ARCHAEOLOGICAL
SERVICES
DURHAM UNIVERSITY

on behalf of
Yuill Homes

Land west of Eaglesfield Road
Hartlepool
Teesside

post-excavation analysis

report 2874
February 2013

Durham
University

Contents

Figures

1. Summary

The project

1.1 This report presents the results of post-excavation analysis of archaeological investigations conducted before and during the development of residential housing at land west of Eaglesfield Road, Hartlepool. The scheme comprised several stages of work; a geophysical survey, eight evaluation trenches, and an area of excavation and archaeological monitoring.

1.2 The works were commissioned by Yuill Homes, and conducted by Archaeological Services Durham University.

Results

1.3 There is limited evidence, in the form of residual artefacts, for the exploitation of the vicinity of the site at some time during the Mesolithic – Bronze Age periods, and in the Iron Age/Romano-British period.

1.4 Substantial evidence was encountered for settlement on the site during the medieval period. This is interpreted as comprising a post-mill, probably dating from the later 14th century, together with an associated rural community. A large pit contained waterlogged deposits and a diverse artefactual and ecofactual assemblage, from which a range of activities at the site have been inferred.

2. Project background

Location (Figure 1)

2.1 The site is located in a field to the west of Eaglesfield Road, Hartlepool (NGR centre: NZ 4866 3036). It is roughly rectangular in plan, and covers an area of approximately 1.95 ha. To the east are Eaglesfield Road and a housing estate, to the west is a continuation of the existing field. To the north is Brierton Lane and to the south is agricultural land.

Development

2.2 The site has been developed for housing.

Objective

2.3 Archaeological monitoring had been conducted during the development of the site, following on from a geophysical survey and evaluation trenching. A significant archaeological resource was uncovered. The objective of these works was to fulfil a planning requirement to fully analyse the data, within the framework of the North East Regional Research Framework (Petts and Gerard 2006).

Methods statement

2.4 The works have been undertaken in accordance with a proposal provided by Archaeological Services Durham University (reference DS12.111rev) and approved by Peter Rowe of Tees Archaeology.

Dates

2.5 Fieldwork was undertaken between 17th January and 9th March 2012. This report was prepared for February 2013.

Personnel

2.6 Fieldwork was conducted by Andy Platell, Janet Beveridge, Johnny Dye, Rebekah Watson, Helen Noakes, and Janice Adams and Mark Randerson (Supervisors). This report was prepared by Janice Adams, with illustrations by David Graham and Janine Watson, and edited by Peter Carne. Specialist reporting was conducted by Dr Chris Cumberpatch and Blaise Vyner (ceramics), Helen Drinkall (flints), Louisa Gidney (animal bone), Dave Heslop and John Cruse (quern and millstones, Alejandra Gutiérrez and Jennifer Jones (other finds), Dr Charlotte O'Brien and Dr Carrie Drew (palaeoenvironmental evidence), Lorne Elliot (charcoal) and Dr Stephen Davis (insects). Sample processing was undertaken by Janet Beveridge, Nigel Cavanagh Helen Noakes and Rebekah Watson. The Project Manager was Daniel Still.

Archive/OASIS

2.7 The site code is **HER11/11a/ 12**, for **H**artlepool **E**aglesfield **R**oad 20**11**/20**12**. The archive will be transferred to Hartlepool Arts and Museums. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-archaeol3-142579**.

3. Landuse, topography and geology

3.1 At the time of the works, the development area comprised part of a recently ploughed field immediately outside the built-up area of Hartlepool.

3.2 The development area was situated on the crest of a north-south aligned ridge at a mean elevation of around 38m to 40m OD. To the west, the remainder of the field (outside the development area) dropped away fairly steeply for around 5m or 6m. To the east the ground slopes away more gently towards the town.

Geology and soils

3.3 The underlying solid geology of the area comprises Permian strata of the Sherwood Sandstone Group, which are overlain by Devensian till (information from British Geological Survey website). Fluvio-glacial sands and gravels are present in the fields immediately to the west and these have been commercially exploited in several locations.

4. Previous archaeological works

4.1 A detailed account of the historical and archaeological background of the site is given in a desk-based assessment (Archaeological Services 2011a).

4.2 A geophysical survey was undertaken over the site in 2011 (Archaeological Services 2011b: Figure 2). The survey identified several positive magnetic anomalies indicating potential archaeological soil-filled features including possible ring ditches, a boundary ditch and ridge and furrow ploughing.

4.3 The geophysical survey was subsequently followed by an archaeological evaluation later the same year (Figure 3). Eight targeted evaluation trenches were excavated across the site identifying archaeological deposits that comprised furrows indicative of medieval agriculture, and a pit and a ditch possibly relating to medieval settlement (Archaeological Services 2011c).

5. The archaeological monitoring

5.1 Archaeological monitoring was maintained during the topsoil strip and the excavation of building foundations across the north part of the site, close to the east boundary (Figure 3). Archaeological deposits were identified and excavated in part of this area (Figures 3 & 4); this work took place in 3 stages, reflecting the progress of the development (below, Section 6).

5.2 In the north part of the site a pipe trench was excavated parallel to Brierton Lane along the existing northern site boundary. This involved the removal of the existing hedge and fence line. Orange-brown sandy-clay loam subsoil [5: 0.06-0.1m thick] was recorded at a depth of 0.65m. Above this was made-ground or a levelling deposit of orange-brown sand and gravel [4: 0.12m thick]. Overlying this was firm grey-brown silt [3: 0.24m thick] that underlay a layer of re-deposited mottled orange-brown clay [2: 0.14m thick]. This layer was covered by topsoil [1: from 0.35m thick], a dark-brown silt-clay (Figure 10).

5.3 Close to the east boundary natural orange-brown glacial sands and clays [6] were identified at a depth of 0.65m. These were overlain by orange-brown sandy-clay loam subsoil [5: 0.25m-35m thick]. Above this was the dark-brown topsoil layer [1: 0.35m-0.45m thick]. Finds recovered from the topsoil deposits included pottery dating from the 13th-20th centuries, dominated by 19th-20th century material (Table 1.2). Fragments of animal bone, shell, glass, iron, clay pipe and a piece of

plastic, all of modern date, were recovered from this layer; one flint fragment was also found. The topsoil was thickest closest to the eastern boundary of the site. No archaeological features were recorded in these areas cutting the subsoil [5].

6. The excavation (Figures 4 & 5)

Summary

6.1 The remains of two linear boundary ditches were identified, running north-south. To the west of these, several small pits, one large pit, several postholes and a segmented circular ditch complex were identified. In the centre of this circle, a crude cross-shape foundation was present. The features cut natural glacial deposits [6] and were covered with subsoil [5] and topsoil [1].

Linear boundary ditches

6.2 In the eastern part of the excavated area, natural glacial deposits [6] were identified at a depth of 0.38m. Cutting these was a broad north-south linear boundary ditch, U-shaped in profile [F19: approx. 23m (exposed length) by 0.92m to 1.67m, by 0.14m deep], filled with a light-brown slightly gritty sandy-clay loam [18] that contained two sherds of mid-13th to 14th century pottery and a very small flake of 19th century pottery (probably intrusive) and five undateable glass fragments. This fill [18] was cut by another linear north-south ditch on a comparable alignment [F17: 18.5m by 0.44m, 0.24m deep]. This ditch was filled by a reddish-brown friable, moderate to firm silt-clay [16] (Figure 11). Overlying this fill was orange-brown sandy-clay loam subsoil [5: 0.06-0.35m thick] that contained a handle from a mid-13th to 14th century jug. This layer was cut by modern field drains and overlain by the brown silt-clay topsoil layer [1]. Both ditches continued north and south beyond the area of investigation.

Pits

6.3 North-west and west of these ditches [F17 & F19] were three pits. The most northern pit was sub-rectangular in shape with a U-shaped profile [F12: 1.9m by 0.81m – 1m by, 0.17m deep]. It had a lower fill of grey-brown slightly gritty silt-clay [11: 0.07m deep], with charcoal fleck inclusions, and an upper fill of firm grey-brown silt-clay loam [7: 0.1m deep] that contained one flint and 49 sherds of 13th-14th century pottery (Figure 12). Immediately to the south of this was a broad but shallow oval pit with an irregular profile [F13: 1.15m by 1.03m, 0.16m max. depth]. It had a lower fill of dark-grey brown, slightly gritty silt-clay [14: 0.09m deep] and an upper fill of firm slightly gritty grey-brown silt-clay [8: 0.11m max. depth]. 14 sherds of 13th to 14th century pottery were recovered from this fill.

6.4 To the south-west of these was a very shallow oval pit [F62: 1.75m by 1.8m, 0.09m deep]. It was filled by a firm gritty orange-brown sandy-clay loam [61] with small angular and rounded stone inclusions which contained 7 sherds of 13th to 14th century pottery and an un-diagnostic flint.

The large pit

6.5 In the north-west part of site, close to the west boundary, was a large oval pit [F47: 6.9m by 5.2m, 1.85 deep] (Figures 13-14). This pit had a primary fill of soft gritty mottled orange-grey silty-sand [80: 0.1m thick] that contained two 13th-14th century pottery sherds, 26 wood fragments, shell and an iron nail. Overlying this was soft grey silty-sand fill [79: 0.2m thick] with inclusions of occasional medium

rounded stone, fragments of animal bone and mussel shell, four sherds of mid-13th to late-14th century pottery, glass fragment, industrial waste, leather and wood fragments. Above this was a highly organic plastic dark grey-brown clay-silt [78: 0.2m thick] with lenses of sandy-silt, frequent pea gravel and occasional large rounded stones. Finds from this fill included 11 13th-14th century pottery sherds, worked and unworked animal bone, mussel and egg shell, wood, two millstone fragments, fired clay and leather. On the south edge of the pit this fill was below a layer of laminated orange-grey silt-sand [72: 0.73m thick] that contained flecks of shale, rare large cobbles and occasional small and medium sized stones. Two sherds of 12th-13th century pottery, 10 sherds of 13th-14th century pottery, worked and unworked animal bone, shell, leather and wood fragments, a stone lid, a quern/millstone fragment and a copper alloy strap end were recovered. On the north edge of the pit, above [78] was a mottled grey-brown and orange-grey silty-sand fill [71: max. 0.6m thick] containing frequent pea-gravel and small stone inclusions. Finds from this fill include shell fragments; two worked stone lids, a millstone fragment, a flint and 26 pottery sherds that range in date from the early-13th century to the late 14th century.

6.6 This pit was recut [F81] through fills [71] and [72]. The recut had a primary fill of grey-brown silty-sand [73: 0.08m thick] that contained leather fragments, a fragment of worked wood and a single sherd of 13th-14th century pottery. Above this was a laminated dark-brown moderately compacted silty-clay fill [70: 0.51m thick]. Finds recovered from this fill included 14 leather fragments and an almost complete left foot turnshoe, 104 pottery sherds dating from the 12th-14th century, a wooden bowl fragment, animal bone and shell, a worked stone lid, a flint, two quern and one millstone fragment. Thin lenses of orange-brown slightly sandy silt-clay and yellow silt-clay with rare inclusions of medium and large stones were evenly distributed throughout this fill. This fill was overlain by soft medium grey silt-clay containing thin lenses of evenly distributed yellow silt-clay [69=48; 0.27m thick]. Four millstone fragments, 23 12th-14th century pottery sherds, a worked stone lid, and worked and unworked animal bone were found in this deposit. Above this was dark-grey slightly sandy clayey silt [68= 46=49= [802] (evaluation): 0.43m thick] that contained 39 13th-14th century pottery sherds, two millstone fragments, frequent shale inclusions and occasional small stones. The upper-most fill of the pit was stiff dark-grey sandy-silt loam [67: 0.17m thick]. Pea-gravel, occasional small to medium stone and 38 sherds of 13th to 14th century pottery were present in this fill.

6.7 Two oval-shaped possible postholes, U-shaped in profile, [F75] and [F77] cut the natural [6] on the north edge of the large pit, underlying the large pit fill [71](Figure 15). Posthole [F75: 0.78m by 0.56m, 0.19m deep] was filled by brown friable sandy-silt [74]. South of this was the second posthole [F77: 0.47m by 0.45m, 0.16m deep], filled by brown friable sandy silt [76]. A flint was recovered from this fill. Although these postholes are earlier than the pit, it is not known if they otherwise directly relate to the pit.

Segmented ditches

6.8 South-east of the large pit was a sub-circular segmented ditch complex. A small irregular shaped pecked sandstone block was found compressed into the natural [6] in this area. The eastern segment of the ditch complex was a wide flat-based curvilinear ditch [F15: approximately 12.6m by 1.65m wide, 0.15m deep] orientated north-west/south-east. This ditch was filled by firm brown gritty sandy-silt loam [9 =

10 = [702 (evaluation)]: 0.15m deep] that contained pea-grit, rare small to large cobbles and four 13th to 14th century pottery sherds. One sherd of post-medieval pottery was also recovered from this fill. It is likely the post-medieval sherd is intrusive and deposited via truncation; an animal burrow is recorded on the pit's north edge.

6.9 Immediately to the south was a broad sub-rectangular flat-based ditch [F25: 3.15m by 1.3m, 0.2m deep], filled with orange-brown firm heavily-compacted sandy-silt loam [24] (Figure 16). This fill contained sandstone and shale flecks, 98 sherds of mid-13th to 14th century pottery (Figure 17) and one sherd of pot of possibly Iron Age or Romano British date. Cutting this fill, towards the north-east edge of the feature, was two inter-cutting postholes [F31 and F33], filled by brown heavily compact slightly gritty silt-clay with sandstone fleck inclusions [30: 0.15m deep, and 32: 0.14m deep]. It is likely that both postholes are contemporary as it was not possible to differentiate between the fills or their internal edges. Cutting both posthole fills was a short, broad flat-based ditch [F35: 3.3m by 1m by 0.1m deep], filled with light-brown soft moderately compacted sandy-clay loam [34]. A single sherd of mid-13th to 14th century pottery and a whetstone were recovered from this fill.

6.10 At the west end of the ditch [F25], cutting its fill [24], was a further oval posthole [F27: 0.3m by 0.4m by 0.10m deep] filled by brown friable silt-clay [26]. Close by were three more postholes. The first was a heavily truncated, oval flat-based posthole [F29: 0.8m by 0.58m, 0.08m deep], filled by soft gritty grey-brown sandy clay [28]. South of this was a broad, oval flat-based posthole [F23: 0.72 by 0.76m, 0.18m deep] filled by soft gritty grey-brown sandy clay [22]. To the north-east was a small circular posthole [F21: 0.48m by 0.46m, 0.12m deep], filled by gritty sandy-clay loam [20], that contained flecks of shale and sandstone.

6.11 West of the postholes was another curvilinear flat-based ditch segment [F60 = F64: 8.5m by 1.62m, 0.17m deep]. This ditch was filled by firm brown friable sandy-clay loam [59 = 63] and contained an iron nail, 19 13th to 14th century pottery sherds and an un-diagnostic flint.

6.12 West of this [F60] was a further segment, a long broad, irregular-shaped, shallow ditch [F42 = F43 =F45] (Figure 18). It measured 13m by 1.8m wide (average 1.3m) and varied in depth along its length from 0.14m-0.32m; the variation may be the product of later ploughing. The ditch was filled by firm gritty brown sandy-silt loam [40 = 41 = 44] that contained 58 sherds of mid-13th to 14th century pottery, two sherds of 19th century date and a stone lid. Its fill was cut by a short, shallow sub-rectangular ditch/pit [F50: 3m by 1.1m, 0.12m deep], filled by firm gritty orange-brown sandy-clay [51] that contained 18 sherds of 13th to 14th century pottery and an unworked flint.

Cross-shaped feature

6.13 Approximately central to the segmented ditch complex, was a short linear ditch or pit, U-shaped in profile [F39: 2.6m by 1m, 0.23m deep] (Figure 19). It was filled by friable mottled orange-brown silt-clay [38] containing re-deposited clay lumps. This was cut by a broad ditch, U-shaped in profile, [F37: 2.95m by 1.8m, 0.48m deep] filled by mottled grey and orange-brown sandy-clay loam [36]. Re-deposited clay lumps, flecks of shale and small white stone fragments plus four sherds of mid-13th

to 14th century pottery, a small flint flake and two iron nails were present in this fill. This ditch [F37] was one of four projecting arms of an irregular cross-based feature [F55] (Figure 20).

6.14 The size of the remaining arms varied [F56: approx. 1.2m by 0.58-0.8m, 0.18 deep], the west arm [F57: 2.2m by 1m, 0.25m deep and the south arm [F58: 2.65m by 1.3m, 0.29m deep], the northern projection being noticeably shorter and smaller than the others. These projections were filled by mottled friable grey and orange-brown slightly sandy clay-silt [52 = 53 = 54] that contained occasional charcoal flecks and ill-sorted sub-rounded stones and cobbles, largely more frequent towards the centre of the cross-shaped feature. These stones did not appear to form packing, and no posthole was noted in the centre of the feature. Finds recovered from the fills included 24 iron nails, a stud and a long-bolt, 26 sherds of 13th to 14th century pottery, animal bone, flint, fired clay fragments and three millstone fragments, industrial residue, three copper alloy objects and glass. It was not possible to differentiate between the fills of the arms of the cross-base suggesting that they were all contemporary in date. A copper alloy object and medieval pottery sherds were found close to the cross-base in the overlying subsoil deposit [5]. It is possible this cross-base feature formed the footing for a timber post-mill.

7. The artefacts

Prehistoric pottery

Summary

7.1 A single potsherd of prehistoric date was found on the site. This is evidence for some prehistoric activity in the vicinity.

Results

7.2 An undecorated body sherd (15g wt) from a medium sized jar was recovered from context [24]. The surfaces are orange-brown and the fabric varying from orange-brown to dark grey containing numerous small and medium-sized angular quartzitic grits. The wall thickness of the sherd is 9 mm.

Discussion

7.3 This is most probably from a vessel of pre-Roman Iron Age date, or possibly early Romano-British date, since similar fabrics continued to be made in that period. The fabric is the most commonly found for this period in the region – see, for example, Thorpe Thewles. No surface accretions are present.

Medieval and later pottery analysis

Summary

7.4 The pottery assemblage consisted of 664 sherds weighing 7739 grams and represented a maximum of 610 vessels. The details of the assemblage are summarised in Tables 1.2 to 1.6. Recent material is listed in Tables 1.2 and 1.3 and is largely omitted from the discussion below as it was almost exclusively of later 19th and 20th century date and was recovered from topsoil contexts. Medieval pottery from all stratified contexts except Pit [F47] is listed in Table 1.4 and the pottery from Pit [F47], exclusively medieval in date, is listed in Table 1.5. Table 1.6 contains summary statistics derived from the data in Tables 1.2, 1.4 and 1.5. Twenty six uunidentifiable fragments of probable pot came from environmental samples [7] <1>, [36] <17>, [38] <16>, [51] <21>, [59] <24>, [52] <26>, [74] <29> and [76] <31>.

Discussion

7.5 Published studies of pottery from Hartlepool were, until recently, largely limited to two reports by Wrathmell (1987, 1990) but these, together with other reports from the wider region, have recently been reviewed by Didsbury (2010) who has suggested a simplification of the fabric type series and the adoption of a simpler scheme for the description of vessel types. These suggestions have been adopted in this report along with the updated chronological scheme.

7.6 The earliest sherd of pottery identified in the assemblage was a small, heavily abraded rim sherd from context [41]. That the sherd had suffered from both mechanical and chemical weathering was evident from its worn appearance and the presence of numerous vesicles at the surface and in cross-section. These were the result of the removal of shell temper in solution through the action of acidic ground water. In spite of its condition the sherd was identifiable as a piece of local Shell and Quartz tempered ware (SHW) as described by Didsbury (2010:220-1). Its presence alongside a sherd of Tees Valley B ware (described below) suggests that it was residual in a later context as the type, although poorly dated most probably belongs to the period between the late 10th and 12th centuries.

7.7 The greater part of the assemblage consisted of Tees Valley B ware (TVW B) with smaller quantities of Early Reduced ware (ERW), Tees Valley A ware (TVW A) and sherds in unidentified local sandy wares (Tables 1.4, 1.5 & 1.6). Regional imports were limited to four sherds of Scarborough I ware. European pottery was represented by a single sherd of Langerwehe stoneware from one of the two evaluation contexts [802]. The characteristics of the Tees Valley wares are fully described by Wrathmell (1987, 1990) and by Didsbury (2010) and details of specific sherds are included in the data tables. The fabrics were characterised by the presence of abundant fine quartz sand and smaller quantities of dark red and black inclusions, probably iron-rich in nature. The size range of the quartz varied between vessels but not to a degree that would indicate the existence of different fabric groups.

7.8 Scarborough ware has been described by Watkins (1987) whose proposed dating has been followed in this report, there being no sign of a resolution of the issues surrounding the chronology of the industry. The splash glazed wares are distinguished from the unidentified local oxidised and reduced wares in view of the probably significance of the technology in chronological terms (Didsbury 2010: 224). Other incidences of splash glazing on sherds of Tees Valley ware are noted in the data tables.

7.9 Tees Valley B ware predominated in both Pit [F47] and in the other medieval contexts with Tees Valley A ware constituting only a minor component across the site as a whole where it formed only 2.95% of the total. The proportion was slightly higher, 4.7% of the total, in Pit [F47]. In contrast the representation of Early Reduced ware varied considerably from 35% of the total in Pit [F47] to zero in the other medieval contexts. It might be possible to argue on these grounds that Pit [F47] is slightly earlier than the other contexts and that this is indicated by the higher proportions of both Tees Valley A ware and Early Reduced ware although care should be taken in drawing such conclusions from a relatively small assemblage of unknown origin. Given this caveat, it is still of interest to note that the representation of the different wares differs considerably from that elsewhere in

Hartlepool where the proportion of Early Reduced ware seems to decline as that of Tees Valley B ware rises (Didsbury 2010: Table 8.4). The condition of the sherds in Pit [F47] was not consistent with the Early Reduced wares being residual and the presence of what may well have been a substantially complete vessel in context [70] would seem to suggest broadly contemporary deposition within the feature. Further work on other quantified assemblages is needed before significance of these observations can be properly assessed.

7.10 Decoration on the vessels was largely limited to applied scale and pellets with some use of coloured glaze to highlight these features. Notable examples included a group of twenty-nine sherds from context [44], probably all from the same vessel and a smaller group from context [8] with applied pellets under green glaze. Together with pinched 'feet' around the base/body angle such traits are regular features of the Tees Valley wares (Didsbury 2010: 233; Figure 8.11; 22, 24, Figure 8.12; 26, 28). The most notable sherd was part of a face mask from context [67] (Pit [F47]) which consisted of an asymmetrical beard with a nose and eyes on an inwardly curving jug rim (Figure 7.A). Face jugs have, perhaps surprisingly, been the subject of very little detailed investigation in spite of their distinctive character and widespread, although never common, occurrence from the later 12th century onwards. In the author's opinion they are indicative of the importance of fecundity and fertility in medieval life and may be linked with the celebration of marriage and the cycle of birth, life and death, although it has to be admitted that this theory has not found general favour since it was proposed some years ago (Cumberpatch 2006).

7.11 In terms of the range of identifiable vessel forms from Pit [F47], jugs predominated with jars and cooking pots unusually rare, at least as indicated by the absence of distinctive rims. During the analysis of the pottery, it seemed that the assemblage might resemble that from Pit 290 at Pontefract Castle (Cumberpatch 2002: 198-202) and represent the waste from dining or even feasting. If this were the case, it would be expected that the animal bones associated with the pottery would consist of primarily food species and that cuts typical of the table might be expected to be commoner than those typical of the abattoir or kitchen. The animal bone report, (below, 7.14-7.31) shows that this was emphatically not the case and that horse carcases dominated the faunal assemblage from Pit [F47]. The environmental evidence (below, Section 8) appears to indicate the rapid filling of the pit and a possible flood event. This would seem to rule out a role as a water source which might be an alternative explanation for the deposition of a number of jugs. Overall, these results indicate the difficulty of inferring practice from medieval pottery assemblages, given the relatively restricted range of vessel types in use during the period and the wide variety of functions that they must have fulfilled.

Conclusions

7.12 Although relatively small in size, the assemblage from Eaglesfield Road is of some local and regional importance in view of the fact that the medieval contexts were relatively uncontaminated with either later intrusive pottery or earlier residual material. The relative proportions of the various types raise certain questions in relation to Didsbury's recent reassessment of the assemblages from Hartlepool and it is probable that the significance of the assemblage will only become apparent once this work is extended to include the various as yet unpublished reports on other assemblages from Hartlepool and neighbouring towns and villages.

Recommendations

7.13 The pottery assemblage should be retained in its entirety and deposited in the appropriate local museum where it will be available for further study in the future. The face mask shown in Figure 7.A is of particular significance and would repay further study as part of a regional and inter-regional study of such vessels.

Animal bone analysis

Summary

7.14 The majority of the animal bones were hand-recovered from contexts [69-72] and [78-9]. These were fills of [F47], a very large pit. Other bones were found in context [52], the north-south arm of the cross-brace for the possible mill base, [F55]. Animal bone was also present in topsoil and unstratified contexts. The pottery indicates a medieval date for the activity on the site.

Results

7.15 Fragments were only recorded as identifiable if they encompassed a unique zone, or non-replicable anatomical feature. Unidentifiable fragments were not counted. A full record was made of ageing data from epiphysial fusion and tooth wear. While the present collection is too small for meaningful analysis of these data, the synthesis of the data from many small excavations within Hartlepool (Daniels 2010) demonstrates the potential value of accumulating comparative data from the hinterland of the town.

7.16 The bones are generally in good condition. Excellent preservation is indicated by the presence of juvenile bird bones in contexts [69] and [70] and eggshell in the sample from context [78]. However, many large bones from context [69] have had an adverse reaction to removal from the damp burial environment and are now flaking, cracking up and disintegrating.

7.17 It can be seen from Table 1.7 that the species composition from the medieval deposits is unusual in the predominance of horse remains and the absence of elements from sheep and pig. The bulk of the faunal refuse deposited was clearly not derived from domestic consumption.

7.18 The horse remains include fragments probably from one skull in contexts [69] and [70]. One premaxilla has a canine tooth *in situ* at an advanced stage of wear, indicating that this animal was male and elderly. The cheek teeth present are also well worn and a mandibular tooth from context [69] has malformed enamel on the lingual surface. There are cervical and lumbar vertebrae, from the neck and lower back, from context [55], while thoracic vertebrae and ribs were found in contexts [69-70]. One lumbar vertebra has lipping round the caudal border of the centrum, indicating the onset of age-related arthropathy such as arthritis. Context [70] contained scapula and humerus fragments of small pony size, probably from the same animal. Context [78] produced radius fragments from two different animals. One was comparatively large and robust with a fused distal end, from an adult. The other was smaller and gracile with woven bone on the shaft, indicating an immature animal, though older than 18-20 months when the proximal radius fuses (Schmid 1972, 75).

7.19 While chop marks were observed on one humerus and one radius, the principal interest in the horse carcasses appears to have been the metapodials of the lower

leg. A metatarsal fragment from context [69] is the only identified element from the hind limbs of horse. Whether hind legs remain in the unexcavated portion of [F47] or were not usually deposited on site is unknown.

7.20 The representation of horse body parts suggests that carcasses of several animals had been dismembered into manageable portions prior to deposition, rather than the dumping of entire carrion carcasses.

7.21 Context [72] produced two artefacts made from horse metapodials ,SF25 and SF27 (below, 7.32).

7.22 Gnawing marks provide indirect evidence for the presence of two other species. Horse humerus and metatarsal fragments from context [69] have rodent gnawing marks. These are not as pronounced as modern brown rat gnawing marks on bones. The only medieval omnivorous rodents would have been house mouse and black rat (Corbet and Harris 1991, 239-259), and horse bones seem rather large for mice to chew. Black rats are particularly associated with medieval maritime trade routes (Armitage 1994, 236), and bones comparable with rat have been recovered from three excavations in Hartlepool (Daniels 2010, 188). The immature horse radius from context [78] has characteristic dog gnawing marks on the distal radius and proximal ulna. These ends were probably unfused and so softer to gnaw. This is the only bone from a young horse, and the only bone found on this site gnawed by dog, which might suggest that dog was not present on this site and the horse bone had been acquired in this condition.

7.23 In contrast to the horse bones, the few cattle bones do appear to indicate disposal of domestic refuse. Chop marks follow standard patterns of breakage for joint division and marrow extraction. Where present, epiphyses are fused and all the cattle bones appear to derive from adults. One mandibular molar from context [69] is at an extremely advanced wear stage, indicating an elderly animal.

7.24 The absence of sheep bones is particularly striking in view of the large numbers recovered from excavations within Hartlepool (Daniels 2010, 188). The cattle and pig bones from the topsoil are large and robust and have saw-mark butchery, indicating a recent origin.

7.25 The bird bones give a hint of seasonality for the deposition of contexts [69] and [70]. Both are juvenile, indicating late spring to early summer. The tibia from context [69] is not diagnostic but is already comparable with adult pigeon in length, though clearly not full grown. The juvenile skull fragment from context [70] is similar in conformation to goose and may therefore derive from a gosling.

7.26 Faunal remains were recovered from the sample residues of contexts [70], [72] and [78-80] in the fills of [F47]. In addition a tiny scrap of calcined bone was found in context [22] within [F23] (Table 1.8).

7.27 Marine shells were uncommon with oyster in topsoil and contexts [70-71], whelk in context [70] and an unstratified cockle shell.

7.28 The cattle and sheep bones are both butchered and appear to be food waste. The single sheep bone is the only fragment of this species recovered from the whole

excavation. The frog/toad bones indicate natural mortalities of this commensal species, attracted by the damp fills of [F47]. The marine shells show that these were more common in the deposits than was observed from the hand recovered finds, with cockle and mussel also present in medieval contexts. The eggshell in context [78] complements the juvenile bird bones in contexts [69] and [70] in suggesting that the fills of [F47] accumulated in the spring/summer bird breeding season. There is a disappointing absence of small mammal bones from which to identify the perpetrator of the gnaw marks on the horse bones.

Discussion

7.29 The finds of juvenile bird bones and eggshell suggest the activity was seasonal. The presence of rodent-gnawed horse bones is a tantalising hint that possibly black rat at this time could venture outside its preferred habitat within buildings or ships.

7.30 This highly selective assemblage demonstrates that urban assemblages, such as those well-documented from Hartlepool, can only be used to extrapolate certain aspects of the faunal economy in the hinterland supplying the town. The product made with the horse metapodial tools appears to have been perishable, so there is nothing in the Hartlepool excavations which could suggest this specialised activity. The general paucity of horse bones within towns such as Hartlepool is normally explicable by the fact that horse was not deemed suitable for human consumption by the Christian church. Rather than being seen as carrion and a problem in waste disposal, the occupants of this site appear to have viewed fallen horses as a source of raw material for production into a useful, though unknown, commodity.

7.31 Attention has been drawn to the absence of craft waste, whether horner, tanner or bone working, in the faunal assemblages from Hartlepool (Daniels 2010, 202). The present excavation suggests that these trades may have been located outside the town itself.

Bone objects (Figures 7.C & D)

7.32 Two worked bones were recovered from context [72]. Louisa Gidney has identified them as horse metapodials; one a distal end and the other a proximal end metacarpal (above, 7.21). They are fragments from different bones, in other words, they represent two different objects or tools although both are worked in a very similar way. They have a perforation through the shaft made by transverse cuts on both anterior and posterior faces of the bone, resulting in a sub-circular hole.

7.33 Bone object SF25 (broken into 2 fragments) survives with a maximum length of 140mm. The perforation on the superior surface is 13mm by 14mm. On the same side a smooth concave scoop has been removed, leaving very smooth edges and perforating the shaft (Figure 7.C).

7.34 Bone object SF27 (broken into 2 fragments) survives with a maximum length of 13 cm. The perforation on the upper surface is 7mm by 10mm. On the same side a smooth concave scoop, oval-shaped, has been removed without perforating the shaft. This scoop is not centred on the width of the bone but placed a little to one side. Although the bone is broken at this point, there is enough to see that there was another similar scoop removed further down the bone, not exactly symmetrical or aligned to the first cut, but on the other side. On the other surface a further two cuts

are visible, also to one side, but the bone is broken at this point and it is impossible to determine their shape and measurements (Figure 7.D).

7.35 The way in which SF25 and SF27 have been trimmed on the surface is quite distinctive and different to point bones, sharpened to a point at one end, which are found in Viking Age contexts in London, Lincoln and York and whose function is still unknown (for example MacGregor 1978, Fig 31; Pritchard 1991, 209). In the medieval period the robustness of horse metapodiae lent itself to a range of activities and processes, perhaps the best documented being their use as skates (Margeson 1993; Egan and Pritchard 1991). Horse bones are sometimes found with usage marks, but their function is often elusive (for example, Murray and Murray 1993, fig 44, no. 288). Short cattle bones with scooped areas similar to SF25 and SF27 have been identified as pulley wheel brakes (Vaughan and Rowntree 1991, Fig 32.4, no. 49), but these are 75mm long and lack any perforations.

7.36 The function of the bones remains unclear, as neither is complete. The artefacts do appear to have been made and used on site, as two further fragments have been recorded by Louisa Gidney: context [78] produced a distal metapodial fragment that had fractured during the making of the hole, and context [69] also produced a shaft fragment from a similar object that appears to have broken in antiquity. The site has provided a unique insight into a rural craft activity involving the use of horse metapodials and disposal of horse carcase parts. Whatever the craft was, it complements the paucity of horse bones within the town of Hartlepool and demonstrates that, though deemed inedible, a fallen horse had salvage value.

Iron objects

7.37 A total of 39 objects were recovered (Appendix 1, Table 1.9). Except for one long, modern bolt with hexagonal head from context 1, the assemblage is exclusively nails. These are too corroded and fragmented to recognise shapes and dimensions. The only measurable example is SF35: context [80], a stud with a shank 56 mm long, a missing tip and a large round head (27 mm diameter). Most nails appear concentrated in contexts [52=53=54], the possible windmill cross-base. The objects are compatible with a medieval date.

Copper-alloy objects

7.38 A small assemblage of four copper-alloy objects was found, three of them small fragments of unknown function (Appendix 1, Table 1.10). These are mainly objects for personal use and they throw little light on the use of the site, nor do they confirm any industrial use or function other than domestic occupation.

7.39 SF26 from context [72] is a strap-end, 12mm wide by 18mm long (Figure 8.e). It is made of a single sheet that has been folded width ways. A perforation 2.5mm wide would have housed a rivet, now missing. Strap-ends such as this were used to protect the ends of straps, belts, girdles, etc. and are typical of the medieval period although they are difficult to date with precision (Egan and Pritchard 1991, 126). Plain, simple strap-ends such as this seem to have been superseded by other styles and forms by the later 15th century (Egan 2005, 41).

7.40 SF13 from context [52=53=54] is a shank of rectangular section, 1.2mm thick, 3.5mm wide at one end, tapering to 3mm at the other. It is broken at both ends, and the surviving length is 38.5mm. It is probably the pin from a buckle, a pair of tweezers or

the handle of a small cosmetic set or implement (ear scoop/toothpick), which were popular in the medieval period and later (Egan and Pritchard 1991, nos. 1755, 1762, 1778; Margeson 1993, Fig. 32, no. 406, 15th century).

7.41 SF8 recovered from context [52=53=54] is a small fragment of shank bent at a right angle; one branch has a circular section and is 10mm long, 3mm in diameter. The other has a rectangular section and is 11mm long by 4mm wide. The function is unknown.

7.42 SF1 (context [52=53=54]) is two fragments of thin sheet, probably belonging to the same unidentifiable object (11mm by 15mm max measurements; 0.5mm thick).

Wooden objects

7.43 Two wooden objects were found (Appendix 1, Table 1.11), both from context [70]. SF24 is part of a hemispherical bowl that survives as 4mm thick, with raised nap and distorted surfaces (Figure 7.B). Neither the rim nor the base has survived and due to possible distortion it is not possible to estimate the rim diameter. A maximum surface area 18cm by 5.5cm had survived.

7.44 SF28 is part of a composite object. Somewhat distorted, it probably has a square section (30mm by 20mm), and survives as a 170mm long fragment, broken at both ends. Along one of the narrower sides there is a cut/groove that runs lengthways. Wood objects survive only very rarely in excavations and these two objects are an uncommon occurrence. Sadly they are not complete enough to ascertain their shape or function.

Quern and millstone analysis

Summary

7.45 Fifteen fragments of quern/millstone have been examined - total weight 24.3 kg. Two of the fragments appear to come from lower stones of two different hand querns (each weighing *c.*20-25 kg). The remaining thirteen fragments are derived from at least two upper stones and four lower stones of Millstone Grit (MSG), which were used in a mechanically powered mill (each likely to be flat discs of >800mm diameter and to each weigh between *c.*60-150kg). Prior to deposition in Pit [F47], each of these querns/ millstones was very thoroughly broken up and only a small proportion of each stone has been recovered in the excavation. Millstones of this size are likely to be post-Norman conquest in date, but are unlike the domed 1.3-1.8m diameter MSG stones, most commonly found in the 16th-17th century AD. Such millstones could have been used in a post-mill at any time after say 1350-1400AD.

Results

7.46 The stone fragments come from a large pit [F47], 6.9m by 5.2m by 1.85m deep, found in contexts [46, 52, 69, 70, 71, and 78] along with medieval pottery (Table 1.12). Pit [F 47] was sited north-west of an irregular complex-shaped or cross-shaped feature [F55], which may have formed the footing for a timber windmill base or industrial structure. For the purposes of this report, the fragments were numbered 1-15 (Appendix 2).

Lithology

7.47 All of the stones were coarse-grained sandstones, predominantly Millstone Grit, and probably from exposures in the Weardale area of the Pennines. The more local, but

finer grained Coal Measures sandstones, which are the most common type on Iron Age and R-B sites in this area, were not used here (Heslop, 2008, Fig 12). These stones come from at least 30 km away, and possibly further.

7.48 Lithological analysis of the material was not carried out. Thin-sectioning would only be appropriate if either the group was securely dated, and/or the group included examples where the form was complete.

Quantification

7.49 Only two of the fragments (Frags 5 & 6) are likely to be from hand querns. The remaining thirteen fragments are derived from mechanically-driven millstones – with Frags 1 & 3 and Frags 8, 9 & 10 each likely to be from different lower stones, together with Frags 13, 14 & 15 from an upper stone. Thus, at the minimum, there is evidence of two upper millstones (Frags 2 & Frags 13/14/15) and perhaps four lower millstones (Frags 1/3, 4? 7, 8/9/10).

Fragmentation and possible re-use

7.50 With the fragments having only 100-200mm of perimeter surviving of the apparently large (c900-1000mm diameter) millstones, accurate estimation of their diameters was rarely possible. However, as each piece only represents *c.*1-3% of the intact millstone, we can suspect that they had been very thoroughly broken up, prior to deposition. The lack of any joining fragments and the complete absence of any central 'eye' or 'feed-pipe' features may indicate that some selection of the fragments had taken place.

7.51 As Frag 4 was squared up and grooved for secondary re-use, a possible explanation of the above data is that it (and other?) unwanted milling stones had been broken up for use as building rubble, any stone with central features being rejected, and on the destruction of the structure, the rubble debris was then dumped into the fill of pit [F47].

Discussion

7.52 From the limited available information, the MSG millstones can be restored as disc shaped, with flat, peck dressed grinding surfaces, diameters around 1000 mm and a thickness of *c.*70 mm. Such large millstones are rarely found on British Roman sites - even the millstones from the Imperial water-mills on the Palatine in Rome were typically 820-900 mm diameter (Wilson 2003).

7.53 Of the published early Historic millstones from the Irish water-mills of the late first millennium AD, only 15% were 900-1100mm diameter, with 85% being between 550-900mm (McErlean & Crothers, 2007, 192/3]).

7.54 Thus we can reasonably confidently rule out the probability that the Hartlepool millstones are residual, or derived from, a nearby Roman or Anglo-Saxon site. Barnatt J & Bannister (2009, 141) record that, at the quarries around Baslow, Derbyshire, the MSG millstones were between 1300-1800mm diameter. They 'were made from at least the 14th century into the early 19th century'… 'with one flat face and the other domed' and that 'domed millstone production reached its peak in the 16th-17th centuries'.

7.55 If these dates are generally applicable to other MSG quarries in the north of England, the fact that none of these bigger, domed millstones were found on our site, could

indicate that it dated to before the 14th/15th century AD. To improve on a dating of the stones as probably later than Anglo-Saxon, but before ca 14th/15th century AD, we will need to rely on dates allocated by other specialists to the associated contents in Pit [F47].

7.56 The hand querns recovered from site may have been used by a nearby household. Dyer (2012, 333) has noted that despite "the risk of a fine because avoiding suit of the lord's mill was a breach of customary law, and the drudgery of the process for a member of the household... we know that the home milling option was sometimes taken, because pieces of millstone are found scattered over Wharram". Another explanation for their presence may be that they were associated with the miller, who used them for processing small volumes of cereal, when the mill was shut down.

7.57 Windmills were in use in Kent from the late 12th century AD (Spain, 2008, 370). Kealey (1987) notes that the earliest documented is Wigston Parva in Leicestershire, which was in existence in 1120AD. There are seven known in Kent by 1190-1200AD and they had become quite common in Kent by the end of the 13th century (Lawson, 2008, 377).

7.58 Beacham (2003, 14) cites the first windmills as occurring in the late 12th century in eastern counties, which are presumed to be the area of invention, as no earlier examples are known on the Continent. In the basic 'Post-Mill' design, the whole body of the wooden mill rotates around a well-secured central post, supported by a trestle, often set in a mound. The power from the sails passes through a one-step gearing to the single pair of stones.

7.59 As the design of a pair of millstones is independent of the source of their rotary drive, there are no specific features currently recognised which indicate whether a millstone was animal, water or wind powered. Intuitively, one would suspect that the power output of windmills would increase over time, as the technology advanced, enabling the millstone size to be progressively increased.

7.60 On this basis, if our comparatively large millstones were powered by a post-mill, a date sometime after 1350-1400 AD may be appropriate.

Flint analysis

Summary

7.61 The site has yielded a total of twenty-five pieces of flint (Table 1.13). Of these nine are natural pieces, and a further seven are fragments which may or may not be worked. Of the artefacts with human working there are five flakes, two flake fragments, one bladelet and a flake spall. Overall the condition of the assemblage is variable, with the worked pieces on the whole exhibiting little rolling, compared to the natural flint and fragments, which demonstrate considerable rolling and plough damage. There is only one artefact from the 2011 season, with the rest coming from work done in 2012. The identified artefacts are non-diagnostic in terms of age.

Results

7.62 Of the twenty-two pieces of flint, as described above, nine are natural pieces with considerable plough damage. The seven fragments identified as possibly being worked are difficult to diagnose due to extensive rolling and abrasion. There are no

clear indications of flake scars from human working. These fragments of flint are from contexts [61], [71], [54], [70], [63], and [7] and along with the natural pieces, will not be discussed in any detail below, except where comparisons of raw material can be made with worked artefacts.

7.63 A small flake was found in the fill [36] of a U-shaped ditch [F37], suggested as being part of the foundation of a windmill base or industrial structure. The flake is on grey flint with a dihedral butt and exhibiting a hinge termination. The dorsal surface shows one natural surface and three removals from the right side (L=18.48mm; W=21.67mm; Th=4.93mm). Despite its presence in this secondary context, the flake is in good condition with sharp edges.

7.64 A chunky flake on black-brown flint was found in the fill [71] of a pit [F47].This was located together with two of the flint fragments discussed above, one of which appears to be made of the same type of flint. The flake is made by hard hammer percussion, with a plain butt and feather termination. It exhibits <25% cortex of a thin nature, with little evidence of weathering perhaps suggesting procurement from a primary flint source. The two removals and one natural surface on the dorsal form a slightly pointed end to the artefact, with a concave thin edge on the right side. Although there is slight break at the tip, there is no edge damage on this concave face indicative of use (L=43.77mm; W=28.47mm; Th=15.54mm). Context [71] is thought to be contemporary with context [72], from which a distal flake fragment on high quality black flint was recovered. This artefact exhibits <25% cortex of a similar thin beige appearance to that from [71]. There appears to have been six removals in total from the dorsal surface (L=20.31mm; W=30.69mm; Th=9.23mm). Although missing its proximal end the flake fragment is in mint condition.

7.65 Context [54] produced two natural pieces, although significantly one was on similar black-brown raw material to that present in [71]; a bladelet, a fragment and two flakes. [54] is also part of the same cross-shaped feature [F55] that contained context [36].The bladelet has a soft hammer butt and feather termination, and is made on black good quality flint. Despite its sharp edges there is evidence of abrasion on the ridges between the flake scars on its dorsal surface (L=11.18mm; W=4.83mm; Th=4.83mm). The first flake is on grey flint, similar to that found in context [36] and exhibits a feather termination, and two removals on the dorsal side, along with a patinated older surface at the distal end. (L=16.19mm; W=14.03mm; Th=3.44mm). The second flake is on black flint, with thin <25% cortex present, although the condition of this suggests procurement from a secondary flint source such as a river cobble. It has a plain butt and a break at the distal end (L=12.26mm; W=16.98mm; Th=4.79mm).

7.66 Context [76] from pit [F47] contained a tiny flake spall, on dark grey flint. It is damaged on three sides but exhibits a feather termination (L=7.32mm; W=6.30mm; Th=1.20mm). A further unstratified flake fragment was recorded, with a broken distal end, on grey-brown flint. The butt appears to be soft hammer and it exhibits five removals on the dorsal surface (L=19.42mm; W=18.21mm; Th=4.23mm).

7.67 The final flake is from work in 2011 and is manufactured on reddish brown good quality flint. The ventral surface exhibits a strong ripple effect, indicative of being struck with some force. There is breakage/damage at two points on the right dorsal

edge, and a series of small removals on the left dorsal side, indicative of use wear, being too irregular and light to be re-touch. The flake displays <25% cortex, located on the distal edge (L=34.57mm, W=25.56mm, Th=9.24mm).

Discussion

7.68 In terms of the raw material used at the site, there appears to be several main varieties present. Firstly a grey flint used for artefacts from context [36] and [54], which are part of the same feature. Light brown flint is present in contexts [61], a natural piece from [51], one of the fragments in [71] and a natural piece from [79]. Similarly a black-brown flint is present in contexts [71] and [54]. This cross-over of material from different contexts adds to the interpretation of the finds as being in a secondary context in later features containing medieval pottery.

7.69 Unfortunately the assemblage appears to be mixed, with damage to some pieces (the fragments mentioned above) which makes it impossible to assign human workmanship to some of the pieces. Of the artefacts discussed above, non are diagnostic in terms of age, so the assemblage is most likely sitting with the broadest age bracket of Mesolithic to the Bronze Age. However, previous analysis of the flake from the 2011 excavations suggests tentatively a Neolithic/Bronze Age date.

Clay pipe analysis

Results

7.70 Context [1] produced a single fragment of clay tobacco pipe bowl. It has rilling at the rim and a line of moulded floral decoration. This is of 19th-century date.

Glass and plastics

Results

7.71 Context [1] produced two pieces of glass. A piece of semi-opaque, modern window glass, 5mm thick, with one reeded side and the base of a rectangular green/clear mould-made bottle, probably used for medicine or condiments. This dates to the 19th century or later. Five tiny fragments of undateable glass were recovered from environmental samples <7> from context [18], <26> from [52] and <34> from [79].

7.72 A small fragment of hard, yellow plastic came from context [1].

Building materials

Results

7.73 A small quantity (7.5g) of small, abraded, undateable fragments of fired clay came from environmental sample <1> from context[7], <3> from [8], <9> from [22], <12> from [24], <22> from [54], <26> from [52], <29> from [74] and <32> from [78].

Industrial residues

Results

7.74 Two pieces of undateable fuel ash slag were recovered. A small piece (2g wt) came from environmental sample <34> from context [79], and a larger piece (22g wt) from context [52]. This is dark and highly vesicular, and has incorporated a piece of burnt shaley fuel. Fuel ash slag can be produced in temperatures achievable in a domestic fire and is not necessarily indicative of any industrial process.

7.75 A single piece of probable smithing slag (106g wt) also came from sample <34>. Though small at *c.*61mm diameter x 30mm deep, the fragment has the concavo-

convex shape typical of a smithing hearth base. The interior is dark in colour, fairly dense and has little vesicularity. Such a small quantity of residue may be the result of a single episode of smithing at the site, and suggests that ironworking was not an important economic activity. It is not dateable.

Stone objects

Results

7.76 Context [6] SF22 (Figure 8.F): naturally water-worn, irregularly shaped block of sandstone c261 x 269 x 73mm thick. The stone has a naturally fairly flat 'base', which along with the sides, shows no evidence of working. The 'top' surface has a roughly central sub-circular pecked depression *c.*30mm diameter x *c.*10mm deep. Radiating from this are three roughly pecked, shallow (<2mm) lines of unequal width (10-20mm) and length (59-74mm). The pecking of the lines does not quite meet up with the central depression, and the line pecking has a fresher appearance than that of the depression. However, all pecking appears to have carried out with a sub-circular point *c.*3-4mm diameter. The top also has three short (*c.*20mm) 'cuts' (<2mm wide) placed diagonally along one edge. The object is of unknown date and function. An original block with a central pecked depression may have been casually modified at a later date.

7.77 Context [34] SF34: an oval shaped river cobble in dark grey sandstone 109mm long, sub-rectangular in section 54 x 39mm, with one naturally squared off and one rounded end. The cobble fits very comfortably in the hand, and on one face there is a smoothed facet *c.*30mm wide, suggesting that it has been used as a whetstone or smoother.

7.78 Five stone lids were recovered; one from the fill of ditch [F45] and the others from fills of pit [F47]. All the stone lid contexts also produced medieval pottery.

7.79 Context [44] SF29: sub-rectangular stone lid with very flat and even surfaces, made from dark whinstone. The top is *c.*87 x 94mm and the underside *c.*42 x 60mm. The lid is *c.*35mm thick, and the sides have been roughly tapered by chipping. There is little evidence of wear.

7.80 Context [69] SF30: lens shaped circular stone lid in grey sandstone, 103mm diameter x 9-31mm thick. The lid has a worn appearance.

7.81 Context [70] SF31: sub-circular to angular roughly made stone lid in grey sandstone, *c.*116mm diameter. x *c.*29mm thick with fairly parallel faces. Chipping is visible around the edges.

7.82 Context [71] SF32: sub-angular stone lid in grey sandstone, 93mm max diamter. 16cm-20mm thick. Slight wear.

7.83 Context [71] SF33: sub-rectangular stone lid in yellow micaceous sandstone *c.*104 x 114mm x *c.*18mm thick with fairly parallel faces. Slight wear.

Leather

Summary

7.84 Twenty six fragments of leather came from five contexts of the fill of pit [F47]. Where identifiable, all pieces derive from footwear.

Results

7.85 Context [70] SF23: almost complete left foot turnshoe (TS) sole 217mm long with round pointed toe, edge of heel seat missing (Figure 7.B & 14). Sole is 85mm wide across tread, 32mm at the narrow waist and 45mm across the seat. The original length would have been approx 223mm, equivalent to a woman's size 3. Nail holes on the underside and at the waist suggest there was originally a further sole layer. The edge/flesh (e/f) stitch holes of the margin are spaced at 3 per 20mm. The shape and narrow waist indicates a 14th-15th century date (Mould *et al* 2003, p3273).

7.86 Context [70]: fragment of stitch margin cut from TS upper, 66mm long, grain/flesh (g/f) stitch holes at 2 per 10mm.

7.87 Context [70]: fragment of stitch margin cut from TS sole 43mm long, e/f stitch holes at 2 per 10mm.

7.88 Context [70]: x3 irregularly shaped ?upper fragments in similar leather, all edges cut or torn, no stitch holes, sizes c81 x 42mm, c93 x 53mm and c52 x 46mm. Grain surface cracked and laminating (*cf* SF25).

7.89 Context [70] SF25: fragment of poorly preserved ?upper *c.*97mm long x 52mm wide max, all edges cut, no stitch holes. Grain surface cracked and laminating (*cf* above).

7.90 Context [70]: x3 stitch margin fragments cut from TS sole(s), 22mm, 35mm and 56mm long. All have e/f stitch holes at 2 per 10mm.

7.91 Context [70]: fragment cut from TS upper 72mm long x 40mm wide max. Two edges cut; the third has g/f stitch holes at 2 per 10mm.

7.92 Context [70]: worn sole repair clump fragment 58 x 31mm. Surface has many irregularly placed nail holes up to 2.5mm diameter.

7.93 Context [70]: 5 very damaged small fragments (<20mm), no original edges or stitching. Not conserved.

7.94 Context [72]: worn but almost whole seat repair clump 97mm long x 88mm wide max. There are tunnel stitches around its edge and f/g stitch holes across the wider end. It has two wear holes.

7.95 Context [72]: stitch margin 114mm long cut from TS sole, e/f stitch holes at 2 per 10mm.

7.96 Context [73]: stitch margin fragment 119mm long x 21mm wide max, cut from TS upper, g/f stitch holes at 2 per 10mm.

7.97 Context [73]: possible latchet fragment 82mm long x 18mm wide tapering to 12mm. Both edges have g/f stitch holes at 2 per 10mm.

7.98 Context [78] SF35 comprised three leather fragments: left foot TS sole forepart fragment, part of pointed toe worn away, cut off across tread; 92mm long x 80mm wide max at tread. Wear hole in centre. E/f stitch holes at 2 per 10mm. Underside

has several groups of randomly spaced small nail holes, indicating previous repairs. Shape suggests 14th-15th century date (Mould et al 2003, p3273).

7.99 Context [78] SF35: right foot pointed TS sole forepart fragment 51mm long x 70mm wide max. Part of inside edge stitch margin worn away at toe, and fragment is cut off above mid-tread. Underside has several groups of randomly spaced small nail holes, indicating previous repairs. Shape is similar to above fragment, again suggesting a 14th-15th century date, but this example is slightly smaller than the left foot above, and the e/f stitch holes are spaced at 3 per 20mm.

7.100 Context [78] SF35: left foot TS sole forepart fragment 61mm long. The toe has been previously repaired, with stitch holes at 2 per 10mm along the cut edge (45mm wide), but this repair has also been lost. The fragment is cut off above mid-tread (74mm wide). Underside has randomly spaced small nail holes, indicating other previous repairs. E/f stich holes around margin at 2 per 10mm.

7.101 Context [78]: quarter fragment 70mm long x 30mm wide max, from a welted shoe construction. Top edge cut. Stich holes along margin at 2 per 10mm, and at 3 per 10mm along the butted side seam.

7.102 Context [78]: two small ?upper fragments, 47 x 20mm and 32 x 16mm, no stitch holes, edges probably cut.

7.103 Context [78]: two fragments of cut TS sole stitch margin 64 & 58mm long with e/f stitch holes at 2 per 10mm.

7.104 Context [78]: one fragment of cut TS upper stitch margin 72mm long, g/f stitch holes at 2 per 10mm.

7.105 Context [79] <34>: fragment of cut stitch margin from TS sole, 52mm long. E/f stitch holes at 2 per 10mm.

Discussion

7.106 This small assemblage represents debris either from the repair or re-use of leather footwear. Where identifiable, most of the shoe fragments appear to have been repaired on several occasions before being finally discarded, the exception being SF23, which is almost complete with no evidence for repairs.

7.107 These may be the fragments which the cobbler could no longer cut up for re-use. The number of sole and upper stitch margin fragments suggests that these parts were being discarded while the remainder of the sole or upper was being used for repairs, or the leather was being used for other purposes. The context suggests casual rather than industrial-scale disposal, and the assemblage is too small to provide definite evidence for its origins.

Recommendations

7.108 All fragments except a bag of scraps from context [70] have been stabilised by pre-treatment with polyethylene glycol 400 followed by freeze drying. The conserved leather should be retained for possible inclusion in any future synthesis of material from the area.

Textile analysis

Results

7.109 A very small piece of waterlogged textile came from environmental sample <34> from context [79], a fill from pit [F47]. It measures 5 x 4mm and is in a plain tabby weave with no original edges. The textile was sampled, but identification was not possible as the fibres proved to be too blackened from the burial environment.

Unconserved wood catalogue and conservation

Wood

Results

7.110 As well as wooden small finds SF24 and SF28 (above, 7.43-4), 63 other fragments of waterlogged wood were recovered from 6 contexts.

7.111 Context [70]: 2 water worn scraps <15mm square, no evidence of working.

7.112 Context [70]: 1 sub-rectangular fragment 122mm long x 21 x 15mm, both ends broken, identified as oak (*Quercus*).

7.113 Context [70]: 1 water worn sliver 46mm long x 12mm wide x *c.*7mm, identified as ash (*Fraxinus*).

7.114 Context [70]: 1 fragment of water worn oak (*Quercus*), probably worked, 45mm long, sub-rectangular in section 7 x 10mm, 1 end possibly cut, other end broken.

7.115 Context [70]: 1 wedge shaped piece of oak (*Quercus*), both ends damaged, 155mm long, wider end 37 x 24mm. Impact damage on surface.

7.116 Context [70]: 8 thin (<7mm) fragments of possible woodworking debris, up to *c.*45mm long. Ends damaged.

7.117 Context [70]: 4 flat, water-worn fragments, all ends broken, 51, 54, 92 and 115mm long, some surface impact damage. Ash (*Fraxinus*), oak (*Quercus*) and blackthorn (*Prunus spinosa*) were identified. Possibly woodworking debris.

7.118 Context [72]: 1 tapered curl of bark of indeterminate species, 90mm long x 27mm wide max.

7.119 Context [73]: 1 water-worn worked fragment 72mm long, sub-triangular section c20mm wide, both ends broken. Identified as willow/poplar (*Salix/Populus).*

7.120 Context [78] : 1 water-worn off-cut 90mm long x 31-38mm wide x 3-7mm thick, ends/edges broken/damaged. Identified as oak (*Quercus*).

7.121 Context [78] <32> : 4 fragments 20, 25, 32 & 60mm long, no bark, no evidence of working. Identified species included ash (*Fraxinus*) and willow/poplar (*Salix/Populus).*

7.122 Context [78] <32>: 9 twig fragments up to *c.*75mm long, no bark, no evidence of working.

7.123 Context [79]: 2 probably worked pieces, no bark, ends broken, sub-rectangular in section. One piece is 114 mm long x *c.*57mm wide and was identified as a fruitwood (*Prunus sp*). The other is 217mm long x *c.*27mm wide and was identified as willow/poplar (*Salix/Populus).* Both pieces have longitudinal splits and fissures, probably the result of cycles of drying out and re-wetting in the ground.

7.124 Context [79]: 1 very water-worn fragment 100mm long x 30mmwide max, identified as oak (*Quercus*). A flat topped nail 20mm diameter (shank missing) has been driven through the wood.

7.125 Context [80] <35>: 26 fragments, possibly woodworking debris. Varying sizes and thickness up to *c.*170mm long x 30mm wide max. Ends broken/damaged, no tool marks or bark. Some pieces longitudinally split and fissured, probably the result of cycles of drying out and re-wetting in the ground. All fragments sampled were identified as willow/poplar (*Salix/Populus).*

Discussion

7.126 Much of this material was water worn and very damaged. No bark survived, but the level of damage and wear sometimes made it difficult to ascertain whether the material had definitely been worked. It is possible that some of the fragments represent woodworking debris or offcuts. This material was not conserved.

Conservation

7.127 All artefacts were examined to assess their condition and stability, to confirm the materials from which they were made and to look for surface and technological detail. The iron and copper alloy objects were X-radiographed in plan and/or side view, as appropriate.

7.128 Obscuring soil and corrosion products were selectively removed from the four copper alloy objects chosen for further study, to facilitate identification. This was done using hand tools under X16 magnification.

7.129 The two bone objects (SFs25 & 27) were surface cleaned and air dried. Detached fragment were re-adhered using Paraloid B72 adhesive.

7.130 Wooden artefactual objects (SFs24 & 28) were stabilised by pre-treatment in solutions of polyethylene glycol (PEG 400 & 4000) followed by freeze drying. The leather for retention was stabilised in a solution of 20% PEG 400 followed by freeze drying.

7.131 All conserved objects were photographed before and after conservation and conservation records were prepared.

8. Paleaoenvironmental analysis

Plant macrofossil analysis

Methods

8.1 Plant macrofossil analysis was undertaken on 31 bulk samples, taken from fills of pits, postholes and ditches associated with a medieval post-mill. The fills of a large medieval pit [F47] were also analysed. The samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones,

nutshells, charcoal, small bones, pottery, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification using a Leica MZ6 stereomicroscope for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (1997). Habitat classifications follow Preston *et al.* (2002).

Summary

8.2 Charred plant remains were present in relatively low numbers comprising barley, oat, cf bread wheat and peas, which are typical medieval crops. The two glume wheat chaff fragments may represent residual material from earlier activity at the site. Permanent, standing water was present in pit [F47] during the accumulation of the lower fills. Some of the plant remains in the pit may derive from hay, dung and/or natural infilling of the feature. The charcoal remains comprise domestic hearth waste, with oak being the preferred choice of fuel, and ash, hazel, birch, pine and alder also available.

Results

8.3 The charred and waterlogged plant remains are discussed below and are listed in Tables 1.14-7. In addition to botanical remains, the samples comprised small amounts of pot, fired clay, bone (mammal, invertebrate and fish), eggshell, shell (marine and freshwater), nails, glass, flint, coal/coal shale, clinker/cinder, cracked stones and industrial residues. A few small fragments of charcoal were present in many of the fills associated with the post-mill, with larger amounts recorded in posthole fill [22] and ditch fill [44], which are discussed more fully in the following section. Waterlogged conditions within the lower fills of pit [F47] allowed the preservation of wood, insect/beetles, a small fragment of leather and textile, vegetative material and a diverse range of uncharred seeds. Modern roots, insects, and a few uncharred seeds and earthworm egg cases were noted in several of the fills associated with the post-mill, but the non-waterlogged nature of these features suggests this material is intrusive. Pre-Quaternary fossils (trilete megasporangia and crinoids) which derive from the local geology, were occasionally recorded.

8.4 Low numbers of charred plant remains were recorded in 24 of the 31 samples. Very few charred remains occurred in the fills of pit [F47]. Remains of cultivated plants included wheat, oat, barley and peas. Although wheat grain morphology is variable, many of the wheat grains were noted to have the short, stout shape characteristic of *Triticum aestivo-compactum* (bread wheat). By contrast, the two small fragments of wheat chaff recorded on the site were glume bases (from contexts [38] and [52]) from either emmer or spelt wheat. The only other cereal chaff present was an oat floret base, which was too fragmented to be determined to oat species. Charred weed seeds comprised plants of arable, heathland, grassland, ruderal, wetland and woodland/scrub habitats. The assemblages of waterlogged seeds in the lower fills of pit [F47] comprised large numbers of aquatic remains with arable and ruderal/meadow species also well-represented.

Discussion

8.5 Although the function of the post-mill is likely to have been for milling grain, the numbers of cereal grains recorded in the samples were relatively low. This may be due to a lack of suitable preservational conditions, as the features directly associated

with the post-mill were not waterlogged. As the milling process does not involve exposure to fire, large numbers of grains preserved through charring would also not be expected. The small mixed assemblages of charred plant remains probably derive from background scatters of domestic waste from nearby households. The very low numbers of cereal remains in the large nearby waterlogged pit [F47] is perhaps surprising though, if this feature was contemporary with the mill.

8.6 Oat, barley and cf. bread wheat were the main cereal crops identified on the site. These are typical arable crops of the medieval period (Greig 1991; Hall & Huntley 2007), and are consistent with the finds assemblage which indicates use of the site between the 10-14th centuries. As glume wheats were not cultivated after the Roman period in Britain, the two glume bases which derive from either emmer or spelt wheat may represent residual material from earlier activity at the site.

8.7 There is evidence from the charred plant remains for the use of peas, which commonly formed part of the human and/or animal diet at medieval sites. Other seeds from the pea family were also recorded, including vetches. These could not be identified to species, but may include hairy tare (*Vicia hirsuta*), which was once a troublesome arable weed (Garrard & Streeter 1983), or common vetch (*Vicia sativa*), which may have been deliberately grown as a fodder crop (Preston *et al* 2002).

8.8 Charred and waterlogged remains of hazel nutshells and bramble fruitstones indicate that wild fruits and nuts were also available. These may have been collected from nearby scrub woodland or opportunistic shrubs growing at the site.

8.9 The charred seeds of the arable weeds stinking chamomile and scentless mayweed probably derive from plants which grew with the cereal crops. The charred false oat-grass tuber, combined with remains of weeds of grassland, meadow and heathland habitats, such as heath-grass, ribwort plantain, knotgrass, heather and dock may provide limited evidence for the use of turves for fuel or building material. However, many of these weeds may have been growing on cultivated land or were brought to the site as a component of hay or dung. Some wet ground species, including sedges, spike-rushes and lesser spearwort were also recorded charred, which may reflect cultivation of damp, heavy soils and/or the burning of peat for fuel.

8.10 Diverse assemblages of uncharred plant remains were preserved in the lower fills [contexts 70, 78, 79, 80] of the large pit [F47] as a result of waterlogged conditions within the feature. Remains of the aquatic plants horned pondweed, crowfoots and stoneworts were numerous, indicating that standing water was present in the pit. Caddis fly larval cases, Cladocera (water flea) ephippia, freshwater molluscs (*Pisidium* sp) and aquatic beetles (9.23 & 9.26) also reflect a waterlain environment. Evidence for waterlogged conditions were absent from the upper fills [contexts 68 and 69] suggesting accumulation of these later fills took place after the pit had filled in above the water level. Waterlogged remains were also absent from contexts [71] and [72].

8.11 Other than aquatic remains, the plant macrofossil assemblages in pit [F47] were largely dominated by arable and ruderal weeds. The arable weeds comprised fool's parsley, corn marigold, petty spurge, fumitories, corn buttercup, wild radish and narrow-fruited cornsalad, with ruderals including dead-nettle, nipplewort, knotgrass, prickly sow-thistle and common chickweed. A number of weeds were recorded

which grow in a wide range of habitats, but which commonly favour grassland, meadow or waste ground including goosefoots, grasses, buttercups, cinquefoils, thistles, docks, clovers and dandelions. This suite of plant remains may derive from hay or dung, the presence of both of which in the pit is indicated by the beetle fauna (9.24 & 9.27).

8.12 It is feasible, given the indications for animals in the vicinity, that the feature may have functioned as a watering hole. Although some domestic waste, including leather, animal bone and pottery was deposited in the pit, cultivated plant remains (charred or uncharred) formed a negligible component of this refuse. The only such remains from the pit were three wheat grains and a possible pea. A proportion of the plant macrofossils in the pit may derive from natural infilling of the feature, which, as suggested by beetle analysis, may have taken place relatively rapidly.

8.13 The range of crops identified at Eaglesfield Road compares with those found from medieval urban excavations at Hartlepool. For example, bread wheat, oats, hulled barley, rye and legumes were identified in 12th-16th century occupation deposits at Headland Town Square (Archaeological Services 2008). However, this rural site lacks the evidence for imported luxury foods, such as dried grapes, which were identified in the town centre. This absence may in part be a product of the limited amounts of refuse of domestic consumption at the site.

Charcoal analysis

Methods

8.14 Following Boardman (1995), identifications were made on fragments >4mm. At least 100 fragments were identified per context, where available. The transverse, radial, and tangential sections were examined at up to x600 magnifications using a Leica DM/LM microscope. Analysis was undertaken following Marguerie & Hunot (2007) and included examination of tree ring curvature, the number of tree rings and, when fragments were large enough, the diameter of roundwood was measured. The presence of pith, bark, tyloses, insect degradation, reaction wood, work marks and alteration by fusion or radial cracks were also noted. Identifications were assisted by the descriptions of Hather (2000), Schweingruber (1990), Gale & Cutler (2000) and modern reference material held in the Environmental Laboratory at Archaeological services Durham University. The different species were weighed separately. Posthole fill [44] and ditch fill [22] contained a substantial quantity of charcoal and therefore were sub-sampled using a riffle box, with 71% and 59% (respectively) of the sample analysed.

Results

8.15 The charcoal from all of the samples comprised mineral inclusions making identification, and measurement of growth widths and ring curvature difficult in many instances. Pith, bark and complete roundwood were absent throughout the samples. Small fragments of clinker/cinder and coal were also noted in [22] and [44]. Material suitable for radiocarbon dating is present for all of the samples. The results of the charcoal analysis are presented in Table 1.18.

8.16 Four tree/shrub species were identified from ditch fill [44], with oak comprising 84% of analysed charcoal, ash 15%, and birch and cf. pine < 1% each. Many of the oak fragments were large, narrow and radially fractured (splitting down multiseriate rays), comprising moderate growth ring curvature and in some instances contained

tyloses. Radial cracks were present in many of these fragments. Up to 11 growth rings were recorded in some of the oak fragments, although other fragments had a deformed/twisted appearance, possibly reflecting reaction wood, knots or rapid combustion. The fragments of ash charcoal were relatively smaller than oak, comprising weak or moderate growth ring curvature and a high density of large earlywood vessels. The birch and cf. pine were too small and too few in number for meaningful interpretation.

8.17 Charcoal from posthole [22] was also predominantly oak (90%), with ash (8%), hazel (1%) and indeterminate (1%) also recorded. Many of the oak fragments were small, narrow and radially fractured, comprising weak or moderate growth ring curvature and in some instances up to 15 narrow growth rings. Radial cracks occurred in many of these fragments and several displayed low levels of vitrification. Fragments of ash and hazel also comprised narrow growth rings (as many as 15 rings in some cases), with strong growth ring curvature occasionally noted.

8.18 Pit fill [8] consisted entirely of alder charcoal, with the majority of the fragments comprising strong growth ring curvature (up to 14 rings) and good evenly-spaced ring growth. Insect degradation commonly occurred in several of the fragments.

Discussion

8.19 Both contexts [22] and [44] predominantly comprised oak charcoal and appear to be the remains of stemwood or large branchwood. The radial cracks noted in many of the oak fragments are generally associated with smaller pieces of wood such as branchwood and twigs (Marguerie & Hunot 2007), however Schweingruber (1990) states rapid combustion at high temperatures can cause tissue deformation, fissures and vitrification. The alteration of the anatomical structure may also reveal the state of the wood before combustion, such as burning damp or green wood (Marguerie & Hunot 2007). Although a predominance of oak stemwood or large branchwood may indicate the presence of structural material for both posthole fill [22] and ditch fill [44], the narrow growth rings present in many of the oak, ash and hazel fragments, particularly from [22], may suggest these remains were too weak for structural purposes and therefore reflects some form of hearth waste. This may explain the evidence for rapid combustion at high temperatures. The presence of clinker/cinder, coal and charred cereal/nutshell remains also indicates these deposits probably comprise domestic hearth waste. Oak logs would be a favourable form of fuel because it allows for high temperatures (500°C +). The ash, birch, hazel and pine remains may represent kindling material or 'starter' wood for the fire.

8.20 The charcoal from context [8] appears to be entirely comprised of small stemwood of alder. The anatomical structure of these remains indicate this material would have comprised strength for a pole or shaft, although the common occurrence of insect degradation (woodworm) and the occurrence of charred cereal remains suggests this deposit also comprises domestic waste material.

The insect analysis

Introduction and methods

8.21 Two small (*c.*2 litre) samples of sieved, waterlogged material from pit feature F47, Hartlepool Eaglesfield Road, were investigated for insect remains. These were extracted using a standard paraffin flotation technique as described by Kenward *et al.* (1980). Briefly, the samples were disaggregated, washed over a 300 µ sieve and

the residues mixed well with paraffin. The addition of cold water was followed by decanting and washing with detergent to remove excess paraffin. The resultant 'flots' were examined for insect remains. These were stored in absolute ethanol, and identified with reference to standard entomological literature and comparative material. Taxonomy follows that adopted by the computer package BugsCEP (Buckland and Buckland, 2006) which is based upon Lucht (1987), revised by Böhme (2005), and Gustafsson (2005). BugsCEP also provided invaluable assistance in providing ecological information. For the purpose of interpretation, insects were assigned to one of the following ecological groupings modified from Robinson (1983): Arable/Disturbed ground taxa (**AD**), waterside or marsh taxa (**RI**) mould beetles (Latridiidae and some Cryptophagidae) (**LATH**), meadow taxa (**M**), grassland taxa (**GR**), pasture or dung indicators (including indicators of nitrophile weeds) (**PD**)**,** refuse taxa (**REF**), silvicolous taxa (those which prefer but are not tied to woodland environments) (**SI**), obligate woodland taxa (**T**), synanthropic taxa (i.e. those which are generally related to human activity) (**SYN**), aquatic taxa of no particular preference (**AQ**), taxa of running water of indeterminate velocity (**WR**), taxa of fast flowing waters (**WF**) and taxa of slow flowing waters (**WS**). Taxa which could not clearly be assigned an ecological grouping were deemed 'unclassified' and not counted in the final sum for percentage calculations. The ecological make-up of the assemblage by category is illustrated in Fig. 9, while a full species list is provided in Table 1.19.

8.22 Given the similarities between the two contexts they will be dealt with together as opposed to individually. In both cases moderately diverse faunas were recovered, with 59 taxa from Context 70 and 60 taxa from Context 78.

8.23 In both contexts, refuse taxa were dominant. These were largely represented by members of the Staphylinidae (rove beetles) and Hydrophilidae (scavenging water beetles), including many exceptionally eurytopic taxa such as *Megasternum obscurum*, *Anotylus rugosus* and *A. tetracarinatus* (described by Hammond 1976 as probably the most common beetle in Europe). Other slightly more specific refuse taxa include the catopid *Nargus velox* (present in both contexts), which is suggestive of leaf litter (Koch 1989a) or potentially of carrion (Atty 1983), particularly in woodland locations and the staphylinid *Platystethus cornutus* (Context 70 only), most commonly found in muddy waterside locations, often with some component of rotting vegetation (Koch 1989a).

8.24 The refuse component of the fauna is complemented by a moderate dung fauna (slightly better represented in Context 70), comprising three species of *Aphodius* dung beetle and the staphylinid *Anotylus sculpturatus*. *Aphodius fimetarius* (Context 78), while fairly eurytopic, is most commonly encountered in cow dung or decomposing organic matter (Landin 1961). Both *A. fimetarius* and *Aphodius contaminatus* have been recorded from human faeces as well as from that of large herbivores (Koch 1989b).

8.25 Meadow and grassland taxa are present in both contexts, in particular weevils of the genus Sitona which were numerous in both contexts. *S. sulcifrons* is primarily found on clovers (*Trifolium* spp.) and vetches (*Vicia* spp.) (Duff 1993), while *S. waterhousei* is most frequently associated with Birdsfoot Trefoil (*Lotus corniculatus*) (Bullock 1993). Also present in both contexts is *S. regensteinensis*, which is usually associated with broom or gorse (Atty 1983). Closely related to the *Sitona* spp. are the broad-

nosed weevils *Tanymecus palliatus* (present in Context 70), which, while consuming a wide range of herbaceous plant taxa, exhibits a preference for members of the Asteraceae (Morris 1997) and *Hypera zoilus*, which is polyphagous on members of the Fabaceae (Bullock 1993). Grassland elaterids (click beetles) include *Adrastus pallens* (usually typical of woodland margins Koch 1989b) and *Agriotes sputator* which is characteristic of open fields, including arable cultivation (Jones and Jones 1974).

8.26 Aquatic taxa are well represented in both contexts, and are almost exclusively taxa of slow-moving or stagnant waters. These include some extremely common taxa, such as the dytiscid Agabus bipustulatus, the hydrophilids *Helophorus brevipalpis* and *H. grandis*. The haliplid *Peltodytes caesus* was present in one context (78), which is confined to slow-moving drains and ponds with permanent water, usually with a soft, muddy bottom (Foster 2000). A single individual of the elmid *Oulimnius tuberculatus* was present in Context 78. Members of the Elmidae are generally associated with swiftly flowing water (Atty 1983) although *O. tuberculatus* is more catholic than some members of the family and can also occasionally be found in drainage ditches (Duff 1993).

8.27 Taxa characteristic of open fields, especially arable agriculture, are also present in both contexts. In particular the carabid *Anchomenus dorsalis*, is typical of dry, open habitats, such as grasslands, gardens, and arable fields, especially cereal crops (Luff 1998) while the terrestrial hydrophilid *Helophorus nubilus* is known as the 'Wheat Shoot Beetle' , although it rarely causes significant damage to modern crops (Jones and Jones 1974). A number of other taxa present (e.g. .the carabids *Notiophilus quadripunctatus*; *Pseudoophonus rufipes* and *Harpalus affinis*) are characteristic of dry, sandy localities, again such as might indicate open arable cultivation.

8.28 Four woodland taxa were recorded, along with a single synanthropic taxon, the ptinid *Ptinus fur*. Two of the woodland taxa recorded (*Strophosoma melanogrammum* and *Phyllobius argentatus* specialise in the vegetation of deciduous tree species), while a third, the cerambycid *Alosterna tabicicolor* develops in thick branches and in bark of a range of deciduous trees (Koch 1992). The fourth woodland specialist is the woodworm, *Anobium punctatum*, a well-known pest of building timbers and worked wood. These are complemented by a large number of silvicolous carabids, in particular *Loricera pilicornis* and *Nebria brevicollis*, both of which are also recorded from grassland locales (Eyre and Luff 1990; Lindroth 1974) (arguably *L. pilicornis* is as much a grassland taxon as it is characteristic of woodland).

Discussion

8.29 Both of these assemblages are dominated by elements of Kenward and Hall's (1997) 'stable manure' indicator group, typical of the dung of stalled animals. This comprises a group of decomposer taxa (i.e. the 'refuse' component'), dung taxa, some structural indicators/synanthropes (in this case the single ptinid, the woodworm) and meadow taxa (derived from hay or silage). In this case there is an added element of arable cultivation, most likely wheat. This may have been used as animal feed.

8.30 Given the contents of the feature, including scraps of leather and animal bone, the insect fauna is remarkably 'clean', lacking any notable carrion component or even

large numbers of what might be considered typical decomposers (principally staphylinids of the Oxytellinae or Omaliinae as well as both Latridiidae and Cryptophagidae which, although present were very sparse). This suggests a possible rapid accumulation of material as decomposing material which has accumulated over time might be expected to include a larger proportion of such taxa. That the pit was open to the elements for some time seems probable, given the very large quantities of carabids present; however, it is feasible that these might arise from a single flood event. The pit also clearly held open water for a time although again, the presence of elmids (albeit a single individual) and Limnebius truncatellus does suggest the possible proximity of running water.

Conclusion

8.31 The feature apparently represents a rapid accumulation of relatively clean organic detritus, possibly including an element of flood trash and with clear affinities for the 'stable manure' indicator group of Kenward and Hall (1997). There are indications of local arable agriculture with two taxa suggesting cereal cultivation. Obvious indications of local human presence are sparse: this is clearly a 'rural' assemblage as opposed to one with any urban characteristics. Some minor elements of Kenward and Hall's (1995) 'house fauna' do exist, but these are subsumed within the stable manure assemblage.

9. Discussion

9.1 Our ability to interpret the evidence presented in this report is limited, as is common in archaeological investigation, by the spatial extent of the area excavated. The horizon where the archaeological remains were identified was not exposed and recorded beyond the area of excavation and monitoring indicated in this report. Whilst the extent of archaeological recording was focused in relation to the results of the evaluation works, it is possible that further remains exist across the area that was developed, as well as beyond it; anomalies which may reflect archaeological features are visible on the geophysical plot beyond the site boundary, including the area adjacent to the main focus of excavation. The extent of the activity may however have reflected and been limited by the site's topographical position on a significant ridge, with the ground sloping way to either side. Wider investigations at the time of the works may have contributed to the site's interpretation; further works may be possible in the future on undeveloped land adjacent to the site.

9.2 No archaeological features were identified as pre-dating the medieval period during the course of the works. However, the presence of a single sherd of later prehistoric /Romano-British pottery, and a flint assemblage defined as Mesolithic – Bronze Age, may be taken as being indicative of exploitation of the vicinity in these periods. The position of the site on a ridge may have been a factor in this exploitation. Similarly, some chronological depth to the site during the medieval period is indicated by a residual sherd of probable 10th-12th century pottery, and the possibility that a large medieval pit may be slightly earlier than the other features on the site, as is discussed by Cumberpatch in this report in relation to the pottery evidence. The possible different date for this pit may also be evidenced by its distinct finds assemblage. The dating evidence for the medieval period was mainly recovered from secure stratified contexts, with post-medieval and modern material recovered from topsoil and subsoil. The pottery indicates that the features date to the 13th-14th centuries, and the more broadly dated remainder of the artefactual and

ecofactual assemblage is compatible with this date. The interpretation of the site as a post-mill would indicate a date towards the end of this range, with these coming into use from the later part of the 14th century (above, 7.57-60). Chronological depth is also indicated by the reestablishment of a boundary feature, and some limited inter-cutting of features, but there is insufficient dating and stratigraphic evidence to support the phasing of the archaeological features within the medieval period.

9.3 A cross-shaped foundation situated centrally within a circular segmented ditch is interpreted as a possible medieval post-mill. This is compatible with its situation on a ridge and its rural location away from Hartlepool, and the assemblage of millstone fragments that were recovered. The large concentration of nails within the fill of the foundation may relate to its construction. The cross-shaped feature would relate to the sunken post-mill frame, the cross-base. A similar cross-base was excavated at Mucking, albeit larger in size (Clark 1993, 22). The cross-base cuts an elongated pit feature on its south-eastern edge. This is morphologically similar to the arms of the cross and could reflect an earlier attempt at construction in a slightly different position. However, a couple of pits that are similar in plan were also recorded away from the cross.

9.4 Reynolds and Stearne state that the cross-base was often overlain by spoil forming a mound, to secure it, and suggest that this spoil may derive from the segmented ditches and pits that encompassed it (Reynolds 1970, 72; Stearne 1985, 170). This may be reflected here. The example at Mucking did not have an external segmented ditch but was sited close to a linear boundary of medieval date. It is possible that once the mill was manipulated to face the wind its position was secured by tethering it to posts, and examples of these may be indicated by the postholes excavated here.

9.5 The possible post-mill was situated on the edge of Brierton Township, which borders Owton and Stranton Townships in Hartlepool. There are no known historical records of a mill at Brierton, although this does not mean one did not exist. Mills were largely controlled by the lord of the manor but independent mills are known to have existed, albeit sparsely, after 1300 (Holt 1988, 54). The location for a windmill in Owton Manor has been identified from aerial photographs to the south-east, and the location for Stranton windmill is also accounted for (Rowe, P, *pers. comm*.). An unexcavated mill site at Thornaby is visible on aerial photographs held by Tees Archaeology. The mill site at Thornaby measures approximately 18m in diameter, which is comparable to our example here.

9.6 Whilst the palaeoenvironmental evidence is not indicative of a windmill, this may be explained in terms of the preservational conditions on the site (above, 8.5). Other interpretations of the features are possible. The northern arm of the cross-feature is significantly smaller than the others, and no conclusive evidence for a central post was identified. A gibbet may also be possible, an interpretation also compatible with its position on a ridge on the edge of a township.

9.7 The remaining archaeological features on the site indicate a range of activity taking place beyond that required of the mill, even though no documentary evidence has been identified for medieval settlement at the site. Ridge and furrow was identified, although this is widespread in rural locations such as this in the region in the

medieval and post-medieval periods. A linear boundary ditch runs adjacent to the mill on its east side, reflecting a demarcation between the mill and the surrounding landscape or activity. Finds from the ditch fill indicate the ditch was re-cut sometime after the 14th century on the same alignment, possibly suggesting a continuation of land ownership and use. The majority of evidence for further activity relates to a large pit and its finds assemblage.

9.8 This large pit was partially excavated, with some of the feature lying beyond the area of investigation. The palaeoenvironmental evidence from the pit indicates that it was probably open and contained standing water for some time, and a watering-hole has been suggested as a possible function. The material derived from digging the pit may also have been used in the creation of the mill mound. The artefactual and ecofactual assemblage within the pit is diverse, suggesting that it does not relate to its original function, but that the pit was used for the deposition of rubbish. The macrofossil and charcoal evidence is indicative of the deposition of domestic waste, including waste from hearths, as may be expected of a medieval rural site not far from the urban settlement at Hartlepool, the assemblage including barley, oat, cf bread wheat and peas. The pottery form distribution is mostly indicative of dinning activity, whereas the animal bone assemblage is dominated by butchered horses and unrelated to human consumption. Stalled animals and hay or silage from are also indicated by the beetle analysis. Both meadows and arable cultivation were being utilised in the vicinity. Specialised craft activity, including animal bone working and leather working, may also be inferred.

9.9 Overall, the evidence indicates a small rural community centered around a post-mill, where a wide variety of activity was taking place at the height of the medieval period. Buildings other than the mill would have been located nearby, and it is probable that the settlement at least in part serviced the nearby urban centre in Hartlepool.

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Appendix 1: Data tables

Table 1.1: Context data

The • symbols in the columns at the right indicate the presence of finds of the following types: P pottery, B bone, M metals, F flint, L leather, G glass, W wood, O other materials.

No	Area	Description	P	B	M	F	L	G	W	O
1		Topsoil	•	•	•	•		•		•
2		Redeposited subsoil								
3		Made-ground layer								
4		Sand and gravel layer								
5		Subsoil	•		•					
6		Natural glacial sand and clay								•
7		Fill of pit F12	•			•				•
8		Fill of pit F13	•							•
9		Fill of ditch F15	•							
10		Fill of ditch F15	•							
11		Primary fill of pit F12	•							
F12		Cut for oval pit								
F13		Cut for oval pit								
14		Primary fill of pit F13								
F15		Cut for ditch								
16		Fill of linear ditch F17								
F17		Cut for linear ditch								
18		Fill of shallow linear ditch	•					•		
F19		Cut for shallow linear ditch								
20		Fill of posthole F21								
F21		Cut for posthole								
22		Fill of circular posthole F23								•
F23		Cut for circular posthole								
24		Fill of ditch F25	•							•
F25		Cut for ditch								
26		Fill of posthole F27								
F27		Cut for posthole								
28		Fill of posthole F29								
F29		Cut for posthole								
30		Fill of posthole F31								
F31		Cut for posthole								
32		Fill of posthole F33								
F33		Cut for posthole								
34		Fill of short linear ditch F35	•							•
F35		Cut for short linear ditch								
36		Fill of east cross-base ditch F37	•		•	•				
F37		Cut for east cross-base ditch								
38		Fill of linear ditch F39								
F39		Cut for linear ditch								
40		Fill of curvilinear ditch F42	•							•
41		Fill of ditch F43	•							
F42		Cut for ditch [=F43=F45]								
F43		Cut for curvilinear ditch [=F42=F45]								
44		Fill of curvilinear ditch F45	•							•
F45		Cut for curvilinear ditch [=F43=F42]								
46		Fill of pit F47 [=49=68]	•							•
F47		Cut for pit								
48		Fill of pit F47	•							
49		Fill of pit F47 [=46=68]	•							
F50		Cut for short sub-rectangular pit								
51		Fill of short sub-rectangular pit F50	•			•				
52		Fill of north cross-base ditch F56	•	•	•	•		•		•
53		Fill of west cross-base ditch F57			•					•
54		Fill of south cross-base F58	•		•	•				•

No	Area	Description	P	B	M	F	L	G	W	O
F55		Group number for cross-base feature								
F56		Cut for north cross-base								
F57		Cut for west cross-base								
F58		Cut for south cross-base								
59		Fill of ditch F60 [= 63]	•		•					
F60		Cut for ditch [=F64]								
61		Fill of shallow pit F62	•			•				
F62		Cut for shallow pit								
63		Fill of ditch F64	•			•	•			
F64		Cut for ditch [=F60]								
F65		Cut for hedge boundary								
66		Fill of hedge boundary F65	•							
67		Fill of pit recut F81	•							
68		Fill of pit recut F81 [=46=49]	•							
69		Fill of pit recut F81 [=48]	•	•						•
70		Fill of pit recut F81	•	•		•	•		•	•
71		Fill of pit F47	•			•				•
72		Fill of pit F47	•	•	•	•	•		•	•
73		Fill of pit recut F81	•	•			•			
74		Fill of posthole F75								•
F75		Cut for posthole								
76		Fill of posthole F77				•				
F77		Cut for posthole								
78		Fill of pit F47	•	•			•		•	•
79		Fill of pit F47	•	•	•	•	•	•	•	•
80		Primary fill of ditch F47	•		•				•	
F81		Recut of ditch F47								
u/s		Unstratified	•	•		•				•

Table 1.2: Pottery from topsoil and unstratified contexts

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes
Topsoil	1	Blue Banded ware	1	11	1	Rim	Bowl	Blue bands & lines ext	C19th	
Topsoil	1	Bone China	4	11	4	Rim & BS	Mug/jug	U/Dec	C20th	Very fine, bright white bone china
Topsoil	1	Sponged ware	1	8	1	Rim	Plate	Pale blue sponge-printed design on rim	*c.*1840+	
Topsoil	1	Stoneware	1	54	1	Rim	Jar	Iron-wash band on rim	LC19th – EC20th	
Topsoil	1	Stoneware	1	326	1	Complete	Bottle	U/Dec	MC19th – EC20th	Pale grey stoneware
Topsoil	1	Stoneware	1	26	1	BS	Hollow ware	Rouletted band ext; brown ext, green int	C19th	
Topsoil	1	Stoneware	1	8	1	BS	Hollow ware	Brown ext, white int	C19th	
Topsoil	1	Stoneware	2	55	2	Rim & base	Jam jar	Narrow fluting ext, grey body	LC19th – EC20th	
Topsoil	1	Stoneware	1	26	1	Rim	Jam jar	Narrow fluting ext; pale brown iron wash around rim	LC19th – EC20th	
Topsoil	1	TP Whiteware	1	21	1	BS	Hollow ware	U/ID TP design ext; flaked	M – LC19th	
Topsoil	1	TP Whiteware	2	3	1	BS	Hollow ware	U/ID Red printed design ext	M – LC19th	
Topsoil	1	TVW A	1	4	1	BS	Hollow ware	U/Dec	E – MC13th	
Topsoil	1	TVW B	2	9	2	BS	Hollow ware	U/Dec	MC13th – M/LC14th	
Topsoil	1	Whiteware	1	56	1	Rim	Bowl	U/Dec	LC19th – EC20th	Clubbed rim
Topsoil	1	Whiteware	1	20	1	Ring foot base	Bowl	U/Dec	M – LC19th	Slightly discoloured
Topsoil	1	Whiteware	1	34	1	Recessed base	?Jug	Thin blue line ext	MC19th – EC20th	
Topsoil	1	Whiteware	1	7	1	BS	Jar	Deep fluting ext	LC19th – EC20th	
Topsoil	1	YGCW	2	53	2	BS	Pancheon	White slip on a red body under clear glaze	C19th – EC20th	
U/S	U/S	ERW	4	54	4	BS	Hollow ware	Patchy green glaze ext	MC13th – M/LC14th	

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes
U/S	U/S	TVW B	23	119	23	Base & BS	Hollow ware	One sherd w/ clear glaze ext	MC13th – M/LC14th	
U/S	U/S	TVW B	1	3	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	
U/S	U/S	TVW B	1	15	1	BS	Hollow ware	Clear glaze ext w/ applied pellet & green glaze streak	MC13th – M/LC14th	
U/S	U/S	TVW B	3	17	3	BS	Hollow ware	Patchy dark glaze ext	MC13th – M/LC14th	
		Total	**57**	**940**	**56**					

Table 1.3: Ceramic building material

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes
Topsoil	1	CBM	1	201	1	Fragment	Drainpipe	N/A	Recent	Unglazed buff drainpipe
Topsoil	1	CBM	3	40	3	Fragments	U/ID	N/A	Recent	
		Total	**4**	**241**	**4**					

Table 1.4: Pottery from contexts other than Pit 47

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Ditch F15	9	TVW B	1	2	1	BS	Hollow ware	White slip ext under clear glaze ext	MC13th – M/LC14th		
Ditch F15	10	Late Redware	1	12	1	BS	U/ID	Clear glaze ?int	LC18th – C19th		
Ditch F15	10	TVW B	1	168	1	Rim & handle	Jug	Patchy green to clear glaze on ridged rod handle	MC13th – M/LC14th	Handle springs from plain rounded rim	
Ditch F15	10	TVW B	1	21	1	Base	Hollow ware	U/Dec w/ pinched 'feet'	MC13th – M/LC14th	Sooted on underside; sandier texture than some examples	
Ditch F15	10	TVW B	1	10	1	BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th		

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Ditch F25	24	TVW B	2	356	1	Rim & handle	Jug	Patchy green glaze on rod handle & ext	MC13th – M/LC14th	Rim as Didsbury 2010; Fig. 8.13;31, 33	
Ditch F25	24	TVW B	77	484	77	BS	Jug	Patchy green glaze ext; patchy thin buff slip ext	MC13th – M/LC14th	Very thin walled vessel; jug	
Ditch F25	24	TVW B	2	17	2	Rim	Jug	Overfired & blistered glaze ext	MC13th – M/LC14th	Green glaze over thin buff slip ext; overfired	
Ditch F25	24	TVW B	16	4	16	BS	Hollow ware	U/Dec	MC13th – M/LC14th		12
Ditch F25	24	TVW B	1	4	1	BS	Hollow ware	Overfired & blistered glaze ext	MC13th – M/LC14th	Overfired	12
Ditch F35	34	TVW B	1	1	1	BS/Flake	Hollow ware	U/Dec	MC13th – M/LC14th	Small flake	
Ditch F42=F43=F45	41	Local Shell and Quartz tempered ware	1	6	1	Rim	Jar	U/Dec	LC10th – C12th	Vesicular fabric w/ angular rock frags; everted rim w/ beaded lip	
Ditch F42=F43=F45	41	TVW B	1	6	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Ditch F43	40	TVW B	1	64	1	Rim & rod handle	Jug	U/Dec	MC13th – M/LC14th	Rim as Didsbury 2010; Fig. 8.13;31, 33	
Ditch F43	40	TVW B	3	93	3	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Black deposit ext	
Ditch F43	40	TVW B	3	73	2	Base	Hollow ware	U/Dec	MC13th – M/LC14th	Abraded edges	
Ditch F43	40	TVW B	2	22	2	Base	Hollow ware	U/Dec	MC13th – M/LC14th		
Ditch F43	40	TVW B	8	43	8	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Ditch F43	40	TVW B	1	13	1	Rim	Jug	Thin white slip ext; patchy clear glaze ext	MC13th – M/LC14th	Rim as Didsbury 2010; Fig. 8.13;31, 33	

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Ditch F43	40	TVW B	1	13	1	Base	Hollow ware	U/Dec	MC13th – M/LC14th	Thin white streaks in orange body	
Ditch F43	40	TVW B	1	3	1	BS	Hollow ware	Applied pellets w/ green glaze; clear glaze on body	MC13th – M/LC14th		
Ditch F43	40	TVW B	2	7	2	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Thin black deposit ext	
Ditch F43	40	TVW B	1	1	1	BS	Hollow ware	Thin buff slip under clear glaze ext	MC13th – M/LC14th		
Ditch F43	40	TVW B	1	8	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Ditch F43	40	TVW B	1	8	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Thick fragment	
Ditch F45	44	TVW B	2	12	1	Rod handle	Hollow ware	U/Dec	MC13th – M/LC14th	Heavily abraded; pale pink w/ white streaks	
Ditch F45	44	TVW B	2	5	1	BS	Hollow ware	U/Dec	M – LC19th	Very fine, thin pale orange	
Ditch F45	44	TVW B	29	82	29	BS	?Jug	Clear glaze w/ applied black pellets ext	MC13th – M/LC14th	Probably one vessel	
Ditch F64	63	TVW B	3	9	3	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Ditch F64	63	TVW B type	10	45	10	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Dull buff ext, dull orange int	
Evaluation	702	TVW B	2	56	2	Base	Hollow ware	Sparse clear glaze ext; pinched feet ext	MC13th – M/LC14th		
Evaluation	702	TVW B	34	127	34	Base & BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th		
Evaluation	702	TVW B type	1	28	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Dark orange body w/ moderate, well-sorted quartz up to 4mm, occasionally larger	
Evaluation	802	Langewehe stoneware	1	28	1	BS	Hollow ware	U/Dec	LC13th – C14th		

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Evaluation	802	Local Sandy ware	1	29	1	Strap handle	Jug	U/Dec	C13th -C14th	Hard, dense orange to pale grey fabric w/ fine red grit	
Evaluation	802	TVW type	1	2	1	BS	Hollow ware	U/Dec	C13th	Buff sandy fabric w/ quartz sand & rare red grit	
Fill of ditch F60=F64	59	TVW A	1	4	1	Base	Hollow ware	U/Dec	E – MC13th		
Fill of ditch F60=F64	59	TVW B	1	2	1	BS	Hollow ware	Thin white slip ext	MC13th – M/LC14th		
Fill of ditch F60=F64	59	TVW B	2	4	2	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Fill of ditch F60=F64	59	TVW B	1	1	1	BS	Hollow ware	Patchy mottled green glaze ext	MC13th – M/LC14th		
Fill of ditch F60=F64	59	TVW B type	1	20	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Hard, bright orange fabric w/ moderate sub-angular quartz sand	
Hedge F65	66	TVW A	1	1	1	BS	Hollow ware	Thin pale green glaze ext	E – MC13th	Abraded edges	
Linear ditch	18	?Whiteware	1	1	1	BS	Hollow ware	U/Dec	?C19th	Very small flake/chip	7
Linear ditch	18	TVW B	1	1	1	BS	Hollow ware	White slip ext under light brown glaze ext	MC13th – M/LC14th		7
Linear ditch	18	TVW B	1	1	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th		7
Pit F12	7	TVW A	1	15	1	BS	Hollow ware	Thin clear glaze ext	E – MC13th		
Pit F12	7	TVW B	16	40	16	BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th		
Pit F12	7	TVW B	26	112	26	BS	Hollow ware	Sparse, thin glaze, possibly splashed ext	MC13th – M/LC14th		
Pit F12	7	TVW B	4	71	4	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th		

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Pit F12	7	TVW B	1	6	1	Rim	Jug	U/Dec	MC13th – M/LC14th	Flat topped rim w/ pulled spout	
Pit F12	7	TVW B	1	18	1	Rim	Jug	U/Dec	MC13th – M/LC14th	Rim as Didsbury 2010; Fig. 8.13;31, 33	
Pit F13	8	TVW A	1	6	1	Base	Hollow ware	U/Dec	E – MC13th	Sooted on underside	
Pit F13	8	TVW B	6	36	6	BS	Hollow ware	Dark shiny green glaze ext; applied ellets ext	MC13th – M/LC14th		
Pit F13	8	TVW B	3	39	3	Base & BS	Hollow ware	U/Dec	MC13th – M/LC14th		
Pit F13	8	TVW B	3	5	3	BS	Hollow ware	U/Dec	MC13th – M/LC14th	One overfired/burnt	3
Pit F13	8	TVW B	1	11	1	BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th		
Pit F50	51	TVW A	1	2	1	BS	Hollow ware	U/Dec	E – MC13th		21
Pit F50	51	TVW B	2	31	2	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th		
Pit F50	51	TVW B	5	13	5	BS	Hollow ware	Patchy green glaze ext	MC13th – M/LC14th		
Pit F50	51	TVW B	5	8	5	BS	Hollow ware	Patchy green glaze ext on thin buff slip	MC13th – M/LC14th		
Pit F50	51	TVW B	1	8	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th		21
Pit F50	51	TVW B	4	2	4	BS	Hollow ware	U/Dec	MC13th – M/LC14th		21
Pit F62	61	Local Reduced Sandy ware	1	1	1	Flake	U/ID	Green glaze on one side	C13th – C14th	Very small abraded flake or chip	23
Pit F62	61	TVW A	1	1	1	BS	Hollow ware	Dark green glaze ext	E – MC13th		23
Pit F62	61	TVW B	1	18	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th		

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
Pit F62	61	TVW B	4	3	4	BS	Hollow ware	U/Dec	MC13th – M/LC14th	One sooted ext	23
Subsoil	5	TVW B	1	62	1	Rod handle	?Jug	Patchy overfired glaze ext	MC13th – M/LC14th	Hard, slightly overfired fabric	
X-base E Ditch F37	36	TVW B	1	4	1	BS	Hollow ware	Raised ridge ext; patchy mottle green glaze on white slip ext	MC13th – M/LC14th		
X-base E Ditch F37	36	TVW B	1	1	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th		17
X-base E Ditch F37	36	TVW B	1	2	1	BS	Hollow ware	Patchy clear glaze ext	MC13th – M/LC14th	Abraded	
X-base E Ditch F37	36	TVW B	1	1	1	BS	Hollow ware	White slip ext under clear glaze ext	MC13th – M/LC14th		
X-base E Ditch F37	36	TVW B type	1	4	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Probably overfired	
X-base N. Ditch F56	52	TVW A type	1	2	1	BS	Hollow ware	Thin clear glaze ext	E – MC13th		
X-base N. Ditch F56	52	TVW B	1	25	1	Handle	Pipkin	Deep grooves on top	MC13th – M/LC14th		
X-base N. Ditch F56	52	TVW B	1	55	1	Rod handle	Jug	Patchy dark overfired glaze ext; grooves on top	MC13th – M/LC14th		
X-base N. Ditch F56	52	TVW B	1	27	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Flaked internally	
X-base N. Ditch F56	52	TVW B	1	9	1	BS	?Jug	Light slip ext	MC13th – M/LC14th		
X-base N. Ditch F56	52	TVW B	1	1	1	BS	Hollow ware	Applied pellets ext w/ green glaze; clear glaze on body; white slip ext	MC13th – M/LC14th		
X-base N. Ditch F56	52	TVW B	8	13	8	BS	Hollow ware	Thin green glaze ext	MC13th – M/LC14th		
X-base N. Ditch F56	52	TVW B type	2	6	2	BS	Hollow ware	Very thin green glaze on one sherd	MC13th – M/LC14th		

Feature	Context	Type	Number	Weight	ENV	Part	Form	Decoration	Date range	Notes	Sample
X-base S Ditch F58	54	Local Oxidised Sandy ware	1	1	1	BS	Hollow ware	Sparse thin glaze ext	C13th – C14th	Hard, fine sandy fabric	22
X-base S Ditch F58	54	Local Oxidised Sandy ware	1	1	1	BS	U/ID	U/Dec	Medieval	Small dark red fragment, very heavily abraded	
X-base S Ditch F58	54	Local Reduced Sandy ware	2	6	2	BS	Hollow ware	Finely mottled green glaze ext	LC13th – C14th		
X-base S Ditch F58	54	TVW B	4	2	4	BS	Hollow ware	U/Dec	MC13th – M/LC14th		
X-base S Ditch F58	54	TVW B	1	1	1	BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th		
X-base S Ditch F58	54	TVW B	1	2	1	BS	Hollow ware	Thin buff slip under clear glaze w/ green mottling	MC13th – M/LC14th		
		Total	**347**	**2568**	**343**						

Table 1.5: Pottery from Pit 47

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	46	TVW B	1	3	1	BS	Hollow ware	Incised line ext	MC13th – M/LC14th			
Pit 47	48	ERW Type	5	31	1	BS	Hollow ware	Green glaze ext	C13th – C14th	Fine pale to dark grey sandy fabric w/ abundant fine quartz up to 0.2mm		
Pit 47	48	TVW B	2	4	2	BS	Hollow ware	Green glaze ext	MC13th – M/LC14th			
Pit 47	48	TVW B	1	1	1	BS/Flake	Hollow ware	N/A	MC13th – M/LC14th	Small abraded flake		19
Pit 47	49	ERW Type	1	12	1	BS	Hollow ware	Thin patchy green glaze ext (?splashed)	C13th – C14th	Fine pale grey sandy fabric w/ fine quartz sand		
Pit 47	49	TVW B	8	27	8	BS	Hollow ware	Patchy green glaze ext	MC13th – M/LC14th			
Pit 47	49	TVW B	1	50	1	Rod handle	Jug	Rare spots of dark glaze	MC13th – M/LC14th			
Pit 47	49	TVW B	1	24	1	Rod handle	Jug	Patchy green glaze ext	MC13th – M/LC14th			
Pit 47	67	ERW Type	7	22	7	BS	Hollow ware	Sparse dark glaze	C13th – C14th	Fine sandy reduced sandy fabric		
Pit 47	67	ERW Type	1	7	1	Base	Hollow ware	Knife trimmed ext	C13th – C14th	Fine sandy reduced fabric		
Pit 47	67	TVW A	2	10	2	BS	Hollow ware	Thin pale yellow-green glaze ext	E – MC13th	Fine white fabric w/ rare large sandstone fragments		
Pit 47	67	TVW B	4	46	1	Rim	Face jug	Patchy green glaze & white slip ext & face mask	MC13th – M/LC14th	Fine buff to pale orange body	7.A	
Pit 47	67	TVW B	3	19	1	BS	Hollow ware	Sparse patchy green glaze ext	MC13th – M/LC14th	Bright orange fabric w/ thin grey core		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	67	TVW B	1	19	1	Rod handle	Hollow ware	Patchy dark green glaze ext	MC13th – M/LC14th			
Pit 47	67	TVW B	2	7	1	BS	Hollow ware	Dark green glaze on white slip over combed wavy lines	MC13th – M/LC14th			
Pit 47	67	TVW B	11	22	11	BS	Hollow ware	Mottled green glaze on some sherds	MC13th – M/LC14th	Some variation in the fabrics		
Pit 47	67	TVW B	4	3	4	BS	Hollow ware	Thin buff slip ext under clear/green glaze	MC13th – M/LC14th			
Pit 47	67	TVW B	1	4	1	BS	Hollow ware	Thin white slip ext	MC13th – M/LC14th			
Pit 47	67	TVW B type	1	6	1	BS	Hollow ware	Thin green glaze ext	MC13th – M/LC14th	Dark orange to grey sandy fabric		
Pit 47	67	TVW type	1	7	1	Base	Hollow ware	U/Dec	C13th – C14th	Very hard, fine sandy grey fabric w/ lighter streaks, possibly overfired TVW B		
Pit 47	68	ERW Type	6	80	6	BS & Base	Hollow ware	Patchy pale green glaze ext	C13th – C14th	Pale grey fabric w/ buff int margin; abundant fine quartz up to 0.5mm, rare dark red round incs up to 3mm		
Pit 47	68	ERW Type	1	10	1	BS	Hollow ware	Dark green glaze ext	C13th – C14th	Dark grey core, pale grey ext margin; moderate, well-sorted quartz up to 0.5mm, rarely up to 1mm		
Pit 47	68	TVW A	1	1	1	BS	Hollow ware	U/Dec	E – MC13th			
Pit 47	68	TVW A	1	3	1	BS	Hollow ware	U/Dec	C13th – C14th	Abraded sandy sherd, slightly coarser than TVW		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
										B		
Pit 47	68	TVW B	1	27	1	Rod handle	Jug	U/Dec	MC13th – M/LC14th	Bright orange fabric w/ abundant quartz sand up to 1mm		
Pit 47	68	TVW B	2	23	1	Rim	Jug	Thin buff slip ext; sparse green glaze ext	MC13th – M/LC14th	Inturned rim w/ pointed lip		
Pit 47	68	TVW B	1	35	1	BS	Hollow ware	Partial, dark (?overfired) glaze ext	MC13th – M/LC14th	Pale orange body w/ fine darker orange streaks in section		
Pit 47	68	TVW B	5	13	5	BS	Hollow ware	Very thin buff slip ext; patchy green glaze ext	MC13th – M/LC14th			
Pit 47	68	TVW B	8	15	7	BS	Hollow ware	Patchy green glaze ext	MC13th – M/LC14th			
Pit 47	68	TVW B type	1	62	1	Base	Hollow ware	Spots of overfired (?splashed) glaze int	C13th	Bright orange fabric; harder than typical w/ abundant fine quartz sand		
Pit 47	69	ERW Type	1	9	1	BS	Hollow ware	Pale green glaze ext	C13th – C14th	Buff to pale grey fabric w/ abundant fine rounded quartz up to 0.4mm		
Pit 47	69	Local Oxidised Sandy ware	1	1	1	BS	Hollow ware	Pale green glaze ext	C13th – C14th			
Pit 47	69	Local Reduced Greenware	1	20	1	Base	Hollow ware	Sparse glaze & stacking scar on underside of base	C14th	Fine sandy, reduced throughout		
Pit 47	69	Scarborough I	3	12	3	BS	Hollow ware	Dark green glaze ext	MC12th - C14th	Pale orange body		
Pit 47	69	TVW B	1	79	1	Rod handle	Jug	Patchy green splashed glaze ext	MC13th – M/LC14th	White steaks in pale orange fabric		
Pit 47	69	TVW B	1	34	1	Rod	Jug	U/Dec	MC13th –			

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
						handle			M/LC14th			
Pit 47	69	TVW B	1	19	1	Rim	Jug	Buff slip ext & patchy dark green glaze ext	MC13th – M/LC14th	Distinctive collared rim w/ ext dished bevel		
Pit 47	69	TVW B	1	11	1	Base	Hollow ware	Pinched 'feet' ext	MC13th – M/LC14th			
Pit 47	69	TVW B	3	9	3	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Slightly sandier than is typical		
Pit 47	69	TVW B	1	29	1	BS	Hollow ware	Patchy pale green glaze ext	MC13th – M/LC14th	Very fine soft orange sandy fabric		
Pit 47	69	TVW B	1	12	1	BS	Hollow ware	Bright green glaze ext	?C12th/EC13th	Possibly hand-made but fabric is TVW B		
Pit 47	70	ERW	1	50	1	Strap handle	Jug	Dark green glaze ext	C13th – C14th	Prominent handle thumbings		
Pit 47	70	ERW	4	26	4	BS	Hollow ware	Patchy green glaze ext	C13th -C14th	Fine, even reduced sandy fabric		
Pit 47	70	ERW	55	1455	31	Base, handle & BS	Jug	Patchy green glaze ext	C13th – C14th	Probably one strap handled jug; fine pale grey reduced sandy fabric		
Pit 47	70	ERW	1	26	1	Base	Hollow ware	Patchy green glaze on underside	C13th – C14th			
Pit 47	70	ERW	1	27	1	BS	Hollow ware	Patchy green glaze ext	C13th – C14th	Fine pale grey sandy fabric, partially oxidised ext		
Pit 47	70	ERW Type	1	43	1	Strap handle	Jug	U/Dec	C13th -C14th	Very hard, dense pale grey reduced fabric w/ quartz & sparse black grit w/ rare flint grains		
Pit 47	70	ERW Type	1	1	1	BS	Hollow ware	U/Dec	C13th – C14th			27
Pit 47	70	Scarborough I	1	2	1	BS	Hollow ware	Dark green glaze ext	MC12th - C14th			

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	70	Splash Glazed Reduced Sandy ware	1	7	1	BS	Hollow ware	Patchy splashed glaze ext	C13th	Unusual grey fabric w/ prominent white streaks		
Pit 47	70	TVW A	1	5	1	BS	U/ID	U/Dec	E – MC13th	Possibly part of a handle		
Pit 47	70	TVW A	1	6	1	BS	Hollow ware	U/Dec	E – MC13th	Sooted ext		
Pit 47	70	TVW A type	1	58	1	Strap handle	Jug	Patchy thin green glaze ext	E – MC13th	Hard, pale buff to grey fabric w/ abundant quartz & moderate, well-sorted black grit up to 1mm; narrow strap handle		
Pit 47	70	TVW B	2	127	1	Base	Hollow ware	U/Dec	MC13th – M/LC14th	Heavily flaked and abraded int & ext		
Pit 47	70	TVW B	1	109	1	Rod handle	Jug	Patchy dark green glaze ext	MC13th – M/LC14th			
Pit 47	70	TVW B	1	50	1	Base	Hollow ware	Sparse patchy dark glaze; pinched feet ext	MC13th – M/LC14th	Heavily abraded base		
Pit 47	70	TVW B	1	49	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Orange fabric w/ white streaks		
Pit 47	70	TVW B	1	40	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Harder and denser than is typical for TVW B; could be slightly later		
Pit 47	70	TVW B	1	8	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th			
Pit 47	70	TVW B	4	31	1	BS	Hollow ware	Patchy splashed glaze ext	MC13th – M/LC14th	Fine, thin walled vessel; probably M – LC13th		
Pit 47	70	TVW B	1	9	1	BS	Hollow ware	Thin white slip under even green glaze & applied pellets	MC13th – M/LC14th	Pale pink to buff fabric w/ fine quartz & sparse white non-		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
										crystalline grit		
Pit 47	70	TVW B	2	13	2	BS	Hollow ware	Patchy splashed glaze ext	MC13th – M/LC14th	Fine dark orange fabric		
Pit 47	70	TVW B	2	15	2	BS	Hollow ware	Thin buff slip ext	MC13th – M/LC14th			
Pit 47	70	TVW B	6	26	6	BS	Hollow ware	U/Dec	MC13th – M/LC14th			
Pit 47	70	TVW B	2	22	1	BS	Hollow ware	Clear glaze ext	MC13th – M/LC14th	Fine buff to pale orange body w/ abundant fine quartz & sparse red and black non-crystalline grit; sherd from sample 27 joins w/ sherd from excavation		27
Pit 47	70	TVW B	1	1	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th			27
Pit 47	70	TVW B	6	9	6	BS	Hollow ware	Clear and green glaze ext, often on buff slip	MC13th – M/LC14th			
Pit 47	70	TVW B	1	12	1	BS	Hollow ware	Distinctive green and brown streaky glaze ext	MC13th – M/LC14th	Hard bright orange fabric w/ abundant, fine, well-sorted quartz sand		
Pit 47	70	TVW B	1	7	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Light sooting ext		
Pit 47	70	TVW B type	1	3	1	BS	Hollow ware	U/Dec	M – LC13th	Hard dull orange fabric		
Pit 47	71	ERW	2	28	1	Base	Hollow ware	Thin pale green shiny glaze ext	C13th – C14th	Pale grey fabric w/ darker core & buff int margin; abundant sub-angular quartz up to 0.6mm & sparse black incs up to		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
										2mm, rarely larger		
Pit 47	71	ERW Type	1	29	1	Base	Hollow ware	Spots of (?splashed) glaze ext on underside & ext	MC13th – M/LC14th	Hard grey to dull orange sandy fabric ; thin black deposit ext		
Pit 47	71	ERW Type	1	16	1	Base	Hollow ware	Patchy splashed green glaze ext	C13th	Abundant fine quartz sand in a pale grey fabric w/ thin buff margin ext		
Pit 47	71	ERW Type	1	8	1	BS	Hollow ware	Patchy green glaze ext	C13th – C14th	Hard, reduced fabric w/ oxidised inner margin w/ abundant fine quartz sand		
Pit 47	71	Local Oxidised Sandy ware	1	48	1	BS	Hollow ware	Rare spots of glaze ext	C13th – C14th	Abundant sub-angular quartz up to 0.8mm, occasionally larger; thicker and slightly coarser than typical TVW B		
Pit 47	71	Local Oxidised Sandy ware	1	6	1	BS	Hollow ware	Thin patchy clear glaze ext	C13th – C14th	Hard, dark orange sandy fabric		
Pit 47	71	Local Reduced Sandy ware	1	25	1	BS	Hollow ware	Finely mottled green glaze ext	C13th – C14th	Fine, even gray sandy fabric, resembling Reduced Greenware		
Pit 47	71	TVW A	1	4	1	Rim	Jug	Sparse clear glaze ext	E – MC13th	Slightly everted rim w/ partial black deposit on lip		
Pit 47	71	TVW A type	1	1	1	BS	Hollow ware	Patchy clear (?splashed) glaze ext w/ light sooting	E – MC13th			

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	71	TVW B	1	51	1	Base	Hollow ware	U/Dec	MC13th – M/LC14th	Fine pale orange sandy fabric; thin black deposit ext		
Pit 47	71	TVW B	1	15	1	Rim & spout	Jug	Buff slip ext; groove around pointed lip	MC13th – M/LC14th	Pulled spout		
Pit 47	71	TVW B	9	51	9	BS	Hollow ware	Patchy green glaze ext	MC13th – M/LC14th	Some variation in the bright orange sandy fabric		
Pit 47	71	TVW B	1	8	1	BS	Hollow ware	Clear gaze ext	MC13th – M/LC14th	Very pale orange fabric		
Pit 47	71	TVW B type	2	125	1	Base	Hollow ware	Pinched feet ext	MC13th – M/LC14th	Thick black deposit ext; pale orange sandy fabric		
Pit 47	71	TVW B type	1	21	1	Base	Hollow ware	U/Dec	MC13th – M/LC14th	Fine pale orange sandy fabric w/ rare red & white incs in addition to abundant fine quartz		
Pit 47	71	TVW type	1	43	1	BS	Hollow ware	Sparse, patchy splashed glaze ext	C13th	Sandy textured fabric w/ abundant quartz sand up to o.2mm, sparse large rounded red incs & quartz		
Pit 47	72	ERW Type	1	62	1	Base	Hollow ware	Thin patchy pale green glaze ext	C13th – EC14th	Dark grey throughout w/ thin ext buff margin		
Pit 47	72	ERW Type	2	23	2	BS	Hollow ware	Thin pale green ext; ?splashed	C13th – EC14th	Hard dark grey sandy fabric w/ thin pale grey ext margin		
Pit 47	72	Splash Glazed Oxidised Sandy ware	2	14	1	Base	Hollow ware	Patchy clear splashed glaze ext	C12th – EC13th	Hard, dark orange sandy fabric w/ quartz & sparse red grit		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	72	TVW A type	1	1	1	Flake	U/ID	Green glaze ext	E – MC13th	Very small flake		33
Pit 47	72	TVW B	1	51	1	Rod handle	Jug	Patchy dark green glaze ext	MC13th – M/LC14th	Hard, fine pink to buff sandy fabric		
Pit 47	72	TVW B	1	27	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Black deposit ext; orange fabric w/ very prominent cream and grey bands in cross-section		
Pit 47	72	TVW B	2	15	2	BS	Hollow ware	U/Dec	M – LC13th	Patch of clear glaze on one sherd		
Pit 47	72	TVW B type	1	5	1	BS	Hollow ware	Thin clear/pale green glaze ext, probably splashed	M – LC13th	Fine orange sandy fabric		
Pit 47	73	ERW Type	1	17	1	BS	Hollow ware	Pale green glaze ext	C13th – C14th	Pale grey ext margin, buff int margin w/ dark grey core; sparse fine quartz up to 0.4mm		
Pit 47	78	ERW Type	10	215	6	Rim, handle & BS	Jug	Green glaze ext	C13th – C14th	Fine buff to grey sandy fabric w/ fine quartz; sooted on neck & rim; internal bevel on rim		
Pit 47	78	ERW Type	1	57	1	Base	Jug	Overfired glaze ext	C13th – C14th	Hard, dense reduced fabric w/ sparse/moderate quartz up to 0.6mm		
Pit 47	79	TVW B	2	37	2	BS	Hollow ware	Spots of ?splashed glaze ext	MC13th – M/LC14th	Harder than typical for TVW B		
Pit 47	79	TVW B type	1	55	1	Base	Hollow ware	Spots of ?splashed glaze on underside of base	MC13th – M/LC14th	Harder than is typical for the type		

Feature	Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range	Notes	Fig	Sample
Pit 47	79	TVW B type	1	2	1	BS	Hollow ware	U/Dec	MC13th – M/LC14th	Harder & slightly sandier than typical for TVW B		34
Pit 47	80	ERW Type	1	3	1	BS	Hollow ware	Pale green glaze ext	C13th – C14th	Pale grey sandy fabric w/ buff int margin; moderate quartz sand up to 0.5mm		35
Pit 47	80	TVW B type	1	10	1	Rim	Jug	Patchy green glaze ext	MC13th – M/LC14th	Harder and with larger quartz sand than is typical for the type		
Pit 47	70&72	TVW B	2	93	1	Rod handle	Jug	Patchy clear/green glaze ext	MC13th – M/LC14th			
		Total	**260**	**4231**	**211**							

Table 1.6: Proportions of different ware types in the assemblage

Type	No	Wt	ENV	% of total (ENV)
All contexts				
Early Reduced ware & ERW type	111	2311	78	12.78
19th and 20th century wares	24	732	23	3.77
European wares	1	28	1	0.16
Unidentified local sandy wares	11	138	11	1.8
Local Shell and Quartz tempered ware	1	6	1	0.16
Scarborough I ware	4	14	4	0.65
Splash Glazed Sandy ware	3	21	2	0.32
Tees Valley A ware	18	124	18	2.95
Tees Valley B ware	488	4313	469	76.8
Tees Valley type ware	3	52	3	0.49
Total	**664**	**7739**	**610**	**99.88**
Pit 47 only				
Tees Valley A ware	10	89	10	4.7
Tees Valley B ware	129	1700	114	54
Tees Valley type ware	2	50	2	0.9
Early Reduced ware	107	2257	74	35
Unidentified local sandy wares	5	100	5	2.3
Scarborough I ware	4	14	4	1.9
Splash Glazed Sandy ware	3	21	2	0.9
Total	**260**	**4231**	**211**	**99.7**
Other contexts (excluding topsoil & U/S)				
Tees Valley A ware	7	31	7	2
Tees Valley B ware	329	2450	325	94.7
Tees Valley type ware	1	2	1	0.29
19th and 20th century wares	2	13	2	0.58
European wares	1	28	1	0.29
Unidentified local sandy wares	6	36	6	1.7
Local Shell and Quartz tempered ware	1	6	1	0.29
Total	**347**	**2566**	**343**	**99.85**

Table 1.7: Fragment counts for the species present

	F47	F55	U/S	Topsoil
Cattle	4			1
Pig				1
Horse	20	5	2	
Bird sp.	2			
Oyster	2			1
Whelk	1			
Cockle			1	

Table 1.8: Species present in environmental samples from contexts within [F47]

Contexts	70	72	78	79	80
Cattle				1	
Sheep/goat			1		
Frog/toad	present		present	present	
Cockle			present	present	present
Mussel			present	present	
Marine shell, unidentifiable	present	present			
Eggshell			present		

Table 1.9: Iron Objects

Object	SF	Context	XR	Fragments	
Nail	-	52	6409	1	
Nail	-	46	-	1	
Nail	-	59	-	1	
Nail	-	54	6409	2	
Nail	-	53	6409	2	
Nail	2	-	-	1	
Nail	3	36	6409	3	
Nail	4	52	-	2	
Nail	5	52	6410	1	
Nail	6	54	6409	1	
Nail	7	54	6410	1	
Nail	10	36	-	1	
Nail	11	54	-	5	
Nail	12	54	6410	1	
Nail	14	-	6410	1	
Nail	15	53	-	1	
Nail	16	52	-	2	
Nail	17	52	6409	2	
Nail	18	52	6410	1	
Nail	19	54	-	2	
Nail	20	54	6409	1	
Nail	21	-	-	1	
Nail	22	-	6409	1	
Nail	26	52	6410	2	
Stud	35	80	-	1	
Long bolt	-	1		1	hexagonal head

Table 1.10: Copper Alloy Objects

Object	SF	Context	XR	Fragments
Thin sheet	1	53	6409	2
Bent shank	8	5	6409	1
Buckle pin?	13	54	6409	1
Strap-end	26	72	6409	1

Table 1.11: Wood Objects

Object	SF	Context	Fragments
Bowl	24	70	1
	28	70	1

Table 1.12: Quern & millstone fragments

Contexts	Reported Depth (m)	Frags	Med. Pot
46	-	11 & 12	Yes
52	-	13, 14 &15	Yes
69=48	0.27	7, 8, 9, & 10	Yes
70	0.51	4, 5 & 6	Yes
71	0.60	3	Yes
78	-	1 & 2	Yes
Total	>3.01m (but 1.85m in text)	15	

Table 1.13: Summary of the typological composition of the flint assemblage

Type	Number
Flakes	5
Flake fragments	2
Flake spall	1
Bladelet	1
Unidentifiable fragments	7
Natural	9
Total	*25*

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Table 1.14: Residue/flot contents from features associated with the post-mill

Sample	1	2	3	4	5	6	7	8	9	11	12	13	14	16	17	18	21	22	23	24	26	29	31
Context	**7**	**11**	**8**	**14**	**9**	**16**	**18**	**20**	**22**	**26**	**24**	**28**	**34**	**38**	**36**	**44**	**51**	**54**	**61**	**59**	**52**	**74**	**76**
Feature	**pit**	**pit**	**Pit**	**pit**	**ditch**	**ditch**	**ditch**	**post hole**	**post hole**	**post hole**	**ditch**	**post hole**	**ditch**	**ditch /pit**	**cross base ditch**	**ditch**	**pit**	**cross base**	**pit**	**ditch**	**cross base**	**pit**	**pit**
Material available for radiocarbon dating	✓	✓	✓	(✓)	✓	-	(✓)	(✓)	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	(✓)	-	-	-
Volume processed (l)	21	2	17	5	20	7	19	8	14	5	18	6	14	16	8	17	15	14	19	16	16	11	11
Volume of flot (ml)	120	55	145	10	50	60	70	40	100	20	145	60	95	175	80	175	100	120	155	30	70	60	80
Residue contents																							
Bone (calcined) indet. frags	-	-	-	-	-	-	-	-	(+)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charcoal	-	(+)	-	(+)	+	-	+	-	++	-	-	-	+	(+)	-	-	-	-	(+)	-	(+)	-	-
Clinker / cinder	(+)	+	(+)	(+)	-	-	++	-	+	-	(+)	-	-	-	-	-	(+)	-	+	(+)	(+)	-	(+)
Coal / coal shale	++	++	-	(+)	(+)	(+)	-	(+)	-	-	-	-	-	+	(+)	+	+	+	-	(+)	(+)	+	-
Cracked stones	-	-	+	-	-	(+)	-	-	-	-	-	-	-	-	-	+	-	(+)	-	-	-	-	-
Fired clay	(+)	-	(+)	-	-	-	-	-	(+)	-	+	-	-	-	-	-	-	(+)	-	-	(+)	(+)	-
Flint (number of fragments)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
Glass (number of fragments)	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Nail (number of fragments)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Pot (number of fragments)	1	-	3	-	-	-	3	-	-	-	18	-	-	1	1	-	6	1	6	1	1	1	1
Flot matrix																							
Bone (unburnt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	-	-	-	-	-	-	-	-
Charcoal	-	(+)	+	(+)	++	-	-	+	+++	+	++	(+)	(+)	(+)	-	+++	-	-	-	(+)	(+)	-	-
Clinker / cinder	++	++	++	(+)	-	-	-	++	++	-	++	-	++	+	++	-	+	++	+	+	++	-	-
Coal / coal shale	++	++	++	(+)	++	-	+	+	++	+	+	(+)	+	++	++	-	++	++	++	-	+	+++	-
Crinoids	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Earthworm egg case	-	-	(+)	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	+	(+)	+	-	++
Fuel ash	-	-	-	-	-	-	-	-	-	-	+	-	(+)	-	-	-	(+)	-	-	-	-	-	-
Heather twigs (charred)	-	-	-	-	-	-	-	-	(+)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insect / beetle	+	-	(+)	(+)	(+)	+	+	-	+	-	+	+	+	+	+	+	-	++	-	(+)	+	+	++
Pre-Quaternary trilete megasporangium	+	-	-	-	-	-	+	-	-	-	+	+	-	+	-	+	-	+	-	-	+	-	+
Roots (modern)	++	(+)	++	(+)	++	-	+	+++	++	++	++	+	++	+	+	++	(+)	+	-	+++	++	-	+
Uncharred seeds	++	+	+	+	+	+	+	+	++	(+)	+	+	+	+	+	+	++	+	+	+	+	-	(+)

[(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant. (✓) there may be insufficient weight of carbon available for radiocarbon dating]

Table 1.15: Charred plant remains from features associated with the post-mill

Sample		1	2	3	4	5	6	7	8	9	11	12	13	14	16	17	18	21	22	23	24	26	29	31
Context		**7**	**11**	**8**	**14**	**9**	**16**	**18**	**20**	**22**	**26**	**24**	**28**	**34**	**38**	**36**	**44**	**51**	**54**	**61**	**59**	**52**	**74**	**76**
Feature		**pit**	**pit**	**pit**	**pit**	**ditch**	**ditch**	**ditch**	**post hole**	**post hole**	**post hole**	**ditch**	**post hole**	**ditch**	**ditch /pit**	**cross base ditch**	**ditch**	**pit**	**cross base**	**pit**	**ditch**	**cross base**	**pit**	**pit**
Charred remains (total count)																								
(a) *Anthemis cotula* (Stinking Chamomile)	achene	14	8	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	achene	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Avena* sp (Oat species)	floret base	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
(c) *Avena* sp (Oat species)	grain	1	3	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) Cerealia indeterminate	grain	4	-	28	-	1	-	-	-	4	-	-	-	4	-	3	11	15	2	1	2	1	1	-
(c) *Hordeum* sp (Barley species)	grain	-	1	1	-	2	-	-	-	-	-	1	1	-	-	-	-	4	-	-	-	-	-	-
(c) *Pisum sativum* (Pea)	fruit	3	1	-	-	-	-	-	-	-	-	1	-	2	-	-	-	5	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	grain	4	-	15	-	4	-	-	1	2	-	-	-	3	2	-	10	6	-	-	1	-	-	-
(c) *Triticum* sp (Wheat species)	glume base	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-
(c) *Triticum* sp (Wheat species)	grain	2	-	3	1	3	-	1	2	-	-	6	3	3	-	4	4	7	1	-	-	1	-	-
(g) *Arrhenatherum elatius* ssp *bulbosum* (False Oat-grass)	tuber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(h) *Danthonia decumbens* (Heath-grass)	caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	1	-	-	-
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	nutlet	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell fragment	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Rubus fruticosus* agg. (Bramble)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	biconvex nutlet	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
(w) Cyperaceae undiff. (Sedge family)	nutlet	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Eleocharis* sp (Spike-rushes)	nutlet	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Ranunculus flammula* (Lesser Spearwort)	achene	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Brassicaceae undiff. (Cabbage family)	seed	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Centaurea* sp (Knapweeds)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(x) *Chenopodium* sp (Goosefoots)	seed	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Fabaceae undiff. (Pea family)	large seed	37	30	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	-	-	-	-	1	-
(x) Fabaceae undiff. (Pea family)	small seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
(x) Poaceae undiff. (Grass family)	>1mm caryopsis	9	6	1	-	4	-	-	-	2	-	1	1	1	1	-	6	1	2	1	-	-	1	-
(x) *Rumex* sp (Docks)	nutlet	6	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
(x) *Vicia* sp (Vetches)	seed	10	-	3	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-

[a-arable weed; c-cultivated; g-grassland; h-heathland; r-ruderal; t-tree/shrub; w-wet/damp ground; x-wide niche]

Table 1.16: Residue/flot contents and charred plant remains from pit [F47]

Sample		**19**	**20**	**27**	**30**	**33**	**32**	**34**	**35**
Context		**48**	**49**	**70**	**71**	**72**	**78**	**79**	**80**
Material available for radiocarbon dating		-	-	(✓)	(✓)	-	✓	✓	✓
Volume processed (l)		16	18	39.5	19	17	45.5	34	16
Volume of flot (ml)		100	150	20	500	275	1200	1400	1150
Residue contents									
Bone (unburnt)	indet. frags	-	-	++	-	-	+	++	-
Clinker / cinder		-	-	-	+	(+)	-	+	-
Coal		++	-	+	+	+	+	++	+++
Crinoids		-	-	-	-	-	-	(+)	-
Fired clay		-	-	-	-	-	+	-	-
Flint (number of fragments)		-	-	-	-	-	-	1	-
Fuel ash slag		-	-	-	-	-	-	+	-
Glass (number of fragments)		-	-	-	-	-	-	2	-
Industrial residue		-	-	-	-	-	-	+	-
Insect / beetle		-	-	+	-	-	++	+	(+)
Leather		-	-	+	-	-	-	-	-
Nail (number of fragments)		-	-	-	-	-	-	-	1
Pot (number of fragments)		1	-	3	-	1	-	1	-
Shell (marine)		-	-	+	-	(+)	+	++	(+)
Wood		-	-	+	-	-	++	-	-
Flot matrix									
Bone (unburnt)	fish	-	-	-	-	-	-	+	-
Bone (unburnt)		-	-	-	-	-	++	++	-
Caddis fly	larval case	-	-	++	-	-	-	+	+
Charcoal		-	-	-	(+)	-	-	-	-
Cladocera (water fleas)	ephippia	-	-	-	-	-	+	+	-
Clinker / cinder		+	-	+	-	-	-	-	-
Coal / coal shale		++	+	+++	++++	++	++	++++	++++
Earthworm egg case		+	+	+	-	-	+	-	-
Eggshell		-	-	-	-	-	+	-	-
Insect / beetle		-	+	+++	+	+	+++	++	(+)
Monocot stem (uncharred)		-	-	-	-	-	-	+	-
Pre-Quaternary trilete megasporangium		++	+	+	+	+	+	++	-
Roots (modern)		++	++	++	+	-	-	-	-
Shell (freshwater – *Pisidium* sp)		-	-	+	-	-	(+)	++	+
Textile		-	-	-	-	-	-	+	-
Vegetative material (uncharred)		-	-	+++	+	-	++	++	+
Wood		-	-	+	+	-	++	+	+++
Charred remains (total count)									
(a) *Triticum* sp (Wheat species)	grain	-	-	-	-	1	-	-	-
(a) *Triticum* cf. *aestivum* (cf. Bread Wheat)	grain	-	-	-	-	-	-	2	-
(c) *Pisum* cf. *sativum* (cf. Pea)	fruit	1	-	-	-	-	-	-	-
(x) Poaceae undiff. (Grass family)	>1mm caryopsis	-	-	-	-	-	-	1	-
(x) *Rumex* sp (Docks)	nutlet	-	1	-	-	-	-	-	-

[(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant. a-arable weed; c-cultivated; x-wide niche
(✓) there may be insufficient weight of carbon available for radiocarbon dating]

Table 1.17: Waterlogged plant remains from pit [F47]

Sample		19	20	27	30	33	32	34	35
Context		**48**	**49**	**70**	**71**	**72**	**78**	**79**	**80**
Waterlogged remains (abundance)									
(a) *Aethusa cynapium* (Fool's Parsley)	fruit	-	-	2	-	-	2	2	-
(a) *Chrysanthemum segetum* (Corn Marigold)	achene	-	-	-	-	-	1	1	3
(a) *Euphorbia peplus* (Petty Spurge)	seed	-	-	-	-	-	1	2	1
(a) *Fumaria* sp (Fumitories)	seed	-	-	2	-	-	2	-	-
(a) *Ranunculus arvensis* (Corn Buttercup)	achene	-	-	1	-	-	1	2	-
(a) *Raphanus raphanistrum* (Wild Radish)	pod	-	-	1	-	-	-	-	1
(a) *Valerianella dentata* (Narrow-fruited Cornsalad)	fruit	-	-	1	-	-	-	-	-
(q) Characeae undiff. (Stonewort family)	oogonium	-	-	3	-	-	3	-	-
(q) *Ranunculus* subgenus *Batrachium* (Crowfoots)	achene	-	-	4	-	-	4	4	3
(q) *Zannichellia palustris* (Horned Pondweed)	fruit	-	-	4	-	-	-	-	-
(r) *Lamium* sp (Dead-nettles)	nutlet	1	-	-	-	-	-	-	-
(r) *Lapsana communis* (Nipplewort)	achene	-	-	1	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	nutlet	-	-	2	-	-	2	2	-
(r) *Sonchus asper* (Prickly Sow-thistle)	achene	-	-	2	-	-	2	2	2
(r) *Stellaria media* (Common Chickweed)	seed	2	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell fragment	-	-	1	-	-	-	-	-
(t) *Rubus fruticosus* agg. (Bramble)	fruitstone	1	-	-	-	-	1	1	-
(w) *Carex* sp (Sedges)	trigonous nutlet	-	-	2	-	2	-	-	-
(w) Cyperaceae undiff. (Sedge family)	nutlet	-	-	2	-	-	-	-	-
(w) *Juncus* sp (Rushes)	seed	-	-	-	-	-	1	1	-
(x) Asteraceae undiff. (Daisy family)	achene	-	-	2	-	-	3	4	-
(x) Brassicaceae undiff. (Cabbage family)	seed	-	-	2	-	-	3	3	2
(x) Caryophyllaceae undiff. (Pink family)	seed	-	-	2	-	-	3	3	-
(x) *Cenococcum geophilum* (Soil fungus)	sclerotia	-	-	-	-	-	-	1	-
(x) *Chenopodium* sp (Goosefoots)	seed	1	-	1	-	-	3	3	2
(x) *Cirsium / Carduus* sp (Thistles)	achene	-	-	1	-	-	4	3	-
(x) *Heracleum sphondylium* (Hogweed)	fruit	-	-	-	-	-	-	1	-
(x) Poaceae undiff. (Grass family)	<1mm caryopsis	-	-	4	-	-	4	1	1
(x) *Potentilla* sp (Cinquefoils)	achene	-	-	-	-	2	-	-	-
(x) Primulaceae undiff. (Primrose family)	seed	-	-	-	-	-	2	-	-
(x) *Prunella vulgaris* (Selfheal)	nutlet	-	-	-	-	-	1	2	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	-	-	4	-	-	4	3	2
(x) *Rumex* sp (Docks)	nutlet	-	-	3	-	-	4	4	2
(x) *Rumex* sp (Docks)	tepal	-	-	2	-	-	3	4	2
(x) *Sonchus* sp (Sow-thistles)	achene	-	-	3	-	-	1	-	-
(x) *Stachys* sp (Woundworts)	nutlet	-	-	-	-	-	-	1	-
(x) *Taraxacum officinale* agg. (Dandelion group)	achene	2	-	-	1	1	2	1	-
(x) *Trifolium* sp (Clovers)	seed	-	-	-	1	-	-	1	-
(x) *Viola* sp (Violets)	seed	-	-	2	-	-	2	1	1

[a-arable; q-aquatic; r-ruderal; t-tree/shrub; w-wet/damp ground; x-wide niche.
Waterlogged remains are scored from 1-5 where 1: 1-2; 2: 3-10; 3: 11-40; 4: 41-200; 5: >200]

Table 1.18: Data from charcoal analysis

Context	**44**	**22**	**8**
Sample	**18**	**9**	**3**
Feature	**Posthole**	**Ditch**	**Pit**
Material available for radiocarbon dating	✓	✓	✓
Charcoal (g/number of fragments)			
% of fragments > 4mm analysed	59	71	100
Total charcoal analysed >4mm (g)	11.799	16.008	7.929
Number of analysed fragments >4mm	112	110	16
Alnus glutinosa (Alder)	-	-	7.929 (16F)
Betula sp (Birches)	0.089 (2F)	-	-
Corylus avellana (Hazel)	-	1.298 (8F)	-
Fraxinus excelsior (Ash)	1.731 (34F)	0.200 (2F)	-
cf. *Pinus* sp (Pines)	0.039 (1F)	-	-
Quercus sp (Oaks)	9.940 (75F)	14.367 (98F)	-
Indet. >4mm	-	0.143 (2F)	-

[F = number of charcoal fragments, (+) presence <4mm]

Table 1.19: List of taxa recovered from Contexts 70 and 78.

Species Name	Context 70	Context 78		Species Name	Context 70	Context 78
Carabidae				*Ocypus aeneocephalus* (Deg.)		+
Nebria brevicollis (F.)	++	++		*Quedius* sp.	+	+
Notiophilus quadripunctatus Dej.		+		*Tachyporus hypnorum* (F.)		+
Loricera pilicornis (F.)	+	++		*Tachyporus* sp.		+
Clivina fossor (L.)	+	+		*Tachinus rufipes* (L.)	+	+
Trechus quadristriatus (Schrank)	+	+		Aleocharinae indet.	+	+
Bembidion lampros (Hbst.)	+	+		**Cantharidae**		
Pseudoophonus rufipes (Deg.)		+		*Cantharis* sp.		+
Harpalus affinis (Schrank)		+		**Elateridae**		
Harpalus sp.		+		*Agriotes sputator* (L.)		+
Poecilus cupreus (L.)		+		*Agriotes* sp.	+	
Pterostichus niger (Schall.)		+		*Adrastus pallens* (F.)	+	+
Pterostichus melanarius (Ill.)	++	++		*Hypnoidus riparius* (F.)	+	+
Pterostichus madidus (F.)	+	+		**Dryopidae**		
Pterostichus sp.	+			*Dryops* sp.	+	+
Abax parallelepipedus (Pill. & Mitt.)	+			**Elmidae**		
Anchomenus dorsalis (Pont.)	+	+		*Oulimnius tuberculatus* (P. Müller)		+
Haliplidae				**Nitulidae**		
Peltodytes caesus (Duft.)		+		*Epuraea* sp.	+	
Haliplus sp.	+			**Cryptophagidae**		
Dytiscidae				*Cryptophagus* sp.	+	
Hydroporus sp.	+	+		*Atomaria* sp.	+	
Agabus bipustulatus (L.)	+			**Latridiidae**		
Ilybius sp.		+		*Latridius minutus* grp. (L.)		+
Rhantus sp.		+		**Anobiidae**		
Hydraenidae				*Anobium punctatum* (Deg.)	+	+
Hydraena riparia Kug.	+			**Ptinidae**		
Ochthebius sp.	+	+		*Ptinus fur* (L.)	+	
Limnebius truncatellus (Thun.)	+	+		**Scarabaeidae**		
Hydrophilidae				*Aphodius contaminatus* (Hbst.)	+	
Helophorus nubilus F.	+	+		*Aphodius sphacelatus* (Panz.)		+
Helophorus grandis Ill.	+	+		*Aphodius fimetarius* (L.)		+
Helophorus brevipalpis Bedel	+	+		*Aphodius* sp.	+	
Cercyon analis (Payk.)	+			**Cerambycidae**		
Cercyon sp.	+			*Alosterna tabacicolor* (Deg.)		+
Megasternum obscurum (Marsham)		+		**Chrysomelidae**		
Hydrobius fuscipes (L.)		+		*Phaedon cochleariae* (F.)		+
*Anacaena globulus (*Payk.)	+			*Longitarsus* sp.	+	+
Laccobius sp.	+			*Psylliodes* sp.		+
Catopidae				**Apionidae**		
Nargus velox (Spence)	+	+		*Apion* sp.	+	+
Staphylinidae				**Curculionidae**		
Lesteva heeri Fauvel	+			*Otiorhynchus rugostriatus* (Goeze)		+
Lesteva longoelytrata (Goeze)		+		*Otiorhynchus singularis* (L.)	+	
Anotylus rugosus (F.)	+	+		*Phyllobius argentatus (L.)*	+	
Anotylus sculpturatus (Grav.)	+			*Strophosoma melanogrammum* (Forst.)	+	
Anotylus tetracarinatus Block	+			*Sitona regensteinensis* (Hbst.)	+	+
Platystethus cornutus (Grav.)	+			*Sitona sulcifrons* (Thun.)	+	+
Lathrobium fulvipenne (Grav.)		+		*Sitona waterhousei* Walton		+

Species Name	Context 70	Context 78		Species Name	Context 70	Context 78
Lathrobium brunnipes (F.)	+			*Sitona* sp.	++	++
Leptacinus sulcifrons (Steph.)	+			*Tanymecus palliatus* (F.)	+	
Leptacinus batychrus (Gyll.)		+		*Notaris acridulus* (L.)		+
Xantholinus linearis (Ol.)		+		*Hypera zoilus* (Scop.)	+	
Philonthus sp.		+		*Ceutorhynchus contractus* (Marsham)	+	
Gabrius sp.	+	+		*Ceutorhynchus* sp.	+	
Ocypus olens Müll.	+					

'+' indicates presence; '++' indicates abundance

Appendix 2: Quern and millstone catalogue

Millstones

Frag 1 Context [78] Probable Lower Stone
Description: Single rim fragment: perhaps 1- 2% of intact stone: c130mm of rim survives, whose estimated diameter is >800mm: the grinding surface (G/S) is flat and peck-dressed (3mm deep, 5mm diameter impacts): its base is only roughly finished, so it is assumed to be a lower stone: the skirt curves down towards the base.
Dimensions: Diameter >800mm to c1000mm: Height 70mm: Wt 1200g (estimated intact weight (EIW) 60-120kg): YQS 4691.
Lithology: Medium grained, with 3mm max quartz pebbles: Millstone Grit (similar to Frag 3).
Comment: Similar thickness, diameter, skirt profile and lithology as Frag 3, thus likely to be from the same lower millstone. Frag 2 has similar diameter, lithology and context - possibly Frags 2 & 1/3 are a paired set of upper and lower stones.

Frag 2: Context [78]: Probable Upper Stone
Description: Single rim fragment: c3-4% of original stone: c200mm rim survives, with an estimated diameter of >800mm: its upper surface is neatly peck-dressed flat (4mm deep, 4-8mm diameter), so (as it is apparently unworn), it is assumed to be an upper stone: the skirt is vertical, with rounded corners: G/S is slightly concave (3°), its outer 150mm are peck-dressed (3-6mm deep, 5-10mm diameter), but the inner area is either undressed, or worn flat.
Dimensions: Diameter >800mm to perhaps 1000mm: Height at rim 65mm, towards centre 55mm: Wt 3700g (EIW 90-125kg): YQS 4692.
Lithology: Medium grained: Millstone Grit.
Comment: Possibly Frag 2 was paired with Frags 1/3.

Frag 3: Context [71]: Probable Lower Stone
Description: Single rim fragment: c3% of original stone: 110mm of surviving rim has an estimated diameter of >800mm: assumed to be a lower stone, as its base is only roughly finished: Like Frag 1, its G/S is flat and peck-dressed (3-4mm deep, 5-10mm diameter) and its skirt is rounded towards its base.
Dimensions: Diameter >800mm to perhaps 1000mm: Height 75mm: Wt 3000g (EIW 100kg): YQS 4693.
Lithology: Medium to coarse grained, horizontally bedded, with 5-10mm quartz pebbles: Millstone Grit (similar to Frag 1).
Comment: Similar thickness, diameter, skirt profile and lithology as Frag 1, thus likely to be from the same lower millstone.

Frag 4: Context [70]: Possible Reused Lower Stone Fragment
Description: Rectangular block: 140mm x 180mm max, 100mm thick: Two faces are neatly squared, one is fragmented and the fourth face appears to be c120mm of the perimeter of a large diameter millstone: the G/S is worn flat, with some irregular (natural?) depressions (4mm deep): the skirt is irregularly worked, with rounded edges, soot-covered from burning: its base surface was roughly finished flat (thus suggesting a lower stone), but has had four parallel grooves (6mm deep, 8-10mm wide) cut into it, at c45° to the rim, subsequent to it being shaped into a block.
Dimensions: Diameter >800mm: Thickness 100mm: Possibly a 2-3% fragment: Wt 4000g (EIW 130-200kg): YQS 4694.
Lithology: Millstone Grit.

Comment: The fragmentation, shaping and grooving suggest re-use in an architectural context.

Frag 7: Context [69]: Probable lower stone
Description: Single fragment: No intact edge: 155 x 210mm max, 35-45mm thick: assumed to be a lower stone as its base is roughly dressed flat: the G/S has been peck dressed, worn flat and slightly convex (3°).
Dimensions: Diameter >600mm: Thickness 35-45mm: Wt 1500g: YQS 4697.
Lithology: Medium to coarse grained, with quartz pebbles 6mm max: Millstone Grit.
Comment: The estimated diameter assumes a 210mm distance between the thinner (35mm) end and the thicker (45mm) side, with >40mm to a raised 'eye' of 50-100mm diameter and >40mm to the rim. As this is greater than the upper size limit for hand querns (c550mm diameter), it is probably a millstone. From its modest thickness, it was a very well worn one.

Frag 8: Context [69]: Probable lower stone
Description: Single fragment: no intact edge: 80 x 140mm, 70mm thick: assumed to be a lower stone as its base is roughly dressed flat: this base was well burnt, with discolouration 15mm into the stone: G/S is peck-dressed (2-3mm deep, 5-10 mm diameter) and worn flat.
Dimensions: Diameter ?: Thickness 70mm: Wt 1500g: YQS 4698
Lithology: Medium grained: Millstone Grit (similar to Frags 9 & 10).
Comment: As Frags 9 & 10 have similar lithology and burnt surfaces, they are assumed to come from the same millstone - as neither of the fragments has any recognisable hand quern features.

Frag 9: Context [69]: Millstone undiagnostic fragment
Description: Irregular-shaped fragment, with no surviving outer edges or evidence of eye. Grinding face has pecked dressing, not lines but irregular pitting. Very flat but not heavily won. Non grinding face surface is flat but not tooled.
Dimensions: 149 x 135 mm x 82 mm thickness. Wt 1100g.
Lithology: Light grey-white Millstone Grit, a coarse-grained sandstone, similar to Frags 13, 14 & 15 but not the same, being more irregular and with occasional patches of ferrous mineral, in areas lying in dark veins of crystals in fissures in the rock.
Comment: Grinding face has sooting.

Frag 10: Context [69]: Millstone, undiagnostic fragment
Description: Very small fragment of millstone, almost certainly same stone as Frag 9, with same tooling and sooting on grinding face.
Dimensions: 172 x 109 mm x 80 mm thickness. Wt 1100g.
Lithology: As Frag 9.
Comment: Second fragment of same millstone as Frag 9.

Frag 11: Context [46]: Millstone fragment?
Description: Single block: 80 x 110mm, 30-35mm thick: no worked edges or surfaces: wt 500g.
Lithology: Medium grained sandstone: Millstone Grit
Comment: As non-local stone, this is presumed to be residual and from a fragmented millstone.

Frag 12: Context [46]: Millstone, undiagnostic fragment

Description: Small fragment of probable millstone, roughly triangular in shape, having grinding face and part of opposite surface. Regular pecked dressing on flat grinding face. No trace of outer edge or central eye.
Dimensions: 140 x 106 mm x 75 mm thick. Wt 1200g.
Lithology: Medium grey-white Millstone Grit. Friable matrix, poorly sorted and rounded. Occastional larger (8 x 6 mm) quartz fragments.
Comment: Sooting on part of the grinding face.

Frag 13: Context [52]: Millstone upper stone fragment
Description: One of three fragments of same stone, all from context [52]. Frags 14 & 15 are the other two, but no sign of joins, or evidence of eye or handle features. Only distinguishing feature is the tooling on the outer surface and a short length of the outer side wall. The tooling consists of regular, random pecking with a round-pointed hammer, up to 30 mm across and 4 mm deep. The outer wall is curved and but without clear evidence of tooling.
Dimensions: 152 x 125 mm x 74 mm thick. Wt 1500g.
Lithology: Light grey-white Millstone Grit. Poorly sorted and compacted. Occasional angular inclusions, up to 6 mm across.
Comment: Very flat grinding face, heavily sooted.

Frag 14: Context [52]: Millstone upper stone fragment
Description: One of three fragments of same top millstone. Same tooling and lithology as Frags13 and 15.
Dimensions: 220 x 143 x 68 mm. Wt 2900g.
Lithology: As Frags 13 & 15.

Frag 15: Context [52]: Millstone upper stone fragment
Description: One of three fragments of same top millstone. Same tooling and lithology as Frags13 and 14.
Dimensions: 160 x 102 x 70 mm: Wt 1100g.
Lithology: As Frags 13 & 14.

Hand Querns
Frag 5: Context [70]: Probable Lower stone
Description: Single rim fragment: c5% survival: limited length of rim (50mm): a curved skirt, with secondary abrasion at the junction to a general flat base (with a sooty, burnt covering), suggests that this is a lower stone: G/S is flat and peck-dressed (4mm deep, 5-10mm diameter).
Dimensions: Diameter 400 (+/-50) mm: Thickness 72-75mm: Wt 1000g (EIW 20kg): YQS 4695.
Lithology: Medium grained: Millstone Grit (similar to Frags 13, 14 & 15).
Comment: probably the lower stone of a flat disc quern.

Frag 6: Context [70]: Possible Lower Stone
Description: Single fragment, with insufficient rim to estimate its diameter: The assumed base was originally roughly dressed flat, but apparently subsequently abraded: the G/S is flat, worn (unlike other fragments, it is not peck-dressed) and somewhat convex (c 7°).
Dimensions: Diameter ?: Thickness, rim 55mm, centre >70mm: Wt 1000g: YQS 4696.
Lithology: Medium grained MSG: the upper 25mm of its section has darker, fine-grain, inclusions, giving a banded appearance.

Comment: although the diameter cannot be estimated, it is probably the lower stone of a hand quern with a convex G/S, as a millstone would be more likely to have a flatter and thicker G/S profile.

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Hartlepool
Teesside

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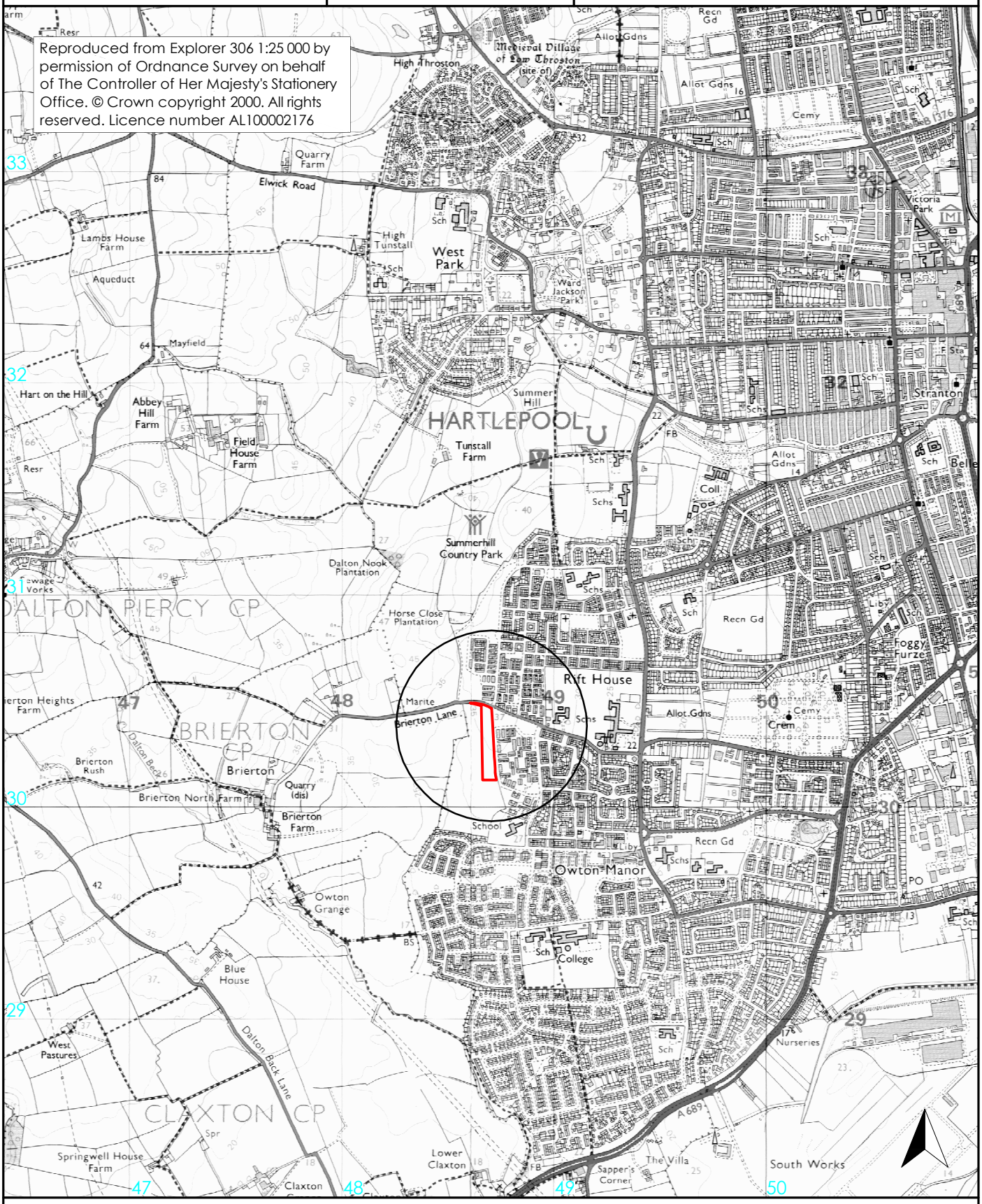
report 2874

Figure 1: Site location



site boundary

0 1km
scale 1:25 000 for A4 plot

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magnetic survey

site boundary

0 50m
scale 1:1000 for A3 plot

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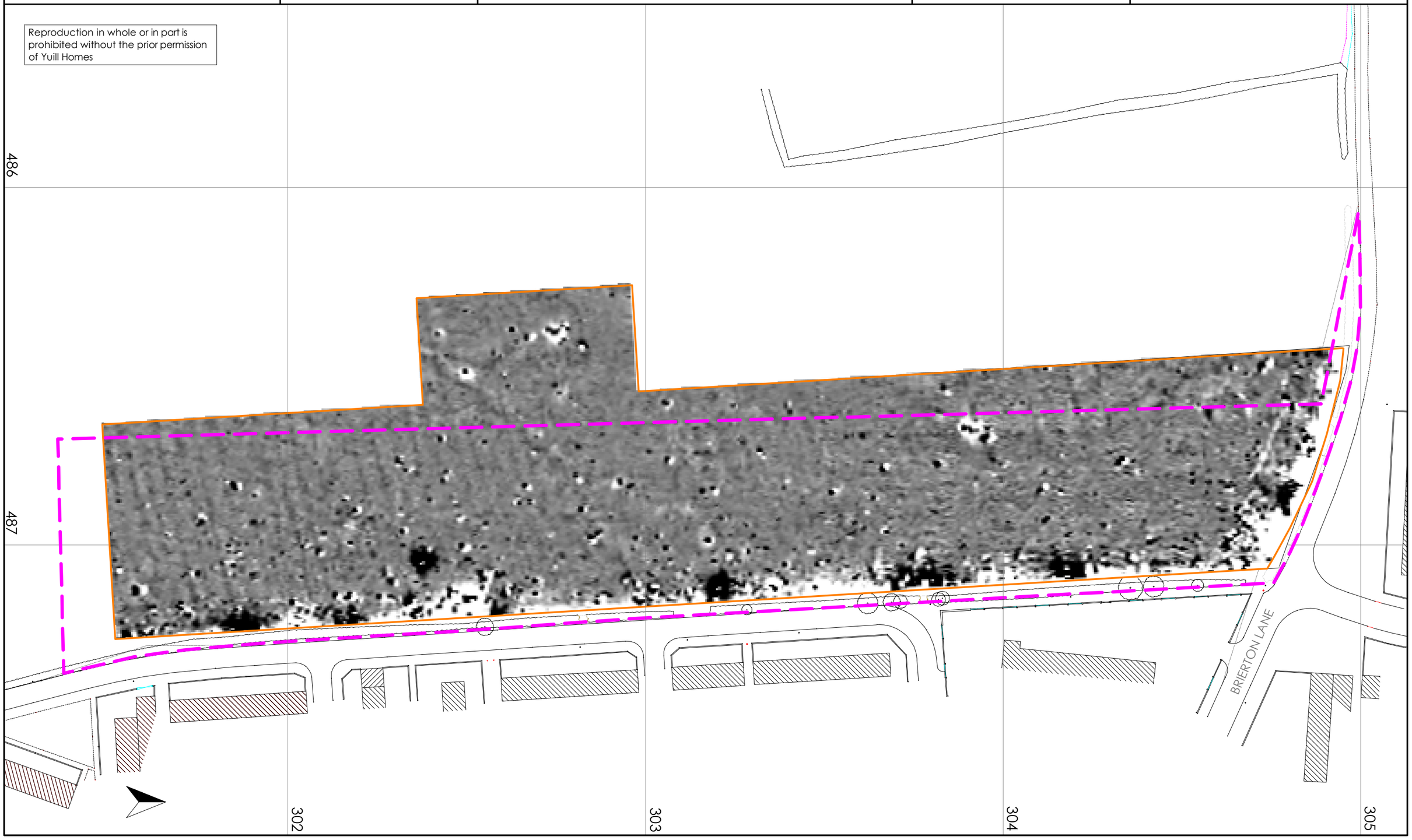
Figure 2: Geophysical survey



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Geophysical interpretation
- magnetic survey
- possible burnt feature
- former ploughing or land drains
- soil-filled feature

Archaeological works
- site boundary
- 2012 monitoring
- 2011 trench
- feature
- 2012 excavation area (Figure 4)

0 50m
scale 1:1000 for A3 plot

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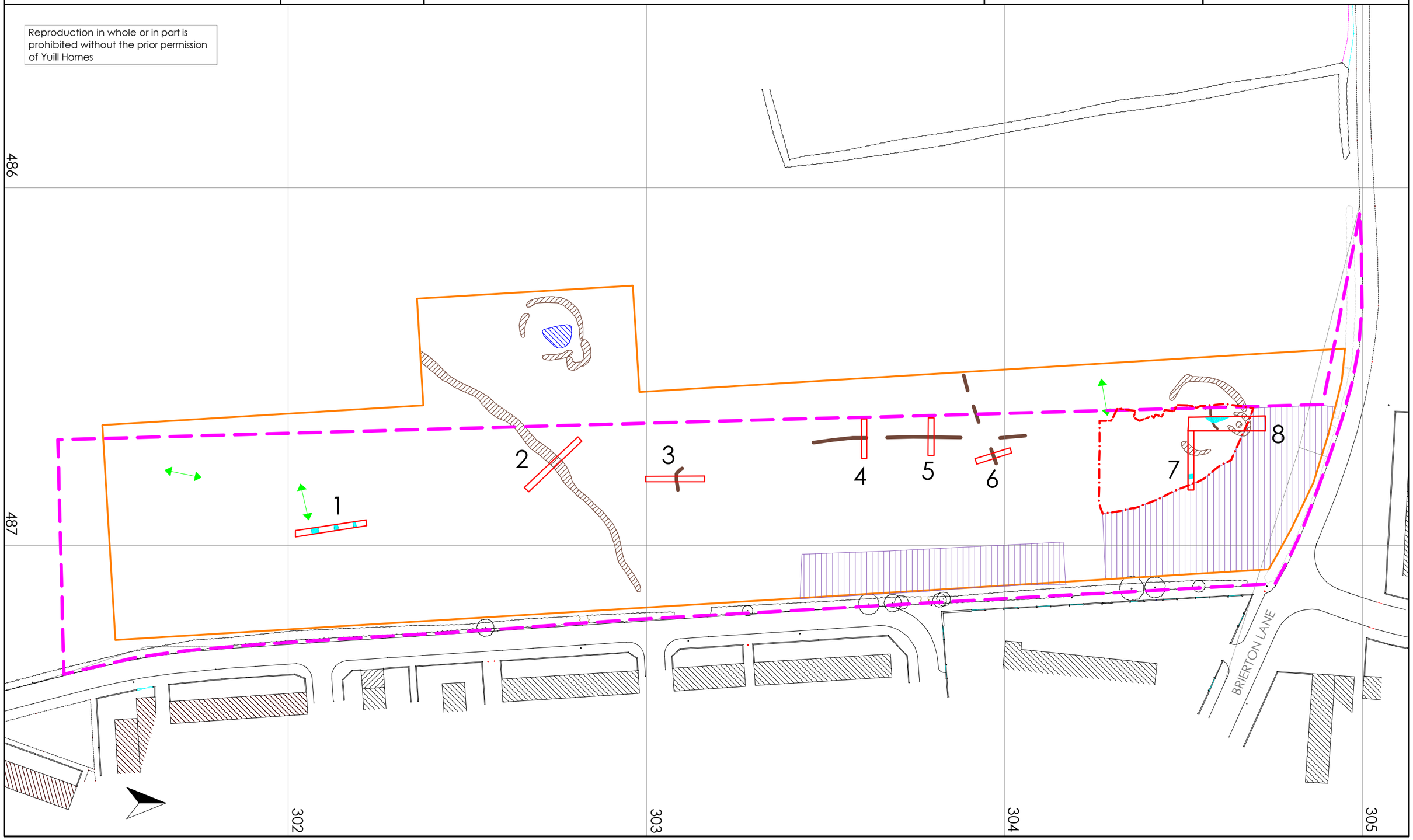
Figure 3: Location of archaeological works



extent of excavation

field drain

section

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0 7.5m

scale 1:150 for A3 plot

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Figure 4: Plan of excavation

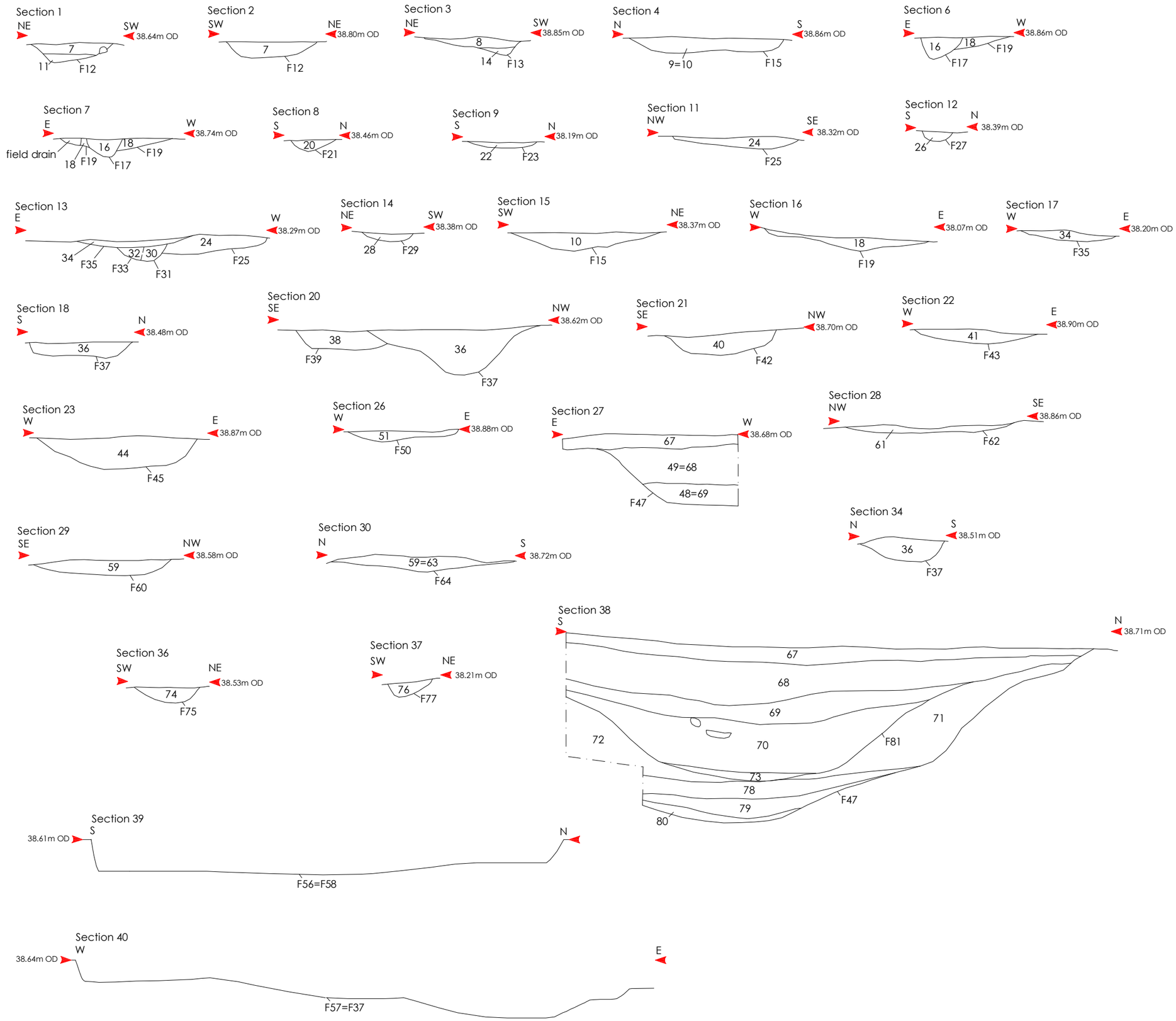

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Figure 5: Sections

0 2m
scale 1:40 for A3 plot

extent of excavation

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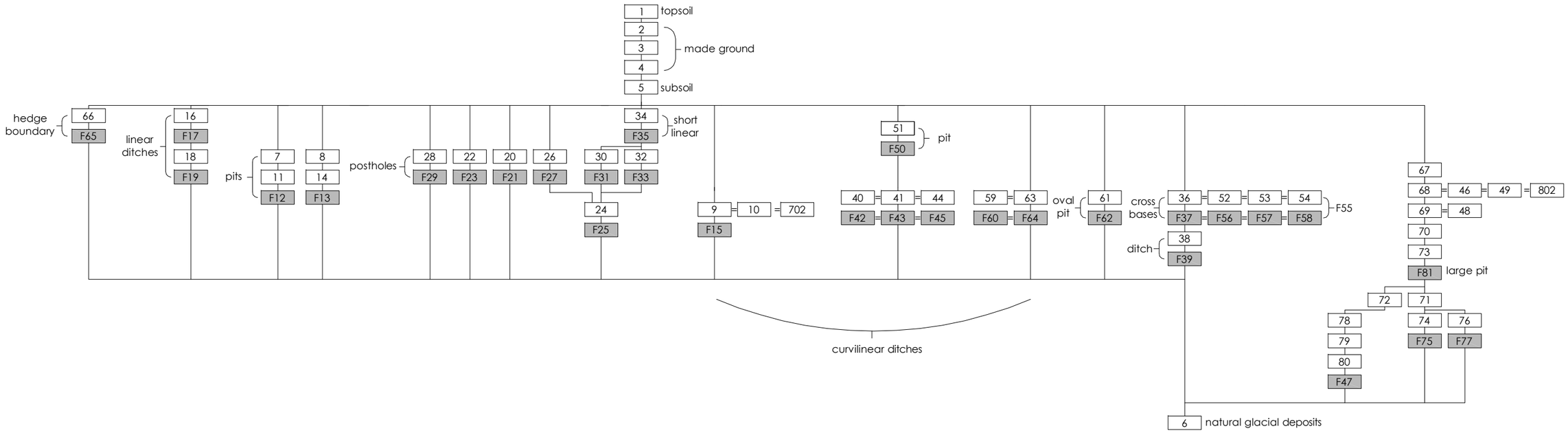
Figure 6: Stratigraphic matrix



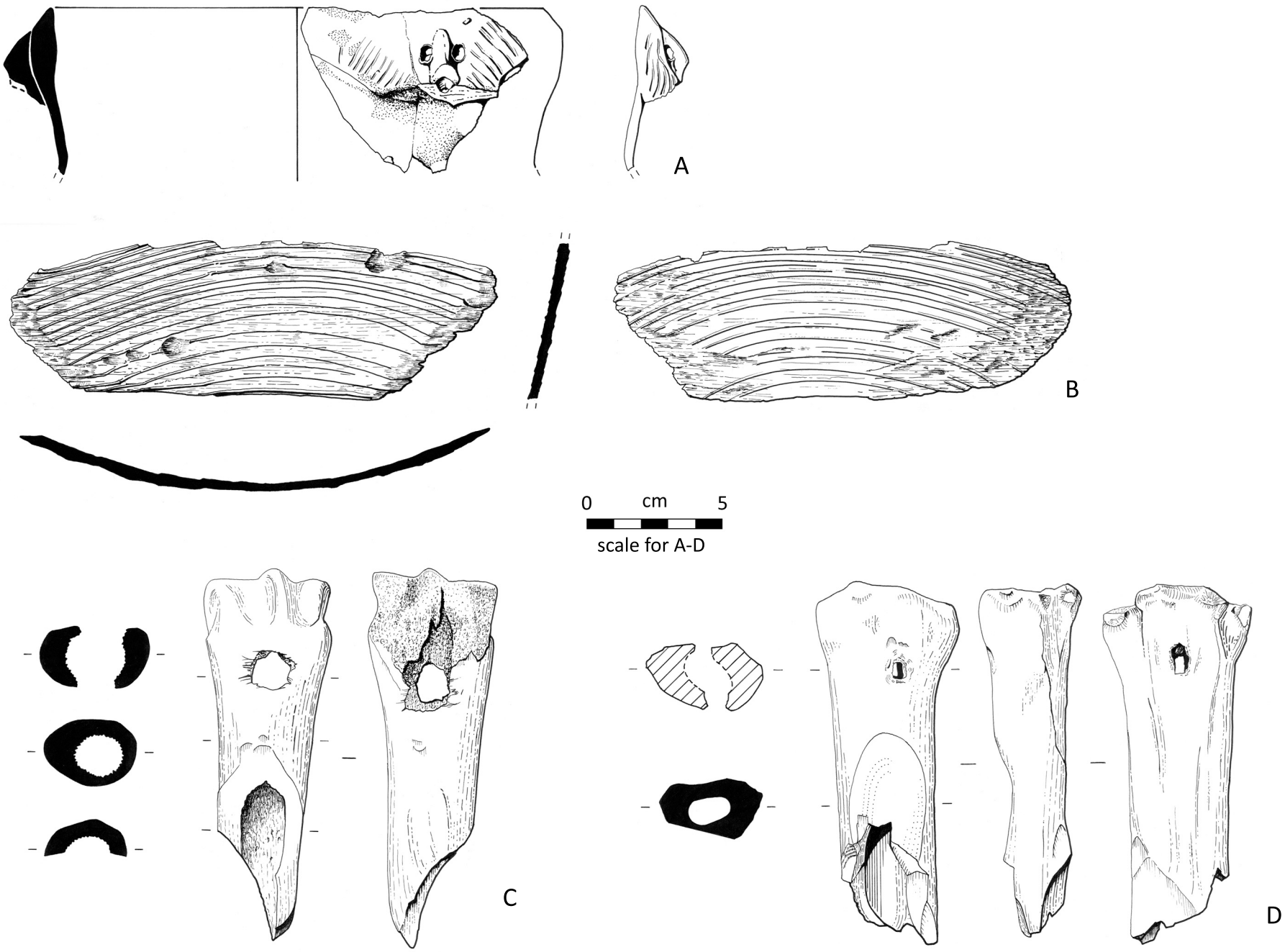
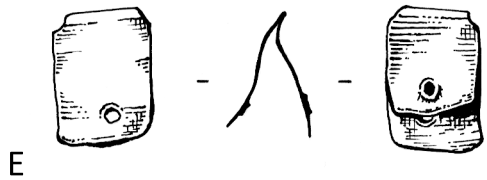


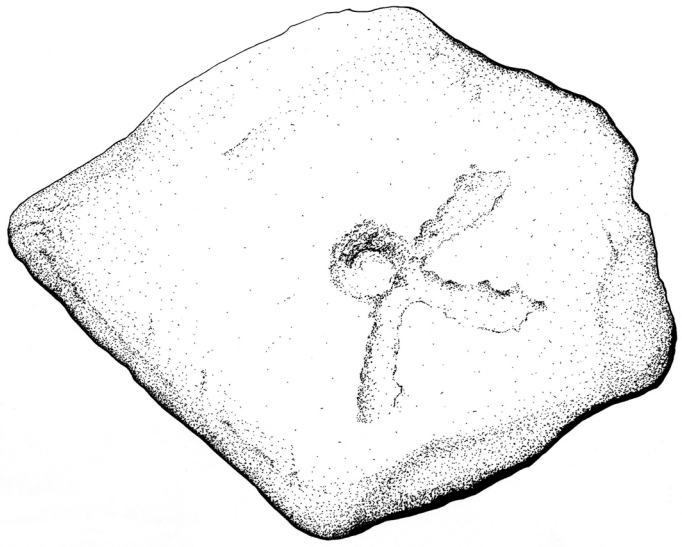
Figure 7: A - sherd of face jug (SF67); B - fragment of hemispherical wooden bowl (SF70); C - worked bone (SF25); D - worked bone (SF27)



E

0 cm 5

scale for E

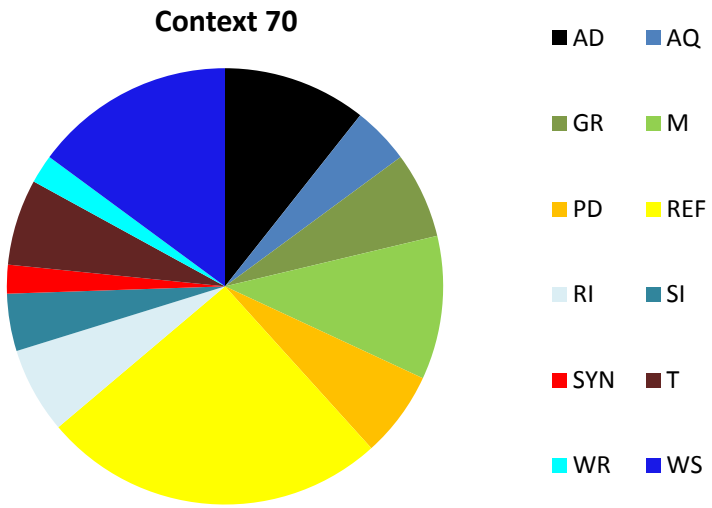


F

0 cm 5

scale for F

Figure 8: E - copper alloy strap end (SF26); F - worked stone (SF22)



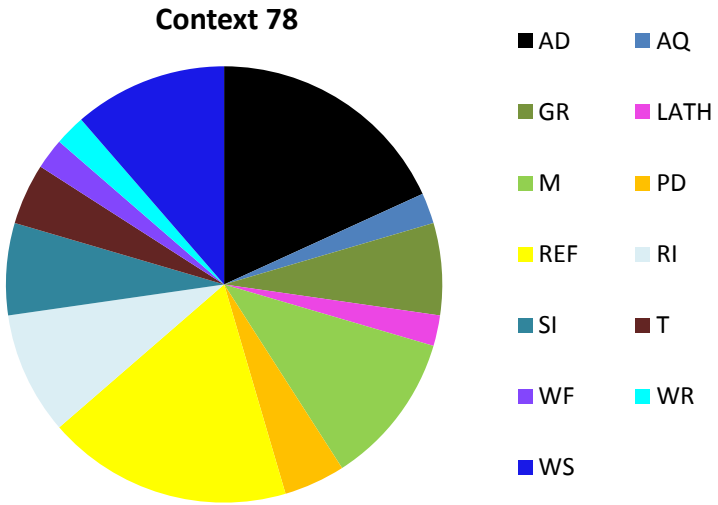


Figure 9: Ecological composition of assemblages from Contexts 70 and 78. Legend: AD = Arable/Disturbed; AQ = Aquatic (undifferentiated); GR = Grassland; LATH = Latridiidae (mould beetles); M = Meadow; PD = Pasture/Dung; REF = Refuse; RI = Riparian (waterside); SI = Silvicolous; T = Woodland; WF = Fast Water; WS = Slow Water; WR = Running Water; SYN = Synanthropic.

Figure 10: Section view of pipe-trench after removal of hedgerow parallel to Brierton Lane, looking north

Figure 11: Section 7 across linear boundary ditches [F17] & [F19], looking south

Figure 12: Section 1 across pit [F12], looking south

Figure 13: Section 38 across large pit [F47], looking west

Figure 14: Leather shoe (SF23) in fill [70], in pit [F47]

Figure 15: Posthole [F75], looking north-west

Figure 16: Section 13 across [F25, F31, F33, F35], looking north

Figure 17: Medieval pottery *in situ* in fill [24] of ditch [F25], looking south

Figure 18: Section 23 across [F42 = F43 = F45], looking north

Figure 19: Section across cross-base [F37 & F39], looking west

Figure 20: Post-excavation view of the post-mill cross-base [F55], looking north-east