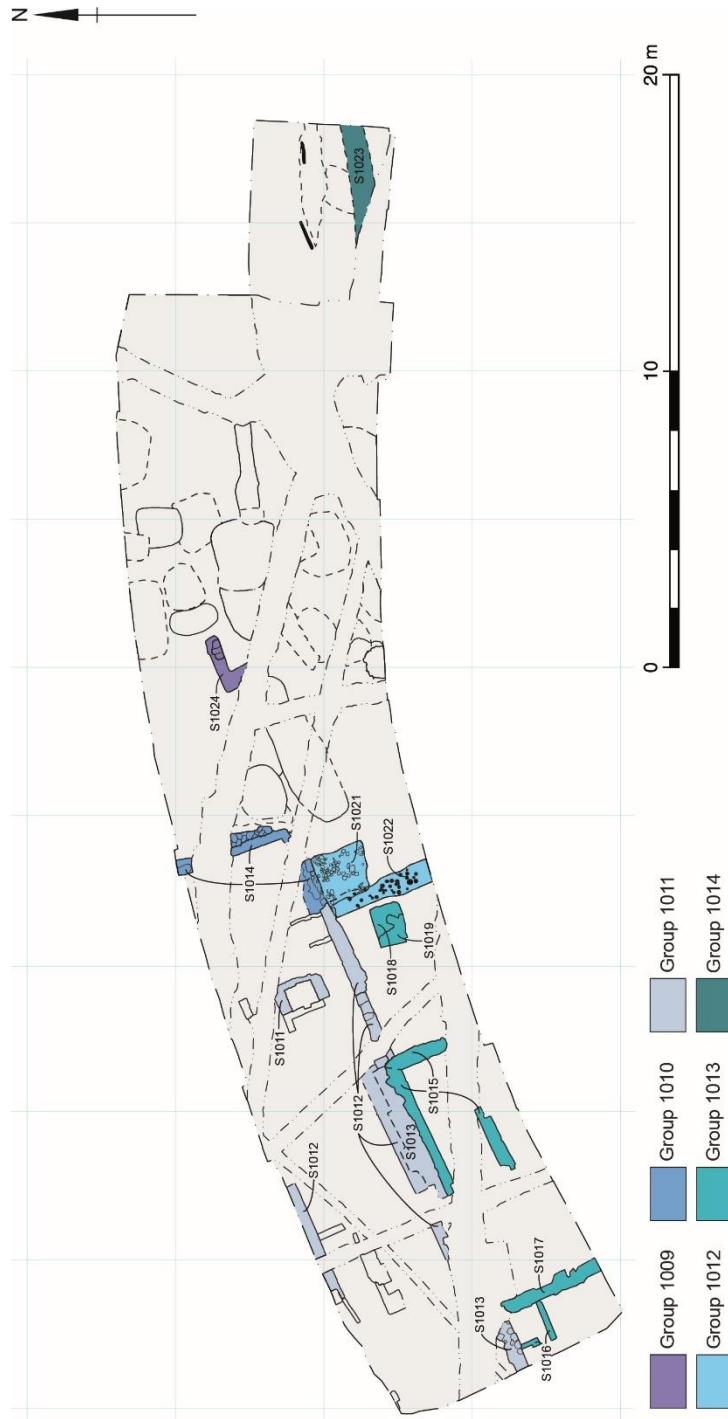


Fig. 9 Phase 5 - Post-medieval activity, 16th to 18th century

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Figure 9 Phase 5 - Post-medieval activity, 16th to 18th century

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Plate 22 Stone-built structures Set 1014, probably post-medieval. Facing south-west, 0.1m scale units



Plate 23 Limestone capital (AF1) dated to 1350-1548. 0.1m scale units

Group 1011 - Northern Tenement, 16th to 18th century structures

Group 1011 comprised Sets 1011–13, which accounted for much of the remaining external structure of the building formerly fronting the Northern Tenement, and a fireplace situated towards its rear. Samples of brick and tile from the structural elements in this group suggest a 16th–18th century date.

At the far west end of the site there was a stone-built section of party wall between the Northern and Central Tenements (Set 1013, Context 1007; Plate 24), this was only exposed in plan. Further to the north-east this party wall was given the Context number 1015 where it appeared much more disturbed, comprising a mortar-bonded limestone rubble core encased by later brick walls (Plate 25). Continuing the line of the wall to the north-east was a 1.75m long and 0.4m wide section of wall made from limestone and sandstone. For a distance of 2.8m further north-east the wall was brick-built, and eventually ran up to the stone-built section of wall, Set 1014 (see Group 1010 above). Presumably the wall, Set 1012, abutted the probably earlier wall, Set 1014, although this was not confirmed by excavation as the site formation level had already been reached in this area.



Plate 24 A limestone and CBM party wall Set 1013. Facing north-west, 0.1m scale units

Set 1012 also included Context 1023, a section of brick-built wall on the north-west side of the property, potentially an element of a party wall with a neighbouring property lying beyond the extent of the excavation (Plate 26). Although the scope for investigation was limited it does appear that the structural elements in Set 1012 formed a basement level, indicated by render applied to the internal face of these walls, a space which had been backfilled by material derived from the 1950s building demolition. Amongst the demolition material were fragments of a 19th-century mosaic floor presumably originating from the Old George Hotel which was in this location (see Appendix 4). The internal extent of the space created by the basement walls was

3.56 x 16.95m in area within the limits of excavation, providing a basement of approximately 60m². Located towards the rear of the basement was Set 1011, a U-shaped brick structure measuring 1.75 x 0.99m, interpreted as a fireplace or part of a chimney.



Plate 25 Continuation of the party wall to the north-west, encased by later brick walls (Set 1015 to the left, Set 1012 to the right). Facing south-west, 0.1m scale units



Plate 26 Brick walls Set 1012 in the northern section of the excavation area. Facing north-west, 0.1m scale units

Groups 1012 - Central Tenement, late medieval or early post-medieval structures

The next group of structural features lay close to the centre of the site towards the rear of a building that had formerly fronted onto Fossgate. Dateable evidence in the form of artefacts was lacking for these features, however, their form, function and close association with post-medieval and modern features implies a post-medieval or later date.

Set 1022 was interpreted as a wall foundation comprising a north-west/south-east aligned linear construction cut containing 34 timber piles packed around with clay and cobbles (Plate 27). The piles and backfill lay below the site formation level, and although timbers were sampled for species identification and radiocarbon dating the backfill and cut were not thoroughly investigated. Despite disturbance to the north-west end of this feature it appears likely that it would have articulated with the party wall shared with the neighbouring Northern Tenement. The sample taken for radiocarbon dating from one of the timber piles (Context 1078) returned a date range of 1445–1485 (at 68.2% probability) and 1439–1617 (at 95.4% probability).



Plate 27 Set 1022, 34 wooden piles aligned north-west/south-east. Facing north-west, 0.1m scale units
Set 1021 was a cobble surface which measured approximately 1.7 x 1.8m in area, situated abutting or possibly slightly above the south-east face of stone-built wall at the rear of the building in the Northern Tenement (see Set 1014 above). A layer of trample, Set 1020, had accumulated on top of this surface. No artefacts were retrieved from this material.

Groups 1013 - Central Tenement, post-medieval structures

Group 1013 comprised Sets 1015, 1016 and 1017, the main structural remains of a post-medieval building occupying the south-western end of the Central Tenement (Figure 7). Set 1017 was a north-west/south-east aligned wall made from brick and limestone, 0.42m wide and at least 3.6m long, potentially continuing beyond the limit of excavation to the south-east. Unfortunately, the relationship between Set 1017 and the party wall shared with the Northern

Tenement (Group 1011, Set 1013), had been lost to later truncation. CBM from Set 1017 has produced a 16th–18th century date.

Near to the south-western end of the excavation was Set 1016, two slight brick walls built into the corner where the walls of Sets 1013 and 1017 would have articulated (Plate 28). These small walls were both a single brick in width and enclosed an area of 1.36 x 1.25m in plan, with a gap on the south-west side 0.39m wide. The walls were perhaps footings for a built-in cupboard or stairs. These abutted and were therefore later than the walls of Sets 1013 and 1017. Set 1016 was constructed from re-used 14th–16th century bricks.



Plate 28 Walls of the post-medieval building in the Central Tenement. Facing north-east, 0.1m scale units

Set 1015 consisted of three walls which appear to have formed part of a basement further towards the rear of the Group 1013 building occupying the western end of the Central Tenement (Plate 29). They shared similarities with the basement walls found in Group 1011, Set 1012, in the neighbouring Northern Tenement. This included their position in relation to, and articulation with the limestone rubble wall in Group 1011 (Set 1013), similar materials utilised in construction, including render applied to the interior face of the walls, and the 16th–18th century date provided by the CBM the walls were made from. Unfortunately, the relationship between the space created within Set 1015 and the space delineated by the north-west/south-east aligned wall in Set 1017 has been lost to extensive disturbance created by 20th century services. The measurable remains of Set 1015 were 1.66m wide and at least 4.52m long enclosing an area of approximately 7.5m².



Plate 29 Wall of a basement in the Central Tenement, Set 1015. Facing west, 0.5m scale units

Located at a distance of 3.49m from the exterior face of the rear wall in Set 1015 a small area of brick sets was exposed (Set 1019). This surface together with a layer of trample that accumulated above it (Set 1018) covered a rectangular area 1.43 x 1.00m in extent, they did not appear to extend further.

Group 1014 - Southern Tenement, post-medieval structures

A linear cut aligned almost east-west, 4.12 x 0.81m in extent was encountered at the eastern end of the site (Set 1023), interpreted as a robbed out wall foundation. It was backfilled with a loose mixture of concrete, mortar and brick rubble, but the feature was not excavated and no artefacts were recovered.

5.2.6 *Phase 6 – Occupation of mid-18th to mid-20th century date (Figures 10 and 12)*

Continued occupation of the buildings formerly fronting onto Fossgate is demonstrated by a number of internal wall additions to the building in the Northern Tenement. Unfortunately, extensive disruption was caused to these walls by modern services, and again the limited scope for excavation meant that these features were not investigated beyond the recording of their extent in plan at formation level; consequently, they are not fully understood.

Groups 1015 and 1016 - Northern Tenement

Group 1015 includes Set 1009, a deposit of cinder found within the U-shaped earlier walls of a probable fireplace or chimney (Phase 5, Group 1011, Set 1011). A later section of wall, Set 1010, constructed from bricks dated to the mid-18th to mid-19th century, was built across the previously open south-west face of the probable fireplace (Set 1011) sealing it off (Figure 12).



Fig. 10 Phase 6 - Post-medieval and modern occupation activity, mid-18th to mid-20th century

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Figure 10 Phase 6 - Post-medieval and modern activity, mid-18th to mid-20th century

There were eight other fragmentary or partially exposed walls, also of probable mid-18th to mid-19th century date, within the basement of the building formerly fronting onto Fossgate in the Northern Tenement. Although none of these were investigated in detail they are thought to relate to additions and alterations inside that building. All eight walls have been assigned to Set 1008.

The structures elements in Group 1016 appear to represent further alterations to the basement in the building formerly fronting onto Fossgate in the Northern Tenement. Bricks in an L-shaped section of wall close to the western end of the excavation area, Set 1007, date to 1850 or later.

5.2.7 *Phase 7 – Modern activity, c. 1950 onwards (Figure 11)*

During the mid-1950s construction of Stonebow the buildings occupying the northern part of the Fossgate street frontage were demolished. The activity in Phase 7 relates to this period of large-scale remodelling of the landscape in this part of the city.

Group 1017 - Fossgate building demolition

The three Sets in Group 1017 comprise material derived from the demolition and clearance of buildings in the vicinity. The clearance cut caused by the demolition of all the buildings in the path of the new road being constructed in the 1950s is represented by Set 1006.

The basement of the building at the front of the Northern Tenement was backfilled with rubble (Set 1003). Several fragments of 19th-century mosaic floor were recovered from the rubble backfill of this cellar (see Appendix 4). The mosaic floor is typical of 19th and early 20th century shop entrance thresholds, which commonly featured the name of the business or proprietor, and therefore was probably associated with one of the businesses occupying the buildings fronting onto Fossgate.

The area at the towards the front of the building facing onto Fossgate in the Central Tenement was also backfilled with rubble (Set 1004), as was the basement at the rear of the same property (Set 1005).

Group 1018 - Services and road

There were numerous service trenches traversing the site, these have been assigned to Set 1002. The extent of the disturbance caused by these services was highly detrimental to understanding parts of the site. For example, at the western end of the site exposed sections of the party wall shared by the buildings formerly fronting the Northern and Central Tenements (Phase 5, Group 1011), was found to be constructed from different materials at various points along its length. Unfortunately, it was often the case that material changes in the wall fabric coincided with disturbance from modern services, limiting understanding of the wall's chronological development. Elsewhere a number of service trenches intersected across an area close to the eastern end of the site. Here this disturbance had masked, or removed evidence which might have helped to define the extent of Stonebow Lane and the Central and Southern Tenements either side of that routeway.

The latest stratigraphic deposits at the site were related to the 1950s and later road surfaces which had recently been removed to enable the works (Set 1001).

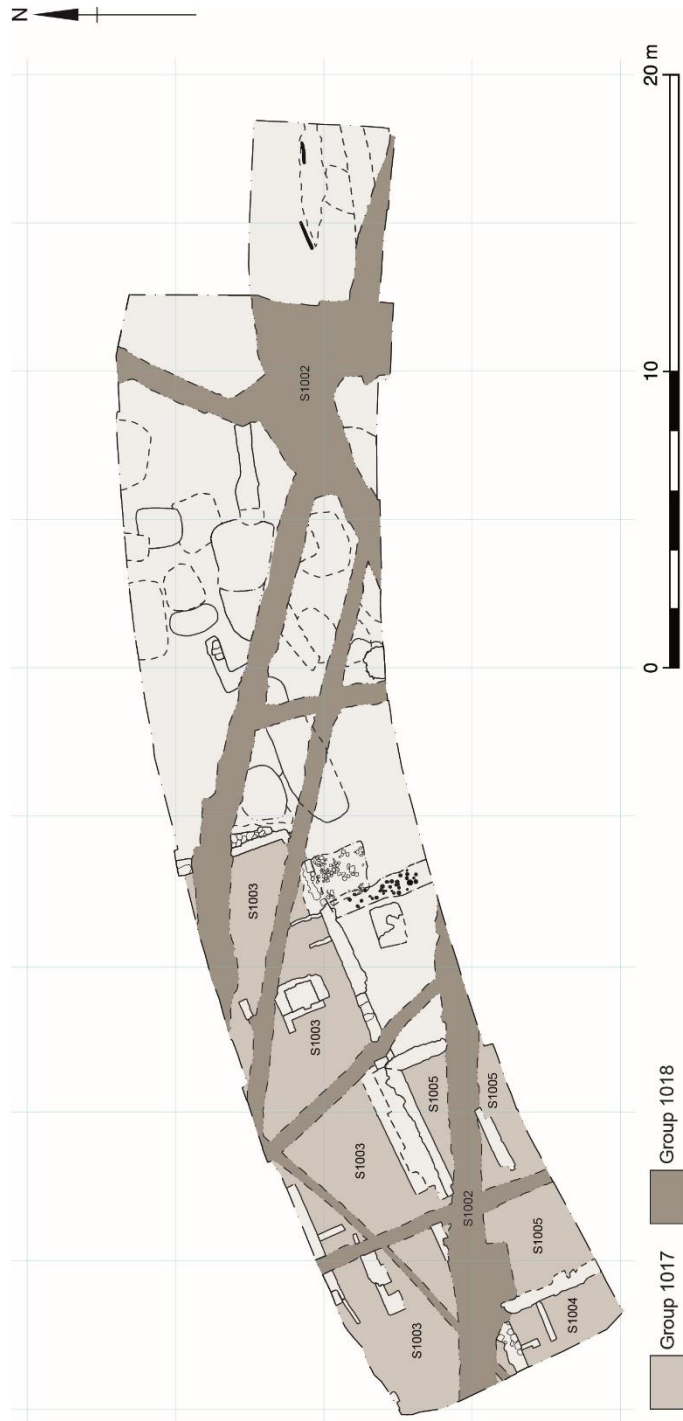


Fig. 11 Phase 7 - Modern activity, c. 1950 onwards

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Figure 11 Phase 7 - Modern activity, c. 1950 onwards

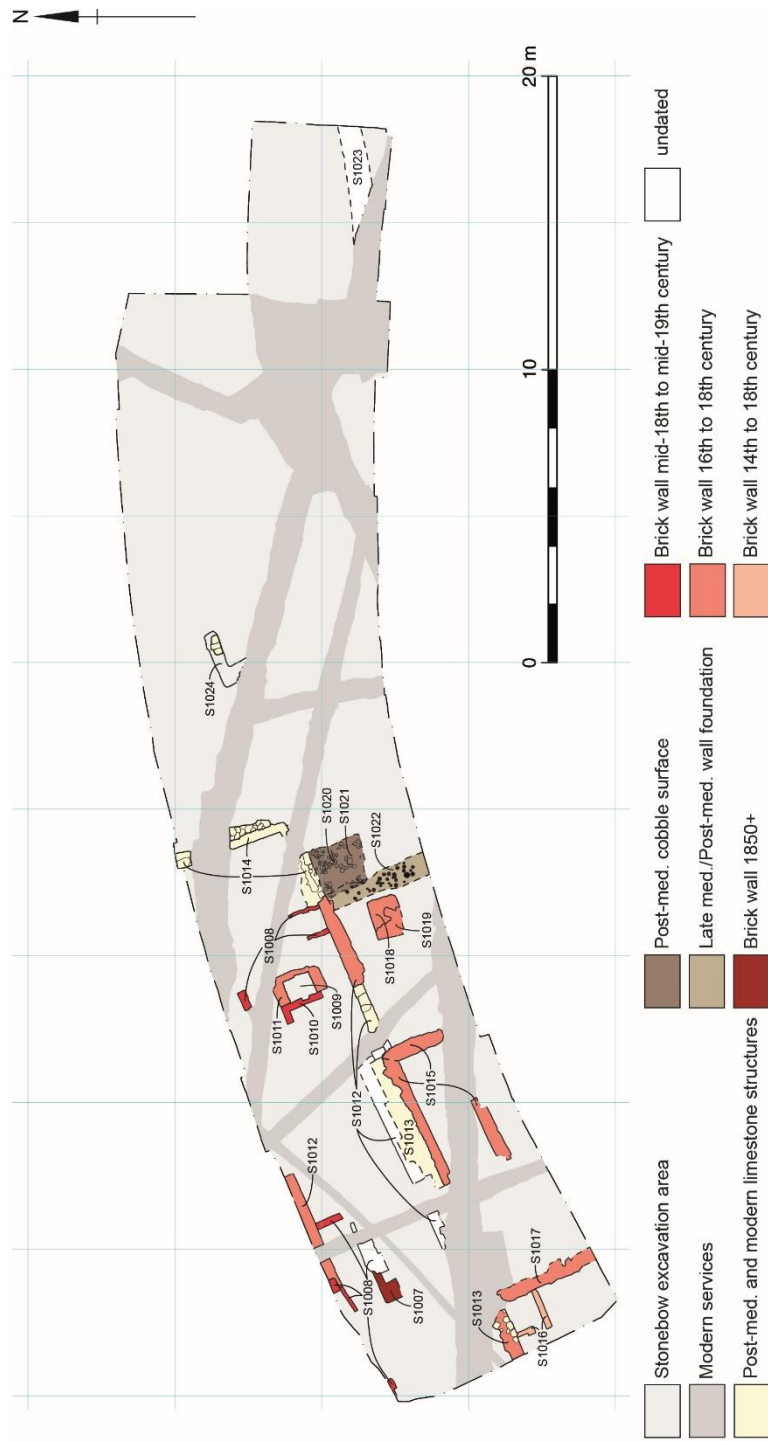


Fig. 12 Post-medieval and modern structure dates, by Set, and other dated features

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Figure 12 Post-medieval and modern structure dates, by set, and other dated features

Group 1019 - Unstratified material

Unstratified material, such as artefacts recovered during the initial machine clearance of the site have been assigned to Set 1000.

6 DISCUSSION

The extensive archaeological remains discovered beneath Stonebow, were in places rich and complex, despite the extensive truncation caused by the construction of the street in the 1950s. From the outset it was clear that the south-western part of the site was largely occupied by post-medieval building foundations and cellars and that there were waterlogged organic deposits in the eastern half of the site. These were likely to be medieval or earlier. Time and budget constraints imposed by the nature of the works meant that there was limited scope for excavation. The material relating to the 1950s onwards was removed by mechanical means at the start of excavation, reducing much of the site to the required formation level. This meant that for much of the site archaeological remains of interest were clearly visible once machine clearance was completed.

Samples taken during the detailed investigation of the selected remains have confirmed the preservation of a range of organic materials including structural timbers, leather and an abundance of plant and insect remains. The recovery of such material greatly enhances the information provided by artefacts, as well as the stratigraphic and spatial arrangement of activity at the site, which provides some clues about land use. As a whole this piece of fieldwork gives a glimpse of a thousand years of occupation at one of York's city centre streets, and hints of earlier presence and what may lie buried deeper at the site as well.

6.1 Phase 1 - Roman

The Stonebow site is situated close to the presumed route of the main Roman approach road leading to the south-east side of the Fortress. Designated as Road 2 by the RCHME the route is thought to following the line of Walmgate, Fossgate and Colliergate before entering the Fortress. No definitively Roman features were found due to the shallow nature of the excavation. A considerable assemblage of residual Roman pottery and CBM was recovered from later features. Indeed, 84 sherds of pottery, nearly 17% of the overall assemblage recovered from the site, was Roman, the majority of which survive as small abraded fragments. The excavation was insufficiently deep to uncover Roman remains, so the nature and extent of Roman activity in the area is unclear, though the presence of residual Roman pottery and CBM is suggestive of some form of activity in the area.

The proximity of the fortress and the road would certainly have influenced the presence of Roman period material at the site, as excavation did not extend to a depth where Roman deposition might be expected it has not been possible to establish much regarding the nature of what activity might have taken place here at that time, notwithstanding the general observation regarding the domestic character of the cultural material recovered. This perhaps alludes to a continuation of extra mural settlement on the south-east side of the fortress across a little investigated, or understood, zone situated between the area around High Ousegate, to the south-west (Extramural Settlement Zone 3, AY 6/2), and Aldwark to the north (Extramural Settlement Zone 2, AY 6/2). It seems very likely, based on the quantity and nature of this residual material, that significant Roman deposition survives below the later horizons.

6.2 Phase 2 - Undated features, possibly Anglo-Scandinavian

No clear evidence of Anglian occupation was present at the site, but such deposits may exist beyond the depth limit of the present excavation works.

The organic nature of the various undated features at the site is suggestive of an Anglo-Scandinavian date, but this could not be confirmed as the features in question were unexcavated and were beneath the formation level for the new road surface.

6.3 Phase 3 - Anglo-Scandinavian, 9th to mid-11th century

Hall and Hunter-Mann (2002, 686) have suggested that the streets and tenement boundaries in this area were probably established in the 10th century; this conclusion is supported by evidence from 19–22 Fossgate, where a linear feature dating to the mid-10th/11th century was thought to be a property boundary (McCluskey 2018, 33). Fossgate, along with Hungate and Coppergate are among several thoroughfares in the vicinity with the Old Norse suffix *gata*, meaning street (Palliser 2014, 68). The earliest written record of the name Fossgate dates to the 12th century (Fellows-Jensen 2004, 366).

The only evidence of Anglo-Scandinavian activity at the present site was two pits in the Central Tenement that occurred early in the stratigraphic sequence and produced exclusively Anglo-Scandinavian artefacts. In addition, there are a number of residual antler artefacts (see Appendix 8), including offcuts, a comb blank (SF2) and a decorated antler tine object (SF6), which are typical of Anglo-Scandinavian craft activity.

The decorated antler tine object (SF6; Plate 6) is highlighted by N. S. H. Rogers as ‘the standout object’ in the artefact assemblage. The object features crisply carved animal heads at both ends, between which are five fields delineated with faint incised lines. The second field in from the animal head at the large end of the object is partially occupied with an interlaced pattern, the next two fields are blank while adjacent to the carving at the narrow end a simple Z-shaped motif is present. Overall the object appears to be unfinished, as the eyes are missing from the smaller head and the object shows little indication of wear. A strikingly similar decorated antler tine object, featuring interlace decoration and drilled perforations next to a conventionalised human head, was found at 22 Piccadilly (MacGregor et al. 1999, 1993, Fig. 950).

6.4 Phase 4 - Medieval, late 11th to 14th century

The majority of the deposition investigated in the tenement backyards spans the 11th–14th centuries, and largely represents pit digging and waste disposal. The spatial arrangement of medieval pits potentially offers some indication of property boundary location and alignment, although no physical remains of property boundaries such as fence lines or ditches were found. For example, it may be speculated that the position of pits in the Northern and Central tenements hints at two tenement plots, each a single perch (approximately 5.5m) wide, ranging back from the former Fossgate street frontage with a boundary between the two tenements. Evidence from other sites in York, such as that from 16–22 Coppergate (Hall and Hunter-Mann 2002), suggests that medieval plot divisions were not always marked with physical barriers, and even where these did exist the ditches or fences delineating them were often slight (Rees Jones 2013, 75). Any sign of a boundary between the Central Tenement and Stonebow Lane, has been masked or destroyed by modern activity, at least to the depth investigated.

The disturbance caused by the creation of the modern Stonebow was deepest at the eastern end of the site, and the only evidence of the earlier Stonebow Lane comprised patches of gravel. The position of a robbed-out wall seems to represent the boundary on the southern side of Stonebow Lane, as depicted on the 1852 OS map of York (1852).

The activity in the tenement backyards during the 11th to early 14th century was found to be exclusively domestic in character, dominated by the disposal of domestic waste, either into pits, many lined with timber and wicker, or dumped on middens. In addition, a drain lined with roundwood logs and capped with wooden boards, was found towards the eastern end of the Central Tenement. The precise function of this feature is not apparent, neither was the purpose of a cluster of wooden stakes situated at its western end, but it was clearly intended to channel and control waste liquids, possibly deriving from domestic activities or waste disposal. Unfortunately, later truncation hampers the full understanding of this drain.

The medieval artefact and ecofact assemblages largely derive either from food waste or artefacts utilised in the storage, processing and consumption of food and drink, including plant remains, animal bone and pottery. The outstanding level of organic preservation of food evidence such as fruit seeds and cereal bran, offers rare dietary detail. In the analysis of the animal bone assemblage from Stonebow, K. Poole has emphasized that this material offers ‘no evidence for on-site food production’ representing ‘consumption waste from animals raised elsewhere’ (Appendix 12). Evidence for industrial or craft activities from the site during this time is scant, consisting of only very small quantities of metal and glass working slag (SF22–24), although the challenges of identification and recovery of this kind of material means there is the potential for underrepresentation. There is no structural evidence suggesting the presence of metal or glass working on the site.

The clearance and landscaping undertaken during the 1950s for the construction of a main road clearly impacted significantly on later medieval and post-medieval deposits. This can be illustrated by the pottery, for while there was good representation of pottery from the 11th-early 14th century, while scarcely any pottery from the 14th-18th/19th century was recovered, due to the clearance of most of the 15th century and later deposits. The one exception to this being a single, rather small, section of limestone wall footing (Phase 5, Group 1009, Set 1024, Figure 7) skirting the boundary between the Northern and Central Tenements.

There is some limited evidence for structures dating to the later medieval or early post-medieval period situated in the western half of the site. Principally this evidence comes from a cobble, clay and timber pile wall foundation (Phase 5, Group 1010) Radiocarbon analysis of one of the timber piles from here has produced date ranges of 1445–1485 (at 68.2% probability) and 1439–1617 (at 95.4% probability). No structural remains survived above the timber piles, however, this type of wall foundation would typically have supported a masonry wall, as at St Anthony’s Hall on Peasholme Green, a short distance to the east of the site (Dean 2008, 114). The presence of a wall foundation of this type, dating to the later medieval or early post-medieval period, suggests the possibility that masonry elements found elsewhere in the buildings occupying both the Northern and Central Tenements could be contemporaneous.

6.5 Phase 5 - Post-medieval occupation, 16th to 18th century

Speed’s 1610 map (Plate 30) depicts buildings ranging along both sides of Stonebow Lane. This map is indicative and cannot be taken as an accurate depiction. It is probable that it was the

intention of the map maker to relay the densely built-up character of the properties located between the two streets, rather than to accurately depict individual buildings and property plots. For example, the map illustrates a single row of building between St Saviourgate and Stonebow Lane, though logically there would have been separate rows of buildings lining each of these streets. The size of tenements in the vicinity suggests that 4–5 tenements would have had a frontage on Fossgate in the area between the northern side of Stonebow Lane and the southern side of St Saviourgate. In Speed's simplified portrayal it is not clear whether the buildings shown are fronting onto Stonebow Lane or St Saviourgate. Despite this ambiguity it is interesting that in Speed's depiction the buildings lining Stonebow Lane appear to be prominent suggesting it was an important thoroughfare, bypassing St Saviourgate in linking Pavement with Hungate.

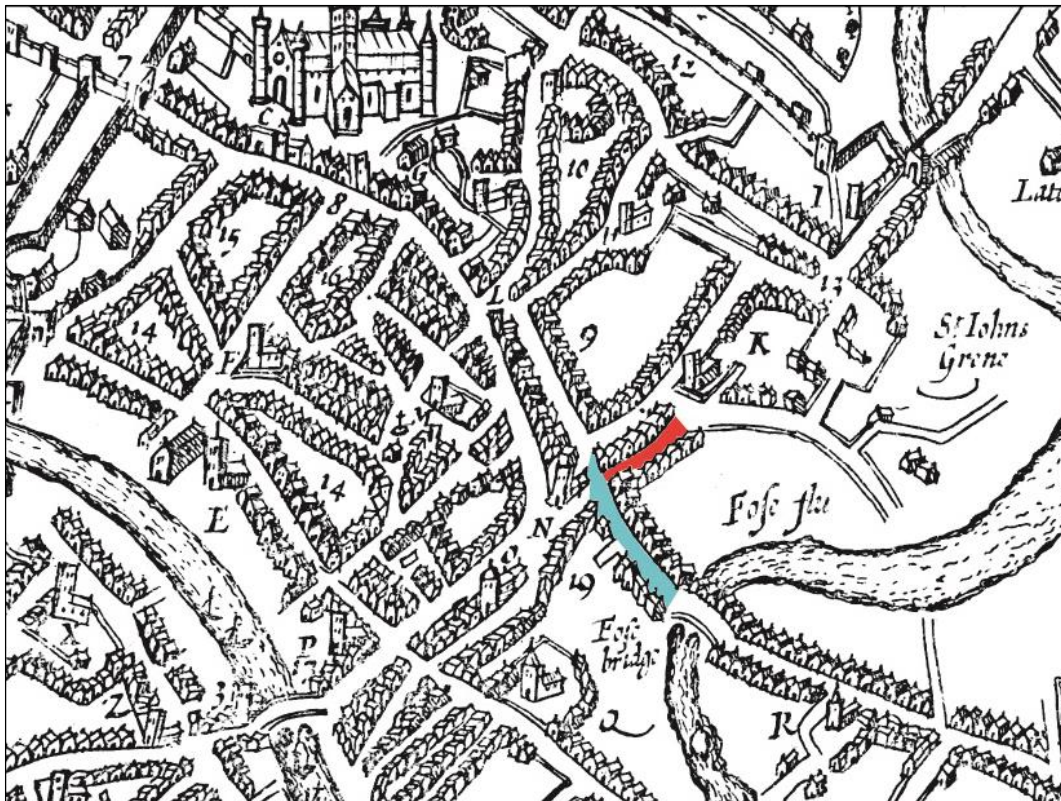


Plate 30 John Speed's 1610 map of York. Fossgate highlighted in blue, Stonebow Lane in red

6.6 Phase 6 - Post-medieval and modern occupation, mid-18th to mid-20th century

No features dating to the mid-16th to mid-18th century were present at the site due to later truncation.

By the mid-19th century the level of cartographic detail available is significantly greater and more precise, the 1852 OS map of York (Plate 31), depicts a densely built-up area with very little open space, and the building occupying the west end of the site is named as the Old George Hotel.

There is often a strong correlation between the physical remains of medieval and later structures found on the sites in York and the building outlines depicted on the 1852 OS map of York, and this was the case for the present excavations (Plate 32). Sometimes it is possible to see when plots have been amalgamated; for example, when compared with other buildings fronting onto the north end of Fossagate the Old George Hotel appears to be around double the

width of its neighbours and perhaps straddles two tenement plots, it is the southern of these which corresponds to the structure exposed within Northern Tenement. It is possible that the northern most north-east/south-west aligned wall exposed by excavation (Phase 5, Group 1011, Set 1012) predates an amalgamation of two neighbouring plots and the construction of the hotel building. The Old George Hotel, 3 Fossgate, is recorded as active in 1834 (York History website), it can also be seen in a number of photographs taken of the area from the 1870s onwards, and is present in the background of a lithograph by Francis Bedford produced around 1840 (RCHMY 1981, Plate 2 (4)).



Plate 31 OS map of York 1852, showing Stonebow Lane and the north-west end of Fossgate. Ward boundaries overdrawn in green

The party wall shared by the Old George Hotel and the neighbouring property, present in the Central Tenement, fits the 1852 OS map of York quite closely, as do the north-east/south-west aligned wall found in the Central Tenement and the robbed out wall at the east end of the site bounding the south side of Stonebow Lane. There is some divergence between north-west/south-east aligned walls in both the Northern and Central Tenement plots from the building outlines shown on the 1852 OS map of York. Neither the rear most limestone wall in the Northern Tenement nor the series of wooden piles in the Central Tenement match structures on the 1852 OS map of York.

Another aspect of the mapping is that it shows the influence of Hungate and St Saviourgate. Hungate lies at the north-east end of Stonebow Lane and perpendicular to it, broadly parallel to Fossgate, while St Saviourgate lies north of and parallel to Stonebow Lane, even mirroring a bend present midway along the street. The line of Hungate and the plots running back from the east end of St Saviourgate follow a slightly different alignment to the plots on Fossgate. The 1852 OS map of York shows a more open area east of the Ward boundary (highlighted on the map in green), where the tenement plots are less well organised with some open yards.



Plate 32 Detail of the OS map of York 1852 with the Stonebow site and major post-medieval and modern structural features superimposed

The physical remains of the Old George Hotel and the neighbouring property show alterations to the arrangement of internal space. With records suggesting that the hotel was present on the site for at least 120 years a degree of maintenance and improvement would be expected.

A number of late 19th and early 20th century photographs of St Crux church and the east end of Pavement show that the Old George Hotel and neighbouring properties occupied a prominent position at the junction of Pavement, Fossgate and Whip-ma-Whop-ma-gate (not reproduced here, see Explore York Libraries and Archives). These photographs show visible changes to the hotel. For example, between around 1870 and the mid-1880s the roof was retiled and the façade was altered with new signage installed by the beginning of the 20th century (Plates 33–4). Several large fragments of mosaic flooring and green wall tiles typical of the entranceways of Victorian hotels and public houses were recovered during mechanical stripping of the site. While providing a glimpse of interior decoration they also give an indication of internal decorative changes to the hotel undertaken at around the same time as cosmetic alterations to the exterior. It is possible that some of the alterations to the basements were carried out at the same time as these other improvements. Twentieth-century photographs also show the street front access to the cellars with hatches below the ground floor bay windows on either side of the main entrance (Plate 31). The hatch below the southern bay window would have led to the basement investigated as part of this excavation.



Plate 33 The Old George Hotel and Embassy Photographic Studio, c. 1949. Image © York Press

Nineteenth and 20th century photographs also depict parts of the building uncovered in the Central Tenement. Number 4 Fossgate is recorded in Kelly's York Directory 1901 as a grocery, Bell's Stores (GENUKI website), this is supported by signage visible in photographs. By the 1930s the building was used as a photographic studio (Plate 33). In 1949, only a few years before its demolition to make way for the new road, the ground floor windows are shown boarded up and the premises were presumably vacant.

Perhaps as much as a thousand years of continuous occupation of this space ended in the 1950s when the buildings which once fronted onto the north end of Fossgate were pulled down and were replaced by Stonebow House along the south side of St. Saviourgate, while improved access into the city centre from the east was facilitated by the introduction of Stonebow. This new street followed the line of the former Stonebow Lane, widening what was a narrow medieval passage by about 8m along its northern side.

The recent resurfacing works were undertaken in part as a response to slumping of the road along the Stonebow. To a degree the instability of the road was due to the gradual decomposition, and consequent reduction in volume, of the soft, highly-organic waterlogged archaeological deposits found across the tenement backyards, which in places had left a void of up to 0.2m below the reinforced concrete road foundation built in the mid-1950s. This demonstrates the sensitivity of these deposits to disturbance and exposure and the effect proximity to the ground surface has in hastening their decomposition.



Plate 34 The Old George Hotel, 5 Fossgate, c. 1935. Image from Explore York Libraries and Archives, © City of York Council

7 RECOMMENDATIONS

As part of the assessment work carried out each specialist has produced a number of recommendations for further analysis, should funds be available. These recommendations are summarised below:

Architectural Fragments

The assessment report text could be adapted to form a publication report, accompanied by a drawing of the medieval limestone capital, AF1, and photographs of the Victorian cement backed mosaic fragments AF2 and 11–12.

Ceramic Building Material

The assessment report text could be adapted to form a publication report, accompanied by photographs of the unusual sherd of medieval tile from Context 1125, and the Victorian wall tile from Context 1011.

Pottery

It is recommended that the decorated York Glazed ware tubular spouted jug depicting a hunting scene (SF26), from deposits in Set 1041, should be drawn, photographed and published for comparison with similar vessels in a journal such as *Medieval Ceramics*, the journal of the Medieval Pottery Research Group.

Small Finds

Further investigation is recommended on three iron objects, SFs 13, 17 and 22, to enable full identification. This should be undertaken if a publication relating to the site is envisaged.

The decorated antler tine object, SF6, appears to be unfinished. Both illustration and photography has been undertaken for this object. It is worthy of publication either in a text relating to the site or in a suitable journal, as it is an unusual artefact.

Leather

The large leather sheet, SF34, the function of which is unknown, requires further study for identification. This may also require drawing and/or photographing, if a publication relating to the site is envisaged.

Wood and Timber

If a publication was envisaged further necessary analysis would include species use and work on felling season patterns.

It may also be useful to select one of the timbers from the pit Set 1041 for radiocarbon analysis as no dateable material was recovered from the lower, potentially primary, deposit in this pit. This may aid in determining the chronological span of this features use.

Animal Bone

At present, full recording and reporting on animal bone from medieval deposits has not taken place. This would be necessary to inform about the utilisation of animals and parts of animals, in this specific location, during the medieval period.

In the case of Stonebow there is the potential to consider the animal bone in relation to specific tenements. Bond and O'Connor (1999, 421) highlighted the need for further work on bones of 11th–15th century date from closely controlled contexts, with well-defined circumstances of deposition. The Stonebow assemblage potentially provides such an opportunity (see Appendix 12).

Plant Macrofossils

Should a publication of the site be envisaged, either full quantification and analysis, or a rapid scan of samples could be implemented following the Environmental Archaeology Unit (EAU) method for York.

Additional radiocarbon analysis of environmental material recovered from the timber lined drain, Set 1043, and from the two pits sampled, Sets 1030, 1041 and 1042, would help develop an understanding of the chronological span for the use of these features.

Archaeoentomology

Dr D. Smith points out that one significance of the Stonebow site is that the features sampled are medieval in date. While York is one of the few urban areas in Britain which has been subject to intensive environmental sampling much of that work has been focussed on either Roman or Anglo-Scandinavian period material, only two other sites (Walmgate, Hall et al. 2000; Lower Petergate, Hall et al. 2007) have produced significant assemblages of insect fauna. Consequently, it is suggested that the Stonebow assemblage warrants full investigation, as a matter of urgency given that this assemblage is inherently unstable.

Concluding remarks

Some recommendations may be suited to incorporation within a broader project drawing together a number of recent archaeological interventions along Fossgate, including the work done by YAT at 24 Fossgate and by OSA at 19–22 Fossgate. Some of the above recommendations would be relatively inexpensive and could be achieved expediently, while others, specifically study of the insect remains, require urgent attention while still available in a suitable state for analysis.

The recommended analyses for pottery, CBM and architectural fragments will be relatively small pieces of work. Further analysis of these assemblages has the potential to aid refinement of chronology on the site, hopefully resolving some of the conflicting dates which currently exist between the pottery and CBM assemblages. It is also arguably the case that a little more work on the decorated antler tine object, SF6, would be quick and straightforward, as the object has already been photographed and illustrated. Similarly, the further specialist analysis of SF34, the large leather sheet, could be rapidly undertaken.

It is recommended that the animal bone is fully recorded, however, should funds for publication be limited, analysis of the material recovered from the two cess pits, Sets 1030, 1041 and 1042, should be prioritised.

Carrying out substantial further work on the archaeobotanical and archaeoentomological remains at this time is imperative due to issues with long-term storage of these delicate organic remains. The cost of the analysis of these assemblages is weighed against the multifaceted and important information that can be gained from the work. Initial assessment highlights the extremely rich character of this material, the potential of which is to provide information regarding diet, health and waste disposal practices in medieval Fossgate. In addition, further study of this material presents an opportunity to provide highly valuable data towards a baseline for the current state of organic preservation in this part of York. Water quality and water level monitoring are presently underway locally at Hungate and at sites adjacent to the River Foss on Piccadilly. The Stonebow site has the potential to contribute to this ongoing research across the city designed to better understand the effects of development on the sensitive waterlogged deposits which make York's archaeology so significant.

The good organic preservation identified in the sampled deposits means there is plenty of material suitable for radiocarbon dating, and this should enable greater resolution of dating for the deposits and features sampled. This type of analysis is relatively expensive so, to manage costs to the project, it will focus on better understanding the life span of the three features investigated in detail.

Further work may aid to the better understanding of the wooden drain (Phase 4, Group 1007, Set 1043). Some material from the environmental samples from silting within the drain have been set aside and require further processing to generate a suitable mass of macrofossils for radiocarbon analysis. Given that three samples from the wood and timber structure have already been processed, analysis of further samples is unlikely to add significantly to understanding of this feature.

The lower backfill of a partially excavated medieval cess pit (Set 1042, Context 1210) is clearly different in character from the upper backfills of the pit in Set 1041, something which was evident during the course of excavation and in the plant macrofossil assessment. For example, the recovery of cereal bran and corncockle seeds becomes greater with increasing depth within the feature. The absence of dateable artefacts from the lower deposit is problematic with regards to the understanding the duration of the use of this feature, and stands in stark contrast to the wealth of artefacts recovered from the upper deposits. Additional radiocarbon dating from both Sets 1041 and 1042 offers the potential to determine when the pit was originally cut and the date at which it was abandoned.

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APPENDIX 2 – CONTEXT LIST

Context Number	Text
300	Former road surface in Test Pit 3
301	Demolition debris in Test Pit 3
302	Soft dark brown grey clayey sandy silt with dark green grey and blue grey lenses. Frequent organic material, including small roundwood fragments, other wood fragments and fibrous plant matter, possibly grass or straw.
303	Soft dark brown grey clayey sandy silt with dark green grey and blue grey lenses. Frequent organic material, including small roundwood fragments, other wood fragments and fibrous plant matter, possibly grass or straw.
1000	Unstratified finds and material
1001	Modern tarmac road surface
1002	Crushed limestone road sub-base
1003	Demolition/clearance deposit. Loose to friable dark greyish brown silty sand. Frequent small to large fragments of CBM and stone, small fragments of clinker and charcoal.
1004	Brick wall 3.6m long, 0.42m wide visible to one course deep. Aligned N-S. Pale grey lime mortar in a random bond with occasional limestone blocks. Butted by 1005
1005	Brick wall 1.4m long, 0.24m wide visible to one course deep. Aligned E-W. Pale grey lime mortar in a stretcher bond, rendered on north side. Butts 1004
1006	Brick wall 0.67m long, 0.24m wide visible to one course deep. Pale grey lime mortar in a random bond. Butts wall 1007
1007	Limestone and brick wall 1.6m long, 0.62m wide, visible to two courses deep. Aligned E-W. Pale yellowish grey lime mortar with irregular coursing. Limestone blocks on south side, mix of limestone fragments/blocks and bricks/other CBM fragments on north side and in the wall core. Butted by wall 1007.
1008	Dump of roof tile. Loose mid brownish grey silt. Frequent small to large fragments of roof tile, very occasional chalk flecks.
1009	Dump. Firm mid to dark greenish brown silty clay. Occasional flecks of charcoal, CBM and mortar.
1010	Dump. Loose light brownish white mortar and crushed limestone.
1011	Rubble infilling. Coarse brick and limestone rubble in a loose mid brown sandy silt
1012	Rubble infilling. Coarse brick and limestone rubble with a friable to loose mid brown sandy silt matrix. Additional inclusions of concrete fragments, occasional small glass and slate fragments.
1013	Rubble infilling. Coarse brick, tile and mortar rubble with a loose mid brown sandy silt matrix. Possibly same as 1021.
1014	Brick wall 4.5m long, 0.15m wide, visible to one course deep. Aligned E-W. Pale yellowish grey sandy mortar with frequent charcoal flecks. Bricks laid in stretcher bond.
1015	Wall core. Large cobbles with occasional small to large CBM and limestone fragments. Bonded with a soft light brown sandy mortar.
1016	Brick wall 5m long, 0.24m wide, visible to two courses deep. Aligned E-W. Pale grey lime mortar in a stretcher bond. Bonded to wall 1017.
1017	Brick wall 4m long, 0.5m wide visible to one course deep. N-S aligned. Made of two types of brick, older and newer. Pale grey lime mortar in a random bond. Bonded to wall 1016.
1018	Brick wall 1.5m long, 0.42m wide visible to one course deep. Aligned E-W. Internal face on north side. Pale yellowish brown lime rich mortar with occasional charcoal flecks in a random bond.

Context Number	Text
1019	Brick wall 2.8m long, 0.56m wide visible to one course deep. Aligned E-W. Internal face on north side. Hard pale grey mortar laid in a random bond.
1020	Brick wall 1.97m long, 0.25m wide, visible to one course deep. L-shaped, longest part NW-SE aligned, shortest part NE-SW. Hard, light yellowish brown sandy lime mortar in a random bond. Butts wall 1056. Possibly contemporary to wall 1055.
1021	Demolition/Infilling. Coarse, light brown brick and mortar rubble in a sandy matrix. Possibly same as 1013.
1022	Brick wall 1.2m long, 0.64m wide visible to one course deep. Aligned E-W. Pale grey mortar with charcoal flecks in a random bond. Butted by wall 1058.
1023	Brick wall 4m long, 0.5m wide, visible up to nine courses deep. Aligned E-W. Coarse light grey sandy lime mortar with flecks of charcoal, top six courses stretcher bond, then one course of headers, then bottom two courses stretchers. Bonded to 1059. Butted by walls 1024 and 1060. A number of the bricks appear to be over fired.
1024	Brick wall 0.90m long, 0.23m wide visible to one course deep. Aligned N-S. Hard light grey cement mortar with a stretched bond. Frogged bricks with 'CASTLEFORD' stamp. Butts 1023.
1025	Disturbed yard build-up. Firm to friable dark brownish black sandy silt with mixed organics. Frequent degraded straw, small fragments of wood, twigs and branches, larger fragments of timber.
1026	Pit fill. Friable mixed grey and dark greyish brown sandy silt and ash. Moderate wood fragments.
1027	Pit cut. Sub rectangular shape in plan aligned NNE – SSW. Moderate break of slope at surface. Moderately steep sides. Base not reached (beyond LOE).
1028	Timber stake in pit 1027. Rounded shape. Diameter 100mm. Could be related to wooden stake 1029.
1029	Timber stake in pit 1027. Rectangular shape. Dimensions – 0.13m long x 50mm wide.
1030	Clay build up. Soft light grey silty clay with ash.
1031	Dump/midden. Firm to friable mid to dark brownish grey silty clay with lenses of firm pale blueish grey clay. Frequent medium cobbles, oyster shells. Ephemeral disturbed edges.
1032	Pit fill. Soft mid brownish grey silty clay, with lenses of pale blueish grey clay. Frequent pebbles. Moderate charcoal flecks. Occasional oyster shells. Above or same as fill 1034.
1033	Sub rectangular shape in plan aligned NE – SW. Moderately sharp break of slope at surface. Moderately steep sides. Base not reached (beyond LOE).
1034	Pit fill. Soft mid brownish grey clay, with lenses of light grey clay. Moderate pebbles and flecks of charcoal. Occasional flecks of CBM. Underneath or same as fill 1032.
1035	Timber. Sub rounded in shape. Dimensions: 1.04m in length. Long rounded timber on northern side of drain, parallel with long timber (1036) on southern edge of drain.
1036	Timber. Sub rounded in shape. Dimensions: 2.80m in length. Long rounded timber on southern side of drain, parallel with long timber (1035) on northern edge of drain.
1037	Timber fragment. Dimensions: 0.44m long x 0.15-0.24m wide x 0.2-0.3m thick. Possibly a timber capping/plank for the drain.
1038	Timber fragment. Dimensions: 0.62m long x 0.14m wide x 0.3m thick. Possibly a timber capping/plank for the drain.
1039	Timber fragment. Dimensions: 0.3m long x 0.18m wide. Very fragmented, thickness unknown. Possibly a timber capping/plank for the drain.
1040	Timber fragment. Dimensions: 0.34m long x 0.6m wide. Very fragmented, thickness unknown. Possibly a timber capping/plank for the drain.
1041	Drain fill. Friable dark brownish grey sandy silt, with lenses of pale yellowish white silt, mottled white and orange silt, light yellowish brown sand and light yellow sandy silt.

Context Number	Text
1042	Timber fragment. Roughly rounded cross section. Dimensions: 0.22m long x 60mm wide. Fragmented, thickness unknown. Possibly a timber capping/plank for the drain.
1043	Timber stake in pit 1033. Rounded shape. Diameter 0.1m. Possibly associated with nearby timbers 1044, 1045 and 1048.
1044	Timber post in pit 1033. Rounded shape. Diameter 0.11m. Possibly associated with nearby timbers 1043, 1045 and 1048.
1045	Timber stake in pit 1033. Rounded shape. Diameter 80mm. Possibly associated with nearby timbers 1043, 1044 and 1048.
1046	Pit fill. Firm to friable dark greyish brown gritty sandy clay, with lenses of light bluish grey clay and light yellowish brown and orangey brown sandy clay. Frequent charcoal and shell flecks. Moderate small to medium sized stones, small fragments of decayed wood. Occasional CBM flecks.
1047	Disturbed build up/dumping. Form to friable dark greenish brown silty clay. Frequent decayed organic remains. Same as 1025.
1048	Timber post in pit 1033. Rounded shape. Diameter 90mm. Possibly associated with nearby timbers 1043, 1044 and 1045.
1049	Limestone wall. Single limestone block measuring 0.46m x 0.25m. Probably E-W aligned. Faced on east side. Butted by 1050, likely part of wall 1016 but masked by 1012.
1050	Limestone and sandstone wall, 1.75m long, 0.4m wide. Aligned E-W. Bonded with hard lime mortar with some large fragments of CBM. Stones possibly faced on both sides. Probably also includes single limestone block 1049.
1051	Dump. Friable to coarse dark greyish black gritty sandy clinker. Frequent flecks to small fragments of charcoal and clinker.
1052	Brick sett surface. Entire surface is 1.34m long by 0.97m wide, one course deep. Bricks laid on bed in a light grey lime mortar. No clear accompanying structures.
1053	Trample. Friable dark brownish grey clayey silt. Frequent flecks of mortar. Moderate flecks of charcoal and small fragments of CBM.
1054	Cobble surface made up of cobbles measuring 40-180mm across and limestone fragments measuring 70-150mm across. Whole surface area <2m by <2m. Occasional CBM fragments.
1055	Brick wall L-shaped plan measuring 0.6m x 0.24m x 0.08m. Visible to one course deep. Aligned NE-SW then NW-SE. Hard pale yellowish brown mortar in a stretcher bond.
1056	Brick walls 1m long and 0.36m wide, visible to one course deep. Aligned N-S then E-W. Hard pale yellowish grey mortar in a header bond.
1057	Cinder dump/infill. Loose dark greyish black coarse silty clinker. Occasional flecks of mortar and small fragments of CBM. Infills Brick walls 1020 and 1056.
1058	Brick wall 1.2m long, 0.66m wide visible to one course deep. Aligned E-W. Faced to the north and on the west return. Hard light grey cement in a random bond.
1059	Brick stub wall 0.8m long and 0.5m wide visible to 6 courses deep. Aligned N-S, faced on west side. Coarse light yellowish grey mortar, bond pattern unclear/random. Bonded to wall 1023.
1060	Brick wall 0.7m long and 0.125m wide, visible to one course deep. Aligned E-W. Light yellowish grey stretcher bond. Faced to south. Continues on the line of wall 1023.
1061	Brick stub wall 1.5m long and 0.7m wide visible to 2 courses deep. Aligned E-W, blue paint on south face. Bonding material and pattern unclear.
1062	Brick wall 1.3m long and 0.4m wide, visible to one course deep. Aligned E-W, faced on north side. Light yellowish brown concrete mortar with random bond.
1063	Timber pile. Diameter 95mm.
1064	Timber pile. Diameter 95mm.
1065	Timber pile. Diameter 105mm.

Context Number	Text
1066	Timber pile. Diameter 120mm.
1067	Timber pile. Diameter 175mm.
1068	Timber pile. Diameter 115mm.
1069	Timber pile. Diameter 100m.
1070	Timber pile. Diameter 90mm.
1071	Timber pile. Diameter 65mm.
1072	Timber pile. Diameter 60mm.
1073	Timber pile. Diameter 105mm.
1074	Timber pile. Diameter 115mm.
1075	Timber pile. Diameter 90mm.
1076	Timber pile. Diameter 70mm.
1077	Timber pile. Diameter 100mm.
1078	Timber pile. Diameter 88mm.
1079	Timber pile. Diameter 70mm.
1080	Timber pile. No measurements.
1081	Timber pile. Diameter 64mm.
1082	Timber pile. No measurements.
1083	Timber pile. No measurements.
1084	Timber pile. No measurements.
1085	Timber pile. No measurements.
1086	Timber pile. Diameter 94mm.
1087	Timber pile. Diameter 94mm.
1088	Timber pile. Diameter 75mm.
1089	Timber pile. Diameter 95mm.
1090	Timber pile/plank. Dimensions 275mm x 127mm x 125mm.
1091	Timber pile/plank. Dimensions 155mm x 80mm x 350m.
1092	Pit fill. Firm to friable dark brown laminated clayey silt. Frequent decayed organic matter. Sampled
1093	Pit lining. Wattle pit lining. Visible in plan but on excavation was found to not have survived further down.
1094	Square shaped pit in plan. Sharp break of slope at top. Steep/almost vertical edges. Sharp/right angled break of slope at base. Flat base. Dimensions: 1.2m x 1.4m x 0.49m.
1095	Limestone wall 3.05m long and 0.71m wide visible to one course deep. Aligned E-W. Bonded with a coarse pale yellowish grey limestone mortar. Very disturbed. Butted by cobble surface 1054.
1096	Brick wall 0.77m long and 0.12m wide, visible to one course deep. Aligned N-S. Hard light brown sandy cement in a stretcher bond. Butts wall 1019.
1097	Brick wall 1.07m long and 0.12m wide, visible to one course deep. Aligned N-S. Soft light yellowish grey lime mortar in a stretcher bond. Butts 1019.
1098	Stone footing 1.3m long and 0.4m wide, visible to one course deep. Aligned N-S, on eastern side of Limestone wall 1099. Earth fast limestone fragments and cobbles.
1099	Limestone wall 2.10m long and 0.34m wide, visible to one course deep (0.25m) Aligned N-S. Bonded with soft light yellowish brown sandy mortar, consists of two blocks of limestone. Butted by/associated with stone footing 1098.
1100	Limestone wall fragment, same as 1099.
1101	Build up. Firm to friable, dark to mid-greyish brown clayey silt. Frequent flecks of charcoal and small fragments of decayed wood and organics.

Context Number	Text
1102	Pit cut. Sub circular shape in plan, sharp break of slope at surface, steep sides, break of slope at base and base unknown (extends beyond LOE and heavily truncated).
1103	Timber stake in pit 1102. Rounded shape, diameter 50mm.
1104	Timber stake in pit 1102. Rounded shape, diameter 45mm.
1105	Timber stake in pit 1102. Rounded shape, diameter 10m1m.
1106	Timber stake in pit 1102. Rounded shape, diameter 60mm.
1107	Timber stake in pit 1102. Rectangular shape, dimensions 50mm x 50mm.
1108	Timber stake in pit 1102. Rounded shape, diameter 130mm.
1109	Timber stake in pit 1102. Rounded shape, diameter 60mm.
1110	Timber stake in pit 1102. Rounded shape, diameter 150mm.
1111	Timber stake in pit 1102. Rounded shape, diameter 30mm.
1112	Timber stake in pit 1102. Rounded shape, diameter 60mm.
1113	Timber stake in pit 1102. Rounded shape, diameter 70mm.
1114	Timber stake in pit 1102. Rounded shape, diameter 55mm.
1115	Timber stake in pit 1102. Rounded shape, diameter 40mm.
1116	Timber stake in pit 1102. Rounded shape, diameter 26mm.
1117	Timber stake in pit 1102. Rounded shape, diameter 30mm.
1118	Pit fill. Friable mid orangey brown silty clay with sandy laminations. Frequent charcoal flecks. Moderate small stones.
1119	Stone wall 0.57m long, 0.31m wide and 0.15m deep. Aligned E-W. Bonded with friable light white lime mortar with occasional charcoal flecks. Consists of three separate blocks.
1120	Pit cut. Sub angular shape in plan, roughly aligned E-W. Gradual break of slope at top. Moderate sloping edges. Gradual break of slope at base. Concave/slight irregular base. Dimensions 0.86m x 0.46m x 0.15m.
1121	Pit fill. Friable, mid brown, silt. Occasional grey clay lenses, pebbles and wood fragments.
1122	Pit cut. Sub square shape in plan, with slightly rounded edges. Sharp break of slope at top. Steep/vertical edges. Break of slope at base and base unknown (beyond LOE). Dimensions: 2m x 1.54m x 0.84m.
1123	Pit fill. Friable, dark brown, slightly clayey gritty silt. Occasional decayed organic material.
1124	Pit cut. Sub circular in plan. Sharp break of slope at top. Steep sides, in areas almost vertical. Break of slope at base and base unknown (beyond LOE). Dimensions 3m x 1.3m x 0.3m.
1125	Pit fill. Firm, light mid greenish blue, silty clay with laminations of sand. Occasional fragments of wood, twigs and matted grassy organics.
1126	Heavily truncated possible pit cut. Contains 1118.
1127	Linear/pit cut, aligned NE-SW. 1.99m long x 0.66m wide. Not fully excavated, depth and description not known. Contains 1128.
1128	Linear/pit fill. Soft dark greyish brown silty clay. Moderate lenses of charcoal and ash, decayed organic matter. Occasional small limestone fragments, flecks of CBM and flecks of mortar.
1129	Pit cut. Sub circular shape in plan. 1.88m wide, not fully excavated. Contains 1130.
1130	Pit fill. Soft dark greyish reddish brown silty clay. Frequent decayed organics, especially wood fragments. Moderate charcoal flecks. Occasional flecks of oyster shell, CBM and small stones.
1131	Pit cut. Sub square shape in plan. Aligned E-W. 0.75m long, 0.7m wide, depth unknown. Not fully excavated. Contains 1132.

Context Number	Text
1132	Pit fill. Soft dark greyish reddish brown silty clay. Occasional flecks of charcoal, mortar, CBM and shell, lenses of ash, decayed organic matter and small stones.
1133	Pit cut. Sub circular shape in plan, 2.15m diameter, not excavated. Contains 1134.
1134	Pit fill. Soft dark greyish reddish brown silty clay. Moderate decayed organic matter and flecks of charcoal. Occasional flecks of CBM, oyster shell and small stones.
1135	Pit fill. Firm to friable dark brown silt. Frequent small to medium stones and decayed organic matter especially wood. Moderate flecks to small fragments of oyster shell and pebbles.
1136	Pit fill. Soft dark greyish brown silty clay. Moderate cobbles and decayed organic matter, especially wood. Occasional flecks of mortar, CBM, charcoal and oyster shell.
1137	Pit fill. Soft dark greyish brown silty clay. Moderate cobbles and decayed organic matter, especially wood. Occasional flecks of mortar, CBM, charcoal and oyster shell.
1138	Friable to firm mid to dark brown grey silty clay with patches of gravel. Moderate large limestone fragments, occasional wood and shell fragments. Numerous roundwood posts visible but not recorded in detail - probably pit linings and/or fence lines.
1139	Pit fill. Friable dark brownish grey silty sandy clay. Frequent charcoal flecks.
1140	Timber stake within deposit 1101. Rounded shape, diameter 60mm.
1141	Timber stake within deposit 1101. Rounded shape, diameter 110mm.
1142	Timber stake within deposit 1101. Rounded shape, diameter 84mm.
1143	Timber stake within deposit 1101. Rounded shape, diameter 60mm.
1144	Timber stake within deposit 1101. Rounded shape, diameter 60mm.
1145	Pit lining. Firm mid to dark grey clay. Lining in pit 1124.
1146	Pit fill. Firm to friable dark greyish brown clayey silt with dark grey, yellowish grey and greenish grey laminations. Frequent decayed organic matter, small stones and flecks of charcoal.
1147	Pit fill. Firm to friable dark greyish brown clayey silt. Frequent decayed organic matter, stones and charcoal. Very mixed deposit.
1148	Foundation cut. Linear shape in plan aligned E-W. Not excavated, profile and extent unknown. Contains 1149.
1149	Foundation backfill. Firm to friable dark grey silty sand. Frequent gravel inclusions.
1150	Brick and stone wall, 3m long and 0.5m wide, visible for one course deep. Aligned E-W. Bonded with pale yellow lime mortar. Heavily disturbed.
1151	Timber fragment. Laid flat at east end of site, 1m long and 0.1m wide. Associated with timber fragment 1152.
1152	Timber fragment. Laid flat at east end of site, 1m long and 0.1m wide. Associated with timber fragment 1151.
1153	Gravel rich deposit. Loose mid greyish brown silty sandy gravel.
1154	Possible wicker fencing fragment 0.5m in length. The fragment has a diameter of 0.16m, as well as some small stake pieces collected with it with diameters of 5mm.
1155	Timber fragment. Large timber fragment/plank in pit 1122, approximately 1.3m x 0.3m
1156	Timber fragment. Medium timber fragment/plank in pit 1122, approximately 0.62m x 0.2m
1157	General area deposit. Friable to firm, mid to dark brownish grey silty clay with patches of gravel. Occasional wood fragments, flecks of chalk or shell. Moderate larger shaped white stones.
1158	Timber upright within pit 1122. Rounded shape, diameter 70mm.
1159	Timber upright within pit 1122. Rounded shape, diameter 70mm.
1160	Timber upright within pit 1122. Rounded shape, diameter 50mm.

Context Number	Text
1161	Wattle revetment on north side of pit 1122. 1.7m long.
1162	Wattle revetment on west side of pit 1122. Approximately 1.5m long.
1163	Loose timber plank in pit 1122.
1164	Pit fill. Firm dark grey clay with occasional silty lenses.
1165	Pit fill. Loose to friable mottled dark and light brown coarse gritty sandy silt. Frequent decayed organic matter. Moderate pebbles.
1166	Pit fill. Firm dark greyish brown clayey silt. Frequent flecks and small fragments of CBM, decayed organic matter, flecks of shell and lenses of clay.
1167	Pit cut. Oval shape in plan aligned N-S. Sharp break of slope at surface. Steep, nearly vertical sides. Break of slope at base and base not known (beyond LOE). 1.83m long, 0.98m wide, 0.3m deep.
1168	Timber stake within cut 1124. Rounded shape, diameter 114mm.
1169	Construction backfill. Friable dark brownish grey clayey silt. Moderate flecks of mortar. Occasional flecks and small fragments of CBM and flecks of charcoal.
1170	Timber stake within cut 1124. Rounded shape, diameter 56mm.
1171	Pit fill. Firm to friable dark greyish brown clayey silt. Frequent small to large stones, decayed organic matter and small fragments of CBM.
1172	Pit cut. Sub rectangular shape in plan, 2.91m long by 0.97m wide. Contains fill 1171 however was not excavated.
1173	Pit fill. Firm to friable greyish brown and greenish brown clayey silt. Frequent lenses of decayed organic matter within fill. Moderate small stones, cobbles and flecks of shell. Occasional flecks of charcoal.
1174	Pit cut. Sub circular shape in plan, 1.48m long and 0.75m wide. Contains fill 1173 but was not excavated.
1175	Pit fill. Friable dark brown silty clay with lenses of light yellowish brown clay and mid grey clay. Moderate decayed organic matter, small fragments of CBM and small stones.
1176	Pit cut. Sub square shape in plan. Sharp break of slope at surface, vertical sides, break of slope at base and base not known (beyond LOE). 0.6m x 0.59m.
1177	Timber plank within pit 1122. Rectangular shape, dimensions 120mm x 20m.
1178	Wooden post. From the NW edge of large pit 1122. Square shaped, dimensions 160mm x 60mm x 245mm.
1179	Timber post. From the NW edge of large pit 1122. Rounded shape, diameter 135mm.
1180	Timber post. From the SW corner of large pit 1122. Rounded shape, diameter 45mm.
1181	Timber post. From the SW corner of large pit 1122. Rounded shape, diameter 70mm.
1182	Timber post. From the SW edge of large pit 1122. Rounded shape, diameter 58mm.
1183	Timber post. From the N edge of large pit 1124. Rounded shape, diameter 54mm.
1184	Timber n stake. From the N edge of large pit 1124. Rounded shape, diameter 56mm.
1185	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 40mm.
1186	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 55mm.
1187	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 25mm.
1188	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 48mm.
1189	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 34mm.
1190	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 35mm.
1191	Timber stake. From the N edge of large pit 1124. Rounded shape, diameter 70mm.
1192	Timber plank. From the NE corner of large pit 1124. Rounded shape, diameter 89mm.
1193	Timber plank. Runs NE-SW along edge of large pits 1122 and 1124. Rectangular shape dimensions 1.52m long and 80mm wide.

Context Number	Text
1194	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 55mm.
1195	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 45mm.
1196	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, dimensions 250mm x 20mm x 50mm.
1197	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 55mm.
1198	Timber plank. From the edge of large pits 1122 and 1124. Width 50mm.
1199	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 59mm.
1200	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 41mm.
1201	Timber plank. From the edge of large pits 1122 and 1124. Dimensions 240mm x 80mm x 5mm.
1202	Timber stake. From the edge of large pits 1122 and 1124. Rounded shape, diameter 64mm.
1203	Pit cut. Circular shape in plan. Dimensions 0.5m x 0.5m. Contains 1206
1204	Timber stake. Within timber lined drain 1256. No measurements.
1205	Stone object within timber lined drain 1256.
1206	Fill in area of timber stakes (1211-1235). Firm to friable light to mid-yellowish orange with brown mottling gritty sand.
1207	Timber post. From the E edge of large pit 1122. Rounded shape, diameter 70mm.
1208	Timber post. From the NE edge of large pit 1122. Rounded shape, diameter 85mm.
1209	Timber post. From the NE edge of large pit 1122. Square shape, dimensions 300mm x 140mm x 40mm.
1210	Pit fill. Firm to friable mottled dark grey silt and dark brownish grey sandy silt. Moderate large limestone fragments at top.
1211	Timber stake. From pit 1203. Dimensions of 140mm x 75mm.
1212	Timber stake. From pit 1203. Rounded shape, diameter 0.11m.
1213	Timber stake. From pit 1203. Rounded shape, diameter 36mm.
1214	Timber stake. From pit 1203. Dimensions of 499mm x 95mm x 73mm.
1215	Timber stake. From pit 1203. Rounded shape, diameter 34mm.
1216	Timber stake. From pit 1203. Rounded shape, diameter unknown.
1217	Timber stake. From pit 1203. Dimensions 65mm x 20mm.
1218	Timber stake. From pit 1203. Rounded shape, diameter 62mm.
1219	Timber stake. From pit 1203. Rounded shape, diameter 45mm.
1220	Timber stake. From pit 1203. Rounded shape, diameter 72mm.
1221	Timber stake. From pit 1203. Rounded shape, diameter 39mm.
1222	Timber stake. From pit 1203. Rounded shape, diameter 45mm.
1223	Timber stake. From pit 1203. Rounded shape, diameter 55mm.
1224	Timber stake. From pit 1203. Rounded shape, diameter 40mm.
1225	Timber stake. From pit 1203. Rounded shape, diameter 60mm.
1226	Timber stake. From pit 1203. Dimensions 65mm x 37mm.
1227	Timber stake. From pit 1203. Rounded shape, diameter 36mm.
1228	Timber stake. From pit 1203. Rounded shape, diameter 90mm.
1229	Timber stake. From pit 1203. Rounded shape, diameter 40mm.

Context Number	Text
1230	Timber stake. From pit 1203. Rounded shape, diameter 52mm.
1231	Timber stake. From pit 1203. Rounded shape, diameter 45mm.
1232	Timber stake. From pit 1203. Rounded shape, diameter 90mm.
1233	Timber stake. From pit 1203. Rounded shape, diameter 85mm.
1234	Timber stake. From pit 1203. Rounded shape, diameter 52mm.
1235	Timber stake. From pit 1203. Rounded shape, diameter 30mm.
1236	Medieval drain. Contains timber plank with holes (1237).
1237	Timber plank with holes in medieval drain 1236.
1238	Pit fill. Firm with greyish yellowish green and blueish patches at the edge. Rest of deposit is firm dark greyish brown with a greenish tinge in silty clay.
1239	Pit cut. Sub rectangular shape in plan, not excavated.
1240	Pit fill. Firm mottles greyish brown with light greenish greyish yellowish and orangey grey clay, and light yellowish greenish brown burnt sandy silty clay. Frequent lenses of clay, flecks of charcoal and small stones and pebbles.
1241	Pit cut. Sub rectangular shape in plan, not excavated.
1242	C20th clearance cut. 0.6-0.8m deep, visible in section. Probably relates to c. 1950s groundworks for Stonebow and Stonebow House.
1243	Modern kerb stones. Approx. 0.2-0.3m BGL, visible in section.
1244	Modern concrete/rubble bedding visible in section. Friable light greyish white, small to medium limestone and concrete fragments. Frequent small crushed stones and white mortar fragments.
1245	Modern service cuts visible in section.
1246	Levelling/demolition rubble visible in section. Firm to friable, light brownish grey, silty clay. Frequent small to medium sized pebbles, small crushed brick fragments, light orangey brown clay patches. Moderate mortar flecks and fragments.
1247	Service trench backfills. Friable, dark greyish black, silty clay. Frequent animal bone and very organic. Moderate crushed and half brick rubble fragments.
1248	Modern bedding material visible in section. Friable to firm, light brownish grey, silty clay. Frequent crushed stone fragments, mortar fragments.
1249	Cinder levelling visible in section. Friable, dark brownish grey, silty cinder. Occasional small crushed CBM fragments, small flecks of burnt material.
1250	Demolition/levelling rubble visible in section. Firm, light brownish orange silty clay. Frequent small CBM fragments, crushed mortar fragments, small angular stones. Moderate broken half bricks. Occasional charcoal flecks.
1251	Modern paving visible in section. Newly lain paving slabs as part of the 2019 ground works on Stonebow. Approximately 0.8m deep.
1252	Modern pavement bedding. Firm, light grey, concrete. Bedding for newly lain pavement.
1253	Modern pavement bedding. Friable, mid yellow brown, fine sand. Bedding for newly lain pavement.
1254	Build up. Firm to friable dark brownish black sandy silt with mixed organic deposition.
1255	Wall construction cut. 4m long and 0.5m wide aligned N-S. Not excavated.
1256	Cut of timber lined drain. Aligned E-W. Sharp break of slope at surface, moderately steep break of slope on northern side, moderately stepped break of slope on southern side. Sharp break of slope at base, wide U shaped, flat base. 2.8m long, 0.9m wide, 0.4m deep.
1257	Timber pile. Rounded shape, diameter 30mm.
1258	Timber pile. Rounded shape, diameter 25mm.
1259	Timber pile. Rounded shape, diameter 30mm.

Context Number	Text
1260	Timber pile. Rounded shape, diameter 30mm.
1261	Timber pile. Rounded shape, diameter 20mm.
1262	Timber plank within pit cut 1122. No dimensions.
1263	Stakehole cut containing 1028. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.1m. Post removed, not fully excavated, stopped at LOE
1264	Stakehole cut containing 1043. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.1m. Post removed, not fully excavated, stopped at LOE
1265	Stakehole cut containing 1044. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.11m. Post removed, not fully excavated, stopped at LOE
1266	Stakehole cut containing 1045. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 80mm. Post removed, not fully excavated, stopped at LOE
1267	Stakehole cut containing 1048. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 60mm. Post removed, not fully excavated, stopped at LOE
1268	Stakehole cut containing 1103. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 60mm. Post removed, not fully excavated, stopped at LOE
1269	Stakehole cut containing 1104. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 45mm. Post removed, not fully excavated, stopped at LOE
1270	Stakehole cut containing 1105. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.11m. Post removed, not fully excavated, stopped at LOE
1271	Stakehole cut containing 1106. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 60mm. Post removed, not fully excavated, stopped at LOE
1272	Stakehole cut containing 1107. Square shape in plan. Sharp break of slope at top. Vertical sides tapering to a squared point. Dimensions 50mm x 50mm. Post removed, not fully excavated, stopped at LOE
1273	Stakehole cut containing 1108. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.13m. Post removed, not fully excavated, stopped at LOE
1274	Stakehole cut containing 1109. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 60mm. Post removed, not fully excavated, stopped at LOE
1275	Stakehole cut containing 1110. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.15m. Post removed, not fully excavated, stopped at LOE
1276	Stakehole cut containing 1111. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 30mm. Post removed, not fully excavated, stopped at LOE
1277	Stakehole cut containing 1112. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 60mm. Post removed, not fully excavated, stopped at LOE
1278	Stakehole cut containing 1113. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, not fully excavated, stopped at LOE

Context Number	Text
1279	Stakehole cut containing 1114. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 55mm. Post removed, not fully excavated, stopped at LOE
1280	Stakehole cut containing 1115. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 40mm. Post removed, not fully excavated, stopped at LOE
1281	Stakehole cut containing 1116. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 26mm. Post removed, not fully excavated, stopped at LOE
1282	Stakehole cut containing 1117. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 30mm. Post removed, not fully excavated, stopped at LOE
1283	Stakehole cut containing 1158 in pit 1122. Rectangular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1284	Stakehole cut containing 1159 in pit 1122. Rectangular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1285	Stakehole cut containing 1160 in pit 1122. Rectangular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 50mm. Post removed, cut not fully excavated (LOE).
1286	Stakehole cut containing 1181 in pit 1122. Rectangular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1287	Stakehole cut containing 1182 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 58mm. Post removed, cut not fully excavated (LOE).
1288	Stakehole cut containing 1207 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1289	Stakehole cut containing 1209 in pit 1122. Square shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Dimensions 0.3m x 0.14m x 0.04m. Post removed, cut not fully excavated (LOE).
1290	Stakehole cut containing 1168 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 0.114m. Post removed, cut not fully excavated (LOE).
1291	Stakehole cut containing 1170 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 56mm. Post removed, cut not fully excavated (LOE).
1292	Stakehole cut containing 1183 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 54mm. Post removed, cut not fully excavated (LOE).
1293	Stakehole cut containing 1184 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 56mm. Post removed, cut not fully excavated (LOE).
1294	Stakehole cut containing 1185 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 40mm. Post removed, cut not fully excavated (LOE).
1295	Stakehole cut containing 1186 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 55mm. Post removed, cut not fully excavated (LOE).

Context Number	Text
1296	Stakehole cut containing 1187 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 25mm. Post removed, cut not fully excavated (LOE).
1297	Stakehole cut containing 1188 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 48mm. Post removed, cut not fully excavated (LOE).
1298	Stakehole cut containing 1189 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 34mm. Post removed, cut not fully excavated (LOE).
1299	Stakehole cut containing 1190 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 35mm. Post removed, cut not fully excavated (LOE).
1300	Stakehole cut containing 1191 in pit 1122. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a point. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1301	Backfill/packing around timber piles. Compact mid greyish clay. Moderate medium cobbles.
1302	Construction cut contains timber piles. Aligned N-S. Sharp break of slope at surface, sides and base not visible (beyond LOE). Dimensions 3.5m long, 0.8m wide.
1303	Timber pile cut contains 1063. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 95mm. Post removed, cut not fully excavated (LOE).
1304	Timber pile cut contains 1064. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 95mm. Post removed, cut not fully excavated (LOE).
1305	Timber pile cut contains 1065. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.105m. Post removed, cut not fully excavated (LOE).
1306	Timber pile cut contains 1066. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.12m. Post removed, cut not fully excavated (LOE).
1307	Timber pile cut contains 1067. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.175m. Post removed, cut not fully excavated (LOE).
1308	Timber pile cut contains 1068. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.115m. Post removed, cut not fully excavated (LOE).
1309	Timber pile cut contains 1069. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.1m. Post removed, cut not fully excavated (LOE).
1310	Timber pile cut contains 1070. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 90mm. Post removed, cut not fully excavated (LOE).
1311	Timber pile cut contains 1071. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 65mm. Post removed, cut not fully excavated (LOE).
1312	Timber pile cut contains 1072. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 60mm. Post removed, cut not fully excavated (LOE).

Context Number	Text
1313	Timber pile cut contains 1073. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.105m. Post removed, cut not fully excavated (LOE).
1314	Timber pile cut contains 1074. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.115m. Post removed, cut not fully excavated (LOE).
1315	Timber pile cut contains 1075. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 90mm. Post removed, cut not fully excavated (LOE).
1316	Timber pile cut contains 1076. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1317	Timber pile cut contains 1077. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 0.1m. Post removed, cut not fully excavated (LOE).
1318	Timber pile cut contains 1078. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 88mm. Post removed, cut not fully excavated (LOE).
1319	Timber pile cut contains 1079. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 70mm. Post removed, cut not fully excavated (LOE).
1320	Timber pile cut contains 1080. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 30mm. Post removed, cut not fully excavated (LOE).
1321	Medieval soil accumulation. Firm to friable dark brownish black sandy silt with mixed organic deposition. Frequent degraded straw, small fragments of roundwood, twigs and branches, larger timber fragments.
1322	Construction cut. Linear shape in plan, aligned N-S. Cut not excavated (beyond LOE) Contains limestone wall 1099 which is 2.1m long, 0.34m wide and 0.25m deep.
1323	Pit cut. Circular shape in plan, moderate break of slope at surface, shallow sides, gentle break of slope at base, flat base. 1.2m long x 0.7m wide x 0.1m deep. Medieval date.
1324	Pit cut. Sub rectangular shape in plan aligned NE – SW. Moderately sharp break of slope at surface, moderately steep sides, break of slope at base and base not reached (beyond LOE). Same as 1033, truncated by services.
1325	Timber stake in pit 1122. Rounded shape, dimensions 0.24m long 0.1m diameter.
1326	Timber stake in pit 1122. Rounded shape, diameter 0.1m.
1327	Timber pile cut contains 1257. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 30mm. Post removed, cut not fully excavated (LOE).
1328	Timber pile cut contains 1258. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 25mm. Post removed, cut not fully excavated (LOE).
1329	Timber pile cut contains 1259. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 30mm. Post removed, cut not fully excavated (LOE).
1330	Timber pile cut contains 1260. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 30mm. Post removed, cut not fully excavated (LOE).
1331	Timber pile cut contains 1261. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 20mm. Post removed, cut not fully excavated (LOE).

Context Number	Text
1332	Timber pile cut contains 1082. No measurement or sample, not fully excavated (LOE).
1333	Timber pile cut contains 1083. No measurement or sample, not fully excavated (LOE).
1334	Timber pile cut contains 1084. No measurement or sample, not fully excavated (LOE).
1335	Timber pile cut contains 1085. No measurement or sample, not fully excavated (LOE).
1336	Timber pile cut contains 1086. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 94mm. Post removed, cut not fully excavated (LOE).
1337	Timber pile cut contains 1087. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 94mm. Post removed, cut not fully excavated (LOE).
1338	Timber pile cut contains 1088. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 75mm. Post removed, cut not fully excavated (LOE).
1339	Timber pile cut contains 1089. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Diameter 95mm. Post removed, cut not fully excavated (LOE).
1340	Timber pile cut contains 1090. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Dimensions 275mm x 127mm x 125mm. Post removed, cut not fully excavated (LOE).
1341	Timber pile cut contains 1091. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Dimensions 350mm x 155mm x 80mm. Post removed, cut not fully excavated (LOE).
1342	Wall construction cut. Aligned north-east/ south-west. It measures 6.32m wide and from 0.54-0.67m wide.
1343	Firm to friable dark brownish black sandy silt with mixed organic deposition. Frequent fibrous organic matter probably grass or straw, small fragments of roundwood and other fragments of wood.
1344	Timber stakehole cut contains 1180. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Post removed, cut not fully excavated (LOE).
1345	Timber stakehole cut contains 1326. Circular shape in plan. Sharp break of slope at top. Vertical sides tapering to a pointed base. Post removed, cut not fully excavated (LOE).
1346	Friable to firm, mid to dark brownish grey silty clay. Occasional wood and shell fragments.
1347	Friable to firm mid to dark brown grey silty clay. Moderate large limestone fragments, occasional wood and shell fragments. Numerous roundwood posts visible but not recorded in detail - probably pit linings and/or fence lines.
1348	Friable to firm mid to dark brown grey silty clay. Moderate large limestone fragments, occasional wood and shell fragments. Numerous roundwood posts visible but not recorded in detail - probably pit linings and/or fence lines.
1349	Friable to firm, mid to dark brownish grey silty clay. Occasional wood and shell fragments.
1350	Friable to firm, mid to dark brownish grey silty clay. Occasional wood and shell fragments.
1351	Friable to firm mid to dark brown grey silty clay with occasional wood and shell fragments. Numerous roundwood posts visible but not recorded in detail - probably pit lining.
1352	Friable dark brown sandy silt.

Table 2 Context list

APPENDIX 3 – WRITTEN SCHEME OF INVESTIGATION

Site Location:	The Stonebow, Pavement and Fossgate, YorkYO1 9TF
NGR:	SE 6051 5182
Proposal:	Re-surfacing of The Stonebow
Planning ref:	Not Applicable
Prepared for:	City of York Council
Document Number:	2019/21

Version	Produced by		Edited by		Approved by	
	Initials	Date	Initials	Date	Initials	Date
1	KS	08/02/19	IDM	13/02/19	IDM	13/02/19
2	KS/BR	28/02/19	BR	28/02/19	BR	28/02/19

1) SUMMARY

- 1.1 **Error! Reference source not found.** are undertaking road resurfacing works at **Error! Reference source not found.** (**Error! Reference source not found.**). The scheme will include excavations to depths ranging from 100mm-800mm in depth along the three aforementioned roads.
- 1.2 A watching brief is required for these works by the City of York Archaeologist.
- 1.3 This Written Scheme of Investigation (WSI) has been prepared in response to a brief written by CYC. The work will be carried out in accordance with the brief and this WSI.

2) SITE LOCATION & DESCRIPTION

- 2.1 The proposal site is at **Error! Reference source not found.** (Figure WSI). The work will take place in three phases over several weeks along the length of the streets of The Stonebow, Pavement and Fossgate (see Figure WSI for specific work areas).
- 2.2 The Stonebow runs roughly east to west and is bounded to the north-east by Stonebow House, to the south-east by the Hungate development (comprising built up and open land), and to the south-west by more retail units. Towards the western end of Stonebow, where it meets the streets of Pavement, Fossgate and Whip-Ma-Whop-Ma Gate, is a slightly wider paved area and the boundary wall of what remains of the graveyard of St. Crux's church (a Grade II* listed building). Stonebow also runs in close proximity to the additional graveyard of St Crux's located just behind the eastern end of Stonebow House, approximately 20m from the road. The Stonebow continues to the north-east where it becomes Peasholme Green, however this programme of works will not extend past the junction of The Stonebow and Garden Place.
- 2.3 Pavement runs roughly south-west from the junction of Parliament Street, High Ousegate, Coppergate and Piccadilly to the north-east where it meets Whip-Ma-

Whop-Ma Gate, Stonebow and Fossgate. On both sides of the road are retail units, and St. Crux's is just to the north-west where Pavement meets the Whip-Ma-Whop-Ma Gate, Stonebow and Fossgate junction.

- 2.4 Fossgate runs north-west from the junction of Whip-Ma-Whop-Ma Gate, The Stonebow and Pavement, to the south-east where it crosses the river Foss and then meets Merchantgate and Walmgate. Fossgate is bounded on both sides by a range of retail and restaurant units and this scheme of works will run the full length of Fossgate to the south-eastern junction with Merchantgate and Walmgate.

3) DESIGNATIONS & CONSTRAINTS

- 3.1 The site is located within the York Area of Archaeological Importance (AAI) and the York Central Historic Core Conservation Area.
- 3.2 As described in Section 2, there are multiple retail units along the sides of the roads where the work will take place. Many of these retail units are Grade II listed (Historic England) however the works will not have any impact on them. The area of works also passes by the Grade II* listed church of St Crux and associated boundary walls. The works will not impact on the church itself however due to the nature of graveyards and the proximity to other areas of archaeological interest in York, this is still a sensitive area, in particular where the excavations will extend to 800mm below ground level.

4) ARCHAEOLOGICAL INTEREST

- 4.1 As mentioned in Sections 2 and 3, the area of works are in the centre of York. There is a wealth of evidence for past activity in the immediate area from the Roman period onwards. Although it is unlikely that anything of a particularly early date will be encountered during these works due to the limited depth of the interventions, it is possible that archaeological deposition dating from the medieval period onwards may be revealed.
- 4.2 *Roman*
Whilst there is little evidence for prehistoric remains in the area of works, it is within 200m of the Roman fortress and in close proximity to one of the main approach roads (Road 2 from Brough or PETVARIA) into the Roman city (RCHME). There is also a Roman burial ground known to the east of the site uncovered during the Hungate excavations. However the depth of overlaying deposits mean that it is highly unlikely Roman deposits will be encountered during this watching brief.
- 4.3 *Anglian & Anglo-Scandinavian*
Investigations in the surrounding area have proven that remains from this period are substantial and survive at various depths below ground level, often in waterlogged conditions. The previous investigations include the Lloyds bank and Coppergate excavations in the 1970–1980s, and more recently the Hungate development and various watching briefs along Fossgate and Stonebow. The names of streets ending in '-gate' such as Fossgate, Hungate, Saviourgate, Colliergate etc all denote Anglo-Scandinavian origins. In particular on Fossgate, where the original street would have been narrower, there may be survival of the old plot fronts which are mirrored in the 5m wide units visible in the shop fronts on the street today. However as the works along Fossgate will only be disturbing 100–200mm of material below the current street level, it is unlikely any archaeology from this period will be observable.

4.4 *Medieval, Post-medieval and later*

The immediate area continued to be developed into the medieval and post-medieval periods, including the construction of various dwellings and the nearby churches of St Crux and St Saviour's. St Crux and its church yard extended south-east to the river Foss before it was demolished due to instability in 1887 (VCH). The current parish hall was constructed using stonework from this demolition and the land south to south-east of the church was sold to the City of York Corporation, meaning the extent of St Crux's church today is much smaller than it was in the past. The medieval predecessor to The Stonebow was a narrow lane depicted on the 1852 OS map of York and labelled Stonebow Lane, which connected Pavement to Hungate. The first mention of this street was in 1275 as 'Le Staynebowe' and it has been suggested, but not corroborated by evidence, that the name derives from a possible Roman archway that once stood in the area (Raine 1955, 62). At this time a *maison dieu* (house of god), or hospital, for both men and women stood on the north side of the lane. A newspaper report from 1857 records the discovery by workmen of large stones, thought to be remains of the Carmelite Friary, the entrance to which was just below Stonebow Lane (Raine 1955, 62; Brunton Knight 1944). The 1852 OS map shows the lane was bounded by numerous small buildings with probable back yards, alleyways and ancillary buildings to the rear.

The immediate area continued to be developed into the modern day, with more dwellings being constructed. In the 20th century, particularly in the areas of Walmgate and Hungate, a programme of buildings clearance was undertaken before redevelopment began following the Second World War. The Stonebow was constructed in the mid-1950s, and in the process the medieval lane of '*Stainbow*', and any surviving buildings lining this ancient thoroughfare were demolished.

4.5 *Previous investigations*

There is potential for some pre-1770 burials to be present in part of the works area, indeed four articulated burials were found during a watching brief on a cable trench in January 2018 (YAT report 2018/3). The trench ran from Stonebow House to Piccadilly, however the burials were found in the part of the trench running along the paved area of Pavement and Whip-Ma-Whop-Ma Gate. This intervention was to 750mm below ground level and because the skeletons were directly below this level they were left *in-situ*. However as this scheme of works includes putting stone in as part of the resurfacing, if any burials are encountered they will most likely have to be lifted as they will be crushed by the stone if left *in-situ*. See Section 7 for further details on the recording methodology for human remains.

Other recent works in the area suggest archaeology is present at a fairly shallow depth, particularly from the medieval period onwards (YAT Reports 2017/98, 2018/3, 2018/51 to name a few). The area of works where formation depth is from 100–200mm BGL will probably not be deep enough to encounter any archaeological deposits. The area of works where formation depth is 750–800mm BGL may only reveal modern made ground and disturbance from the creation of Stonebow, however more sensitive material may be encountered near the area where Stonebow meets Pavement and Whip-Ma-Whop-Ma-Gate and this is where the most caution should be exercised.

5) GROUNDWORKS TO BE MONITORED

- 5.1 This work will comprise a **continuous** watching brief, on the excavation of all foundations, trenches services and any subsequent groundworks involving excavation. The watching brief may be stepped down to **intermittent monitoring**, depending on the results, and following agreement from the Development Control Archaeologist.

5.2 This WSI has been revised due to the discovery of in situ, well-preserved organic deposits containing structural timbers, leather and organic material during the watching brief YAT has been asked to devise a methodology for appropriately mitigating the damage to such deposits. The approach to be taken is as follows:

- Monitor of area strip down to top of archaeological deposits or structures.
- Rapidly record post-medieval or modern building foundations at the Pavement end of the road so that this area can be handed back to the groundworks team for stoning-up and preparation of services.
- Identify areas of high archaeological potential or importance
- Target excavate trenches in areas of high potential or importance
- Liaise with CYC archaeologists throughout this process and in response to changing archaeological discoveries to ensure appropriate adaptation of this methodology

6) DELAYS TO THE DEVELOPMENT SCHEDULE

- 6.1 All earth-moving machinery must be operated at an appropriate speed to allow the archaeologist to recognise, record and retrieve any archaeological deposits and material.
- 6.2 It is not intended that the archaeological monitoring should unduly delay site works. However, the archaeologist on site should be given the opportunity to observe, clean, assess and, where appropriate hand excavate, sample and record any exposed features and finds. In order to fulfil the requirements of this WSI, it may be necessary to halt the earth-moving activity to enable the archaeology to be recorded properly.
- 6.3 Plant or excavators shall not be operated in the immediate vicinity of archaeological remains until the remains have been recorded and the archaeologist on site has given explicit permission for operations to recommence at that location.

7) RECORDING METHODOLOGY

- 7.1 Archaeological deposits and structures over a large area will need to be recorded given the size of area being stripped for the road re-surfacing. It has been established that a hand-held GPS is unsuitable due to interference from surrounding buildings and/or telecommunications. Planning will instead be undertaken using a combination of free baselines and the use of a total station theodolite (TST) for accurate measurement in relation to surrounding landscape features.
- 7.2 Unique context numbers will only be assigned if artefacts are retrieved, or stratigraphic relationships between archaeological deposits are discernible. In archaeologically 'sterile' areas, soil layers will be described, but no context numbers will be assigned. Where assigned, each context will be described in full on a pro forma context record sheet in accordance with the accepted context record conventions.
- 7.3 Archaeological deposits will be planned at a basic scale of 1:50, with individual features requiring greater detail being planned at a scale of 1:20. Larger scales will be utilised as appropriate. Cross-sections of features will be drawn to a basic scale of 1:10 or 1:20 depending on the size of the feature. All drawings will be related to Ordnance Datum. Where it aids interpretation, structural remains will also be recorded in elevation. All

drawings will be drawn on inert materials. All drawings will adhere to accepted drawing conventions.

- 7.4 Photographs of archaeological deposits and features will be taken. This will include general views of entire features and of details such as sections as considered necessary. All site photography will adhere to accepted photographic record guidelines.
- 7.5 Areas which are inaccessible (e.g. for health and safety reasons) will be recorded as thoroughly as possible within the site constraints. In these instances, recording may be entirely photographic, with sketch drawings only.
- 7.6 All finds will be collected and handled following the guidance set out in the ClfA guidance for archaeological materials. Unstratified material will not be kept unless it is of exceptional intrinsic interest. Material discarded as a consequence of this policy will be described and quantified in the field. Finds of particular interest or fragility will be retrieved as Small Finds, and located on plans. Other finds, finds within the topsoil, and dense/discrete deposits of finds will be collected as Bulk Finds, from discrete contexts, bagged by material type. Any dense/discrete deposits will have their limits defined on the appropriate plan.
- 7.7 All artefacts and ecofacts will be appropriately packaged and stored under optimum conditions, as detailed in the RESCUE/UKIC publication *First Aid for Finds*, and recording systems must be compatible with the recipient museum. All finds that fall within the purview of the Treasure Act (1996) will be reported to HM Coroner according to the procedures outlined in the Act, after discussion with the client and the local authority.
- 7.8 A soil sampling programme will be undertaken for the recovery and identification of charred and waterlogged remains where suitable deposits are identified. The collection and processing of environmental samples will be undertaken in accordance with Historic England guidelines (Campbell, Moffatt and Straker 2011). Environmental and soil specialists will be consulted during the course of the evaluation with regard to the implementation of this sampling programme. Soil samples of approximately 30 litres for flotation (or 100% of the features if less than this volume) will be removed from selected contexts, using a combination of the judgement and systematic methodologies.
- **Judgement sampling** will involve the removal of samples from secure contexts which appear to present either good conditions for preservation (e.g. burning or waterlogging) or which are significant in terms of archaeological interpretation or stratigraphy. (Given the nature of an archaeological watching brief, it is anticipated that the implementation of a systematic sampling methodology will not be possible).
- 7.9 There is little chance of industrial activity being present at this site. However, if industrial activity of any scale is detected, industrial samples and process residues will also be collected. Separate samples (approximately 10ml) will be collected for micro-slugs (hammer-scale and spherical droplets) (Historic England 2015).
- 7.10 Other samples will be taken, as appropriate, in consultation with YAT specialists and the Historic England Regional Science Advisor, as appropriate (e.g. dendrochronology,

soil micromorphology, monolith samples, C14, etc.). Samples will be taken for scientific dating where necessary for the development of subsequent mitigation strategies. Material removed from site will be stored in appropriate controlled environments.

- 7.11 Should human remains be discovered they will be left *in-situ*, covered and protected pending notification of the discovery to the City of York Archaeologists and the submission to the Ministry of Justice of an application for excavation. Exhumation of human remains will take place in compliance with environmental health regulations and only with a valid licence from the Ministry of Justice. An osteoarchaeologist will be available to give advice on site.
- **Disarticulated** human remains will be identified and quantified on site. If trenches are to be immediately backfilled the remains will be left in the ground. If the excavations are to remain open for any length of time disarticulated remains will be removed and later reburied in, or as close as possible to, the location of their discovery.
 - If **articulated** remains are encountered, these will be excavated in accordance with recognised guidelines (see 7.12) and retained for assessment.
 - Any grave goods or coffin furniture will be retained for further assessment.
- 7.12 Where a licence is issued, all human skeletal remains must be properly removed in accordance with the terms of that licence. Where a licence is not issued, the treatment of human remains will be in accordance with the requirements of Civil Law, ClfA Technical Paper 13 (1993) and Historic England guidance (2005).
- 7.13 Human remains will be removed in accordance with the Burial Act 1857 and the Ministry of Justice exhumation licence, and with the guidance of ClfA Technical Paper 13 (1993) and APABE (2017).
- 7.14 Where excavation is in a church or within its precinct, where a Ministry of Justice exhumation licence is not required, permissions will be sought under the Care of Cathedrals Measure 2011 Part 2 (1) (a) (iv), the Cathedrals Fabric Commission for England (CFCE) and cathedral's Fabric Advisory Committee (FAC). The treatment of human remains in these instances will be in accordance with the requirements of ClfA Technical Paper 13 (1993) and Advisory Panel on the Archaeology of Burials in England (APABE) (2017).

8) REPORT & ARCHIVE PREPARATION

- 8.1 Upon completion of the groundworks, a report will be prepared to include the following:
- a) A non-technical summary of the results of the work.
 - b) An introduction which will include the planning reference number, grid reference and dates when the fieldwork took place.
 - c) An account of the methodology and results of the operation, describing structural data, associated finds and environmental data.
 - d) A selection of photographs and drawings, including an overall plan of the site accurately identifying the areas monitored.
 - e) Specialist artefact and environmental reports as necessary.
 - f) Details of archive location and destination (with accession number, where known), together with a catalogue of what is contained in that archive.

- g) A copy of the key OASIS form details
 - h) Copies of the Brief and WSI
 - i) Additional photographic images may be supplied on a CDROM appended to the report
- 8.2 Copies of the report will be submitted to the commissioning body and the HER/SMR (also in PDF format).
- 8.3 The requirements for archive preparation and deposition will be addressed and undertaken in a manner agreed with the recipient museum. In this instance the Yorkshire Museum is recommended and an agreed allowance should be made for the curation and storage of this material.
- 8.4 Provision for the publication of results, as outlined in the Brief, will be made.
- 8.5 The owner of the Intellectual Property Rights (IPR) in the information and documentation arising from the work, would grant a licence to the County Council and the museum accepting the archive to use such documentation for their statutory functions and provide copies to third parties as an incidental to such functions. Under the Environmental Information Regulations (EIR), such documentation is required to be made available to enquirers if it meets the test of public interest. Any information disclosure issues would be resolved between the client and the archaeological contractor before completion of the work. EIR requirements do not affect IPR.

9) HEALTH AND SAFETY

- 9.1 Health and safety issues will take priority over archaeological matters and all archaeologists will comply with relevant Health and Safety Legislation.
- 9.2 A Risk Assessment will be prepared prior to the start of site works.

10) TIMETABLE & STAFFING

- 10.1 The timetable will be agreed with the client.
- 10.2 Specialist staff available for this work are as follows:
- Human Remains - Malin Holst (York Osteoarchaeology Ltd)
 - Palaeoenvironmental remains – PRS Ltd
 - Head of Curatorial Services - Christine McDonnell
 - Finds Researcher - Nicky Rogers
 - Medieval Pottery Researcher - Anne Jenner
 - Finds Officers – Nienke Van Doorn
 - Archaeometallurgy & Industrial Residues – Dr Rod Mackenzie & Dr Roger Doonan
 - Conservation – Ian Panter

11) MONITORING OF ARCHAEOLOGICAL FIELDWORK

- 11.1 As a minimum requirement, Claire MacRae will be given a minimum of one week's notice of work commencing on site, and will be afforded the opportunity to visit the site during and prior to completion of the on-site works so that the general stratigraphy of the site can be assessed. York Archaeological Trust will notify Claire MacRae of any discoveries of archaeological significance so that site visits can be made, as necessary. Any changes to this agreed WSI will only be made in consultation with Claire MacRae.

12) COPYRIGHT

- 12.1 York Archaeological Trust retains the copyright on this document. It has been prepared expressly for **Error! Reference source not found.**, and may not be passed to third parties for use or for the purpose of gathering quotations.

13) KEY REFERENCES

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For current Historic England guidance documents see:

<https://historicengland.org.uk/advice/latest-guidance/>

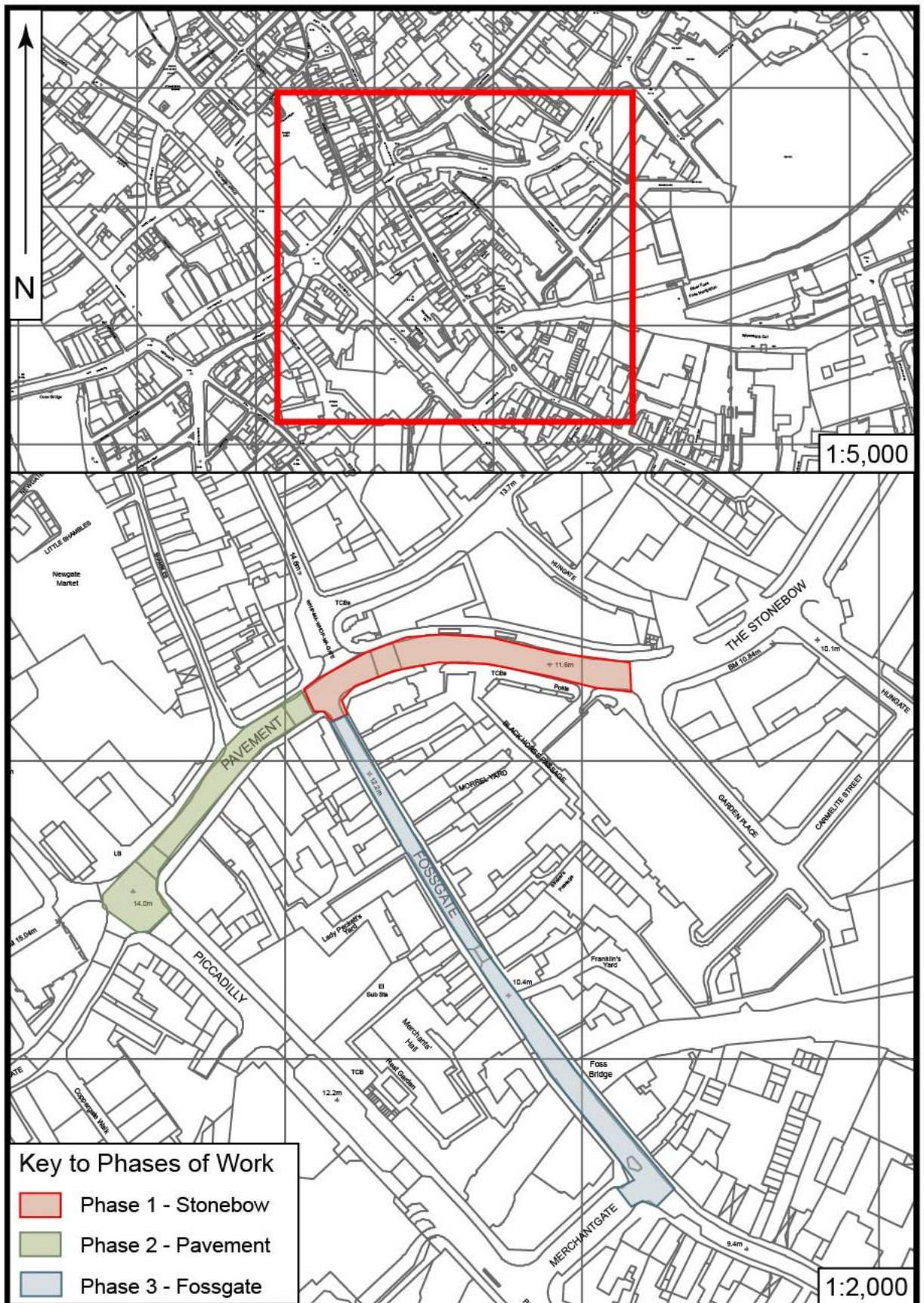


Figure (WSI) Approximate works location including all phases of planned works. Crown copyright reserved. Reproduced with the permission of OS on behalf of HMSO. Licence number 100018343

APPENDIX 4 – ARCHITECTURAL FRAGMENT ASSESSMENT

By J. M. McComish

INTRODUCTION

This assessment relates to twelve architectural fragments (AFs) recovered from archaeological investigations at Stonebow (York Archaeological Trust project code 6126).

METHODOLOGY

The collection was recorded to a standard York Archaeological Trust (YAT) methodology (McComish 2015) whereby the fragments are numbered in a sequence for the site, starting at 1. The numbered AFs are recorded on individual pro-forma record sheets which detail the project code, the context number, AF number, the stone type, a simple keyword identifying the form (such as jamb or voussoir), the surviving dimensions (height, width and thickness), a free text description, a sketch (with any relevant measurements noted on the sketch) and any other relevant information. If rubbings of tool marks or 1:1 tracings of the profile are required, these are done on a separate blank sheet of paper which also details the site code, context and AF number. The data is transferred onto YATs internal computer system (which is backed up daily to prevent data loss) under the project code 6126. In addition, record photographs were taken of AFs 2–12.

DISCUSSION

A single AF was of stone, (AF1) comprising a medieval capital of limestone. This would have originated from a church and dates to 1350–1548.

The remaining AFs (AFs2–12) were all portions of a Victorian mosaic floor. Each fragment comprises a cement backing, the basal portion of which is pale grey, with a 9mm thick upper layer of dark grey cement. The backing ranges from 17-90mm thick dependent upon survival. The mosaic on the upper surface of the concrete comprises ceramic tiles. There was clearly a border panel of parallel stripes adjacent to the wall of the building in question. The border comprised adjacent bands of red (the outermost band), black, blue-green, dark purplish-grey and white tiles (the innermost band) comprising tesserae 19 x 10 x 9mm to 22 x 13 x 9mm in size. There were six rows of red tiles, then two black, four blue-green, three purplish-grey and one of white tesserae. Within the area framed by the border there was a fish-scale design, the area within each scale being infilled with arcs of tesserae 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae in the fish scales are mainly white with occasional red and yellow tesserae. This mosaic flooring is typical of Victorian hotels and public houses and it undoubtedly came from the same building as three vivid green wall tiles mentioned in the appendix relating to CBM.

Catalogue of AFs

AF1 - Capital of Magnesian Limestone, perpendicular in style, 1350–1548. Half octagonal in plan, designed for a half-pier. Eight faces present F1 = top, F2-6 the sides, F7 = the flat back and F8 = the base. Plain abacus above a hollow roll with narrow roll beneath. Clearly reused (within a wall foundation), with a large hole 135 x 35mm in size roughly cut into the top and a small circular drilled hole 20mm in diameter and 145mm deep in the base of the larger hole. Very eroded, it has clearly been outside for some time before being reused. Mortar on F1.

AF 2 (Plate 35) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of three fish scale shapes present, one with 3 rows, one with four rows and one with fourteen rows (within this scale there are 8 red and 8 yellow tesserae). At the edge of the tile are two straight rows, one of white tesserae and one of purplish-grey tesserae, the tesserae being 22 x 13 x 7mm in size. Should be retained long term as a representative sample.

AF 3 (Plate 35) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of one fish scale shape present, one with 14 rows (within this scale there are 8 red and 8 yellow tesserae).



Plate 35 AF2 (left) and AF3 (right)

AF 4 (Plate 36) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of two fish scale shapes present, one with 7 rows (within this is one yellow tessera) and one with four rows (within this scale there are 3 red and one yellow tesserae).

AF 5 (Plate 36) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of two fish scale shapes present, one with 6 rows (within this are 3 red and one yellow tesserae) and one with 12 rows (within this scale there are 4 red and 2 yellow tesserae).



Plate 36 AF4 (left) and AF5 (right)

AF 6 (Plate 37) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of one fish scale shape present, with 3 rows (within this are one red and two yellow tesserae).

AF 7 (Plate 37) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of one fish scale shape present, with 8 rows (within this are 4 red and 3 yellow tesserae).



Plate 37 AF6 (left) and AF7 (right)

AF 8 (Plate 38) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of three fish scale shapes present, one with 3 rows (within which is one red tessera), one with 5 rows (within which are 2 red and 1 yellow tesserae), and one with 13 rows (within this scale there are 4 red and 2 yellow tesserae).

AF 9 (Plate 38) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of two fish scale shapes present, one with 2 rows (within which are two red tesserae) and one with 22 rows (within which are 22 red and 14 yellow tesserae).



Plate 38 AF8 (left) and AF9 (right)

AF 10 (Plate 39) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5 x 10 x 7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of four fish scale shapes present, one with 9 rows (within which are 2 red and two yellow tesserae), one with 15 rows (within which are 8 red and 6 yellow tesserae), one with 12 rows (within which are 7 red and 7 yellow tesserae), and one with 13 rows (within this scale there are 9 red and 8 yellow tesserae).

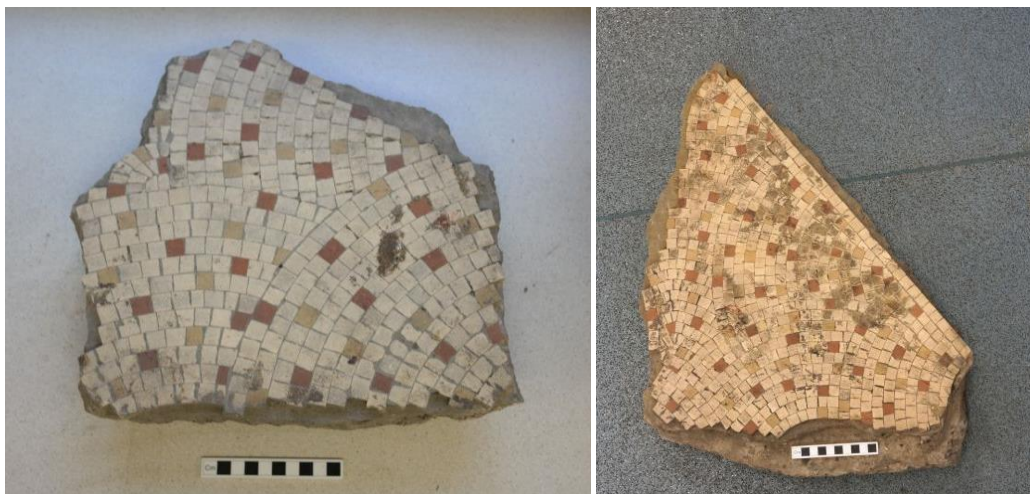


Plate 39 AF10 (left) and AF11 (right)

AF 11 (Plate 39) - A cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae in a fish scale pattern, with the ceramic tesserae ranging from 5x10x7mm to 13 x 13 x 7mm in size. The tesserae are mainly white with occasional red and yellow tesserae. Part of six fish scale shapes present, one with 9 rows (within which are 5 red and 3 yellow tesserae), one with 21 rows (within which are 8 red and 8 yellow tesserae), one

with 4 rows (within which are 1 red and 1 yellow tesserae), one with 17 rows (within which are 15 red and 610 yellow tesserae), one with 11 rows (within which are 10 red and 10 yellow tesserae), and one with 10 rows (within this there are 8 red and 6 yellow tesserae). There is an edging of a band of white tesserae. Should be retained as a representative sample.

AF12 (Plate 40) - cement backing of pale grey with a 9mm thick upper layer of dark grey cement. Above this are tesserae comprising adjacent bands of red (the outermost band), black, blue-green, dark purplish-grey and white tiles (the innermost band) comprising tesserae 19 x 10 x 9mm to 22 x 13 x 9mm in size. There were six rows of red tiles, then two black, four blue-green, three purplish-grey and two white. Adjacent to this border is a small area of tesserae in a fish scale pattern of white tesserae with an occasional red or yellow tessera. Part of two fish scale shapes present, one with 4 rows (within which are 1 red and 1 yellow tesserae) and one with 1 row (within which is a yellow tessera). Should be retained as it is the only example of the border area of a mosaic floor.

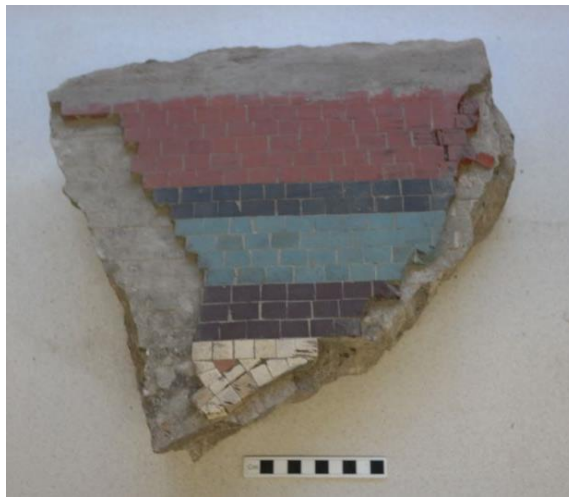


Plate 40 AF12

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

The AFs have little potential for further research. If a publication is envisaged, the AF assessment text could be adapted to form a publication report. Detailed hand-drawn illustrations of AF 1 would be necessary to accompany such a text. In addition, photographs of AFs 2 and 11–12 would be required.

AFs 1–12 are of sufficient quality that they could be used in museum displays.

RECOMMENDATIONS FOR RETENTION/DISCARD

All of the AFs have been retained for now. It is recommended that AF1 is retained long-term as it is a good example of a capital. Three of the mosaic floor fragments AFs 2 and 11–12 should be retained long terms as a representative sample of the flooring.

AFs 3–10 could be discarded (with the Client's permission) or used for display/teaching purposes within YAT.

APPENDIX 5 – STONE ROOFING AND FLOOR TILE ASSESSMENT

By J. M. McComish

INTRODUCTION

This assessment relates to 770g of stone roofing tiles recovered from the archaeological watching brief at Stonebow (York Archaeological Trust project code 6126).

METHODOLOGY

The stone roof and floor tiles are recorded to a standard YAT methodology (McComish 2017) whereby each sherd is individually recorded on a pro-forma sheet which details the project code, the context number, the weight in grams, the stone type, the surviving complete dimensions (length, width, thickness) and any other relevant information (e.g. peg-hole size). A question mark is placed after the form name if the identification is uncertain, for example 'stone peg?'. The data is stored on YATs internal computer system (which is backed up daily to prevent data loss) under the project code 6126.

DISCUSSION

Four fragments of micaceous sandstone were present which ranged from 11–29mm in thickness (no other dimensions survived). The thicknesses are suggestive of roof tile, though no actual peg-holes survived to confirm this identification. The fragments were from contexts 1025, 1125 and 1157. Micaceous sandstone roof flags were widely used in Roman York, being sourced from the Elland area near Leeds (Buckland 1976, 36). The use of this stone for roofing became increasingly common in York from the late 2nd century onwards (McComish 2012, 256–8), and some idea of the scale of production is indicated by the widespread nature of such finds, with roofing flags of this type being recovered from Roman sites at Rudston and Harpham in East Yorkshire, and Hibaldstow in North Lincolnshire (Buckland 1978, 41).

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

This material is typical for York as a whole. No further work is recommended. The material has been discarded.

APPENDIX 6 – CERAMIC BUILDING MATERIAL ASSESSMENT

By J. M. McComish

INTRODUCTION

This assessment relates to 147.005kg of ceramic building material (CBM) recovered from the archaeological investigations at Stonebow (York Archaeological Trust project code 6126). The CBM ranged in date from Roman to modern.

METHODOLOGY

The collection was recorded to a standard YAT methodology (McComish 2017) whereby each sherd is individually recorded on a pro-forma sheet which details the project code, the context number, the weight in grams, the fabric type, the surviving complete dimensions (length, width, thickness, flange height) and any other relevant information (surface marks, glazes, unusual features etc.). A question mark is placed after the form name if the identification is uncertain, for example 'Imbrex?', while the form of non-standardised sherds is listed as 'Other'. The fabric is determined by comparing the sherd to a York fabric reference collection held by York Archaeological Trust (YAT).

RESULTS

The various forms present are summarised by historical period on Table 3, while a summary of the forms present in relation to context is given on Table 4.

Period	Form	No. of sherds	Weight in grams	% of total weight
Roman	Brick	21	4640	3.16
	Box flue	2	210	0.14
	Imbrex	3	160	0.11
	Pipe	1	50	0.03
	Tegula	8	650	0.44
Medieval	Brick	14	22900	15.58
	Curved	11	1475	1.00
	Flange	8	2555	1.74
	Other	1	90	0.06
	Peg	4	650	0.44
	Plain	65	6100	4.15
	Plain glazed floor	1	50	0.03
	Ridge	9	1650	1.12
Post-medieval	Brick	22	51750	35.20
Modern	Brick	18	53275	36.24
	Wall tile	3	800	0.54

Table 3 CBM by form in relation to period

Roman

The Roman CBM accounted for 3.88% of the total volume of CBM from the site. The forms present included roof tiles (tegulae and imbrices), box flue and pipe (tubuli), but the majority of the fragments were of indeterminate form (termed Roman brick).

The tegulae at the present site were all partial survivals, being either the flat portion of the tile with the flange broken off, or a portion of a flange. Only two examples had a surviving thickness, which were 22mm and 32mm respectively. No other original dimensions survived. A single fragment had a circular peg hole 7x?mm in size; such holes are occasionally seen on tegulae (Brodrigg 1987, 10–11).

The imbrices at the present site ranged in thickness from 15–19mm (three examples). Two had reduced cores caused by the exclusion of oxygen during firing.

Two sherds of box flue tiles were present. Such tiles generally have two opposing plain sides and two opposing keyed sides. On this site there was one example of a plain side and one example of a keyed side. The keying was combed in a wavy line, the comb being 28mm wide with 4 teeth.

A single sherd of a Roman pipe (tubuli) was present. Such pipes were used to conduct steam generated by hypocausts through walling/vaults.

There were 21 sherds of Roman CBM which were too fragmentary to determine the original form and these are termed Roman brick. These ranged from 19–45mm in thickness. One had smoothing lines parallel to an edge, one had a faint dog's paw print on the upper surface (caused by the animal walking over the tile while it was laid on the ground to dry prior to firing) and two had reduced cores. Several had features relating to use including one with a sooted top and one which was burnt on one edge. One had soot all over including on broken surfaces indicating re-use, and two had mortar on broken surfaces, again indicating re-use.

The Roman CBM was typical for York as a whole in terms of fabrics and dimensions present, with the exception of the pipe which is a relatively rare find.

Medieval

Medieval CBM accounted for 24.13% of the total volume of CBM from the site. The forms present included roofing tiles of late 11th to early 13th century date (curved and flange), roofing tiles of 13–16th-century date (peg, plain and ridge), floor tile of 14–16th-century date (plain glazed) and bricks of 14–16th-century date. There was also one sherd of highly unusual form (termed 'Other' in the recording methodology).

Medieval tiles were made using a similar process to the Roman tiles, i.e. sanded moulds on a sanded workbench, followed by smoothing, then drying to a leather hard stage and finally firing.

Curved and flanged tiles imitate Roman tegulae and imbrices, but are smaller and thinner. The flanged tiles examined ranged from 15–25mm in thickness (8 examples), but no lengths/breadths survived. The flanges were 26–40mm thick (7 examples). The curved tiles were 13–18mm thick (11 examples) but no other dimensions survived. Two flanged tiles and three curved tiles were smoothed lengthways. Curved and flanged tiles have a nail hole placed centrally close to the upper edge of the tile, only one example survived on the material from the present site which was a circular peg hole 6mm in diameter on one of the curved tiles. Five

of the flanged tiles and two curved tiles had reduced cores and one flanged tile had an oxidised core (due to increased oxygen during firing).

Later medieval roofing tiles were flat rectangles which could be fixed to the roof either by a projecting nib which hooked over the laths of the roof (nib tiles) or by a wooden peg or nail (peg tiles). Where the method of fixing is unclear due to the fragmentary nature of the material in question the tiles are termed plain tiles. These tiles were laid in overlapping courses on a roof (as with present day roofs).

The peg tiles examined ranged from 12–16mm in thickness (4 examples), but no other dimensions survived. In the case of York peg-holes were usually square in shape, but circular and diamond shapes are also common. The present site had two square peg-holes and two circular peg-holes that ranged in size from 10–12mm, which is typical for the period. Smoothing lines parallel to the upper edge of the tile were present on one example, while a second sherd had smoothing lines parallel to both edges. Grip marks (where the tile had been lifted while wet) were present on one example which also had a thumb on the upper surface. Three of the peg tile sherds had reduced cores.

The plain tiles examined ranged from 10-20mm in thickness (63 examples), a single breadth survived at 210mm, but no lengths survived. Smoothing lines parallel to the edge of the tile were present on 13 examples, while a further example had smoothing lines parallel to both edges. One sherd had indented borders; the mould having been used to tamp down the edges of the tile after it had been removed from the mould. One sherd was glazed with dark green glaze on the upper surface; small numbers of glazed sherds are often found in medieval deposits within York. Ten of the plain tile sherds had reduced cores, and two sherds were overfired which had caused the tile to blow.

The ridge tiles at the present site ranged from 14–23mm in thickness, but no other dimensions survived. Two were smoothed parallel to the long edge, three were glazed (one with clear glaze and two with olive green glaze) and five had reduced cores.

Medieval floor tiles have knife cut edges, which taper from top to base, so that the tiles could be laid edge to edge with no mortar visible between the tiles (as opposed to the modern preference for clear lines of grouting to be visible between tiles). A single sherd of plain glazed floor tile present which range in date from the 14th–16th century (Stopford 2005, 213) which was 21mm thick (no other dimensions survived). Floors made of such tiles were usually of two colours laid in a chequerboard pattern, the colours being cream and dark green or brown/black.

The medieval bricks were 31–53mm in thickness (14 examples), 117–137mm in breadth (14 examples) and 250–283mm in length (3 examples) with a fourth brick being in excess of 270mm long. Medieval bricks were made in sanded moulds resulting in a sanded base and edges. The coarseness of the sand used could vary, but in the case of the present site all were finely sanded. One brick had smoothing lines on the upper surface parallel to the stretcher and indented borders were present on two sherds.

A single highly unusual sherd was present. This would originally have been square in shape, but only part of one side survived. This side had knife trimmed chamfer along the edge on upper surface, and was pierced by to 6mm diameter holes at the junction of the flat and chamfered portions. There was olive green glaze on flat portion of upper surface and the tile was reduced

below the glaze. The function of this piece is uncertain, but a couple of other examples of similar tiles from York have been seen by the present author.

The medieval CBM was in sizes and fabrics typical for York as a whole in terms of fabrics and dimensions, with the exception of the sherd termed 'Other' which is highly unusual.

Post-Medieval

The post-medieval CBM accounted for 35.2% of the total volume of CBM from the site and comprised bricks of 16th–18th century date.

The post-medieval bricks were 43–61mm in thickness (22 examples), 106–123mm in breadth (18 examples) and 226–242mm in length (11 examples). Bricks of this date were made in wetted moulds, a technique termed slop-moulding. Two of the brick have a turning mark on the base. Four had reduced cores. Two of the bricks from context 1035 were mortared together at the time of assessment and it was clear these were from a wall which was originally at least two bricks wide.

The post-medieval CBM was in sizes and fabrics typical for York as a whole in terms of fabrics and dimensions, with the exception of one brick which was a couple of millimetres longer than the norm.

Modern

The modern CBM accounted for 36.78% of the total volume of CBM from the site. The forms present included hand-made bricks of mid-18th to mid-19th century date, machine-made bricks of early-19th century or later date and machine-made wall tiles of early-19th century or later date.

The mid-18th to mid-19th bricks were made in the same way as post-medieval bricks, i.e. slop moulding, they were, however, larger. This was as a response to the Brick Taxes of 1784–1850 which were initially levied per 1000 bricks, encouraging an increase in brick size to avoid the tax (Brunskill 1997, 38). In 1803 as a response to the increased size of bricks the tax was altered to be double duty on bricks more than 150cu inches in volume, which curbed the growth in the size of bricks (ibid., 38). The examples from the present site were 215–242mm long (8 examples), 101–125mm wide (14 examples) and 63–87mm thick (15 examples). Two sherds had turning marks on the base. Two had rain marks on the upper surface resultant from the bricks being laid on the ground to dry prior to firing. Four had reduced cores.

Machines for the mass production of pressed bricks were invented in the mid-19th century (Brunskill 1997, 25). Such bricks could have frogs (indentations in one or both beds) which made the central portion of the brick thinner; this reduced the volume of material required and reduced firing times and it also made the brick lighter which was a great benefit to bricklayers (ibid., 25). Pressed bricks could be perforated, again to reduce the volume of clay needed and to reduce firing times. Bricks could also be pressed several times to achieve the required density. Machine made bricks often bear a manufacturer's stamp. The following examples were recovered from the present site

There were three machine pressed bricks at the site, two of which were identical. These two had frogs on both beds with the upper frog carrying the makers stamp C CASTLEFORD. This relates to the Castleford Brick Company which was in production from 1897–1912 (Old Bricks

website). The third brick was a bullnose brick perforated by 21 firing holes 15mm in diameter in a grid pattern of 7 x 3 rows.

The machine-made wall tiles from had a white fabric vivid green glaze on top and sides. Two sherds were stuck to exceptionally strong cement on the back from which they could not be separated. The third sherd had two keying lines 7mm wide and 12mm apart on the back. Between the keying lines was lettering [CRAVE] 5mm high. Below are the letters [NNILL & CO] 5mm high. The centre of the back of the tile had two concentric circles stamped in. Vivid tiles of this type are typical of Victorian architecture, such as detailing on tiled rooms within hotels and public houses.

The post-medieval CBM was in sizes and fabrics typical for York as a whole in terms of fabrics and dimensions.

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

The collection of CBM from the site was for the most part typical for periods in question in terms of the forms, fabrics and dimensions present, but it does offer some potential for further research into the unusual medieval tile sherd which is rare and of interest. It may also be possible to trace the maker of the wall tiles, though only a partial maker's stamp is present.

If a publication is envisaged for this site, the CBM assessment text could be adapted to form a publication report, though time would be required for some comparative research into the unusual sherd and into the maker's stamp for the Victorian wall tiles. Any illustrations to accompany such a text could be done through the use of photographic images rather than by hand-drawn illustrations, as this would reduce costs. The following sherds would merit photographic illustration in such a publication:

- The unusual medieval sherd
- The Victorian tile (front and reverse)

None of the material was worthy of museum display.

RETENTION/DISCARD

For excavations within the City of York, YAT routinely adopts a record and discard policy, whereby only a representative selection of CBM from each site is retained. This typically means that around 80% of the volume of CBM from any given site is discarded. In the case of this site the bulk of the CBM was typical for York as a whole and in the light of this 4% of the CBM from the present excavations was retained.

Context	Dating	Forms present
Context	Dating	Keywords
303	13-16th	Plain
303	13-16th	Plain, Ridge
1004	16-18th	Post medieval brick
1005	14-16th	Medieval brick
1006	14-16th	Medieval brick

Context	Dating	Forms present
1007	16-18th	Post medieval brick
1011	1850+	Wall Tile
1014	16-18th	Medieval brick, Post medieval brick
1016	16-18th	Medieval brick, Post medieval brick
1017	16-18th	Medieval brick, Post medieval brick
1018	16-18th	Medieval brick, Post medieval brick
1019	16-18th	Post medieval brick
1020	Mid-18 th to mid-19th	Brick, Post medieval brick
1023	16-18th	Medieval brick, Post medieval brick
1024	Mid-18 th to mid-19th	Brick
1025	1-4th	Box Flue, Roman brick, Tegula, Tegula?
1026	Mid-18 th to mid-19th	Brick, Post medieval brick, Roman brick
1031	1-4th	Box Flue, Plain, Roman brick, Tegula
1032	13-16th	Flange, Flange?, Plain
1034	13-16th	Plain, Roman brick
1041	L11th-E13th	Curved, Flange
1046	13-16th	Imbrex, Pipe, Plain, Tegula
1047	13-16th	Plain, Roman brick, Tegula
1052	16-18th	Post medieval brick
1055	Mid-18 th to mid-19th	Brick, Post medieval brick
1056	16-18th	Post medieval brick
1058	1850+	Brick
1059	Mid-18 th to mid-19th	Brick, Post medieval brick
1060	Mid-18 th to mid-19th	Brick
1061	Mid-18 th to mid-19th	Brick
1092	13-16th	Plain
1096	Mid-18 th to mid-19th	Brick
1097	Mid-18 th to mid-19th	Brick
1101	L11th-E13th	Curved?
1121	13-16th	Plain, Roman brick
1125	13-16th	Curved, Flange, Other, Ridge
1135	14-16th	Curved?, Plain glazed floor tile, Plain, Roman brick

Context	Dating	Forms present
1145	1-4th	Tegula
1146	1-4th	Roman brick
1157	14-16th	Curved?, Flange, Imbrex, Medieval brick, Peg, Plain, Roman brick, Ridge
1165	16-18th	Imbrex, Medieval brick, Post medieval brick, Ridge
1166	13-16th	Curved?, Flange, Plain, Roman brick, Ridge, Tegula
1169	13-16th	Plain
1171	13-16th	Peg, Plain
1173	13-16th	Curved, Peg, Plain, Ridge
1175	13-16th	Plain, Roman brick, Tegula

Table 4 CBM in relation to context

APPENDIX 7 – POTTERY ASSESSMENT

By A. Jenner

INTRODUCTION

Five hundred and one sherds of domestic pottery were retrieved from excavations at Stonebow (Table 5). They range in date from the Roman period to the 18th century. Although the majority of the wares are medieval, many contexts are mixed with Roman residual material. This may, in part, be due to the nature of the excavation, as well as the typical disturbed nature of reworked urban deposits.

DISCUSSION

Roman

There are 84 Roman pottery sherds, amounting to 16.77% of the total number of sherds within the assemblage. The Roman sherds are mainly small. Three contexts, 1047, 1132 and 1169 contains nothing but Roman pottery. All the rest of the Roman material is residual as it occurs in contexts with later wares.

The Roman wares include Samian ware cups and bowls and Grey and Black Burnished wares. There is also a small amount of Ebor ware.

The domestic nature of the pottery suggests that it may have been used by the legions residing in the adjacent fort. The sherds may have been accidentally broken and discarded by individuals traversing around the exterior of the fort. This is because there are few joining pieces and most sherds are small and abraded. This fact, along with the lack of mortarium and amphora suggests that these sherds relate to small scale consumption, rather than production of food and drink.

Anglo-Scandinavian

The majority of the Anglo-Scandinavian wares are from Grey wares, including 'd' ware jars. The rim of a large storage jar resembles Thetford and Ipswich types. It has finger indents and bosses around the neck, just above the shoulder. There are also a few Stamford unglazed and York ware jars and a small amount of Torksey type ware.

The presence of these wares points towards contact with Lincolnshire in particular at this time. The source of the York wares and the possible imports is not known at this stage of the post-excavation process.

Medieval unglazed wares

Medieval wares include buff Gritty ware jars with square rims. There is one jar with an everted neck and rounded rim in this fabric. There is some evidence to suggest that this type of Northern Gritty ware, which floods the market from the late-11th-early 13th centuries, was made in the Potterton area (Mainman and Jenner 2013, 1184).

A few sherds of an oxidised Gritty ware with square rims and bifid edges have chalk inclusions in them. The chalk inclusions suggest that they were perhaps made in the Wolds area to the east of York, though no such production centres have been noted. The bifid edge may have acted as a useful groove to help tie on a lid, or suspend the vessel above a heat source.

Foreign wares

Two sherds of Pingsdorf red painted ware were retrieved from 11th century contexts (1025 and 1032). One has two vertical lines of red paint (Context 1032). The other has typical looped finger painted marks on it (Context 1025). They have both been painted by dipping the finger into the paint and smearing it onto the external surface of the vessel.

These Rhenish red painted sherds reflect contact of some sort with what is now modern Germany, where they were made. As such, these sherds must have been from prized vessels, which perhaps cost more to acquire than the more locally produced unglazed wares of the period.

Red painted Pingsdorf sherds have been noted in York, at 16–22 Coppergate (Mainman 1990, 477) and the Lloyds Bank site (Holdsworth 1978, 9), but are rare (Mainman 1990, 478-9). They appear there in Anglo-Scandinavian and medieval contexts, around the 11th century, but may be residual by the 12th century.

They occur slightly more frequently in the early to mid-11th century at New Fresh Wharf in London (Vince and Jenner 1991, 102) for example, though they are far less common than local wares in both locations. Although no exact parallels have been found for the decoration in York, similar looped decoration has been found on two vessels from London (Vince and Jenner 1991, 101, Fig. 2.107, nos 252 and 257).

One scrap of medieval pottery may be part of an Andenne type vessel but is too small to be certain of its origin.

Medieval glazed wares

A few sherds of Stamford glazed ware attest to a continued link with Lincolnshire. Despite this, Stamford type wares were also being made in West Yorkshire (Roberts and Cumberpatch 2009, 45–50).

Splashed wares with patchy glazes occur in oxidised fabrics as well as reduced types. The former may well be of a type produced in Beverley, to the east of York. It is not clear where the reduced Splashed wares were made.

The main medieval fabric type retrieved from excavations at Stonebow is from a highly decorated York Glazed ware jug (Contexts 1121; 1135; 1147). It has a tubular spout and strap handle. The body is decorated with applied strips which probably represent two sets of hunt scenes; one set on either side of the body of the vessel. These include a young stag facing a running hound.

The complete decoration, including stags and hounds together, is unparalleled on other York Glazed tubular spouted jugs.

Stags as decorative motifs

A York Glazed ware jug with an applied stag has been noted within the collections of the Yorkshire Museum (see Jennings, 1992, 39, no 21). It has rather more elaborate antlers, and is on the same vessel as an applied roundel in the form of a brooch.

A closer parallel is that from excavations at Hungate (Mainman and Jenner 2013, 1209, Fig. 473, 4219). This deer has straight antlers and comb stabbed decoration.

A simpler stag motif has been noted on a 'Brandsby' jug (Holdsworth 1978, 160; Mainman and Jenner 2013, 1233, Fig. 497). This latter ware type was in currency in York from the late 13th-early 14th century.

Cruder stag motifs occur on later 16th century Cistercian wares from York (Brears 1971, 33). The decorative motifs on the Stonebow jug must therefore be a precursor of the later wares.

Hounds as decorative motifs

There are a number of sherds from 16–22 Coppergate and Hungate with parts of hounds on them (Mainman and Jenner 2013, 1210). One sherd has part of a similar stag and hound on it (ibid., no. 4221). This was found during excavations at Hungate (SF5284).

Function

This York Glazed vessel was probably produced in the Howardian Hills area (Mainman and Jenner 2013, 1231), perhaps to a specific order from a wealthy resident in York. It may well have sat on the table during feasting and as such would have sent subliminal messages to fellow diners and guests. These wares, frequently in the form of elaborate jugs, are common in York from the late 12th to the early 13th century (ibid.,).

Post-medieval

There are only a few sherds of late Humber ware which are glazed on both surfaces. These are 15th century or later. There is no Cistercian ware or other wares from the 16th through to the 18th/19th century.

Industrial/modern

There is only a very small amount of late post-medieval pottery from excavations at Stonebow. One sherd of English stoneware with a legend on it. This is the base of a bottle or ointment jar.

CONCLUSION

The majority of the sherds retrieved from excavations at Stonebow are medieval, followed by Anglo-Scandinavian wares. Roman wares are less frequent and post medieval wares even less well represented.

The most important vessel is that of the York Glazed tubular spouted jug with applied stag decoration. This is not just because it is the most complete vessel from excavations at Stonebow, but because it is unusual. It is also the vessel which reconstructed, includes the highest number of sherds.

RECOMMENDATIONS

The Stag jug should be drawn, photographed and published. It should be compared with similar vessels and its significance studied in more detail.

There are no further recommendations.

Context	Find	Quantity	Dating	Details
303	BF99	29	LATE 12TH CENTURY	1 Roman Black Burnished jar base; 1 Roman Grey ware rim; 1 Torksey ware; 1 'd' type base with sagging bottom, sooted inside and out; 1 Roman Grey ware; 4 Gritty ware with squared rim, sooted; 7 Stamford unglazed, sooted; 1 Stamford unglazed ware; 1 Buff Gritty ware; 5 Reduced Green Glazed ware with incised lines including rod handle; 1 Splashed Glazed ware, fine, oxidised with patches of soot; 1 Splashed Glazed ware, moderately gritted, fine lightly oxidised with patches of soot; 3 Stamford type ware with splashed glaze including base; 1 Miscellaneous fine hard oxidised ware
1000	BF18 BF75	70	18TH CENTURY	4 Reduced Green Glazed ware, small to large sherds including base; 11 Brandsby ware with fine white fabric including ribbed necked jug with cross bands consisting of 5 incised lines, mottled green glaze; 1 Brandsby type ware money box with incised horizontal bands; 1 Humber strap handle with oxidised surfaces and reduced core and vertical ribs; 1 English Stoneware with grey fabric; 2 Samian ware, small sherds; 1 Porcelain, small sherd, undecorated; 1 English Stoneware jar with grey fabric and light green / brown glaze. Impressed '--T DENN--THORNT--'; 2 Splashed Glazed ware pipkin, coarse, reduced with oxidised surfaces; 3 Splashed Glazed ware, moderately gritted with reduced core and specks of chalk; 1 Splashed Glazed ware pitcher rim, fine fabric and shiny glaze, oxidised surfaces and reduced core; 1 Oxidised Humber type with horizontal incised lines; 1 Moderately gritted reduced ware with green / brown glaze; 1 Splashed Glazed ware, coarse, reduced with oxidised surfaces (similar to pipkin but with suspension glaze inside); 1 hard, lightly reduced ware jug rim with light green suspension glaze, squared rim with horizontal bands; 1 Reduced Humber ware with ribs; 1 Coarsely gritted oxidised ware with smooth external surface; 5 Stamford glazed ware including rim and sooted base sherd; 2 'd' ware, sooted; 4 Stamford Unglazed ware; 9 Roman Grey ware; 17 Gritty ware jars including squared rim with soot on external rim and larger vessel with hooked rim, sooted mainly over rim; 1 Roman fine reduced ware with buff surfaces and traces of dark slip.

Context	Find	Quantity	Dating	Details
1025	BF76	55	13TH CENTURY	1 decorated Samian ware; 14 York Glazed jug with strap handle including central groove and thumb marks at base; 1 kiln waste; 1 Roman jar with flat topped rim; 1 Roman Grey ware pie dish rim; 9 Stamford unglazed ware; 5 Reduced Green Glazed ware type 1 with splashed glaze including strap handle with central groove; 3 Roman Grey ware; 1 Pingsdorf ware; 3 Torksey ware; 7 Gritty ware including squared rims; 1 Splashed Glazed ware with reduced core and buff surfaces; 1 Brandsby ware with incised horizontal lines and mottled glaze; 6 Coarsely gritted Splashed ware, oxidised with sparse red iron ore, chalk and mica inclusions including sagging base (joins); 1 Splashed Glazed fine soapy ware sagging base with sparse chalk inclusions.
1026	BF77	8	13TH CENTURY	1 Brandsby ware jug with streaky green glaze; 1 York ware; 4 'd' type ware, sooted; 1 Stamford unglazed ware rim, sooted; 1 Splashed ware, moderately gritted, oxidised.
1031	BF78	18	11TH / 12TH CENTURY	1 Salt glazed stone ware land drain, 4 Stamford unglazed ware including rim; 1 Samian ware bowl base with internal band of rouletting; 1 Roman Colour Coated ware jar rim; 2 Splashed Glazed ware including base, oxidised with sparse red iron ore, chalk and mica inclusions; 1 Roman pie dish; 1 Roman Grey ware jar rim; 2 Roman Grey ware; 1 'd' ware; 3 Splashed ware, unglazed, fine oxidised, soapy; 1 Roman (?) jar with square rim and groove at rim top with abundant small shell inclusions.
1032	BF79	18	LATE 13TH / EARLY 14TH CENTURY	4 Brandsby ware with mottled green glaze; 1 Purple Glazed ware fine reduced fabric; 1 Roman Crambeck Parchment ware; 1 Roman or Pingsdorf ware with red painted vertical strips (not Crambeck or Nene Valley pers. comm. K. Hartley); 1 Humber ware with glossy green glaze; 2 Gritty ware including square rim with string indent; 1 Reduced Green Glazed ware scrap, 2 York ware type, sooted including base; 1 White Gritty base, sooted; 1 Stamford unglazed ware; 1 fine oxidised unglazed; 2 Grey Gritty ware.
1041	BF19	14	11TH CENTURY	4 Torksey ware; 2 Shelly ware; 3 Stamford unglazed ware; 3 Coarse ware jar including flanged rim, sooted, coarse uneven surfaces; 1 fine Red ware; 1 White Gritty ware, sooted

Context	Find	Quantity	Dating	Details
1046	BF20	39	LATE 11TH / 12TH CENTURY	11 Gritty ware jar including squared rims; 2 Black Burnished ware; 3 Grey ware jar with flat rim; 1 Calcite gritted ware; 1 Samian ware; 2 Developed Stamford ware including one with applied comb stabbed strip; 1 Stamford unglazed ware, heavily sooted; 1 Stamford unglazed ware; 1 Andenne type scrap; 1 Roman with dense grey core and brown surfaces; 1 Ebor white slip ware scrap; 1 Gritty ware; 3 Stamford yellow glazed ware; 4 White Gritty ware; 2 Stamford unglazed ware; 4 Black Burnished type ware.
1047	BF80	1	ROMAN	1 Black Burnished ware jar rim.
1092	BF103	5	LATE 11TH / 12TH CENTURY	1 Splashed ware with reduced core and white external margin with patch of soot; 2 Gritty ware jar with square rim; 1 Splashed ware with lightly reduced core and thick white margins, light green glaze; 1 Stamford ware with splashed yellow glaze
1101	BF81	30	12TH / 13TH CENTURY	7 Ebor ware flagon rim with white slip; 1 Ebor flagon rim; 3 Roman coarse ware jar base, sooted; 1 Splashed ware with fine oxidised fabric and green brown glaze; 1 Grey ware; 2 Black Burnished ware; 1 Grey burnished ware; 1 York ware; 1 Humber type ware finely gritted strap handle with shiny green glaze and three central grooves; 1 Torksey ware socketed bowl' heavily sooted; 1 Samian ware rim; 1 Stamford glazed ware scrap; 2 Gritty ware; 1 Roman White ware; 1 Ebor ware type base with slight foot ring; 4 Roman flat based coarse ware jar with heavy soot; 1 Roman coarse ware jar rim with brown surfaces.
1118	BF82	8	LATE 11TH CENTURY	8 White Gritty ware jar, heavily sooted
1121	BF83	31	LATE 12TH / EARLY 13TH CENTURY	1 reduced Humber ware type with horizontal incised wavy line decoration; 1 Roman White ware rim; 1 Roman Red ware with brown slip; 1 late Brandsby ware type with shiny green glaze; 1 reduced ware with buff surfaces; 4 Gritty ware jar with square rim; 22 York Glazed ware jug, joins C1135.
1123	BF21	6	11TH CENTURY	1 Splashed coarse oxidised ware, 4 'd' type ware, heavily sooted; 1 York ware, heavily sooted.
1125	BF84	4	11TH CENTURY	1 'd' type ware jar, heavily sooted. 1 Early Glazed ware; 1 Torksey type ware; 1 Stamford unglazed ware.
1130	BF22	1	11TH CENTURY	1 'd' type ware, heavily sooted

Context	Find	Quantity	Dating	Details
1132	BF104	1	ROMAN	1 micaceous Grey ware, heavily sooted including over breaks
1135	BF23	20	13TH CENTURY	2 York Glazed ware; 1 Andenne type ware jug neck; 7 York Glazed ware. 10 York Glazed ware (?) jug reconstructed, joins with C1121. DRAW/PHOTO Context includes tile with yellowish green glaze (not included in sherd total)
1136	BF85	1	14TH CENTURY+	1 Reduced Green Glazed ware bung hole from cistern, very abraded.
1145	BF105	1	9TH TO 11TH CENTURY	1 York type ware.
1146	BF24	6	11TH CENTURY	4 Grey gritty ware jar with squared hooked rim; 2 Splashed ware with lightly reduced fabric and green glaze including one with single incised wavy line decoration.
1147	BF25	7	LATE 12TH / EARLY 13TH CENTURY	1 York Glazed ware strap handle with reduced core (joins C 1121); 1 York Glazed ware base, sooted inside; 1 hard Grey Gritty jug with rod handle attached to the external surface and square rim; 1 Splashed ware with fine, oxidised and reduced fabric; 3 spalded Sandy ware, very abraded.
1157	BF87	46	LATE 11TH / 12TH CENTURY	2 Samian ware including rolled rim; 1 Samian ware with moulded decoration including leaves and animal, burnt; 1 Roman Colour Coated ware type 1; Splashed ware with light grey fabric and green brown glaze; 1 Stamford Glazed ware; 5 Gritty ware jar including sagging base; 1 White Gritty ware rim with lid seating, sooted to a line along the rim and over the external surface; 1 Stamford yellow glazed ware; 2 Torksey ware including rim; 6 'd' type grey ware including lid seated rim; 1 Roman Grey ware rim with lid seat; 1 medieval Grey ware Ipswich Thetford type storage jar with long neck, thumb indents and bosses immediately above the shoulder; 1 Samian ware; 4 Gritty ware; 1 Gritty ware with sparse chalk inclusions; 1 Stamford unglazed ware; 3 Stamford Glazed ware; 1 York Glazed ware with applied thumbbed vertical strip and small roundel with incised cross; 1 York ware type; 4 Stamford green glazed ware including rolled rim, handle scar at rim and vertical incised line decoration; 6 'd' ware type jar, sooted; 1 'd' ware type with eroded black slipped surfaces

Context	Find	Quantity	Dating	Details
1165	BF106	37	LATE 12TH / EARLY 13TH CENTURY	19 Gritty ware jar including squared rim with bifid edge, sooted; 2 'd' ware, heavily sooted; 12 White Gritty ware jar; 2 York Glazed ware including jug base; 1 Stamford ware unglazed jar with lid seated rim; 1 Gritty type ware with reduced core, heavily sooted.
1166	BF26	22	LATE 12TH / EARLY 13TH CENTURY	5 Gritty ware jar including squared rims; 1 Gritty ware jar with lightly oxidised fabric, everted neck and rounded rim; 3 York type ware with hard fabric angular grits and bifid rim and a line of soot along the external rim edge only; 1 Roman coarse hard Grey ware rim; 1 Anglo Scandinavian imported ware with bifid rim and one small spot of glaze; 3 York Glazed ware jug with collared rim and incised line decoration; 5 Humber type ware with reduced core and applied stamped vertical strip; 1 'd' type ware jar rim; 1 grey Gritty ware; 1 'd' type ware rim.
1169	BF27	3	LATE ROMAN	3 Roman Grey ware with black burnished surfaces, abraded
1171	BF28	12	13TH CENTURY	1 Samian ware with moulded decoration; 4 Gritty ware jar including heavily sooted base, also including rim with external sooting up to lid seating; 1 Gritty ware jar rim with light sooting up to top of rim; 2 Splashed ware with lightly reduced core, buff white surfaces, green glaze, finely gritted; 1 'd' type ware jar rim; 1 Stamford unglazed type ware; 1 Brandsby ware; 1 Anglo-Scandinavian miscellaneous imported, hard Red ware with sparse rounded chalk and moderate black iron inclusions. Scrap
1173	BF88	1	12TH / 13TH CENTURY	1 Stamford glazed, shiny greenish yellow glaze
1175	BF89	2	12TH / EARLY 13TH CENTURY	1 Splashed glazed ware, fine reduced with oxidised external surface margin; 1 Stamford glazed ware jug with thumbbed lower handle join
1206	BF90	3	LATE 11TH / 12TH CENTURY	2 Coarsely gritted jar with hard red fabric with sparse white chalk inclusions & iron inclusions, square rim joins, sooted externally; 1 Splashed ware with lightly reduced core, buff surfaces, white slip and green glaze
	Total	501		

Table 5 Pottery quantification

APPENDIX 8 – SMALL FINDS ASSESSMENT

By N. S. H. Rogers

INTRODUCTION AND METHODOLOGY

A total of 25 metal and non-metal small finds were assessed for this report (Table 6). All of the iron and copper alloy finds had been X-rayed before the assessment was carried out, and identifications of these metal objects have been made in conjunction with the information provided by the X-rays.

THE FINDS

Iron

Six small finds were of iron, although two finds (SF23, Context 1046 and SF24, Context 1092) proved to be concretions rather than objects. Two finds (SF22, Context 1041 and SF17, Context 1025) both appear to be tanged tools or knives, while (SF13, Context 1146) appears to be a tubular object; all three require conservation investigation to enable identification. Although found unstratified, (SF15, Context 1000) may be a spike from a wool-comb similar to those found at 16–22 Coppergate (Ottaway 1989, 538-540).

Copper Alloy

The only find of copper alloy (SF18, Context 1031) is of uncertain function, comprising an incomplete L-shaped object with iron coatings at each end.

Slag

A fragment of slag was found as part of SF22, Context 1041.

Antler

A well-made decorated object formed from an antler tine, (SF6, Context 1145; Figure 13) is the stand-out object in the assemblage; although its function is unclear, similar objects found on Clifford Street in York and elsewhere have been interpreted as amulets (MacGregor 1985, 108). Both ends of the tine have zoomorphic decoration featuring animal heads and the fields between feature interlace and Z-shaped motifs; these decorative features are similar to those seen on 9th century copper alloy strap-ends. At the broader end there is a perforation on the underside, and the end itself appears to have been hollowed out, indicating that this may be where a thong for suspension could have been attached.

The remaining finds are pieces of antler working debris comprising offcuts from all parts of the antler following cutting up; SF25, Context 302, is a naturally shed burr from which the remainder of the antler has been sawn off, and other parts of the antler including crown, beam and tines are also represented (SF7, Context 1130; SFs8 and 9, Context 1000; SF10, Context 1047; SF11, Context 1031; SF12, Context 1166; part of SF20, Context 1025). Offcuts from the comb-making process were also recovered, comprising offcuts of side plate or tooth plate blanks, and also a tooth plate trimming (SF2, Context 1047; part of SF20, Context 1025).

Bone

An incomplete object, (SF14, Context 1206) is formed from a cattle femoral head with an incompletely cut through perforation with an iron fragment within; this appears to be an

unfinished spindle whorl with the remains of the iron drill bit still left inside, leading to its being discarded.

Glass

An incomplete green glass finger ring (SF3, Context 1000) was found unstratified but is similar to other glass rings found at 16–22 Coppergate and Pavement (Mainman and Rogers 2000, 2585).

Stone

All three stone objects are spindle whorls; (SF1, Context 1000) and (SF5, Context 1166) are both made of black stones, and both appear to be of Walton Rogers Form A (Walton Rogers, 1736–7). SF4, Context 1138, is of whitish-grey stone and has the form of Walton Rogers Type C.

Fired Clay

Found unstratified (SF19, Context 1000) is a tobacco pipe bowl with moulded decoration and a pipe stem fragment of 19th-century date.

Wood

Also found unstratified, (SF21, Context 1000) is a modern turned object, possibly the terminal of an electric light switch.

FURTHER WORK

- Three iron objects require conservation investigation to enable identification: SF13, SF17 and SF22

CONCLUSIONS AND RECOMMENDATIONS

Most of the material in this small assemblage appears to date from the Anglo-Scandinavian period, in particular the antler working debris and decorated tine; the debris indicates comb-working in the area, and may well derive from the same antler working industry seen close by at Hungate, where a very large assemblage of debris pointed to local antler working. The two Form A spindle whorls are from the 9th–11th centuries, the glass ring and the possible wool-comb spike are also likely to date to the same period. Other datable objects comprise the Form C spindle whorl which is medieval, and the tobacco pipe which is 19th century in date.

Much of the assemblage comprises tools and working debris, with at least two tanged iron tools, a possible wool-comb spike and one unfinished and three complete spindle whorls; the only personal objects are the ?amulet, the glass finger ring, and the post medieval tobacco pipe.

This assemblage usefully adds yet more evidence of Anglo-Scandinavian activity in this area of York, and it should be retained for further analysis.

Find	Context	Name	Material
SF1	1000	Spindle Whorl	Stone
SF2	1047	Comb Blank Offcut	Antler
SF3	1000	Finger Ring	Glass
SF4	1138	Spindle Whorl	Stone
SF5	1166	Spindle Whorl	Stone
SF6	1145	Decorated Tine	Antler
SF7	1130	Beam Offcut	Antler
SF8	1000	Offcuts	Antler
SF9	1000	Crown Fragment	Antler
SF10	1047	Beam Offcut	Antler
SF11	1031	Offcuts	Antler
SF12	1166	Tine Offcut	Antler
SF13	1146	Object	Iron
SF14	1206	Spindle Whorl	Bone, Iron
SF15	1000	Spike	Iron
SF16	1092	Unworked Fragment	Wood
SF17	1025	Object	Iron
SF18	1031	Object	Copper Alloy, Iron
SF19	1000	Tobacco Pipe	Fired Clay
SF20	1025	Offcuts	Antler
SF21	1000	Object	Wood, Copper Alloy
SF22	1041	Object, Fragment	Iron, Slag
SF23	1046	Concretion	Iron
SF24	1092	Concretion	Iron
SF25	302	Burr	Antler

Table 6 Small Find quantification

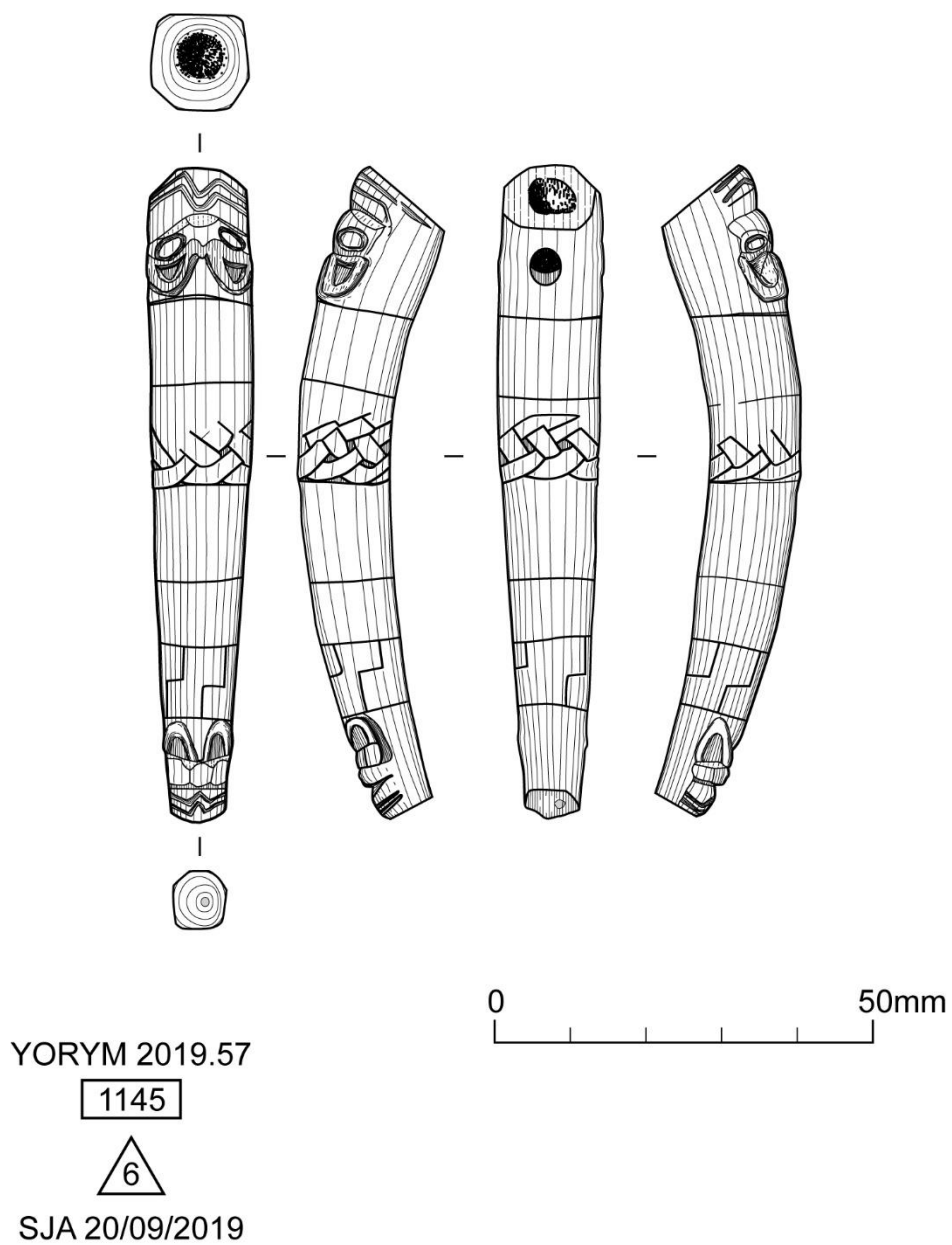


Figure 13 SF6 Decorated antler tine object

APPENDIX 9 – LEATHER ASSESSMENT

By I. Panter

This small assemblage of waterlogged leather comprises fragments of soles and uppers with many pieces exhibiting evidence of re-use, probably for cobbling (Table 7). Stylistically the soles date to between the late 11th-early 13th centuries, whilst the upper fragments are undiagnostic. Where grain surfaces survive the majority of are cattle hide, although sheep/goat offcuts were also recorded.

The assemblage is typical for small-scale excavations in the city and provides further evidence for cobbling activities throughout the medieval period. No further work is proposed for the majority of the finds, however, the large sheet (SF34, Context 1034) should be shown to Q. Mould for her opinion as to its identification.

Find	Material	Context	Description
SF27	Leather	303	Incomplete sole, seat missing. Oval toe, distinct waist, type D2, 12th -13th Century. No grain surface.
SF28	Leather	303	Tertiary offcut, grain surface indistinct.
SF29	Leather	303	Incomplete sole, missing part of toe and seat, e/f seam, distinct narrow waist, rounded seat and oval toe, type D, 12th-13th Centuries. No grain surface. Shoe upper fragment x 1, f/g seam, cut for re-use, sheep/goat. Secondary waste x 1 cattle, scraps x 3
SF30	Leather	1000	Incomplete sole, cut for re-use, e/f seam, oval and pointed toe, no grain surface.
SF31	Leather	1000	Sole fragments x 2, very poor condition, no grain surface, traces of e/f seam
SF32	Leather	1000	Secondary offcut, sheep/goat.
SF33	Leather	1034	Tertiary offcuts x 9, of which 4 are sheep/goat and 2 are cattle. Sole fragment, e/f seam, Upper fragments x 2, one with e/f seam probably a quarter, and the other piece has been cut for re-use, both cattle. Undiagnostic scraps x 5.
SF34	Leather	1034	Large sheet, sub-rectangular, cut for re-use along three sides. Fourth side has e/f butt seam, with partial survival of e/f seam on opposite side. Three elongated perforations, two close together possibly for a fastener. Cattle. Function unknown.
SF35	Leather	1092	Incomplete sole, toe and part waist. Oval pointed toe, type C or type D, spanning 11th-13th Centuries. No grain surface.

Find	Material	Context	Description
SF36	Leather	1121	Incomplete sole, missing toe and part of tread, e/f seam, distinct waist and wide rounded seat, possible type D3, 12-13th century. Upper fragments, both cattle, one with f/g seam and one with two holes for laces or toggle fastener. Rand fragments x 4, Scraps.
SF37	Leather	1121	Clump sole x 1, for the toe area, tunnel stitching, no grain surface. Sole fragment x 1 cut for re-use, e/f seam, no grain.
SF38	Leather	1135	Tertiary offcut, cattle.
SF39	Leather	1165	Fragments, undiagnostic x 2. No grain surface.
SF40	Leather	1166	Incomplete sole missing toe area. Rounded seat, broad waist, e/f seam, no grain surface. Secondary offcut x 1, cattle.
SF41	Leather	1146	Sole, incomplete, missing toe and seat areas, broad waist, e/f seam, no grain surface, but thickness of hide suggests cattle.
SF42	Leather	1146	Clump sole fragment x 1, tunnel stitching, no grain surface, Shoe upper fragments x 2, recut, no seams surviving, both cattle.
SF43	Leather	1165	Incomplete sole, rounded toe section, reused as repair patch, e/f seam and tunnel stitching. Grain surface indicates cattle. Type C1 sole, late 11th-early 13th Century.

Table 7 Leather quantification table

APPENDIX 10 – WOOD AND TIMBER ASSESSMENT

By S. J. Allen

INTRODUCTION

On 4th–8th March 2019 the author paid a visit to view and advise on the recovery of a group of timbers exposed during excavation work at Stonebow in the City of York. Following the requisite sampling and recovery of such timbers as could be exposed by the limited scope of the works, the assemblage of wood and samples were delivered to the curatorial department of York Archaeological Trust and then transferred for temporary storage to the Conservation workshop area at 421 Huntington Road for assessment.

AIMS AND OBJECTIVES

The work carried out has been done in accordance with ClfA Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (ClfA 2014). The work requested was the cleaning, examination, recording and assessment of the objects submitted, with sampling of selected pieces for radiocarbon dating.

PROCEDURES

All of the larger timbers and many of the smaller pieces had been individually wrapped in clear polythene bags, with a label inside the packaging. Smaller pieces were packaged inside grip top finds bags, labelled externally and internally.

Few of the bags had been sealed and some drying had occurred between lifting and assessment. Most of the drying damage had, however, taken place before excavation as the pieces exposed were at the very top of the local water table and had consequently already been damaged by decay and erosion. Some fungal growth was present on a number of the timbers.

Each piece of wood was removed from its packaging, washed under cold running water to remove any remaining burial matrix adhering to the wood surface, then recorded, sampled for wood species identification and returned to its packaging to await a decision on the recommendations made in this report.

Species identification was done via a transmitted light microscope at x40, x100 and x200 magnification as appropriate. All species identifications follow Schweingruber (1982).

CONDITION

The wood had been preserved in waterlogged anaerobic conditions and it appears that these conditions were maintained up until exposure during excavation. Most of the material was in poor condition, with eroded surfaces, developing shrinkage cracks along their length and occasional areas inadvertently damaged during initial exposure. It was evident during the site visit that the formerly waterlogged deposits on the site had been drying out since the creation of Stonebow in the mid-20th century and that this changing burial environment was adversely affecting the preserved timbers in the ground. Owing to the depth constraints imposed upon the excavation, the lower ends of most of the vertically set piles and stakes could not be recovered and several timber lined features could not be fully excavated. Consequently, a sampling strategy was adopted to try and recover as much of the timbers exposed in the

excavation as would provide useful information but those parts of sampled timbers that passed below the limit of excavation were left in situ.

DESCRIPTION

285 individual pieces of wood were recovered or identified on site, resulting in the creation of 137 Structural Timber (ST) numbers. For the most part, these timbers had been allocated a single context number and were given a single ST number, however, some contexts produced more than one individual timber. Where these were distinct stakes or larger pieces of wood it was possible to distinguish between them and record them as separate elements, however, where wood fragments were recovered as bulk finds from deposits and placed in the same bag rather than being individually packaged, it was not possible to undertake any analysis owing to the potential and probable quantification error. This is because the original number of pieces put into such a bag (as opposed to the number of pieces of wood that are now present on unwrapping after several episodes of movement and handling before assessment) cannot be determined, so the danger of duplicate sampling of separate pieces that might originally have been part of one object would introduce a misleading impression of wood use and exploitation.

Each Structural Timber (ST record) has been entered on to YAT's Interactive Archaeological Database (iadb) under project 6126, where the individual recorded details can be found. For this assessment, these have been divided up into sub assemblages according to the stratigraphic set numbers to which each context has been assigned. At the time of writing the dating of these sets is dependent on pottery spot dates and it should be noted that these dates may be subject to revision as further analysis is undertaken.

Summary of assemblages:

Set 1030. Contexts 1092, 1125. (ST 44, 61)

Refuse or Cess pit, 11th–12th century. A charred *Alnus spp.* stake and four *Quercus spp.* fragments.

Set 1032. Contexts 1046, 1103-1106. (ST19, 46-49)

Refuse or Cess pit, 11th–12th century. Two *Quercus spp.* and one *Alnus spp.* roundwood stakes, one *Quercus spp.* quartered stake, 11–22 annual rings, various cross section tips and early spring-spring felled where known. Also twelve *Salix spp.* twig, degraded timber and unidentifiable bark fragments from the fill.

Set 1040. Contexts 1211-1232, 1235, 1237. (ST90, 103-122, 125, 126, 134, 135)

Feature, Late 11th–12th century. Seventeen stakes of which nine are *Quercus spp.* roundwood, 8–30 annual rings, winter-spring felled where known and poorly preserved fragments from a further *Quercus spp.* stake. There are three *Fraxinus excelsior* L. roundwood stakes with 14–30 annual rings, all early spring felled. There is an *Alnus spp.* roundwood with 15 annual rings, early spring felled and an *Alnus spp.* halved fragment. One *Corylus avellana* L. roundwood with 17 annual rings, early spring felled and an *Ilex aquifolium* L. roundwood with 26 annual rings, spring felled.

Also three piles, two of which are *Alnus spp.* roundwood, 14–20 annual rings, winter-spring felled and a reused boxed radial *Quercus spp.* (ST106; Figure 14).

Also two roundwood samples, of which one is *Corylus avellana* L., 17 annual rings, spring felled and one *Quercus* spp, 16 annual rings, spring felled.

Also three fragments of radially faced reused *Quercus* spp. Boards (Figures 15-17).

Set 1041. Contexts 1146, 1155, 1156, 1165 (ST 67, 71, 136, 137)

Infill of pit, 12th–13th century. Two very crude tangentially faced *Quercus* spp. planks/slabs, a radially faced *Quercus* spp. board and a bark chipping.

Set 1033. Contexts 1101, 1140-1144, 1154. (ST 45, 62–66, 68)

Pit, late 12th–13th century, partially excavated. Nine stakes of which five are *Quercus* spp. with four roundwood 17–20 annual rings, winter and early spring felled where known and a boxed radial conversion. Three stakes are *Salix* spp. roundwood 14–17 annual rings, winter felled. One stake is *Alnus* spp. roundwood with 5 annual rings winter felled. Where known, all of the stakes have sub rectangular cross section tips.

Also there are three roundwood fragments and a splinter from a ‘wicker fence’- of which two are *Fraxinus excelsior* L., 6 and 7 annual rings, winter and spring felled and one *Salix* spp. 9 annual rings, winter felled. The splinter is *Quercus* spp.

Set 1029. Context 1166 (ST 72)

Pit, late 12th–13th century. Not excavated. A single *Quercus* spp. axe chipping.

Set 1036. Contexts 1026, 1028, 1029, 1034, 1043–1045 and 1048 (ST 03–07, 16–20)

Fill of Cess pit, Late 13th–14th century. Five *Quercus* spp. roundwood piles 10–28 annual rings present, various cross section tips and spring felled (where known). Also one board fragment of tangentially faced *Quercus* spp. and ten assorted fragments including *Quercus* spp. heartwood chippings and *Corylus avellana* L. roundwood.

Set 1035. Contexts 302, 303, (ST 01, 02)

Medieval soil accumulation. Wood consists of 91 fragments and chippings, including *Quercus* and *Pinus* spp. Casually derived debris incorporated into the burial matrix. No diagnostic features.

Set 1043. Contexts 1035–1042. (ST 10–15 and two not sampled)

Medieval Timber lined drain. Two parallel sides (ST 8 and 9) of *Quercus* spp. roundwood logs with a lid of two radial and one tangentially faced *Quercus* spp. boards (one of latter in 23 non-refitting fragments). A quartered *Quercus* spp. timber fragment, a box quartered *Quercus* spp. stake and *Salix* spp. roundwood fragments also present. Sampled for radiocarbon dating.

Set 1022. Contexts 1063–1079, 1081–1091, 1257–1261. (ST21–43, 127–132 and four not sampled)

Pile wall foundation, mid 15th to early 17th century. Twenty stakes of which thirteen are *Fraxinus excelsior* L. roundwood with between 6–16 annual rings and winter-spring felled where known. Six are *Quercus* spp. including three roundwood, two boxed radial and one boxed heart conversions. The roundwood have between 9 and 15 annual rings, winter-spring felled. There are also twelve piles of which five are *Quercus* spp. with three roundwood between 20 and 36 annual rings, winter to spring felled, two boxed heart and one box halved conversions. One of

the box halved conversions is a reused timber (ST43; Figure 18). Three piles are *Fraxinus excelsior* L. roundwood, with 6–16 annual rings, winter-spring felled. Four of the piles were not sampled. ST 35 sampled for radiocarbon dating.

Set 1031. Contexts 1107–1117. (ST 50–60)

Stake built structure over pit 1102, no date. Nine stakes of which five are *Salix spp.* with four roundwood, 11–12 annual rings, winter or spring felled and sub rectangular cross section tips where known. Four are *Quercus spp.* of which two are roundwood and two quartered, one having six annual rings, winter felled and one has a sub rectangular cross section tip where known.

Also there are two piles, both *Quercus spp.* one of which is box quartered, the other boxed heart conversion.

Set 1042. Contexts 1158–1163, 1177–1182, 1191–1202, 1207–1209, 1262, 1325, 1326. (ST 69, 70, 75–79, 88–102, 133, and seven not sampled)

Refuse or Cess pit, no date, partially excavated. Eighteen stakes of which 10 are *Quercus spp.* with five roundwood, 9–24 annual rings, winter and early spring felled; three quartered and one each of boxed quartered and boxed radial conversion. Five are *Alnus spp.* roundwood, 12–30 annular rings, winter or early spring felled. Two are *Salix spp.* roundwood, 10–11 annual rings, winter and early spring felled. Three stakes were not sampled.

There are four piles of which two are boxed heart, one box halved and one boxed radial conversions. One of the boxed heart conversions (ST 77; Figure 19) is cut from a reused timber.

Also there are four board fragments, one each radially and tangentially faced while two of the boards were not sampled.

Two fragments of wattle were not sampled.

Set 1044. Contexts 1168, 1170, 1183–1190. (ST73, 74, 80–87)

Refuse or cess pit, Undated. Ten stakes of which five are *Quercus spp.* roundwood, 5–12 annual rings, winter-spring felled where known and one *Quercus spp.* radially faced conversion. There is one *Acer campestre* L. roundwood with 17 annual rings winter felled, one *Alnus spp.* roundwood point with a sub rectangular cross section tip, one *Fraxinus excelsior* L. roundwood with 50 annual rings, early spring felled and one *Salix spp.* with 13 annual rings, spring felled.

Also one fragment of radially faced *Quercus spp.* heartwood.

Set 1049. Contexts 1204, 1233, 1234. (ST 123, 124, one not sampled)

Unexcavated soil layer. No date. Three stakes, of which one is *Alnus spp.* roundwood, 19 annual rings, early spring felled, one *Ilex aquifolium* L. roundwood, 21 annual rings, winter felled and one not sampled.

Botanical identification	Common English name
<i>Acer campestre</i> L.	Field Maple
<i>Alnus</i> spp.	Alders, exact species not determinable
<i>Corylus avellana</i> L.	Hazel
<i>Fraxinus excelsior</i> L.	Ash
<i>Ilex aquifolium</i> L.	Holly
<i>Pinus</i> spp.	Pine, insufficiently well preserved for closer identification
<i>Quercus</i> spp.	Oaks, exact species not determinable
<i>Salix</i> spp.	Willow, exact species not determinable

ASSESSMENT

All of the wood recovered is structural in nature or derived from structural woodworking. Remarkably, no wooden portable artefacts were recovered. Stonebow is a recent addition to the city street plan and crosses at least two tenements that formerly faced on to the northern end of Fossgate. The deposits and features recorded relate to the back yards of those tenements, the buildings themselves and their related street frontage appear largely to have lain outside and to the west of the area excavated.

The rear areas of medieval tenements were usually given over to rubbish and cess disposal in pits and the structural timbers are largely related to this type of activity. Preservation of wattle remains this high in the stratigraphic sequence was generally poor. However, the more substantial tops of stakes and piles used to support wattle linings, and around which the rods of the structure would have been woven, were much better preserved. Sections of roundwood were collected, one end cut to a point and then driven into the base of a pit. Horizontal wattle rods would then be woven around these uprights to form a robust lining.

The preparation of points on these uprights was not especially complicated. Facets would be hewn with an axe to create a tip tapering to a sharp point. While a few multi-faceted tips are present, most of those recovered appear to have been sub rectangular in cross section with three or four facets. The level of surface abrasion present has removed most of the tool signature marks and tool mark comparison studies cannot be carried out.

It was noticeable that the range of uprights included some relatively small diameter examples and some relatively larger. An artificial division was made with anything more than 100mm in diameter being classed as a pile and anything smaller being classed as a stake. In functional and woodworking terms, however, this distinction divides what would otherwise be a continuous size spectrum. The predominant wood species chosen are oak and ash, with some alder and willow and very rare examples of holly. At present it is not possible to determine whether there is a preference for any particular species at any given point in time. What is clear though is that wherever a felling season could be identified, this would be during the winter or the first half of the spring. At this time of the year the trees are largely devoid of leaves and it is easier for a woodworker looking for a particular shape of timber to identify them in the tree before they are

hidden and this practice is reflected in the felling season wherever this can be identified throughout the excavated levels of this site.

It must be emphasised though that trees were not being specifically felled to provide raw material for stakes and piles. Most of the raw material appears to have been branch wood, some very slow grown, others very fast grown, all with curving wood grain and several small knots or more substantial side branches. None of this is especially high quality and what we seem to have is the utilisation of branch wood that was unfit for any more important purpose.

Some pieces of more regular timber are present but these invariably show evidence of a former use- they are recycled pieces of timber from a dismantled and/or broken up structure. These include ST106 and ST77 (Figure 15), box converted timbers with redundant peg holes present, which have been crudely hewn to a point at one end. Not enough survives to show what structures these pieces had been removed from, but they demonstrate a willingness to recycle older pieces of timber for new purposes rather than obtain entirely new pieces of wood for the intended structure.

There are remarkably few board or plank fragments in the assemblage, though this is perhaps more a reflection of the type of feature excavated than a genuine absence of boards. Those present are either waste fragments deposited as debris in pit fills or are used for a specific purpose, such as the lid of the crude medieval drain recorded as Set 1043. No sapwood survives on these pieces and none have long enough ring sequences that would allow for dendrochronological dating. Many of these (ST90, Set 1042; ST107 x 2 and ST126, Set 1040) have evidence of a previous use in that all have one or more redundant through holes augured through the face to house pegs for affixing these pieces to others.

The woodworking technology exhibited in the assemblage is somewhat limited by the nature of the excavated features. Axe hewn facets are present on stake and pile points, and on the stumps of trimmed side branches, but no tool signatures have survived. The degree of erosion suffered during burial means that it cannot be determined whether cleft or sawn methods were used to convert the timbers and boards. There are no joints present, only the few augured peg holes present in reused timbers. Sadly, therefore there is nothing diagnostic in the wood assemblage that would allow any of it to be dated to a particular period.

All of the wood species identified are native to the British Isles and there is no evidence that these timbers have been brought in from any great distance. All of the hardwoods could have been found in the same stand of woodland. The possible exception is the *Pinus spp.* fragment (ST 01). Though it cannot definitively be identified, it is most likely that this piece is *Pinus sylvestris L.* Scots Pine. While most pine species found in archaeological contexts predating the sixteenth century can be shown to be imported from Scandinavia or continental Europe, there is increasing evidence to show that small stands of Scots Pine were present in the Yorkshire landscape and were occasionally being exploited from at least the late Iron Age onwards. As a highly eroded fragment from the springing of a side branch from the main trunk, it is likely this piece arrived in this form and is most likely to be debris from the trimming or conversion of raw timber from a roundwood log.

RECOMMENDATIONS

Conservation: The wood surfaces have all suffered varying degrees of degradation and damage whilst buried. The types of timbers present have been well replicated in other assemblages from the city of York. Unless there is an unforeseen requirement to keep pieces from this assemblage it is recommended that all of the wood is discarded once radiocarbon dates have been obtained.

Illustration: 1:10 scale drawings of the reused timbers should be prepared as part of the archive. It may be possible to identify what the parent timbers were from comparison with pieces found in future excavations.

Dating: None of the wood is intrinsically dateable and there is currently nothing to support or refute the pottery spot dates arrived at so far. None of the wood is suitable for dendrochronological dating, having short ring sequences and/or no sapwood or bark edge that would provide a felling date. Samples for radiocarbon dating have been taken for submission from the outer surviving (i.e. most recently formed) annual rings and these should give an indication of the period in which they were felled.

Analysis and publication: Once the recommended illustration of the reused material has been completed, no further recording is necessary for writing up a report and conducting further research the nature of the assemblage. It would be useful to try and identify any species use or felling season patterns among some of the features excavated but this should be deferred to the analysis phase.

Future of the assemblage: As stated earlier, there is no pressing reason for the retention of any part of the assemblage and the wood should be discarded as soon as no longer needed for dating purposes.

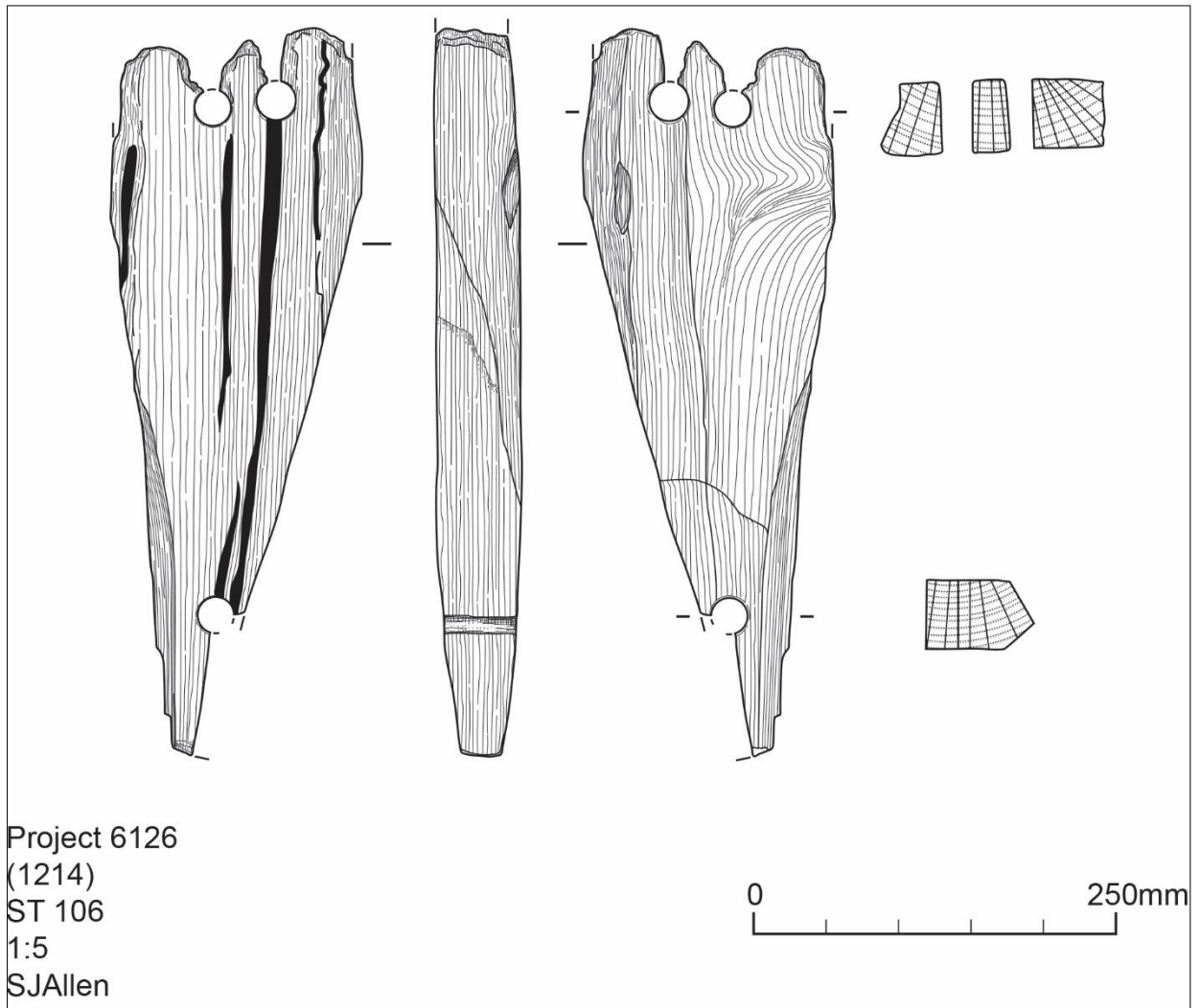


Figure 14 Structural Timber ST106

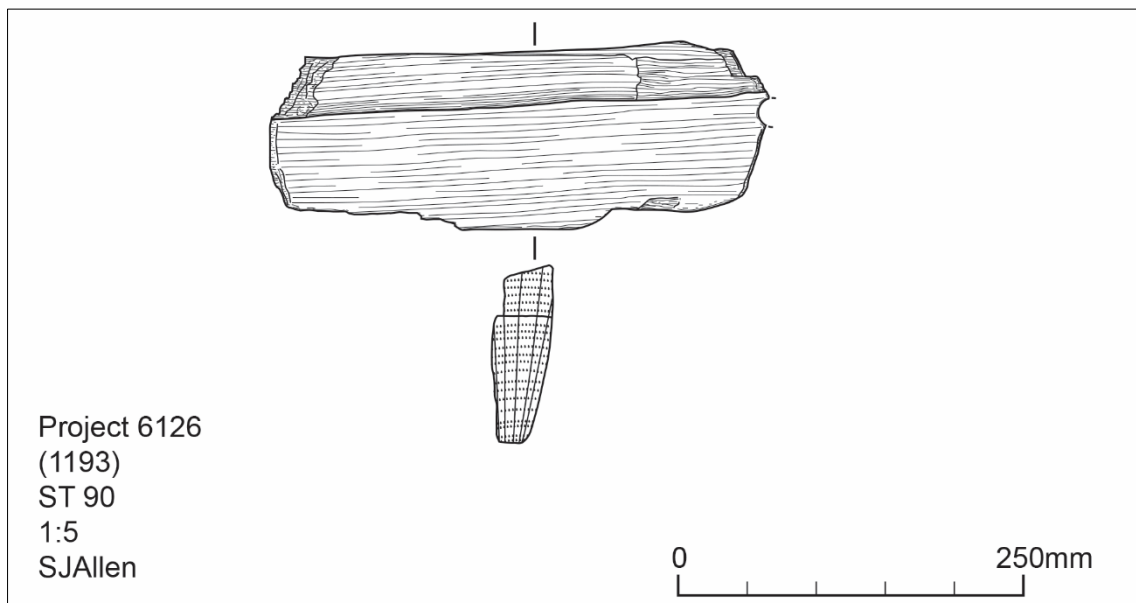


Figure 15 Structural Timber ST90

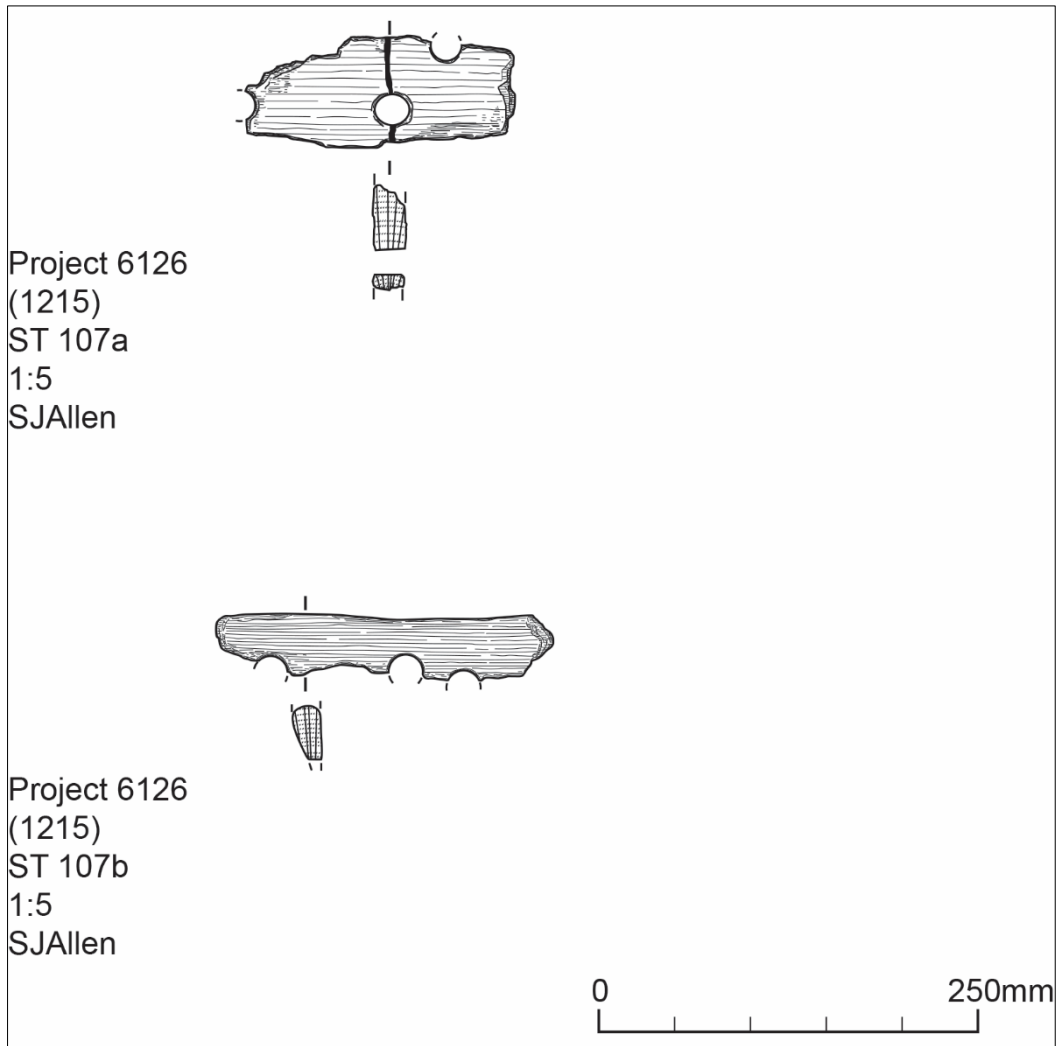


Figure 16 Structural Timbers ST107a and ST107b

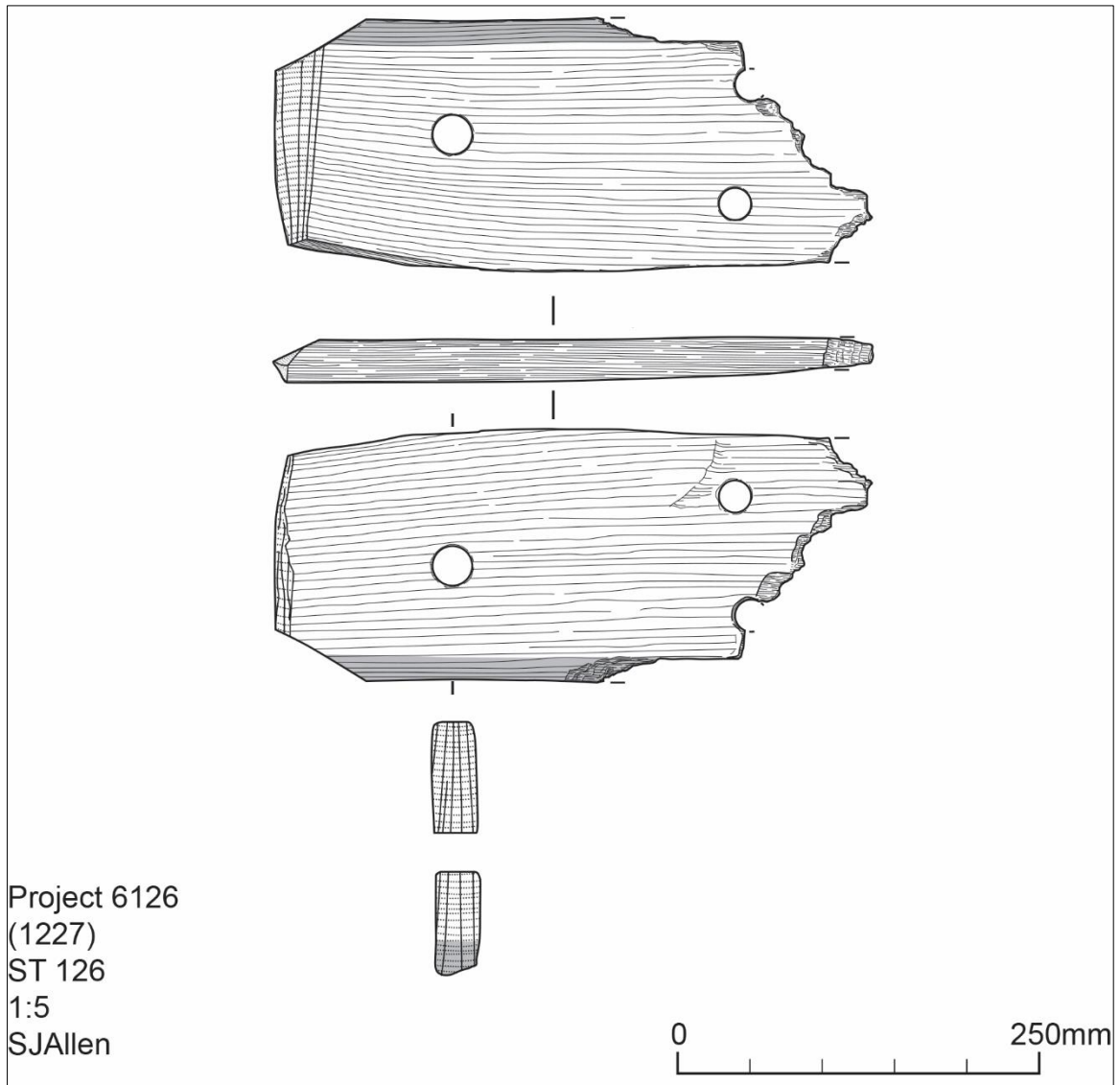


Figure 17 Structural Timber ST126

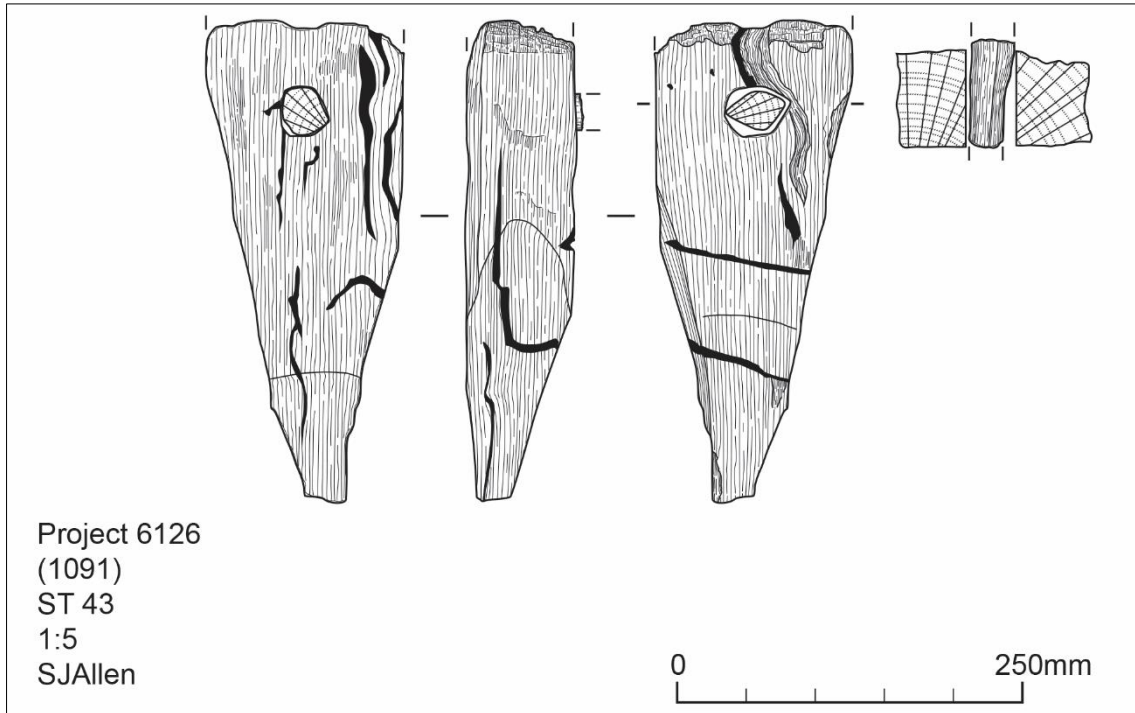


Figure 18 Structural Timber ST43

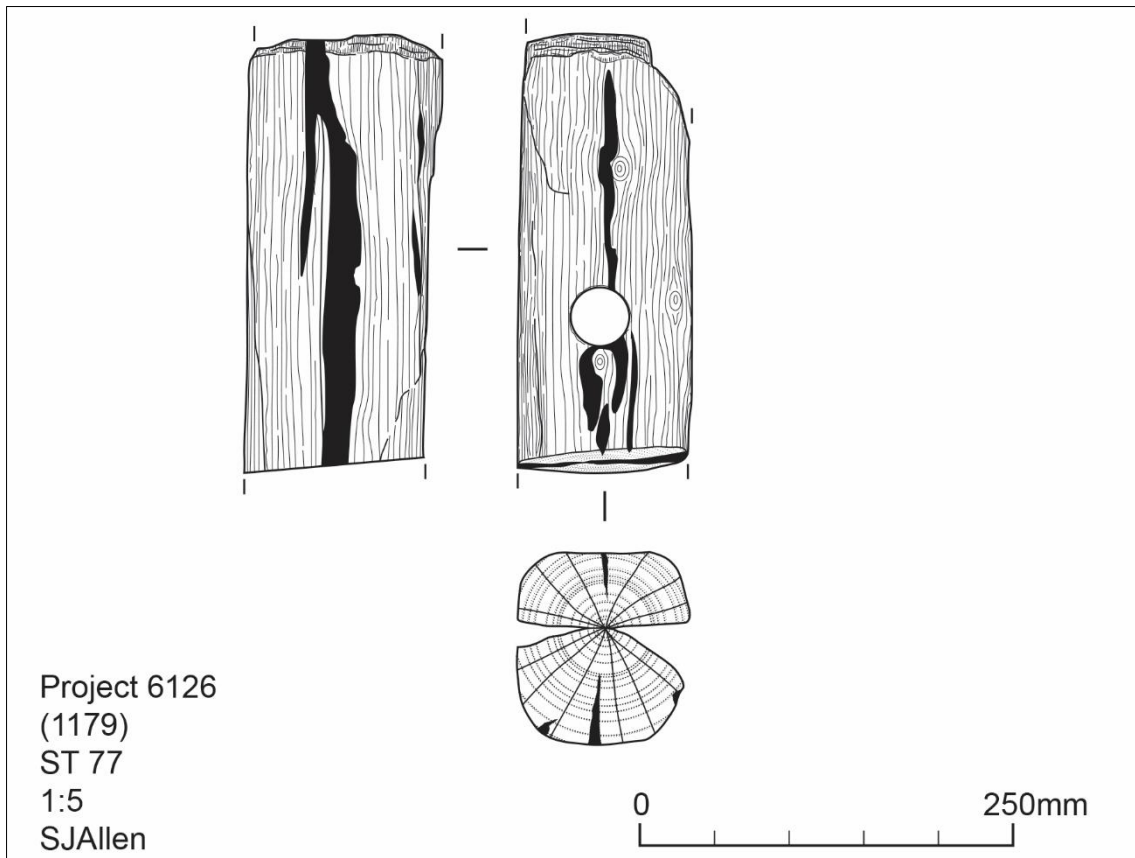


Figure 19 Structural Timber ST77

APPENDIX 11 – CONSERVATION ASSESSMENT

By C. Wilkinson

AIMS AND OBJECTIVE

This report aims to meet the requirements of MAP2 (English Heritage 2001) and MoRPHE (English Heritage 2006) to produce a stable site archive. This has involved X-radiography and an assessment of the condition, stability and packaging of the finds.

The condition of the various classes of material is summarised and indicators of unusual preservation noted. The potential of the assemblage for further analysis and research is discussed, and recommendations made for further investigative conservation and long term storage.

PROCEDURE

Six metallic recorded finds (with the exception of Lead alloy) and five non-metallic finds (recommended for X-ray by the finds department) were X-rayed using standard YAT procedures and equipment. One plates was used and given a reference number in the YAT conservation laboratory series (X9286). The X-ray number was written on each small find bag. Each image on the radiograph was labelled with its small find number. The plates were packaged in archival paper pockets.

All finds were examined under a binocular microscope at X20 magnification. The material identifications were checked and observations made about the condition and stability of the finds, and recorded below.

As part of the assessment phase all wet packed material was brought to dry storage.

For glass this was achieved by solvent drying by immersion in gradually increasing concentrations of acetone (starting with 30% acetone v/v in water, then 60% and finally 100% acetone). The objects were then consolidated with 10% Paraloid B72 (methyl methacrylate co-polymer) w/v in acetone, by immersion after which they were removed, allowed to dry and packaged. Digital images were taken before and after treatment.

The leather finds from this site will be assessed separately.

CONDITION ASSESSMENT SUMMARY

Iron

The five iron small finds were found to be corroded and in overall good condition. Active corrosion in the form of hairline surface cracks was noted on four of the finds, dry storage is essential to avoid further outbreaks of active corrosion. X-radiography showed a majority of the objects to have fairly robust metal cores with some areas of mineralisation towards the edges. BF37 was found to be significantly more mineralised. SF22 was identified as slag or metalworking waste. Mineral preserved organics were found to be present on three of the finds (SF13, SF22 and BF37). These are all thought to be incidental relating to the burial environment rather than the object itself. Spots of vivianite were visible amongst the corrosion products on two of the finds (SF13 and SF15) indicating an anoxic waterlogged burial environment. Store dry below 15%RH.

Copper Alloy

The copper alloy object was composite with iron and found to be in overall good condition with no evidence of active corrosion. Spots of vivianite were visible amongst the corrosion products on the iron sections indicating an anoxic waterlogged burial environment. X-radiography showed the metal core of the Copper Alloy to be intact and even. The iron was found to be mineralised. Store dry below 35%RH.

Glass

The glass was found to be in good condition. SF3 arrived wet packed and has been brought to dry storage as part of the assessment process. SF23 and SF24 are fragments of glass working waste and are dry, stable and ready for long-term storage. Store in a stable environment between 50-55%RH.

Shale/Stone

The stone objects, all three are spindle whorls, were found to be in a good stable condition. Store between 45–60% RH.

Wood

The two wooden objects were both dry and found to be in overall good condition. SF21 is composite with Copper Alloy which was also found to be in good condition. SF16 appears partially carbonised and is covered in a hard organic crust. Store in a stable environment between 45–60% RH.

Antler

The ten antler finds were found to be in overall fair to good condition. A majority of the finds showed no signs of fresh damage with cracks only present on three of the finds (SF9, SF11 and SF12). Two of the finds (SF2 and SF6 are worked). Store in a stable environment between 50–55% RH.

Bone

The bone object was found to be in overall good condition. A section of metal (possible iron) is present in the centre. X-radiography shows the metal to be heavily mineralised. Store in a stable environment between 50–55% RH.

Fired Clay

The fired clay object consists of two parts of a tobacco pipe and was found to be in overall good condition. Store in a stable environment between 45–60% RH.

STATEMENT OF POTENTIAL**Indicators of preservation**

Spots of vivianite were noted on three finds (SF13, SF15 and SF18), it is formed in anoxic waterlogged condition, slightly acidic and rich in phosphate, conditions which favour organic preservation. Waterlogged leather was also found at the site.

Evidence of technology, craft or industry or anything else of note

There are three stone spindle whorls (SF1, SF4 and SF5) in the collection.

X-radiography indicated SF22 to be slag or metalworking waste. SF23 and SF24 were found to be glass working waste.

RECOMMENDATIONS

Further Investigative Conservation

Investigative conservation is proposed for the following artefacts to aid identification and clarification:

SF	Material	Aim	Estimated time
6	Antler	Remove soil and consolidate surface.	1 hour

Selected items could have corrosion removed fully for publication or display, quotes for the items selected can be arranged individually to suit your requirements.

Packaging and Long Term Storage

All finds were well-packed in suitable sealed containers to provide the appropriate desiccated environments.

All materials used are archive stable and acid-free. The metal finds should be stored in a desiccated environment at less than 15%RH. The desiccated environment will need to be maintained.

APPENDIX 12 – ANIMAL BONE ASSESSMENT

By Dr K. Poole

INTRODUCTION

The animal bone assessment was undertaken following Historic England's guidelines for best practice in animal bone assessments, as set out in Baker and Worley (2019, 25–28). This report has been compiled in line with the MoRPHE guidelines for Assessment Reports (Product P2 Assessment Report) set out by Historic England (2016, 26–27).

MEANS OF COLLECTING DATA

Animal bones were assessed on a context by context basis). Information recorded comprised of (see Table 17):

- Number of bones that could be recorded to species, using the categories of 'cattle', 'sheep/goat', 'pig', 'horse', 'other mammal', 'bird' and 'fish'. Ribs and vertebrae, except for axis and atlas vertebrae, were not included in these totals.
- For cattle, sheep/goat and pigs, the number of elements that could provide ageing data, categorised as ageing from 'mandibles', 'teeth' and 'bone fusion'.
- For all species, the number of bones that could be measured, grouped as 'Cattle', 'Sheep/goat', 'Pig', 'Other mammal' and 'Bird'.
- Notes regarding taphonomy in each context, specifically presence of gnawing, burning,

QUANTITY OF MATERIAL AND RECORDS

A total of 65 bags of animal bones and teeth, from 32 contexts, were submitted for assessment.

PROVENANCE OF THE MATERIAL

This material largely derived from pits, with a layer of soil accumulation and a dump/midden providing the next largest quantities, and smaller amounts from a drain and yard build-up (Table 8). These were situated at what would have been the rear of three property plots in the medieval period and almost all of the material came from features of medieval date. A small number of bones were from contexts that are currently listed as undated, but given their stratigraphic position, are also likely to be medieval in date. The largest single collections of identifiable bones are from Sets 1035 and 1041, a soil accumulation and midden/dump respectively (Table 9). By phase, the largest assemblage derived from 11th and 11th–12th century contexts (Table 10). In terms of plots, almost all the bones derived from the northern and central plot, with only two fragments from the southern plot (Table 11).

All of the material was recovered through hand collection. The assemblage was in good condition and was largely unaffected by gnawing. Probably in part due to this, the bone assemblage had relatively low levels of fragmentation. A significant proportion of bones had signs of burning and butchery. At least one bone (a cattle skull from Context 1145) had traces of vivianite, a mineral that forms in particular soil conditions and is white to greyish but tends to change to blue when exposed to the air. It forms in particular soil conditions and, in archaeological contexts has been found as layers at the edges and infills of pits used for industrial activities, including flax retting metalworking and tanning (McGowan and Prangnell 2006).

RANGE AND VARIETY OF THE MATERIAL

Number of recordable specimens

The numbers of bones that can be recorded to species are set out in Tables 9–11, by set, current phasing and by the three plot boundaries from which they were recovered. As would be expected from a medieval urban site, the assemblage is dominated by remains of the three main domestic species (cattle, sheep/goat and pig), with cattle being particularly dominant. Of the sheep/goat remains, although attempts were not made to distinguish between sheep and goats from post crania, at least three specimens were from goats (all horn cores). Interestingly, the quantity of pig bones was greater than of sheep/goat, in contrast to other assemblages from York, where sheep/goat is otherwise either the first or second most frequently represented species (Bond and O'Connor 1999, 378). The quantities of pig may be slightly inflated by the possible presence of a partial pig skeleton in Context 1041, although this would only have increased the number of pig bones by ten, with pig bones still being numerically dominant. Totals were not kept of the varying types of elements present, but a number of horn cores (predominantly of cattle, but also some sheep and goat) were noted across the assemblage.

Other domestic mammals were present in the form of small numbers of horse and a few cat bones. One bone was possibly from a deer. A number of bird bones were also present and are likely to have been chicken, goose and duck, based on an initial appraisal. Fish were also present and on a brief viewing may have been from members of the *Gadid* (cod) family.

Number of ageable specimens

A number of specimens have potential for providing ageing data (Tables 12–14). In the majority of cases these data would be based on epiphyseal fusion, with smaller numbers of ageable mandibles. The latter method is generally preferred (O'Connor 2003, 158–170) as it is less affected by issues of nutrition and environment, although the former can still inform about the broad ageing trends in an assemblage.

Number of measurable specimens

Assessment of the bones for the number that could be measured indicated that there were a total of 109 measureable bones, of which the majority were of cattle (Table 15). Few bones were sufficiently complete to provide greatest length (GL) measurements, with most measurements being in the form of breadth measurements.

STATEMENT OF POTENTIAL

Questions posed prior to assessment

This work was undertaken in order to provide an informative overview of the animal bone assemblage from Stonebow. This can be measured against the large dataset of animal bones from medieval contexts recovered and recorded from York (Bond and O'Connor 1999).

Research questions resulting from the data collection and the potential value of the data-collection to local, regional and national research priorities

Although this is a relatively small collection, it is a valuable addition to the present corpus of bone assemblages recovered from medieval York.

In terms of species representation, there is little unusual compared to other medieval animal bone assemblages within medieval York, aside from the slightly unusual proportions of pigs to sheep/goat. The dominance of domestic species is to be expected, although on initial assessment, there appears to be a near total absence of wild mammal and bird species, in contrast to other contemporary sites in the town. The lack of diversity may in part be an issue of recovery, given that all of the bones studied for this assessment were from hand collection, a recovery technique known to be biased against the recovery of smaller bones (O'Connor 2003, 98–103). Given the species representation, there is little of intrinsic value within the Stonebow assemblage, such as species beyond their expected temporal/geographical range (e.g. Rainsford *et al.* 2014).

The Stonebow assemblage does, however, hold extrinsic interest. The remains can provide some insight into animal husbandry and economy, although there was no evidence for on-site food production and it is likely that they represent consumption waste from animals raised elsewhere. Additionally, relatively small assemblages on their own are not particularly informative about city-wide economic strategies, which is better explored through large assemblages, of which there a number from York (O'Connor 2003, 205). Yet this assemblage can add further data to the wider picture of economy within medieval York. Perhaps the greater value of the Stonebow assemblage lies in its potential to inform about the utilisation of animals and parts of animals, in this specific location, during the medieval period.

Many of the faunal assemblages previously excavated from York are from areas near the town walls, or outside of them. Two significantly larger assemblages of medieval animal bone than those from Stonebow have already been excavated nearby, from 16–22 Coppergate (Bond and O'Connor 1999) and Hungate (Rainsford *et al.* 2014), however, 16–22 Coppergate is some 170m away from the site, and Hungate some 110m away, as well as not yet having been subject to full analysis and reporting. The Stonebow animal bone is therefore important due to its recovery from a location in the town for which there are currently no published animal bone assemblages.

A further strength of the Stonebow animal bone is its deposition largely into specific features, located in designated plot boundaries. In contrast to 16–22 Coppergate, where bones largely derive from dumping of waste onto open ground, there is thus potential with Stonebow to consider the animal bone in relation to specific properties in the town. Bond and O'Connor (1999, 421) highlighted the need for further work on bones of 11th–15th century date from closely controlled contexts, with well-defined circumstances of deposition. The Stonebow assemblage potentially provides such an opportunity.

Key aspects that can be explored for the Stonebow assemblage include dietary habits and on-site activities, such as possible evidence for specific butchery types and craft activities. As discussed above, the proportions of pig were unusual in this assemblage and there were a number of horn cores. A large number of bones also showed signs of butchery, and recording of body-part patterns and butchery could therefore inform regarding on-site activities.

Studying the nature of taphonomy on the assemblage could also inform regarding disposal practices and the burial environment. Lack of gnawing and good bone condition indicates relatively swift deposition, but bones could be examined in more detail for evidence of taphonomy. One interesting aspect in this regards was the presence of vivianite on at least one

bone. Further examination of bones for traces of this substance and the features in which they were located could, therefore, be useful in identifying on-site activities and the nature of deposition.

The potential of the Stonebow assemblage ties in with a number of the research questions that O'Connor (2003, 78–83) set out, regarding the information we might seek to gain from animal bone assemblages regarding York. These include:

- What information can be obtained regarding the redistribution of meat within the town?

This can be explored by examining:

- Evidence for standardised butchery within the assemblage, suggesting presence of specialised butchers in the town.
- Is there evidence for particular cuts of meat? Again, this would relate to possible presence of specialised butchers
- What craft activities (if any) were taking place at the site?

This can be examined by analysing:

- Body-part patterns.
- Treatment of bones, specifically how they were butchered.
- The presence of vivianite on bones, which bones were affected and which contexts.
- What do the animal bones indicate regarding the status of those living at the site?

This can be explored by analysing:

- Species presence and proportions
- Age at death of the animals
- Whether there is a preference for particular body-parts (i.e. the main meat-bearing bones).
- How intensely carcasses were being utilised.

Integration of the bones with other material classes would also assist with examining the research questions set out above.

RECOMMENDATIONS

It is recommended the animal bones from contexts dating to the medieval date be subject to full recording and reporting. Bones from features that are probably medieval, but which it is subsequently not possible to date, should be excluded from the analysis. Excluding the undated bones gives a total of 373 bones identifiable to species. Suggested methods for analysis are set out in the Example Recording Strategy; these methods have been used to calculate time estimates for future work. The timetable for this work is set out in Table 16 below. This does not include the time required for recording of bones recovered from any environmental samples that may have been taken. If samples were taken but have not yet been processed, it is recommended that this takes place and any bone is also submitted for analysis. A timescale for the analysis of bone from samples can be supplied as and when necessary.

During the recording and writing up of the Stonebow bone assemblage, it is recommended that liaison with other specialists is made possible, particularly those undertaking analysis of pottery and environmental remains. Integration of the respective lines of evidence have the best potential for understanding the site and the nature of activity undertaken there during the medieval period.

STORAGE AND CURATION

The Stonebow assemblage is currently stored within plastic finds bags within 4 archive boxes. It is judged that this storage is adequate.

Feature type	Total recordable bones
Pits	225
Soil accumulation	68
Dump/ Midden	65
Drain	34
Yard build-up	1
TOTAL	393

Table 8 Total number of recordable animal bone by context type

Set	Cattle	Sheep/Goat	Pig	Horse	Other	Birds	Fish	TOTAL
1026	4	2						6
1027	3	1				1		5
1028	3		3					6
1029	11	6	5			2		24
1030	12	5	4	1		2		24
1032	17	4	11	1		1		34
1033	11	2	4	1		5	2	25
1034								
1035	35	12	10	2	1	7		67
1036	10	2	4					16
1037	54	5	5					64
1038	2		1					3
1039	3				1			4
1041	31	2	8		2	6		49
1043	7	2	17		1	5	7	39
1044	4	3	2			2		11
1047	1	2				2		5
1049	4		1		2		2	9
1050	1		1					2
TOTAL	213	48	76	5	7	33	11	393

Table 9 Total number of recordable bones by set

Date	Cattle	Sheep/Goat	Pig	Horse	Other	Birds	Fish	TOTAL
C9th-11th	4	3	2			2		11
C11th and C11th-12th	118	26	31	4	1	10		190
C12th and C12th-13th	28	9	12	1		8	2	60
C13th and C13th/14th	45	6	12		2	6		71
C14th+	1		1					2
Medieval	7	2	17		1	5	7	39
Undated	10	2	1		3	2	2	20
TOTAL	213	48	76	5	7	33	11	393

Table 10 Total number of recordable bones by phase

Plot	Cattle	Sheep/Goat	Pig	Horse	Other	Birds	Fish	TOTAL
Northern	85	30	33	4	1	13		166
Between Northern and Central	11	2	4	1		5	2	25
Central	116	16	38		6	15	9	200
Southern	1		1					2
TOTAL	213	48	76	5	7	33	11	393

Table 11 Total number of recordable bones by plot

Phase	Mandible	Teeth	Bones
C9th-11th			1
C11th and C11th-12th	8		51
C12th and C12th-13th	4		9
C13th and C13th/14th	2		18
C14th+			1
Medieval			2
Undated	1		4
Grand Total	15		86

Table 12 Total number of cattle elements with aging data

Phase	Mandible	Teeth	Bones
C9th-11th	1		10
C11th and C11th-12th	4		5
C12th and C12th-13th	1		2
C13th and C13th-14th			1
C14th+			2
Medieval			2
Undated	1		1
Grand Total	7		23

Table 13 Total number of sheep/ goat elements with aging data

Phase	Mandible	Teeth	Bones
C9th-11th			2
C11th and C11th-12th	7		15
C12th and C12th-13th			3
C13th and C13th-14th			6
C14th+			
Medieval			11
Undated			
Grand Total	7		37

Table 14 Total number of pig elements with aging data

Phase	Cattle	Sheep/goat	Pig	Other	Bird
C9th-11th		2			
C11th and C11th-12th	41	11	4	2	3
C12th and C12th-13th	6	5	2		1
C13th and C13th-14th	15	1	2		3
C14th+			1		
Medieval	1		1		1
Undated	5				2
TOTAL	68	19	10	2	10

Table 15 Total number of bones that can be measured

Task	Time required
Recording	3 days
Data Analysis	1.5 days
Report writing	1.5 days
TOTAL	6 days

Table 16 Timetable for further work

Context Information					Taphonomy				Recordable							Ageing						Measureable				Comments									
Plot	Context	Fill of	Set	Feature type	Phase	Preservation	Gnawing	Burning	Butchery	Cattle		Sheep/goat		Pig		Horse		Other			Cattle		Sheep		Pig		Cattle	S/G	Pig	Bird	Other				
										Bones	Teeth	Bones	Teeth	Bones	Teeth	Bones	Teeth	Other mammal	Birds	Fish	Mand	Teeth	Bones	Mand	Teeth	Bones						Mand	Teeth	Bones	
Northern	1026	Pit		C 13th and C 13th/14 th	2	3		4	4		2								9							3									
Northern	1027	Pit		C 12th and C 12th-13th	2	1	1	1	3		1								1	5		1				1	1								
Northern	1028	Pit		C 12th and C 12th-13th	2			2	3					3							1					1	1								
Northern	1029	Pit		C 12th and C 12th-13th	2	7		5	10		1	6		5				2	8	1	5	1		2		1	3	3							
Northern	1030	Pit		C 11th and C 11th-12th	2	Y	Y	Y	12			4	1	3	1	1		2	23		4	2		1		1	3				1	Horse			
Northern	1032	Pit		C 11th and C 11th-12th	2	1		5	16		1	4		9	2	1		1	47		7			3		7	6	3	2	1					
Bw N anc	1033	Pit		C 12th and C 12th-13th	2			1	6	10	1	2		3	1	1		5	2	26	3			2		1	1	1	1	1			Horse		
Northern	1034	Pit		C 11th and C 11th-12th	2														2																
Northern	1035	Soil accumulation		C 11th and C 11th-12th	2	Y	Y	Y	34		1	12		10		1	1	1	7	83	7		11	1		5	4		6	9	4	2	2	1	Horse, Cat
Central	1036	Pit		C 13th and C 13th/14 th	2	Y	Y	Y	2										2	1						1									
Central	1037	Dump/ midden		C 11th and C 11th-12th	2		2	24	52		2	5		5					12	1	29	1		1	2	1	23	4							
Central	1038	Disturbed yard build up		C 11th and C 11th-12th	2				1					1					2	1						1									
Central	1039	Pit		Undated	2				3								1				3					3									
Central	1041	Pit		C 13th and C 13th/14 th	2	Y	Y	Y	31			2		8			2	6	24	1	13			1		5	11	1	2	3			?Deer		
Central	1043	Drain		Medieval	2		Y	Y	6		1	2		16	1		1	5	7	92			2			11	1		1	1				Cat	
Central	1044	Pit		C 9th-11th	2														1																
Central	1044	Pit		C 9th-11th	2		1	2	4			3		2				2	4		1	1		2			2								
Central	1044	Pit		C 9th-11th	2		Y	Y	4			3		2				2	5		1	1		2			2							Vivianite	
Central	1047	Pit		Undated	2				1			2						2			1	1		1							2				
Central	1049	Pit		Undated	2			2	4					1			2		2	4						1								Cat	
Southern	1050	Pit		C 14th+	2		3		1					1					2		1							1							

Table 17 Animal bone data

EXAMPLE RECORDING STRATEGY

The assemblage will be recorded using a Microsoft Access database.

Levels of preservation will be recorded using Behrensmeyer's (1978) standards, with burning and gnawing also recorded. Butchery will be recorded in detail, noting the butchery mark type (chop, cut, saw, shave) and its location on the bone. This would be achieved by using the standards set out by Lauwerier (1988), with additional butchery codes created when necessary. Attempts will be made to identify all bone fragments to element and species, with some exceptions. Mammal ribs, vertebrae, skull fragments and long bones fragments not identifiable to species, will be classed as large-, medium-, or small-sized mammal (except for atlas and axis vertebrae, and the more durable/diagnostic parts of the cranium, namely the zygomatic, occipital, maxilla and horn core, which were identified to species). Ribs will only be only counted when the head was present. Apart from the calcanei and astragali, carpals and tarsals will not be recorded. Similarly, for birds, all elements will be identified, where possible, to species, apart from vertebrae and ribs, which will be classed simply as 'chicken size' or 'goose size'.

Morphological criteria of Boessneck (1969), Payne (1985), Prummel and Frisch (1986) and Halstead et al. (2002) will be utilised to attempt to distinguish between sheep (*Ovis*) and goat (*Capra*). In addition, particular measurements will be taken of medial metapodial condyles and proximal metatarsals of sheep/goat species, which have been shown to aid species separation (Rowley-Conwy 1998). Domestic pig and wild boar can be extremely hard to tell apart, one of the best ways being through tooth measurements (Payne and Bull 1988, 31), and thus measurements of the width of the greatest length (GL), length at cemento-enamel junction (CL), the width of anterior (WA) and width of posterior (WP) of the deciduous fourth premolar, first, second and third permanent molars will be taken. Red deer will be distinguished from cattle using Prummel (1988), with red and fallow deer differentiated using their antlers, and the criteria of Lister for postcrania (1996). Hares and rabbits will be separated through Callou's (1997) methods.

Attempts to distinguish between chicken and pheasant will be made using the pneumatized proximal foramen of the femur and the continuation of the medial calcaneal ridge on the tarso-metatarsus (Cohen and Serjeantson 1996, 63, 79). Geese lack suitable morphological criteria on which to differentiate between individual species, and there is also considerable size overlap between species (Barnes et al. 2000, 91). Where bones are of a size obviously compatible with domestic goose, they were recorded as such, otherwise, they will be recorded as *Anser/Branta* sp. Similar problems exist for ducks, and so their remains were recorded as either 'mallard-size' or 'teal-size'.

All identified fragments will be recorded as individual specimens, with the exception of fresh breaks, which will be refitted where possible, and counted as one element. Partial or complete skeletons will be recorded as one specimen, with details of the elements present, completeness, measurements and so on noted. The most straightforward method of quantification to be applied is the Number of Identified Specimens (NISP), being merely a count of the identified fragments. Such a method can be problematic as it will particularly overemphasise the larger taxa due to greater fragmentation. For this reason, the zoning systems set out by Serjeantson (1996) for mammals and Cohen and Serjeantson (1996) for birds will also be used to record

elements. This will then be used to work out the Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for each species.

Methods used for ageing specimens will be dental eruption/attrition and epiphyseal fusion. Grant's methods (1982) will be used for recording tooth wear in cattle, sheep and pig, with wear stages assigned using standards set out by Halstead (1985) for cattle, Grant (1982) for pigs, and Payne (1973; 1987) for sheep. Epiphyses will be recorded as 'foetal', 'neonatal', 'unfused', 'fusing' or 'fused'. These data will enable age estimates to be calculated using the sequence outlined for sheep/goat, cattle, pigs, equids and dogs using data given by Getty (1975) and cats using Smith (1969). As bird bones lack epiphyses, elements will be recorded as either 'fused' or 'unfused.'

Where possible, pigs will be sexed on the basis of their canines; male canines growing throughout life and being open-rooted, while sows have much smaller canines with closed roots (Schmid 1972, 80). In addition, the canines of castrates appear dwarfed and stunted, although they retain the open root characteristic of males (Armitage 1977, 94). Morphological and metrical traits of the pelvis will be used to sex cattle and sheep/goat (Grigson 1982; Hatting 1995; Greenfield 2006). Cattle may be sexed using the metapodials, although other factors also play a part in the dimensions of these elements (e.g. Albarella 1997). Equids will be sexed through the presence of canines and on the pelvis. Presence of the baculum will be used to identify male dogs in the sample. Presence or absence of tarsometatarsi cockspurs will be used to differentiate between male and female chickens. Medullary bone in femora and tibiotarsi will be used to sex Galliformes (Driver 1982), as well as other birds, where possible.

Measurements will be taken following von den Driesch (1976) for mammals and Cohen and Serjeantson (1996) for birds. Withers heights will be calculated using the calculation factors given by von den Dreisch and Boessneck (1974). Pathological traits will be recorded using the protocol developed by Vann and Thomas (2006). Those traits that were particularly looked for are: hypoplasia (following the method devised by Dobney and Ervynck 1998), penning elbow, periodontal disease, and osteoarthritis. Non-metric traits to be recorded are: presence of lower 2nd premolar in cattle and sheep, absence of, or reduced, hypoconulid of 3rd lower molar on cattle and sheep, location of foramen on sheep femur.

APPENDIX 13 – ARCHAEOBOTANY ASSESSMENT

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INTRODUCTION

Nine bulk samples of sediment from three separate features sampled as part of archaeological investigations at Stonebow Pavement, Fossgate, York carried out by York Archaeological Trust were submitted to the author for assessment (Table 18).

The samples selected for assessment from three presumed medieval features are as follows:

Feature Description	Context Description	Samples
Medieval gully [SET 1043 – Late 11 th – early 13 th century AD based on finds]	1041 – fill of timber gully	Sample 1
Medieval wicker-lined pit [SET 1030 – Late 11 th /12 th century AD based on finds]	1092 – backfill of pit 1030 (main) 1125 – main fill of pit 1030 (base) 1139 – fill at base of pit 1030 (base)	Sample 2 Sample 4 Sample 5
Medieval timber-lined pit (with wicker structures) [upper backfills SET 1041– 12 th /13 th century based on finds, main fill Set 1042 – med.] *NB base of feature not reached/ sample log records pit as Feature 1122	1121 – backfill of pit - Set 1041(upper) 1135 – upper fill of pit - Set 1041 (upper) 1165 – upper fill of pit – Set 1041 (upper) 1210 – lower fill of pit - Set 1042 (main) NB material distinct from upper fill/ excavation did not reach base of pit	Sample 3 Sample 6 Sample 8 Sample 9

Table 18 Samples assessed

*NB pit samples are ordered by presumably youngest deposits at the top of the features to oldest deposits at the base

METHODOLOGY

In each case, approximately 2 litres of sediment was sub-sampled for waterlogged plant remains (hereafter WPR), but because it was clear during processing of insect samples that these samples were extremely well-preserved and organic-rich, a smaller volume of sediment (only 500 ml) was processed for the WPR assessment. In part, this decision is based on statistical analyses carried out by N. Fieller and M. van der Veen which have established that 250 quantifiable plant remains would produce results representative of an infinite population of plant remains with an accuracy of $\pm 5\%$ at 95% confidence, where 20% of that population could be made up of one species (van der Veen and Fieller 1982, 296). Counts >250, would therefore, be likely to be more reliable in cases where a single taxon represents <20% of all identifications

in an assemblage. Although carried out on the assumption these samples are rich in waterlogged plant macrofossil remains, during assessment it was clear that reducing the sample volume to 500ml does appear to generate flots and heavy residues that will produce upwards of 250 fully quantifiable plant remains and a great deal of unquantifiable cereal bran/ leaf epidermis fragments and cereal/ large grass glume debris. In addition, all remaining unprocessed sediment has been retained for all nine samples to supplement these flots/heavy residues at full analysis, should further sediment be required.

A 500 ml sub-sample was processed using standard wash-over technique (Kenward et al. 1980) for each sample. Flots and heavy residues were collected over a single 0.3 mm geological sieve, rather than a stack of sieves of decreasing apertures. Both the flots and heavy residues were scanned for this assessment. Two to three larger plant macrofossils such as cherry (*Prunus avium* (L.) L./*cerasus* L.) or hazel (*Corylus avellana* L.) nutshell fragments were extracted during scanning and dried in case these are desired for radiocarbon determination. This step also meant that it was possible to store the processed flots and heavy residues in a mixture of ethanol and tap water in order to inhibit biological activity which could result in decay of plant remains over time. Although storage in ethanol/ water mixture means this material is reasonably stable in the short-term (ca. 6 months), in the longer term (> 1 year) the plant remains will begin to decay, which may result in information loss or void samples. It also is likely that the smaller sub-samples of unprocessed sediment will dry out over time (ca. one year), again resulting in information loss/ void samples for waterlogged plant remains.

Flots were sorted under a low-power Meiji EMZ binocular microscope at magnifications between x15 – x20. Identifications were made at magnifications up to x50. Identifications were made in comparison to the author's own reference material or to standard botanical keys (e.g. Cappers *et al.* 2006). Nomenclature and taxonomic order follows Stace (2010). Semi-quantitative scoring system: 1 = 1 item/+ = 2-5 items/++ = 5 - 25 items/+++ 25 - 100 items/++++ > 100 items/+++++ > 1000 items.

Flots and heavy residues were rapidly scanned and, in many cases, only a fraction of the flot/heavy residue was examined (see Tables 19–20). As a result, all identifications presented here should be seen as provisional. The rapid nature of scanning these flots and heavy residues also means that quantification was notional, and it is likely that smaller items/fragments of plant remains may have been overlooked during assessment. Full analysis of these samples would result in more thorough scanning (if the EAU style of rapid scanning is adopted at full analysis) or full sorting, which in either case is likely to greatly increase the range and quantity of plant remains reported here at assessment.

RESULTS

Tables 19–20 present the WPR assessment results for all nine samples. In general, plant remains were well preserved and primarily waterlogged, however, in a few cases charred, possibly/ partly charred and possibly mineralized remains were noted. With the exception of cereals (none of which could be identified to species level using conventional low-power microscopy), all of the plant remains recovered are considered native or archaeophytes in the British Isles.

The results will be discussed below for each feature.

Timber gully, Set 1043 – sample 1

Sample 1 from Set 1043 produced an assemblage primarily made up of low quantities of weed/wild taxa. Only one potential food plant, elderberry (*Sambucus nigra* L.), was noted; however, some have argued that elder is likely to have occurred naturally within York, e.g. Hall has remarked on the recovery of elder stumps at 16–22 Coppergate and is uncertain if it can be considered a collected wild food, (Kenward and Hall 1995, 527; Hall 2000, 32). There are also small quantities of cereal bran, although this identification is made only at low-power and would need to be confirmed using higher power magnification. The preservation of plant remains was generally good, but these were more sparse than the two pit deposit sample.

Wicker-lined pit, Set 1030 – samples 2, 4 and 5

The three samples recovered from the pit Set 1030 (Table 21) were relatively well preserved, but interestingly the plant remains became very spongy and fragile toward the base of this feature (sample 5). This inverse preservation, where material is better preserved higher up the profile of the pit, suggests that these remains at the base of the pit are either considerably older than at the top, or there have been issues with dewatering of the feature at points in the past. It may be possible that the lower material has been compressed by the weight of the material above it, damaging the structure of the plant remains and possibly driving the water out. A decline in preservation with depth has been noted elsewhere in York (pers. comm. H. Kenward to D. N. Smith).

These samples were rapidly scanned, but clearly contain a wider range of plant taxa than the sample from the timber-lined gully (sample 1) and more edible plants (e.g. small numbers of apple, plum and cherry noted). The lowest sample (sample 5) also produced raspberry (*Rubus idaeus* L.) and blackberry (*Rubus* section *Glandulosus* Wimm. and Grab.) seed. Small quantities of bran were noted in the upper samples (samples 2 and 4) and an entire, compressed epidermis of a cereal grain was noted in sample 2. Linseed (*Linum usitatissimum* L.) also was noted in sample 2.

The samples from pit Set 1030 also contained abundant fragments of waterlogged wood and charcoal. Interestingly, the lowest sample (sample 5) produced leather-like remains. These were highly flexible and light tan in colour, completely unlike the usual dark reddish-brown cowhide previously encountered by the author.

Timber and wicker-lined pit, Sets 1041 & 1042 – samples 3, 6, 7, 8 and 9

Five samples were collected from pit Sets 1041 and 1042 and all deposits contained well-preserved plant remains (Table 21). Unlike the other features sampled, pit Sets 1041 and 1042 has produced abundant bran remains in the main fill (samples 6–9) and two compressed, but entire, epidermises from cereal grains in the uppermost backfill (sample 3). A quantifiable fragment of cereal or grass straw also was noted in sample 6. Pit Sets 1041 and 1042 samples produced a range of fruits including apple, cherry, plum and sloe. Hazel nutshell fragments and blackberry (or bramble) seeds also were noted. A single linseed was recovered from sample 6 near the top of Set 1041.

In addition to the edible plants, a wide range of weed/wild taxa were recovered. Perhaps the most notable result was the correlation of large quantities of corncockle (*Agrostemma githago*

L.) seed coat fragments with increasing depth in pit Sets 1041 and 1042. This also mirrors the increased recovery of cereal bran fragments with increasing depth; in particular, highly abundant thin-walled epidermis (provisionally identified as cereal bran) was observed in the lowest sample (sample 9) excavated.

DISCUSSION

Unsurprisingly, the pit features appear to incorporate food waste, possibly cess, certainly bran is frequently considered an indicator for cess (Hall et al. 1983; Hall and Kenward 2016, 104). The gully was less productive and food remains were relatively scarce. Nonetheless all three features have produced samples with relatively good preservation and reserved sediment is available (ca. 1.5 L) for all nine samples.

The issue of phasing

At present Pit Set 1030 has been provisionally dated to the late 11th/12th century, the wood lined gully Set 1043 to the late 11th–early 13th century, and the upper fills of the wicker and timber lined pit Set 1041 to the late 12th/13th century, the lower fill of this feature (Set 1042) is presumed medieval, however, no dateable artefacts were recovered from it. Plant remains have been collected from samples associated with pit Sets 1041 and 1042, but no sizeable (sufficient for the 0.01g required for AMS radiocarbon determination) were noted during rapid scanning of gully Set 1043 sample 1.

Many archaeobotanical samples already studied from York are only provisionally phased to main chronological periods i.e. Roman/post-Roman to Anglian/Anglo-Scandinavian etc. (Hall 2000, 40–1). There is potential to submit plant remains from the Stonebow samples for AMS radiocarbon determination and this may be essential before determining whether to abandon any samples at further analysis (see discussion of location of site below).

The issue of site location

Stonebow Pavement is in relatively close proximity to the archaeological site of 16–22 Coppergate and, certainly, exhibits many similarities with the archaeobotanical data from that site (Kenward and Hall 1995). Several questions are worth the excavator and curator exploring.

1. Is this the first work from Fossgate and near the river Ouse? (To my knowledge, no other work from this immediate area is available. If this is a new location for environmental evidence in York – this would suggest full analysis is warranted.
2. Although abundant ‘medieval’/Anglo-Scandinavian pit fill data is available already, my impression is much of this is loosely dated. A programme of AMS radiocarbon determination on these deposits is advisable, before determining the relative significance of these assemblages.
3. The two pit features clearly provide a wider range of economic information than the gully feature. York Archaeological Trust will need to review the archaeological significance of the timber gully feature. Gullies from between 975–early to mid-11th century are particularly well studied at 16–22 Coppergate, for example (Kenward and Hall 1995: 456). Provisional dating of gully Set 1043 places it in the late 11th–early 13th century, a little later in date than those at 16–22 Coppergate.
4. Sample stability is an issue. At present approximately 1.5 L of unprocessed sediment for each sample is stored at room temperature out of direct sunlight at University of Birmingham; however, these samples will gradually dry out in these conditions (most

likely within one year). The fully processed material is currently stored in a mixture of ethanol and tap water to inhibit biological breakdown of the organic remains; nevertheless, these flots and heavy residues are not indefinitely stable and should be fully sorted or rapidly scanned and recorded before October 2020.

It is recommended that all of these samples (in association with the insect remains) are fully analysed. It is likely that the pit samples represent slightly different functions, with pit Set 1030 potentially incorporating tanning debris in addition to domestic waste, including cess, which also can be used during tanning to 'bate' or soften skins. These are well-preserved and rich archaeobotanical assemblages, which if recovered from anywhere else in the UK (including London) would be taken to full analysis. The issue is whether this information enhances/refines archaeobotanical data/ environmental archaeological information in York, but that decision is dependent on other environmental proxies (especially archaeoentomological data), chronology and archaeological significance of these deposits.

Leather and wood fragments, as well as fruit stones, have been recovered from many samples in both Pit Set 1030 and Pit Sets 1041 and 1042 in archaeoentomological processing. The larger volume of sediment processed for the recovery of insect remains for sample 5 (Pit Set 1030) also produced several animal bones, including pig jaw fragments. The archaeobotanical sub-samples from Pit Set 1030 appears to contain a range of food plants and weed/wild taxa, as well as quantities of wood/bark fragments and charcoal fragments. The archaeobotanical sub-sample from Pit Sets 1041 and 1042 is quite different in character with larger quantities of highly fragmented, transparent vegetative material which has been provisionally identified as cereal bran, although it may also incorporate other material such as vegetable/leaf epidermis (higher power magnification will be necessary to fully identified these minute fragments).

The large quantity of corncockle (*Agrostemma githago* L.) seed coat fragments noted in samples from Pit Sets 1041 and 1042 also is of interest. Corncockle seeds are poisonous and difficult to clean from cereal crops because the seeds are roughly the same size as cereal grain and, therefore, are unlikely to be removed by sieving. Bread made from flour contaminated by corncockle can lead to serious illness, especially for particularly young or elderly people (Hall 1981). Once this was recognized, laws were passed in the medieval period to try and prevent the sale of grain containing high proportions of corncockle (Hall *op cit.*). Even given preservation bias against cereal grain in waterlogged deposits (e.g. Hall 2000), the abundance of corncockle with cereal bran does suggest that these weed seeds were contaminating cereal grain (and grain products such as flour) and potentially were a serious problem in this period at York.

Finally, the results from the two separate pit features have generated slightly different archaeobotanical assemblages, and the lower deposit of Pit Set 1042 is clearly different in character from upper layers in Set 1041. This may also be the case for Pit 1030, but preservation in the lowest layer (sample 5) of this pit was poor in many instances, with extremely fragile, spongy and highly fragmented plant remains frequently noted. Without more precise phasing/radiocarbon dating of these deposits, it is not possible to determine whether this is urban debris discarded into a deep feature in a relatively short period of time or whether this is the gradual infilling of a deep feature with a mixture of waste products over an extended time frame. The poorer preservation of plant material at the base of Pit Set 1030 (sample 5) does suggest that the material in Pit Sets 1041 and 1042 is better preserved, and potentially may inform decisions about which samples to take to further analysis. A programme of AMS

radiocarbon determinations, as well as the archaeoentomological assessment results, could resolve the depositional history of these deep features and better inform the decision-making process in terms of planning further analysis of some or all of the archaeobotanical samples assessed here.

COMPARISON WITH OTHER YORK RESULTS

Although now somewhat out of date, the Environmental Archaeology Bibliography (York 2008) lists nearly 50 sites with archaeobotanical results reported for Medieval York. Stonebow Pavement, Fossgate is in close proximity and 16–22 Coppergate, which is one of the most thoroughly reported archaeobotanical assemblages from York (Kenward and Hall 1995) dating to the Anglo-Scandinavian (10th–11th centuries).

Unfortunately, without tight chronology, it is difficult to determine the significance of the Stonebow deposits. There are clear gaps in the archaeological record for York. For example, at 16–22 Coppergate pit fills are well-studied from all phases (a total of 220 pit fills have been analysed/ rapidly scanned from the 9th–11th centuries), but archaeobotanical evidence from drains/ gullies is primarily limited to the late 10th through 11th centuries, with only 6 gullies/ drains analysed from the early–mid-10th century (Kenward and Hall 1995: 456). Without more precise phasing, it is extraordinarily difficult to determine whether these samples should be fully analysed and whether that should be only as an intensive scan or merits full quantification of archaeobotanical data. As a result the following recommendations/costing will provide information for either scenario at full analysis.

RECOMMENDATIONS FOR FURTHER ANALYSIS

There clearly is a great deal of pre-existing archaeobotanical data from similar Anglo-Scandinavian/medieval features already available from York, and none of the data generated here diverges from existing datasets (e.g. Stonebow Pavement results presented here all closely align with 16–22 Coppergate, although cherry stones may be more prevalent). At the time of this assessment, the corresponding archaeoentomological assemblage for these samples has not been assessed; therefore, it also is difficult to determine if this data may have novel information regarding the formation of/waste disposal practices into these deposits.

Data from the early Anglo-Scandinavian period is clearly more limited, so should this material prove to be primarily 10th century in date, full analysis of the plant macrofossils would make an important contribution to the history of York. It seems the only way to determine the significance of these currently insecurely dated deposits would be to commence a programme of radiocarbon determinations on this material, despite plant remains being submitted from bulk sediment samples. Suitable plant remains have already been extracted from the two pit feature (Set 1030 and Sets 1041/1042) samples should York Archaeological Trust determine it is worthwhile to establish the general chronological span of these deposits. The gully sample was not particularly rich, but further material can be processed to generate macrofossils of suitable mass (or a combination of several seeds of the same species) to support radiocarbon determination for this context as well. Finally, the archaeoentomological assessment may well generate new data on the formation/function of these features which may alter the interpretation that this material is broadly similar to previously reported Anglo-Scandinavian results from sites such as 16–22 Coppergate.

Ultimately, the decision to take some or all of these samples to full analysis may require discussion between the curator, York Archaeological Trust and the client in order to determine whether further analysis is merited in this instance.

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	20%	20%	
LATIN BINOMIAL										ENGLISH COMMON NAME
CEREALS	-	-	-	-	-	-	-	-	-	
Cereal indet. - seed coat (entire/ compressed)	-	-	1	-	-	-	-	-	-	cereal grain
Cerealia indet. - minute (< 2 mm) bran fragments	-	-	++	-	+	+	-	-	-	cereal bran
Cereal/ POACEAE - glume fragments	-	-	-	-	-	-	-	-	-	indeterminate cereal/ large wild grass
Cereal/ POACEAE - culm node	-	-	-	-	-	-	-	-	-	indeterminate cereal/ large wild grass
PULSES										
<i>Vicia sp./ Pisum sativum</i> L. - charred	-	-	-	-	-	-	-	-	1	indeterminate vetch/ garden pea
FRUITS/ NUTS										
<i>Prunus spinosa</i> L.	-	-	-	-	-	-	-	-	-	sloe/ blackthorn
<i>Prunus domestica</i> L.	-	-	-	1	-	1	-	-	-	plum
<i>Prunus domestica</i> ssp. <i>insititia</i> (L.) Bonnier & Layens	-	-	+	-	-	-	-	-	-	bullace/ greengage/ damson
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L.	-	-	+	-	-	-	-	-	-	wild/ dwarf cherry
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L. - fragment	-	-	-	1	-	1	-	-	-	wild/ dwarf cherry

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	100%	20%	
<i>Prunus</i> sp. - stone fragment - highly decayed	-	-	-	1	-	-	++	+	+	indet. plum / cherry/ bullace/ sloe
<i>Prunus</i> sp. - stone fragment -encrusted with minneralised material	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
cf. <i>Prunus</i> sp. - internal structure (smaller - sized)	-	-	-	1	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill	-	-	-	-	-	-	-	-	-	indet. pear/ apple
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill - immature	-	-	-	-	-	-	-	-	-	indet. pear/ apple
<i>Malus sylvestris</i> (L.) Mill.	-	-	-	-	-	-	+	-	-	crab apple
<i>Malus sylvestris</i> (L.) Mill. - endocarp fragment	-	-	-	-	1	-	-	-	-	crab apple - core fragment
<i>Crataegus</i> sp.	-	-	-	-	1	-	-	-	-	hawthorn
<i>Rubus idaeus</i> L.	-	-	-	-	-	-	-	-	+	raspberry
<i>Rubus</i> section <i>Glandulosus</i> Wimm. & Grab.	-	-	-	-	-	-	1	-	-	bramble/ blackberry
<i>Corylus avellana</i> L. - nutshell fragment	-	-	-	-	-	-	-	-	-	hazelnut
<i>Corylus avellana</i> L. - nutshell fragment - ?charred/ stained	-	-	-	-	-	-	-	-	+	hazelnut
<i>Sambucus nigra</i> L.	+	-	-	-	-	-	-	+	+	elder/ elderberry
OTHER ECONOMIC PLANTS										
<i>Linum usitatissimum</i> L.	-	-	1	-	1	-	-	-	-	flax/ linseed

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	20%	20%	
WEED/ WILD PLANTS										
<i>Papaver cf. somniferum</i> L.	-	-	-	-	-	-	-	-	-	opium poppy
<i>Ranunculus acris</i> L./ <i>repens</i> L./ <i>bulbosus</i> L.	-	-	-	-	1	-	1	-	-	meadow/ creeping/ bulbous buttercup
<i>Ranunculus</i> subg. RANUNCULUS	-	-	-	-	-	-	-	-	-	buttercup
<i>Ranunculus sceleratus</i> L.	-	-	-	-	-	-	-	-	-	celery-leaved buttercup
<i>Ranunculus</i> subg. BATRACHIUM (DC.) A Gray	-	-	-	-	-	-	-	-	-	crowfoot
<i>Ficaria verna</i> Huds.	-	-	-	-	-	-	-	-	-	lesser celandine
<i>Filipendula ulmaria</i> (L.) Maxim	-	-	-	-	1	-	-	-	-	meadowsweet
<i>Potentilla</i> spp.	-	-	-	-	-	-	-	-	-	cinquefoil
<i>Aphanes arvensis</i> L.	1	-	-	-	-	-	-	-	-	parsley-piert
<i>Urtica dioica</i> L.	1	-	-	-	-	-	1	-	-	common nettle
<i>Urtica urens</i> L.	-	-	-	-	-	-	1	-	-	small nettle
<i>Brassica</i> spp./ <i>Sinapis</i> spp.	-	-	-	-	-	-	-	-	+	wild cabbage/ wild mustard
<i>Raphanus raphanistrum</i> L. - capsule segment	-	-	-	-	-	-	1	-	-	wild radish
<i>Thlaspi arvense</i> L.	1	-	-	-	-	-	-	-	-	field penny-cress
<i>Persicaria cf. maculosa</i> Gray/ <i>cf. lapathifolia</i> (L.) Delabre - fragments	-	-	-	-	-	+	-	-	-	possible redshank/ pale persicaria
<i>Persicaria cf. hydropiper</i> L.	-	-	+	-	-	-	-	-	-	possible water-pepper
<i>Polygonum aviculare</i> L.	-	-	-	-	-	-	-	-	-	knotgrass

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	20%	20%	
<i>Rumex</i> spp.	1	-	-	-	-	-	-	-	-	dock
<i>Stellaria media</i> L. agg.	-	-	1	-	-	-	-	-	-	common chickweed
<i>Stellaria media</i> L. agg. - seed coat fragment	-	-	-	-	-	1	-	-	-	common chickweed
<i>Agrostemma githago</i> L.	-	-	-	-	-	-	-	-	-	corncockle
<i>Agrostemma githago</i> L. - seed coat fragments	-	-	1	-	+	+	-	-	-	corncockle
<i>Chenopodium</i> spp.	+	-	+	-	-	-	+	+	+	goosefoot
<i>Chenopodium</i> spp./ <i>Atriplex</i> spp. - seed coat fragments	-	+	-	-	-	-	-	-	-	indeterminate goosefoot/ orache
<i>Atriplex</i> spp.	1	-	+	-	-	-	-	-	+	orache
cf. <i>Galium</i> sp. - ?charred fragment	-	-	1	-	-	-	-	-	-	cleaver/ bedstraw
<i>Solanum nigrum</i> L.	-	-	-	-	-	-	-	-	-	black nightshade
<i>Plantago media</i> L./ <i>lanceolata</i> L. - ?charred	-	-	-	-	-	-	-	-	1	hoary/ ribwort plantain
cf. <i>Lamium</i> sp.	-	-	-	-	-	-	-	-	1	possible dead-nettle
<i>Galeopsis</i> sp.	-	-	-	-	-	-	-	-	-	hemp-nettle
<i>Prunella vulgaris</i> L.	-	-	-	-	-	-	-	-	-	selfheal
ASTERACEAE - medium-sized (2–4 mm/ <i>Anthemis</i> / <i>Glebionis</i> type)	-	-	1	-	-	-	-	-	-	Daisy Family
<i>Centaurea</i> sp.	-	-	-	-	1	-	-	-	-	knapweed
<i>Lapsana communis</i> L.	-	-	1	-	+	-	-	-	-	nipplewort
<i>Sonchus asper</i> (L.) Hill.	-	-	+	-	-	-	-	-	-	prickly sow-thistle

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	lower fill of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	20%	20%	
<i>Bellis perennis</i> L.	-	-	-	-	-	-	-	-	-	daisy
<i>Anthemis cotula</i> L.	-	-	1	-	-	-	-	-	-	stinking chamomile
<i>Glebionis segetum</i> (L.) Fourr.	-	-	1	1	-	-	-	-	-	corn marigold
<i>Valerianella dentata</i> (L.) Pollich	-	-	1	-	-	-	-	-	-	narrow-fruited cornsalad
APIACEAE - small-sized (< 2 mm), abraided	1	-	-	-	-	-	-	-	-	Carrot Family
<i>Chaerophyllum temulum</i> L.	-	-	1	-	-	-	-	-	-	rough chervil
<i>Carex</i> spp. - 2-sided	-	-	-	-	-	-	-	-	-	sedge
<i>Carex</i> spp. - 3-sided	+	1	1	-	-	-	-	-	-	sedge
<i>Avena</i> sp./ <i>Bromus</i> sp. - charred	-	-	-	-	-	-	-	-	-	indet. cultivated or wild oat/ brome grass
<i>Glyceria maxima</i> (Hartm.) Holmb.	-	-	1	-	-	-	-	-	-	reed sweet-grass
<i>Bromus</i> sp. - charred	-	-	-	-	-	-	-	-	-	brome grass
POACEAE - small-sized grass caryopsis	-	-	-	-	-	1	-	-	-	wild grass
POACEAE - large-sized grass caryopsis	-	-	-	-	-	-	-	-	-	wild grass
POACEAE - medium-sized grass glume fragment	-	-	-	-	-	-	1	-	-	wild grass
Unidentified - ?peel/ ?bark - ? mineralised	-	-	-	-	-	-	-	-	1	-
OTHER ENVIRONMENTAL REMAINS										
Burnt bone (minute < 2 mm fragments)	-	+	-	-	-	-	-	-	-	-
Charcoal (smaller sized - 2–4 mm)	+	+	-	+	-	+	++	++	++	-

SET	1043	1043	1030	1030	1030	1030	1030	1030	1030	
FEATURE TYPE	Timber gully	Timber gully	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	
CONTEXT NUMBER	1041	1041	1092	1092	1125	1125	1139	1139	1139	
CONTEXT DESCRIPTION	fill of gully	fill of gully	backfill main fill of pit	backfill main fill of pit	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	lower till of pit 1030	
SAMPLE NUMBER	1	1	2	2	4	4	5	5	5	
PHASE	11 C	11 C	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	11/12C AD	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	HR	
PROPORTION SCANNED	100%	100%	100%	15%	25%	10%	100%	20%	20%	
Coleoptera	++	-	++	-	-	-	++	+	+	beetle
Diptera (puparia)	+	-	+++	++	1	-	+	+	+	fly
Eggshell (< 4 mm fragments)	-	1	-	-	-	-	-	1	-	-
Fish - vertebra	-	1	-	-	-	-	-	1	-	-
? Leather frags - very flexible/ pitted/ pale tan	-	-	-	-	-	-	-	+	-	-
Moss - fragments	-	-	-	+	-	-	-	-	-	-
Oyster shell - fragment	-	-	-	-	-	-	-	-	-	-
Waterlogged wood fragments (minute - < 2 mm)	+++++	-	-	-	-	-	-	-	-	-
Waterlogged wood fragments (smaller sized - 2-4 mm)	-	++	-	++	-	++	-	-	-	-
Waterlogged wood fragment (larger-sized - > 4 mm)	-	-	-	-	-	-	-	-	-	-

Table 19 Assessment results for waterlogged plant macrofossils from presumed medieval features from Stonebow, Pavement, Fossgate, York

Nomenclature follows Stace 2010. Semi-quantitative scoring system: 1 = 1 item/ + = 2-5 items/ ++ = 5 - 25 items/ +++ 25 - 100 items/ ++++ > 100 items/ +++++ > 1000 items

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
LATIN BINOMIAL											ENGLISH COMMON NAME
CEREALS											
Cereal indet. - seed coat (entire/ compressed)	1	1	-	-	-	-	-	-	-	-	cereal grain
Cerealia indet. - minute (< 2 mm) bran fragments	-	-	++++	-	+++	+++	+++	-	+++++	+++	cereal bran
Cereal/ POACEAE - glume fragments	++	-	-	-	-	-	-	-	-	-	indeterminate cereal/ large wild grass
Cereal/ POACEAE - culm node	-	-	-	1	-	-	-	-	-	-	indeterminate cereal/ large wild grass
PULSES											
<i>Vicia sp./ Pisum sativum</i> L. - charred	-	-	-	-	-	-	-	-	-	-	indeterminate vetch/ garden pea
FRUITS/ NUTS											
<i>Prunus spinosa</i> L.	-	-	-	-	-	1	-	1	-	-	sloe/ blackthorn
<i>Prunus domestica</i> L.	-	-	-	-	-	1	-	-	-	-	plum
<i>Prunus domestica</i> ssp. <i>insititia</i> (L.) Bonnier & Layens	-	-	-	-	-	-	-	-	-	-	bullace/ greengage/ damson

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L.	+	1	-	1	-	-	1	-	-	-	wild/ dwarf cherry
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L. - fragment	-	-	-	-	-	-	-	-	1	-	wild/ dwarf cherry
<i>Prunus</i> sp. - stone fragment - highly decayed	-	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
<i>Prunus</i> sp. - stone fragment -encrusted with minneralised material	-	-	-	-	-	-	-	1	-	-	indet. plum / cherry/ bullace/ sloe
cf. <i>Prunus</i> sp. - internal structure (smaller - sized)	-	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill	-	-	-	-	-	1	-	-	-	-	indet. pear/ apple
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill - immature	-	-	-	-	-	1	-	-	-	-	indet. pear/ apple
<i>Malus sylvestris</i> (L.) Mill.	-	1	-	1	+	-	-	-	-	-	crab apple
<i>Malus sylvestris</i> (L.) Mill. - endocarp fragment	+	+	1	-	1	+	-	1	-	+	crab apple - core fragment
<i>Crataegus</i> sp.	-	-	-	-	-	-	1	-	-	-	hawthorn
<i>Rubus idaeus</i> L.	-	-	-	-	-	-	-	-	-	-	raspberry
<i>Rubus</i> section Glandulosus Wimm. & Grab.	-	+	-	1	+	+	-	1	-	-	bramble/ blackberry
<i>Corylus avellana</i> L. - nutshell fragment	-	1	-	+	-	-	-	-	-	-	hazelnut
<i>Corylus avellana</i> L. - nutshell fragment - ?charred/ stained	-	-	-	-	-	-	-	-	-	-	hazelnut
<i>Sambucus nigra</i> L.	-	-	-	-	-	-	-	-	-	-	elder/ elderberry

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
OTHER ECONOMIC PLANTS											
<i>Linum usitatissimum</i> L.	-	-	1	-	-	-	-	1	-	-	flax/ linseed
WEED/ WILD PLANTS											
<i>Papaver cf. somniferum</i> L.	-	-	-	-	-	-	1	-	-	-	opium poppy
<i>Ranunculus acris</i> L./ <i>repens</i> L./ <i>bulbosus</i> L.	-	-	-	-	-	-	-	-	-	-	meadow/ creeping/ bulbous buttercup
<i>Ranunculus</i> subg. RANUNCULUS	-	-	-	-	-	-	-	1	-	-	buttercup
<i>Ranunculus sceleratus</i> L.	1	-	-	-	-	-	-	-	-	-	celery-leaved buttercup
<i>Ranunculus</i> subg. BATRACHIUM (DC.) A Gray	-	-	+	-	-	-	-	-	-	-	crowfoot
<i>Ficaria verna</i> Huds.	-	-	-	-	-	-	1	-	-	-	lesser celandine
<i>Filipendula ulmaria</i> (L.) Maxim	-	-	-	-	-	-	-	-	-	-	meadowsweet
<i>Potentilla</i> spp.	-	-	1	-	1	+	1	-	-	-	cinquefoil
<i>Aphanes arvensis</i> L.	-	-	-	-	-	-	-	-	-	-	parsley-piert
<i>Urtica dioica</i> L.	-	-	-	-	-	-	-	-	-	-	common nettle
<i>Urtica urens</i> L.	-	-	-	-	-	-	-	-	-	-	small nettle
<i>Brassica</i> spp./ <i>Sinapis</i> spp.	-	1	-	-	-	-	-	-	-	-	wild cabbage/ wild mustard

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
<i>Raphanus raphanistrum</i> L. - capsule segment	-	1	-	-	-	-	-	-	-	-	wild radish
<i>Thlaspi arvense</i> L.	-	-	-	-	-	-	-	-	-	-	field penny-cress
<i>Persicaria</i> cf. <i>maculosa</i> Gray/ cf. <i>lapathifolia</i> (L.) Delabre - fragments	-	-	-	-	-	-	-	-	-	-	possible redshank/ pale persicaria
<i>Persicaria</i> cf. <i>hydropiper</i> L.	-	-	-	-	-	-	1	-	-	-	possible water-pepper
<i>Polygonum aviculare</i> L.	-	+	-	-	-	-	-	-	-	-	knotgrass
<i>Rumex</i> spp.	-	-	-	-	-	-	-	-	-	-	dock
<i>Stellaria media</i> L. agg.	-	-	-	-	-	-	-	-	-	1	common chickweed
<i>Stellaria media</i> L. agg. - seed coat fragment	-	-	-	-	1	-	-	-	-	-	common chickweed
<i>Agrostemma githago</i> L.	-	-	-	-	-	1	-	-	+	-	corncockle
<i>Agrostemma githago</i> L. - seed coat fragments	+	1	+	-	1	++	-	++	-	+++	corncockle
<i>Chenopodium</i> spp.	-	-	-	-	-	-	-	1	-	-	goosefoot
<i>Chenopodium</i> spp./ <i>Atriplex</i> spp. - seed coat fragments	-	-	-	-	-	-	-	-	-	-	indeterminate goosefoot/ orache
<i>Atriplex</i> spp.	-	-	-	-	-	-	-	-	-	-	orache
cf. <i>Galium</i> sp. - ?charred fragment	-	-	-	-	-	-	-	-	-	-	cleaver/ bedstraw
<i>Solanum nigrum</i> L.	-	-	-	-	-	-	-	-	1	-	black nightshade
<i>Plantago media</i> L./ <i>lanceolata</i> L. - ?charred	-	-	-	-	-	-	-	-	-	-	hoary/ ribwort plantain
cf. <i>Lamium</i> sp.	-	-	-	-	-	-	-	-	-	-	possible dead-nettle

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
<i>Galeopsis</i> sp.	-	-	-	1	-	-	-	-	-	1	hemp-nettle
<i>Prunella vulgaris</i> L.	-	-	-	-	-	-	-	1	-	-	selfheal
ASTERACEAE - medium-sized (2-4 mm/ <i>Anthemis</i> / <i>Glebionis</i> type)	-	-	-	-	-	-	-	-	-	-	Daisy Family
<i>Centaurea</i> sp.	-	-	+	-	1	-	-	-	-	1	knapweed
<i>Lapsana communis</i> L.	1	-	-	-	-	-	-	1	-	+	nippewort
<i>Sonchus asper</i> (L.) Hill.	-	-	-	-	-	-	-	-	-	-	prickly sow-thistle
<i>Bellis perennis</i> L.	-	-	-	-	-	1	-	-	-	-	daisy
<i>Anthemis cotula</i> L.	-	-	-	-	-	-	-	-	-	-	stinking chamomile
<i>Glebionis segetum</i> (L.) Fourr.	+	-	-	-	1	-	1	-	-	1	corn marigold
<i>Valerianella dentata</i> (L.) Pollich	-	-	-	-	-	-	-	-	-	-	narrow-fruited cornsalad
APIACEAE - small-sized (< 2 mm), abraided	-	-	-	-	-	-	-	-	-	-	Carrot Family
<i>Chaerophyllum temulum</i> L.	1	-	-	-	-	-	-	-	-	-	rough chervil
<i>Carex</i> spp. - 2-sided	-	-	-	-	-	1	-	-	-	-	sedge
<i>Carex</i> spp. - 3-sided	-	-	-	-	-	-	-	+	-	-	sedge
<i>Avena</i> sp./ <i>Bromus</i> sp. - charred	-	1	-	-	-	-	-	1	-	-	indet. cultivated or wild oat/ brome grass
<i>Glyceria maxima</i> (Hartm.) Holmb.	-	-	-	-	-	-	-	-	-	-	reed sweet-grass
<i>Bromus</i> sp. - charred	-	-	-	1	-	-	-	-	-	-	brome grass

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
POACEAE - small-sized grass caryopsis	-	-	-	-	-	-	-	-	-	-	wild grass
POACEAE - large-sized grass caryopsis	-	-	-	-	-	-	-	-	-	1	wild grass
POACEAE - medium-sized grass glume fragment	-	-	-	-	-	-	-	-	-	-	wild grass
Unidentified - ?peel/ ?bark - ? mineralised	-	-	-	-	-	-	-	-	-	-	-
OTHER ENVIRONMENTAL REMAINS											
Burnt bone (minute < 2 mm fragments)	-	-	-	-	-	-	-	-	-	-	-
Charcoal (smaller sized - 2–4 mm)	-	-	++	-	-	-	-	-	-	-	-
Coleoptera	+	-	++	+	-	-	-	-	+	+	Beetle
Diptera (puparia)	++	+	+++	1	+	+	+	-	++	+	fly
Eggshell (< 4 mm fragments)	-	-	-	-	-	-	-	1	-	1	-
Fish - vertebra	-	-	-	-	-	-	-	-	-	-	-
? Leather frags - very flexible/ pitted/ pale tan	-	-	-	-	-	-	-	-	-	-	-
Moss - fragments	-	+	+	-	-	-	-	-	-	-	-
Oyster shell - fragment	-	-	-	-	-	-	-	1	-	-	-
Waterlogged wood fragments (minute - < 2 mm)	-	+++	-	-	-	-	-	+	-	-	-

SET	1041	1041	1041	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1121	1121	1135	1135	1147	1147	1165	1165	1210	1210	
CONTEXT DESCRIPTION	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	3	3	6	6	7	7	8	8	9	9	
PHASE	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	12/13 C	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	FLOT	HR	
PROPORTION SCANNED	100%	10%	50%	10%	15%	10%	25%	20%	50%	15%	
Waterlogged wood fragments (smaller sized - 2-4 mm)	-	+	-	-	-	+++	-	++	-	-	-
Waterlogged wood fragment (larger-sized - > 4 mm)	-	-	-	-	-	-	-	+	-	-	-

Table 20 Assessment results for waterlogged plant macrofossils from presumed medieval features at Stonebow, Pavement, Fossgate, York continued...

Nomenclature follows Stace 2010. Semi-quantitative scoring system: 1 = 1 item/ + = 2-5 items/ ++ = 5 - 25 items/ +++ 25 - 100 items/ ++++ > 100 items/ +++++ > 1000 items

SET	1030	1030	1030	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1092	1125	1139	1121	1121	1135	1147	1165	1210	1210	
CONTEXT DESCRIPTION	backfill (top of pit)	main fill of pit 1030	main fill of pit 1030	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	2	4	5	3	3	6	7	8	9	9	
PHASE	11/12C AD	11/12C AD	11/12C AD	12/13 C AD	12/13 C AD	12/13 C AD	12/13 C AD	12/13 C AD	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	HR	FLOT	HR	HR	HR	FLOT	FLOT	HR	
PROPORTION SCANNED	100%	10%	20%	100%	10%	10%	10%	25%	50%	15%	
LATIN BINOMIAL											ENGLISH COMMON NAME
FRUITS/ NUTS											
<i>Prunus spinosa</i> L.	-	-	-	-	-	-	1	-	-	-	sloe/ blackthorn
<i>Prunus domestica</i> L.	-	1	-	-	-	-	-	-	-	-	plum
<i>Prunus domestica</i> ssp. <i>insititia</i> (L.) Bonnier & Layens	-	-	-	-	-	-	-	-	-	-	bullace/ greengage/ damson
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L.	3	-	-	2	1	1	-	1	-	-	wild/ dwarf cherry
<i>Prunus avium</i> (L.) L/ <i>cerasus</i> L. - fragment	-	1	-	-	-	-	-	-	1	-	wild/ dwarf cherry
<i>Prunus</i> sp. - stone fragment - highly decayed	-	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
<i>Prunus</i> sp. - stone fragment -encrusted with mineralised material	-	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
cf. <i>Prunus</i> sp. - internal structure (smaller - sized)	-	-	-	-	-	-	-	-	-	-	indet. plum / cherry/ bullace/ sloe
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill	-	-	-	-	-	-	-	-	-	-	indet. pear/ apple
<i>Pyrus</i> sp./ <i>Malus sylvestris</i> (L.) Mill - immature	-	-	-	-	-	-	-	-	-	-	indet. pear/ apple
<i>Malus sylvestris</i> (L.) Mill.	-	-	-	-	-	-	-	-	-	-	crab apple

SET	1030	1030	1030	1041	1041	1041	1041	1041	1042	1042	
FEATURE TYPE	Wicker-lined pit	Wicker-lined pit	Wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	timber and wicker-lined pit	
CONTEXT NUMBER	1092	1125	1139	1121	1121	1135	1147	1165	1210	1210	
CONTEXT DESCRIPTION	backfill (top of pit)	main fill of pit 1030	main fill of pit 1030	backfill at top of pit 1042	backfill at top of pit 1042	top of upper fill of pit 1042	middle of upper fill of pit 1042	base of upper fill of pit 1042	top of lower fill of pit 1042	top of lower fill of pit 1042	
SAMPLE NUMBER	2	4	5	3	3	6	7	8	9	9	
PHASE	11/12C AD	11/12C AD	11/12C AD	12/13 C AD	12/13 C AD	12/13 C AD	12/13 C AD	12/13 C AD	?Med	?Med	
SAMPLE VOLUME (ml)	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	
FRACTION	FLOT	HR	HR	FLOT	HR	HR	HR	FLOT	FLOT	HR	
PROPORTION SCANNED	100%	10%	20%	100%	10%	10%	10%	25%	50%	15%	
<i>Malus sylvestris</i> (L.) Mill. - endocarp fragment	-	-	-	-	-	-	-	-	-	-	crab apple - core fragment
<i>Crataegus</i> sp.	-	-	-	-	-	-	-	1	-	-	hawthorn
<i>Rubus idaeus</i> L.	-	-	-	-	-	-	-	-	-	-	raspberry
<i>Rubus</i> section <i>Glandulosus</i> Wimm. and Grab.	-	-	-	-	-	-	2	-	-	-	bramble/ blackberry
<i>Corylus avellana</i> L. - nutshell fragment	-	-	-	-	1	1	-	-	-	-	hazelnut
<i>Corylus avellana</i> L. - nutshell fragment - ?charred/ stained	-	-	2	-	-	-	-	-	-	-	hazelnut
<i>Sambucus nigra</i> L.	-	-	-	-	-	-	-	-	-	-	elder/ elderberry
WEED/ WILD PLANTS											
<i>Galeopsis</i> sp.	-	-	-	-	-	-	-	-	-	1	hemp-nettle

Table 21 Plant macrofossils removed from flots or heavy residues from Stonebow Pavement, Fossgate, York Pit 1030 and Pit 1042 samples for potential ¹⁴C AMS radiocarbon determination

NB: No larger-sized fruit stones and/or weed seeds were available from the WPR sub-sampled for gully 1041; however, further unprocessed sediment exists and can be processed and rapidly scanned if plant material for radiocarbon AMS determination from this feature is desired.

APPENDIX 14 – ARCHAEOENTOMOLOGY ASSESSMENT

By Dr D. Smith - Dept. of Classics, Ancient History and Archaeology, University of Birmingham

INTRODUCTION

Nine bulk samples of sediment were selected from archaeological investigations at Stonebow Pavement, Fossgate, York (YORYM:2019.57) by York Archaeological Trust for insect assessment.

These samples came from three features:

- 1) Sample 1 came from Context 1041 from Set 1043 which was a wooden lined gully early to mid-11th century in date.
- 2) Samples 2, 4 and 5 came from contexts 1092, 1125 and 1139 sequentially from Set 1030 which was a wicker lined pit which has been dated to the 11th/12th century.
- 3) Samples 3, 6, 7, 8, came from contexts 1121, 1135, 1147, 1165 from Set 1041, secondary fills in a timber lined pit which have been dated to the late-12th/early-13th century.
- 4) Sample 9 came from Context 1210, Set 1042 which was the primary fill of a timber lined pit, the upper fills (Set 1041) within which have been dated to the late-12th/early-13th century.

METHODS

The feature and context numbers and the archaeological nature of the samples are outlined in Table 22.

The samples were processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). The sample weights and volumes are displayed in Table 23. Several of these samples have produced very large flots which could not be sorted fully in the limited amount of time available. The proportions of the flots which were sorted are indicated in Table 23.

The system for 'scanning' faunas, as outlined by Kenward *et al.* (1985) was followed in this assessment.

When discussing the faunas recovered, the following considerations should be taken into account:

- 1) due to the rapid nature of scanning, identifications of any insects present are provisional. In addition, many of the taxa present potentially can be further identified down to species level during a full analysis, producing information that is more detailed.
- 2) again, due to the rapid nature of scanning, the various proportions of insects suggested are very notional and subjective. As a result, the faunas described here should be regarded as incomplete and possibly biased.

RESULTS

The insect taxa recovered are listed in Table 23. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles) and K. G. V. Smith (1989) for the Diptera (flies). The numbers of individuals present for each taxa is estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 5-10 individuals, ++++ = 10-20 individuals, +++++ = 20+ individuals.

The majority of the insect fauna recovered were Diptera (flies), Coleoptera (Beetles) and Siphonaptera (fleas). The preservation and nature of the insect faunas recovered along with recommendations for further analysis are presented in Table 24.

DISCUSSION

Early Medieval Gully, Set 1041

The single sample of material taken from the wood lined medieval gully (context 1041/sample 1) produced a moderately sized, but poorly preserved, insect fauna. This was dominated by a range of beetles which are commonly associated with decaying settlement waste in the archaeological record such as the hydrophilid *Cercyon* spp. and the staphylinids 'rove beetles' *Oxytelus*, *Trogophloeus* and *Lithocharis* (Kenward and Hall 1995). The puparia of the flies *Copromyza*, *Sphaerocera curvipes* and the 'house fly' *Musca domestica* are also common in this type of material (K. G. V. Smith 1989). The colydiid beetle *Aglenus bruneus* appears to be particularly common in buried material in house floors in Anglo-Scandinavian York (Kenward and Hall 1995). Also typical of housing and settlement is the woodworm *Anobium punctatum* which is a common pest of housing timbers. This sample also produced relatively large numbers of *Aphodius* dung beetles. Traditionally these are interpreted as indicating the presence of grazing animals and pasture (e.g. Smith et al. 2018) but it seems that several of the commonest dung beetles encountered in the archaeological record may breed in wet settlement waste (Kenward et al. 2004).

This insect fauna probably derives from a range of different materials gathered from a number of sources from across the settlement. The poor preservation of this insect fauna might result from the material laying in the open before deposition or decay in the archaeological record. It is suggested that, unless there are specific archaeological reasons, this fauna is not fully analysed.

Medieval Wicker-lined Pit, Set 1030

The insect faunas from the three samples (Samples 2, 4 and 5) from this feature are dominated by fly puparia. The fly *Thoracochaeta zosteriae*, which occurs in some numbers, and 'the drain fly' *Scatopse notata* are thought to be particularly typical of cesspits and the presence of cess in the archaeological record (Smith 2013). *Heleomyza serrata* and 'the house fly' *Musca domestica* are indicative of decaying settlement wastes, as are a range of beetles; such as the *Cercyon*, Histeridae, *Oxytelus*, *Platystethus* and *Quedius* species. *Xylodromus concinnus*, *Monotoma*, *Cryptophagus* and the *Lathridius* species are indicative of dry materials, such as hay, in archaeological settlements (Kenward and Hall 1995). The ground beetle *Pristonychus terricola* and the spider beetle *Ptinus fur* are thought to be particularly indicative of housing and settlement (Kenward and Hall 1995). Sample 2 also contained a number of individuals of the human flea *Pulex irritans*.

The fills of this pit seem to be composed of a range of materials, most notably settlement waste and human cess, and probably represents a cesspit and/or a rubbish pit. Both the preservation and clear interpretation of these faunas suggests that they warrant fuller analysis.

Medieval Timber-lined Pit, Sets 1041 and 1042

This feature produced a series of well preserved and large insect faunas as well. These are dominated by a range of fly puparia that are thought to be typical of the presence of cess in the archaeological record (Smith 2013). This includes *Thoracochaeta zosteræ*, the 'latrine fly' *Fannia scalaris*, the 'drain fly' *Scatopse notata* and 'the rat tailed maggot' *Eristalis ?tenax* and the 'dung fly' *Sepsis*. Similar to Set 1030 the beetle faunas are dominated by a range of species that are indicative of decaying settlement wastes such as *Cercyon*, *Oxytelus*, *Quedius*, *Aglenus brunneus* and *Trox* spp. The large numbers of *Aphodius* recovered throughout these contexts probably indicates the presence of very decayed settlement waste. The beetles *Cryptophagus* spp., *Lathridius* spp., *Atomaria* spp., *Typhaea stercorea*, *Mycetea hirta* and the spider beetle *Ptinus fur* are all indicative of dry settlement material, such as hay. The human flea (*Pulex irritans*) was recovered in some numbers from all of the contexts in this feature. A single individual of the granary weevil (*Sitophilus granarius*) also was recovered. It is probable that this individual has passed through the human dietary track and entered the deposit in cess (Osborne 1983; Smith 2013).

Once again, the insect faunas from this feature indicate that it contained cess and settlement waste. Given that the faunas from this deposit are well preserved and informative, it is recommended that a fuller analysis takes place.

RECOMMENDATIONS

The centre of York is one of the few urban areas in Britain which has been intensively sampled for environmental archaeology (e.g. Hall and Kenward 1990; Kenward and Hall 1995; Buckland and Buckland 2006, Environmental Archaeology Bibliography York 2008), however, the vast majority of these date from the Roman (1st to 2nd century) or Anglo-Scandinavian (mid-10th to 11th century) periods. There are at present only two other sets of 12th–14th century insect faunas recovered from York (Lower Petergate, Hall et al. 2007; Walmgate, Hall et al. 2000), therefore, given the comparative rarity of medieval insect faunas in York, it seems that deposits of this age do warrant fuller investigation. Additionally, past investigations of the insect faunas from York did not routinely examine the nature of the Diptera faunas recovered. The additional work proposed here, therefore, would shed new light on this aspect of York's past history, however, the scale of any analysis that occurs will depend on the date of the material, the archaeological aims of the project itself and the money available. There are two approaches to the full analysis of insect remains. The first is to fully identify all insect fragments and to produce full counts which is expensive but produces statistically viable results; the second is to undertake an intensive scan that identifies the majority of the fauna present and to produce estimated counts which is cheaper, but will not produce data as statistically valid (see Kenward 1985; 1992) and, therefore, will be of less use in any further comparative analysis to other sites.

Column 6 in Table 24 presents the individual recommendations for further analysis for all productive samples. Column 7 in Table 24 indicates two different estimates of the time it will take to complete this analysis per sample. The first figure indicates the number of hours it will

take carry out an intensive scan and the second estimates provides the time required to carry out a full identification and quantification of each fauna.

Feature Description	Context Description	Samples
Anglo-Scandinavian gully [SET 1043 - early to mid-11 th century AD based on finds and radiocarbon dates]	1041 – fill of timber gully	Sample 1
Medieval wicker-lined pit [SET 1030 – c. 11 th /12 th century AD based on finds]	1092 – backfill of pit 1030 (top) 1125 – main fill of pit 1030 (main) 1139 – fill at base of pit 1030 (base)	Sample 2 Sample 4 Sample 5
Medieval timber-lined pit (with wicker structures) (secondary fills above SET1042) [SET 1041 – late-12 th /early-13 th century based on finds]	1121 – backfill of pit 1042 (top) 1135 – upper fill of pit 1042 (top) 1147- upper fill of pit 1042 (middle) 1165 – upper fill of pit 1042 (base)	Sample 3 Sample 6 Sample 7 Sample 8
Medieval timber-lined pit (with wicker structures) (primary fill below SET 1041) [SET 1042 – no datable artefacts] *NB base of feature not reached/ sample log records pit as Feature 1122	1210 – lower fill of pit 1042 (top) NB material distinct from upper fill/ excavation did not reach base of pit	Sample 9

Table 22 Context, feature, phase and archaeological descriptions for the samples used in the insect assessment from Stonebow, York (YORYM:2019.57)

Set	1043	1030	1030	1030	1041	1041	1041	1041	1042
Context	1041	1092	1125	1139	1121	1135	1147	1165	1210
Sample	1	2	4	5	3	6	7	8	9
Weight (kg.)	6.6	4.6	5	6.5	7	8	6	6	7
Volume (L.)	8	7	6	7	8	8	8	8	8
% sorted	100	100	100	100	100	15	10	50	10
COLEOPTERA									
Carabidae									
<i>Nebria</i> spp.	-	-	+	-	-	-	-	-	-
<i>Clivina</i> spp.	-	-	-	-	-	-	-	-	+
<i>Trechus</i> spp.	+	-	+	-	+	+	-	-	-
<i>Pristonychus terricola</i> (Hbst.)	-	-	+	-	+	-	-	-	-
<i>Amara</i> spp.	-	-	+	-	-	-	-	-	-
Hydraenidae									
<i>Helophorus</i> spp.	-	+	+	-	-	-	-	-	-
Hydrophilidae									
<i>Cercyon</i> spp.	++++	++	++	++	++	++	+	++++	++++
<i>Megasternum boletophagum</i> (Marsh.)	-	-	-	+	-	-	-	-	-
Histeridae									
Histeridae Gen. & spp. indet.	-	+	-	-	++	+	+	-	+
<i>Acritus nigricornis</i> (Hoffm.)	-	-	-	-	+	+	-	+	-
Catopidae									
<i>Catops</i> spp.	-	-	+++	-	+	-	-	+	-
Ptiliidae									
Ptiliidae Genus & spp. indet.	-	+	-	-	++	-	-	+	-
Staphylinidae									

Set	1043	1030	1030	1030	1041	1041	1041	1041	1042
Context	1041	1092	1125	1139	1121	1135	1147	1165	1210
Sample	1	2	4	5	3	6	7	8	9
Weight (kg.)	6.6	4.6	5	6.5	7	8	6	6	7
Volume (L.)	8	7	6	7	8	8	8	8	8
% sorted	100	100	100	100	100	15	10	50	10
<i>Omalius</i> spp.	-	-	+	+	-	-	-	-	-
<i>Xylodromus concinnus</i> (Marsh.)	-	++	++	++	-	-	+	+++	-
<i>Olophrum</i> spp.	+	-	-	-	-	-	-	+	-
<i>Coprophilus striatulus</i> (F.)	-	-	-	+	-	-	-	-	-
<i>Trogophloeus</i> spp.	+++	+++	++	-	++++	++	-	-	-
<i>Oxytelus</i> spp.	++++	+++	++	+++	++++	+	-	++++	++
<i>Platystethus</i> spp.	+	++	+	-	++	+	-	-	-
<i>Stenus</i> spp.	+	-	+	-	-	-	-	+	-
<i>Stilicus</i> spp.	-	+	-	-	-	-	-	-	-
<i>Gyrophypnus</i> spp.	+	+	-	-	++	-	-	++	-
<i>Xantholinus</i> spp.	+	-	-	-	++	-	-	-	-
<i>Lithocharis</i> spp.	++	-	-	-	-	-	-	-	-
<i>Neobisnus</i> spp.	-	+	-	-	-	-	-	-	-
<i>Quedius</i> spp.	-	+++	-	++	+++	+++	-	+++	++++
<i>Leucoparyphus silphoides</i> (L.)	-	-	+	-	-	-	-	-	-
Aleocharinidae Genus & spp. Indet.	-	-	-	-	-	-	-	++	+
Cantharidae									
<i>Cantharis</i> spp.	-	-	-	-	-	-	-	-	+
Nitidulidae									
<i>Omosita</i> spp.	-	-	-	-	-	-	-	+	-
Cucujidae									
<i>Monotoma</i> spp.	-	+	+	-	+	-	-	-	+

Set	1043	1030	1030	1030	1041	1041	1041	1041	1042
Context	1041	1092	1125	1139	1121	1135	1147	1165	1210
Sample	1	2	4	5	3	6	7	8	9
Weight (kg.)	6.6	4.6	5	6.5	7	8	6	6	7
Volume (L.)	8	7	6	7	8	8	8	8	8
% sorted	100	100	100	100	100	15	10	50	10
Cryptophagidae									
<i>Cryptophagus</i> spp.	+	+	+++	++	++	-	+	+++	-
<i>Atomaria</i> spp.	+	-	-	-	+++	-	+	++	+
Lathridiidae									
<i>Lathridius</i> spp.	++	+	+++	-	++	++	-	++	++
<i>Corticaria</i> spp.	-	-	-	-	-	-	-	+++	-
Mycetophagidae									
<i>Typhaea stercorea</i> (L.)	-	-	-	-	+	-	-	-	-
Colydiidae									
<i>Aglenus brunneus</i> (Gyll.)	++	-	-	-	++	-	-	++	-
Endomychidae									
<i>Mycetaea hirta</i> (Marsh.)	-	-	-	-	+	-	-	-	-
Anobidae									
<i>Anobium punctatum</i> (Geer)	++++	+	+	++	++	+++	-	+++	++
Ptinidae									
<i>Ptinus fur</i> (L.)	+	-	+	+	+	-	+++	++	-
Tenebrionidae									
<i>Tenebrio</i> spp.	-	-	-	-	+	-	-	-	-
Scarabaeidae									
<i>Trox</i> spp.	-	-	-	+	-	+	-	-	-

Set	1043	1030	1030	1030	1041	1041	1041	1041	1042
Context	1041	1092	1125	1139	1121	1135	1147	1165	1210
Sample	1	2	4	5	3	6	7	8	9
Weight (kg.)	6.6	4.6	5	6.5	7	8	6	6	7
Volume (L.)	8	7	6	7	8	8	8	8	8
% sorted	100	100	100	100	100	15	10	50	10
<i>Oxyomus silvestris</i> (Scop.)	+	-	-	-	-	-	-	+	-
<i>Aphodius</i> spp.	+++++	-	-	-	++++	++++	-	+	+++
Chrysomelidae									
<i>Phyllotreta</i> spp.	-	-	-	-	+	-	-	-	-
Bruchidae									
<i>Bruchus</i> spp.	+	-	-	-	+	-	+	-	-
Curculionidae									
<i>Sitona</i> spp.	-	-	+	-	-	-	-	-	-
<i>Sitophilus granarius</i> (L.)	-	-	-	-	+	-	-	-	-
Ceutorhynchinae indet.	-	-	+	-	-	-	-	-	-
DIPTERA									
Scatopsidae									
<i>Scatopse notata</i> L.	-	++	+	-	-	++	+	++	++
Syrphidae									
<i>Eristalis ptenax</i> (L.)	-	-	-	-	++	-	+	++++	+++
Helomyzidae									
<i>Heleomyza serrata</i> (L.)	-	+++	-	-	-	-	-	-	-
Sepsidae									
<i>Sepsis</i> spp.	-	-	-	-	-	+++	-	+++	+
Sphaeroceridae									

Set	1043	1030	1030	1030	1041	1041	1041	1041	1042
Context	1041	1092	1125	1139	1121	1135	1147	1165	1210
Sample	1	2	4	5	3	6	7	8	9
Weight (kg.)	6.6	4.6	5	6.5	7	8	6	6	7
Volume (L.)	8	7	6	7	8	8	8	8	8
% sorted	100	100	100	100	100	15	10	50	10
<i>Sphaerocera curvipes</i> Lat.	+	-	-	-	-	-	-	-	-
Copromyzinae Genus and spp. indet.	+	-	-	-	-	-	-	-	-
Limosiniinae Gen. & spp. Indet.	-	-	++	-	+++	+++	+++	++	+
<i>Thoracochaeta zosteræ</i> (Hal.)	-	+++++	++++	++	++++	++++	+++	++++	+++
Calliphoridae									
<i>Calliphora</i> spp.	-	-	-	-	+	+	-	-	-
Fanniinae									
<i>Fannia scalaris</i> (Fab.)	-	-	-	-	+	-	-	-	-
Muscinae									
<i>Musca domestica</i> L.	+++	+++	-	++	++	+	-	+	-
SIPHONAPTERA									
<i>Pulex irritans</i> (L.)	-	++	-	-	++++	++	-	+	-

Table 23 The insect remains recovered from Stonebow, York (YORYM:2019.57) (Nomenclature follows Lucht 1987)

Key

+ = 1-2 individuals

++ = 2-5 individuals

+++ = 5-10 individuals

++++ = 10-20 individuals

+++++ = 20+ of individuals

CONTEXT	DEGREE OF PRESERVATION	SIZE OF FAUNA	POSSIBLE AQUATIC ENVIRONMENT	TERRESTRIAL LANDSCAPE	RECOMMENDATION	Hours required for intensive scan / full analysis
1041	Poor and fragmented	moderate	No indicators	<i>Copromyza</i> , <i>Musca domestica</i> and <i>Sphaerocera curvipes</i> fly puparia are associated with settlement waste or stable waste as are <i>Cercyon</i> , <i>Oxytelus</i> , <i>Lithocharis</i> and <i>Aglenus bruneus</i> beetles. <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. The large numbers of <i>Aphodius</i> dung beetles may indicate the presence of grazing animals or decaying settlement waste.	This samples has a limited potential since the fauna is eroded and probably not in situ.	0.25 / 2
1092	Good preservation with little fragmentation	moderate	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> and <i>Scatopse notata</i> are typical of cesspits and the presence of cess. Other flies such as <i>Heleomyza serrata</i> and <i>Musca domestica</i> are indicative of decaying settlement wastes as are the <i>Cercyon</i> , Histeridae, <i>Oxytelus</i> , <i>Platystethus</i> and <i>Quedius</i> species of beetle. <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. <i>Monotoma</i> , <i>Cryptophagus</i> and the <i>Lathridius</i> species are indicative of dry material such as hay. <i>Pulex irritans</i> is the human flea.	Clearly settlement waste and cess. Further analysis recommended.	0.5 / 3
1125	Good preservation with little fragmentation	moderate	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> and <i>Scatopse notata</i> are typical of cesspits and the presence of cess. Indicative of decaying settlement wastes as are the <i>Cercyon</i> , <i>Oxytelus</i> , <i>Platystethus</i> and <i>Quedius</i> species of beetle. <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. <i>Monotoma</i> , <i>Cryptophagus</i> , <i>Lathridius</i> and the spider beetle <i>Ptinus fur</i> are indicative of dry material such as hay.	Clearly settlement waste and cess. Further analysis recommended.	0.5 / 3

CONTEXT	DEGREE OF PRESERVATION	SIZE OF FAUNA	POSSIBLE AQUATIC ENVIRONMENT	TERRESTRIAL LANDSCAPE	RECOMMENDATION	Hours required for intensive scan / full analysis
1139	Poorly preserved with some erosion and fragmented	Small/moderate	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> are typical of cess pits and the presence of cess. Indicative of decaying settlement wastes are the 'house fly' <i>Musca domestica</i> the beetles <i>Cercyon</i> , <i>Oxytelus</i> , <i>Quedius</i> and <i>Trox</i> . <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber., <i>Cryptophagus</i> and the spider beetle <i>Ptinus fur</i> are indicative of dry material such as hay.	Decaying settlement waste and cess. Further analysis may be warranted	0.5 / 1
1121	Good preservation with little fragmentation	Moderate / large	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> , Limosininae, <i>Fannia scalaris</i> and <i>Eristalis ?tenax</i> are typical of cesspits and the presence of cess. Indicative of decaying settlement wastes are the 'house fly' <i>Musca domestica</i> the beetles <i>Cercyon</i> , <i>Oxytelus</i> , <i>Quedius</i> , <i>Aglenus brunneus</i> and <i>Trox</i> . The large numbers of <i>Aphodius</i> dung beetles indicate the presence of grazing animals or very decayed settlement waste. <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. <i>Cryptophagus</i> , Lathridius, Atomaria, <i>Typhaea stercorea</i> , <i>Mycetea hirta</i> and the spider beetle <i>Ptinus fur</i> are indicative of dry material such as hay. <i>Pulex irritans</i> is the human flea.	Mainly settlement waste and cess. Further analysis recommended.	0.5 / 2
1135	Good preservation and little fragmentation	large	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> , Limosininae, <i>Sepsis</i> and <i>Scatopse notate</i> are typical of cesspits and the presence of cess. Indicative of decaying settlement wastes are the 'house fly' <i>Musca domestica</i> the beetles <i>Cercyon</i> , <i>Oxytelus</i> , <i>Quedius</i> , and <i>Trox</i> . The large numbers of <i>Aphodius</i> dung beetles indicate the presence of grazing animals or very decayed settlement waste. <i>Anobium punctatum</i> is the woodworm and indicates the	Mainly settlement waste and cess. Further analysis recommended.	0.5 / 2 Only has 15% of flot sorted will also need 1.5 days to fully sort

CONTEXT	DEGREE OF PRESERVATION	SIZE OF FAUNA	POSSIBLE AQUATIC ENVIRONMENT	TERRESTRIAL LANDSCAPE	RECOMMENDATION	Hours required for intensive scan / full analysis
				presence of timber. <i>Lathridius</i> is indicative of dry material such as hay. <i>Pulex irritans</i> is the human flea.		
1147	Good preservation and little fragmentation	large	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> , Limosininae, <i>Eristalis ?tenax</i> and <i>Scatopse notate</i> are typical of cess pits and the presence of cess. Indicative of decaying settlement wastes are the <i>Cercyon</i> . <i>Cryptophagus</i> , <i>Atomaria</i> and the spider beetle (<i>Ptinus fur</i>) are indicative of dry material such as hay.	Mainly settlement waste and cess. Further analysis recommended.	0.5 / 2 Only has 10% of flot sorted will also need 2 days to fully sort
1165	Good preservation and little fragmentation	large	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> , Limosininae, <i>Sepsis</i> and <i>Scatopse notate</i> are typical of cesspits and the presence of cess. Indicative of decaying settlement wastes are the 'house fly' <i>Musca domestica</i> the beetles <i>Cercyon</i> , <i>Oxytelus</i> , <i>Quedius</i> , and <i>Trox</i> . <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. <i>Cryptophagus</i> , <i>Atomaria</i> , <i>Lathridius</i> , <i>Corticaria</i> and the spider beetle <i>Ptinus fur</i> are indicative of dry material such as hay. <i>Pulex irritans</i> is the human flea.	Mainly settlement waste and cess. Further analysis recommended.	0.5 / 2 50% of the flot sorted will also need 1 day to fully sort

CONTEXT	DEGREE OF PRESERVATION	SIZE OF FAUNA	POSSIBLE AQUATIC ENVIRONMENT	TERRESTRIAL LANDSCAPE	RECOMMENDATION	Hours required for intensive scan / full analysis
1210	Good preservation and little fragmentation	large	No indicators	The fly puparia <i>Thoracochaeta zosteræ</i> , Limosininae, <i>Sepsis</i> and <i>Scatopse notate</i> and the 'rat tailed maggot' <i>Eristalis tenax</i> are typical of cesspits and the presence of cess. Indicative of decaying settlement wastes are the beetles <i>Cercyon</i> , <i>Oxytelus</i> and <i>Quedius</i> . <i>Anobium punctatum</i> is the woodworm and indicates the presence of timber. <i>Cryptophagus</i> , <i>Atomaria</i> , <i>Lathridius</i> and <i>Corticaria</i> are indicative of dry material such as hay.	Mainly settlement waste and cess. Further analysis recommended.	0.5 / 2 10% of the flots sorted will also need 2 days to fully sort

Table 24 Preservation, size, provisional interpretation and recommendations for the samples containing insects from Stonebow, York (YORYM:2019.57)

APPENDIX 15 – RADIOCARBON ANALYSIS

Five samples were sent to the Scottish Universities Environmental Research Centre (SUERC) for radiocarbon analysis. All of the samples were recovered from wood or timbers. Three were from elements of a medieval timber lined drain, Set 1043 (Contexts, 1036, 1038 and 1042), one from a stake or pile forming a structure in a medieval pit, Set 1031 (Context 1114), and another from a wooden pile forming part of a presumed post-medieval wall foundation, Set 1022 (Context 1078).

The results of the radiocarbon analysis are summarised in Table 25 below, the radiocarbon dating certificate for each of the five samples are then presented on the succeeding pages.

Context number	Sample number	Material	Radiocarbon Age BP	Calibrated Date (calAD) 68.2%	Calibrated Date (calAD) 95.4%
1036	10	Waterlogged wood: <i>Quercus spp.</i>	928 ± 24	1043 – 1154 AD	1033–1160 AD
1038	11	Waterlogged wood: <i>Quercus spp.</i>	933 ± 24	1040 – 1153 AD	1032–1158 AD
1042	12	Waterlogged wood: <i>Quercus spp.</i>	980 ± 23	1018 – 1146 AD	1013–1153 AD
1078	13	Waterlogged wood: <i>Fraxinus excelsior</i>	403 ± 23	1445 – 1485 AD	1439–1617 AD
1114	14	Waterlogged wood: <i>Salix Spp.</i>	926 ± 23	1044 – 1154 AD	1034–1160 AD

Table 25 Radiocarbon sample analysis summary



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Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc



RADIOCARBON DATING CERTIFICATE

11 November 2019

Laboratory Code SUERC-89873 (GU52807)

Submitter Ben Savine
York Archaeological Trust
47 Aldwark
York
YO1 7BX

Site Reference 6126 - Stonebow, Pavement, Fossgate Watching Brief

Context Reference 1036

Sample Reference 10

Material Waterlogged wood : Quercus spp.

$\delta^{13}\text{C}$ relative to VPDB -27.7 ‰

Radiocarbon Age BP 928 \pm 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

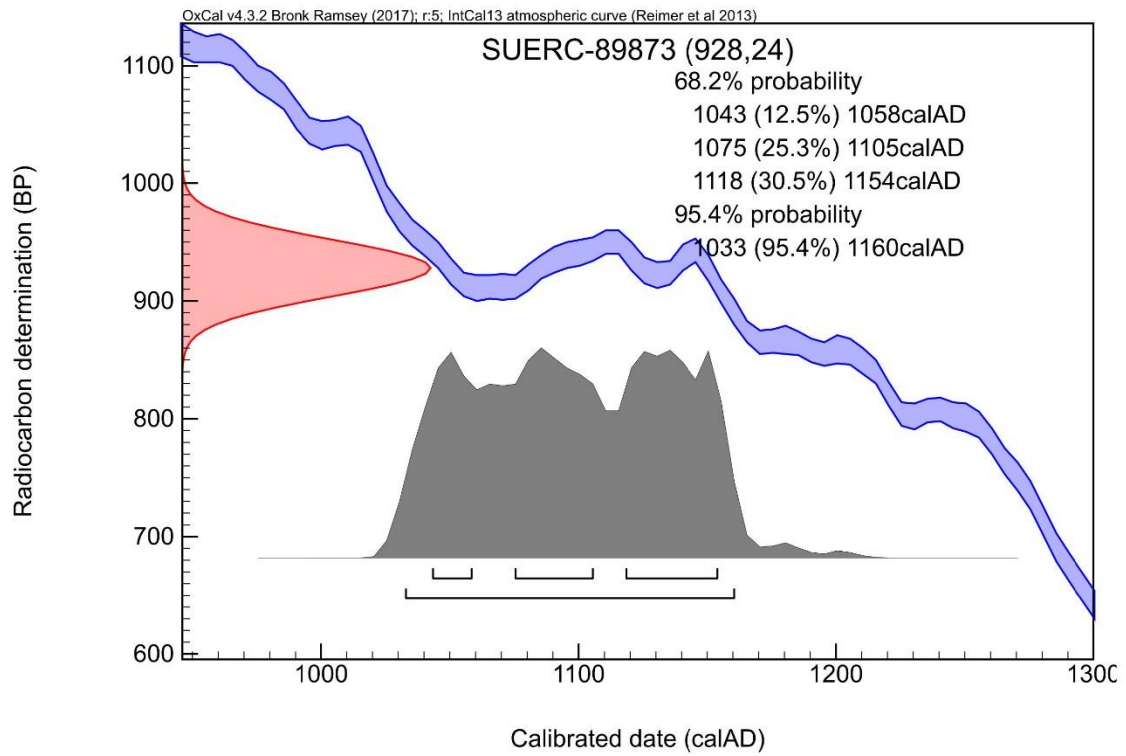


**University
of Glasgow**

The University of Glasgow, charity number SC004401



The University of Edinburgh is a charitable body,
registered in Scotland, with registration number SC005336



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



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RADIOCARBON DATING CERTIFICATE

11 November 2019

Laboratory Code SUERC-89874 (GU52808)

Submitter Ben Savine
 York Archaeological Trust
 47 Aldwark
 York
 YO1 7BX

Site Reference 6126 - Stonebow, Pavement, Fossgate Watching Brief

Context Reference 1038

Sample Reference 11

Material Waterlogged wood : Quercus spp.

$\delta^{13}\text{C}$ relative to VPDB -28.5 ‰

Radiocarbon Age BP 933 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

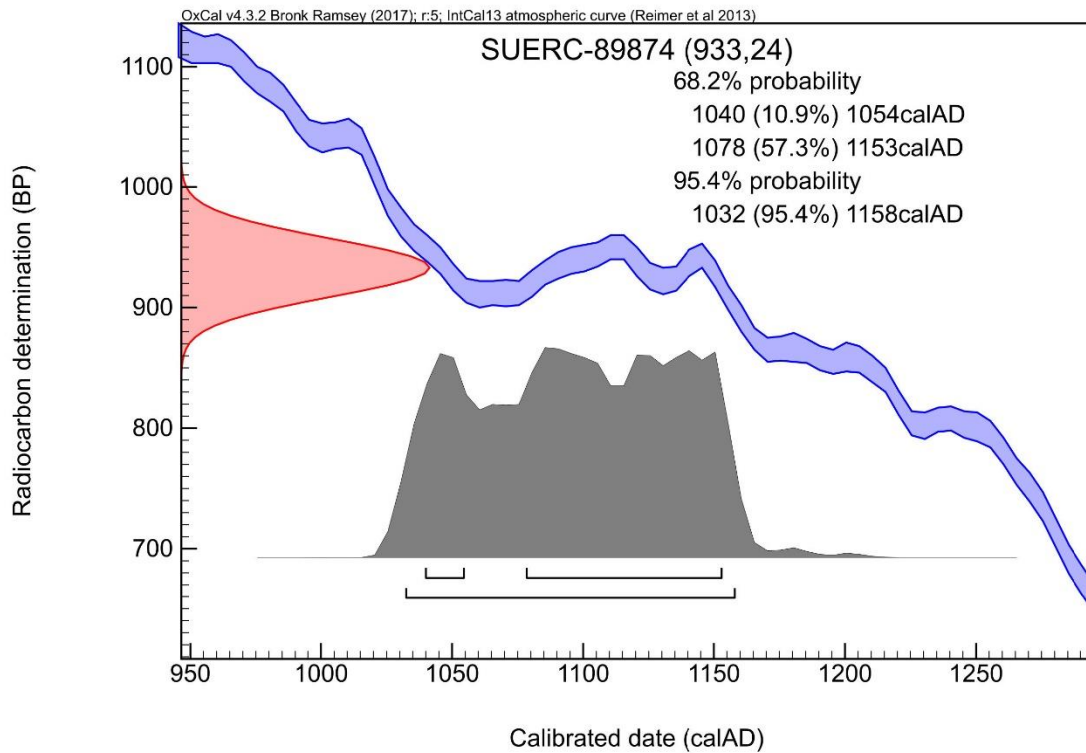


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The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



RADIOCARBON DATING CERTIFICATE

11 November 2019

Laboratory Code	SUERC-89875 (GU52809)
Submitter	Ben Savine York Archaeological Trust 47 Aldwark York YO1 7BX
Site Reference	6126 - Stonebow, Pavement, Fossgate Watching Brief
Context Reference	1042
Sample Reference	12
Material	Waterlogged wood : Quercus spp.
$\delta^{13}\text{C}$ relative to VPDB	-27.8 ‰
Radiocarbon Age BP	980 \pm 23

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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Conventional age and calibration age ranges calculated by :

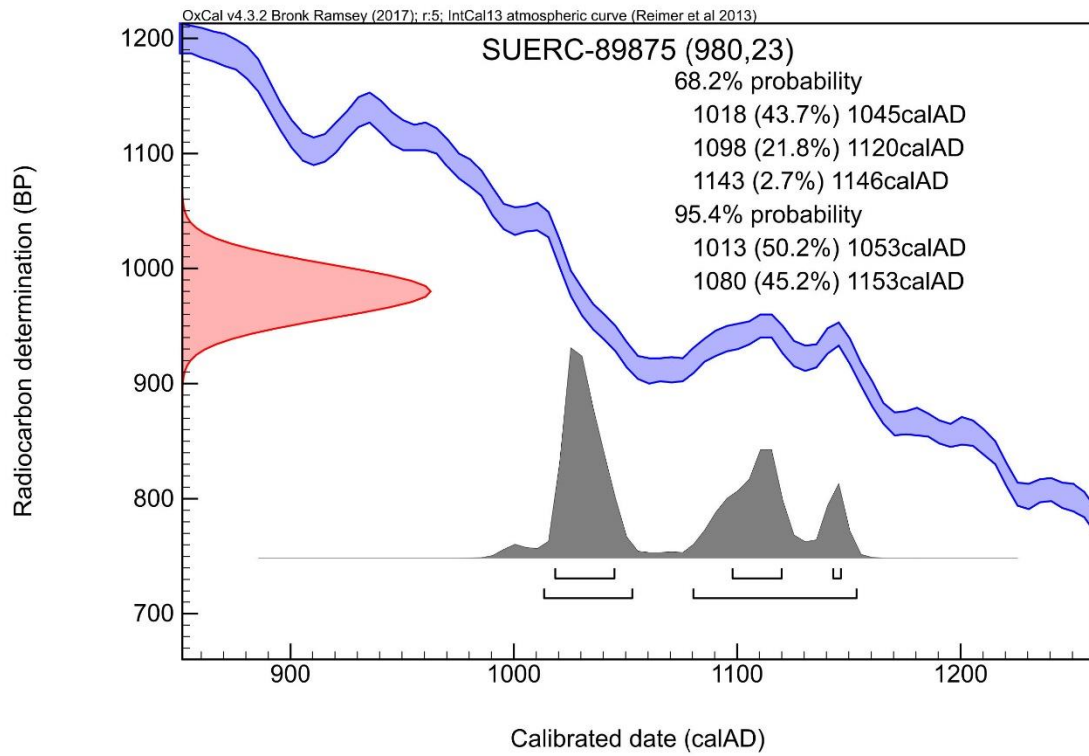
Checked and signed off by :



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* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



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 Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc



RADIOCARBON DATING CERTIFICATE

11 November 2019

Laboratory Code	SUERC-89876 (GU52810)
Submitter	Ben Savine York Archaeological Trust 47 Aldwark York YO1 7BX
Site Reference	6126 - Stonebow, Pavement, Fossgate Watching Brief
Context Reference	1078
Sample Reference	13
Material	Waterlogged wood : Fraxinus excelsior
$\delta^{13}\text{C}$ relative to VPDB	-26.8 ‰
Radiocarbon Age BP	403 ± 23

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

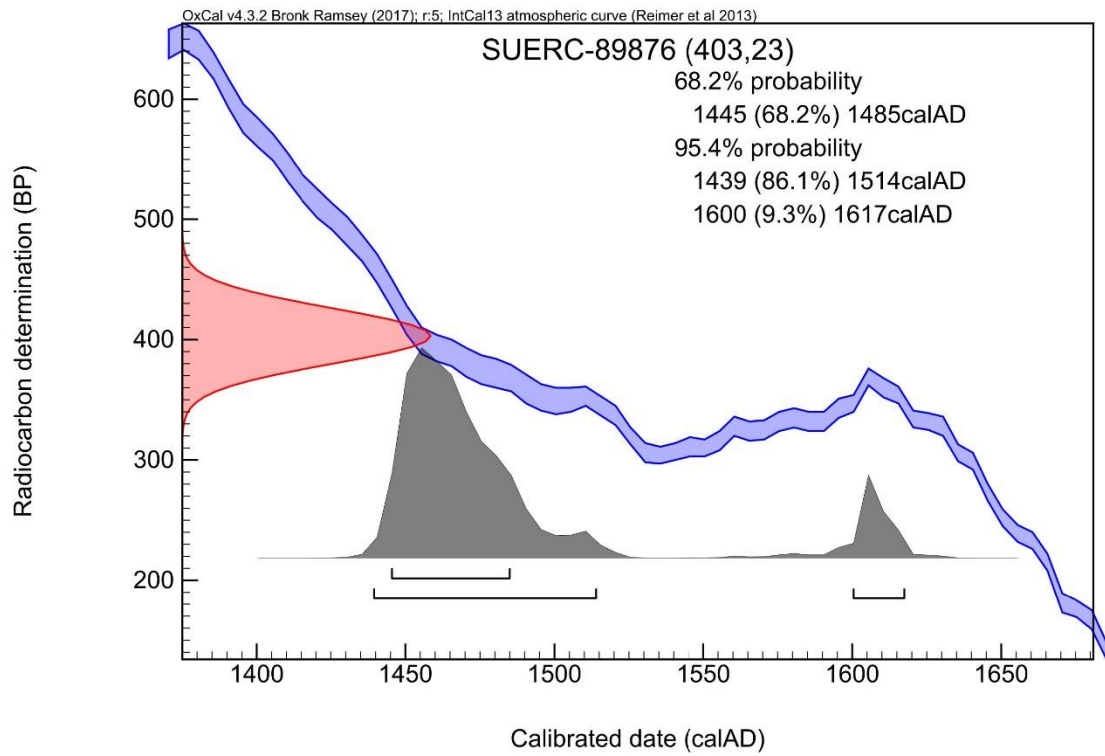


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The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



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RADIOCARBON DATING CERTIFICATE

11 November 2019

Laboratory Code SUERC-89877 (GU52811)

Submitter Ben Savine
York Archaeological Trust
47 Aldwark
York
YO1 7BX

Site Reference 6126 - Stonebow, Pavement, Fossgate Watching Brief

Context Reference 1114

Sample Reference 14

Material Waterlogged wood : Salix spp.

$\delta^{13}\text{C}$ relative to VPDB -27.5 ‰

Radiocarbon Age BP 926 ± 23

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

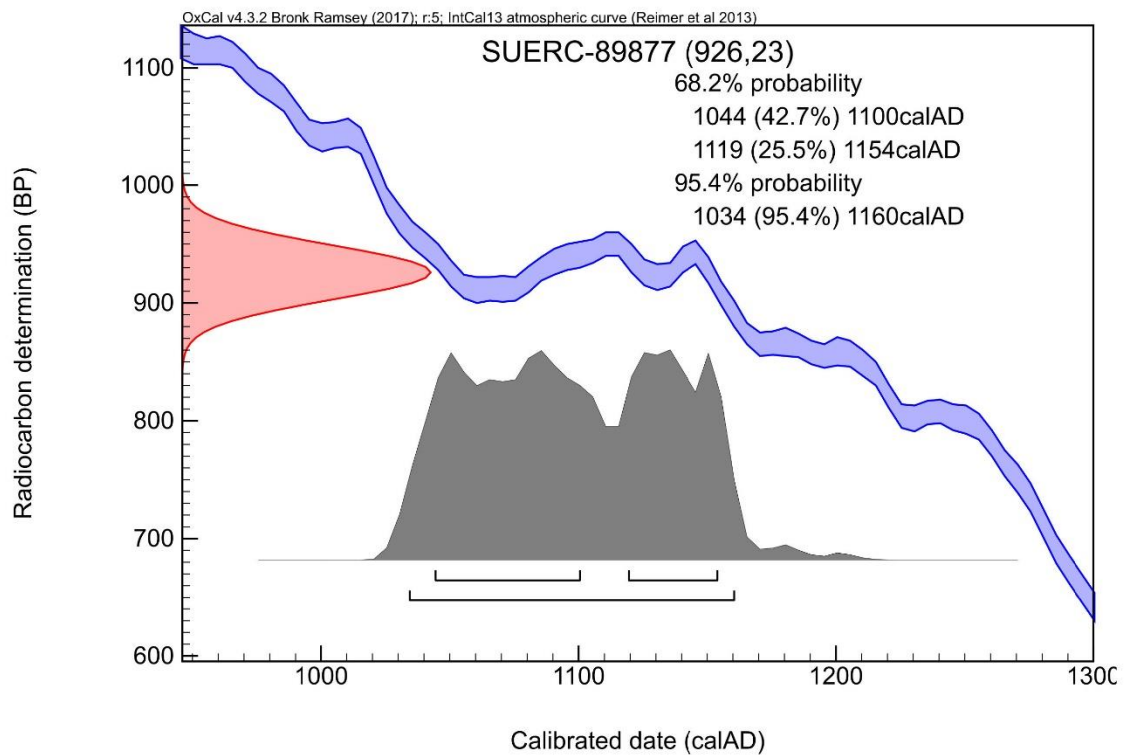


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The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.†

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† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



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