YORK ARCHAEOLOGICAL TRUST

# ELECTRIC SUB-STATION

# 71–73 GOODRAMGATE, YORK

## EXCAVATION REPORT

*by Bryan Antoni*

REPORT NUMBER 2012/41

# YORK ARCHAEOLOGICAL TRUST

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## Abbreviations

YAT York Archaeological Trust

AOD Above Ordnance Datum

BGL Below Ground Level

## SUMMARY

*The excavation showed that the features observed in the Sub-station trench were probably domestic in origin whereas those in the Duct trenches were related to metal-working industry. The earliest deposits within the sub-station trench were in the form of highly organic levelling deposits dated to the 13th century, suggesting extensive land reclamation was undertaken at that time. This was carried out in advance of the construction of domestic dwellings subsequently rebuilt and/or repositioned on several occasions between the 13th and late 14th century. Alterations within the metal working area located in the duct trench have concordance with the construction sequence observed in the sub-station trench, inferring that both areas were under the same ownership. If this were the case it would suggest domestic dwellings to the north-west of the site, with industrial activity taking place within a back-lot attached to the rear or south-east of them. By the 16th century, both the dwellings and putative workshops had been cleared and the area was then used for the digging of refuse pits. In the 18th/19th century the ground is raised once more, to formation level of the concrete and tarmac yard surfaces at the time of excavation.*


## 1. INTRODUCTION

Between 26th March and 29th May 2012, York Archaeological Trust undertook an archaeological excavation on a plot of land to the rear of 71-73 Goodramgate, York (NGR SE 60475199, Figure 1).

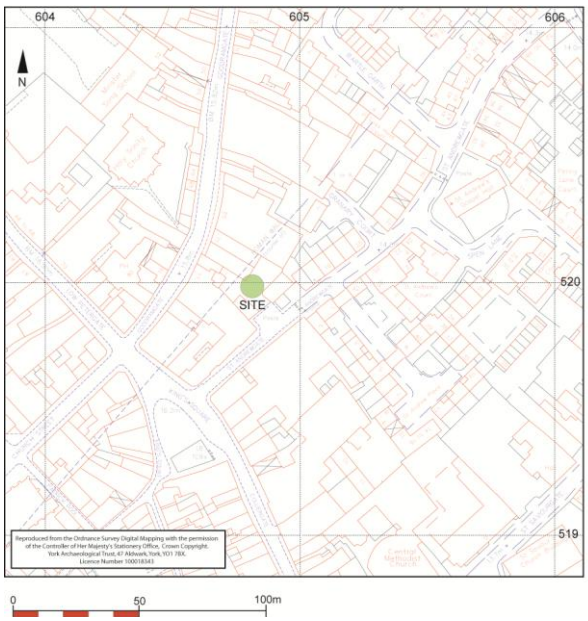


*Figure 1…Site location*

Archaeological hand excavation was undertaken within a 4.3m x 4.3m x 1.50m deep foundation trench intended for a new electricity sub-station, as well as the 14.60m long, 0.90m wide, 0.90m deep cable ducting trenches supplying it. The ducts came off the south-eastern side of the new sub-station to join with previously installed cables located to the south-east, at the junction of the site boundary and the north side of St. Andrewgate (Figure 2). The new sub-station was needed to relocate an existing unit, housed beneath the rear of 71-73 Goodramgate, in advance of proposed conversion and extension and works being carried out. Hand excavation was undertaken wherever ground-works penetrated to a depth below 0.60m BGL. An archaeological evaluation undertaken in 2011 showed that archaeologically sensitive deposits and features would be encountered at this depth (Milstead, YAT Report 2011/32). The footprint of the new sub-station located over the northern end of Trench 2 of the previous assessment works (Figure 2).

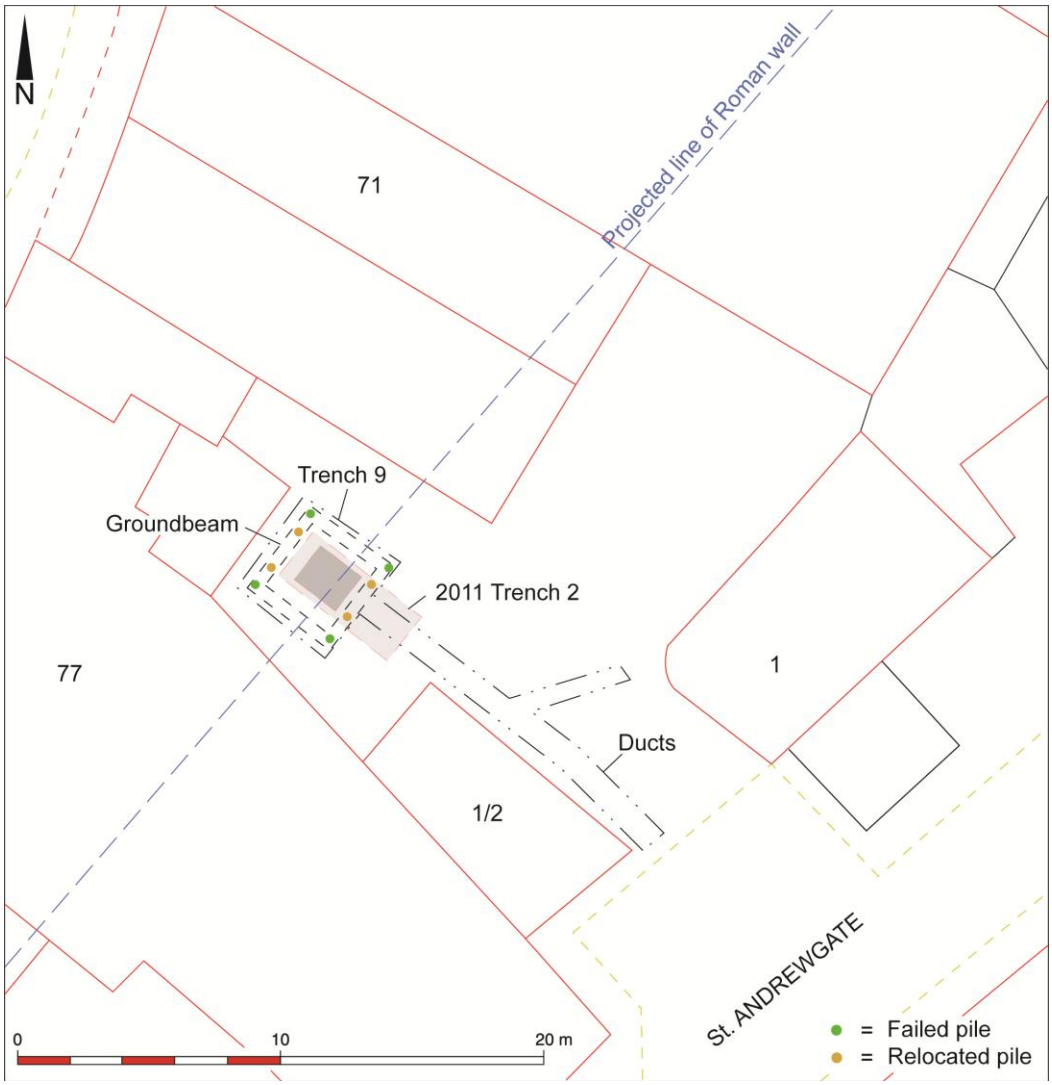


*Figure 2 Location of Trench 9 and previous archaeological works*

## 2. METHODOLOGY

The archaeological excavations first involved the completion of an 11.20m length of the north-west / south-east aligned cable duct trench running up from St. Andrewgate. Part of this work included the excavation of an east-north-east / west-south-west aligned, 0.5m wide, 3.70m long spur trench off the eastern side of the main duct trench, some 7.60m from its south-eastern terminus. These lengths of duct trench were excavated first, the ducting installed and then the trench backfilled to provide access and operating clearance for the Piling rig. The excavation of the remaining 3.30m at the northern end of the duct trench was held in abeyance until the foundation slab of the new sub-station was cast.

The excavation of the sub-station foundations was preceded by the insertion of four, 18m long, 0.30m Ø, steel sleeved concrete piles, one for each corner of the slab. All the piles were drilled out in advance and one sleeve partially inserted before the pile type was found to be unsuitable. When an attempt was made to drive the tip of the sleeve into bed rock, ground vibrations from the impact could be felt in the adjacent properties. To avoid damage to the properties, four more, 0.30m Ø steel reinforced, pumped concrete piles were placed inboard of the original locations (Figure 2) and overburden removed from around them. When archaeological hand excavation reached formation level of the foundation slab, work was then restricted to a 0.48m wide x 0.35m deep ground-beam trench cut below the outer perimeter of the slab. The ground-beam incorporated the piles and was cast as a unit with the main foundation slab.

The trenches were machine excavated to 0.60m BGL by the use of a three ton, tracked 360° mini digger fitted with a toothless ditching bucket, under archaeological supervision, before archaeological hand excavation and recording commenced.

The works were undertaken at the behest of Town Centre Securities, in compliance with an archaeological condition imposed on planning application Ref. No. 11/01568/FUL, by City of York Council's principle archaeologist, John Oxley.

Deposits and features were recorded as drawn plans, at a scale of 1:20 and described using pro-forma context recording sheets, following the procedures laid down in the Trust's fieldwork manual (YAT 2005). A series of colour digital photographs were taken throughout.

All original site records are currently stored with the York Archaeological Trust under the Yorkshire Museum accession code YORYM: 2011.407. Details of trench phasing and

contexts recorded were entered into the York Archaeological Trust's Integrated Archaeological Database (IADB), Project 5508, when the fieldwork was completed.

## 3. LOCATION, GEOLOGY AND TOPOGRAPHY

In depth reference to the location, geology and topography, history and archaeological background of the site were detailed in the 2011 report on the previous assessment work, hence they will be only briefly mentioned in this report.

The site is located 55m north-east of King's Square and fronts onto Goodramgate in the north-west. The yard at the rear of the property is accessed from the south-east, via St. Andrewgate (Figure 2). The surface level at the entrance of the rear yard lies at c. 15.60m AOD and rises gently towards the north-west, where a level of c.16.40m AOD is reached. The solid geology of the area comprises sandstones of the Sherwood sandstone group, overlaid by clayey glacial till drift deposits (British Geological Survey, http://maps.bgs.ac.uk/geologyviewer/, accessed 01/08/2012).

## 4. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The line of the Roman fortress wall is thought to run beneath the north-west edge of the site. Its projected north-east / south-west alignment (Figure 2.) is purely based upon sightings by Miller in 1925-7, Ramm in 1955 (Stead, 1968, 161, RCHMY1, 29-33) and more recently YAT excavations at the Bedern (Ottaway, 1996, 171).

Evidence for the Anglo-Scandinavian period is scant and is mainly attested by the presence of a possible building, pits and artefacts at the Bedern (Richards, 2001, 408), along with scant pottery finds recovered during watching briefs.

Goodramgate is first recorded in the 12th century but is thought to have been Anglo-Scandiavian in origin (Palliser, 1978, 10). St. Andrewgate was again mentioned in the 12th century, but at that time was known as 'Ketmongergate' or 'Street of the flesh sellers' (Raine, 1955, 55-56).

Medieval deposits and structures have been found in most archaeological works in the areas surrounding the site. These works showed that the area underwent a complex sequence of development from the 12-13th century, including the formation of medieval buildings and their backlands, up until the post medieval period (Whyman, 1993, 12). By the 15th century, the

area appeared to have been used by the metalworking industry (Finlayson, 2004, 890-893), up until the 18th century when the area was cleared and the ground surface raised and levelled. By the 19th century the area was occupied by warehousing and other sundry industrial buildings which were either converted or demolished to make way for new housing in the latter half of the 20th century.

## 5. RESULTS

As the archaeological excavations progressed, it became apparent that the deposits within the duct trench were industrial in origin whereas those in the sub-station trench were likely to have been associated with domestic dwellings. Later truncation had removed any divisions such as fence or wall lines between them, leaving the different areas of activity recognisable solely by the type and distribution of the deposits and features observed. The following text will, therefore, refer to these areas as either 'Sub-station' or 'Duct' trench (Figure 3).

The Interpretation and / or phasing of features was also hampered by the fact that horizontal truncation and clearance had occurred between successive phases of activity throughout. The centre of the Sub-station trench had been almost completely removed by previous archaeological trial trenching (Milstead, YAT Report 2011/32: Trench 2). This meant that only a 0.80 – 1.5m wide strip around the perimeter on northern, eastern and western sides was available for excavation (Figure 2). The discontinuation of the deposits and structures located in any given strip further hampered the understanding and interpretation of the archaeology present. With this in mind, it should be made clear that some of the following Phase descriptions are somewhat tentative and open to speculation.

The Phase numbering used within this report will begin at Phase 26 to avoid confusion with Phases 1–25 identifiers used for the 2011 site assessment. Wherever possible, any concordance between Phases 1-25 and those used here will be mentioned.

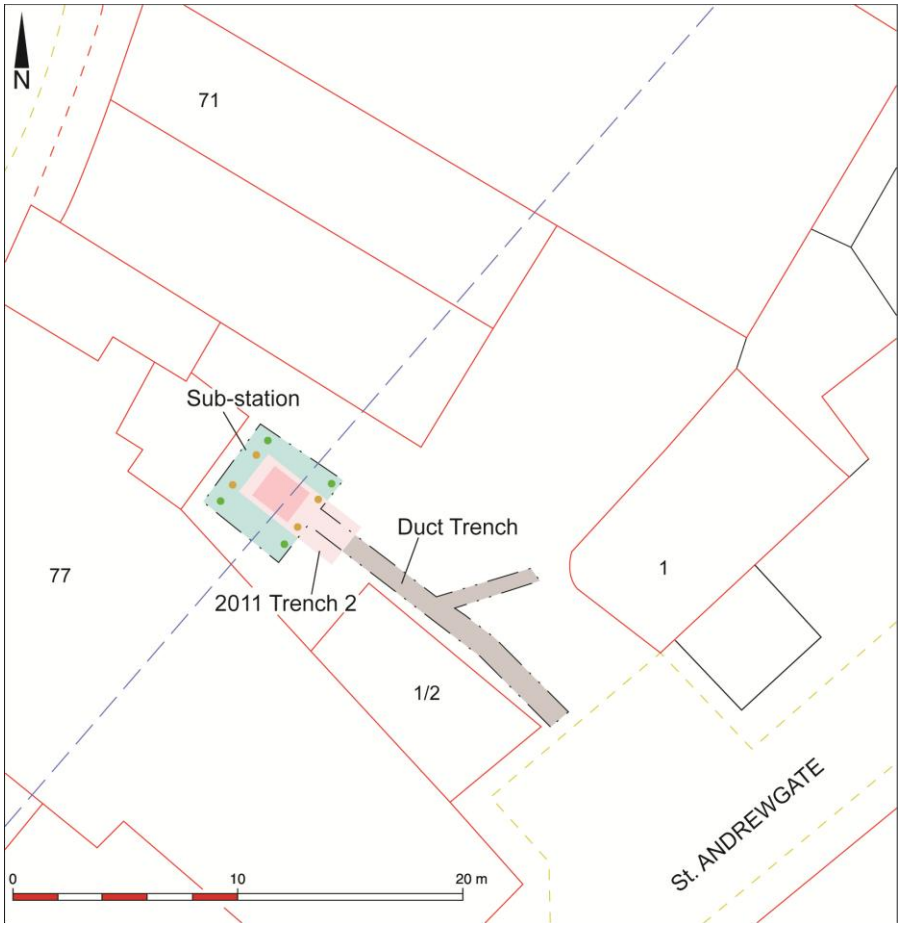


*Figure 3 Demarcation of site*

5.1 PHASE 26: 13TH CENTURY LAND RECLAMATION AND OCCUPATION

The earliest deposit encountered was observed in the ground beam trench only. It was in the form of a mixed, highly organic silt levelling deposit (Figure 3) with some structured plant matter, wood chips, twigs and mica sandstone fragments (9127; Group 30). The surface sloped gently from 14.74m AOD at the east corner of the trench, down to 14.50m AOD in the west and it was excavated to a depth of 0.38m. It continued beyond the base of the trench and excavation was halted at formation level (14.35m AOD) for the new ground beam. The types and range of artefacts recovered, such as 13 – 16th century CBM (Appendix 5), coal / shale, wood chippings, fragments of leather shoes (SF81) and a stone vessel fragment (SF167) suggested industrial discard was a main constituent, yet a certain amount of 13th/14th century pottery (Appendix 2), animal bone (Appendix 6) and mollusc shell also implies domestic origin for some of the material.

Similar deposits observed at this level in the 2011 excavations (Phase 21; Contexts 2017, 2034 and 2032) were sampled for environmental analysis and showed the main organic constituent comprised stable / byre bedding and fodder waste. The differences in the

composition and the type / amount of artefacts recovered from these was found lacking when compared to Deposit 9127, inferring that the dumps had been sourced and brought in from more than one location.

Surface 9126 (Group 31) and its make-up deposits sealed the top of Deposit 9127. The surface was only observed in the west corner of the ground beam trench, where a 1.84m long x 0.48m wide stretch of it was available for recording. It was truncated to the north by a failed pile and extended beyond the sides of the ground beam and the western trench edge.

Initially, an up to 0.1m thick bedding of small – large, rough limestone rubble (9139) was laid down to consolidate the top of Deposit 9127 and raise it to 14.49 - 14.60m AOD. This was followed by up to 0.04m thick dumps of woodworking debris and off-cuts (9130 and 9131) which sealed the south-west half of rubble 9139. Later inspection in the laboratory showed that the off-cuts were discard from working and/or re-working of wood, including cutting points on piles or stakes, on or nearby the site (Appendix 7). Deposit 9131 also produced a plank off-cut (SF173), wooden bowl fragment (SF174) and a wooden peg (SF175). Deposits 9130 and 9131 were sealed by Context 9126.

Deposit 9126 extended beyond the eastern side of the ground beam and western trench edge. It comprised a 1.80 x 1.30m wide, patchy, uneven floor surface of compacted, fine to moderately coarse crushed magnesian limestone (9126; Figure 4), up to 0.05m thick. The surface fell from 14.70m AOD in the south-east, down to 14.56m AOD in the north-west. The make-up of it suggested an interior floor surface as it would not have withstood the heavier traffic and erosion associated with external yard surfaces. The fall in level had been brought about by settling of the underlying organics, which had probably instigated the next phase of activity on the site.

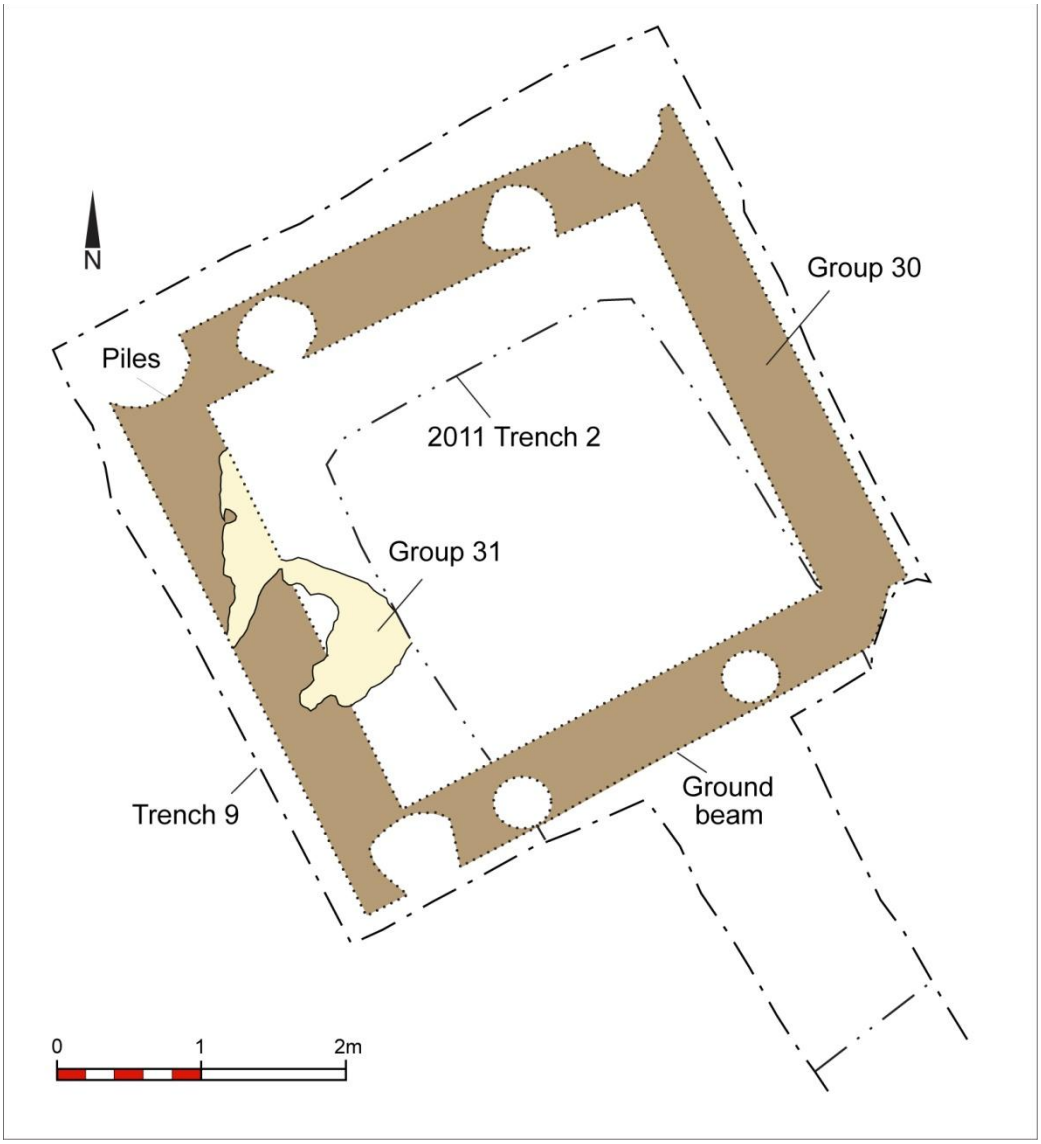


*Figure 4 Phase 26 features*

5.1.1 PHASE 27: 13TH CENTURY LEVELLING AND CONSTRUCTION

Phase 26 floor 9126 was sealed and levelled by Phase 27 organic dump 9117 (Group 32; Figure 5). This was used to raise the ground to 14.76m AOD in advance of the insertion of Pile clusters 9120 and 9158, which appeared to have been associated with different structures. Pile cluster 9120 had gone out of use and was levelled by the end of the 13th century, whereas Pile cluster 9158 was retained until the 14th, See below; Phase 30.

Deposit 9117 went on to produce 31 sherds of 13th century pottery, CBM (Appendix 5) mollusc shell, nut shell, animal bone, Coprolite, fragments of roundwood, a leather fragment (SF72), a Wood Object (SF79), a small fragment of Slag (SF158), a Fired Clay fragment (SF165) and a fragment of a Roman, dressed limestone block (AF12; Appendix 5).

Pile cluster 9120 (Group 33; Figure 5) comprised timbers 9121 – 9124, two of which, 9121 (ST 17) and 9123 (ST19) were reused boxed Oak, the others, 9122 (ST18) and 9124 (ST20), were Alder cut to purpose (Appendix 7). The piles were between 680 – 816mm long with a diameter / thickness between 120 – 142mm. Collectively, they were driven through deposit 9117 in a tightly packed, 0.35m x 0.28m group 'topped-out' (or cut way) flush with its surface, at c. 14.72m AOD. The exception was Pile 9121, which had been dislocated some 0.14m to the west by the piling rig (Plate1).

Pile cluster 9158 (Group 77) formed a c.0.34 x 0.40m square plan form and was located in the opposite corner of the trench, some 2.70m east of cluster 9120 (Figure 5). It comprised re-used Oak timbers 9133 (ST24), 9134 (ST25) and an Alder pile 9132 (ST 23) which, despite being badly damaged by the piling rig, appeared to have been cut to purpose (a fourth timber, probably Alder, was lost when the south-east corner of the trench was destroyed by the piling rig). Piles 9133 and 9134 were between 522 – 598mm long, whereas Timber 9132 was a 314mm long fragment. The diameter / thickness varied between 110 – 132m and the tops of the piles were flush with the surface of Deposit 9127 (Phase 26), at c.14.70m AOD (max.).

In both cases, the timbers of each pile were arranged with Oak piles opposed on one diagonal axis, Alder on the other.

Group 76 Isolated oak posts/stakes 9125 (ST21), 9129 (BF425) and one of Alder, 9140 (ST30), were probably inserted at this time. They were located north-west of Pile clusters 9158 and 9120 and what they represented is currently unclear but they may have served as setting-out markers for buildings or property boundaries.

In the Duct trench an 8.25m long trampled surface had been formed (Figures 2 and 5). The northern edge of it was located some 4m south-east of Pile Clusters 9120 and 9158, the top of it sloped up gently from 14.60m AOD in the south-east, to 14.90m AOD in the north-west and it continued beyond both sides of the 0.90m wide trench. It comprised contexts 9072, 9033 and 9034 (Group 66) which were either compacted earth and/or clays (unexcavated) entirely lacking in the organics encountered in the sub-station trench, the differences in deposit make–up and typology between the two areas was maintained throughout the excavations. This suggested that the area to the south-east of the sub-station trench had been a workshop area behind the building(s) signified by Pile Clusters 9120 / 9158. Context 9072, a dark grey brown sand silt with moderate charcoal and occasional small mould fragments, inferred that metal working was being carried out in or close by this area.

The buildings represented by pile clusters 9120/9158 appeared to have remained unaltered when Phase 28 pits were dug into the putative metalworking area within the duct trenches.

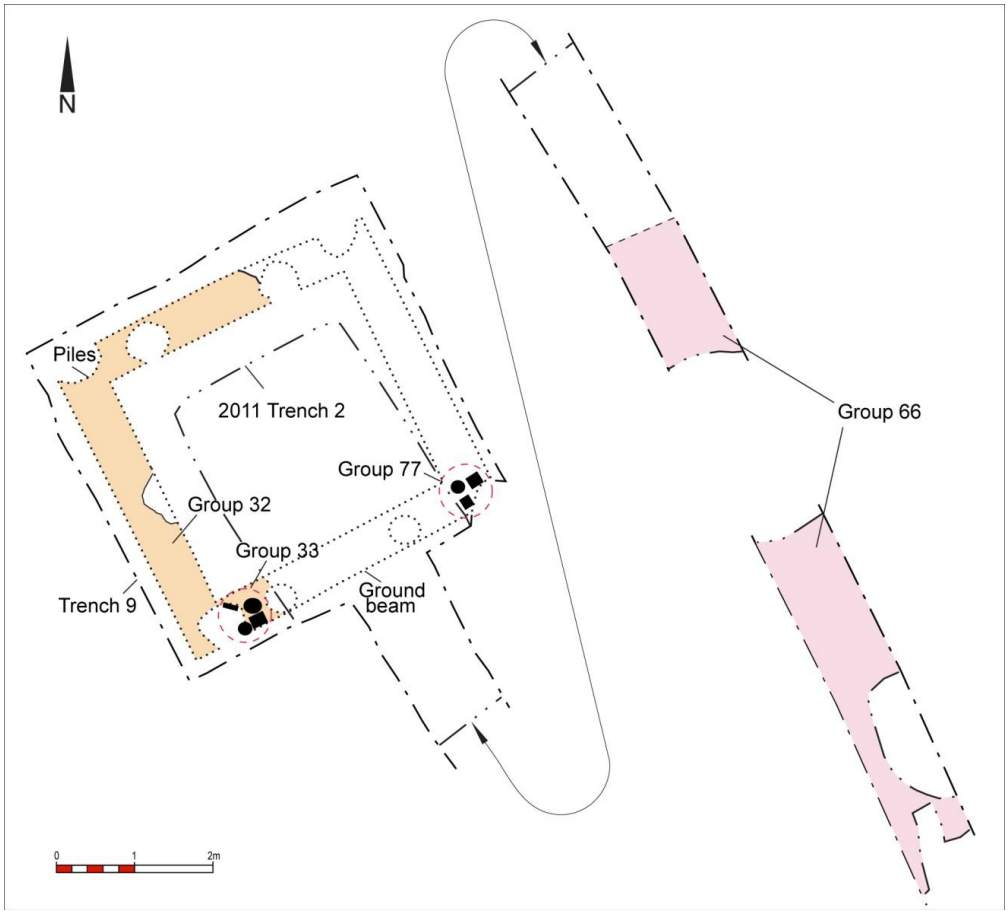


*Figure 5 Phase 27 features*

5.1.2 PHASE 28: MID 13TH? CENTURY DECLINE IN METAL WORKING AREA.

Phase 27 features were truncated by Phase 28 Pits 9036, 9068 and 9070 (Group 65). Pit 9037 (Group 64), cut into the fill (9028) of Pit 9036, is thought to have been the last of the sequence of pits in this phase.

Pit 9068 (not excavated) was a substantial feature cut into the top of Phase 27 Floor 9072. It was ovoid / sub-circular in plan, 2.30m long and ran beyond the eastern and western trench edges. A 0.20m wide crescent of soft light brown silt clay (9071) was located against the visible part of its northern edge. What this represented is currently unclear but it is quite possibly the remnants of a lining intended to retain liquids. This was sealed beneath a 1.03 m wide deposit of soft dark grey brown silt clay with frequent charcoal flecks, small CBM fragments, occasional medium limestone fragments and small - medium pebbles (9067), which had been used to infill and level the pit when it was no longer needed. Pit 9070 was

cut into the top of Phase 27 deposits 9033 and 9034. It had been truncated to the north and south-east and also remained unexcavated. It was 0.40m long, 0.36m wide and had a rectangular, north-west / south-east aligned plan shape. It backfill (9031) comprised a friable mid greenish grey silt with moderate CBM and occasional charcoal flecks.

Pit 9036 was located 0.14m north-east of Pit 9037, where it had been cut into the top of Phase 27 floors 9033 / 9034. The plan shape/alignment could not be ascertained as the northern and eastern edges were truncated by later activity and the western end was outside the trench. Only a part of the steep southern edge survived, providing a 0.61m long x 0.45 wide x 0.12m deep cut with a flat base. Its backfill, 9028, a charcoal rich, grey brown sand silt produce a single fragment of animal bone and residual 11$^{th}$ century pottery. The north-eastern edge of 9028 was truncated by Pit 9037. The north – eastern side of Pit 9037 (Group 64) lay outside the trench, the south-eastern end was cut away by later activity. The remainder was north-west / south-east aligned, 1.50m long, 0.54m wide and 0.12m deep with a sub-circular plan shape, steep sides and a flat base. Its fill, 9029, a soft dark brown grey sand silt with moderate charcoal flecks and occasional pale green grey clay lumps, went on to produce fragments of 13$^{th}$ century pottery, shell, animal bone and crucible fragments (SF98).

The infilling of Pit 9037 preceded the levelling of the immediate area in advance of the formation of Phase 29 floor surfaces.

5.1.3 PHASE 29: LATER 13TH CENTURY REBUILD AND ALTERATIONS.

In the sub-station area, the building supported by Phase 27 Pile group 9120 was demolished and cleared away before Phase 29 levelling deposits 9116 and 9113 (Group 35) were laid down. This was undertaken in advance of a new build taking place, signified by the excavation of the Construction cut (9112) for stone foundations 9103 (Group 36). At the same time Phase 28 Pits (Groups 64 and 65) in the workshop area to the south-east, within the Duct trench, were levelled and sealed by Phase 29 build-up and/or levelling deposits 9057, 9061 and 9065 (Group 79). These were overlaid/ patched by the sparse remnants of Group 78 compacted mould and mould rich floor surfaces 9060, 9063 and 9056.

The top of Phase 27 Pile 9124 was sealed by a 1.70m long, up to 0.06m thick dump of soft, loose mid grey white silty ash with moderate charcoal flecks and occasional small pebbles (9116). Only its northern edge was observed, the rest lay outside the ground-beam trench. It went on to produce several sherds of residual 11$^{th}$ century pottery, fragments of 13$^{th}$ – 16$^{th}$ century CBM and a single piece of animal bone. Deposit 9116 and the remainder of Phase 27 pile group 9120 (Timbers 9121-23; Group 33) were sealed by a dump of a soft, mixed mid

orange brown and dark grey sand silt, with occasional small - medium stones, brick/tile frags and charcoal flecks (9113), up to 0.21m thick. It went on to produce 13th century pottery, 13-16th century CBM and animal bone.

Deposits 9113/9116 were used to raise the ground to level, to c. 14.91m AOD before the northern end of deposit 9113 and the tops of Phase 27 posts / stakes 9125 and 9140 (Group 76) were cut away by construction cut 9112. Although the bulk of the cut occupied the western corner of the sub-station trench, only the southern edge of it survived intact c. 1m north of the southern corner of the trench. The rest of it lay outside the northern and western limits of excavation or had suffered truncation (including the 2011 excavations) along its eastern side, leaving a 2.68m long, 1.45m wide and 0.35m deep segment available for recording. This suggested a west-north-west / south-south-east aligned rectilinear plan shape with steep – vertical sides and a flat, irregular base.

It contained foundation 9103 (Figure 6; Plate 2) which also ran beyond the western and northern trench edges, leaving an up to 2.70m long, 1.50 wide area available for recording. This suggested a west-north-west / south-south-east aligned linear or rectilinear plan shape with 90° corner in the south-south-east. Foundation 9103 was up to 0.50m thick and comprised medium – large pebbles (some burnt), in a soft humic / organic mid - dark brown clay silt matrix, with occasional small - medium millstone grit, magnesian limestone and CBM fragments, mortar and charcoal and flecks. Some of the limestone fragments had been previously worked and were re-used (Appendix 5: AF 1-11 and 13). Animal bone, shell, 13th century pottery, 13th-16th century CBM, wood fragments (chippings / bark), a wood bale pin (SF80), slag (SF's 96 and 132), iron fragments (SF133), nails, a clench bolt and a horseshoe nail (all SF135) were also recovered. A context sample (SA 46) of the silt matrix was taken to understand how it had formed. The results (Appendix 9) showed that it had been deposited by ponded or retreating floodwater.

At the same time, alterations were undertaken within the workshop area in the duct trench (Figure 6). The slumped fill (9067) of Phase 28 pit 9068 (Group 65) was sealed by Phase 29 levelling deposit 9061 (Group 79) comprised soft dark brown grey clay silt with frequent charcoal flecks, brick/tile fragments and occasional pale grey clay lumps, 0.05m thick. It also produced animal bone, late 13th century pottery, residual late 12th – early 13th century CBM, fragments of crucible (SF85) and slag (SF's 87 – 88). Deposits 9065 and 9067; (unexcavated) were included within Group 79 purely because they had a similar charcoal and / or ash rich make–up. They were located 1.28m east of 9061, within the spur trench off the eastern side of the duct trench (Figures 3 and 6). Group 79 deposits were used to level the ground at 14.73 – 14.83m AOD before compacted floor surfaces 9060, 9063 and 9065

(Group 78) were formed above them. These survived as disparate, eroded patches of compacted crushed bright orange red mould fragments / mould rich silts, with charcoal flecks and light brown clay patches, or dark grey charcoal rich sand silt (9065), they were thought to have formed the same surface at c 14.91m AOD. A single iron nail (SF70) was recovered from deposit 9060, whereas 9063 (Plate 4) produced a single sherd of residual Roman pottery, 13th – 16th century CBM, crucible (SF92) and mould fragments (SF137).

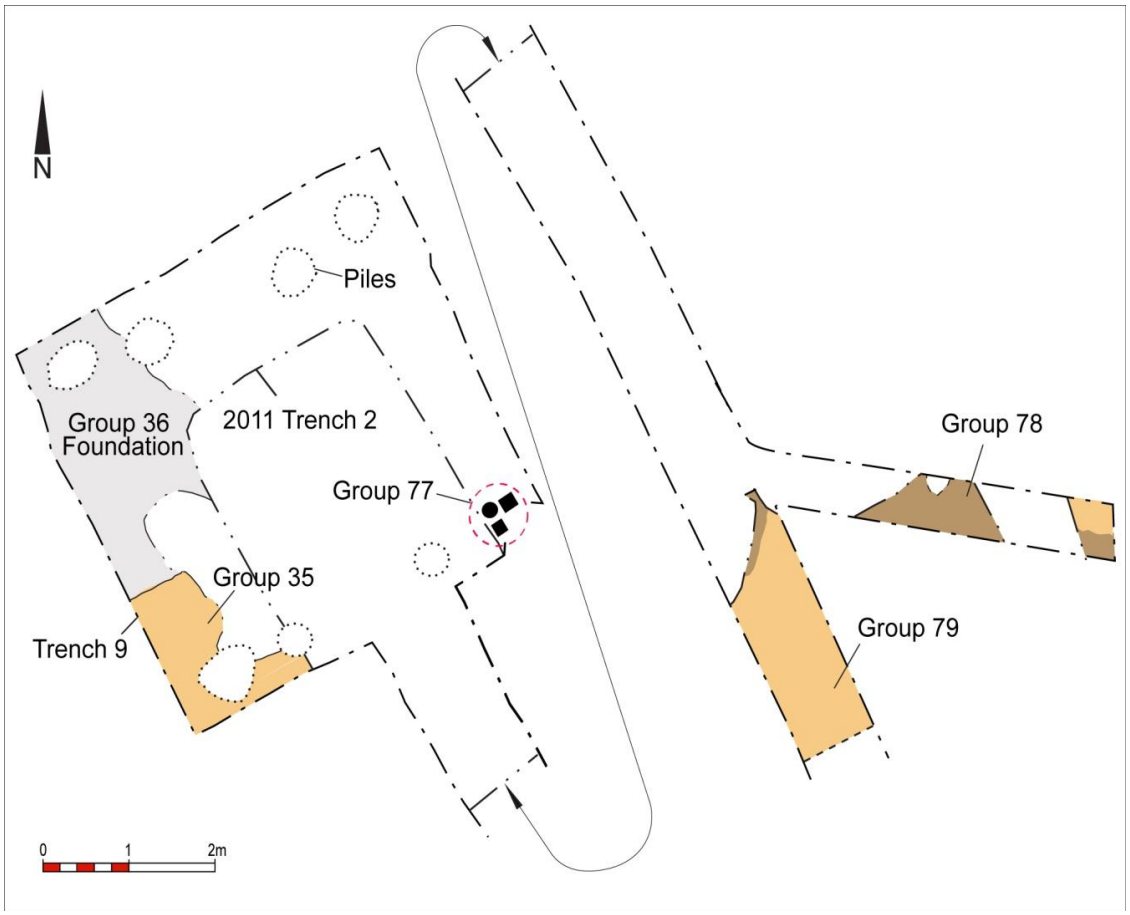


*Figure 6 Phase 29 features*

5.1.4 PHASE 30: LATE 13TH / EARLY 14TH CENTURY DEMOLITION AND LEVELLING

This Phase (Figure 7) was represented by demolition and levelling activities, inferring a change in land use. Phase 30 involved the demolition of the building utilising phase 27 Pile Group 9158 before the area was levelled with organic dump(s) (9119; Group 59). It is also assumed that Phase 29 Footing 9103 (Group 36) was demolished and cleared as the easternmost edge of it had been removed by Phase 30 Pit 9102 (Group 39). Pit 9059 (Group 61) was located within the duct trench and it was included in this phase purely because it had cut into the top of Phase 29 Mould floor 9060 (Group 78). Although somewhat tenuous,

the excavation of this pit suggested that a part(s) of the putative workshop area had also gone out of use.

In the eastern corner of the sub-station trench, the structure founded on Phase 27 pile group 9158 had been demolished down to the top of the piles before they were sealed and levelled with Phase 30 levelling deposit 9119 (Group 59). This was only observed within the north-west / south-east aligned length of the ground beam trench located inside the eastern edge of the sub-station trench. It was between 0.04 - 0.14m thick and was used to raise the ground level to between 14.74 – 14.82m AOD. It comprised friable, mixed organic dark grey sand silt with frequent brick/tile fragments. Animal bone, shell, wood (chippings and roundwood), an iron nail (SF160), fragments of 14th century pottery and 13th – 16th century CBM were also recovered.

Pit 9102 ran beyond northern trench edge and the majority of its eastern extents were removed by later activity. What survived of it was rectilinear?, north-west / south-east aligned 1.50m long, 0.44m wide and 0.21m deep. The surviving western edge fell steep - vertical (variable along length) to a flat base. Its backfill, 9101, was a soft, plastic mid reddish brown gritty sand silt with frequent flecks - small fragments of mortar, occasional charcoal flecks, brick/tile fragments and small pebbles. This also produced a single fragment of residual 11th century pottery, as well as a fragment of a 13th – 16th century ridge tile.

Pit 9059 was located some 9.5m south-east of Pit 9102. It ran beyond the western side of the duct trench and was truncated on its north-west edge. The remainder was rectilinear, north-east /south-west aligned, 1m long, 0.64m wide and 0.11m deep with steep sides and a flat base. It's backfill, 9058, a friable mid brown grey sand silt with frequent charcoal flecks and occasional brick/tile fragments, went on to produce 13th – 15th century pottery fragments and a copper alloy strap end (SF71).

### 5.1.5 PHASE 31: EARLY 14TH CENTURY REBUILD

In this phase (Figure 31), Pile cluster 9157 (Group 37) was driven into the top of Phase 30 levelling deposit 9119 (Group 59). It is quite possible that the structure founded on these piles was a direct replacement for that which had utilised Phase 27 Pile group 9158 (Group 77). Post 9128 (Group 38) was included in this phase purely because it had been inserted at the same level as the Pile cluster and was located close by. Pile cluster 9157 (Group 37) was located in the eastern corner of the trench, adjacent to the western edge of Phase 27 Pile Group 9155 (Figure 7). It comprised Alder round-wood 9135 (ST26), 9136 (ST27) and re-used boxed Oak 9137 (ST28) and 9138 (ST29) set together in a 0.40m x 0.38m east / west aligned rectilinear plan form. Piles 9135 and 9136 were between 1480 and 1540mm

long and 148 – 154mm Ø, whereas 9137 and 9138 were 1206 – 1373mm long, 178 - 228mm wide and between 162 – 227mm thick (all dimensions respective). Oak piles 9137 and 9138 were paired on the western side of the group, Alder 9135 and 9136 on the eastern side. All had been driven in, or cut down, flush with the top of deposit 9119, at c. 14.74m AOD.

These were recorded as Phase 22 pile cluster 2026 of the 2011 Trench 2 excavations.

A further Oak post, 9128 (ST22), was located c. 0.67m to the east of Pile cluster 9157. It was 420mm long, 40mm² and the top of it, at c. 14.75m AOD, was level with the surface of deposit 9119. Its function is currently unknown.

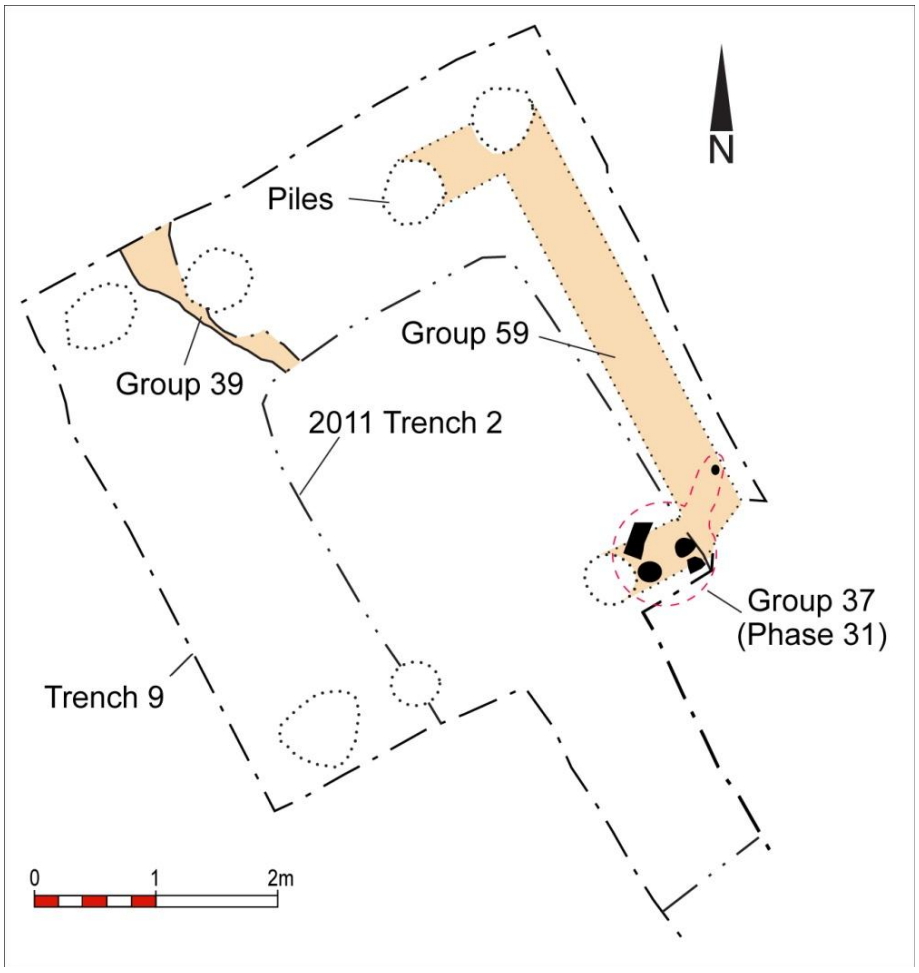


*Figure 7 Phases 30 and 31 features*

5.1.6 PHASE 32: 14TH CENTURY BUILD-UP AND LEVELLING

This phase is represented by Group 43 and 40 deposits. These had either built-up or were dumped outside the building founded on Phase 31 Pile Group 9157 (Group 37), as well as levelling the floor of the workshop within the duct trench to the south-east of it (Figure 8).

Group 43 comprised, sequentially, deposits 9114, 9111, 9110 and 9100 and the earliest of these (9114) sealed the top of Phase 31 post / stake 9128 (Group 38). On the whole they were formed of compacted mid – dark grey brown sand silts with moderate – frequent CBM, charcoal and mortar flecks. They were located against the eastern trench edge and had, collectively, raised the ground level by 0.12m – 0.21m, rising gradually from 14.86m AOD in the south corner of the trench, to 15.00m AOD in the north. 14th century pottery was recovered from deposits 9111 and 9114, whereas 9110 produced a relatively large amount of 13th C. pottery (12 fragments), which inferred that it had arisen from ground-works elsewhere and then brought in for levelling purposes. Iron nails were recovered from contexts 9100 (SF54) and 9111 (SF138). Animal bone and 13-16th century CBM were recovered throughout.

Group 40 deposits lay in the north corner of the sub-station trench, on its western side and their association with the Group 43 deposits above is somewhat tenuous as the 2011 excavations had cut away intervening deposits (Figure 8).

The earliest of them, 9109, was up to 0.07m thick and comprised a dark grey brown slightly organic / humic gritty clay sand silt with moderate flecks - small fragments of mortar, occasional charcoal flecks and small fragments of brick/tile and limestone. This sealed the top of Phase 29 foundation 9103, with both it and Phase 30 Pit 9102 sealed beneath Group 40 deposit 9098. This comprised mid grey brown, gritty clay sand silt with moderate charcoal and mortar flecks, occasional small limestone fragments, small - large pebbles, brick/tile fragments, small mortar lumps and patches blue grey silt clay, 0.08m thick. Collectively they had raised the ground level from 15.03m AOD in the south-east, to rise gently to c.15.12m AOD in the north-west and the limit of excavation. Deposit 9109 produced 14th century pottery, 13th – 16th century CBM and animal bone, whereas 9098 contained 112 sherds of residual 13th century pottery, suggesting that it had also been generated from ground-works elsewhere. (See above; Group 43 deposit 9110).

Group 80 deposit 9049 was located in the putative workshop area within the duct trench south-east of the sub-station. It sealed the top of Phase 30 Pit 9059 (Group 61) and extended over an area of some 5.38m along the base of the duct trench, its width unknown. It was soft grey brown silt clay with frequent charcoal flecks, occasional small - large brick/tile fragments, large mortar patch, white sand patches and light brown clay lumps, 0.14m thick. It formed a floor surface at c. 15.05m AOD and was thought to be contemporary with Group 40 and 43 deposits above, signifying that the internal spaces of the workshop(s) were levelled and raised at the same time. Shell, animal bone, large parts of a 14th century Brandsby ware jug (would re-construct), 13th – 16th century CBM, a worked bone object (SF55), a copper

alloy fragment (SF75) and off-cut (SF76), slag (SF139) and crucible fragments (SF100 and 129) were recovered.

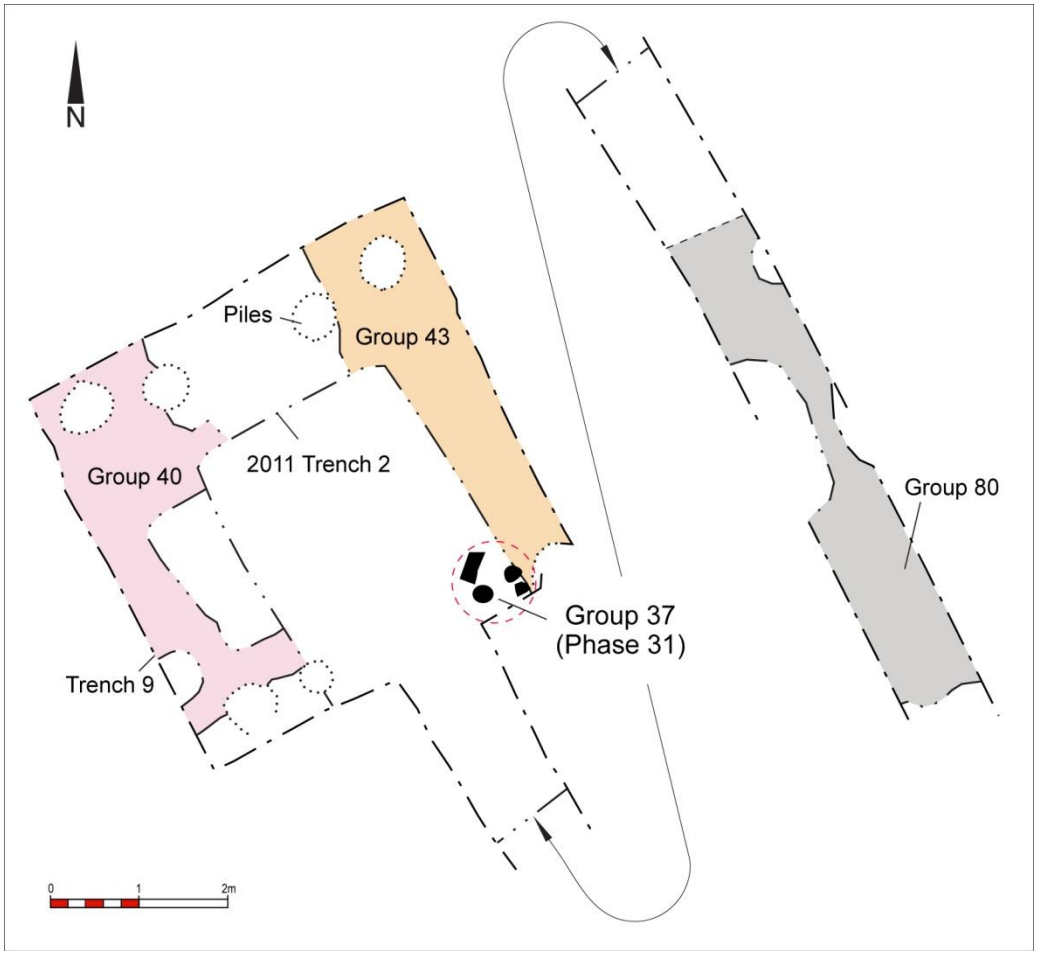


*Figure 8 Phase 32 features*

5.1.7 PHASE 33: 14TH CENTURY FENCE? LINE

Phase 33 comprises Group 41 paired stakes/posts (Cuts 9104 and 9107) and post-hole cut 9095. These are thought to represent a north-north-east / south-south-west aligned sub-division of the land to the north-west of Phase 31 pile cluster 9157. Cut 9104 and 9107 truncated the top of Phase 32 levelling deposit 9114 (Group 43), whereas post-hole 9095 truncated the top of Phase 32 deposit 9098 (Group 40).

Post-hole cut 9107 was located some 1.60m north- west of pile cluster 9157 and much of the western side of it had been removed by the 2011excavations. The remainder suggested a circular, 0.20m Ø plan shape with vertical sides and unexcavated base. Its backfill, 9108, was a soft, organic / humic dark grey brown clay silt with frequent wood flecks, fragments and smears, representing the remains of a badly decayed stake. Post-hole cut 9104 was

0.16m Ø, with vertical sides and was emptied to a depth of 0.13m, the base was not reached. It was located 0.20m to the north-east Post-hole 9107 and contained the 292mm long, 55mm Ø tip of Oak stake 9105 (ST16) and a packing / backfill deposit of a soft, dark grey brown organic clay silt (9106).

Post-hole 9095 was located on the opposite side of the trench, some 3.40m south-south-west of post / stake-holes 9107 and 9105. It was only thought to have been contemporary with them as it continued the general alignment and was cut at the same level. It ran beyond the western trench edge yet it was possible to ascertain that it was sub-rectangular, north-west / south-east aligned, 0.52m long, 0.31m wide and 0.07m deep with moderately steep sides and a rounded base. Its backfill, 9093, was a mixed deposit of small - medium pebbles, in a matrix of soft, pale pinkish brown silt clay with frequent crushed soft sand lime mortar and occasional charcoal flecks, large pebbles as well as small limestone and CBM fragments.

5.1.8 PHASE 34: 14TH CENTURY WORKSHOP ACTIVITY

This phase (Figure 9) was restricted to the workshop area within the duct trench south-east of the sub-station. Group 63 floors/repairs/levelling deposits 9052, 9048, 9047, 9046 (sequential) and 9035 were most likely contemporary with Phase 33 sub-division (above) but, as this could not be proven with any degree of certainty, was placed under a separate identifier. Group 82 Deposits 9053 and 9062 (located within the spur trench off the eastern side of the duct trench) were added to this phase but their association is somewhat tenuous as the relationships between them and Group 63 deposits been severed by later activity. Deposit 9052 and 9035 sealed the top of Phase 32 levelling Deposit 9049 (Group 80), whereas 9062 overlay Phase 29 mould floor 9063 (Group 78).

The complexity and presence of these deposits, which included small patches of eroded clay flooring (9052, 9053 and 9047 (burnt red), a build-up of black ashy cinders (9062 and 9154), black burnt sand (9035) and remnants of trampled mould floors (9046), with heavy charcoal and/or burnt clay flecking, suggested increased industrial activity.

Fragments of 14th century Brandsby ware pottery were recovered from Deposits 9048 and 9062, which also went on to produce animal bone and Slag (SF97).

5.1.9 PHASE 35: MID – LATE 14TH CENTURY RE-BUILD

This phase (Figure 9) saw the demise of the building supported on Phase 31 Pile cluster 9157 (Group 37). This was demolished in advance of the excavation of the construction cut (9099) for the foundations (9094; Group 45) of a new build. A pair of pits, Cuts 9081 and

9097 (Group 42), presumably located within the bounds of a plot of land to the west of the new build, had most likely served as refuse pits for the same.

Foundation trench 9099, located against the eastern trench edge, was cut into the top of Phase 33 post-holes 9104 and 9108 (Group 41) as well as the top of Phase 32 Levelling deposit 9100 (Group 43). Pit 9081 cut into the top of Phase 29 foundation 9103 (Group 36) whereas Pit 9097 had been dug into the southern edge of Phase 32 levelling deposit 9098 (Group 40).

Construction cut 9099 was 2.47m long, 0.82m wide and up to 0.05m deep. Only the northern edge was available for recording and it suggested a linear, east / west aligned plan shape, although this could not be verified as the western edge was removed by the 2011 excavations and the eastern edge lay outside the trench. The southern end also ran beyond the limit of excavation and most of it had been removed by the intervention of one of the failed piles. It seemed likely that Cut 9099 had been excavated down to the top of Phase 31 Pile cluster 9157, at c.14.70m AOD, although this could not be properly verified due to this truncation. Foundation course 9094 was linear, north / south aligned, up to 1.60m long, 0.70m wide and up to 0.25m thick. The southern end of it had been cut away by the failed pile, the western edge removed by the 2011 excavations and the eastern edge lay outside the trench. The top of it sloped up gently from south to north, from 15.02 – 15.11m AOD, and it comprised small - medium pebbles in a plastic mid grey brown silt clay matrix, with occasional small - large tile fragments, pieces of limestone and patches pale yellow mortar. Fragments of animal bone, 14$^{th}$ century pottery, 13$^{th}$ – 16$^{th}$ century CBM, slag (SF's 143 and 151), an iron object (SF58) and a piece of column shaft (AF14) were also recovered.

Foundation 9094 is thought to have been the continuation of Phase 22 foundation 2024 of the 2011 excavations (Trench 2).

The lay-out of the putative workshop to the south-east also appeared to have been altered at this time. This was signified by the excavation of north-west / south-east aligned post-holes (Group 53), comprised cuts 9038, 9045, 9043, 9041 and 9153 (Figure 9). Their fills 9030, 9044, 9042, 9046 and 9142 (respective) comprised soft or friable orange brown or mid brown clay silts with moderate – frequent CBM and charcoal flecks. They may have originally held posts forming an end / side wall (or central support) of an 8m long covered, open sided workshop type building. The western side of Cut 9153 (not excavated) and the eastern edges of cuts 9038 and 9041 all lay outside the duct trench.

Shell, animal bone and residual 11th century pottery was recovered from 9030, medieval pot from 9044, residual 13th century pot from 9042, further animal bone, a Cu alloy and crucible fragment (SF's 56 and 68) came from 9044 and a fragment of 13th – 16th century CBM was picked from the surface of 9152.

Post-holes 9038, 9045, 9043 and 9041 were circular or sub-circular in plan, 0.12 – 0.50m deep, between 0.43 – 0.69m Ø and were set 2.5 - 3m apart. Cuts 9042 and 9044 (the smallest post-holes of the alignment) were located mid way between cuts 9038 and 9041 and were almost touching. Their proximity to each other inferred that one had been replaced by the other, or that they had been doubled up for greater strength. Cut 9153, the northern-most of the alignment, was square in plan, 0.43m long and 0.21m wide and was located slightly west of the main alignment. This may infer a return to the northern wall or gable end of the structure.

Group 53 Post-holes were cut into the top of Phase 28, 34 and 32 features.

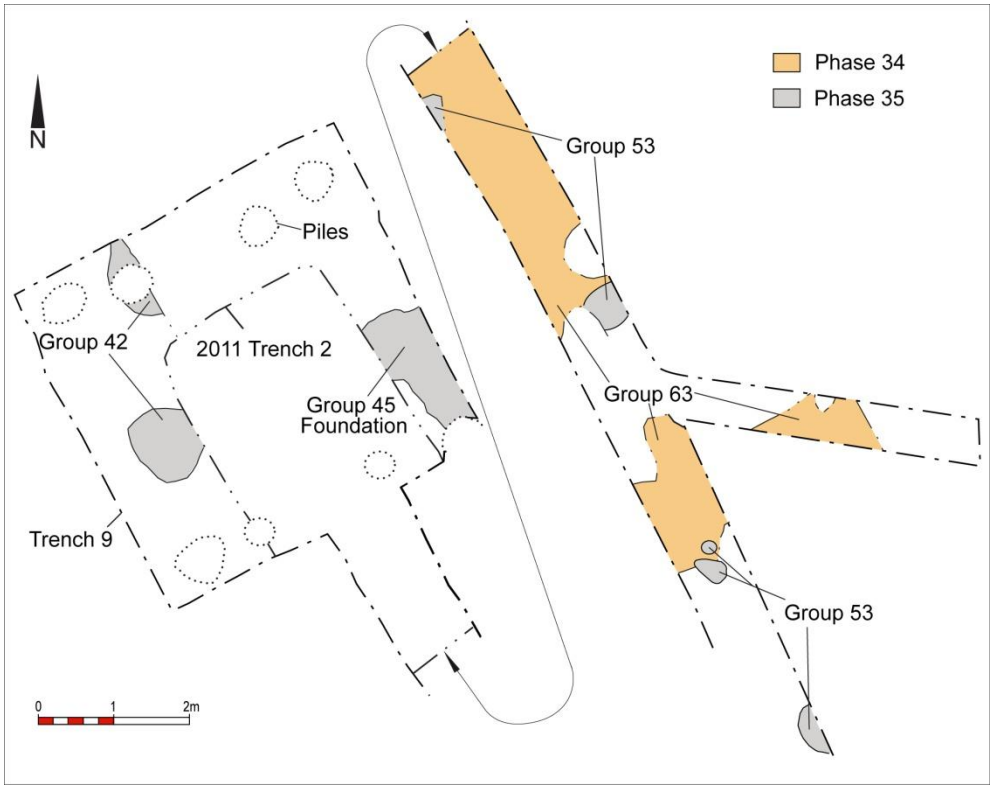


*Figure 9 Phases 34 and 35 features*

5.1.10 PHASE 36: LATE? 14TH CENTURY DEMOLITION AND RE-BUILD

Phase 36 activities (Figure 10) originated with the demolition of the building utilising Phase 35 foundation 9094 (Group 45), before the ground was levelled in preparation for a new

build. At the same time, the Group 53 Post-hole alignment observed in the duct trench to the south-east was levelled and new floors laid and/or built up.

The demolition of Foundation 9094 was evinced by the presence of a small, displaced deposit of cobbles (9092; Group 46), overlaying its northern edge. After demolition, levelling deposits 9083, 9085 (Group 47), 9091 and 9090 (Group 81) were laid down. Deposits 9083 and 9085 (comprised firm, mid or dark grey sand silts with frequent charcoal, CBM and mortar) could only be differentiated by the presence of occasional small stones within the matrix of 9085. They were located against the eastern trench edge and both sealed the top of cobble dump 9092. Deposit 9085 spread out to level the ground surface to the north, whereas 9083 spread out to cover the top of foundation 9094 in the south. Combined, they had raised the ground level by up to 0.11m, or to 15.11m AOD.

Shell, animal bone, 14$^{th}$ century pottery, 13-16$^{th}$ century peg tile, iron nail shanks (SF156), slag (SF161) and a fragment of crucible (SF162) were recovered from 9085. Deposit 9083 produced further shell, animal bone, 13$^{th}$ – 16$^{th}$ century CBM and slag (SF115), as well as residual 13$^{th}$ century pottery and an iron nail (SF116).

Group 81 deposits 9091 and 9090 were located in the western corner of the sub-station trench. They comprised up to 0.25m thick dumps of mid grey brown or grey brown sand silts (with frequent charcoal, mortar and CBM) which had used to raise the ground level to c.15.12m AOD in advance of a new build taking place (see below, Group 44).

Deposit 9091 produced animal bone, 14$^{th}$/15$^{th}$ century pottery and 13 – 16$^{th}$ century CBM, whereas 9090 gave up further animal bone and 13$^{th}$ – 16$^{th}$ century CBM, along with residual 11$^{th}$/12$^{th}$ century pottery and 2 iron nails (SF152).

Deposit 9090 overlay the top of 9091, which sealed the fill (9096) of Phase 35 Pit 9097.

The top of deposit 9090 was truncated by the construction cut (9086) for foundation 9084 (Group 44). Cut 9086 was located in the west corner of the trench, where it extended beyond the northern and western trench edges. What was available for recording was north-north-west / south-south-east aligned, 1.30m long, 0.60m and 0.13m deep, with a 'C' shape plan. A 0.83m long, 0.30m wide, slightly elevated tongue of ground (forming the opening of the 'C') was located on its western side, some 0.58m north of the southern edge. The exposed southern and western sides fell gently to a rounded, irregular base.

Foundation 9084 (Group 44), shared the same alignment and dimensions as cut 9086 (Figure 10). It was up to 0.22m thick and comprised small - large cobbles in a silt clay matrix containing moderate charcoal flecks and occasional small – medium CBM and limestone fragments The top of it was formed between 14.96 – 15.18m AOD and was very irregular and uneven. It also produced 34 fragments of 14th century pottery, Roman and 13th – 16th century CBM and an iron nail (SF153).

Some 0.54m to the south-east of foundation 9084, at 14.97 – 15.12m AOD, was the scant remains of a contemporary, abraded and uneven external metalled surface (9088; Group 44), up to 0.08m thick. It was located in the southern corner of the trench, ran outside the western and southern trench edges and had been truncated by the 2011 excavations down its eastern side. The 1.79m long, 1.44m wide 'L' shaped remnant available for recording comprised compacted small - medium pebbles in a coarse grained silt sand with small - medium brick/tile and limestone fragments, flecks - small patches of mortar and 'pea-grit', along with animal bone, 14th century pottery (including 1 Roman), Roman and 13-16th century CBM, copper alloy wire (SF53), iron nails (SF69) and slag (SF157).

Surface 9088 sealed the fill (9093) of Phase 33 post-hole 9095.

At the same time, changes were made in the workshop(s) area located in the duct trench. This was initiated by the infilling of Phase 35 post-holes (Group 53), before Group 62 deposit 9027 was laid down to level the ground. It comprised soft yellow brown silt clay, with frequent charcoal flecks and occasional small brick / tile frags, followed by an extensive layer of tile rich clay, 9010 = 9025, which could have been a further levelling and/ or consolidation deposit or a floor surface in its own right (Plate 7). Combined, they were up to 0.14m thick and had been used to raise the ground surface to c. 15.12m AOD.

The top of floor/make-up deposit 9010 = 9025 was itself renewed / repaired by, sequentially, Group 60 and 57 levelling and / or make-up deposits (Figure 10). These were, excepting deposit 9026, in the form of charcoal rich, clay build-up / floor deposits 9024, 9151 (Group 60), 9020 and 9150 (Group 57), laid down in that order. Deposit 9026 (Group 57) sealed the top of deposit 9150 and was a small spread of small-large limestone fragments and pebbles. Both groups were parts of the same sequence of deposits, but were given different identifiers as they had been parted by later intrusion. They were up to 0.12m thick and were observed over a distance of 9.38m in the base of the duct trench, width unknown. The top sloped up gently from 14.75m AOD in south-east, rising to 15.12m AOD in the north-west.

13th – 16th century CBM was recovered from all of the above and animal bone was, with the exception of 9026, also present. Residual 12th century pottery was recovered from 9026, whereas 9020 and 9150 produced pottery of the 14th century. Slag fragments were recovered from 9151 and 9026 (SF's 99 and 83), 9020 produced 2 iron nails, one from a horseshoe (SF65), and 9026 also produced a fragment of copper alloy wire or pin shank (SF122).


*Figure 10 Phase 36 features*

5.1.11 PHASE 37: LATE 14TH/EARLY 15TH CENTURY DEMOLITION AND END OF USE OF WORKSHOPS

Scant evidence was available for this phase yet it appeared that Phase 36 foundation 9084 (Group 44) was demolished and levelled. In concordance with this, the Group 60 and 57 floors within the duct trench appeared to have been levelled and a large post-hole cut through them.

Foundation 9084 was partially demolished before being levelled with deposit 9082 (Group 58), which was a plastic, dark grey brown sand silt clay with moderate mortar flecks, occasional charcoal flecks, burnt clay patches, small CBM and limestone fragments, 0.11m thick. It had raised the ground level to c. 15.17m AOD and no dating evidence was recovered.

Within the duct trench to the south-east, the top of Phase 36 deposit 9026 (Group 57) was levelled by the imposition of a 0.25m thick dump of a friable dark grey silt with frequent mortar flecks, moderate patches buff clay and small - medium brick / tile fragments (9021). This raised the ground level to c. 14.97m AOD and went on to produce fragments of animal bone, 13th-16th century CBM, 14th century pottery, a bark chipping, copper alloy off-cut and a penannular ring (SF66). Metal working waste in the form of blue (copper alloy?) stained fired clay (SF154) and crucible fragments (SF155) were also recovered.

Post-hole 9016 was located against the eastern edge of the duct trench, some 3.96m north-west of deposit 9021, where it had been cut into the top of Phase 36 deposit 9020 (Group 57). Although it ran beyond the edge of excavation it was possible to ascertain that it was sub-circular, up to 0.74m Ø and 0.23m deep with steep sides and a sharply rounded base. The base was filled with a collapsed post-packing of 3 large cobbles (9017).

5.1.12 PHASE 38: LATE 15TH CENTURY ALTERATIONS TO WORKSHOP(S)

This phase of activity saw alterations to the workshop area(s) located in the duct trench This involved the formation of limestone (Group 56) and clay floors (Group 52). (Group 56 floor sealed the top of Phase 37 cobble packing 9017 (above) and was used to fill the rest of the post-hole (9016) containing them. This suggested that the post had been removed immediately before Phase 38 floors were laid) After Group 56 floor was laid, the surface of it was either cut into / eroded by Group 55 gully 9002.

Group 56 floors 9011 and 9147 were parts of the same deposit but were allocated separate identifiers as they had been parted by later activity. The top of them was formed at c. 15.20m AOD and, when combined, they covered an area of some 2.87m north-west / south-east along the line of the duct trench, extending beyond the 0.90m width of the same. They comprised compacted, coarse limestone rubble in a soft mid grey and yellow brown silt clay matrix with occasional CBM fragments, medium - large pebbles, with occasional charcoal flecks, up to 0.18m thick.

Deposits 9147 and 9011 both produced 13th-16th century CBM, further fragments of animal bone, 15th century pottery and crucible (SF91) were recovered from the latter.

Group 52 comprised clay floors 9008 and 9007. Deposit 9008 overlaid the southern edge of Limestone floor 9011 (above) and it comprised plastic, pale creamy brown silt clay with frequent burnt patches, moderate brick, red - black mould fragments, occasional patches of charcoal and small - medium tile fragments, 0.16m thick. Deposit 9007 sealed the top of Phase 36 deposit 9010 (Group 62).and comprised a firm mid brown clay with frequent small - medium brick / tile fragments, moderate charcoal flecks, mortar patches and occasional pebbles, 0.05m thick. It was thought to have been a different dump of material forming part of the same surface as 9008 but this could not be categorically proven as they had been parted by the imposition of a later feature. Combined they extended for a distance of 5.49m along the base of the duct trench and continued beyond its eastern and western edges. The surface sloped up gently from 15.14 in the south-east, to 15.20m AOD in the north-west.

Deposit 9007 produced 14th century pottery and crucible (SF 131) fragments, whereas 13th-16th century CBM and a fragment of copper alloy waste (SF107) was recovered from 9008.

Gully 9002 was cut into the top of Floor 9011 (Group 56, above). It was north-east / south-west aligned and continued beyond the eastern and western trench edges. What could be recorded was linear in plan, 0.68m wide, 0.16m deep with gentle sides, rounded base and a wide 'U' shaped profile. Because of the restrictions imposed by the width of the trench and the profile of the gully, it could not be ascertained if it represented a water eroded eaves drip gully or a deliberately cut feature, such as a drain, serving building(s) located east and/or west of the duct trench.

5.1.13 PHASE 39: 16TH CENTURY END OF WORKSHOPS USE, LEVELLING & PIT DIGGING

This phase of activity was observed within the workshop area located in the duct trenches and it suggested that the area had become a backyard or wasteland and was used for the digging of refuse pits, namely Cuts 9069, 9051, 9009 and 9149 (Group 54; Figure 11).This phase also included the infilling and levelling of Phase 38 gully 9002 (Group 55), with soft lime mortar 9001 (Group 54).

Pit 9149 was cut into the top of Phase 38 floor 9147 (Group 56) and was truncated to the north-west by Trench 2 of the 2011 excavations. It also ran beyond the western edge of the trench, leaving a 0.50m wide, up to 0.22m deep triangular wedge available for recording. This suggested a rectilinear plan shape with moderately steep sides and a flat base. Its backfill (9148) comprised firm mid grey brown clay sand silt with frequent 16th – 18th century CBM fragments and moderate small - medium limestone fragments. Animal bone, 15th century pottery, a lead alloy off-cut (SF141) and a fragment of copper alloy waste (SF142) were also recovered.

Pit 9009 was located 2.18m south east of Pit 9149, where it was cut into the top of Phase 38 floor 9008 (Group 52). This also ran beyond the western trench edge, leaving a 1.80m long, 0.60m wide segment available for recording and it suggested a north-east / south-west aligned, ovoid plan shape (squared end to the south-west), with step irregular sides. Only the upper 0.47m of Its backfill (9006), a plastic mid - dark grey brown clay sand silt with occasional flecks - small charcoal fragments, small limestone fragments (some burnt), mould fragments and medium pebbles, was removed. The remainder was preserved beneath the formation level of new ducting. It also produced shell, animal bone, 1 fragment of human bone, coprolite, 14th century pottery, 13th-16th century CBM, slag (SF's 108 and 121), fragments of crucible (SF112) and an iron nail (SF171).

Pit 9051 was cut into the top of Phase 34 Floor 9053 (Group 82). It was located within the north-western end of the spur trench off the eastern side of the main duct trench, some 0.20m east of Pit 9009. It was east/west aligned and the majority of it lay outside the northern edge trench. The 1.8m long, 1.20m width exposed suggested a rectilinear plan shape with moderate to steep sides. Only the upper 0.32m of the backfill (9050) was removed, the rest preserved beneath the base of the duct trench. It comprised plastic, olive green mottled, mid red brown, sand clay silt with moderate small - large 13th - 16th century CBM fragments, occasional small - medium fragments of limestone, 'slabby' mica sandstone, small coal and charcoal fragments. Animal bone, 16th century pottery, crucible fragments (SF's 126 and 127), a glass vessel fragment (SF52), copper alloy fragment (SF67), slag (SF's95 and 128) as well as an iron blade (SF77) and 2 nail fragments (SF78) were recovered.

A sample (GBA 43) was taken and processed. The large amounts of human faecal material, moss, fruit seeds and blow fly puparia showed that its primary function had been that of a cess pit yet the back ground faunal assemblage (fish and mammal), glass and pottery fragments suggested an element of butchery waste and domestic discard was also present. The relative paucity of metalworking debris highlights the abandonment of the area as a focus for industry.

Pit 9069, not excavated, was cut into the top of Phase 28 Pit 9070 (Group 65). It was only included in this Group/Phase because it seemed to have been cut at the same level as the rest of Group 54 features. It was located 4.55m south-east of Pit 9009, where the north-east side lay beyond the edge of the trench, the southern edge was removed by modern activity. The remainder was north-north-west / south-south-east aligned, 0.86m long, 0.80m wide and suggested a rectilinear plan shape would have been most likely. Its fill, a friable mid green

brown sand silt with occasional CBM fragments and charcoal flecks (9032), failed to produce any dating evidence.

All the above features were observed within the ducting trenches, in an area which is thought to have been occupied by workshops, suggesting that a boundary was still being maintained between them and the area previously occupied by the buildings in the sub-station trench.

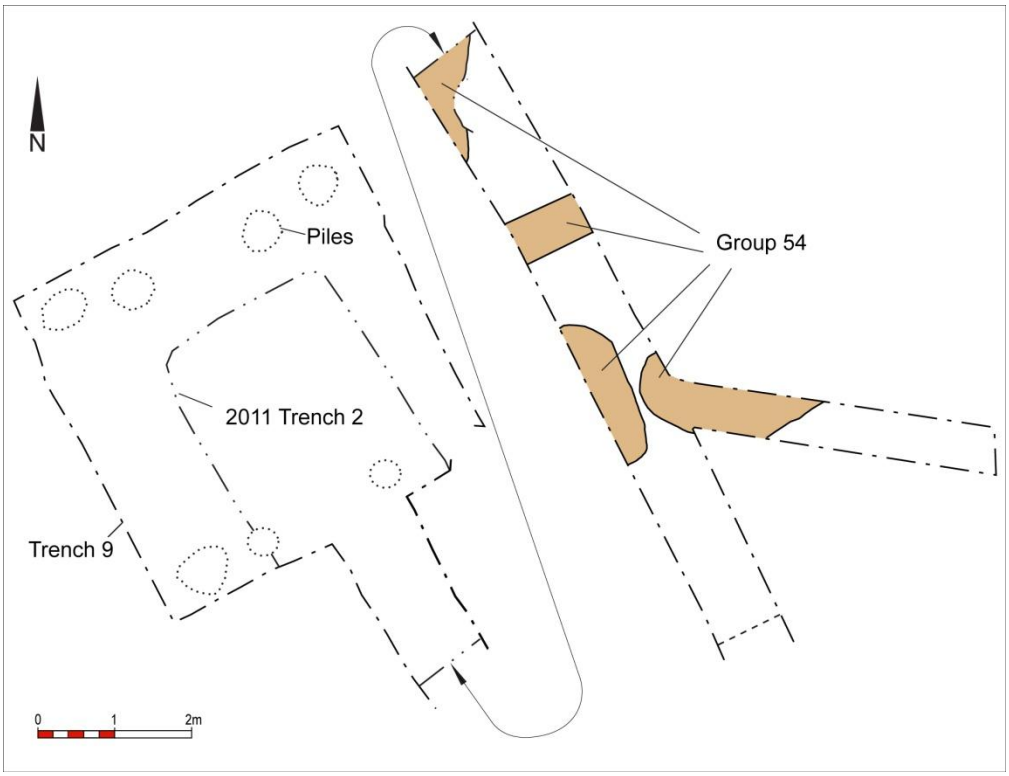


*Figure 11 Phase 39 features*

5.1.14 PHASE 40: 16TH CENTURY LEVELLING WITHIN FORMER WORKSHOP(S)

This Phase was represented by Group 51 levelling deposits 9005, 9015 and 9146, laid down over the top of Phase 39 pits after they had gone out of use and were backfilled. These comprised either sand clays (9005), silt (9015) or sand silts (9146) containing moderate to high concentrations of mortar flecking and CBM fragments. They were widely spaced along the base of the duct trench, were up to 0.17m thick and provided a gently sloping ground level, rising from 14.91m AOD in the south-east, to 15.29m AOD in the north-west.

Deposit 9005 went on to produce animal bone, 14th century pottery, 13th – 16th century CBM, slag (SF109), iron nails (SF110 -111) and fragments (SF113), crucible fragments (SF114) and a fragment of an iron blade (SF169). Further animal bone was recovered from deposit 9015, along with 19th – 20th century CBM (intrusive), 16th century pottery, a mould fragment

(SF64), slag (SF's 82 and 102), crucible fragments (SF's 86 and 106), a copper alloy off-cut (SF90), fragment of iron (SF103) and part of an iron key (SF170). Deposit 9146 provided shell, animal bone, 15th century pottery, 13th-16th century CBM, a copper alloy buckle (SF123) and a fragment of painted window glass (SF163).

5.1.15 PHASE 41: LATER 16TH C. PITS AND MORTAR MIXING TANK

This Phase (Figure 12) shows that any boundary between activities in the sub-station trench and the former workshops located in the duct trenches had been removed, evinced by the expansion of pit digging, cuts 9019, 9004, 9145 and 9079 (Group 50), into both areas. A mortar mixing tank, Structure 9141 (Group 48), was also constructed in the sub-station trench). When considered together, the presence of Group 48 and 50 features inferred that the Phase 39 / 40 yard or back-lot, first observed within the duct trench, had been expanded to incorporate lands within the sub-station trench. The presence of the mortar mixing tank suggested, speculatively, that construction was taking place just outside the bounds of the trench. If this were the case, then this new construction may have driven the changes made to the layout and extents of the rear yard or back-lot mentioned above.

Pit 9019 was located at the southern end of the duct trench and ran beyond the western edge of the same. The south-eastern end of it was truncated by modern disturbance, leaving a 1.20m long, 0.4m wide, 0.25m deep segment available for recording. This was north-west / south-east aligned, rectilinear in plan (with rounded corners) with steep almost vertical sides and a flat base. It was backfilled with a soft mid grey brown silt with frequent small CBM fragments, charcoal flecks and occasional medium pebbles (9018). It also went on to produce animal bone, 15th century pottery, charred wood fragments, copper alloy fragment (SF147), wires (SF61), objects, a sheet fragment and off-cuts (SF62), as well as slag (SF146), a fragment of fired clay (SF166) copper alloy fired clay waste (SF148), and a mould fragment (SF172).

An environmental sample (GBA 39) was retained and processed (Appendix 9). A large volume of metal working debris was recovered, suggesting that industrial waste was being deposited at the same time. This is most likely representative of metalworking discard being brought in for disposal, inferring that the focus for this activity was located beyond the bounds of the sub-station and ducting trenches. The presence of a prolific amount of seeds (medicinal plants, food plants and arable crop weed species), moss, fly pupae and larvae inferred that this feature had also served a lesser function for the disposal of domestic, butchery, crop processing waste and cess.

Cut 9004 was located 3.17m north-west of Pit 9019. The western edge lay outside the edge of excavation. The remainder was sub-circular in plan, 0.60m Ø, 0.10m deep with steep sides and a gently rounded base. Its backfill (9003), a plastic pale yellow orange clay with occasional crushed CBM fragments and mortar flecks, failed to produce any dating evidence.

Pit 9145, was, 0.58m², 0.30m deep with steep sides and a flat base. It was located 2.86m north-west of Pit 9004 and contained a backfill (9144) of a friable dark grey brown clay sand silt with moderate CBM fragments, occasional medium stones and charcoal flecks, which also produced animal bone, shell 16th century pottery and an undated fragment of clay tobacco pipe.

Pit 9079 and was located within the sub-station trench, some 3.14m north-west of Cut 9145, where it was cut into the top of Phase 37 levelling deposit 9082 (Group 37). Although its eastern edge had been removed by Trench 2 of the 2011 excavations, it was possible to ascertain a north-north-west / south-south-east aligned rectilinear rectilinear plan shape for the whole. The surviving western half of the pit was 1.86m long, 0.86m wide, 0.29m deep, with steep - vertical sides and a flat, uneven base. Its backfill, 9078, was a soft, mid reddish brown sand silt with frequent 14th – 16th century CBM fragments, moderate flecks - small fragments of charcoal and occasional small stones. Shell, animal bone, 11th century pottery (residual), a fragment of copper alloy (SF144), iron blade (SF145) and slag (SF159) were also recovered.

Group 48 mortar mixing tank (Structure 9141; Plate 8) was located 0.39m north-east of Pit 9079. It was previously encountered during the excavation of Trench 2 in 2011, where it was assigned to Phase 22 under identifier 2021. The 2011 excavations had removed the square south-eastern end of it and the surviving elements ran beyond the northern trench edge some 1.28m distant. Its construction cut, 9077, was 1.30m long, 1.75m wide and 0.35m deep with vertical sides and uneven base. It was cut into the top of Phase 41 deposit 9087 (Group 48). Structure 9141 comprises the eastern (9075) and western (9074) walls of the tank, as well as a scant basal lining of tile in mortar (9076). The side walls were constructed of 3 courses rough limestone ashlar bonded with a soft yellow clay sand. As the walls were dismantled, fragments of 16th – 18th century CBM and animal bone were recovered from Wall 9074, along further animal bone, 14th century pottery and CBM with nail concretion (SF150) from Wall 9075. A tile from levelling deposit 9076 was broadly dated to between 13th – 16th centuries.


*Figure 12 Phase 41 features*

5.1.16 PHASE 42: 18TH - 19TH CENTURY LEVELLING.

Phase 41 features were all sealed beneath extensive levelling deposits comprised building and / or demolition rubble in a clay sand silt matrix, up to 0.50m thick. This deposit was encountered in Phase 24 of the 2011 excavations and proved to be divisible into separate layers of dumped materials, contexts 2004/ 2006 and 2003/2005. Together they were used to raise the ground level to c. 15.90m AOD at the southern end of the site, rising gently to 16.20m AOD at the north-west site boundary. In the footprint of the sub-station and duct trenches, these deposits were allocated context number 9066 (Group 49) and machine excavated to a depth of 0.60m BGL.

5.1.17 PHASE 43: 20$^{TH}$ – 21$^{ST}$ CENTURY INTRUSIONS AND YARD SURFACES.

The top of Phase 42 deposit 9066 was truncated by modern service trenches (surface and foul water drains) sealed beneath the tarmac and concrete slab of the yard surface when excavation was carried out (Group 68). Trench 2 of the 2011 excavations, identified as cut 9156/ 9143 (Group 69) was cut into the top of them. The backfill of it (9155/9118) was highly mixed and was machine excavated down to 0.60m BGL.

Unstratified finds were encountered throughout the excavations. These were retained under context number 9000 and included nut shell, animal bone, 11th – 19th century pottery, 14th – 16th century CBM, a wood off-cut (oak), copper alloy disc (SF63), fragment (SF73), and off-cut (SF74), as well as fragments of crucible (SF's 89, 118, 120, 124 and 134) and slag (SF119).

## 5.2 DISCUSSION

The earliest deposits encountered during the excavations comprised extensive dumps of organic silts (Phase 26) dated to the 13th-14th century. These were encountered in the 2011 excavations (Trench 2; Phases 11, 12 and 21) and were regarded as waste associated with backyard middening. Processed environmental samples of this deposit from the 2011 excavations showed that animal waste was a main constituent, yet the type and range of artefact recovered during the 2012 excavations suggested that dumps of industrial and domestic discard were also present. The extent and depth of deposit (over 0.6m thick) suggested large scale levelling and/or land reclamation, rather than a build-up of midden from dwellings in the vicinity. The surface of these deposits sloped up gently from west - east (14.50m AOD - 14.74m AOD) and they appeared to have been laid down in preparation for construction to take place. The primary evidence for this was a patchy floor of moderately crushed limestone (Group 31), located in the west corner of the trench. Due to depth restrictions placed on the excavations very little of this deposit was observed, yet it would appear to have been the internal floor of a building as this type of surface would not have been robust enough to withstand external use. Any other evidence for the building it served remained beneath the level reached, was removed in antiquity or lay outside the trench. The top of Group 31 surface was uneven and sloped steeply down from south-east to north-west, from 14.70 -14.56m AOD, suggesting settling and subsidence had occurred in the underlying organics. This may have driven the next phase of construction.

The top of Group 31 surface was raised to c. 14.76m AOD by the imposition of Phase 27 organic dumps, also dated to the 13th century. These were laid down in advance of the insertion of timber pile clusters 9120 (Group 33) and 9158 (Group 77). Pile cluster 9120 was located in the western corner of the trench whereas cluster 9158 had been placed in the eastern corner of the trench, some 2.70m to the north –east. As excavation progressed it became clear that the pile groups represented separate buildings. Pile cluster 9120 had gone out of use by the end of the 13th century whereas cluster 9158 was retained up until the 14th century (see Phase 30, below). The layout and ground plan of each building could not be ascertained as the greater part of them lay outside the trench. Group 76 stakes, also inserted at this time, could have been parts of fence lines or construction setting out markers associated with the new build(s).

Phase 27 also includes the earliest deposits reached within the duct trench. Although by no means certain, it would appear that Group 66 deposits represented compacted, trampled floors associated with the metalworking industry (workshops?), in a yard(s), or back-lot, south-east of the above dwellings. (The moderate amounts of copper alloy waste, objects, mould and crucible fragments recovered from this area throughout suggested that smelting, casting and working of copper or bronze objects was taking place)

The buildings represented by Groups 33 and 77 pile clusters appear to have remained unaltered as the workshops suffered a decline in use. Phase 28 relates to the metalworking area only and it would appear that a series of pits (Group 65 and 64) were cut through the top of Group 66 floors in the mid 13th century. The fills of these was domestic in origin, contained a percentage of 'cessy' staining and mottling with very little metalworking discard present, suggesting that industry had been suspended or relocated elsewhere. Why this should be the case is currently unclear.

In the later 13th century (Phase 29), Phase 27 Pile cluster was truncated and the area raised and levelled (to 14.91m AOD) with dumps of ash and silt (Group 35) in advance of the relocation of the building originally supported on them. This involved the construction of a substantial limestone rubble foundation (9103; Group 36) in the west corner of the trench, c. 1m to the north of Phase 27 pile cluster 9120 (Group 33). The dimensions of this foundation course are currently unknown as its extents lay beyond the northern and western trench edges. The 2.70m long, 1.50m width observed did, however, suggest that a substantial building had been founded upon it. What function this building had could not be ascertained, yet the dimensions suggested a large building of some status. The presence of water borne silts within the interstices of rubble foundations 9103 (Appendix 9; Sample 46) strongly suggests that a rise in the water table was responsible for the buildings demise. The need to escape the encroaching water ground water level may have been the driving force behind the successive phases of demolition and clearance of buildings observed in the sub-station trench. This will remain largely supposition and will not be fully understood without further archaeological work being undertaken.

At the same time, in the workshop area, the tops of Phase 28 pits were levelled (Group 79) and new floors formed (Group 78). Group 78 floors comprised disparate, trampled patches of crushed mould fragment and/or burnt clay rich silts which suggested that metalworking had recommenced.. Whether or not the new build and revitalisation of the metalworking industry were related is not clear.

The next major change in land use (Phase 30) appeared to have taken place in the late 13th – early 14th century. Phase 30 activity involved the demolition of the building utilising Phase 27 Pile cluster 9158 (Group 77) before the ground level was raised to 14.74 – 14.82m AOD with Group 59 organic dump(s). It is also assumed that the building founded upon Phase 29 Footing 9103 (Group 36) was demolished and cleared at this time as the easternmost edge of it had been removed by Pit 9102 (Phase 30, Group 39). A further pit (9059; Group 61), was cut through Group 78 floors (Phase 29) in the workshop area, suggesting that changes had taken place here as well. The imposition of these two pits might, however tenuous, suggest that both areas had become vacant after they were cleared of structures.

In the early 14th century (Phase 31), a further pile cluster (9157; Group 37) was driven through the top of Phase 30 levelling deposits (Group 59), immediately west of the Phase 27 piles (Group 77). This would infer that the structure founded on Phase 27 piles was rebuilt at this time. Other evidence for the new structure was lacking as the majority of it lay outside the trench edge. Phase 32 deposits (Groups 43 and 40) appeared to have been building-up within a yard on the north-west side of the Phase 31 new build.

In the industrial area to the south-east, Group 80 levelling / build up deposits sealed the top of a Phase 30 Pit (Group 61). The presence of these deposits inferred that industrial processes were once more being undertaken in the workshops. This may have been associated with the Phase 31 re-build, above, but as this could not be categorically proven, it was allocated its own identifier.

The top of phase 32 deposits in Groups 43 and 40 had been cut into / driven through by a sequence of post-holes (Phase 33; Group 41). These were thought to represent a north-west / south-east aligned fence line across the north side of the structure using Phase 31 pile cluster. Whether or not this fence related to the demarcation of activities within an existing plot or was a division of land tenure is unknown.

Phase 34 activities were restricted to the workshop area to the south – east and was represented by Group 63 floors/floor repairs/levelling deposits. These sealed the top of Phase 32, Group 80 levelling deposits and comprised clay floors (some burnt red), cinder build-up, burnt sands and the remnants of crushed mould surfaces, all suggesting an increase in industrial activity.

In the mid – late 14th century, the building supported on Phase 31 Pile cluster 9157 (Group 37) was demolished in advance of a new build taking place (Phase 35). This was evinced by the presence of cobble foundation 9094 (Group 45). The construction cut for it had removed

the tops of Group 41, Phase 33 posts and it was also assumed to have cut through the top of Phase 31 pile cluster 9157 (Group 37), although this could not be proven as the relationship had been removed by later activity. A pair of refuse pits, Cuts 9081 and 9097 (Group 42), located within a plot of land on the west side of the new build, were most likely contemporary. At the same time Phase 34 floors in the workshop area were truncated by Phase 35 post-holes (Group 53) which suggested that building was also taking place in this area. The post-holes may have represented the eastern side, or central supports, of an 8m long, open sided workshop building but this could not be proven as the majority of it lay beyond the edge of excavation.

Phase 35 Foundation was replaced in the later 14th century. In Phase 36, the building using Phase 35 foundations was demolished and the area levelled to 15.11m AOD with dumps of charcoal and mortar rich silts (Group 47 and 81). Once this was undertaken, a new cobble foundation (9084; Group 44) was laid and an external metalled surface laid to the south-east of it. Foundation 9084 was relocated to the western corner of the sub-station trench, 3.40m from the previous Phase 35 foundations, suggesting that a change in the layout of buildings within the property boundaries was also involved. The form of the new structure will remain unknown as the majority of it lay beyond the trench edge. Also at this time, the Phase 35 post built structure (Group 41) observed in the duct trench was swept away and the ground levelled with charcoal and tile rich clays (Group 62) before a succession of charcoal rich clay floor and/or build-up deposits were formed above them (Group 55). The presence of these deposits suggested that changes in the layout of the industrial area had been coincidental with those observed in the sub-station trench. The building represented by Phase 35 post-holes appeared to have been relocated; the internal Group 55 clay floor/build up deposits could only have survived if they were protected from the elements hence it is postulated that they were enclosed by a structure with its external walls located outside the confines of the duct trench.

Phase 37 sees the demolition of Phase 36 foundation 9084 and the area levelled (Group 58) in the late 14th / early 15th century. Little evidence was available for this phase of activity within the workshop area, yet it appeared that Phase 36 workshop floor (Group 55) had gone out of use and was then levelled with mortar rich silts, as well as a substantial post hole being cut through them (Group 58). What this isolated feature relates to is currently unknown, although the presence of a collapsed packing of large pebbles lining the base suggested that it had carried a post of considerable size. Further alterations were carried out within the workshop area in the late 15th century (Phase 38), involving the infilling of Group 58 post-hole, followed by the formation of external limestone rubble floor (Group 56), overlapped by internal clay floors (Group 52) along its southern edge. After Group 56 floor

was laid, the surface of it was either cut and/or eroded by a shallow eaves drip or drainage gully (Group 55). It is postulated that the placement of the gully, just to the north of the boundary between the clay and limestone floors, inferred the northern wall of a north-east / south-west aligned building of some sort may also have existed in that location. By the 16th century (Phase 39), if a building was present, it had been swept away and the area used the excavation of Rubbish pits. (Group 54), signalling the end of metalworking in the area. Shortly after, the Group 54 pits had gone out of use and the area was levelled once more (Phase 40) before pit digging recommenced in the later 16th century (Phase 41). Phase 41 pits were present across the ducting and the sub-station trenches, inferring that any division between the two areas had, by now, been swept away. Although buildings were absent in both areas, the presence of a mortar mixing tank (Group 48) showed that construction was taking place elsewhere at this time. In the 18th – 19th century a major change in land use (Phase 42) was undertaken. The top of Phase 41 features were sealed beneath an extensive levelling deposit which was present across the whole of the site. It was up to 0.50m thick and had been used to raise the ground level and provide a gentle slope across the development area, rising from 15.90m AOD in the south-east, to 16.20m AOD in the north-west. The absence of any archaeological features and deposits of 17th century date suggested that truncation had occurred. This may have been brought about by the clearance and demolition of structures in preparation for the levelling of the site mentioned above. Finally, Phase 43 relates to the 20th – 21st century services and the concrete and tarmac surfaces of the yard (Group 68) at the time of excavation, subsequently truncated by the 2011 excavation trenches (Group 69).

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## APPENDIX 1: SITE PHOTOGRAPHS

*Plate 1 Phase 27 Pile Cluster 9120. Showing modern failed sleeve pile (mid left) and steel reinforced concrete replacement (mid right). 0.10mscale divisions*

*Plate 2 Phase 29 Foundation 9103. Looks south-east. 0.10m scale divisions*

*Plate 3 Phase 29 burnt clay and mould floor 9063. Duct trench, vertical. 0.1m scale divisions*

*Plate 4 Phase 34 patch of burnt clay flooring (9047). Duct trench, looking south-west. 0.10m scale divisions*

*Plate 5 Phase 35 foundations 9094. Looking north-east. Shallow step bottom left to right indicates edge of 2011 excavations (Trench 2). 0.10m scale divisions*

*Plate 6 Phase 36 foundations 9084. Looking vertical, south-east to top of frame. Failed modern sleeved pile bottom centre, steel reinforced concrete replacement mid left. 0.10m scale divisions*

*Plate 7 Phase 36 clay and tile floor / make-up deposit 9010. Duct trench, looking north-west. 0.10m scale divisions*

*Plate 8 Phase 41 mortar mixing tank (Structure 9141) pre-excavation. Looking north-west. 0.10m scale divisions*

## APPENDIX 2: POTTERY REPORT

**By A.J. Mainman**

This assemblage of 852 sherds is centred on the late 12th to 14th century with a few contexts containing earlier pottery, in some cases, clearly residual, and a few contexts with later material.

It is a remarkably consistent assemblage with generally very little earlier residual material incorporated into later layers. A few sherds of Roman and Anglo-Scandinavian pottery have been incorporated into layers that are essentially post-Conquest in date. Even the 11th century is poorly represented both as individual contexts and as residual gritty ware (the hallmark of the 11th century) sherds incorporated into later levels. Gritty wares occur together with splashed wares and occasional YGW (York Glazed wares) to indicate 12th century, but the bulk of the material is Brandsby-type wares of the later 13th and 14th century. These are replaced in the later 14th and 15th century by Humber wares and Hambleton ware. Post medieval wares are also poorly represented with only a few sherds of Cistercian wares, black wares, slip wares and post-medieval red earthenwares (PMRW).

A few sherds show signs of burning which is consistent with the evidence on site of industrial activity (crucibles, moulds, slag). One form (from context 9109) is an unusual form of dripping dish, very sooted which might have had an industrial purpose. One or two forms are reconstructable suggesting that this material is primary material which has not moved far.
In summary, the assemblage is typical domestic material of largely 14th century date and would reward further analysis in combination with a study of the other material culture and site stratigraphy.

| CONTEXT | NO OF SHERDS | DATE | DESCRIPTION |
|---|---|---|---|
| 9000 | 56 | 11th-19th | All types |
| 9005 | 9 | 14th century | 4 Hambleton<br>2 Humber<br>1 splashed<br>2 Brandbsy |
| 9006 | 2 | 14th century | 1 Brandbsy<br>1 unknown |
| 9007 | 1 | 14th century | Brandsby |
| 9010 | 2 | 14th century | 2 Brandsby |
| 9011 | 2 | 15th century | 1 Hambleton<br>1 waster |
| 9012 | 6 | 18th century | 2 PMRW<br>2.Humber<br>2 Brandsby (burned) |

| | | | |
|---|---|---|---|
| 9015 | 22 | 16th century | 1 slipware 16th<br>21 mixed medieval wares |
| 9018 | 16 | 15th century | 14 Brandsby<br>1 red ware<br>1 burned |
| 9020 | 3 | 14th century | Brandsby |
| 9021 | 19 | 14th century | 2 red ware<br>11 Brandsby<br>6 YGW |
| 9026 | 5 | 12th century | 1 developed Stamford ware<br>3 gritty ware<br>1 splashed |
| 9027 | 3 | 14th century | 2 Brandsby<br>1 Stamford |
| 9028 | 1 | 11th century | 1 burned gritty |
| 9029 | 6 | 13th century | 5 YGW<br>1 gritty ware |
| 9030 | 1 | 11th century | 1 gritty ware |
| 9032 | 1 | 11th century | 1 splashed ware |
| 9042 | 6 | 13th century | 4 YGW<br>1 splashed<br>1 gritty ware |
| 9044 | 1 | ? | Medieval? |
| 9048 | 3 | 14th century | 3 Brandsby |
| 9049 | 104 | 14th century | Large part of Brandbsy ware jug - would reconstruct |
| 9050 | 33 | 16th century | 1 Cistercian<br>1 Black ware<br>2 Humber<br>3 burned<br>3 Hambleton<br>23 medieval residual |
| 9058 | 2 | 13th (15th) | YGW |
| 9061 | 10 | Late 13th century | 4 YGW<br>4 early Brandsby<br>2 splashed |
| 9062 | 1 | 14th century | 1 Brandsby |
| 9063 | 1 | R | 1 Roman |
| 9075 | 1 | 14th century | 1 Brandsby |
| 9078 | 5 | 11th century | 5 gritty ware |
| 9080 | 11 | 14th century | 1 Stamford<br>1 splashed<br>2 Brandsby<br>7 Gritty ware |
| 9083 | 4 | 13th century | YGW |

| | | | |
|---|---|---|---|
| 9084 | 34 | 14th century | 1 Brandsby<br>1 gritty ware<br>2 scrap<br>30 splashed |
| 9085 | 12 | 14th century | 1 gritty ware<br>1 red ware<br>10 Brandsby |
| 9087 | 2 | 16th? century | Cistercian base |
| 9088 | 18 | 14th century | 1 Roman |
| 9090 | 1 | 11th/12th century | Splashed |
| 9091 | 9 | 14th/15th century | 1 Humber<br>2 splashed<br>4 Brandsby |
| 9094 | 17 | 14th century | 1 burned frag<br>1 gritty ware<br>1 Brandsby |
| 9096 | 4 | 12th century | 2 splashed<br>2 YGW |
| 9098 | 112 | 13th century | 70 gritty ware<br>30 splashed<br>6 Stamford<br>5 YGW<br>1 Torksey ware |
| 9101 | 1 | 11th century | Gritty ware |
| 9103 | 81 | 13th century | 26 splashed<br>3 Torksey ware<br>48 gritty ware<br>2 Stamford<br>1 YGW<br>1 Brandsby |
| 9109 | 9 | 14th century | 1 ?dripping dish<br>1 Roman<br>7 Brandsby |
| 9110 | 12 | 13th century | 4 YGW<br>5 splashed<br>3 scraps |
| 9111 | 26 | 14th century | 5 gritty ware<br>17 splashed<br>3 YGW<br>1 Brandsby |
| 9113 | 9 | 13th century | 1 YGW<br>2 gritty ware<br>5 splashed<br>1 Stamford |
| 9114 | 27 | 13/14th (17th) century | 5 gritty ware<br>17 splashed<br>3 YGW<br>1 Brandsby<br>1 open form with slip |

| | | | |
|---|---|---|---|
| 9115 | 10 | 11/12th century | 6 gritty ware<br>3 splashed<br>2? |
| 9116 | 8 | 11th century | 8 gritty ware |
| 9117 | 31 | 13th century | 14 gritty ware<br>8 splashed<br>1 shelly<br>5 splashed<br>2 Stamford<br>1 YGW |
| 9118 | 1 | Scrap | |
| 9119 | 32 | 14th century | 8 gritty ware<br>6 Brandsby<br>10 splashed<br>3 Roman<br>1 Shelly<br>4 scraps |
| 9127 | 38 | 13th/14th century | 1 Torksey ware<br>9 splashed<br>16 gritty ware (some burned)<br>3 Stamford<br>2 Roman<br>1 developed Stamford<br>6 Brandsby<br>1 ? |
| 9144 | 4 | 16th century | 2 Humber<br>2 post med |
| 9146 | 1 | 15th century | 1 Hambleton |
| 9148 | 5 | 15th century | 4 Brandsby<br>1 Humber |
| 9150 | 4 | 14th century | 2 Brandbsy<br>2 YGW |
| 9151 | 7 | 14th century | 7 Brandsby |
| 9154 | 1 | 13th century | 1 YGW |

*Table 1 Pottery Data by Context*

## APPENDIX 3: SMALL FINDS

**By Nicky Rogers**

A total of 123 small finds were recorded – of these two are made of leather (SF's72, 81) and are reported on by Ian Panter**,** five are of wood (SF's79-80,173-175) and have been studied by Steve Allen, and 55 appear to be related to metalworking (SF's57, 64, 68, 82-88, 91, 92, 94-99, 100, 102, 104-109, 112, 114, 115, 121, 126-132, 136, 137, 139, 140, 143, 146, 148, 149, 151, 154, 155, 157-159, 161, 162, 165, 166, 172) and are reported upon by Rachel Cubitt. The remaining small finds are assessed in this report.

IRON

Twenty of the 29 iron small finds comprise nails; of these SF135, Context 9103 also contains a clench bolt, and a horseshoe nail of 14th – 15th century form, and SF65, Context 9020 also contains a 13th- 14th century horseshoe nail. Plated buckle SF60, Context 9098 has a buckle plate that is similar in form to that on a buckle from 16-22 Coppergate which was recovered from a 12th – 13th century deposit (Ottaway and Rogers 2002, *12659*), which suggests a possible date for SF60. Other objects include blade fragments, probably from knives (SF77, Context 9050; SF145, Context 9078; SF169, Context 9005), part of a key for a fixed lock (SF170, Context 9015), and an unidentified decorated and plated iron object (SF58; Context 9094).

COPPER ALLOY

Of 18 copper alloy small finds, five contain sheet offcuts (SF62, Context 9018; SF66, Context 9021; SF74, Context 9000; SF76, Context 9049; SF90, Context 9015), and three are made up of lengths of wire (SF53, Context 9088; SF61, Context 9018; SF122, Context 9026). Dress fittings comprise buckle SF123, Context 9146 which is of a simple D-shaped form used throughout most of the medieval period, from at least the 12th to 15th centuries, and also one-piece strap-end SF71, Context 9058 which is very similar to an example found in a 14th century deposit at St. Andrewgate (Finlayson 2004, *SF397*).

LEAD ALLOY

SF14, Context 9148 is an offcut, and the only lead alloy object which was recovered.

STONE

The only stone object from the excavations, SF167, Context 9127 is part of a large circular vessel of uncertain function.

BONE

The two finds of bone comprise a worked fragment or offcut (SF168, Context 9080) and a possibly unfinished object (SF55, Context 9049).

GLASS

Three finds of glass were recovered. SF163, Context 9146 is a fragment of medieval painted window glass. SF52, Context 9050 appears to be the base of a medieval vessel – medieval glass vessels are not commonly recovered from excavations, and typically come from high status sites: several fragments were retrieved from the excavations at the nearby Vicars Choral College (Ottaway and Rogers 2002, 2814-2827). A second vessel glass fragment

SF164, Context 9144 is of post medieval date, and must be intrusive in its 16th century context.

## CONCLUSIONS

Virtually all of the datable material within this part of the small find assemblage is medieval, predominantly from the 12th – 14th /15th century period; the only post medieval object is the vessel glass fragment SF164. In terms of activity on and around the site, evidence of non-ferrous metalworking is provided by the copper alloy offcuts and wires, although these were all found scattered throughout several phases, with no particular concentrations evident. Such material resembles the metalworking evidence from the evaluation of this site, and also that from the site at St. Andrewgate, and in the wider Bedern area. The other finds assessed here add little further to an understanding of the site, being a somewhat mixed group of material.

## RECOMMENDATIONS

As with the material from the previous evaluation, this assemblage complements both the evidence of activity and of dating provided by the other finds from this excavation, and in turn the considerably larger body of evidence from previous excavations within the same area. Coming as it does from a site of considerable interest to the study of medieval craftworking in the city, this assemblage should be studied in combination with the other material culture and analysis of the site stratigraphy.

| Small Find No. | Context | Description | Material |
|---|---|---|---|
| SF52 | 9050 | Vessel Fragment | Glass |
| SF53 | 9088 | Wire | Copper Alloy |
| SF54 | 9100 | Nail | Iron |
| SF55 | 9049 | Unfinished Object | Bone |
| SF56 | 9040 | Fragment | Copper Alloy |
| SF57 | 9056 | Slag | Slag |
| SF58 | 9094 | Object | Iron |
| SF59 | 9098 | Nails | Iron |
| SF60 | 9098 | Buckle | Iron |
| SF61 | 9018 | Wires | Copper Alloy |
| SF62 | 9018 | Object, Sheet fragment, Offcuts | Copper Alloy |
| SF63 | 9000 | Disc | Copper Alloy |
| SF64 | 9015 | Mould, Waste | Fired Clay, Copper |

| | | | |
|---|---|---|---|
| | | | Alloy |
| SF65 | 9020 | Horseshoe Nail, Nail | Iron |
| SF66 | 9021 | Offcut, Ring | Copper Alloy |
| SF67 | 9050 | Fragment | Copper Alloy |
| SF68 | 9040 | Crucible, Fragment | Fired Clay |
| SF69 | 9088 | Nails | Iron |
| SF70 | 9060 | Nail | Iron |
| SF71 | 9058 | Strap End | Copper Alloy |
| SF72 | 9117 | Fragment | Leather |
| SF73 | 9000 | Fragment | Copper Alloy |
| SF74 | 9000 | Offcut | Copper Alloy |
| SF75 | 9049 | Fragment | Copper Alloy |
| SF76 | 9049 | Offcut | Copper Alloy |
| SF77 | 9050 | Blade Fragment | Iron |
| SF78 | 9050 | Nail, Fragment | Iron |
| SF79 | 9117 | Object | Wood |
| SF80 | 9103 | Bale Pin | Wood |
| SF81 | 9127 | Fragment | Leather |
| SF82 | 9015 | Slag | Slag |
| SF83 | 9026 | Slag | Slag |
| SF84 | 9098 | Slag | Slag |
| SF85 | 9061 | Crucible fragments | Fired clay |
| SF86 | 9015 | Crucible fragments | Fired clay |
| SF87 | 9061 | Slag | Slag |
| SF88 | 9061 | Slag | Slag |
| SF89 | 9000 | Crucible fragments | Fired clay |
| SF90 | 9015 | Offcut | Copper Alloy |
| SF91 | 9011 | Crucible fragment | Fired clay |
| SF92 | 9063 | Crucible fragment | Fired clay |
| SF93 | 9010 | Nail | Iron |
| SF94 | 9010 | Slag | Slag, Ceramic Building Material |
| SF95 | 9050 | Slag | Slag |
| SF96 | 9103 | Slag | Slag |
| SF97 | 9062 | Slag | Slag, Pottery |
| SF98 | 9029 | Crucible fragment | Fired clay |

| | | | |
|---|---|---|---|
| SF99 | 9151 | Slag | Slag |
| SF100 | 9049 | Crucible fragment | Fired clay |
| SF101 | 9027 | Fragment | Iron |
| SF102 | 9015 | Slag | Slag |
| SF103 | 9015 | Fragment | Iron |
| SF104 | 9098 | Slag | Slag |
| SF105 | 9032 | Slag | Slag |
| SF106 | 9015 | Crucible fragment | Fired clay |
| SF107 | 9008 | Waste | Copper alloy |
| SF108 | 9006 | Slag | Slag |
| SF109 | 9005 | Slag | Slag |
| SF110 | 9005 | Nail | Iron |
| SF111 | 9005 | Nail | Iron |
| SF112 | 9006 | Crucible Fragment | Fired Clay |
| SF113 | 9005 | Nail Fragments | Iron |
| SF114 | 9005 | Crucible Fragments | Fired Clay |
| SF115 | 9083 | Slag | Slag |
| SF116 | 9083 | Nail | Iron |
| SF117 | | | |
| SF118 | 9000 | Crucible Fragments | Fired Clay |
| SF119 | 9000 | Slag | Slag |
| SF120 | 9000 | Crucible Fragments | Fired Clay |
| SF121 | 9006 | Slag | Slag |
| SF122 | 9026 | Wire | Copper Alloy |
| SF123 | 9146 | Buckle | Copper Alloy |
| SF124 | 9000 | Crucible Fragment | Fired Clay |
| SF125 | 9050 | Nail | Iron |
| SF126 | 9050 | Crucible Fragment | Fired Clay |
| SF127 | 9050 | Mould Fragment | Fired Clay |
| SF128 | 9050 | Slag | Slag |
| SF129 | 9049 | Crucible fragments | Fired Clay |
| SF130 | 0 | Slag | Slag |
| SF131 | 9007 | Crucible fragments | Fired Clay |
| SF132 | 9103 | Slag | Slag |
| SF133 | 9103 | Fragments | Iron |
| SF134 | 9000 | Crucible fragments | Fired Clay |

| | | | |
|---|---|---|---|
| SF135 | 9103 | Clench Bolt, Nails, Horseshoe Nail | Iron |
| SF136 | 9154 | Waste, Mortar | Copper Alloy, Mortar |
| SF137 | 9063 | Mould Fragments | Fired Clay |
| SF138 | 9111 | Nails | Iron |
| SF139 | 9049 | Slag | Slag |
| SF140 | 9098 | Slag | Slag, Bone |
| SF141 | 9148 | Offcut | Lead Alloy |
| SF142 | 9148 | Fragment | Copper Alloy |
| SF143 | 9094 | Slag | Slag |
| SF144 | 9078 | Fragment | Copper Alloy |
| SF145 | 9078 | Blade | Iron |
| SF146 | 9018 | Slag | Slag |
| SF147 | 9018 | Fragment | Copper Alloy |
| SF148 | 9018 | Waste | Copper Alloy, Fired Clay |
| SF149 | 9018 | Crucible fragments | Fired clay |
| SF150 | 9075 | Nail, Tile | Iron, Ceramic Building Material |
| SF151 | 9094 | Slag | Slag |
| SF152 | 9090 | Nails | Iron |
| SF153 | 9084 | Nail | Iron |
| SF154 | 9021 | Waste, Fired Clay | Copper Alloy, Fired Clay |
| SF155 | 9021 | Crucible fragments | Fired clay |
| SF156 | 9085 | Nail Shanks | Iron |
| SF157 | 9088 | Slag | Slag |
| SF158 | 9117 | Slag | Slag |
| SF159 | 9078 | Slag | Slag |
| SF160 | 9119 | Nail | Iron |
| SF161 | 9085 | Slag | Slag |
| SF162 | 9085 | Crucible fragment | Fired clay |
| SF163 | 9146 | Painted Window Glass Fragment | Glass |
| SF164 | 9144 | Vessel Fragment | Glass |
| SF165 | 9117 | Fragment | Fired Clay |

| | | | |
|---|---|---|---|
| SF166 | 9018 | Fragment | Fired Clay |
| SF167 | 9127 | Vessel Fragment | Stone |
| SF168 | 9080 | Worked Fragment | Bone |
| SF169 | 9005 | Blade Fragment | Iron |
| SF170 | 9015 | Key Fragment | Iron |
| SF171 | 9006 | Nail | Iron |
| SF172 | 9018 | Mould Fragment | Fired clay |
| SF173 | 9131 | Offcut | Wood |
| SF174 | 9131 | Bowl | Wood |
| SF175 | 9131 | Peg | Wood |

*Table 2 Small Finds by Context*

## APPENDIX 4: CONSERVATION ASSESSMENT REPORT

**By K. Kenward**

### INTRODUCTION

This report aims to meet the requirements of MAP2 (English Heritage, 1991) to produce a stable site archive (Phase2: Fieldwork). This has involved X-radiography and an assessment of the condition, stability and packaging of the finds. Urgent first-aid treatments have been undertaken as required, to enable safe storage for the long term.

The potential of the assemblage for further analysis and research is also discussed (MAP2 Phase 3: Assessment). The condition of the various classes of material is summarised and indicators of unusual preservation are noted. There are recommendations for investigative conservation, for additional specialist support, and topics for further research are raised.

| Material | Quantity |
|---|---|
| Iron | 26 |
| Iron slag | 33 |
| Copper alloy | 18 |
| Lead alloy | 1 |
| Glass | 3 |
| Bone | 2 |

| | |
|---|---|
| Fired clay:<br>mould fragments<br>hearth fragments | 7 in total:<br>5<br>2 |
| Stone | 1 |
| Leather | 2 |
| Wood | 2 SFs + 21 bags |

*Table 3 Material Quantification*

**METHODOLOGY**

All metal finds (with the exception of the lead alloy) were X-rayed using standard Y.A.T. procedures and equipment. The X-rays were given a reference number in the YAT Conservation Laboratory series and the number was written on the packaging for each object X-rayed. Four X-ray plates were produced (X8058-X8061). Each image on the X-ray was labelled with its small find number. The plates were packaged in acid-free archival envelopes. The plate number was linked to the IADB find record for each object.

All finds were examined under a binocular microscope at X20 magnification alongside their X-ray image where they existed. The material identifications were checked and observations made of the condition and stability of the finds. Remedial conservation treatments were carried out where appropriate in order to stabilise the material for long term storage. Assessment and treatment details were recorded in the Conservation Work Record area on IADB, the information can be printed out through SQL Query.

**CONDITION ASSESSMENT SUMMARY**

IRON

26 bags containing iron finds were assessed. The overall condition of the assemblage suggests a moist, well aerated burial environment resulting in bulky corrosion crusts and mineralised cores. Recently active corrosion was only noted on a few objects and on these it appears to be stabilising in the dry storage environment provided. Mineral preserved organic remains (MPO) are present in the crusts of some of the objects. In the case of nails these are associated with the use of the objects but in other cases they appear to be incidentally incorporated from the burial environment. The X-rays reveal only a few objects (eg SF152 and SF153) have any metal surviving in their cores, the cores of the rest are heavily to totally mineralised. Possible surface plating has been identified by X-ray on three objects; SF58, SF60 and an object amongst sf102.

SLAG

A sample comprising 14 of the 33 bags labelled as slag was radiographed. From the X-rays three objects have been identified, a nail in sf108, a possible blade in sf109 and what appears to be a plated lock part in sf102. These would have been missed if the slag had not been radiographed which highlights the importance of x-raying at least a sample of slag recovered from sites.

COPPER ALLOY

18 copper alloy finds were assessed, six of which appear to be metal working waste. All had blue/green corrosion products present but, with the exception of one or two which had some active corrosion present, most appeared stable at the time of assessment. The X-ray shows the cores to be variable; those likely to be metal working waste have very little metal present whilst the majority of the objects have a fair to good metal core. Fragments of mineral preserved organic remains (mostly incidental plant remains) were noticed in the crusts of some of the objects. However sf71 and one of the 3 pieces of sf123 appear to have the mineralised remains of leather present.

LEAD ALLOY

The one lead alloy strip is in a good condition with a dark protective layer over a bright metal core.

GLASS

3 fragments of glass were assessed, which had been wet packed although one had dried out. Two fragments, SF163 and SF164 (painted) are in good condition and were solvent dried through successive baths of 30% and 60% acetone/water and 100% acetone. Sf52 was in a more fragile, friable condition and has been consolidated with 10% Paraloid B72 in acetone.

BONE

The 2 pieces of bone are in good condition with no splits or friable areas. Surface soil was removed with cotton wool swabs of IMS and material identification confirmed by M. Felter.

FIRED CLAY

7 bags containing fragments of fired clay were assessed, two of which contained possible hearth fragments whilst the rest appeared to be mould fragments. The pieces in 2 of the bags had bright blue copper alloy corrosion products present. All were in good condition; only one was particularly friable and might require consolidation if this were felt necessary.

STONE

One stone crucible fragment was present. It was in a good condition.

LEATHER

Two bags of wet packed leather were brought to dry storage as part of the assessment process. SF72 contained two fragments both of which were hard and inflexible whilst SF81 contained 8 pieces in total including two sole fragments and two heel fragments. These were more variable in condition some pieces being hard and inflexible others being more supple. All pieces were washed under running tap water and pre-treated by soaking in 25% v/v glycerol in water for 7 days before being frozen and freeze-dried.(Heto run xx)

WOOD

23 bags containing wood fragments were recovered, two of which have been given finds numbers; SF79 and SF80 The wood will be assessed separately by S.Allen

**STATEMENT OF POTENTIAL**

INDICATORS OF PRESERVATION

The survival of waterlogged leather and wood indicates the presence of anoxic waterlogged deposits. The condition of the metal work suggests moist, well aerated conditions.

INDUSTRIAL ACTIVITY

The fragments of copper alloy waste and the iron slag suggests some level of metal working on the site.

**RECOMMENDATIONS FOR ANALYSIS**

INVESTIGATIVE CONSERVATION TO AID INTERPRETATION/IDENTIFICATION

Further investigation has been suggested for the following small finds, requiring a total of 26 hours work. It should be noted that these suggestions have been made from an appraisal of the x-rays, without consultation with the Finds Researcher.

Fe: SF's 58, 60, 101, 135 and 145

Cu Alloy: SF's 56, 63, 71 and 123.

X-RAY FLUORESCENCE (XRF)

Should plating be identified on SF's 58, 60 and 102, XRF analysis would identify the alloys used.

LONG TERM STORAGE

With the exception of the waterlogged wood (reported elsewhere) the artefacts are now stabilised and packed for long-term storage and a programme of regular monitoring and maintenance should be implemented.

## APPENDIX 5: BUILDING MATERIALS

**By J.M. McComish**

### 1. CERAMIC BUILDING MATERIAL

A total of 105606g of ceramic building material (CBM) and possible stone roofing tiles was recorded from the site, with forms ranging from Roman to modern in date, though the overwhelming bulk (79.5%) was of medieval date. The CBM was recorded to a standard YAT methodology and the results are summarised in Table 4 below.

| DATE | FORM | SHERD COUNT | WEIGHT |
|---|---|---|---|
| Roman | Imbrex | 4 | 450 |
| | Tegula | 11 | 2830 |
| | Tegula mammata | 1 | 275 |
| | Roman brick | 43 | 10390 |
| Medieval | Medieval brick | 10 | 9700 |
| | Crested | 2 | 225 |
| | Curved | 20 | 2845 |
| | Flange | 67 | 11230 |
| | Hip | 2 | 275 |
| | Nib | 4 | 730 |
| | Other | 8 | 395 |
| | Peg | 40 | 10075 |
| | Plain | 358 | 42536 |
| | Plain glazed floor tile | 1 | 275 |
| | Ridge | 59 | 5650 |
| Post medieval | Post medieval brick | 6 | 3425 |
| Modern | Modern brick | 1 | 1300 |
| | Modern drain | 1 | 300 |
| Unknown | Stone floor? | 3 | 1000 |
| | Stone peg | 5 | 1700 |

*Table 4 Summary of CBM present by form*

1.1 ROMAN

The bulk of the Roman sherds were too fragmented to determine the original form and have been classed as 'Roman Brick'; of these one had smoothing lines on the upper surface, one had a wire trimmed base, one had rain marks on the upper surface showing it was dried in the open air prior to firing and one was reduced. The roofing tiles comprised four fragments of imbrex and two sherds of tegulae. There was also a sherd of tegula mammata, which is a very unusual find, but the mammata had been broken off.

In addition to the Roman tile there were two fragments of micaceous sandstone which possibly originated from roofing tiles and a further sherd that may originally have been a floor tile. Micaceous sandstone was used in both the Roman and post-medieval to modern periods in York, so these sherds could be of either date.

1.2 MEDIEVAL

There were 20 sherds of curved and 67 sherds of flange tile, all of late 12$^{th}$ to early 13$^{th}$ century date. One of the flange tiles had a circular peg-hole 9mm in diameter, seven sherds had smoothing lines parallel to the long edge of the tile, fifteen sherds were reduced and one had some kind of industrial concretion on the upper surface presumably from re-use. Four of the curved tiles had circular peg-holes ranging from 7-9mm in diameter, but one definitely lacked a nail hole. Nine of the curved tiles were glazed with the glaze ranging from clear to yellow-green to green in colour. All of these tiles were in fabrics M1, M2, M3, M6 or M69 which are commonly seen within York, and all were of typical dimensions. Curved and flange tiles were associated with high status buildings and are relatively rare on excavations within York; at this site they accounted for almost 13% of the total volume of CBM implying that a high status building was located nearby.

The bulk of the CBM was roofing tile of 13-16$^{th}$ century date comprising 40 peg tiles, 358 plain tiles, two hip tile, four nib tiles, two crested ridge tiles and 59 ridge tiles, all of which were typical in terms of their fabrics and dimensions for York as a whole. There were 20 peg tiles with square peg holes, fourteen with circular peg holes, two with a diamond shaped peg holes and one tile with two circular peg holes; this site conforms to the pattern usually seen in York where square shaped holes dominate with lesser numbers of circular peg-hole, small numbers of diamond shapes and rare examples with two peg holes. One of the circular peg holes was abnormally large at 20mm in diameter, but the remainder were all in the range of 8-14mm in size which is typical for York as a whole. Thirteen of the peg tiles had smoothing lines parallel to the long edge, one had a grip mark on the reverse where the tile had been lifted while wet, two had glaze on the upper surface, four were reduced and one was blown through overfiring. The plain tiles showed various features relating to manufacture including

one with indented borders, 61 with smoothing lines on the top, two with finger drawn smoothing lines on the top parallel to the long edge, two with grip-marks from being lifted while wet, nine with glaze on the upper surface, one with a failed attempt to punch a peg hole, eleven which were badly made and three with accidental marks on the surfaces representing manufacturing errors. One tile had almost pie crust shaped marks on the edge, again probably representing a manufacturing error. One sherd had a chicken's footprint, one a dog's footprint, one a donkey or horse hoof print, and two had rain marks on the upper surface showing that these tiles at least had been dried in the open air. In addition 59 plain tiles sherds had reduced cores, five were vitrified and one was warped. Five of the tiles were sooted, two were burned and three were heavily mortared reflecting their later use. One of the hip tiles had a circular peg-hole 9mm in diameter, while the second had the partial remains of square peg hole. Four nib tiles were present each of which had a nib stuck to the back of the tile. The nibs ranged in size from 32 x 24 x 34mm to 44 x 42 x 27mm. The two crested ridge tiles were both badly damaged, in one case the crest was fan shaped, but the crest was missing on the second example. The ridge tiles included four with smoothing lines on the upper surface, 31 examples with reduced cores, 16 with glaze on the upper surface, two which were badly made, one which had blown and had a small fragment of copper adhering to the surface from reuse, and one had an industrial concretion on the upper surface again presumably from reuse.

There were ten fragments of medieval brick of 14-16$^{th}$ century date, these were all made in sanded moulds, one had an indented border, one had grass marks on the base and one had rain marks on the upper surface showing that it had been dried outdoors rather than under cover. One of these sherds was underfired. The bricks were in fabrics and dimensions commonly seen in York.

A single example of a plain glazed floor tile of 14-16$^{th}$ century date was present which had cream slip and a clear glaze, and a nail hole was present on the upper surface.

Two fragments of stone were present which may have originally been roofing tiles; one was of oolitic limestone and two were magnesian limestone. There were also two fragments of possible floor tile in magnesian limestone. As both types of stone were in use during both the Roman and medieval periods the date of these fragments in unclear, but given that the bulk of the material on site was medieval they are probably medieval.

Eight of the fragments interpreted as being of medieval date were highly unusual and have been termed 'Other' on the YAT database; these tiles were from Contexts 9098, 9111, 9103,, 9113, 9117 and 9127. Although none of these sherds were sufficient to suggest the overall

design of the tile, three better preserved examples of identical tiles were uncovered on previous excavations at the site; these show that the tiles were originally square, roughly 120x119mm in size and 13mm in thickness, the upper surfaces were trimmed adjacent to all four edges creating tapering borders, the tiles were glazed, but often badly, and were pierced by four circular holes up to 9mm diameter placed near the corners. No comparable tiles have been found in York and their function is unclear; although roughly the same size as many medieval decorated floor tiles, they are far thinner and lack the trimmed sides and even upper surfaces seen on floor tiles, in addition no floor tiles are known pierced by holes of this type. The tiles do not seem to represent wall tiles; it would not be necessary to have four large holes to attach such a tile to a wall, in addition the uneven upper surfaces and poorly applied glaze would suggest that display was not the primary function. It is possible that these tiles were intended for drainage or for ventilation, though the size of the holes would make then relatively inefficient for either of these purposes.

## 1.3 POST-MEDIEVAL AND MODERN

Post-medieval and modern material accounted for 4.5% of the total volume of CBM seen. There were six fragments of post-medieval brick of 16-18th century date all of which were slop moulded; rain marks were present on one sherd and one was blown from overfiring. One brick of late18th to mid 19th century date was present, this was also slop moulded. There was also one sherd of a modern drainage pipe.

| CONTEXT | DATE | KEYWORDS |
|---|---|---|
| 9000 | 14th 14-16th | Tegula, Pfloor, Plain, Roman brick, Mbrick, Ridge, Ridge?, Curved, Curved?, Peg, Flange |
| 9005 | 13th / 13-16th | Plain |
| 9006 | 13-16th | Plain |
| 9008 | 13-16th | Plain |
| 9010 | 13-16th | Peg, Plain, ridge |
| 9011 | 13-16th | Peg, Roman brick |
| 9012 | L 18th-19th | Plain, Brick, Flange, Stone peg? |
| 9013 | 13-16th | Roman brick, Tegula, Ridge, Plain, Flange, Stone floor?, Stone floor, Peg |
| 9015 | M 19th-20th | Plain, Drain, Pbrick, Peg |
| 9018 | 13-16th | Plain, Roman brick, Ridge, Curved, Flange, Curved? |
| 9020 | 13-16th | Plain |
| 9021 | 13-16th | Curved?, Flange, Plain, Ridge |
| 9024 | 13-16th | nib |
| 9025 | 13-16th | Peg, Plain |
| 9026 | 13-16th | Plain, ridge |
| 9032 | 13-16th | Plain, Peg |
| 9049 | 13-16th | Peg, Plain, Roman brick, Crested |

| | | |
|---|---|---|
| 9050 | 13-16th | Roman brick, plain, ridge, peg, |
| 9061 | L 12-E 13th | Flange, Curved |
| 9063 | 13-16th | Plain |
| 9066 | 14-16th | Roman brick, Mbrick, Stone floor? |
| 9073 | 13-16th | Flange, Peg |
| 9074 | 16-18th | Plain, Roman brick, Mbrick, Pbrick |
| 9075 | 13-16th | Plain |
| 9076 | 13-16th | Plain |
| 9078 | 14-16th | Plain, Curved?, Mbrick, Peg, Ridge |
| 9080 | 13-16th | Roman brick, Plain |
| 9083 | 13-16th | Plain, flange, nib |
| 9084 | 13-16th | Plain, Tegula, Flange |
| 9085 | 13-16th | Peg, Stone peg? |
| 9087 | 13-16th | Plain |
| 9088 | 13-16th | Roman brick, Plain,Ridge, Flange |
| 9090 | 13-16th | Plain, peg, ridge |
| 9091 | 13-16th | Plain, ridge |
| 9094 | 13-16th | Plain, Ridge, Peg, Tegula, Curved?, Flange |
| 9098 | 13-16th | Other, Curved, Peg, Plain, Ridge, Nib, Flange |
| 9100 | 13-16th | Plain, Ridge, Roman brick, Flange |
| 9101 | 13-16th | Ridge |
| 9103 | 13-16th | Stone peg?, Curved?, Plain, Ridge, Imbrex, Roman brick, Tegula, Other, Flange |
| 9109 | 13-16th | Plain, Peg, Crested, Flange, Ridge |
| 9110 | 13-16th | Plain, Ridge, Mammata, Ridge |
| 9111 | 13-16th | Ridge, Plain, Crested, Peg, Other, Flange, Stone Peg? |
| 9113 | 13-16th | Roman brick, Flange, Ridge, Plain, Curved, Curved?, Other |
| 9114 | 13-16th | Plain, Ridge, Roman brick, Peg, Curved, Flange, Sone peg? |
| 9115 | 13-16th | Ridge, Plain, Peg, Roman brick, Flange, Curved? |
| 9116 | 13-16th | Flange, Ridge |
| 9117 | 13-16th | Roman brick, peg, plain |
| 9118 | L 12-E 13th | Flange |
| 9119 | 13-16th | Roman brick, Plain, Ridge, Flange, Peg, Curved |
| 9126 | 1-4th | Roman brick |
| 9127 | 13-16th | Roman brick, Imbrex, Tegula, Plain, Imbrex, Flange, Other |
| 9144 | 13-16th | Pbrick, Plain |
| 9146 | 13-16th | Pbrick, plain, ridge, flange, hip |
| 9147 | 13-16th | Roman brick, Plain, Hip, Flange |
| 9148 | 16-18th | Plain, Mbrick, Pbrick, Flange, Peg |
| 9150 | 13-16th | Peg, Plain |
| 9151 | 13-16th | Plain, Peg, Ridge |
| 9152 | 13-16th | Plain |

*Table 5 CBM by Context*

## 2. ARCHITECTURAL FRAGMENTS

Fourteen architectural fragments were recovered from the excavations all of which were badly damaged. A small number of examples of saxa quadrata were present, but most of the fragments were of medieval date and comprised small chips off larger blocks, the overwhelming bulk of which were too fragmentary to suggest the original function, and in some cases even the original date of the fragment. AF11 was unusual in having a slightly curving profile, but it had clearly been re-cut and re-used so its original form and function were unclear.

| FIND NO. | CONTEXT | DATE | DETAILS |
|---|---|---|---|
| AF1 | 9103 | Roman | Magnesian limestone block, rectangular in cross-section, trapezoidal in plan. Front face 150x78mm in size. Some very faint striated tooling on the front face, but too faint to take a rubbing. |
| AF2 | 9103 | Roman | Magnesian limestone block, trapezoidal in plan, rectangular in cross-section, front face 120x150mm in size. No tooling. |
| AF3 | 9103 | Medieval | Small chip off a magnesian limestone block. Traces of two faces present (F1-F2) at right angles to one another. Some faint striated tooling on F2. |
| AF4 | 9103 | | Small chip off a magnesian limestone block three faces surviving (F1-F3), forming the corner of the block. No clear tooling present. |
| AF5 | 9103 | Medieval | Magnesian limestone block, part of four faces present (F1-4), forming the top, base and two sides of the block. Some striated tooling on F3. |
| AF6 | 9103 | Roman | Magnesian limestone block, rectangular in cross-section and trapezoidal in plan, front face 170x110mm in size. No clear tooling present. |
| AF7 | 9103 | Roman | Magnesian limestone block, rectangular in cross-section, pentagonal in plan, front face 150x100mm in size, no tooling. |
| AF8 | 9103 | | Magnesian limestone block, top and base present (F1-F2) all sides broken off. No tooling present. |
| AF9 | 9103 | | Magneisan limestone block, roughly dressed , no clear surfaces, no tooling present. |
| AF10 | 9103 | | Magnesian limestone block, roughly dressed, no clear faces, no tooling present. |
| AF11 | 9103 | Medieval | Magneisan limestone block, clearly re-used as portions seem to have been hacked off, part of two faces present (F1-F2 which are at right angles to one another. F1 has a slightly curving profile. Striated tooling present on both surfaces. Mortar on F1 and F2. Original function uncertain. |
| AF12 | 9117 | Medieval | Dressed magensian limestone block, three faces surviving (F1-3), forming the corner of the block. Striated tooling on all three faces. |
| AF13 | 9103 | Medieval | Dressed magnesian limestone block. Part of one face present (F1) which has striated tooling. |
| AF14 | 9094 | Medieval | Abraded magnesian limestone column shaft 132mm in diameter. No tooling surviving. |

*Table 6 Architectural Fragments by Context*

## 3. SUMMARY AND RECOMMENDATIONS

The excavations, though small in area, produced a highly unusual collection of building materials; the presence of Roman material including saxa quadrata is suggestive of Roman structures in the area, while the proportion of curved and flange tiles suggests the presence of a high status building of late 12th to early 13th century date in the vicinity. The higher than normal proportion of glazed ridge tiles and glazed plain tile fragments could relate either to a building of late 12th to early 13th century date, or to a later replacement roof of 13-16th century date, but of above average quality. The single example of a plain glazed floor tile of 14-16th century date may also hint at a high status building in the area. Most unusual of all are the eight pierced tiles of uncertain function; to date no other examples of this form have been seen in York.

A search of relevant literature should be made to determine if other examples of pierced tiles are known in order to determine their function and date, and ideally be published, even if as a note in a relevant journal, as they are highly unusual. The remaining building materials do not merit any further research.

## APPENDIX 6: FAUNAL REMAINS

**By C. Rainsford**

The faunal remains from the 2012 excavations at 71-73 Goodramgate, York, were assessed with a view to providing a preliminary characterisation of the species composition and preservation condition of faunal material from the various phases. In addition, this material was used to test and expand patterns noted previously from faunal material recovered from the 2011 excavations (Rainsford 2011a).

### METHODOLOGY

All material was identified to the lowest taxonomic level possible, and identifications were confirmed by comparison to reference specimens from the Department of Archaeology, University of York. Where identification to taxon was not possible (eg. for ribs, vertebrae, and shaft or cranial fragments without identifiable features), fragments were counted as unidentified, although note was made of approximate body part and relative size (large, medium, small). Fish were not identified beyond the level of "fish", and elements were quantified as "cranial", "vertebra" or "ribs and rays". Elements were recorded as "sheep" unless positively identified as "goat", owing to the difficulty of distinguishing between these two taxa, and the relative lack of goat elements in material from York. Basic age data (adult / sub-adult / juvenile) and level of fragmentation (completeness relative to whole bone) was recorded for each identifiable bone, and any further taphonomic information was recorded by means of notes for each context. Bone was defined as "adult" if fully-fused or teeth with wear; "sub-adult" if unfused; and "juvenile" if showing a poorly-mineralised bone texture and / or clearly juvenile size.

For each context, the overall assemblage condition was recorded using a qualitative scale (very good / good / reasonable / poor / variable), and the overall fragmentation was also recorded ("mostly complete" (A), "moderately fragmented" (B) or "highly fragmented" (C)). Brief taphonomic descriptions, including colouration and weathering, were also made for each context.

Bone was kept bagged by context following analysis. Data were stored as Excel spreadsheets. NISP (Number of Identified Specimens) has been used as a descriptive quantification method throughout. The assistance of Terry O'Connor in identification of bird bone and other problematic elements is gratefully acknowledged.

**QUANTITIES**

1039 bone fragments were recovered from 51 contexts, with 392 fragments identified to taxon (38%) (Table 1). This brings the total amount of bone recovered from Goodramgate to 1407 fragments, of which 588 are identified (42%); more than tripling the quantity of bone recovered from the site. The majority of the bone from the 2012 excavations was recovered from deposits dated to the 13th and 14th centuries (863 fragments, of which 304 were identified). The remainder derive from the 15th/16th centuries (169 fragments), with a small minority from the 19th / 20th centuries. This is weighted towards the 13th and 14th centuries to a greater extent than the 2011 assemblage, where approximately a third of the assemblage derives from 15th / 16th century contexts.

**TAPHONOMY**

In general, the condition of the assemblage was highly similar to that recovered from the 2011 excavations and described in (Rainsford 2011a). Assemblages from the 13th and 14th century phases were generally described as being in "good" or "very good" condition, with the colouration generally dark brown, consistent with deriving from highly organic deposits. Material from the 15th century phases was also described as being in good condition, with mid- to dark-brown colouration. Phases dating to the 16th century comprised material in a variety of conditions, with some contexts containing material in very good condition, and a few described only as reasonable. A variety of colourations were also present, from dark brown to pale fawn. This may suggest a greater degree of reworking, particularly as 1 fragment of human bone was also recovered from a context in this period, but is also likely to reflect the greater variety of burial environments and conditions in this period, including contexts containing building materials and thus richer in minerals. Very little bone was recovered from 19th and 20th century contexts. This was largely described as being in good condition, and is probably reworked from underlying deposits.

Significant copper staining was present in a small number of assemblages throughout the sequence. A few elements (5, 1%) showed evidence of dog gnawing, and these were also scattered throughout the sequence. Rodent gnawing (rat and mouse, 1 instance each) was noted from assemblages from the 15th/16th century, and this is discussed further below.

Two perforated sheep metapodia were present within the assemblage, dating respectively to the 13th century (context 9113) and the 16th century (context 9078). The metapodial from context [9113] appeared also to be heat-affected; while the one from context 9078 appeared to have been split subsequent to perforation. Perforation of sheep metapodia is a technique most commonly recognised in York from deposits of Anglo-Scandinavian and medieval date, although some post-medieval examples are also present from Hungate (Rainsford 2011b).

The presence of these is therefore significant in expanding the corpus of perforated metapodials known from York from well-dated contexts.

**SPECIES REPRESENTATION**

As in the previous assessment, the assemblage is dominated by the major domestic mammals – sheep (32% identified assemblage), cattle (27%) and pig (14%) (Table 2). While the frequency of cattle and sheep is almost equal, pig is substantially less frequent. Chicken is the only other taxon with a substantial representation, comprising almost 13% of the identified assemblage. All other taxa can be described as minor, comprising 5% or less of total assemblage by NISP. These are discussed by period, below.

Few domestic animals from the Goodramgate 2012 excavations were recorded as sub-adult or juvenile (Tables 9, 9a). Out of the total elements recorded for that species, 7% of cow elements were recorded as sub-adult, 12% of sheep, and 31% of pig. Very few juvenile animals were present – 1% of recorded cow elements were recorded as juvenile, and 2% of sheep. The three juvenile sheep elements were concentrated in one context in phase 29, and are probably from a single lamb. There are no clear temporal patterns in the presence of sub-adult animals from any species, with small quantities of sub-adult elements present in deposits throughout the sequence. A similar pattern was noted for the 2011 assessment, although in this assessment there were some indications that younger cattle were concentrated in phases from the 16th century onwards. This is a typical pattern for York, where younger cattle tend to be more frequent in the post-medieval period (Bond & O'Connor 1999). This may also be borne out by the 2012 assessment, where the only juvenile cow element was recovered from a 16th century phase.

13TH -14TH CENTURY (PHASES 26-37)

Frequencies of sheep and cow are close to equal in this period. Red deer was recorded from 14th century deposits in the previous assessment. Fallow deer was recorded in this assemblage from the 13th century and late 14th century deposits, both containing elements from the hind leg (astragalus, metatarsal). One element of hare was also recorded from a context dated to the late 14th century, indicating a certain amount of material from restricted sources present in the deposit. Bird species present in this period include crane (*Grus sp.*), duck (*Anas platyrhynchos*), goose (*Anser anser)* and one element of small wild goose (*Anser / Branta sp.*), in addition to chicken. The presence of crane, hare and fallow deer bears some similarities to assemblages of a similar date recovered from the Bedern, an ecclesiastical site in close proximity to Goodramgate (Bond & O'Connor 1999). Goat was also identified from one 13th century deposit. Goat was also identified from the 13th century in the previous assessment. While few elements of goat have been positively identified from the assemblage

overall, the identification of both from 13th century deposits may suggest genuine deposition at this period.

Dog and cat elements are also present infrequently and in small quantities in this period. Fish elements are also relatively frequent in the first few phases of the period (26-32). Whether this is a genuine pattern of deposition or reflects improved preservation in the earliest organic deposits is uncertain, particularly since the pattern is not mirrored in the previous assessment, where little fish was recovered.

15TH-16TH CENTURY (PHASES 38-41)

Sheep is typically more frequent than cow over these phases. This is a pattern that was noted from the previous assessment, but is borne out by the increased sample. While cattle is usually the dominant taxon in York assemblages, the frequency of sheep tends to increase from the 12th century onwards (Bond & O'Connor 1999), and therefore this increase in sheep compared to previous periods reflects processes across the city as a whole. Horse and roe deer were present in this period, as well as one element of large rodent, likely rat. The most frequent bird species is chicken, with goose and raven (*Corvus corax*) also present.

One specific context, 9078, is worth further mention. This was described as a pit backfill, and contained an assemblage of faunal material in very good condition. This comprised a number of elements of cat, with an MNI of 2 based on the ulna. One of the cats, represented by radius, ulna and tibia, was significantly larger than the other (represented by cranium, scapula, humerus, ulna and tibia). The deposit also contained several elements of chicken, including 5 tibiotarsus fragments, and one perforated sheep metapodial (discussed above). This assemblage bears some similarities to the assemblage from context 1032 in the 2011 excavations, a 16th century cesspit backfill which also contained a substantial quantity of cat elements with an MNI of 1. However, when the assemblages were compared directly, it was clear that the elements from contexts 1032 and 9078 represented a minimum of 3 cats overall. While it is difficult to draw interpretations on relatively scant evidence, the presence of a quantity of cat remains in this period alongside evidence for rodent remains and evidence of rodent gnawing may indicate an increase in scavenging activity around the site in the 16th century. The presence of the raven, a carrion bird, may also lend weight to this interpretation.

**RECOMMENDATIONS**

No further work is currently recommended for this assemblage. However, the quality of preservation of the material, and the fact that it derives from well-dated contexts, makes this a valuable assemblage for wider studies of faunal remains within the city of York.

| PHASE No. | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPECIES** | **26** | **27** | **28** | **29** | **30** | **32** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **43** | **TOTAL** |
| cow | 14 | 6 | | 23 | 3 | 25 | | | 4 | 14 | 1 | | 8 | 6 | 3 | 1 | **107** |
| sheep | 19 | 2 | | 16 | 3 | 31 | | | 3 | 13 | 1 | | 21 | 7 | 8 | | **124** |
| goat | | | | 1 | | | | | | | | | | | | | **1** |
| pig | 8 | 2 | | 7 | 1 | 21 | 1 | | | 4 | | 1 | 6 | 1 | 2 | | **54** |
| horse | | | | | | | | | | | | | | | 1 | | **1** |
| fallow deer | | | 1 | | | | | | | 1 | | | | | | | **2** |
| roe deer | | | | | | | | | | | | | | | 1 | | **1** |
| hare | | | | | | | | | | 1 | | | | | | | **1** |
| dog | | | | 1 | | | | | | | | | 4 | | | | **5** |
| cat | | | | | | | | | 5 | | 1 | | | 1 | 7 | | **14** |
| rodent | | | | | | | | | | | 1 | | | | | | **1** |
| chicken | 6 | 2 | | 9 | | 8 | | | 6 | | | | | 2 | 16 | | **49** |
| goose | | | | 2 | | 4 | | | | | | | | | 1 | | **7** |
| duck | | | | | | 1 | | | | | | | | | | | **1** |
| swg | | | | | | | | | | 1 | | | | | | | **1** |
| crane | | | | | 1 | | | | | | | | | | | | **1** |
| raven | | | | | | | | | | | | | | 1 | | | **1** |
| fish | 10 | 4 | 2 | 6 | | 3 | | | | | | 2 | 1 | | | | **21** |
| **Total ID** | ***57*** | ***16*** | ***3*** | ***65*** | ***8*** | ***93*** | ***1*** | ***0*** | ***18*** | ***34*** | ***4*** | ***3*** | ***40*** | ***18*** | ***39*** | ***1*** | ***392*** |
| unid mammal | 77 | 33 | 11 | 73 | 25 | 201 | 1 | 5 | 20 | 82 | 3 | 2 | 24 | 13 | 30 | 4 | **604** |
| unid bird | | 2 | | 12 | 1 | 14 | | | 2 | 2 | | | 2 | | | | **35** |
| **Total unid.** | **77** | **35** | **11** | **85** | **26** | **215** | **1** | **5** | **22** | **84** | **3** | **2** | **26** | **13** | **30** | **4** | **639** |

*Table 7 Species representation by phase from 71-73 Goodramgate, 2012 excavations. All numbers given are NISP / fragment counts.*

| | PHASE No. | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPECIES** | **26** | **27** | **28** | **29** | **30** | **32** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **43** | **OVERALL** |
| cow | 24.6 | 37.5 | | 35.4 | 37.5 | 26.9 | | | 22.2 | 41.2 | 25 | | 20 | 33.3 | 7.7 | 100 | **27.3** |
| sheep | 33.3 | 12.5 | | 24.6 | 37.5 | 33.3 | | | 16.7 | 38.2 | 25 | | 52.5 | 38.9 | 20.5 | | **31.6** |
| goat | | | | 1.5 | | | | | | | | | | | | | **0.3** |
| pig | 14 | 12.5 | | 10.8 | 12.5 | 22.6 | 100 | | | 11.8 | | 33.3 | 15 | 5.6 | 5.1 | | **13.8** |
| horse | | | | | | | | | | | | | | | 2.6 | | **0.3** |
| fallow deer | | | 33.3 | | | | | | | 2.9 | | | | | | | **0.5** |
| roe deer | | | | | | | | | | | | | | | 2.6 | | **0.3** |
| hare | | | | | | | | | | 2.9 | | | | | | | **0.3** |
| dog | | | | 1.5 | | | | | | | | | 10 | | | | **1.3** |
| cat | | | | | | | | | 27.8 | | 25 | | | 5.6 | 17.9 | | **3.6** |
| rodent | | | | | | | | | | | 25 | | | | | | **0.3** |
| chicken | 10.5 | 12.5 | | 13.8 | | 8.6 | | | 33.3 | | | | | 11.1 | 41 | | **12.5** |
| goose | | | | 3.1 | | 4.3 | | | | | | | | | 2.6 | | **1.8** |
| duck | | | | | | 1.1 | | | | | | | | | | | **0.3** |
| swg | | | | | | | | | | 2.9 | | | | | | | **0.3** |
| crane | | | | | 12.5 | | | | | | | | | | | | **0.3** |
| raven | | | | | | | | | | | | | | 5.6 | | | **0.3** |
| fish | 17.5 | 25 | 66.7 | 9.2 | | 3.2 | | | | | | 66.7 | 2.5 | | | | **5.4** |
| **Total ID** | **57** | **16** | **3** | **65** | **8** | **93** | **1** | **0** | **18** | **34** | **4** | **3** | **40** | **18** | **39** | **1** | **392** |

*Table 8: Species representation by phase. All figures given are percentages of the total identified material for that phase.*

| | PHASE No. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPECIES** | **26** | **27** | **29** | **30** | **32** | **33** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **TOTAL** |
| cow (s) | | | 2 | | 3 | | | | | | 1 | 1 | | 7 |
| cow (j) | | | | | | | | | | | 1 | | | 1 |
| pig (s) | 3 | 2 | 1 | | 5 | 1 | | 1 | | 1 | 2 | | 1 | 17 |
| pig (j) | | | | | | | | | | | | | | |
| sheep (s) | 5 | | 2 | | 4 | | | | | | 2 | | 2 | 15 |
| sheep (j) | | | 3 | | | | | | | | | | | 3 |

*Table 9*

| | PHASE No. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPECIES** | **26** | **27** | **29** | **30** | **32** | **33** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **TOTAL** |
| cow (s) | | | 9 | | 12 | | | | | | 13 | 17 | | 7 |
| cow (j) | | | | | | | | | | | 13 | | | 1 |
| pig (s) | 38 | 100 | 14 | | 24 | 100 | | 25 | | 100 | 33 | | 50 | 31 |
| pig (j) | | | | | | | | | | | | | | |
| sheep (s) | 26 | | 13 | | 13 | | | | | | 7 | | 25 | 12 |
| sheep (j) | | | 19 | | | | | | | | | | | 2 |

*Table 9a*

*Table 9 / 9a: Age distribution of domestic mammals by phase. (s) = sub-adult; (j) = juvenile. Figures in table 9 are NISP, table 9a shows percentages of the total identified elements for that species in that phase, and are given correct to the nearest 1%.*

## APPENDIX 7: WORKED WOOD ASSESSMENT

**By Steven J Allen**

**INTRODUCTION**

This report aims to comply with the recent edition of MORPHE published by English Heritage (2009) and is an assessment of the wood recovered from the excavations conducted in 2011 and 2012.

The material assessed in this report is the material observed by the field team in two sessions (May 2011 and May 2012) in adjacent evaluation trenches excavated in advance of building works behind No's 71 and 73 Goodramgate, York. The author was invited to visit each site and this assessment includes both material seen and recorded in situ by the author (but not necessarily excavated and recovered), and material recovered by the field team.
The assemblage is derived from a fairly limited number of wood species, such as Oak (*Quercus spp.*), Alder (*Alnus spp.*), Hazel (*Corylus avellana L.*), Willow (*Salix spp.*), Ash (*Fraxinus excelsior L.*) and a single piece of Field Maple (*Acer campestre L.*).

**METHODOLOGY**

The in situ material was recorded, so far as it could be observed, on standard YAT recording forms and where possible, samples taken for wood species identification. Owing to the constraints of the excavation it was not always possible to recover deeply and firmly set timbers and thus it was not possible to fully describe these pieces. The recovered material was brought to the YAT Conservation laboratory on 18th May 2012 for assessment. In each case the wood was removed from its site packaging, washed under cold clean running water to remove any adhering burial deposits and recorded. Sampling for species identification was undertaken and then conducted under x40 and x100 magnification; species identifications follow Schweingruber 1982. The wood was drawn to scale where necessary and then repacked to await the implementation of the assessment recommendations.

The records consist of, for structural timbers, a standard YAT wood record sheet completed for each piece and a 1:10 scale drawing to pencil stage. For the bulk and small finds material, individual descriptions were made in a notebook. In each case the written records have been transcribed into the YAT IADB system (Project 5508).

**QUANTIFICATION**

Some 30 pieces of wood can be classified as Structural Timbers (ST01-ST30). Five of the smaller pieces have been assigned Small Finds numbers (SF 79, 80, 173, 174 and 175).

The remaining 123 pieces are classed as bulk finds and divided by context between 14 Bulk Finds numbers (BF 414-427).

**DESCRIPTION**

Each piece is individually described on IABD. The entries include dimensions, technological description, intrinsic dating information, assessment methodology, reccommendations for future work and movement records. It is not proposed to repeat the individual data here but to summarise any patterns observed, the significance of the material, the research potential and dating implications.

**THE STRUCTURAL TIMBERS**

2011 EXCAVATIONS

These are almost entirely piles or stakes, driven into the underlying deposits to anchor the foundations of surface built structures. None appear in themselves to have been part of the above ground elements of these structures. Some grouping was observed during the excavation and this grouping is followed here.

CONTEXT 1050.

Group of three piles, of which one (SF13) not recovered/recorded. The remainder (ST01, ST02) are both Fraxinus excelsior L., one of which has a sawn surface. This places the date of this group sometime after cAD1200. None suitable for dendrochronological dating.

CONTEXTS 1067-1069

Three associated *Quercus spp.* roundwood stakes (ST03, ST05, and ST06). No intrinsic datable features, too few rings for dendrochronology.

CONTEXT 1056

Isolated *Alnus spp.* roundwood timber from a pit fill. No intrinsic dating evidence and not suitable for dendrochronology.

CONTEXT 2026

Nine assorted stakes and piles. Four of these (ST11, ST13-15) exist only as paper records observed by the field team and nothing can be said of them. One (ST12) is an unremarkable *Alnus spp*. roundwood stake and another (ST10) a similar stake cut from *Quercus spp.* roundwood. Of the remaining three, ST08 is a standard boxed heart *Quercus spp*. timber with a point cut at one end but ST07 and ST09 are both *Quercus spp*. piles cut from reused

timbers. None of the timbers in this group (including the reused pieces) have features that are closely datable and none are suitable for dendrochronology.

**2012 EXCAVATIONS**

CONTEXT 9105

An isolated *Quercus spp.* roundwood stake (ST16).

CONTEXTS 9125, 9140

A pair of associated stakes one (ST21) a boxed radial *Quercus spp.* pile cut from reused timber, as the presence of a redundant nail shaft indicates. The other (ST30) is a boxed heart stake cut from *Acer campestre L.* Neither exhibits any dating evidence

PILE GROUP 9120

Four piles, two of which (ST18, ST20) are *Alnus spp*. roundwood and the remaining two (ST 17, ST19) are *Quercus spp*., boxed conversions but both cut from reused timbers. The reworking on ST 19 truncates a row of spoon-bit blind auger holes which should pre date cAD1500, while the reworking on ST17 truncates a blind chase mortice. This mortice has been started with a spoon-bit auger hole placed on its axis, a practice not seen in medieval carpentry before cAD1200. Neither piece has sufficient rings or sapwood to allow a dendrochronological date to be obtained.

PILE GROUP 9157

Four piles, two (ST26, ST27) are *Alnus spp.* roundwood, one (ST28) boxed heart *Quercus spp*. and the last of them (ST29) is a box quartered *Quercus spp*. cut from reused timber. This last has been cut down from a larger boxed heart timber and has evident saw marks resulting from sawn conversion. This feature dates the original use of the timber to sometime after cAD1200.

PILE GROUP 9158

Three piles, one (ST23) a fragment of halved *Alnus spp.* with no technology surviving. The second (ST25) is a box quartered *Quercus spp*. pile with a redundant nail driven into one face, hence reused. The remaining piece (ST24) is also box quartered *Quercus spp.* whose converted faces have saw marks present. This feature makes the conversion of this timber (which could have a reused origin) after cAD1200. One more boxed heart *Quercus spp.* pile (ST22) is thought to be associated with this group.

WOOD BULK FINDS

These were derived from pit fills, deposits or deep organic dump layers, as follows. Unless otherwise indicated, all are *Quercus spp.*

**Context 9000** (BF 414) Single charred offcut.

**Context 9018** (BF 415) Three charred chippings.

**Context 9021** (BF 416) Bark chipping.

**Context 9080** (BF 417) Bark chipping.

**Context 9094** (BF 418) Two chippings.

**Context 9098** (BF 419) Unidentifiable roundwood fragment.

**Context 9103 (**BF 420) Two bark chippings.

**Context 9115** (BF 421) Bark chipping.

**Context 9117** (BF 422) Three roundwood fragments, one each of *Alnus spp.*, *Corylus avellana L.* and *Salix spp*., three axe chippings (one of which *Corylus avellana L*.) and ten offcuts (three from reworking of timbers, two from stake point preparation. One of remaining offcuts is *Fraxinus excelsior L.*).

**Context 9119** (BF 423) Two chippings (one charred) and a fragment of *Alnus spp.* roundwood.

**Context 9127** (BF 424) Five bark chippings, nineteen chippings (one *Acer campestre L*., one *Salix spp.* roundwood surface), two offcuts, seven roundwood fragments (one *Alnus spp.,* three *Corylus avellana L*., two *Fraxinus excelsior L*., and one *Salix spp*.), one *Quercus spp*. stake point, one unidentifiable root fragment and one *Corylus avellana L.* nutshell.

**Context 9129** (BF 425) Three offcuts (one from preparation of stake point) and a Quercus spp. stake point.

**Context 9130** (BF 426) One bark chipping, twelve chippings and three roundwood fragments (two *Corylus avellana L.*).

**Context 9131** (BF 427) Two bark chippings, sixteen chippings (including one from outer surface of roundwood, and three *Acer campestre L*.), eight offcuts, nine roundwood fragments (all *Corylus avellana L.*) and one unidentifiable root fragment.

WOOD SMALL FINDS

All derived from the above contexts, in some cases having been identified at assessment stage.

**Context 9103** (SF80) Bale pin.

**Context 9117** (SF79) Crude (? unfinished) pin.

**Context 9131** Offcut from a board (SF 173), base of turned bowl (SF 174) and tip of carpenters peg (SF 175).

**DATING POTENTIAL**

The woodworking technology and associated artefacts indicate that all of this material is of medieval or later date and for this period it is commonly accepted that $^{14}C$ dating lacks the precision required for close dating. As referred to above none of the material is suitable for dendrochronological dating. Some is of a wood species which cannot be dated by this method, some is cut from reused timber, some have insufficient rings and in no case is there complete sapwood or a bark edge which would give a felling date.

On technological grounds, there is nothing here which would indicate a date prior to cAD1200. The preparation of mortices by cutting a row of auger holes along the length of the intended slot is a thirteenth-century development (Allen 1993) and the use of through and through sawing, introduced in the London area from cAD1180 (Goodburn 1992) does not become widespread in medieval England until the first quarter of the thirteenth century. The spoon-bit auger is generally uncommon in structural carpentry after c.AD1500. These parameters suffice to give a date range for the preparation, use and reuse of these timbers and their associated deposits.

The character of the bulk finds wood is consistent with the above statement; neither the bulk finds nor the small finds are closely datable but are typical of the sort of material seen in medieval deposits elsewhere.

**SIGNIFICANCE**

The survival of the wood and its overall condition indicates that waterlogged burial conditions have been maintained in the area since shortly after the wood was deposited. This indicates that other organic material can be expected in this area at similar depths and in a similar condition should further groundworks be undertaken.

The nature and extent of any structures above ground cannot be determined from the wood alone. What can be said is that none of this material would seem to be associated with earthfast structure(s), rather the piles were intended to support a surface-laid structure, whether framed or otherwise, in an area which was at that time regarded as unstable ground. The size of some of these piles suggests that any such structure was substantial and of more than a temporary nature.

Much of the bulk material is derived from the working or reworking of wood, either on this site or near enough to be transported here without undue difficulty. The chippings include some which are clearly derived from the cutting of points on piles or stakes. Though it cannot be proved by physically refitting pieces (and the tool signatures are too abraded for toolmark matching) it would seem to be more than a coincidence that we have both piles/stakes on site and the debris from the preparation pile/stake points.

The reused timbers are an indication that the users of the site were able and willing to recycle timbers from redundant structures. It is impossible to say whether this was due to an actual shortage of timber, shortage of resources to obtain fresh timber or opportunistic exploitation of a nearby resource. We cannot say whether these pieces were originally used on the site in an earlier structure but it is unlikely that they were brought from too far away. What is clear is that the structure(s) from which they were taken were not temporary shelters and were at least partially framed.

The assemblage is derived from a fairly limited number of wood species. Oak (*Quercus spp.*) is the predominant species in structural timbers and woodworking debris with a small amount of roundwood present. The other species used for timber include Alders (*Alnus spp.*) for roundwood piles and a single piece of boxed heart Field Maple (*Acer campestre L.*). The small diameter roundwood is mostly Hazel (*Corylus avellana L.*) with some Willow (*Salix spp.*), Ash (*Fraxinus excelsior L.*) and Alder (*Alnus spp.*). All of these species are native to the British Isles and none need have been imported over any great distance. Indeed, given the nature of much of the bulk finds wood it is probable that the chippings derive from woodworking activity on the site or close at hand.

**RECCOMENDATIONS FOR FURTHER WORK**

The structural timbers are drawn to pencil stage at a scale of 1:10. For security and completeness, these need to be drawn up - preferably in digital form.

None of the material is suitable for dendrochronology. $^{14}C$ dating for the medieval period does not allow of close dating and submitting samples from this site will not add significantly to the existing range of dating material from the site. There is no reason to retain any material for dating purposes.

The technology on the reused timbers is of interest but has been recorded fully- both as a description and a drawing. None are of sufficient merit to warrant retention for archive, research or display purposes. There is consequently no need to retain the timbers.

The bulk finds wood is typical of the sort of woodworking debris found on many medieval sites and though of interest, it has been recorded and no further information can be obtained from it. It is recommended that the material be discarded.

The five small find objects are a useful addition to the corpus of wooden artefacts from York- the bowl base in particular is unusual in that when fragments are identified it is normally the rim which is recovered. The bale pin is one of the few tangible artefacts associated with the medieval wool industry. The carpenters peg is a relic of the construction of a timber framed structure - and as a truncated tip it was struck off just after the joint it secured was made. The pin is a crude and unusual form, possibly unfinished, used to secure coarse woven clothing or sacking. Finally the offcut from a board, as well as exhibiting the use of a very sharp axe, reflects the smaller woodworking practices not often represented in the archaeological record. It is therefore recommended that these five small finds are retained for archive, research and possible display purposes. They will therefore need stabilisation with p.e.g. polymers and freeze drying. Before stabilising these pieces, they must also be drawn.

## APPENDIX 8: METALWORKING DEBRIS

**By R.S. Cubitt**

**INTRODUCTION**

One hundred and four items of hand collected metalworking debris from the 2012 excavations at Goodramgate were subjected to visual assessment. The results of this assessment are given in table 10. The iron objects have been referred to the artefact specialist.

| Activity | Classification | Weight | Number of occurrences |
|---|---|---|---|
| Smithing | smithing hearth bottor | 1090 | 1 |
| | smithing slag lump | 746 | 4 |
| | flake hammerscale | - | 6 |
| | spheroidal hammersca | | 3 |
| Non-diagnostic ironwo | non-diagnostic iron sla | 7455 | 18 |
| Copper alloy worki | crucible | 9060 | 20 |
| | fired clay mould | 406 | 4 |
| | copper alloy waste | 231 | 13 |
| | mixed lumps (waste, slag, fi vitrified clay) | 304 | 4 |
| Metalworking or other temp process | fired clay tuyere | 724 | 4 |
| | ?hearth fragment | 2500 | 1 |
| | fired clay | 996 | 9 |
| | cinder | 146 | 10 |
| | slag | 253 | 7 |
| | grey fragment | 68 | 1 |
| Non-slag items | coal | 10 | 1 |
| | charcoal | 29 | 4 |
| | slagged shale | 1 | 1 |
| | iron objects | 56 | 3 |
| | Total | 24365 | 108 |

*Table 10 Quantification of Metalworking Finds*

**OUTLINE OF THE DEBRIS**

The assemblage includes evidence for iron smithing activity in the form of **smithing hearth bottoms** (shb). One potential shb was recorded among the assemblage. These are formed

from droplets of slag that accumulate in the hottest part of the hearth whilst an object is being worked and are easily recognised by their plano-convex shape. The hot zone in a hearth is near the air inlet and the dished upper surface of a smithing hearth bottom results from the force of this air on the surface. Furnace bottoms would have been removed from the hearth and discarded perhaps at the end of each smithing campaign or at least when they built up sufficiently to impede operation of the hearth. Measuring 127x105x83mm and weighing 1090g this example is quite large but has the right overall shape to be a shb. Size and weight can be an indication of the type of smithing work being undertaken however, it is difficult to draw any conclusions from a single find.

An additional category of diagnostic smithing evidence encountered was hammerscale. It is particularly important for interpreting the location of features such as the anvil on smithing sites as it tends to remain where it falls.

**Flake hammerscale** derives from the thin layer of slag on the surface of an object in the hearth which becomes detached as the object is hammered by a smith.

**Spheroidal hammerscale** is liquid slag that escapes from inside pieces of iron as they are welded at high temperatures. A magnet was used to look for hammerscale evidence in the finds bags of the items sent for assessment. There were six occurrences of flake hammerscale and three of spheroidal. The majority of the hammerscale evidence from a site generally comes from soil samples taken at the time of excavation and the majority of these are still to be assessed.

A number of **smithing slag lumps**, with a total weight of 746g were recorded. These friable lumps are made up of layers of hammerscale which having fallen on the smithy floor are sometimes trampled and corroded together.

A further category of evidence for ironworking was also encountered. 7455g of **non-diagnostic ironworking slag** was recorded. It is not possible to determine through visual analysis whether this material derives from the smelting of iron ore in a furnace or the smithing of objects in a hearth. As diagnostic smelting evidence is lacking from the assemblage, the non-diagnostic material is most likely to been produced by the smithing activity. In fact, some of these bags produced the hammerscale evidence detailed above. The assemblage also included categories of evidence for copper alloy casting, primarily the circa 9kgs of **fired clay crucible fragments.** All of these are a thick type known to date from

the medieval period. Thicknesses range from 9-31mm, with the smallest measurements generally being recorded among the rim sherds. Indeed some individual sherds showed a range of body thickness between 10 and 25mm. Where the internal diameter of the vessels could be established this varied from 9-22cm, although most are at the smaller end of this range. Rims are generally straight and square in section, occasionally with a slight curve inwards but never turned out. Many had obviously suffered in the intense heat to which they had been exposed and a number of distortions and cracks were observed. One pouring lip was identified (sf129). A number of thick sherds with a rounded profile are thought to be from rounded bases.

Clues as to what the product of this casting operation might have been come from the **fired clay mould fragments** recovered. They are fragments from the cope (outer) parts of moulds for casting large vessels. All are from the body of the vessel (no rims, legs or handles) and show none of the decorative details that are sometimes cut into these moulds. Where it could be established, the internal diameter of the fragments ranges from 18-42cm. Often the moulds for large vessels such as these were created from several parts luted together. One fragment appears to be one half of such a joint.

221g of **copper alloy waste** represents material that has been lost in the casting process. Some of these fragments include charcoal, slag and quartz lumps, depending on what has become incorporated as the waste solidified. The **mixed lumps** are another example of this. Droplets of alloy were also identified on the crucible and mould fragments and on some of the fired clay items listed below. Analysis of a range of the waste using X-Ray Fluorescence (XRF) to determine the composition of the alloy would be useful to assist with identifying the sorts of items being cast. The size of some of the mould fragment and large amounts of waste which has been splashed suggest of large quantities of metal being melted for large castings. XRF might confirm whether the castings were large vessels such as cauldrons which are normally low-tin, high-lead alloys (Bayley & Richards 1993, 189).

Other categories of material recorded are termed non-diagnostic as they could be produced by number of high temperature processes both industrial and domestic. In some instances visual analysis does permit them to be linked to a particular process.

The assemblage included a number of tuyere fragments, 724g in total. These are fragments of the clay tube through which air was blown into the furnace to increase the working temperature. Some of the fragments show vitrification where they have been heated to very

high temperatures. They all have a similar interior diameter of between 4 and 5cm. Some have been splashed with waste metal linking them to the copper alloy working attested by the other evidence.

A large fragment of fired clay might also be a hearth fragment, perhaps from the base or walls of the hearth structure. SF124 is a large (2500g and measuring 250 x 140 x 50mm) curving fragment of clay. It is heavily vitrified with a green glassy slag across its surface. The overall curved shape is distorted probably due to heat deformation. There are some possible pull marks at one end where the fragment may have been grasped and manipulated when it was very hot. A lump of probable iron slag adheres to one end suggesting that this fragment might be connected to the smithing operation taking place.

A number of other smaller fired clay fragments totalling 996g were also recovered. Some are splashed with waste linking them to the copper alloy working although it is not known what role they played in the process. They may perhaps have formed part of the wider hearth structure but not in direct contact with the heat/metal. Other fragments cannot be conclusively linked to metalworking and may have been fired accidently.

146g of **cinder** was recorded. Elements of the hearth structure vitrify as a result of high temperature reactions between the clay lining and the alkalis in fuel ash or fayalitic slag. The term cinder is used here to describe smaller fragment of this material that have spalled away from the interior walls of the hearth.

There was 253g of **non-diagnostic slag**. These fragments were generally small and glassy with a range of colours (black, red, green and white). XRF might be used to determine the composition of these fragments.

Fuel inclusions were noted in some of the groups of waste and adhering to some of the crucible sherds. 29g of **charcoal** and 10g of **coal** were also included in the assemblage. The fragment of slagged shale may be waste from the burning of coal.

One item (SF82) is described as a **grey fragment** and requires further research. It is a fragment of grey material of unknown composition. It measures 77x33x31mm, the overall shape being long and thin with a slight curve along the length. Two surfaces are flat, the others are irregular. It has the appearance of being composed of layers and had inclusions of

charcoal and a white material. XRF might be used to determine the composition of this curious item.

**DISCUSSION**

Table 11 (below) shows how the debris outlined above is divided between the various phases of the site.

Phases 27-38 are dated between the 13th and late 15th Centuries and broadly relate to the use and remodelling of a structure which is thought by the excavators to have functioned as a workshop. This is presumably because of the quantity of debris that was recovered in the excavated levels as no hearths were encountered. There is no obvious pattern in the way the debris is distributed between these phases, with the exception of phase 32 containing the majority of the ironworking debris. However, this phase is described as build up or levelling and includes material thought to have been generated by groundworks elsewhere.

Phases 39-41 date to the 16th century when the area formally occupied by the structure is used as a back yard and into which pits are cut. Each phase contains quite a range of debris and the overall totals are variable, often containing more material that the phases relating to the workshop. It is not known whether the pits also contain other domestic or industrial refuse.

Further investigation into this site is recommended and this might usefully include the XRF analysis detailed above. A look at the distribution of the debris at the group or set level plus investigating the spatial arrangement would help understanding of the excavation results. The current assemblage should also be compared with finds from previous phases of excavations at 71-73 Goodramgate. The 2011 dig encountered 24 items of metalworking evidence, demonstrating both iron and copper alloy working, with a total weight of 5426g. 71 – 73 Goodramgate is of interest because of it's proximity to other well know metalworking sites uncovered at St Andrewgate (Finlayson 2004) and the Bedern (Richards 1993). There are a number of similarities in the evidence recovered on the three sites. At St Andrewgate, iron smithing and copper alloy casting of small objects and large vessels was taking place amid domestic habitation over a similar time period (Finlayson 2004, 951-955). Evidence recovered from the Bedern was primarily regarding the casting of large vessels. That site also saw numerous phases of rebuilding because of problems with subsidence (Richards 1993, 155-156). Hollows in the floor created by subsidence were sometimes filled with extant mould material (Richards 1993, 165), and mould fragments were also laid as part of new

floors (Richards 1993, 172). This can be compared to the floors made of compacted mould material encountered in phases 29 and 34 of the Goodramgate excavations. In sum, this small excavation has produced quite a quantity of evidence for metalworking which is made all the more interesting by the site's location in what appears to be a zone of metalworking activity in the centre of the Medieval city. It is recommended that all of the material be retained pending further investigation and comparison to other assemblages in order that all of these sites might be better understood.

Thanks are due to Dr Cath Mortimer for her assistance identifying some of the fragments.

| Activity | Phase | 0 | 27 | 28 | 29 | 32 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Smithing | smithing hearth bottom | | | | | 1090 | | | | | | | | |
| | smithing slag | | | | | 428 | | 16 | 302 | | | | | |
| | flake hammerscale | 1 | | | | 2 | | 1 | 2 | | | | | |
| | spheroidal hammerscale | | | | | 1 | | 1 | 1 | | | | | |
| Non-diagnostic ironworking | non-diagnostic iron slag | 196 | | | 688 | 5057 | | | 740 | | | 252 | 498 | 24 |
| Copper alloy working | crucible | 1656 | | 398 | 666 | 1632 | | 82 | 70 | 1390 | 134 | 514 | 828 | 1690 |
| | fired clay mould | | 20 | | | | 122 | | | | | 42 | | 222 |
| | copper alloy waste | | | | | | 8 | 10 | 14 | | 4 | 49 | 82 | 64 |
| | mixed lumps | 48 | | | | | 98 | | | | | | | 158 |
| Metalworking or other high temp process | fired clay tuyere | | | | | | | | | 148 | | | | 576 |
| | ?hearth frag | 2500 | | | | | | | | | | | | |
| | fired clay | 24 | | | 650 | 34 | | | | 82 | | 54 | 78 | 74 |
| | cinder | 8 | | | 63 | 54 | | | 1 | | | 10 | 10 | |
| | slag | | 24 | | | 20 | 100 | 1 | | | | 38 | 24 | 46 |
| | grey fragment | | | | | | | | | | | | 68 | |
| Non-slag items | coal | | | | | | | | | | | 10 | | |
| | charcoal | | | | 6 | | | | 1 | | | | 16 | 6 |
| | slagged shale | | | | | | | | | | | | | 1 |
| | Total | 4432 | 44 | 398 | 2073 | 8315 | 328 | 99 | 1128 | 1620 | 138 | 993 | 1636 | 2861 |

*Table 11 Quantification of Metalworking debris by phase. (All quantities shown in grams)*

## APPENDIX 9: ENVIRONMENTAL ASSESMENT

**By Jennifer Miller, Edouard Masson–Maclean, Sharon Carson and Clark Innes**

**SUMMARY**

Analysis of the two pit fills and sample of cobble footing at Goodramgate have helped confirm the archaeological interpretations of those features. Both pits functioned to dispose of metalworking waste and demolition rubble but had additional use as both middens and latrines. Analysis of the range of environmental materials present has revealed that a wide range of foodstuffs had been consumed, including various sources of meat and abundant different dried fruits. Together with the presence of bud scales and scarcity of cereal bran, this might tentatively suggest deposition in the late spring or early summer. The sediment below the cobbles has probably resulted from in-wash of silts during a period of inundation or even heavy rain that has imported domestic and industrial waste.

### INTRODUCTION

Three samples (two pit fills and one sample of cobble footing) from Goodramgate, York were analysed to determine the range materials within the deposits of a possible metalworking site. It was anticipated that comparative analysis of these samples and the interpretation of any domestic organic detritus found in addition to industrial debitage would help confirm the proposed range of functions of the workshop and highlight periods of abandonment of metalworking and general decline of workshop use. It was anticipated that this interpretation would help confirm the archaeological interpretation of regular, successive phases of demolition and rebuilding undertaken on the site to address issues arising from the fluctuating water table.

### METHODOLOGY

BULK SAMPLE PROCESSING

Bulk samples were received within 10 litre plastic tubs, sealed to exclude light and air. They were floted for the recovery of environmental evidence and artefacts using standard methods and a Siraf flotation system including a bespoke pumped recycled water system with four settling tanks. Samples were disaggregated by agitating in water over a 500µm diameter mesh supported over a flotation drum. Light, primarily organic materials floated as wash-over (flots) and were retained on 500µm and 1mm calibrated mesh diameter Endicot sieves whilst other materials larger than 500µm that did not float remained on the mesh as the retent.

Wet retents were spread out on plastic trays and examined visually for fragile artefacts/ecofacts before being tagged and dried. Once dried, the retents were sieved using 4mm and 2mm Endicot sieves and sorted using magnified illuminated lamps for all

categories of artefacts and ecofacts. A magnet was employed to locate magnetized stone and iron.

Samples were highly likely to retain uncarbonised (waterlogged) organics corresponding to the age of the site and so flots were retained in water pending sorting for biological materials and any fragile artefacts. Sorting of flots was undertaken using a Nikon 93756 binocular microscope at variable magnifications of between x8 and x40 with associated Schott KL-1500 LCD cold light source. Subsequently, the remaining flot material was retained wet awaiting decision from York Archaeological Trust regarding disposal.

Sorted materials were bagged and labelled for submission to specialists and weighed using an Ohaus CS200 digital scale calibrated to 0.01g. Sorted residues were also weighed on a digital scale, bagged and stored pending decision regarding disposal. The retent sorting results are presented by material type in Tables 12 – 14 and a list of the codes used can be found in Table 15.

FAUNAL MATERIAL IDENTIFICATION

Mammal, bird and fish remains were identified by means of comparison to modern osteological reference collections at the Northlight Heritage Dickson Laboratory and the Hunterian Museum, Glasgow and by reference to published material. No identification was attempted on small bone fragments as little information would have been gained (O'Connor et al. 2003 : 116) and they were only estimated numerically. Vertebrae, ribs and shaft fragments were grouped into the following categories: large mammal (assumed to be horse, cow or large cervid), medium-sized mammal 1 (assumed to be sheep, pig or small cervid), medium-sized mammal 2 (assumed to be cat, dog or hare) and small mammal (assumed to be voles, mice, shrews, rats, etc.). The results are presented in Table 13.

BOTANICAL MATERIAL IDENTIFICATION

Abundance assessment of the environmental components within each sample is presented in Table 12 with results of analyses in Table 13. Charcoal >4mm from the sorted flotation retent was 50% or 100% identified in each case depending on volume in order to characterise the assemblage present. Charcoal identification in all cases was undertaken using the reflected light of a Zenith metallurgical microscope at X63 magnification with reference to Schweingruber (1990). The flot material was sorted under water for carbonised and uncarbonised cereals, seeds and other macroplant remains. Cereal identification was achieved with reference to Jacomet (1987). Seed identification was undertaken with reference to Beijerinck (1947), Cappers et al (2006) and the Dickson botanical reference

collection. Plant nomenclature follows Stace (1997) except cereals, which conform to Zohary & Hopf (2000).

INVERTEBRATE REMAINS

Invertebrates sorted from the flots were identified as specifically as preservation and timescales would permit with reference to Barnes (1980) and modern reference materials within the Dickson reference collection.

SEDIMENT ANALYSIS

A sub sample of the silt cobble footing from context 9013 (sample 046) was subjected to detailed sedimentological analysis to address the question of provenance of the deposit. The visual characteristics and texture of the deposit was described and approximately 200ml of the deposit was sub sampled and was then wet sieved through a 300µm mesh diameter sieve to remove the very fine mineral and organic elements which would not be identifiable. The sieve retent was then analysed under the microscope in water and described in detail.

**RESULTS**

CONTEXT 9018 (SAMPLE 039)

A large volume of metalworking waste was recovered from this pit fill, interpreted during excavation as a discard pit, although without clear indication of whether it related primarily to industrial or domestic waste disposal. Sample [039] produced a significant amount of CBM consisting of red/orange brick type material and an equally notable volume of mortar, one fragment retaining evidence suggestive of moulding. Ceramic rough pottery material was present in notable quantities, much of it around 20mm in thickness. Some ceramic fragments displayed evidence of exposure to high temperatures and had a blue sheen on the outer surface. Specialist interpretation might suggest if these fragments were from broken crucibles. Slag was also recorded, primarily metallic. Together, these materials strongly support the suggestion that one function of this pit was for disposal of metalworking debitage.

Several sherds of pottery were also present and included orange/pink, sandy fabric and green glazed reduced ware. Sherds were generally under 20mm diameter.

The animal bone assemblage recovered from this sample was very small (120g) comprising only 13 fragments. The other bones were in good condition though very fragmented with most fragments smaller than 50mm. There was rare evidence of burning (calcined and charred fragments) and some fresh breaks were noted. Of interest was the presence of

green staining on all fragments which was considered to be related staining caused by proximity to corroding copper or copper alloy within the metalworking debitage.

The remains of cattle, sheep/goat, herring and gadidae (cod?) were recovered from the sample. The cattle and ovicaprid remains comprised of head and feet elements which suggest the pit was used to dump butchery waste. However, the presence of mammal vertebrae and fish post-cranial remains (vertebrae, ribs, scales) may also indicate the presence of some domestic waste in the pit.

*Plate 9 Copper staining on a cattle metacarpal*

The charcoal assemblage was fairly substantial and consisted entirely of oak (*Quercus*). This would support the interpretation of metalworking waste deposition, since oak charcoal has been the smelting fuel of choice since antiquity (Tylecote 1973, Dickson & Dickson 2000), attaining temperatures in excess of 1600$^{o}$C for prolonged periods.

The macroplant assemblage is presented within Table 13 and is presented in habitat association order for ease of interpretation. The prolific uncarbonised seeds recovered were primarily of food plants and weeds of arable crops. Bean or pea (Fabaceae) testa (skin) plus oat (*Avena*) and indeterminate cereal bran were recorded, together with fragments of corncockle (*Agrostemma githago*), a serious contaminant of cereal crops until the 19$^{th}$ century that imparted a bitter, sour taste to bread (Dickson & Dickson 2000). Some of the edible taxa were broken, including the grape and blackberry seed, which suggests that they may have been chewed. Together with fig pips, blow fly pupae/ larvae and notable quantities of weft-forming mosses, the assemblage implies that human faeces were present within the sample. That would support the interpretation of this feature as a latrine containing cess material as well as an industrial waste pit. Tiny fragments of fish bone and fish scales could be further supportive evidence of this proposition.

Crops indicated from the assemblage include oats, a type of bean/pea (Fabaceae) and flax (*Linum usitatissimum*). The presence of so many arable crop weeds would suggest that crop processing waste may have been added to the disposal pit, although this might more commonly be fed to livestock in times of plenty (Miller 2002). Consequently, it is feasible that byre flooring waste was disposed of in the pit or that the weeds thrived on the enriched midden deposits in between periods of use.

The relative scarcity of carbonised plant remains and absence of charcoal of scrub woodland taxa would suggest that general hearth waste was not a significant component of this sample. However, the carbonised grain of bread wheat (*Tritucum aestivum*) found was of note in that it had germinated. It is likely to have been discarded onto the hearth with the carbonised arable weeds and hazel (*Corylus avellana*) nutshell found during food processing.

Other plant foods present within the assemblage include hazel nuts and gathered wild fruits, including blackberry (*Rubus fruticosus sl*) but also elder/red berried elder (*Sambucus nigra/racemosa*). Imported fruits including fig (*Ficus carica*) and grape (*Vitis vinifera*) emphasise the better availability of these previously prohibitively expensive sugar sources imported from the continent from the later medieval period onwards.

Three ruderal weeds with notable medicinal properties (Stuart 1989) were recorded, including especially hemlock (*Conium maculatum*) but also henbane (*Hyoscyamus niger*) and black horehound (*Ballota nigra*). These are recorded frequently across York in medieval deposits and were widely cultivated from the late 15$^{th}$ century onwards as medicinal plants Dickson & Dickson 2000, Culpeper 1653). However, in this instance it is quite feasible that they were simply toxic, noxious weeds growing wild on the enriched substrate of the abandoned site.

Plants of damp and wetter places may support the archaeological interpretation that the land was subject to fluctuating water levels and some parts probably remained consistently damp. However, rushes (the generic name for flooring materials but including sedges and rushes *per se*) were frequently gathered for flooring materials and so domestic dumping cannot be excluded as an option in this case. Nevertheless, the presence of two water flea (*Daphnia pulex*) resting eggs is evidence of ephemeral standing water on site. The hazel bud scales within the sample suggest that the deposition of this material is likely to have occurred in spring when the buds were bursting on the trees and the nearby river was likely to have been in spate or heavy rainfall expected to form deep short lived puddles.

CONTEXT 9050 (SAMPLE 043)

This sample was interpreted as domestic debris including cess within a pit that cut through a possible metalworking workshop floor. Cess waste was notable within this sample, including a large volume of mineralised faecal concretions retaining numerous impressions of as well as actual blow fly (*Calliphora vomitoria*) puparia. Seeds, bone and hair were observed within the faecal material and fragments of weft forming mosses were recovered. A notable animal bone assemblage and moderate amounts of oyster (*Ostrea edulis*) shell were also recorded. The environmental evidence would concur with the archaeological interpretation of domestic discard and waste disposal including human cess.

Significant volumes of orange/red CBM including brick and tile or pipe material and mortar were recorded, including some large fragments. Coal and slag were also recovered, plus five small glass fragments and a few fragments of pot. This assemblage may be evidence of demolition of a former workshop.

The faunal remains comprised of 27 fragments (182.3g) in very good condition. The assemblage was fragmented with most elements smaller than 50mm but the sample did contain a greater number of larger fragments (50mm to 20mm) than context 9018. The fragments had spiky edges and were fawn or brown in colour. Rare evidence of butchery was observed, as was calcined bone. Cess-like concretions and olive green staining were observed on a rib which would be in keeping with the use of this feature as a cess-pit.

The variety of species recorded in this sample was greater than context 9018 with at least 3 species of mammals, 4 species of fish and 1 species of bird represented. Dog bones were the most frequent remains in the assemblage (NISP = 6) and possibly all came from the same individual. Other mammalian taxa in the sample were sheep/goat and pig. There was clear evidence of initial butchery waste, with head and feet bones predominant in the identified material. However, there were also some rib, vertebrae and shaft fragments from medium-sized mammals plus fish and bird remains, suggesting that domestic waste had also been deposited in the pit. Fish species present were herring, eel, haddock and possibly turbot and the avian element was from a goose.

The charcoal assemblage would concur with the pit having been a repository for both industrial and domestic waste. Oak charcoal was most frequently recorded, but round wood and other large pieces of alder (*Alnus*), apple/rowan type (Maloideae), birch (*Betula*), hazel (*Corylus*) and poplar/willow (*Populus/Salix*) are strongly suggestive of domestic hearth waste utilising branches gathered from open scrub woodland.

The macroplant assemblage was entirely dominated by a superabundance (>1000 seeds) of fig (*Ficus carica*). Other food plants recorded were primarily also from fruits, including grape (*Vitis vinifera*), blackberries (*Rubus fruticosus sl*), hawthorn *(Crateagus monogyna*, bullace (*Prunus spinosa subsp insititia*), blackthorn (*Prunus spinosa*), indeterminate plum (*Prunus sp*), crab apple (*Malus sylvestris*) and elder/red berried elder (*Sambucus nigra/racemosa*). Cereal bran was less frequent, although barley (*Hordeum*) and oat (*Avena*) types were recorded infrequently. Fragments of corncockle (*Agrostemma githago*) were also correspondingly fewer than in context 9018. Seeds were frequently observed embedded in faecal concretions, indicating strongly that this pit was used for the disposal of human waste. Fragments of oyster (*Ostrea edulis*) shell and large numbers of short hairs of various colours were also embedded within the faeces, both singly and in small tufts of putative 'fur'. Collectively, these remains would support the interpretation that the community enjoyed a varied diet including a wide selection of fruits with cereals, shellfish and various sources of meat. Indeed, one small fragment tentatively identified as meat protein was teased from the centre of a pellet of faecal material.

The large numbers of blow fly (*Calliphora vomitoria*) remains concur with the volumes of faecal material recovered to further highlight quite how unpleasant this area would have been during the period of use as a cess pit.

The ruderal weed assemblage was less varied than in context 9018 but was of a generally similar range of taxa, suggesting discarded gleanings of daily cereal processing or casual weeds around the area. There was tentative evidence of flooring' rushes' or damp track ways in the form of yellow sedge (*Carex viridula sl*) and sheep's sorrel (*Rumex acetosella*). The hazel bud scale found concurs with the seasonality suggested in the previous pit sample.

CONTEXT 9103 (SAMPLE 046)

This sample represented silt recovered from the interstices of cobble footing and was interpreted during excavation as potentially having been washed in by floodwater or the fluctuating water table. Fragments of mortar were predominant in this sample, but small fragments of bone and charcoal were also recorded. A very small amount of CBM was present together with four tiny sherds of pottery of an orange fabric, one green glazed. This assemblage would support the archaeological interpretation of in-washed domestic and industrial waste, potentially from discard pits within the vicinity during periods of flooding.

A subsample of the deposit was analysed microscopically to characterise the sediment and constituent parts. Before sieving the sample was described as dark grey brown clay silt with a coarse sand component. The coarse sand was not uniform throughout but occurred

randomly and occasionally throughout the sample without visible pattern. Visible gross inclusions included charcoal, CBM and stone to 40mm size.

The stone within the sample was mainly sandstone and varied from angular to sub rounded, ranging in size from 300 µm to approximately 40mm. The mineral component consisted primarily of well rounded quartz grains of average 1mm diameter. Small fragments of CBM and metal slag within the deposit were also observed. The botanical and biological components were varied but consisted predominantly of charcoal and bone, with fragments of oyster shell, invertebrates, eggshell and occasional seeds. Charcoal and bone were uniformly well preserved and showed little evidence of erosion.

From analysis of the sample it is difficult to determine conclusively if this was sediment laid down by receding flood water. There are no visible laminated structures or obvious stratigraphic changes within the sample, although any stratigraphy is likely to have been become homogenised during recovery. Nevertheless, the very rounded, eroded condition of the mineral component would concur with riverine silts or otherwise highly weathered sediment inclusion. The condition of those minerals contrasts with the well preserved nature of the fragile organic components to support the interpretation that those materials were redeposited in the cobble footings by retreating floodwater. Furthermore, spheroidal hammerscale (slag spheres), the solidified droplets of liquid slag expelled from within the iron during hot working (Starley 1995), also floats and can easily be transported by water.

Together, the overall composition of the sample and the range of inclusions do suggest some form of water borne deposition process, although not necessarily catastrophic flooding. It may be that this sediment was deposited by significant rain water runoff pooling within the spaces between the cobbles but it is not possible to determine which with confidence. A more detailed analysis could have been achieved if the sample was extracted using a small kubiena tin. In such circumstance, the sample would be fully contained as a block within the tin making it more stable and preserve any microstratigraphic features. It may have been possible at that point to examine the microstructure and see evidence of laminations by visual analysis alone, but if further investigation was needed it could then be submitted for micromorphological analysis.

The bone assemblage within the sample was small (8g) and comprised mainly of herring vertebrae (NISP = 10) and very small (10-20mm) fragments of indeterminate mammal bone, some calcined. Possible haddock and eel vertebrae and a shaft fragment from a large-sized bird (chicken size?) were also recovered from this sample. The faunal remains tend to suggest redeposited domestic food waste. Condition of the bones was good.

The charcoal assemblage was of small volume with individual fragment size not significantly >4mm, although most were in good condition. The taxon composition reflects the industrial nature of the area at that time in that oak (*Quercus*) was frequently recorded, although alder (*Alnus*) was also noted. Alder charcoal has a similar historic association with smelting to oak (Tylecote 1973) and both may have had provenance in the metalworking workshop. That would concur with the slag spheroids also recovered. However, charcoal of mixed deciduous open woodland including blackthorn type (*Prunus spinosa* type), hazel (*Corylus*), birch *(Betula*) and poplar/willow (*Populus/Salix*) were also identified. Round wood was noted. Together these characteristics and taxa reflect domestic hearth fuel, which would concur with the bone assemblage to support the suggestion of re-deposited domestic midden material as well as industrial debitage within the cobble footings. As such, water ingress, whether from severe flooding or merely rising natural water table levels, must be considered quite feasible.

**DISCUSSION**

The samples from Goodramgate strongly support the archaeological interpretation of each of the three features. Both of the pits represented by contexts 9018 and 9050 contained evidence of metal working, using oak charcoal to achieve the prolonged high temperatures necessary for smelting. Metal, slag and possible moulding debitage are further evidence towards this proposition. The destruction of the metalworking workshops is suggested by the quantities of structural debitage recorded, with both pits subsequently being used as latrines and domestic midden pits. The green staining on all the bones from pit fill 9018 is further supportive of the close proximity of the bone to metal waste and cess material, suggesting the possibility of urine acting as a conductor between copper and iron in the fill. There was clear evidence of faecal material and the association with mosses and seeds of imported fruits is highly indicative of human waste rather than byre flooring.

The environmental evidence from both pit fills but especially context 9050 has revealed significant information regarding the diet of the local community, their domestic practices and surrounding landscape. There was a striking preponderance of fruits, especially imported figs, but also grapes and gathered wild fruits and nuts. By contrast to the large numbers of seeds recovered, cereal bran and bean testa was not excessive, whilst arable weed seeds were prolific. It may be that the cess material recovered reflects a time of year before the cereal crop was harvested and stored reserves were low and expensive. That could concur with the bud scales observed and almost complete absence of carbonised cereals, other than one sprouted wheat grain to tentatively suggest late spring deposition.

When cereal stores were low before the harvest came in there was greater reliance on other resources in the past, including dried fruits (Dickson & Dickson 2000). Hawthorn berries can

be crushed into cakes for winter storage and sweeten upon drying (Camilla Dickson pers comm.). The same is also well known for crab apples and the various types of plum recovered (Dickson & Dickson 2000), in addition to the more commonly known raisins, hazel nuts and dried figs. Blackberries can also be preserved by cooking.

The diet also contained protein from mammalian, bird, fish and shellfish. Hairs and putative fragments of fur concur with the various bones, shell and fish scale remains found to suggest that the population had consumed a variety of different types of meat. There was evidence of both primary butchery waste (heads and feet removal) and of domestic food preparation debitage.

Crops including oats (*Avena*) barley (*Hordeum*), bean/pea (Fabaceaae) and flax (*Linum usitatissimum*) are suggested from the botanical assemblage. A wide range of arable/ruderal weeds relating to this cultivation were recovered, especially from pit fill 9018, although the assemblage in 9050 comprised smaller numbers of similar taxa. Together, the ruderal weeds suggest crops grown on moderately fertile, well drained land including a fairly standard medieval weed flora including fat hen (*Chenopodium album*), black mustard (*Brassica nigra*), greater celandine (*Chelidonium majus*) and the rampant, noxious weed corncockle (*Agrostemma githago*) (Greig 1988) and others. Flax especially prefers well drained soil, although standing water is needed later to ret (rot) the stems for fibre production. Whether these are weeds of direct crop processing or domestic escapes from previous gleaning cannot be determined, although the fragmented nature of most of the corncockle suggests that it has been ingested with cereals.

Although many of the weeds recovered imply well drained fertile soil, many, including yellow sedge (*Carex viridula sl*), sheep's sorrel (*Rumex acetosella*) and cf club-rush (cf *Scirpus sp*) are more indicative of wetter places. This may be residual from discarded flooring materials but could also reflect the fluctuating water table and local wetter areas. The presence of two water flea (*Daphnia pulex*) resting eggs in pit fill 9018 highlights the fact that water levels did not remain at consistent levels.

Significant numbers of seeds of hemlock (*Conium maculatum*) were recovered from pit fill 9018. Both this deposit and that of pit fill 9050 also contained low levels of henbane (*Hyoscyamus niger*) and black horehound (*Ballota nigra*). These three plants have significant medicinal value (Stuart 1989) and have been cultivated for their properties since the late 15$^{th}$ century in England (Culpeper 1653). However, it is not possible to discern whether these seeds came from a physic garden directly or were escapes that grew up naturally on the undisturbed ground around the discard pits. Many weeds with medicinal properties have

grown naturally within medieval urban deposits without any direct influence from man as a result of past activity populating the natural seed bank. One such example is that of greater celandine, which, although frequently cultivated in physic gardens is also frequently encountered within arable weed assemblages.

The range of materials recovered within the sediment below the cobbles would support the interpretation of debitage from retreating flood water, although it cannot confirm whether the flooding was complete inundation from the river in spate or ephemeral deep puddles from heavy rainfall.

Thanks are due to Professor James Dickson for identifying the mosses found within this assemblage.

| Context | 9018 | 9050 | 9103 |
|---|---|---|---|
| Sample | 039 | 43 | 046 |
| Total C.V. Vol. (ml) | 85ml | 55ml | 15ml |
| Vol. C.V. >4mm | 50ml | 45ml | 10ml |
| % >4mm ID (%) | 50% | 50% | 100% |
| AMS option Y / N | Seed | Corylus RW | Betula |
| Roots/stems | + | + | |
| Charcoal | +++++ | ++ | +++ |
| Seeds / Macros | +++ | +++++ | + |
| Weft-forming | +++ | + | |
| Wood/bark | ++++ | ++ | |
| Faecal concretions | | +++++ | + |
| Organic detritus | ++ | +++++ | +++++ |
| Hair | | +++ | |
| Invertebrates | +++ | ++++ | + |
| Oyster shell | | + | + |
| Bone | + | + | +++ |
| Fish bone | ++ | + | |
| Eggshell | | | + |
| Cinder | + | + | |
| Coal | + | + | |
| Slag | + | + | |
| Spheroidal | | | + |
| CBM | + | | + |
| Mortar | + | | |
| Pot | + | | |

*Table 12 Flots initial assessment results*

| Context No. | | 9018 | 9050 | 9103 |
|---|---|---|---|---|
| Sample No. | | 039 | 043 | 046 |
| Charcoal | Common Name | | | |
| *Alnus* | alder | | 2 | 2 |
| *Betula* | birch | | 2 | 1 |
| *Corylus* | hazel | | 5 | 2 |
| Maloideae | apple/rowan type | | 1 | |
| *Populus/Salix* | poplar/willow | | 2 | 1 |

| | | | | |
|---|---|---|---|---|
| *Prunus spinosa* type | blackthorn type | | | 2 |
| *Quercus* | oak | 25 | 10 | 8 |
| **Seeds (c)** | | | | |
| *Triticum aestivum* | bread wheat | 1 | | |
| *Corylus avellana* nutshell | hazel nutshell | 1 | | |
| Brassicaceae indet | indet mustard family | 1 | | |
| *Spergula arvensis* | corn spurrey | 1 | | |
| **Seeds (nc)** | | | | |
| **Cultivated Crops** | | | | |
| *Avena sp* cereal bran | oat bran | + | + | |
| *Hordeum* sp cereal bran | barley bran | | + | |
| Indet cereal bran | indet cereal bran | ++ | ++ | |
| Fabaceae testa fragment | bean /pea skin fragment | + | | |
| *Linum usitatissimum* seed | flax seed | 1 | | |
| *Linum usitatissimum* | flax capsule valve | 1 | | |
| **Ruderal/Crop Weeds** | | | | |
| *Aethusa cynapium* | fool's parsley | 2 | | |
| *Agrostemma githago* | corn cockle | 1 | | |
| *Agrostemma githago* | corn cockle | 16 | 2 | |
| *Ajuga reptans* | bugle | 1 | | |
| *Brassica nigra* | black mustard | 8 | 1 | |
| Brassicaceae indet | indet mustard family | 1 | | |
| *Chelidonium majus* | greater celandine | 3 | | |
| *Chenopodium album* | fat hen | 23 | 2 | |
| *Fallopia convolvulus* | black bindweed | 1 | | |
| *Galeopsis tetrajit sl* | hemp nettle | 4 | | |
| *Persicaria lapathifolia* | pale persicaria | 2 | | |
| *Persicaria maculosa* | redshank | 1 | | |
| *Poa annua* | annual meadow grass | | 1 | |
| Poaceae (large seed) indet | large seeded grass | 1 | | |
| Poaceae (small seeded) | flower of small seeded | 1 | | |
| Poacae leaf fragments | grass leaf fragments | ++ | + | |
| *Ranunculus* | creeping/bulbous | 3 | 2 | |
| *Rumex acetosella* | sheep's sorrel | | 2 | |
| *Rumex sp* | dock | 2 | 2 | |
| *cf Silene sp* | cf catchfly | 1 | | |
| *Spergula arvensis* | corn spurrey | 2 | | |
| *Stellaria media* | chickweed | 5 | 1 | |
| *Urtica dioica* | stinging nettle | 2 | | |
| **Imported Foods** | **Common name** | | | |
| *Ficus carica* | fig pip | 13 | >100 | |
| *Vitis vinifera* | grape seed | | 2 | |
| *Vitis vinifera* (broken) | broken/bitten grape seed | 1 | 1 | |
| **Gathered wild foods** | | | | |
| *Corylus avellana* nutshell | hazel nutshell | 6 | | |
| *Crateagus monogyna* | hawthorn seed fragment | | 11 | |
| *Malus sylvestris* | crab apple | | 1 | |
| *Prunus spinosa subsp* | bullace | | 1 | |
| *Prunus cf spinosa* | blackthorn fragment | | 3 | |
| *Prunus sp* (fragment) | plum stone fragment | | 8 | |
| *Rubus fruticosus sl* | blackberry | | 4 | |
| *Rubus fruticosus sl* | blackberry fragment | 1 | 15 | |
| *Sambucus nigra/racemosa* | elder/red berried elder | 1 | 1 | |
| *Sambucus nigra/racemosa* | elder/red berried elder | | 3 | |
| **Medicinal/ Ruderals** | | | | |
| *Conium maculatum* | hemlock | 58 | | |
| *Hyoscyamus niger* | henbane | 1 | 1 | |
| *Ballota nigra* | black horehound | 1 | 1 | |
| **Woodland** | | | | |
| *Corylus avellana* budscale | hazel budscale | 4 | 1 | |

| | | | | |
|---|---|---|---|---|
| *Ilex europaeus* leaf | holly leaf fragment | 1 | | |
| Pteropsida leaf stipule | leaflet of fern stem | 1 | 1 | |
| mosses | | ++++ | + | |
| **Damp/Wet Habitat** | | | | |
| *Bryum sp* | moss | + | | |
| Bryophyta indet | unidentified moss | ++ | | |
| *Carex hostiana* | tawny sedge | 2 | | |
| *Carex viridula sl* | yellow sedge | 3 | | |
| *Carex sp* | sedge | 1 | | |
| *cf Scirpus sp* | cf club-rush | 8 | | |
| *Sphagnum sp* | bog moss | + | + | |
| *Thuidium tamariscinum* | moss | ++ | | |
| **Invertebrates** | | | | |
| *Daphnia pulex* ephippium | water flea resting egg | 2 | | |
| *Calliphora vomitoria* pupa | bluebottle pupa | >40 | >100 | |
| *Calliphora vomitoria* larva | bluebottle larva | >30 | >50 | |
| *Lumbricus terrestris*egg | earthworm egg | >20 | 5 | |
| Invertebrate eggs | | + | + | |
| Beetle head/ carapace | | + | + | |
| **Other** | **Common Name** | | | |
| Possible meat? Tissue | ?meat? | | 1 | |
| Faecal matter | dung fragment | 1 | >100 | |
| Fur/hairs | | | ++++ | |
| Oolithic | fossil fragment | 1 | | |
| **Marine Bivalve fgmts** | | | | |
| Mollusca (terrestrial) | Land snail fragment | | 1 | |
| *Ostrea edulis* | native/European flat | | + | |

*Table 13 Flots identification results*

| Taxa | Context | | | Total |
|---|---|---|---|---|
| | **9018** | **9050** | **9103** | |
| Cattle (*Bos taurus*) | 1 | | | **1** |
| Pig (*Sus scrofa*) | | 1 | | **1** |
| Sheep/goat | 3 | 3 | | **6** |
| Dog (*Canis familiarus*) | | 6 | | **6** |
| Large mammal | 1 | | | **1** |
| Medium-sized mammal 1 | | 8 | | **8** |
| Medium-sized mammal 2 | | 4 | | **4** |
| Small mammal | | 22 | | **22** |
| Mammal indeterminate | 39 | 38 | 10 | **87** |
| Geese (*Anser sp.*) | | 1 | | **1** |
| Bird indeterminate | | 5 | 1 | **6** |
| Eel family (Anguillidae) | | | 1 | **1** |
| Eel family (Anguillidae) ? | | 1 | | **1** |
| Herring family (Clupeidae) | 4 | 1 | 10 | **15** |
| Cod (*Gadus morhua*)? | 1 | | | **1** |
| Haddock (*Melanogrammus* | | 1 | | **1** |
| Haddock (*Melanogrammus* | | | 1 | **1** |
| Turbot (*Scophthalmus* | | 2 | | **2** |
| Fish indeterminate | 9 | 34 | 28 | **71** |
| Indeterminate* | 50 | 100 | 50 | **200** |
| **Total** | **108** | **227** | **101** | **436** |
| *estimated count | | | | |

*Table 14 Faunal identification results*

| Code | | | Definition |
|---|---|---|---|
| Context | | | Context number |
| **Sample information (Volumes in L)** | Num | | Sample number |
| | Type | | Type of sample |
| | Vol | | Sample volume before processing |
| | Rvol | | Residue volume before flotation and sorting |
| **Sorting %** | Enviro | | All environmental material |
| | CBM | | Ceramic Building Material |
| **Weights (g)** | C.V | | Charred Vegetation |
| | Plant Macros | | Plant macrofossils |
| | Wood | | |
| | Faunal | | Animal and human bone |
| | Shell | | |
| | Pottery | | |
| | CTP | | Clay Tobacco Pipe |
| | CBM | | Ceramic Building Material |
| | Stone | Lithic | Stone tools and debitage |
| | | Wkd | Worked stone including masonry |
| | | Other | Anomaly or noteworthy |
| | Industrial | Slag | All slag including metal and glass |
| | | Other | Other industrial materials/waste |

*Table15 Soil sample sorting codes*