

# PREHISTORIC AND HISTORIC LANDSCAPES: EXCAVATIONS AT SIPSON FARM, SIPSON, LONDON BOROUGH OF HILLINGDON, 2010–14

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With contributions by Enid Allison, Ian Betts, Lyn Blackmore, Julian Bowsher, Jon Cotton, Anne Davis, Damian Goodburn, Michael Marshall, Mary Nichols, Alan Pipe, Natasha Powers, Mary Ruddy, Amy Thorp, Ian Tyers and Don Walker

## INTRODUCTION

This online supplement has been published in support of an article in *LAMAS Transactions* Volume 75 (2024), 1–106 (Cowie 2025). Standard Museum of London reference codes are used for ceramic building materials and pottery fabrics, details of which are available online ([www.mola.org.uk/resourcelibrary](http://www.mola.org.uk/resourcelibrary)). Context numbers are denoted by square brackets: [1]. Open Areas, Buildings and Structures are numbered and referred to thus: OA1; B1; S1. Figure and table numbering is continued from the main article.

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## BUILDING MATERIALS

*Ian M Betts*

### *Daub*

A large quantity of daub, some 574 fragments, was recovered from the site, although most is small and abraded with, in most cases, little or no indication of function. Daub was recovered from features dated generally as prehistoric (period 2) and Neolithic and Early Bronze Age to early medieval (period 4 to period 8, phase 1). Most is brown or orange in colour, whilst a few have a reddish tinge. Some fragments have a grey or, occasionally, black cores, suggesting they may have been partly burnt.

The daub falls into four general categories: fine; fine with the odd fragment of quartz or flint; occasional

quartz or flint; and fairly sandy with fairly frequent quartz or flint. Small pieces of muscovite mica are scattered through most daub. Other daub is characterised by the presence of red clay inclusions. Most daub falls into the first three categories. With the possible exception of the fairly sandy daub, some of which could actually be loom weight, all the other daub probably derives from similar brickearth deposits. The slight variations in fabric probably reflect natural variation in the brick clay.

Very little daub has structural features, a characteristic noted on fired clay from Imperial College Sports Ground (ICSG) and RMC Land (Brown & Mephram 2015, 176). The former produced a few pieces of daub with wattle impressions, none of which could be related to structures (Mephram with Stevens 2015, 121). Some daub from Sipson Farm has a flat surface, but due to abrasion it is not always possible to say if an actual surface is present. Round holes are present in certain pieces, but it is often not possible to determine whether or not these are wattle impressions; they could equally represent the central hole found in clay loom weights. There are, however, a few daub fragments with interlocking wattle marks made by interwoven withies. These are small branches or coppiced shoots often around 5–15mm in diameter. These wattle marks are located parallel to the outer surface. These are almost certainly from wattle and daub structures, as some have wattles set at a 90° angle. Wattle impressions are present on the daub from OA6 (period 6), B5 (period 7, phase 1) and S15 (period 7, phase 2). Two small pieces of shaped daub are from OA3 (period 4), a small odd wedge-shaped piece of daub was recovered from OA5 (period 5) whilst S15 (period 7, phase 2) produced what appears to be a curved piece of daub with what may be a lip on one edge.

Most daub, from period 2 onwards, is made from either fine brickearth or brickearth containing small quantities of quartz and flint. Daub with a fabric characterised by the scatter of red clay inclusions is present from period 7, phase 1.

### *Roman Building Material*

The site produced a small quantity of Roman roofing tile (tegula and imbrex) and brick. Based on their thickness the bricks are probably all of *bessalis*, *pedalis* or *lydion* type (Brodrick 1987, 3). All are red in colour with varying amounts of quartz inclusions (fabric group 2815). White speckles, perhaps small inclusions of

calcium carbonate, are present in certain tiles, but these may represent natural variation in the clay.

All but one of the Roman tiles from the site may derive from the same tiliary or tile-making area. From the associated pottery this seems to have been in operation around c.AD 40–160 date, the same date as similar tiles used in Roman London.

One tile, a residual tegula roofing tile or thin brick from medieval ditch [3699] in OA16, is distinguished by the presence of very small black iron oxide inclusions (fabric 3060B), suggesting production at a separate tiliary. Tiles with black iron oxide inclusions are believed to have been made at Radlett, Hertfordshire, but these are generally sandier than the Sipson Farm tile. The origin of the Sipson Farm example is therefore not certain.

There are no higher status building material types such as box-flue, voussoir, tessera or painted wall plaster. This suggests the Roman tile from the site derives from relatively humble structures, perhaps agricultural buildings. Two keyed box-flue tiles were, however, recovered from ICSG along with a small number of roofing tile and brick, again of thinner *bessalis*, *pedalis* or *lydion* type (Brown 2015, 180). Brown believes that

box-flue were brought on to the site as hardcore from further afield, perhaps from the Roman settlement at Staines.

### *Medieval Building Material*

A few small abraded scraps of what appears to be sandy medieval peg roofing tile (fabric 2273) were recovered from OA16, but there are too few in number to indicate the presence of a tiled roof building. A fragment of Kentish ragstone rubble was found in OA17, which also produced a small fragment of late medieval–early Tudor red brick (fabric 3033). The brick has straw marks in the top surface; this straw may have been used to separate the bricks during the drying process.

## STRUCK FLINT

*Jon Cotton*

### *Introduction*

A total of 1780 pieces of struck flint were recovered from 478 separate contexts of all periods across the site. A

*Table 4. Details of the illustrated struck flint*

| <F> no. | Acc no. | Period | Landuse | Context | Parent context | Description                                              | Fig no. |
|---------|---------|--------|---------|---------|----------------|----------------------------------------------------------|---------|
| <F1>    | <84>    | -      | OA5     | [695]   | [590]          | edge blunted microlith, Late Mesolithic                  | 64      |
| <F2>    | <16>    | 4      | -       | +       | +              | bi-facially worked piece (?laurel leaf), Early Neolithic | 64      |
| <F3>    | <85>    | 5      | OA5     | [438]   | [384]/[390]    | leaf arrowhead, Early Neolithic                          | 64      |
| <F4>    | <86>    | 4      | OA3     | [3578]  | [3579]         | flaked adze, re-used as a percussor, Neolithic           | 64      |
| <F5>    | <87>    | 4      | OA3     | [3578]  | [3579]         | fabricator, Neolithic                                    | 64      |
| <F6>    | <88>    | 4      | OA3     | [3578]  | [3579]         | serrated blade, Neolithic                                | 64      |
| <F7>    | <89>    | 4      | OA3     | [3578]  | [3579]         | end scraper, Neolithic                                   | 64      |
| <F8>    | <90>    | 4      | OA3     | [3578]  | [3579]         | end/side scraper, Neolithic                              | 64      |
| <F9>    | <91>    | 4      | OA3     | [1599]  | [1600]         | diminutive multi-platform flake core, Early Neolithic    | 64      |
| <F10>   | <92>    | 4      | OA3     | [1599]  | [1600]         | quartzite rubber, Early Neolithic                        | 64      |
| <F11>   | <93>    | 4      | OA3     | [335]   | [336]          | spherical flint hammerstone, Neolithic                   | 65      |
| <F12>   | <94>    | 4      | OA3     | [335]   | [336]          | two-platform flake core, Neolithic                       | 65      |
| <F13>   | <95>    | 4      | OA3     | [335]   | [336]          | double ended/side scraper, Neolithic                     | 65      |
| <F14>   | <96>    | 4      | OA3     | [1115]  | [1116]         | chisel arrowhead, Late Neolithic                         | 65      |
| <F15>   | <97>    | 5      | OA5     | [655]   | [656]          | chisel arrowhead, Late Neolithic                         | 65      |
| <F16>   | <98>    | 7      | S11     | [2957]  | [4008]         | chisel arrowhead, Late Neolithic                         | 65      |
| <F17>   | <99>    | -      | -       | +       | +              | chisel arrowhead, Late Neolithic                         | 65      |
| <F18>   | <100>   | 4      | OA3     | [1237]  | [1238]         | serrated blade, Late Neolithic                           | 65      |
| <F19>   | <101>   | 4      | OA3     | [1237]  | [1238]         | notched/spurred piece, Late Neolithic                    | 65      |
| <F20>   | <102>   | 4      | OA3     | [1237]  | [1238]         | end scraper, Late Neolithic                              | 65      |
| <F21>   | <103>   | 4      | OA3     | [1113]  | [1114]         | bi-facially worked discoidal core, Late Neolithic        | 65      |
| <F22>   | <104>   | 2      | OA2     | [991]   | [992]          | bi-facially worked discoidal core, Neolithic             | 65      |
| <F23>   | <105>   | 4      | OA3     | [241]   | [242]          | mid-section of polished flint axe, Neolithic             | 66      |
| <F24>   | <106>   | 4      | OA3     | [732]   | [733]          | cutting edge of polished flint axe, Neolithic            | 66      |
| <F25>   | <107>   | 4      | OA3     | [867]   | [868]          | flake knife, Neolithic                                   | 66      |
| <F26>   | <108>   | 2      | OA2     | [3601]  | [3602]         | irregular, multi-platform flake core                     | 66      |
| <F27>   | <109>   | 5      | B1      | [1239]  | [1240]         | end scraper                                              | 66      |
| <F28>   | <110>   | 5      | B1      | [1249]  | [1250]         | discoidal scraper                                        | 66      |
| <F29>   | <111>   | 5      | S9      | [5644]  | [5583]         | pebble-worked-as-core                                    | 66      |
| <F30>   | <112>   | 5      | S9      | [5646]  | [5583]         | single-platform flake core                               | 66      |
| <F31>   | <113>   | 8      | OA17    | [1499]  | [1500]         | plano-convex knife, Early Bronze Age                     | 66      |
| <F32>   | <114>   | -      | -       | +       | +              | borer, Bronze Age                                        | 66      |

Table 5. All lithics by period; period 0 = undated, period 9 = post-medieval/modern; numbers of fragmentary items are indicated in brackets

| Period        | Flake (frag)     | Blade (frag)   | Flake/Blade (frag) | Chip/spall | Core (frag)   | Core rejuv | Nodular shatter | Misc retouched | Other      | No. of contexts | Total       |
|---------------|------------------|----------------|--------------------|------------|---------------|------------|-----------------|----------------|------------|-----------------|-------------|
| 2             | 79 (39)          | 10 (10)        | 23 (17)            | 43         | 2 (3)         | 9          | 26              | 24             | 11         | 130             | 296         |
| 4             | 197 (93)         | 33 (8)         | 61 (33)            | 205        | 5             | 13         | 34              | 11             | 28         | 30              | 721         |
| 5             | 113 (61)         | 12 (12)        | 23 (34)            | 31         | 9             | 11         | 54              | 10             | 25         | 141             | 395         |
| 6             | 1                | -              | -                  | -          | -             | -          | 1               | -              | -          | 1               | 2           |
| 7             | 25 (10)          | (4)            | 1 (4)              | 14         | 1             | 3          | 11              | 8              | 9          | 59              | 90          |
| 8             | 42 (26)          | 1 (3)          | 12 (9)             | 19         | 2             | 3          | 9               | 5              | 15         | 87              | 146         |
| 9             | 3 (2)            | -              | 2                  | 1          | -             | -          | -               | -              | -          | 5               | 8           |
| 0             | 10 (2)           | 1 (4)          | 2 (4)              | 2          | 1 (1)         | 1          | 7               | 3              | 6          | 25              | 44          |
| +             | 21 (16)          | 2 (4)          | 9 (1)              | 5          | 1             | 1          | 1               | 3              | 14         | -               | 78          |
| <b>Totals</b> | <b>491 (249)</b> | <b>59 (45)</b> | <b>133 (102)</b>   | <b>320</b> | <b>21 (4)</b> | <b>41</b>  | <b>143</b>      | <b>64</b>      | <b>108</b> | <b>478</b>      | <b>1780</b> |

Table 6. Breakdown of tool types; numbers of fragmentary pieces are indicated in brackets

| Tool type                         | No.     |
|-----------------------------------|---------|
| Microlith (?fragment)             | 1 (1)   |
| Scrapers (fragments)              | 42 (12) |
| Possible 'laurel leaf'            | 1       |
| Leaf arrowheads (fragments)       | (2)     |
| Transverse arrowheads (fragments) | 5 (4)   |
| Transverse arrowhead roughout     | 1       |
| Polished axe (fragments)          | (20)    |
| Chipped axe (fragments)           | 1 (2)   |
| Axe thinning flakes (fragment)    | 3 (1)   |
| Bi-facially worked pieces         | 3       |
| Flake knife (fragment)            | 4 (1)   |
| Fabricator                        | 1       |
| Borer                             | 1       |
| Serrate on blade                  | 8       |
| Denticulate                       | 1       |
| Notched pieces                    | 5       |
| Composite tool                    | 5       |
| Keeled flake                      | 1       |
| Hammerstone/rubber                | 2       |

further 54 flints from 25 contexts were recovered during the evaluation phase, but are not included here.

Most of the material was excavated by hand, although a number of chips/spalls were subsequently retrieved from sieved environmental samples. While the work produced a reasonably sized lithic assemblage only 24 individual contexts contained ten or more flints, and only six contexts more than 50 flints, all from Period 4 (Neolithic).

The assemblage has been scanned and entered onto the MOLA Oracle database using standard codes. Table 5 provides a summary of the overall assemblage by period; Table 6 provides a breakdown of the formally retouched pieces; and Table 3 (main report) outlines the material recovered from the period 4 contexts. Full details relating to the other period contexts are held in the site archive.

### The Lithic Assemblage

The assemblage incorporates all elements of the reduction sequence. The bulk of the material comprises debitage in the form of flakes, blades, narrow flakes/blades, chips/spalls and irregular nodular shatter. Cores are noticeably few in number, and usually small in size (*eg* Fig 64, <F9>); most are of one-, two- or multi-platform type (*eg* Fig 65, <F12>; Fig 66, <F26>, <F30>), with a few keeled examples and several simple pebbles-worked-as-cores/tested nodules (*eg* Fig 66, <F29>). Core maintenance flakes, in the form of core tablets and platform renewal flakes, are present in low numbers.

Formally retouched pieces (Table 6) are dominated by scrapers of various forms (*eg* Fig 64, <F7>, <F8>; Fig 65, <F13>, <F20>; Fig 66, <F27>, <F28>), followed by projectile tips including a possible 'laurel leaf' (Fig 64, <F2>), several fragmentary leaf arrowheads (Fig 64, <F3>), and a number of transverse arrowheads of chisel form (Fig 65, <F14>–<F17>). In addition, some 20 fragments of ground and polished flint axe were recovered, principally of a fine opaque pearl-grey flint of unknown origin (*eg* Fig 66, <F23>, <F24>). One complete chipped flint axe/adze appears to have been re-used as a percussor or rubber (Fig 64, <F4>). Other tool types are restricted in range, but comprise bi-facially worked pieces, flake knives (*eg* Fig 66, <F25>), serrates/denticulates (*eg* Fig 64, <F6>, Fig 65, <F18>), notched pieces (*eg* Fig 65, <F19>), a single fabricator (Fig 64, <F5>), a spherical hammerstone (Fig 65, <F11>) and a quartzite rubber (Fig 64, <F10>).

### Raw Material and Condition

Like other assemblages from the Heathrow terrace, the raw material comprises rolled and medium-sized cobbles of nodular flint readily obtainable from the river gravels. Where it is present cortex is usually thin with evidence of thermal alteration. A small number of pieces of glauconitic Bullhead Bed flint with a distinctive greenish-black cortex and orange sub-cortical band may have been preferentially selected. In addition, several of the retouched pieces have been

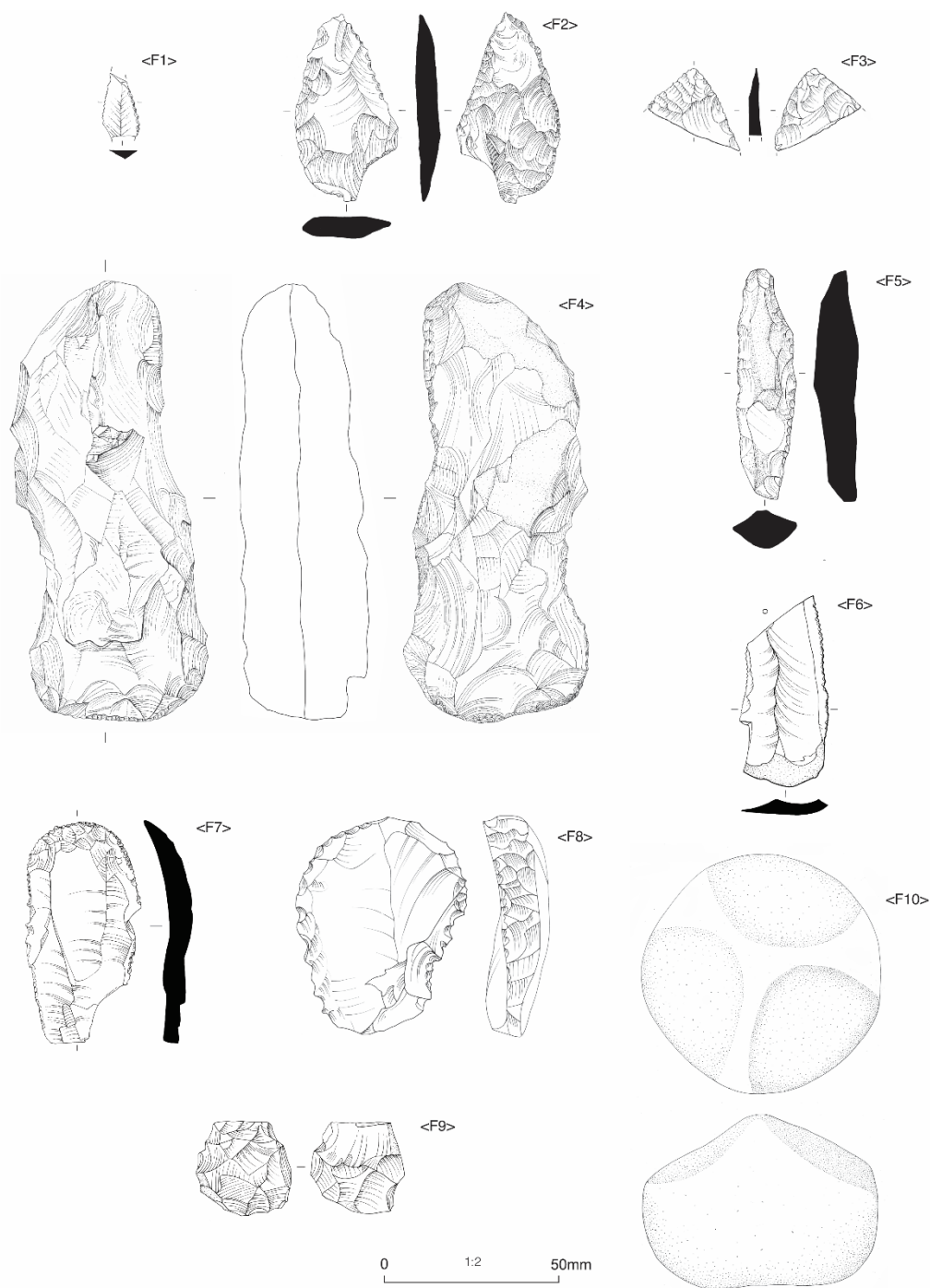


Fig 64. Late Mesolithic and Early Neolithic worked flint: <F1>–<F10> (scale 1:2)

worked on a handsome orange/umber flint (Fig 64), while many of the fragments of polished flint axe appear to have utilised a fine opaque pearl-grey flint.

The condition of the assemblage is generally good and some of the material (*eg* that from the Neolithic pits) is feather sharp. None of the assemblage has been subject to re-cortication, although a few of the pieces from the topsoil/subsoil show traces of iron-staining while others have been subjected to heat. In addition, 1727 pieces of burnt unworked flint (25.163kg) were recorded, with assemblages from a handful of contexts standing out by virtue of the quantities involved. Full details are contained in the archive.

### Discussion

The Sipson Farm struck flint is consistent with that recovered from other sites on the Heathrow terrace including the assemblages from ICSG and RMC Land (Bradley 2015). No Palaeolithic material could be identified and the Mesolithic is only certainly represented by a handful of pieces including a single broken microlith comparable to those published by Bradley (2015, 183, pl 7.1). There is no reason to suppose that Mesolithic hunter-gatherer groups necessarily eschewed the area between the Colne and the Crane, however, and several stray chipped flint adzes

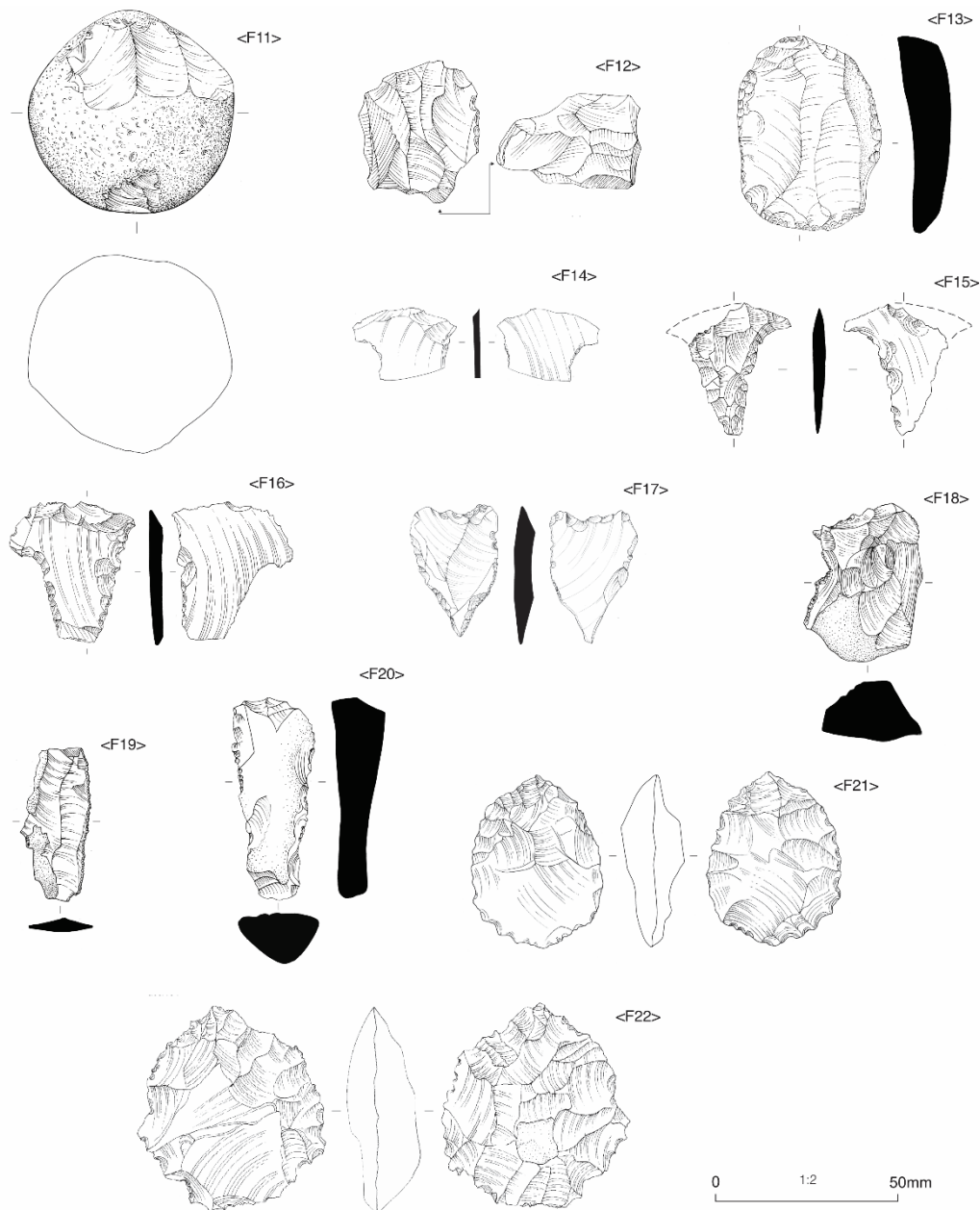


Fig 65. Late Neolithic worked flint: <F11>–<F22> (scale 1:2)

from Harlington are in the Museum of London collection (acc nos O243, 81.467), while another was picked up during field walking at Home Farm on the west side of Sipson village.

Direct evidence of Early Neolithic activity is limited to a few diagnostic tool types (*eg* a possible ‘laurel leaf’ and several fragmentary leaf arrowheads) and sherds of Plain Bowl pottery. The later Neolithic signal is locally stronger, and comprises a series of deposits caught in tree throws and placed in pits and the fills of ring ditch (S5). The ring ditch forms part of an increasingly open Early/Middle Neolithic ritual landscape, and can be linked with other monuments such as those recorded at ICSG (Powell *et al* 2015, 20–33); it is unfortunate that, like these, its accompanying lithic assemblage is so nondescript.

Much of the struck flint recovered from the pits may represent the detritus of day-to-day inhabitation, and/or the residues of specific acts marking the commissioning or termination of activity. Some of the pieces employ raw material that appears to have been deliberately selected. This includes a fine pearl-grey flint used for axes, for which a South Downs mined source has been suggested (Bradley 2015, 182); semi-translucent Bullhead Bed flint present in the terrace gravels but probably originally derived from the Reading Beds further upstream; and an attractive orange/umber material – probably also sourced from the terrace gravels. This latter flint appears to have been reserved for special items such as arrowheads (*eg* Fig 65, <F16> redeposited in early Roman ditch [4008]), of which several have been noted elsewhere in the locality

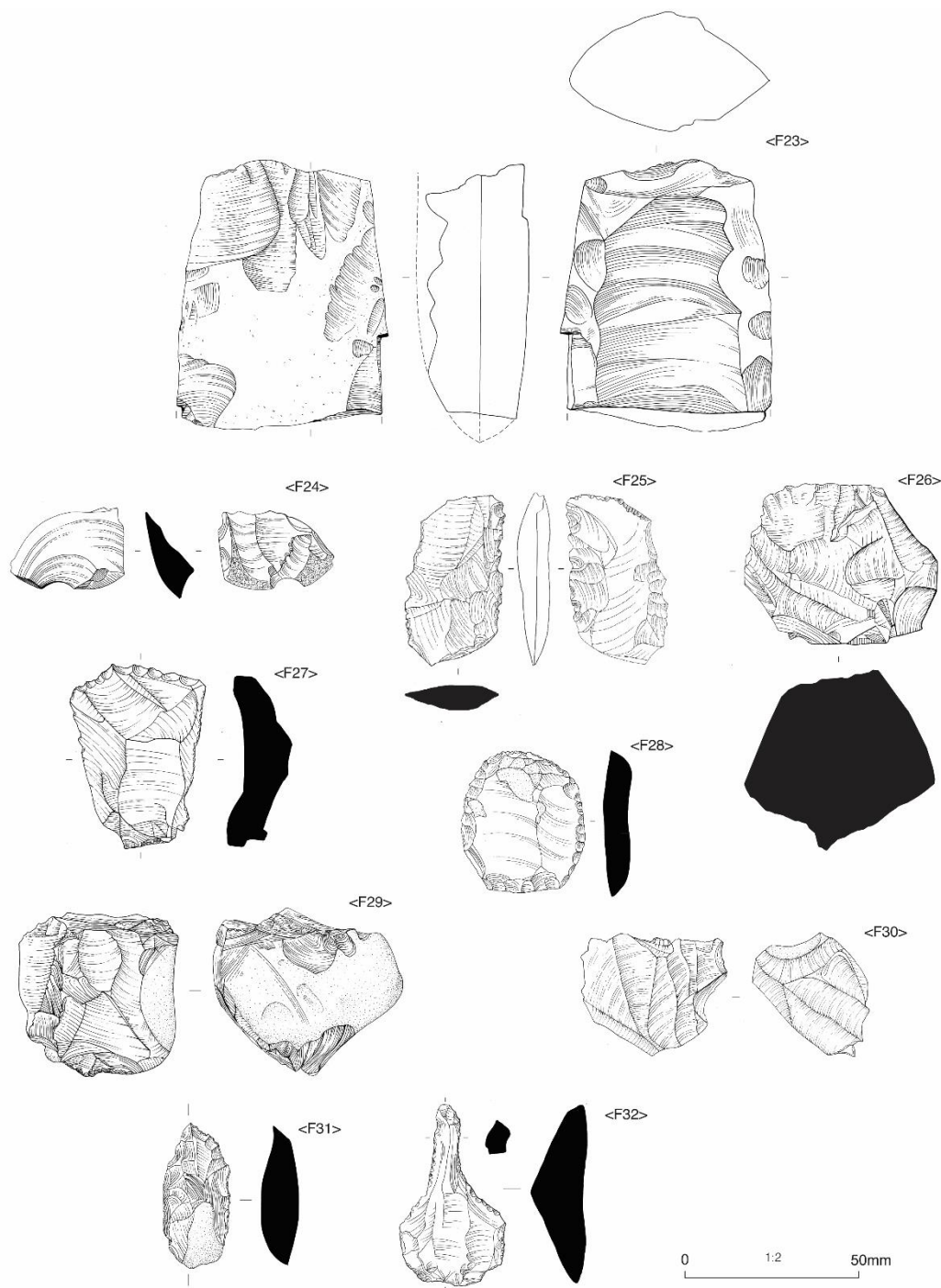


Fig 66. Neolithic and Bronze Age worked flint: <F23>–<F32> (scale 1:2)



Fig 67. Chisel arrowhead (<F16>) of fine, semi-translucent orange-brown flint, redeposited in early Roman ditch [4008] (scale 1:1)

(eg Elsden 1997, 4–5; Lewis *et al* 2010, 126, pl 2.30; Powell *et al* 2015, 63, pl 3.1).

Little Early Bronze Age material was identified though a small plano-convex knife (Fig 66, <F31>) was redeposited in early medieval ditch [1500] and a possible barbed-and-tanged arrowhead snapped during manufacture was recovered during the evaluation phase (Wessex Archaeology 2006, 24). Later prehistoric flintwork incorporating hard hammer flakes and the odd retouched piece was dispersed along trackway and field boundary ditches, and incorporated within the fills of tree throws and wells. Its presence here presumably indicates the continued limited employment of flint for

specific purposes (*eg* butchery) down to and perhaps beyond the end of the Bronze Age.

## PREHISTORIC POTTERY

*Jon Cotton*

### *Introduction and Methodology*

A total of 1367 sherds of prehistoric pottery weighing 15.010kg were excavated from 173 contexts. (The figures do not include a ‘stack’ of plain body sherds lifted in a block from pit or ditch [5814], or the 207 sherds weighing 3.051kg recovered during the evaluation phase.) Of these 973 (11.156kg) were in a variety of flint tempered fabrics (71% by sherd count

*Table 7. Summary of prehistoric pottery by date, number of contexts, sherd count and weight; \*Late Bronze Age/Early Iron Age sherds from context [5814] not included*

|                                | Period | No. of contexts | SC           | Wt (g)        |
|--------------------------------|--------|-----------------|--------------|---------------|
| Prehistoric                    | 2      | 98              | 293          | 1373.7        |
| Early Neolithic                | 4      | 6               | 53           | 575.7         |
| Late Neolithic                 | 4      | 4               | 34           | 134           |
| Early Bronze Age               | 4      | 2               | 7            | 37.7          |
| Middle Bronze Age              | 5      | 16              | 187          | 3475.2        |
| Late Bronze Age/Early Iron Age | 5      | 36              | 745          | 8745.5        |
| Middle Iron Age                | 6      | 11              | 48           | 668.2         |
| <b>Total</b>                   |        | <b>173*</b>     | <b>1366*</b> | <b>15010*</b> |

*Table 8. Details of the illustrated prehistoric pottery*

| Date    | <P> no. | Acc no. | Period | Land use | Context       | Parent context | Fabric                   | Form                                           | Decoration                                                              | Fig no. |
|---------|---------|---------|--------|----------|---------------|----------------|--------------------------|------------------------------------------------|-------------------------------------------------------------------------|---------|
| E Neo   | <P1>    | <115>   | 5      | OA5      | [341]         | [342]          | FLIN cf ICSG FL1         | open bowl with everted rim                     | plain                                                                   | 20      |
| E Neo   | <P2>    | <116>   | 5      | OA5      | [432]         | [433]          | FLIN cf ICSG FL2         | plain bowl with rolled rim                     | plain                                                                   | 20      |
| E Neo   | <P3>    | <117>   | 4      | OA3      | [2151]        | [2152]         | FLIN cf ICSG FL1         | decorated bowl with everted rim                | stab and drag impressions                                               | 20      |
| E Neo   | <P4>*   | <118>   | 4      | OA3      | [1599]        | [1600]         | FLIN cf ICSG FL10        | plain bowl with S-profile                      | pre-firing perforation at rim                                           | 20      |
| E Neo   | <P5>*   | <119>   | 4      | OA3      | [1599]        | [1600]         | FLIN cf ICSG FL10        | plain bowl shouldered profile                  | ?stick impressions in neck                                              | 20      |
| L Neo   | <P6>*   | <120>   | 4      | OA3      | [1113]        | [1114]         | GROG cf T5 GR5           | shallow tub                                    | crimped and plain horizontal cordons                                    | 20      |
| L Neo   | <P7>    | <121>   | 4      | OA3      | [379]         | [380]          | FLIN/VOIDS               | tub                                            | horizontal grooved lines                                                | 20      |
| LBA-EIA | <P8>    | <122>   | 5      | OA5      | [1752]        | [2058]         | FLIN cf ICSG FL4         | handled jar with plain in-turned rim           | plain                                                                   | 32      |
| LBA-EIA | <P9>    | <123>   | 5      | OA5      | [1784]        | [1558]         | FLIN cf ICSG FL4         | shouldered jar                                 | cabled rim and finger tipped shoulder                                   | 32      |
| M/LBA   | <P10>*  | -       | 5      | OA5      | SFB05 [1002]  |                | FLIN cf ICSG FL14        | shouldered jar with expanded short upright rim | plain, exterior burnish                                                 | 32      |
| LBA-EIA | <P11>   | <124>   | 5      | OA5      | [1655]        | [1614]         | FLIN cf ICSG FL6         | shouldered jar                                 | finger tipped shoulder                                                  | 32      |
| LBA-EIA | <P12>   | <125>   | 5      | OA5      | [2171]        | [2172]         | SAND cf ICSG QU3         | carinated bowl                                 | horizontal tooling at rim and shoulder                                  | 33      |
| LBA-EIA | <P13>   | <126>   | 5      | OA5      | [2171]        | [2172]         | SAND cf ICSG QU1         | tripartite bowl                                | horizontal tooling at base of neck                                      | 33      |
| LBA-EIA | <P14>   | <133>   | 5      | OA5      | [2171]        | [2172]         | SAND cf ICSG QU3         | round shouldered jar                           | geometric tooled lines, oxidised exterior                               | 33      |
| LBA-EIA | <P15>*  | <127>   | 5      | OA5      | [1953]        | [1954]         | FLIN cf ICSG FL5         | weakly shouldered jar                          | cabled rim                                                              | 33      |
| LBA-EIA | <P16>*  | <128>   | 5      | OA5      | [1953]        | [1954]         | FLIN cf ICSG FL4         | round shouldered jar/bowl                      | plain                                                                   | 33      |
| LBA-EIA | <P17>*  | <129>   | 5      | OA5      | [1953]        | [1954]         | SAND cf ICSG QU1         | round shouldered bowl                          | horizontal tooled lines at base of neck and shoulder, oxidised exterior | 33      |
| LBA-EIA | <P18>*  | <130>   | 5      | OA5      | [1953]        | [1954]         | SAND cf ICSG QU3         | shouldered jar/bowl                            | tooled lines at and above shoulder                                      | 33      |
| LBA-EIA | <P19>*  | <131>   | 5      | OA5      | [1953]/[1958] | [1954]         | SAND cf ICSG QU1         | carinated bowl                                 | horizontal tooled lines at the shoulder                                 | 33      |
| MIA     | <P20>*  | <132>   | 6      | OA6      | [6110]        | [6114]         | TUFA cf Thorpe Lea TUFA2 | globular bowl                                  | plain, exterior burnished                                               | 38      |

and 74% by weight), while 394 (3.853kg) were in a range of non-flint fabrics, principally sand tempered. The overall prehistoric assemblage has been summarised by date, sherd count and weight in Table 7. Details of the illustrated prehistoric pottery are provided in Table 8. A full list of the assemblage by individual context is contained within the site archive.

The fabrics were initially identified in hand specimen, and their dominant inclusions identified. These comprised FLIN, SAND, GROG, VOIDS and SHEL/TUFA. The data has been recorded on MOLA pottery spot-dating sheets and entered onto the MOLA Oracle database using standard codes. This report has adopted the fabric series defined for ICSG/RMC Land (Leivers 2015, 157–9, Appendix 1; Seager Smith 2015, 160–1), with additions and adjustments made where necessary.

Dates have been assigned on a context-by-context basis, but the overall quantities of pottery were usually low (single sherds in many cases), diagnostic pieces absent and individual sherds often worn and abraded, making precise attributions difficult. This has compounded difficulties already inherent in separating Early from Middle Neolithic, Middle from Late Bronze Age and Late Bronze Age from Early Iron Age ceramics. A generic ‘prehistoric’ label has been applied where particular doubt occurs.

The earliest illustrated examples comprise five bowls dated to the Early Neolithic (main report: Fig 20, <P1>–<P5>) and two tubs dated to Late Neolithic (Fig 20, <P6>, <P7>). Later illustrated examples include a shouldered jar dated to the Mid/Late Bronze Age (main report: Fig 32, <P10>), and others comprising various shouldered jars and bowls dated to the Late Bronze Age–Early Iron Age (Fig 32, <P8>, <P9>, <P11>; Fig 33, <P12>–<P19>). The Middle Iron Age assemblage is represented by a globular bowl (main report: Fig 38, <P20>).

## Discussion

Although relatively small the Sipson Farm prehistoric assemblage aligns broadly with the emerging sub-regional picture.

The features containing Early Neolithic ceramics are few and widely scattered across the northern and eastern areas of the site. Together with others containing small lithic assemblages these must relate to activities taking place in an open 4th-millennium BC landscape eventually dominated by small earthen monuments such as ring ditch S5 and those recorded at ICSG (Barclay *et al* 2015, 20–33). Only the sherds of the two Plain Bowls (main report: Fig 20, <P4>, <P5>) from pit [1600] are of any size; these appear to have been deposited soon after breakage and are accompanied by a small lithic assemblage including a single core and a quartzite hammer/rubber.

Compared with the numbers of Middle Neolithic pits on the Heathrow terrace (*eg* Powell *et al* 2015, 33–46) there are far fewer containing Late Neolithic Grooved Ware. The sherds from Sipson Farm can be added to those recorded elsewhere at Holloway Lane, Prospect Park, Terminal 5 and RMC Land. These Grooved Ware assemblages tend to be dominated by

large vessels of Durrington Walls sub-style, which makes the small Woodlands tub (main report: Fig 20, <P6>) from pit [1114] worthy of note. On present evidence this vessel is likely to date to the later 3rd millennium BC; it finds a ready parallel in another small Woodlands tub from Holloway Lane (Rayner *in prep*; Cotton 2000, 19, fig 2.11).

Early Bronze Age activity on the Heathrow terrace remains elusive and Beaker-related material is virtually absent. No Beaker ceramics were found at Sipson Farm and only a couple of thick plain body sherds that might derive from Collared Urns. Beaker was absent from ICSG too, although there were several complete or semi-complete Collared Urns, one of which was associated with a cremation dated 1940–1740 cal BC (Leivers 2015, 151).

Sherds of Middle Bronze Age type were widely if thinly distributed across the site, with a number associated with B1 towards its eastern edge. The presence of sherds in the Bronze Age field ditches has implications for the dating of the laying out of the field system – or at least of certain elements within it (*eg* ditches [15] and [384]). To judge from the bulk of the sherds associated with diminutive ring ditch S9, this too may have been constructed relatively early within the sequence of Bronze Age land division. Moreover, scraps of cremated bone suggest that this was connected with funerary rites perhaps intended to demarcate or reinforce the boundary and protect the area contained within it.

The Late Bronze Age material is better represented – particularly in the south-eastern corner of the site – and is associated with the field system and with various pits and waterholes, some of which continued in use into the Early Iron Age. Although not directly associated with ceramics, radiocarbon dates of 1210–1000 cal BC from posthole [1008] in B3, 1060–840 cal BC from waterhole [6120] and 930–810 cal BC from a cremation in ring ditch S9 offer broad chronological context, although it is likely that some elements of the assemblage are later, and that several of the fine angular bowls in particular belong within the full Early Iron Age, as at ICSG (Leivers 2015, 153–4). Several contexts containing semi-complete jars could have been deliberately placed, as at Heathrow Runway 1 west extension (Canham 1978, 23, features 19, 21).

The Middle Iron Age material is less well represented, and locally less well understood, but includes at least one vessel fired from naturally shelly tufaceous clays (main report: Fig 38, <P20>) amongst the otherwise sand tempered wares. The small assemblage is associated with several round houses and a well on the western side of the site and invites comparison with material from Holloway Lane (Cotton *et al* 1986, 54–6, fig 38; Rayner *in prep*), Caesar’s Camp, Heathrow (Grimes & Close-Brooks 1993, 351 & fig 33) Terminal 5 (Leivers *et al* 2010, Section 1, 37–41) and Ashford Prison (Seager Thomas 2006). A radiocarbon date of 400–190 cal BC from the eavesdrip gully of round house B4, though not directly associated with any of the pottery, provides an independent date for the local Middle Iron Age that aligns with several others from Terminal 5 (Brown & Smith 2010, 217).

Table 9. Details of the illustrated Late Iron Age and Roman pottery

| <P> no. | Acc no. | Period (phase) | Land use | Context | Parent context    | Fabric | Form | Decoration | Fig no. |
|---------|---------|----------------|----------|---------|-------------------|--------|------|------------|---------|
| <P21>   | <83>    | 7 (1)          | OA7      | [5359]  | pit [5360]        | GROG   | 2    |            | 40      |
| <P22>   | <81>    | 7 (1)          | OA7      | [5359]  | pit [5360]        | SHEL   | 2A   |            | 40      |
| <P23>   | <82>    | 7 (1)          | OA7      | [5359]  | pit [5360]        | SHEL   | 2A   |            | 40      |
| <P24>   | <80>    | 7 (1)          | OA7      | [5025]  | tree throw [5024] | GROG   | 4    |            | 40      |
| <P25>   | <74>    | 7 (2)          | S5       | [4079]  | ditch [4070]      | SAND   | 4K   |            | 44      |
| <P26>   | <75>    | 7 (2)          | S5       | [4079]  | ditch [4070]      | GROG   | 2    | HPOF       | 44      |
| <P27>   | <76>    | 7 (2)          | S11      | [3390]  | ditch [3199]      | OXID   | 1K   |            | 44      |
| <P28>   | <77>    | 7 (2)          | OA11     | [3246]  | ditch [3247]      | GROG   | 3A   |            | 44      |
| <P29>   | <78>    | 7 (2)          | OA11     | [3340]  | ditch [2757]      | SAND   | 2A   |            | 44      |
| <P30>   | <79>    | 7 (2)          | OA11     | [2741]  | waterhole [2742]  | OXID   | 1K   |            | 44      |

## ROMAN POTTERY

Amy Thorp

### Introduction and Methodology

The late Iron Age and Roman pottery was spot dated and assessed to Museum of London archive standards, using standard MOLA conventions, with spot-dating records entered onto the MOLA Oracle database. Quantification of the pottery included sherd count, weight and estimated number of vessels (ENV). Pottery illustrated in the chronological narrative is listed in Table 9.

A total of 1619 sherds (19.760kg) of late Iron Age and Roman pottery were recovered from the site, predominantly in small groups of less than 30 sherds. The majority of this material (1400 sherds, 17.641kg) was within contemporary features with relatively low levels of intrusive and residual finds in other periods. Its condition was predominantly poor with high levels of abrasion and a low proportion of diagnostic sherds. The exceptions to this are the two semi-complete vessels present in period 7, phase 1. In similarity to other sites in the nearby area it was not possible to identify a definite pre-Roman Iron Age ceramic horizon; the use of similar grog and shell tempered fabrics, in particular, continue right through from the late Iron Age until well into the late 1st and early 2nd centuries AD. These ‘transitional’ fabrics are therefore considered under a single phase (period 7, phase 1).

Table 10 shows the overall composition of the assemblage and a breakdown by phase. The early material is quite limited accounting for just 8% of the total sherds and 14% of the assemblage by weight. Grog tempered wares are by far the most dominant fabric; this concentration is partially the result of a semi complete bowl from a ditch ([5025]; 17 sherds, 366g). This balance of wares in the earliest phase contrasts with the assemblage from ICSG in which sandy grey ware fabrics were present in higher quantities than grog tempered vessels (Seager Smith 2015, 163). This might well be a result of the small sample for this period (and the preservation of a single vessel) at Sipson Farm. However, the identifiable forms are mostly bead-rimmed jars and this is consistent with the assemblages at both ICSG and

the excavations at Terminal 5 (*ibid*; Jones & Brown 2010, 4).

As the activity at Sipson Farm moves into the 2nd century AD a distinct diversification in the range of vessels being used at the site is evident. In addition to this increased range the use of sandy grey ware fabrics, which were lacking in the early period, is now a strong feature. These vessels are likely to be primarily of local manufacture with a high proportion bearing a strong resemblance to the descriptions for Colne Valley wares (Crouch & Shanks 1984, 84) including examples of ‘Surrey’ bowls. Also consistent with the dating of this phase the few occurrences of the London sourced Highgate Wood ware C (HIWC) is within this period. Despite being in much lower quantities than other locally produced reduced ware Alice Holt/Surrey ware (AHSU) jars (both bead-rimmed and necked types) are a notable feature of this phase with otherwise only a few residual sherds in period 7, phase 3. Among the oxidised wares further local products were noted in the form of potential Staines-type orange wares; including two distinctive examples of pulley-rim flagons, which are consistent with either a late 1st- or early 2nd-century AD date (Jones with Poulton 2010, 93). The contribution of further material from the London area is evident in the form of Verulamium white ware vessels. Imported wares are almost entirely samian with otherwise just a single sherd of Baetican amphora (though further amphorae is residual in phase 3). Grog tempered wares continue to still have a strong presence in the assemblage; particularly of interest is the drilled jar base in the ditch of the western boundary of the track (S10) similar examples of which have been noted at ICSG (Seager Smith 2015, 166).

While later Roman features (period 7, phase 3) contained a high level of residual material a small quantity of specifically late Roman wares were evident. These consist mostly of Alice Holt/Farnham ware (AHFA) storage jars. Late mortaria are represented by a single sherd in Nene valley white ware (NVWW) and two Oxfordshire white ware examples. A highly fragmented section of a late everted rim jar in black burnished ware 1 (BB1) was also found in a well [2734]. Aside from two other sherds this accounts for the only occurrence of black burnished ware 1 on the site. The use of black burnished wares in only the late Roman period which again bears a striking similarity to the assemblage at ICSG (Seager Smith 2015, 163, table 6.7).

Table 10. Overall late Iron Age/Roman (period 7) pottery assemblage by phase, sherd count and weight

|                                                     | phase 1    |             | phase 2    |             | phase 3    |             | All phases  |              |
|-----------------------------------------------------|------------|-------------|------------|-------------|------------|-------------|-------------|--------------|
|                                                     | SC         | Wt (g)      | SC         | Wt (g)      | SC         | Wt (g)      | SC          | Wt (g)       |
| Alice Holt/Farnham ware (AHFA)                      | -          | -           | -          | -           | 32         | 1099        | 32          | 1099         |
| Alice Holt/Surrey ware (AHSU)                       | -          | -           | 90         | 616         | 10         | 73          | 100         | 689          |
| Unsourced amphorae fabric (AMPH)                    | -          | -           | 1          | 18          | -          | -           | 1           | 18           |
| Baetican early Dressel 20/Haltern 70 fabric (BAETE) | -          | -           | 1          | 30          | 40         | 1742        | 41          | 1772         |
| Black-burnished ware 1 (BB1)                        | -          | -           | -          | -           | 24         | 160         | 24          | 160          |
| Black-burnished ware 2 (BB2)                        | -          | -           | -          | -           | 1          | 10          | 1           | 10           |
| Unsourced coarse ware (COAR)                        | 1          | 18          | 4          | 120         | 1          | 23          | 6           | 161          |
| Unsourced fine reduced ware (FINE)                  | -          | -           | 4          | 18          | -          | -           | 4           | 18           |
| Flint tempered (FLIN)                               | 17         | 325         | 7          | 76          | -          | -           | 24          | 401          |
| Unsourced grog-tempered ware (GROG)                 | 66         | 1629        | 277        | 3306        | 42         | 1027        | 385         | 5962         |
| Unsourced grog and shell-tempered ware (GROGSH)     | 9          | 55          | 14         | 189         | 1          | 23          | 24          | 267          |
| Highgate Wood ware C (HWC)                          | -          | -           | 5          | 40          | -          | -           | 5           | 40           |
| Unidentifiable Roman fabric (MISC)                  | -          | -           | 14         | 100         | -          | -           | 14          | 100          |
| Nene valley white ware (NVWW)                       | -          | -           | -          | -           | 1          | 26          | 1           | 26           |
| Organic tempered (ORGAN)                            | -          | -           | 7          | 104         | -          | -           | 7           | 104          |
| Unsourced oxidised ware (OXID)                      | -          | -           | 81         | 885         | 56         | 668         | 137         | 1553         |
| Unsourced fine oxidised fabric (OXIDF)              | -          | -           | 16         | 100         | 1          | 5           | 17          | 105          |
| Oxfordshire red/brown colour-coated ware (OXRC)     | -          | -           | 1          | 3           | -          | -           | 1           | 3            |
| Oxfordshire white ware (OXWW)                       | -          | -           | -          | -           | 2          | 27          | 2           | 27           |
| Unsourced white-slipped ware (RWS)                  | -          | -           | 4          | 37          | 1          | 5           | 5           | 42           |
| Unsourced Gaulish samian (SAM)                      | -          | -           | -          | -           | 1          | 4           | 1           | 4            |
| Central Gaulish samian (SAMCG)                      | -          | -           | 2          | 18          | 15         | 105         | 17          | 123          |
| La Graufesenque samian (SAMLG)                      | -          | -           | 12         | 62          | 2          | 8           | 14          | 70           |
| Les Martres-de-Veyre samian (SAMMV)                 | -          | -           | 2          | 12          | 6          | 66          | 8           | 78           |
| Unsourced sand-tempered ware (SAND)                 | 14         | 187         | 252        | 1976        | 187        | 1681        | 453         | 3844         |
| Unsourced shell-tempered ware (SHEL)                | 8          | 193         | 16         | 178         | 2          | 12          | 26          | 383          |
| Unidentifiable voids (VOIDS)                        | -          | -           | 1          | 4           | -          | -           | 1           | 4            |
| Verulamium/London region white ware (VRW)           | -          | -           | 41         | 400         | 8          | 178         | 49          | 578          |
| <b>Overall Total</b>                                | <b>115</b> | <b>2407</b> | <b>852</b> | <b>8292</b> | <b>433</b> | <b>6942</b> | <b>1400</b> | <b>17641</b> |

## MEDIEVAL POTTERY

*Lyn Blackmore*

### *Introduction and Methodology*

The Anglo-Saxon pottery is summarised in the main narrative (Cowie 2025) and discussed in the archive report (Blackmore 2016). The medieval assemblage amounts to 918 sherds (307 ENV, 11.355kg) of domestic pottery from 158 contexts; a further 21 sherds of medieval and later pottery were found during the evaluation of the site (Wessex Archaeology 2006, 22–3, table 2). Most, however, are body sherds, with few diagnostic profiles, and 120 contexts contained only five sherds or less. Pottery illustrated in the chronological narrative is listed in Table 11.

Distinguishing between the medieval fabrics is not easy, due to the presence of varying amounts of flint and/or calcareous inclusions which make it difficult to draw firm distinctions between ware types; the impression is that, excluding the early Surrey wares,

most are part of a homogenous industry, even if from different kilns. Comments on the distribution of the pottery are included in the main narrative; here the assemblage is considered as one group. The bulk of the material dates to the 11th/12th centuries (596 sherds, 246 EN, 7.029kg), which equates with period 1c at Northolt (Hurst 1961, 214, 234). General descriptions of the earlier ware types can be found in Vince and Jenner (1991), while the Surrey type series has been outlined by Jones (1998; 2015; with Poulton 2010).

### *Fabrics and Forms*

Given the site's proximity to Surrey it is not surprising that the early medieval assemblage is dominated by Surrey type fabrics (277 sherds (95 ENV, 3.997kg), mainly comprising early Surrey ware (ESUR) and its flint-tempered variant (ESUR FL) and micaceous (ESUR MIC) variants, but including more iron-rich fabrics (EMIS, ESIR, ESIR FL). In Surrey these wares, equate with the IQ fabric group in the Surrey series, continued in use longer than in central London, and

Table 11. Details of illustrated Post-Roman pottery

| <P> no. | Acc no. | Period (phase) | Land use | Context | Parent context | Fabric  | Form        | Comment                          | Fig no. |
|---------|---------|----------------|----------|---------|----------------|---------|-------------|----------------------------------|---------|
| <P31>   | <61>    | 7 (2)          | OA11     | [2515]  | [2516]         | CHFS    | jar         | everted rim                      | 50      |
| <P32>   | <62>    | 8 (2)          | OA17     | [1348]  | [1350]         | ESUR    | flared dish | handmade                         | 55      |
| <P33>   | <63>    | 8 (2)          | OA17     | [1141]  | [1142]         | ESUR    | cooking pot | handmade                         | 55      |
| <P34>   | <64>    | 8 (2)          | OA17     | [5279]  | [5280]         | ESUR    | cooking pot | wheel-thrown                     | 55      |
| <P35>   | <65>    | 8 (2)          | OA17     | [4384]  | [4389]         | EMGY    | curfew      |                                  | 55      |
| <P36>   | <66>    | 8 (2)          | OA17     | [1225]  | [1226]         | EMCALC  | cooking pot |                                  | 55      |
| <P37>   | <67>    | 8 (2)          | OA17     | [1348]  | [1350]         | EMCALC  | cooking pot | fine sandy ware                  | 55      |
| <P38>   | <68>    | 8 (2)          | OA17     | [1348]  | [1350]         | EMCALCQ | cooking pot | added sand, moderate flint       | 55      |
| <P39>   | <69>    | 8 (2)          | OA17     | [1367]  | [1368]         | EMCALC  | flared dish | flinty fabric                    | 55      |
| <P40>   | <70>    | 8 (3)          | OA18     | [4569]  | [4570]         | SHER    | cooking pot |                                  | 59      |
| <P41>   | <71>    | 8 (3)          | OA18     | [4919]  | [4876]         | SHER    | prop?       | hollow pedestal base, stab marks | 59      |
| <P42>   | <72>    | 8 (2)          | OA17     | [4889]  | [4758]         | LCOAR   | jar         | with applied thumbled strip      | 59      |
| <P43>   | <73>    | 8 (3)          | OA18     | [4340]  | [3365/4343]    | KING    | cooking pot |                                  | 59      |

they could span the period 1050–1200. The most complete find is a large flared dish <P32> (main report: Fig 55) from ditch [1350] (period 8, phase 2) of which c.70% of the rim is present; as it is handmade the rim diameter is irregular but it measures c.310–320mm across, with a wall depth of c.55mm. Cooking pots represented by over 18 sherds were also found in ditch [1142] (two abraded examples, including <P33> (Fig 55) one with a thumbled rim) and pit [1338] (period 8, phase 2), while waterhole [5280] contained four sherds from a wheel-thrown cooking pot with well-defined rim <P34> (Fig 35); although the fabric is close to that of Kingston-type ware (KING), the form is more typical of the 12th than the 13th century. Fabric ESUR MIC, made of a micaceous fine sandy clay, does not occur in London but has been noted among finds from Tolworth (Blackmore 2010; Blackmore & Thorp 2011, 33).

Broadly contemporary with the above are the coarse sandy fabrics, in some cases with fine flint or no flint (EMGY), in others with coarser flint (EMGY FL), which together total 119 sherds (49 ENV, 1.224kg) and are the third most common ware type. Most sherds are from cooking pots and jars, but part of a lid or curfew (main report: Fig 55, <P35>) and a possible jug with patchy green glaze (from ditch [3412]) are also represented. A range of slightly finer sand-tempered wares is also present (EMS, EMCS), some with flint inclusions (EMSF), totalling 81 sherds (42 ENV, 594g). These are probably of relatively local origin, and similar fabrics have been noted at Harmondsworth; cooking pots are the main form, some with thumbled rims. In addition, 30 sherds (21 ENV, 471g) are flint-tempered, some with added sand, some with calcareous inclusions (fabrics EMFL, EMFL CALC, EMFLS). These wares correspond with Surrey fabrics FLQ, QFL and GQ, and EMGY/EMGY FL might equate with fabric Q404 at Terminal 5, the third most common ware on that site, thought to be related to the Surrey wares and relatively locally made (Mephram 2010).

Also of 11th-/12th-century date are shell-tempered, calcareous and chalk-tempered wares. One everted rim sherd from ditch [883] has abundant plate-like voids

and was recorded as early-medieval shell-tempered ware (EMSH; Surrey fabric group S2) but no other possible shell-tempered wares were identified. The calcareous wares (EMCALC, EMCALCQ, EMCH; Surrey fabric groups SNC, QCS) total 93 sherds (38 ENV, 721). They are of uncertain origin, but are characterised by voids left by inclusions that have leached or burnt out; some sherds have a fine fabric with few other inclusions, while others are coarser, with sand and/or sparse flint. Forms of note include cooking pots <P36> from pit [1226], and <P37> and <P38> (main report: Fig 55) from ditch [1350], of which <P37> has a bag-shaped profile, wider at the base than at the rim, and horizontal combing on the shoulder, and part of a flared dish from ditch [1368] (Fig 55, <P39>).

The remaining sherds belong to better known industries and are more easily dated. They include early – *ie* mainly handmade – south Hertfordshire coarse-ware (ESHER, dated to 1050–1200; Blackmore & Pearce 2010, 90–1, 201–3) and developed South Herts-type greywares (SHER, dated to 1170–1350; *ibid.* 90–5, 204–6; Surrey fabric group HMQ). Including sieved sherds from well [2448], 55 sherds (7 ENV, 329g) were recorded as ESHER, of which 46 are from a cooking pot with horizontal combing, a variation of the vertical and diagonal combing seen on wares from Rush Green, Denham, Bucks and Uxbridge (Farley & Leach 1988; Knight & Jeffries 2004, 46–7). SHER, by contrast, is the second most common ware type on the site (176 sherds (34 ENV, 2.382kg). Of these 87 sherds are from 11 jars, 39 are from 17 cooking pots, one with surface rilling (main report: Fig 59, <P40>) (from waterhole [4570]), a tradition which continued into the 13th century. A total of 46 sherds are from jugs, although only three examples are represented, with 40 sherds from the base of a large example with unusually large finger impressions spaced at intervals around the base angle (from fill [4579] in waterhole [4164]). Fill [3845] in ditch [2722] contained a rod handle with single thumbing down the back. Also present are joining base sherds from a small jug or bottle (from fill [4265] in ditch [4264]). These wares were produced at a number

of centres, but the closest to the site are at Rush Green and Uxbridge, dated to the late 12th/early 13th century (Farley & Leach 1988; Knight & Jeffries 2004, 12, 13–6, 41–9, figs 14, 15; Blackmore & Pearce 2010, 114–18). An unusual tubular form with external stabbing found in ditch [4876] (period 8, phase 3) could be a kiln prop (main report: Fig 59, <P40>). although no kilns are known in the area and the form differs from those found at Uxbridge (Knight & Jeffries 2004, 46, fig 51; Blackmore & Pearce 2010, fig 61, nos 525–6), Pinner (*ibid*, fig 59, no. 478) and Rush Green (*ibid*, fig 60, no. 605).

London-type wares (Pearce *et al* 1985) are rare on the site (13 sherds, 3 ENV, 200g), and only appear in the coarse variant (LCOAR, LCOAR EAS, LCOAR CALC), including a jug handle from waterhole [3365]. Jar <P42> (main report: Fig 59) with applied strips from ditch [4758], however, could be a local equivalent as the fabric is close to EMGY/EMGY FL. Surrey whitewares (Pearce & Vince 1988; Surrey fabric groups FQ and WW) are also surprisingly sparse, as the 67 sherds (1.402kg) of Kingston-type ware (KING) are only from 13 vessels, with 40 sherds from a large externally sooted cooking pot <P43> (Fig 59). The others include unglazed sherds that appear to be later than early Surrey ware, but not Kingston-type ware as such, perhaps an intermediate phase of the industry not seen in central London. The more definite finds include two sherds from two metal copy jugs (*ibid*, 20, figs 56–9) found in the upper fill [4094] of waterhole [4095] (period 8, phase 3). Also present is part of a crucible in a whiteware fabric <60> (not illustrated) from ditch [3493], again possibly from Kingston. Two abraded sherds from the base of a jug with continuous thumbing around the angle may be of Earlswood-type ware (EARL), but as the fabric contains iron oxides they could be a more local oxidised ware. Only one sherd is of coarse Surrey-Hampshire border ware (CBW). Possible imports are limited to two small sherds in a very fine whiteware that appears to be of North French origin (NFM).

## Discussion

Although the medieval assemblage is quite large, the contexts are mainly scattered ditches and as most of the pottery from period 8, phase 2, is the same as that in period 8, phase 1, it is unclear how much can be associated with actual activity on the site and how much is redeposited waste from a settlement elsewhere, used in manuring the fields. Most of the pottery appears to be from relatively local sources and dates to the period between 1050 and 1200. Due to the nature of the sandy fabric types and abrasion, however, some sherds may appear earlier than they are, and only when diagnostic fabrics, forms or glazed wares are present is it possible to be more certain about the dating. This reduces the potential of the pottery as a dating indicator.

The same problem has been noted on other sites in the area. At Terminal 5, the 1792 sherds (19.697kg) fall into 30 fabric types and, being sparsely distributed and largely undiagnostic, were assigned to three ceramic phases (Cramp *et al* 2010, 337; Mephram 2010). Most of the pottery dates to the 11th- to 12th-century (ceramic phase 1) and appears to be broadly contemporary that

from Sipson period 8 phases 1 and 2. As at Sipson, Early Surrey ware is the dominant ware type, but wares dating to the 13th and 14th centuries (ceramic phase 2) are more common than in Sipson period 8 phases 2 and 3, with a range of greyware fabrics and noticeably more London-type and Kingston-type wares (*ibid*, tables 2, 4), although it is suggested that the latter may be earlier products of the industry.

At RMC Land the bulk of the pottery comprises early medieval wares which, from the amount of late Saxon shelly ware, appear to be slightly earlier in character than those from Sipson Farm, although the two chronologies almost certainly overlap. The finds from ICSG, by contrast, have a more limited range of early medieval wares and a higher proportion of coarse London-type ware and Kingston-type ware (*ibid*, 169, 171, table 6.8).

Nonetheless, these sites and those at West Drayton (Cotton 1981, 123–5) and Harmondsworth (Knight & Jeffries 2004, 48–9; Blackmore 2018) and the market towns of Uxbridge (Knight & Jeffries 2004, 4–5, 7–10) and Staines (Jones with Poulton 2010) all testify to the growth of settlement in the Colne Valley in the 12th century, and the concomitant development of the pottery supply. The same applies to Northolt Manor, in the Crane valley (Hurst 1961, 259–76). At Manor Farm, Harmondsworth, 319 sherds of medieval pottery were found (Blackmore 2018). Although the first mention of Sipson is not until 1214 (Lewis *et al* 2010, 335), the pottery clearly demonstrates the development of field systems and some occupation before this, and the mixed range of wares present reflects the location of the site approximately half way between Uxbridge to the north and Staines. For period 8 phase 1, the main difference between Sipson and the ICSG, RMC Land and Terminal 5 sites is the virtual absence of shell-tempered pottery, which was relatively common on the other sites (Mephram 2010, table 1, ill 8); although these were present on ICSG and RMC Land (Mephram 2015a, 171, table 6.8). Otherwise, early Surrey ware is the dominant ware on most sites, with smaller amounts of locally made wares types not marketed in London, some oxidised but mainly reduced. The latter could be from the contemporary industries at Rush Green and Uxbridge, or from other unknown kilns. The later 12th century saw the appearance of more developed reduced wares from kilns in south Hertfordshire and Middlesex (Knight & Jeffries 2004; Blackmore & Pearce 2010); the paucity of other wares may reflect the date and/or status of the site, as such wares were clearly available in Harmondsworth, Uxbridge and elsewhere in the area (Knight & Jeffries 2004, 47–9). The sherd of north French pottery is unexpected in this rural context but may reflect the fact that the manor of Harmondsworth was held by the abbey of St Catherine's, Rouen until 1391. Two sherds of French pottery were, however, also found at Terminal 5 (Cramp *et al* 2010, 359; Mephram 2010) and imports are also known at Northolt (Hurst 1961, 272, fig 72, no. 16); all may have arrived with passing guests rather than normal marketing.



Fig 68. Denarius of Hadrian <C1> dated AD 119–22 from enclosure ditch [2682] S27 (scale 2:1)

## ROMAN COIN

*Julian Bowsher*

The only coin from the site was a denarius of Hadrian dated AD 119–22 (RIC 110a) (Fig 68). This came from an enclosure ditch [2682] of probable medieval date (period 8, phase1). It has been battered, probably through cultivation, and must be residual as is the case with the Roman pottery, also of the 1st and 2nd centuries AD. In contrast, the few Roman coins from ICSG are of the 4th century (Cooke 2015, 209) though another single mid-2nd-century AD coin, amongst plentiful late 3rd- and 4th-century AD pieces, was also found at Terminal 5 (Cooke 2010).

<C1> Silver coin (Fig 68)

<22>, [3273]; period 8, phase1

Hadrian, AD119–22; denarius. Diam 20mm; Wt 2.65g. Ax 6; Wr D.

Obv IMPCAESARTRAIANHADRIANVS AVG, laur bust r. Rev P M TR P COS III, Hadrian standing l holding rudder on globe and spear. RIC II (Part 2), 353 no.110a, Rome.

## PREHISTORIC, ROMAN AND MEDIEVAL SMALL FINDS

*Michael Marshall*

### Introduction

Small finds of later prehistoric, Roman and medieval date are noted in the chronological narrative above and summarised in Table 12. This appendix discusses the more important objects and provides a catalogue of the illustrated material. Full details of the unillustrated, post-medieval and unstratified/undatable finds can be found in the site archive.

### Bronze Age Finds

Two Bronze Age small finds came from period 5, OA5 pit fills. Amber bead, <S1> (Fig 69) from [1954] was associated with Late Bronze Age or Early Iron Age pottery (see Cotton above). Prehistoric amber ultimately derives from the Baltic Sea region. It may have been accessed through long-distance exchange

networks, but fragments can also be found washed up on the eastern coast of England (Beck & Shennan 1991, 15–27). This exotic material may have been regarded as magical and was particularly popular in the early Bronze Age, especially in central southern England (Beck & Shennan 1991, 71–98; Needham 2006, 77, fig 37; *eg* Mephram with Sheridan 2010, 1–3 from Terminal 5). Late Bronze Age (or earliest Iron Age) finds are rarer and are restricted to simpler bead types (Beck & Shennan 1991, 101–4). However, these were still found deposited in contexts, such as hoards, that imply considerable social significance (Brück & Davies 2018). Amber beads in our region are more typically found as single finds from settlement contexts (*ibid*) *eg* from Runnymede Bridge (Longley 1980, 31–3, fig 18, nos 69–70) and Queen Mary's Hospital, Carshalton (Adkins & Needham 1985, 41) in Surrey, but it is possible that some of these are also deliberate placed deposits. A bead from Lofts Farms, Essex (Brown 1988, 281) was found with a pottery assemblage that was thought to represent the residues of a feast and, as the Sipson Farm bead was also found in association with a distinctive pottery assemblage, it is possible that token deposits of amber beads were deliberately utilised within ritual acts that also involved food consumption.

Decorated fired clay loom weight <S2> (Fig 69) from pit [5396], dated to period 5, was found with burnt material and Middle Bronze Age pottery. Plain examples are fairly common in Middle to Late Bronze Age contexts and are known from nearby at Terminal 5 (Brown 2010, 8, fig 5), ICSG (Brown & Mephram 2015, 177–8, fig 6.11 no. 2) and from Queen Mary's Hospital, Carshalton (Adkins & Needham 1985, 37–8, fig 14, nos 398–402). Decorated examples, as <S2>, are much more unusual, but have been found at Latton Lands, Wiltshire (Powell *et al* 2008, fig 29) and Blackbird Leys, Oxford (Booth & Edgeley-Long 2003, 217–8, fig 6). A group of both decorated and plain cylindrical weights were found in a pit at Magna Park, Milton Keynes (Chapman 2012). The decorative schemes on these weights vary considerably but lines of comb-stabbed impressions are a common feature. It is possible that decoration (or its absence) served a 'practical' purpose, perhaps to distinguish sets with different owners or with different functions. However, the data are limited, and no clear patterns of this sort have yet emerged. Alternatively, decorative loom weights might reflect the social importance of weaving in these communities or indicate that they were made by the same people who produced similarly decorated pottery vessels (see Booth & Edgeley-Long 2003, 217).

### Iron Age or Romano-British Triangular Loom Weights

Triangular clay weights are typical finds on Iron Age sites in southern Britain and have been discussed in some detail elsewhere based upon larger well-stratified assemblages (*eg* Poole 1984, 401–6). Better preserved examples from the region include those from Beddington, Surrey (Adkins & Adkins 2005, 64–5, fig 57) and Terminal 5 (Brown 2010, 3–4 & 8, fig 6). The present assemblage comprises nine small and poorly preserved fragments (944g), none with complete dimensions (Fig 69). Only one comes from an Iron Age

Table 12. Details of notable prehistoric, Roman and medieval small finds

| <S> no. | Acc no. | Period (phase) | Land use | Context      | Date               | Material | Object        | Fig no. |
|---------|---------|----------------|----------|--------------|--------------------|----------|---------------|---------|
| <S1>    | <18>    | 5              | OA5      | [1953]       | Bronze Age         | amber    | bead          | 69      |
| <S2>    | <53>    | 5              | OA5      | [5395]       | Bronze Age         | ceramic  | loom weight   | 69      |
|         | <54>    | 6              | OA6      | [5898]       | Iron Age           | ceramic  | loom weight   |         |
|         | <55>    | 7 (2)          | OA11     | [2743]       | Iron Age or Roman  | ceramic  | loom weight   |         |
|         | <56>    | 7 (2)          | S15      | [5589]       | Iron Age or Roman  | ceramic  | loom weight   |         |
|         | <57>    | 7 (2)          | S15      | [5782]       | Iron Age or Roman  | ceramic  | loom weight   |         |
|         | <58>    | 7 (2)          | S15      | [5783]       | Iron Age or Roman  | ceramic  | loom weight   |         |
|         | <59>    | 8 (1)          | OA16     | [5533]       | Iron Age or Roman  | ceramic  | loom weight   |         |
| <S3>    | <24>    | 7 (2)          | S22      | [3413]       | Iron Age or Roman? | ceramic  | unidentified  | 69      |
| <S4>    | <25>    | 7 (2)          | S22      | [3413]       | Iron Age or Roman? | ceramic  | unidentified  | 69      |
| <S5>    | <34>    | 7(2)           | S13      | [4411]       | Roman              | ceramic  | spindle whorl | 70      |
|         | <44>    | 7 (1)          | OA7      | [3881]       | Roman              | stone    | quern         |         |
| <S6>    | <46>    | 7 (2)          | OA11     | [2753]       | Roman              | stone    | quern         | 70      |
|         | <47>    | 7 (2)          | OA11     | [2753]       | Roman              | stone    | quern         |         |
|         | <43>    | 7 (3)          | OA13     | [3872]       | Roman              | stone    | quern         |         |
|         | <45>    | 7 (3)          | OA13     | [3872]       | Roman              | stone    | quern         |         |
| <S7>    | <38>    | 8 (3)          | OA18     | [3363]       | Roman              | stone    | quern         | 70      |
|         | <39>    | 8 (3)          | OA18     | [3363]       | Roman              | stone    | quern         |         |
|         | <30>    | 7 (2)          | S10      | [4079]       | Roman              | iron     | knife         |         |
|         | <48>    | 7 (1)?         | OA7      | unstratified | Roman?             | lead     | weight        |         |
|         | <29>    | 8 (2)          | OA17     | [4083]       | Medieval           | iron     | horseshoe     |         |
|         | <13>    | 8 (2)          | OA17     | [1395]       | Medieval           | iron     | horseshoe     |         |
| <S8>    | <27>    | 8 (3)          | OA18     | [4340]       | Medieval           | wood     | bowl          | 70      |

Table 13. Quantification and distribution of fired clay loom weights by type

| Period (phase) | Land use | Context | Form                                 | fabric            | Wt (g) | Frgs |
|----------------|----------|---------|--------------------------------------|-------------------|--------|------|
| 5              | OA5      | [5395]  | decorated cylindrical (<S2>, Fig 69) | FLIN              | 450    | 1    |
| 6              | OA6      | [5898]  | triangular?                          | FLIN              | 115    | 1    |
| 7 (2)          | OA11     | [2743]  | triangular                           | FLIN              | 68     | 1    |
| 7 (2)          | S15      | [5589]  | triangular                           | FLIN              | 179    | 1    |
| 7 (2)          | S15      | [5782]  | triangular?                          | FLIN              | 58     | 1    |
| 7 (2)          | S15      | [5783]  | triangular                           | FLIN reduced core | 335    | 4    |
| 8 (1)          | OA16     | [5533]  | triangular                           | FLIN reduced core | 189    | 1    |

deposit and the majority (seven fragments) come from Roman period 7, phase 2 contexts, mostly from ditch S15.

The poor preservation of the Sipson Farm examples could indicate that those from Roman contexts are residual. However, weaving with 'Iron Age' triangular loom weights continued in some areas until at least the end of the 1st century AD and it is not entirely clear when the type passed out of use (Perring & Pitts 2013, 208–9). Others examples are known from early Roman contexts in the region (*eg* Watson with Heard 2006, 95–6, fig 90 <S 30>; Cowie *et al* 2013, 16, 81, fig 13 <S 14>). Excluding an obviously residual fragment from a medieval ditch, the latest dated example here comes from an upper fill [2743] of a Roman waterhole, associated with early 2nd-century samian (Fig 69).

### Two Undated Fired Clay Artefacts

Two further fired clay objects (Fig 69, <S3>, <S4>) were found in a posthole [3414] of S22, dated to the early to middle Roman period (period 7, phase 2). These might be of Roman or prehistoric date given their flint-tempered fabric. Both are globular lumps clay with deep thumb impressions on one face. Their purpose is not clear. It is possible that they were terminals of some sort, either jammed on to the top of a shaft, perhaps to make a sharp end safe, or on to the base to act as a foot, but if so they would have been fairly fragile.

### Roman Finds

The range of Roman finds is quite restricted; most are associated with textile work or food preparation (Table 12). A perforated pot sherd fragment <S5> (Fig 70) from period 7, phase 2, is probably an unfinished

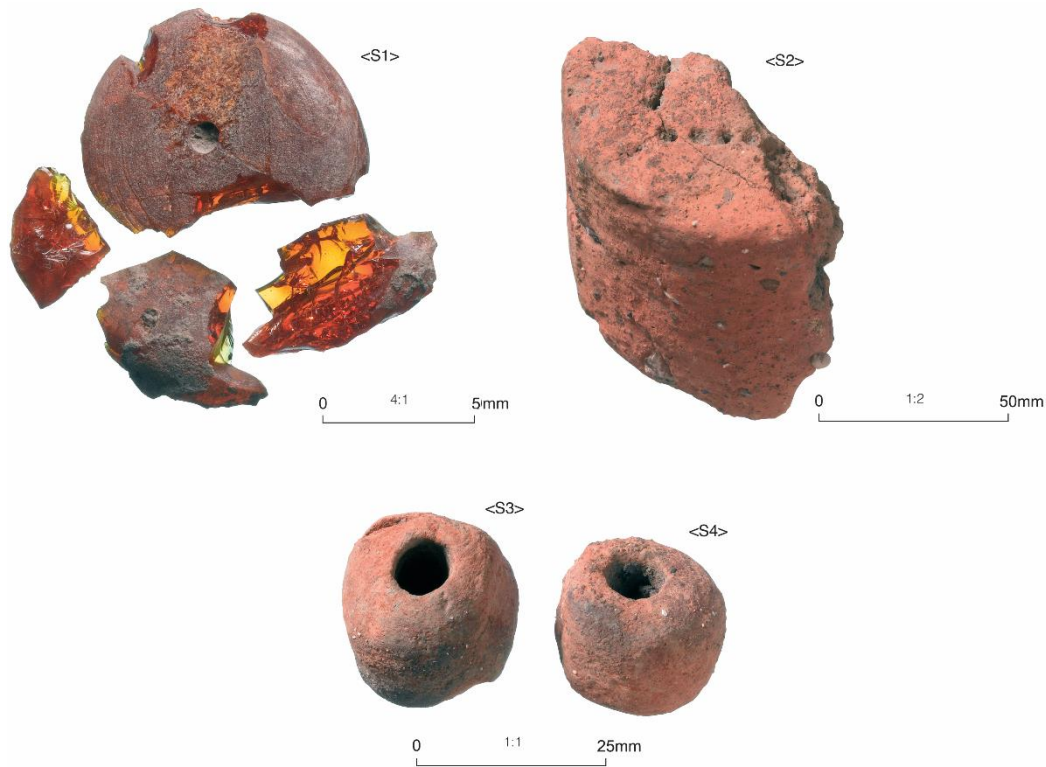


Fig 69. Bronze Age amber bead <S1>, Bronze Age fired clay loom weight <S2> and fired clay objects with impressions <S3> and <S4> (scale: <S1>, 4:1; <S2>, 1:2; <S3> and <S4> 1:1)

spindle whorl for making yarn, while triangular weights from Roman contexts (Fig 69), if not residual, may reflect the use of the warp-weighted loom to produce cloth within a native Iron Age tradition.

The quern stones from the site (seven finds, totalling 23 fragments and 9.593kg) are dominated by Lodsworth Greensand (five fragments; 8.974kg; see Shaffrey & Roe 2011 and Green 2017, 163–6 for this industry) and the diagnostic fragments are all typical Lodsworth rotary querns (see <S6>, <S7>, Table 12). However, two other sources/types may be represented by fragments from fill [3872] of putative mid-late Roman pond [3901]. This feature produced small abraded pieces of imported Mayen lava (17 fragments; 348g), probably from rotary querns or millstones, and a small burnt unsourced sandstone fragment (271g) that might come from the edge of a rotary quern.

The only other identifiable small finds of Roman or possible Roman date are a fragment from a large knife or cleaver blade <30>, probably also used for food preparation, and a rectangular lead pan weight <48> (Table 12). The latter weighs 57.6g and has a cross marked on one face and a dot stamped on the opposite face.

### Medieval Finds

Just three medieval small finds are covered by this report. Two iron horseshoe fragments came from period 8 phase 2, OA17. Of these, only type 2 horseshoe <29> is well enough preserved to be identified typologically. The form was most common in the 11th–12th century AD (Clark 1995, 86). More interesting is a

large lathe-turned alder bowl (<S8>) from a well [4343] in period 8, phase 3 OA18.

### Catalogue of Illustrated Small Finds

#### Bronze Age

<S1> Amber bead (Fig 69)  
<18>, [1953]; period 5, OA5  
Incomplete; Diam 13.6mm; Th (6.6)mm; perf Diam  $\approx$  1.5mm. Amber bead, badly damaged, circular with fine drilled central perforation and irregular lentoid section. Three loose fragments.

<S2> Fired clay loom weight (Fig 69)  
<53>, [5395]; period 5, OA5  
Incomplete; L 90mm; Diam 120mm; est Diam central perf (25)mm; surviving weight (450)g. Cylindrical loom weight fragment, full length and just under 25% of circumference surviving, broken along the longitudinal cylindrical perforation. One flat face is decorated with parts of two rows of comb-stabbed circular impressions, four surviving in one row, three in the other, each about 4–5mm in diameter, meeting at an angle of slightly under 90°, perhaps originally forming a lozenge around the perforation. The other flat face and the sides are undecorated. Made from oxidised brickearth fabric with sparse irregular flint.

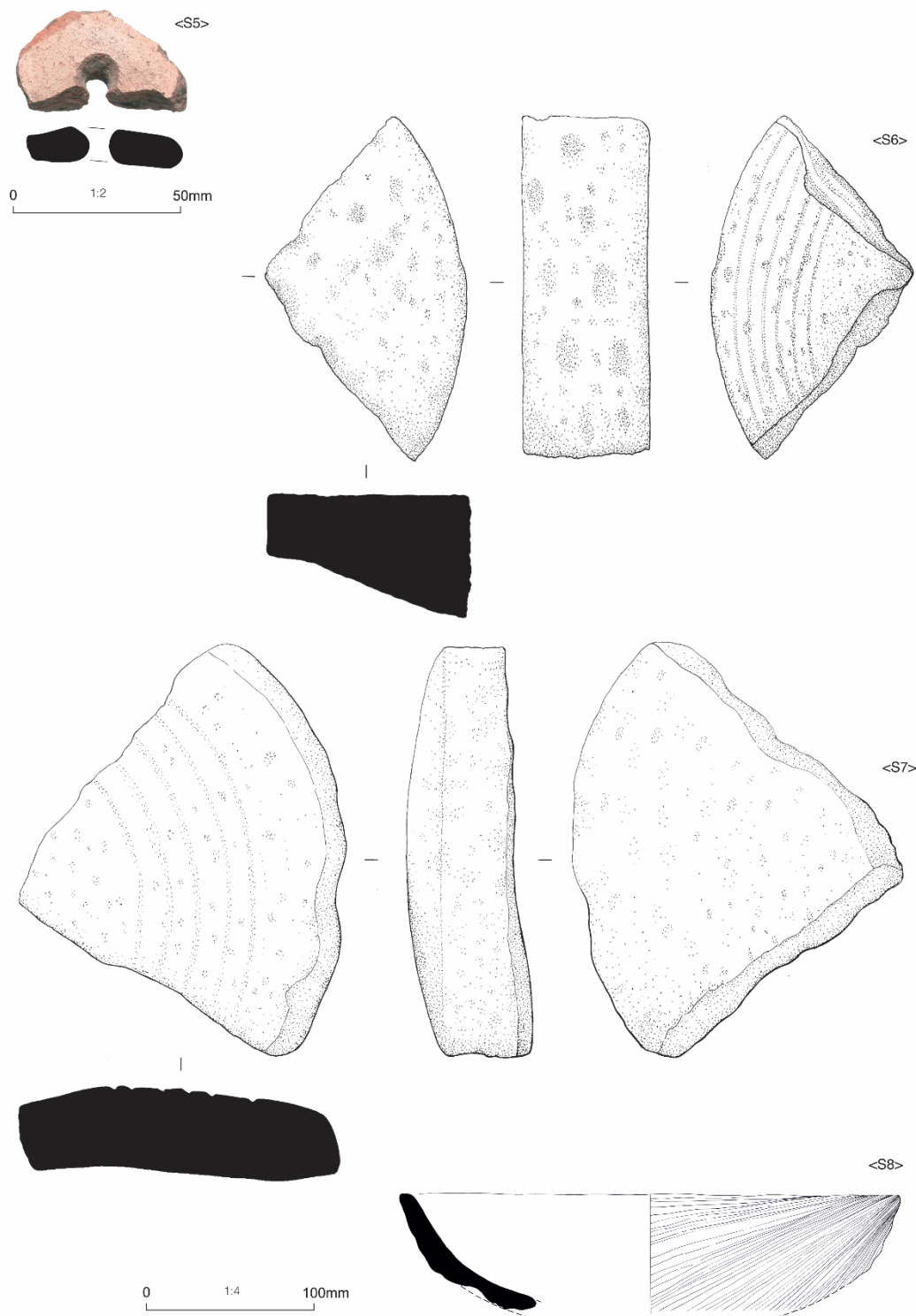


Fig 70. Roman ceramic spindle whorl <S 5>, Roman stone querns <S 6> and <S 7> and medieval Alder bowl <S 8> (scale: <S 5> 1:2; <S 6>—<S 8>, 1:4)

#### Roman or Prehistoric?

<S3> Fired clay object (Fig 69)  
 <24>, [3413]; period 7, phase 2, S22  
 Complete; H 41mm; W 44.5mm; Th 42.5mm; Diam hole 14.5 x 12.5mm; Depth hole 28.8mm. Fired clay object, globular but with a slightly flattened face with an oval hole pushed into it at a slight angle. Poorly mixed

brickearth fabric with sparse poorly sorted small flint and iron rich inclusions.

<S4> Fired clay object (Fig 69)  
 <25>, [3413]; period 7, phase 2, S22  
 Complete but damaged; H48.5mm; W 46.5mm; Th 44mm; Diam hole 15 x 12mm; Depth hole 25mm. Fired clay object, globular but with very slightly flattened faces, an oval hole pushed into one face at a slight angle.

Made from poorly mixed brickearth with sparse small flint and iron rich inclusions. Now split into two adjoining pieces.

Roman

<S5> Ceramic spindle whorl (Fig 70)  
<34>, [4411]; period 7, phase 2, S13  
Incomplete; est Diam 50mm; Th 11.3mm; min Diam perf 6.5mm. Spindle whorl, made from recycled pottery base sherd, half now missing. Irregular subcircular shape, rough edges, thicker in centre. Central hourglass shaped perforation. Unsourced oxidised orange fabric with pale cream slip. It is quite crude and thus perhaps unfinished and broken when the perforation hole was being drilled during manufacture.

<S6> Stone quern (Fig 70)  
<46>, [2753]; period 7, phase 2, OA11  
Incomplete; H 75mm; Diam  $\approx$  320mm. Edge fragment from a rotary quern upper stone. Less than 25% of circumference. Neither eye nor handle survives. Cylindrical form. Near vertical sides and flat top. Concentric wear on the concave grinding face.

<S7> Stone quern (Fig 70)  
<38>, [3363]; period 8, OA18  
Incomplete; H wall 40–50mm; max H (75+)mm; Diam  $\approx$  300–320mm. Edge fragment from a rotary quern lower stone. Concave base, uneven but fairly smooth/worn, vertical sides, damaged in places, convex grinding face with concentric wear. Spindle hole does not survive. Medieval

<S8> Wooden bowl (Fig 70)  
<27>, [4340]; period 8, phase 3, OA18  
Incomplete; Diam 300mm; H (67+)mm; max surv Th wall (14)mm. Rim fragment from a large lathe-turned bowl made from alder (*Alnus glutinosa*; see Table 11Table ). Relatively shallow form with rounded rim. Fine horizontal lathe-turning marks visible in a band on interior and very faintly on exterior near the rim. Wooden vessels of comparable size and shape are not uncommon in medieval contexts and are probably too large for individual servings of liquid foods. Keys (1998, 198–201) suggests that similar vessels from London were used in food preparation and serving.

## WOOD SPECIES IDENTIFICATION

Karen Stewart

This report presents the results of the wood species identification of timbers and artefacts from the site (Table 14Table ). Oak (*Quercus* sp) timbers were identified by eye. Where species identification of timbers was unclear samples were taken for microscopic wood species analysis. Where possible, samples were taken from damaged areas of the artefacts to reduce the visual impact of sampling on the objects. The samples were analysed using standard methodologies (Schoch *et al* 2004; Wheeler *et al* 1989) and modern reference material where required.

## WOODWORK

Damian Goodburn

### Methodology

Timbers found in four wells/waterholes, [4343], 5245], [5280] and [6120], were recorded *in situ* before lifting. After cleaning further details were recorded in accordance with guidelines (Museum of London 1994; Brunning 1996). Records comprise scale drawings, pro-forma timber sheets record sheets and detailed photographs.

After recording seven oak timbers and the beech wheel fragment were sampled for tree-ring analysis (Table 25). Other samples were taken for radiocarbon dating (Table 24) and for species identification (Table 14) of smaller roundwood elements that could not easily be visually identified as oak (*Quercus* sp) or beech (*Fagus sylvatica*).

### Wheel Fragments from Well Shaft [4343]

The overall truncated length of the rim or ‘felloe’ sections is  $\approx$  0.88m long by 185mm deep with a maximum thickness of 65mm (perhaps nearer 70mm before decay and compression post burial (Fig 71). Fragments of spoke ends and locking wedges were also found. The wheel rim has a thin, plank-like section, much deeper than more recent wooden wheels or Roman examples, but similar to the deep, plank-like examples of the wheels on the wagon from the Oseberg ship burial of AD 834 (Sjøvold 1985, 25). Other wheels with deep plank like felloes have also been found in Scandinavian bogs (Jope 1956, 551). A broadly similar fragment of Saxo-Norman wheel felloe from Longstanton, Cambridgeshire, is also plank-like and pierced by two spoke holes, but a little thicker than that from Sipson Farm (Darrah 2014). The Longstanton find is the only other early medieval wheel fragment recorded in England known to the author.

The Sipson Farm rim section included one nearly complete felloe and conjoining fragments of another, together with several loose small roundwood spoke fragments and oak locking wedges. The felloe had spoon augered holes  $\approx$  38mm dia 105mm long in the ends for pegs that once joined it to other felloes in the wheel, but they were not found *in situ*, suggesting the wheel had been completely broken up before deposition.

The felloe was shaped from a half log of beech, as were the beech felloes used in the small Oseberg Wagon. During this period it is almost certain the timber was cleft and then axe shaped, but surface decay and use wear had removed diagnostic tool marks. Two surprisingly small round spoke holes  $\approx$  25mm in diameter survived and part of a third (Fig 71). A fragment of a loose spoke end was identified as fruitwood (Maloideae) (Table 14). It had been shaved down from a cleft billet of timber. The remains of a small slot in the broken, conjoining felloe fragment was possibly the result of a crude attempt at a repair, possibly

Table 14 Results of taxonomic identification of wood artefacts

| Period (phase) | Land use | Context | Parent context   | Acc no. | Type        | Taxon                   | Common name               | Notes                        |
|----------------|----------|---------|------------------|---------|-------------|-------------------------|---------------------------|------------------------------|
| 5              | OA5      | [6073]  | waterhole [6120] |         | roundwood   | Maloideae               | hawthorn, apple, pear etc |                              |
| 5              | OA5      | [6074]  | waterhole [6120] |         | roundwood   | not identified          |                           | very poorly preserved        |
| 5              | OA5      | [6075]  | waterhole [6120] |         | roundwood   | Maloideae               | hawthorn, apple, pear etc |                              |
| 5              | OA5      | [6076]  | waterhole [6120] |         | roundwood   | <i>Corylus avellana</i> | hazel                     |                              |
| 5              | OA5      | [6122]  | waterhole [6120] |         | roundwood   | <i>Quercus</i> sp       | oak                       |                              |
| 8 (3)          | OA18     | [4340]  | waterhole [4343] | <27>    | wooden bowl | <i>Alnus glutinosa</i>  | alder                     | <S8>, Fig 70                 |
| 8 (3)          | OA18     | [4340]  | waterhole [4343] | <28>    | withies     | <i>Corylus avellana</i> | hazel                     | c.10 fragments, 4 identified |
| 8 (3)          | OA18     | [4396]  | waterhole [4343] |         |             | Maloideae               | hawthorn, apple, pear etc |                              |

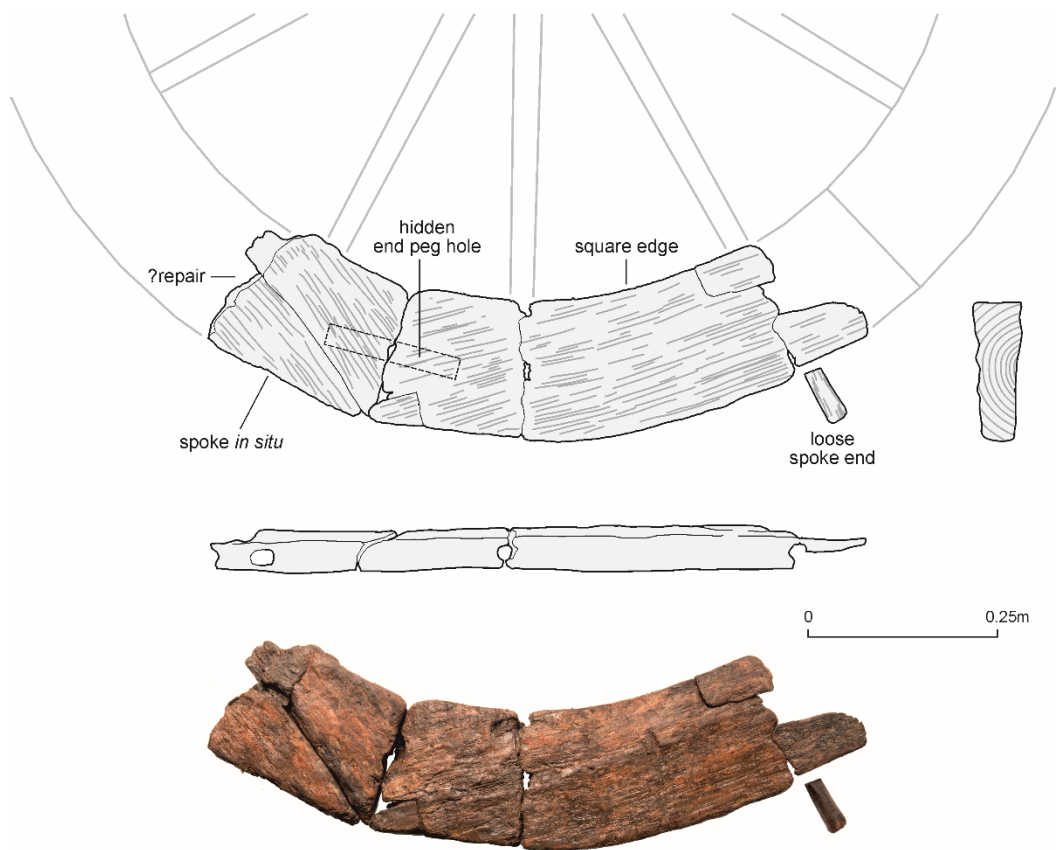


Fig 71. The mid-12th-century beech wheel rim timbers [4396] reassembled, showing slight surface decay and a loose fruitwood spoke fragment, and view of the outer edge with holes for the spoke ends (scale 1:10)

indicating the replacement of a broken spoke with one of a quite different wider form.

The beech used for the felloes was a rare choice for recent wheelwrights in England, and the use of fruitwood for spokes is not documented at all, but intermediate archaeological finds and occasional documentary sources show that beech was actually often used as late as post-medieval times (Goodburn 2009, 220; Rackham 1986, 141). Both types of timber were

strong but not rot resistant. The parent beech tree was fairly slow grown with annual rings under 2mm wide and would probably have been around 75 years old when felled. The narrow rings probably imply an origin in tall, dark wildwood-type woodland. Tree-ring analysis suggests a felling date after 1109 (Table 25).

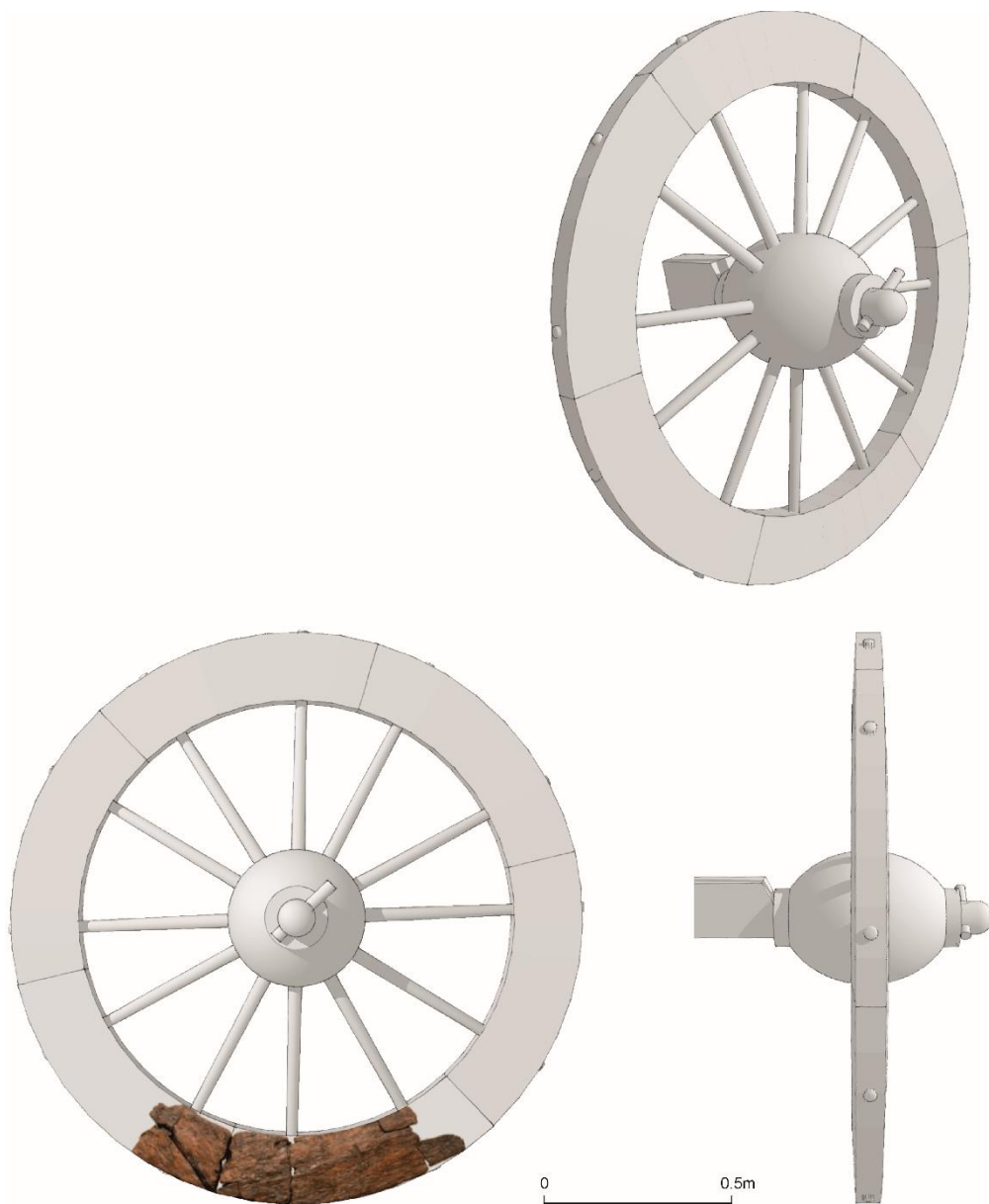


Fig 72. Reconstruction of the mid-12th-century spoked wheel with plank-like 'felloes'; the axle end is based on the dimensions of a re-used axle of similar date from the City (scale 1:20)

### *Reconstructing the Wheel*

Archaeological evidence for early medieval wheels is extremely rare, and there are apparently no published, or on-line, surveys on the subject, although evidence for wheels of prehistoric and Roman date has been reviewed by Piggott (1983) and Jope (1956, 541–6) respectively. The best parallels for wheels of this form are those of the small Oseberg wagon (Bonde & Christensen 1993). The date of the Oseberg find suggests that wheels of this type may have been used in north-west Europe for several centuries before disappearing later in the medieval period. The Oseberg and Sipson Farm wheels differ from late prehistoric and Roman types, although their form possibly echoes earlier plank-like, solid disk wheels.

The reconstruction presented in Fig 72 is based on the limited comparative evidence. It has six felloes and

twelve spokes as does the Oseberg example (and many recent agricultural wooden wheels) and a large nave with small round spokes. The depth of the felloes probably compensated for the apparent weakness of the spokes, although the partial slot in one of the felloes may indicate repair. The lack of a supporting metal rim suggests that the spokes would have been locked into the hub in some way, possibly using oblique pegs, such as those found in a small 16th-century beech wheel found in Southwark (Goodburn 2009, 220–1). The reconstruction of the missing axle and hub is based on a re-used section of an 11th-/12th-century oak axle ('axletree') found during an excavation near Ludgate Hill in the City (site code PWB88; Goodburn 1992b).

Allowing for about 10mm wear of the outer edge of the wheel, the reconstructed diameter would have been close to 5ft (1.52m). A wheel of this fairly large size could have been used on a cart or wagon or possibly a

*Anne Davis*

Over 200 environmental samples were taken during the excavation. They came mainly from cremations, and fills of pits, postholes, waterholes and ditches, dating from

the Neolithic/early Bronze Age to the late medieval periods. Most samples produced no flot after processing, or were seen at assessment to contain only occasional small fragments of charcoal. Twenty-two samples, spanning the periods of occupation of the site, were selected for analysis on the basis of secure dating and presence of significant plant remains.

Flots from the selected samples were scanned, using a low-powered binocular microscope, and all charred plant remains were removed, recorded and fully quantified. Waterlogged plant parts were recorded and their abundance was estimated (+ up to 10, ++ 11-50, +++ 51-approx. 250, ++++ over 250).

Table 15. Plant remains from deposits dated to periods 2–5

|                                          |                            |            | Period             | 4             | 4             | 4             | 4            | 5             | 5            | 5                  | 5             | 5             | 5                   |               |                         |
|------------------------------------------|----------------------------|------------|--------------------|---------------|---------------|---------------|--------------|---------------|--------------|--------------------|---------------|---------------|---------------------|---------------|-------------------------|
|                                          |                            |            | Land use           | OA3           | OA3           | OA3           | OA3          | OA2           | OA2          | B1                 | OA5           | OA5           | OA5                 | OA5           |                         |
|                                          |                            |            | Subgroup/<br>group | 301           | 300           | 299           | 105          | 650           | 235          | 341                | 754           | 579           | 1157                | 598           | 774                     |
|                                          |                            |            | Parent<br>context  | pit<br>[1116] | pit<br>[1114] | pit<br>[1018] | pit<br>[400] | pit<br>[3579] | pit<br>[676] | posthole<br>[1242] | pit<br>[5736] | pit<br>[1954] | waterhole<br>[6120] | pit<br>[2296] | ring<br>ditch<br>[5584] |
|                                          |                            |            | Context            | [1115]        | [1113]        | [1017]        | [399]        | [3578]        | [675]        | [1241]             | [5735]        | [1958]        | [6119]              | [2295]        | [5654]                  |
|                                          |                            |            | Sample             | [90]          | [92]          | [83]          | [47]         | [182]         | [71]         | [103]              | [246]         | [130]         | [256]               | [132]         | [245]                   |
|                                          |                            |            | Sample vol<br>(l)  | 90            | 70            | 90            | 55           | 20            | 10           | 30                 | 30            | 40            | 40                  | 40            | 10                      |
| Latin name                               | Common name                | plant part |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| charred remains                          |                            |            |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| cereal grains                            |                            |            |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Triticum dicoccum</i> Schubl          | emmer                      | -          |                    | 1             |               |               |              |               |              | 1                  | 1             |               |                     |               |                         |
| <i>Triticum</i> cf <i>dicoccum</i>       | emmer                      | -          |                    |               |               |               |              |               | 2            |                    | 2             | 1             |                     |               |                         |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | -          |                    |               |               |               |              |               |              |                    |               |               |                     |               | 4                       |
| <i>Triticum spelta</i> L.                | spelt                      | -          |                    |               |               |               |              |               |              | 1                  | 4             |               |                     | 1             |                         |
| <i>Triticum</i> cf <i>spelta</i>         | spelt                      | -          |                    |               |               |               |              |               | 2            |                    | 3             |               |                     |               |                         |
| <i>Triticum spelta/aestivum/turgidum</i> | spelt/free-threshing wheat | -          | 3                  |               |               |               |              |               |              | 3                  | 2             |               |                     |               |                         |
| <i>Triticum aestivum/turgidum/durum</i>  | free-threshing wheat       | -          |                    |               | 2             |               |              | 4             | 1            |                    |               |               |                     |               |                         |
| <i>Triticum</i> sp                       | wheat                      | -          |                    | 2             |               |               |              |               |              | 2                  | 7             | 2             |                     |               | 3                       |
| cf <i>Triticum</i> sp                    | wheat                      | -          |                    |               | 1             |               |              | 1             |              | 3                  |               | 1             |                     |               |                         |
| <i>Hordeum vulgare</i> L.                | barley                     | -          | 1                  |               |               |               |              | 2             | 1            | 4                  | 9             | 12            |                     |               | 1                       |
| cf <i>Hordeum vulgare</i>                | barley                     | -          |                    |               |               |               |              |               |              | 1                  | 5             | 2             |                     |               | 2                       |
| <i>Avena</i> sp                          | oat                        | -          |                    |               |               |               |              |               |              | 2                  | 5             | 2             |                     |               |                         |
| cf <i>Avena</i> sp                       | oat                        | -          |                    | 2             | 1             |               |              |               | 1            | 1                  | 1             | 2             |                     |               |                         |
| Cerealia                                 | indet. cereal              | -          |                    | 1             |               |               |              | 2             | 1            | 5                  | 14            | 6             |                     | 1             | 10                      |
| chaff                                    |                            |            |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Triticum dicoccum</i> Schubl.         | emmer                      | GB         |                    |               |               |               |              |               |              |                    | 8             |               |                     |               |                         |
| <i>Triticum</i> cf <i>dicoccum</i>       | emmer                      | GB         |                    |               |               |               |              |               |              |                    |               | 2             |                     |               |                         |
| <i>Triticum spelta</i> L.                | spelt                      | SF         |                    |               |               |               |              |               |              |                    | 1             |               |                     |               | 6                       |
| <i>Triticum spelta</i> L.                | spelt                      | GB         |                    |               |               |               |              |               | 5            |                    | 16            |               |                     |               | 10                      |
| <i>Triticum</i> cf <i>spelta</i>         | spelt                      | GB         |                    |               |               |               |              |               |              | 2                  |               |               |                     |               |                         |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | SF         |                    |               |               |               |              |               |              | 5                  | 4             |               |                     |               | 1                       |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | GB         |                    |               |               |               |              |               |              |                    | 11            |               |                     |               | 2                       |
| <i>Triticum</i> sp                       | wheat                      | SF         |                    |               |               |               |              |               |              |                    | 3             |               |                     |               |                         |
| <i>Triticum</i> sp                       | wheat                      | GB         |                    |               |               |               |              |               | 14           | 13                 | 27            | 3             |                     |               | 7                       |
| <i>Triticum</i> sp                       | wheat                      | GF         |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Triticum</i> sp                       | wheat                      | R          |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Triticum</i> sp                       | wheat                      | AW         |                    |               | +             |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Hordeum vulgare</i> L.                | barley                     | R          |                    |               |               |               |              |               |              | 4                  | 5             | 1             |                     |               |                         |
| <i>Avena fatua</i> L.                    | wild oat                   | FL         |                    |               |               |               |              |               |              |                    |               | 1             |                     |               |                         |
| wild plants                              |                            |            |                    |               |               |               |              |               |              |                    |               |               |                     |               |                         |
| <i>Ranunculus acris/repens/bulbosus</i>  | buttercups                 | -          |                    |               |               |               |              |               | 1            | 2                  |               | 1             |                     |               |                         |
| cf <i>Agrostemma githago</i>             | corncockle                 | -          |                    |               |               |               |              |               |              |                    | 1             |               |                     |               |                         |
| <i>Chenopodium</i> sp                    | goosefoots                 | -          |                    |               |               |               |              |               |              |                    | 1             |               |                     |               |                         |
| <i>Vicia/Lathyrus</i> sp                 | vetch/wild pea             | -          |                    | 1             |               |               |              | 2             |              | 14                 | 2             | 1             |                     |               |                         |
| <i>Vicia/Lathyrus/Pisum</i> sp           | vetch/pea                  | -          |                    |               |               |               |              | 4             |              |                    |               |               |                     |               |                         |



|                                          |                            |            | Period (phase) | 6               | 6            | 6                | 7 (1)            | 7 (1)       | 7 (2)            | 8 (2)        | 8 (2)            | 8 (2)      | 8 (3)            |       |  |
|------------------------------------------|----------------------------|------------|----------------|-----------------|--------------|------------------|------------------|-------------|------------------|--------------|------------------|------------|------------------|-------|--|
|                                          |                            |            | Land use       | B4              | B4           | OA6              | OA7              | OA7         | OA11             | OA17         | OA17             | OA17       | OA18             |       |  |
|                                          |                            |            | Subgroup/group | 818             | 817          | 1154             | 1153             | 773         | 1122             | 563          | 1138             | 307        | 1123             |       |  |
|                                          |                            |            | Parent context | posthole [5572] | gully [5582] | waterhole [6114] | waterhole [6095] | pit? [5722] | waterhole [3313] | ditch [1354] | waterhole [5280] | pit [1226] | waterhole [4343] |       |  |
|                                          |                            |            | Context        | [5571]          | [5580]       | [6110]           | [6094]           | [5721]      | [4534]           | [1353]       | [5492]           | [1225]     | [4340]           |       |  |
|                                          |                            |            | Sample         | {248}           | {237}        | {255}            | {254}            | {247}       | {209}            | {112}        | {244}            | {100}      | {203}            |       |  |
|                                          |                            |            | Sample vol (l) | 10              | 10           | 40               | 40               | 50          | 40               | 40           | 40               | 40         | 40               |       |  |
| Latin name                               | Common name                | plant part |                |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| charred remains                          |                            |            |                |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| cereal grains                            |                            |            |                |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| <i>Triticum dicoccum</i> Schubl          | emmer                      | -          |                |                 |              |                  |                  |             |                  |              | 18               |            |                  |       |  |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | -          |                |                 |              |                  |                  |             |                  |              | 9                |            |                  |       |  |
| <i>Triticum spelta</i> L.                | spelt                      | -          |                |                 |              |                  |                  |             |                  |              | 66               |            |                  |       |  |
| <i>Triticum</i> cf <i>spelta</i>         | spelt                      | -          | 1              | 1               | 1            |                  |                  |             | 8                |              |                  |            |                  |       |  |
| <i>Triticum spelta/aestivum/turgidum</i> | spelt/free-threshing wheat | -          | 1              |                 |              |                  |                  |             | 6                |              |                  |            |                  |       |  |
| <i>Triticum aestivum/turgidum</i>        | free-threshing wheat       | -          |                |                 |              |                  |                  |             |                  |              | 15               | 250        | 1136e            | 1495e |  |
| <i>Triticum</i> sp                       | wheat                      | -          |                |                 |              |                  |                  |             |                  |              | 50               | 11         | 80e              | 106e  |  |
| cf <i>Triticum</i> sp                    | wheat                      | -          |                |                 |              |                  |                  |             |                  |              |                  | 12         | 120e             | 128e  |  |
| <i>Triticum/Secale</i> sp                | wheat/rye                  | -          |                |                 |              |                  |                  |             |                  |              |                  | 9          | 64e              | 72e   |  |
| <i>Secale cereale</i> L.                 | rye                        | -          |                |                 |              |                  |                  |             |                  |              |                  | 45         | 192e             | 66e   |  |
| cf <i>Secale cereale</i>                 | rye                        | -          |                |                 |              |                  |                  |             |                  |              |                  | 11         | 72e              | 2     |  |
| <i>Hordeum vulgare</i> L.                | barley                     | -          | 1              | 2               |              |                  |                  |             | 2                | 23           | 65               | 40e        | 1                |       |  |
| cf <i>Hordeum vulgare</i>                | barley                     | -          |                |                 |              |                  |                  | 1           | 4                | 5            | 17e              |            |                  |       |  |
| <i>Avena</i> sp                          | oat                        | -          |                |                 |              |                  |                  |             | 11               | 44           | 80e              | 286e       |                  |       |  |
| cf <i>Avena</i> sp                       | oat                        | -          | 1              |                 |              |                  |                  |             | 12               | 46           | 48e              | 123e       |                  |       |  |
| Cerealia                                 | indet. cereal              | -          | 2              | 3               |              |                  |                  |             | 2                | 100e         | 70               | 160e       | 330e             |       |  |
| chaff                                    |                            |            |                |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | SF         |                |                 |              |                  |                  |             |                  |              | 3                |            |                  |       |  |
| <i>Triticum dicoccum/spelta</i>          | emmer/spelt                | GB         |                |                 |              |                  |                  |             |                  |              | 21e              |            |                  |       |  |
| <i>Triticum spelta</i> L.                | spelt                      | SF         | 1              |                 |              |                  |                  |             | 9                |              |                  |            |                  |       |  |
| <i>Triticum spelta</i> L.                | spelt                      | GB         | 6              | 1               |              |                  |                  | 1           | 92e              |              |                  |            |                  |       |  |
| <i>Triticum</i> cf <i>spelta</i>         | spelt                      | SF         | 1              |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| <i>Triticum</i> cf <i>spelta</i>         | spelt                      | GB         | 2              |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| <i>Triticum</i> cf <i>aestivum</i>       | bread wheat                | R          |                |                 |              |                  |                  |             |                  |              | 22               | 35         | 34e              | 48e   |  |
| <i>Triticum aestivum/turgidum</i>        | free-threshing wheat       | R          |                |                 |              |                  |                  |             |                  |              |                  | 27         | 32e              |       |  |
| <i>Triticum</i> sp                       | wheat                      | SF         | 1              |                 |              |                  |                  |             | 37e              |              |                  |            |                  |       |  |
| <i>Triticum</i> sp                       | wheat                      | GB         | 6              |                 |              |                  |                  | 9           | 336e             |              |                  |            |                  |       |  |
| <i>Triticum</i> sp                       | wheat                      | GF         |                |                 |              |                  |                  |             |                  |              | ++               |            |                  |       |  |
| cf <i>Triticum</i> sp                    | wheat                      | AW         |                |                 |              |                  |                  |             |                  |              |                  | +          |                  |       |  |
| <i>Secale cereale</i> L.                 | rye                        | R          |                |                 |              |                  |                  |             |                  |              |                  | 38         | 8e               | 16e   |  |
| <i>Secale/Hordeum</i> sp                 | rye/barley                 | R          |                |                 |              |                  |                  |             |                  |              |                  | 4          |                  |       |  |
| <i>Hordeum vulgare</i> L.                | barley                     | R          |                |                 |              |                  |                  |             |                  |              | 24e              | 15         |                  |       |  |
| cf <i>Hordeum vulgare</i>                | barley                     | R          |                |                 |              |                  |                  |             |                  |              | 1                | 8e         |                  |       |  |
| <i>Avena</i> cf <i>sativa</i>            | cultivated oat             | FL         |                |                 |              |                  |                  |             |                  |              | 2                |            |                  |       |  |
| <i>Avena</i> sp                          | oat                        | FL         |                |                 |              |                  |                  |             |                  |              | 4                |            |                  |       |  |
| Cerealia                                 | indet cereal               | R          |                |                 |              |                  |                  |             |                  |              | 32e              |            |                  |       |  |
| Cerealia                                 | indet cereal               | CN         |                |                 |              |                  |                  |             |                  |              | 2                | 5          | 2                | 1     |  |
| Cerealia                                 | indet cereal               | CO         |                |                 |              |                  |                  |             |                  |              | 16e              |            |                  |       |  |
| Cerealia                                 | indet cereal               | AW         |                |                 |              |                  |                  |             |                  |              | ++++             | +++        |                  |       |  |
| wild plants                              |                            |            |                |                 |              |                  |                  |             |                  |              |                  |            |                  |       |  |
| <i>Ranunculus acris/repens/bulbosus</i>  | buttercups                 | -          |                |                 |              |                  |                  |             |                  |              | 2                | 16e        | 8e               |       |  |
| <i>Ranunculus</i> cf <i>flammula</i>     | lesser spearwort           | -          |                |                 |              |                  |                  |             |                  |              | 2                |            |                  |       |  |
| cf <i>Ranunculus</i> sp                  | -                          | -          |                |                 |              |                  |                  |             |                  |              | 7                |            |                  |       |  |
| <i>Brassica/Sinapis</i> sp               | wild cabbage, mustard etc  | -          |                |                 |              |                  |                  |             |                  |              | 49e              |            |                  |       |  |
| cf <i>Sinapis arvensis</i>               | charlock                   | FR         |                |                 |              |                  |                  |             |                  |              | 5                |            |                  |       |  |
| <i>Raphanus raphanistrum</i> L.          | wild radish                | FR         |                |                 |              |                  |                  |             |                  |              |                  | 4          | 18e              |       |  |
| <i>Agrostemma githago</i> L.             | corncockle                 | -          |                |                 |              |                  |                  |             |                  |              |                  | 1          | 70e              |       |  |
| <i>Spergula arvensis</i> L.              | corn spurrey               | -          |                |                 |              |                  |                  |             |                  |              | 20e              |            |                  |       |  |
| <i>Scleranthus annuus</i> L.             | annual knawel              | FR         |                |                 |              |                  |                  |             |                  |              | 1                |            |                  |       |  |



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|                                                      |                              |    |     |      |      |     |
|------------------------------------------------------|------------------------------|----|-----|------|------|-----|
| <i>Ranunculus sardous</i> Crantz                     | hairy buttercup              | -  |     | +    | +    |     |
| <i>Ranunculus sceleratus</i> L.                      | celery-leaved<br>crowfoot    | -  |     |      | ++   |     |
| <i>Ranunculus</i> subgen<br><i>Batrachium</i> (DC) A | crowfoots                    | -  | +   | ++++ | ++++ |     |
| <i>Chelidonium majus</i> L.                          | greater<br>celandine         | -  |     |      |      | +   |
| <i>Fumaria</i> sp                                    | fumitory                     | -  |     |      | +    |     |
| <i>Brassica</i> cf <i>nigra</i>                      | black mustard                | -  |     | +    | +    |     |
| <i>Brassica</i> /Sinapis sp                          | wild cabbage,<br>mustard etc | -  |     |      |      | +   |
| <i>Raphanus raphanistrum</i> L.                      | wild radish                  | FR |     |      |      | +   |
| <i>Lepidium</i> sp                                   | pepperwort                   | -  |     |      |      | +   |
| <i>Coronopus squamatus</i> (Fskl)<br>Ascherson       | swine-cress                  | FR |     |      |      | +++ |
| <i>Capsella bursa-pastoris</i> (L.)<br>Medic.        | shepherd's<br>purse          | -  | +   | +    |      |     |
| <i>Rorippa</i> cf <i>palustris</i>                   | marsh yellow-<br>cress       | -  |     | ++   | ++   |     |
| <i>Viola</i> sp                                      | violet                       | -  | +   |      |      |     |
| <i>Agrostemma githago</i> L.                         | corncockle                   | -  |     | +    |      | +   |
| <i>Cerastium</i> sp                                  | mouse-ear<br>chickweed       | -  | +   |      |      |     |
| <i>Myosoton aquaticum</i><br>(L.) Moench             | water chickweed              | -  | +   |      |      |     |
| <i>Stellaria media</i> (L.) Vill                     | common<br>chickweed          | -  | +++ | ++   | +    | ++  |
| <i>Stellaria graminea</i> L.                         | lesser stitchwort            | -  | +   |      |      |     |
| <i>Montia fontana</i> ssp<br><i>chondrosperma</i> L. | blinks                       | -  | +   | +++  | +++  | +   |
| <i>Chenopodium album</i> L.                          | fat hen                      | -  | ++  | +++  | ++   | ++  |
| <i>Chenopodium</i><br><i>rubrum</i> /glaucum         | red/glaucous<br>goosefoot    | -  |     | ++   | ++   |     |
| <i>Atriplex</i> sp                                   | orache                       | -  | +++ | ++   | ++   | +++ |
| <i>Malva</i> cf <i>sylvestris</i>                    | common mallow                | FR |     |      |      | ++  |
| <i>Linum usitatissimum</i> L.                        | cultivated flax              | FR |     |      |      | +   |
| <i>Ornithopus perpusillus</i> L.                     | birdsfoot                    | FR | +   |      |      |     |
| Fabaceae indet                                       | -                            | FR |     |      |      | +   |
| <i>Rubus</i> cf <i>fruticosus</i> agg                | blackberry                   | -  |     |      | +    | +++ |
| <i>Potentilla anserina</i> L.                        | silverweed                   | -  |     |      |      | +   |
| <i>Potentilla</i> cf <i>erecta</i>                   | tormentil                    | -  | +   | ++   | +    |     |
| <i>Fragaria vesca</i> L.                             | wild strawberry              | -  |     |      | +    |     |
| <i>Aphanes arvensis</i> agg                          | parsley piert                | -  | +++ | ++   | +    |     |
| <i>Prunus domestica</i> L.                           | plum/bullace                 | -  |     |      |      | +   |
| cf <i>Hippuris vulgaris</i> L.                       | mare's tail                  | -  |     |      |      | +   |
| <i>Aethusa cynapium</i> L.                           | fool's parsley               | -  |     |      |      | +   |
| <i>Conium maculatum</i> L.                           | hemlock                      | -  |     |      |      | +   |
| <i>Torilis</i> cf <i>nodosa</i>                      | knotted hedge-<br>parsley    | -  |     |      |      | +   |
| <i>Bryonia dioica</i> Jacq                           | bryony                       | -  |     |      |      | +   |
| <i>Polygonum aviculare</i> agg                       | knotgrass                    | -  | +++ | ++++ | ++++ | ++  |
| <i>Persicaria maculosa</i> Gray                      | redshank                     | -  |     | +    | +    |     |
| <i>Persicaria lapathifolia</i> (L.)<br>Gray          | pale persicaria              | -  | +   | +    | +    |     |
| <i>Persicaria hydropiper</i> (L.)<br>Spach           | water pepper                 | -  | +   | ++++ | ++   |     |
| <i>Fallopia convolvulus</i> (L.) A<br>Love           | black bindweed               | -  |     |      | +    |     |
| <i>Rumex acetosella</i> agg                          | sheep's sorrel               | -  | +++ | +    | +    | +   |
| <i>Rumex</i> spp                                     | docks                        | -  | ++  | +    | ++   | +++ |
| <i>Urtica urens</i> L.                               | small nettle                 | -  |     | +    | +    | +   |
| <i>Urtica dioica</i> L.                              | stinging nettle              | -  | ++  | +    | ++   | +   |
| <i>Morus nigra</i> L.                                | mulberry                     | -  |     |      |      | +   |
| <i>Salix</i> sp                                      | willow                       | BD |     |      |      | +   |
| <i>Calluna vulgaris</i> (L.) Hull                    | heather                      | FR |     |      | +    |     |
| <i>Calluna vulgaris</i> (L.) Hull                    | heather                      | LF |     |      |      | +   |
| <i>Hyoscyamus niger</i> L.                           | henbane                      | -  |     | +    | +    |     |
| <i>Solanum nigrum</i> L.                             | black<br>nightshade          | -  |     |      | +    | +   |
| <i>Prunella vulgaris</i> L.                          | self-heal                    | -  | ++  |      | +    |     |
| <i>Lamium</i> sp                                     | dead-nettle                  | -  |     | +    | +    |     |
| <i>Galeopsis</i> cf <i>tetrahit</i> L.               | common hemp-<br>nettle       | -  |     |      |      | +   |
| <i>Galeopsis</i> sp                                  | hemp-nettle                  | -  |     | +++  | +    |     |
| <i>Marrubium vulgare</i> L.                          | white<br>horehound           | -  |     |      |      | +   |
| <i>Plantago major</i> L.                             | great plantain               | -  | ++  |      |      |     |

|                                                |                     |    |      |     |     |      |
|------------------------------------------------|---------------------|----|------|-----|-----|------|
| <i>Plantago lanceolata</i> L.                  | ribwort             | -  | +    |     |     |      |
| <i>Sambucus nigra</i> L.                       | elder               | -  |      | +   |     |      |
| cf <i>Senecio</i> sp                           | ragwort             | -  | +    |     |     |      |
| <i>Anthemis cotula</i> L.                      | stinking chamomile  | -  |      | +   |     |      |
| <i>Chrysanthemum segetum</i> L.                | corn marigold       | -  |      |     |     | ++   |
| <i>Solidago</i> sp                             | golden rod          | -  |      |     |     | +    |
| <i>Arctium</i> sp                              | burdock             | -  |      |     |     | +++  |
| <i>Cirsium</i> cf <i>arvense</i>               | creeping thistle    | -  |      | +   |     |      |
| <i>Carduus</i> / <i>Cirsium</i> sp             | thistles            | -  | ++   |     | +   | ++   |
| <i>Centaurea</i> cf <i>cyanus</i>              | cornflower          | -  |      |     |     | +    |
| <i>Lapsana communis</i> L.                     | nipplewort          | -  |      |     |     | +    |
| <i>Hypochoeris</i> sp                          | cat's ear           | -  | +    |     |     |      |
| <i>Leontodon autumnalis</i> / <i>hispidus</i>  | hawkbit             | -  |      |     | +   |      |
| <i>Sonchus oleraceus</i> L.                    | smooth sow-thistle  | -  | +    |     |     | +    |
| <i>Sonchus asper</i> (L.) Hill                 | prickly sow-thistle | -  |      |     | +   | +    |
| <i>Juncus</i> sp                               | rush                | -  | ++++ | ++  |     | +    |
| <i>Luzula</i> sp                               | woodrush            | -  | +    |     |     |      |
| <i>Lemna</i> sp                                | duckweed            | -  |      | +   |     |      |
| <i>Eleocharis palustris</i> / <i>uniglumis</i> | spike-rush          | -  |      |     |     | +    |
| <i>Carex</i> spp                               | sedges              | -  | +    | +   | +   |      |
| <i>Triticum spelta</i> L.                      | spelt               | GB | +    |     |     |      |
| <i>Triticum</i> cf <i>spelta</i>               | spelt               | GB |      | +   |     |      |
| cf <i>Secale cereale</i>                       | rye                 | R  |      |     |     | +    |
| Cerealina                                      | indet. cereal       | CN |      | +   |     |      |
| Poaceae indet                                  | grasses             | -  | ++++ | ++  | +   | +    |
| indeterminate                                  | -                   | ST | +++  | +++ | +++ | +++  |
| indeterminate                                  | -                   | FR |      |     |     | +    |
| indeterminate                                  | -                   | TH |      |     |     | ++   |
| indeterminate                                  | -                   | WD |      | ++  |     | ++++ |
| indeterminate                                  | -                   | RT | +++  |     | +++ |      |

Identifications were carried out with the aid of a modern botanical reference collection and standard identification reference manuals, with the nomenclature following Stace (1991).

Flots from three of the largest charred assemblages were divided, and only a proportion of the smaller fractions fully sorted and quantified. Counts from the sub-samples were then multiplied up to give an estimate of the total number of items in the sample.

## Results

Full species lists with abundance of plant remains recovered from each sample are shown in Tables 15 and 16.

The results are more fully described and discussed in the period sections (above) and include information from samples seen only at assessment where relevant.

## ANIMAL BONE

*Alan Pipe*

### Introduction and Methodology

This report quantifies, identifies and interprets the hand-collected and wet-sieved animal bones recovered from prehistoric, Roman and medieval contexts (periods 2–8) that mainly comprised pit, ditch, waterhole and cremation deposits.

Animal bones from each context were described and recorded on the MOLA Oracle animal bone post-assessment database, in terms of species, skeletal

Table 17. Hand-collected and wet-sieved animal bone fragment count distribution from each period and phase

| Period (phase) | Fragments  |
|----------------|------------|
| 2              | 3          |
| 4              | 131        |
| 5              | 12         |
| 6              | 11         |
| 7 (1)          | 10         |
| 7 (2)          | 71         |
| 7 (3)          | 3          |
| 8 (2)          | 57         |
| 8 (3)          | 1          |
| <b>Total</b>   | <b>299</b> |

element, body side, age, epiphyseal fusion, dental eruption and wear, sex, fragmentation, and modification. Identifications of species and skeletal element were made with reference to the MOLA reference collections and Schmid (1972). Evidence for age at death was derived from surface texture, epiphyseal fusion and tooth eruption and wear stages as appropriate. Interpretations of age at death were made following Amorosi (1989), Bull and Payne (1982) Grant (1982), Payne (1973) and Schmid (1972). Modifications such as tool marks, burning and gnawing were described using MOLA Osteology codes and conventions. In general, each bone fragment was recorded as an individual database entry unless this was impracticable due to extreme fragmentation and/or erosion in which case

Table 18. Hand-collected and wet-sieved animal bone

| Period (phase) | Land use | Group/subgroup | Context | Sample | Parent context | Feature        | Identification         | Bone               | Age         | Fusion (distal) | Nos | Age (yrs) |
|----------------|----------|----------------|---------|--------|----------------|----------------|------------------------|--------------------|-------------|-----------------|-----|-----------|
| 2              | OA2      | 87             | [299]   | {63}   | [300]          | pit            | mammal, unidentifiable | unidentifiable     |             |                 | 2   |           |
| 2              | OA2      | 298            | [813]   | {77}   | [814]          | cremation      | sheep-sized            | long bone midshaft |             |                 | 1   |           |
| 4              | OA3      | 105            | [399]   | {47}   | [400]          | pit            | mammal, unidentifiable | unidentifiable     |             |                 | 63  |           |
| 4              | OA3      | 299            | [1017]  | 0      | [1018]         | pit            | cattle-sized           | long bone midshaft |             |                 | 2   |           |
| 4              | OA3      | 299            | [1017]  | {83}   | [1018]         | pit            | sheep-sized            | long bone midshaft |             |                 | 1   |           |
| 4              | OA3      | 300            | [1113]  | {92}   | [1114]         | pit            | sheep-sized            | long bone midshaft |             |                 | 1   |           |
| 4              | OA3      | 301            | [1115]  | {90}   | [1116]         | pit            | sheep-sized            | unidentifiable     |             |                 | 20  |           |
| 4              | OA3      | 304            | [1153]  | {94}   | [1154]         | pit            | sheep-sized            | unidentifiable     |             |                 | 2   |           |
| 4              | OA3      | 306            | [1201]  | {97}   | [1202]         | pit            | sheep-sized            | long bone midshaft |             |                 | 1   |           |
| 4              | OA3      | 308            | [1237]  | {101}  | [1238]         | pit            | sheep-sized            | long bone midshaft |             |                 | 1   |           |
| 4              | OA3      | 465            | [843]   | 0      | [844]          | natural hollow | cattle                 | tooth              |             |                 | 25  |           |
| 4              | OA3      | 1955           | [335]   | {54}   | [336]          | pit            | cattle                 | tooth, mandibular  | young adult |                 | 1   |           |
| 4              | OA3      | 1955           | [335]   | {54}   | [336]          | pit            | cattle                 | tooth              | young adult |                 | 1   |           |
| 4              | OA3      | 1955           | [335]   | 54     | [336]          | pit            | cattle                 | tooth              |             |                 | 2   |           |
| 4              | OA3      | 1955           | [335]   | {54}   | [336]          | pit            | cattle-sized           | long bone midshaft |             |                 | 2   |           |
| 4              | OA3      | 1956           | [337]   | {55}   | [338]          | pit            | mammal, unidentifiable | unidentifiable     |             |                 | 8   |           |
| 4              | OA3      | 1956           | [337]   | {55}   | [338]          | pit            | cattle                 | tooth              |             |                 | 1   |           |
| 5              | OA5      | 426            | [1096]  | 0      | [1052]         | waterhole      | cattle-sized           | skull              |             |                 | 11  |           |
| 5              | OA5      | 1153           | [6094]  | 0      | [6095]         | waterhole      | cattle                 | radius             |             |                 | 1   |           |
| 6              | OA6      | 1154           | [6110]  | 0      | [6114]         | waterhole      | cattle                 | tibia              |             | fused           | 1   | >2.0      |
| 6              | OA6      | 1154           | [6113]  | 0      | [6114]         | waterhole      | cattle-sized           | rib                |             |                 | 5   |           |
| 6              | OA6      | 1154           | [6113]  | 0      | [6114]         | waterhole      | horse                  | mandible           |             |                 | 1   |           |
| 6              | OA6      | 1417           | [5897]  | 0      | [5251]         | ditch          | cattle                 | innominate         |             |                 | 1   |           |
| 6              | OA6      | 1417           | [5897]  | 0      | [5251]         | ditch          | cattle                 | skull              |             |                 | 1   |           |
| 6              | OA6      | 1417           | [5897]  | 0      | [5251]         | ditch          | cattle                 | tibia              |             | fused           | 1   | >2.0      |
| 6              | OA6      | 1417           | [5898]  | 0      | [5251]         | ditch          | cattle                 | tibia              |             |                 | 1   |           |
| 7 (1)          | OA7      | 739            | [5359]  | 0      | [5360]         | pit            | cattle                 | tooth, mandibular  | adult       |                 | 1   |           |
| 7 (1)          | OA7      | 1153           | [6094]  | 0      | [6095]         | waterhole      | cattle                 | radius             |             | fused           | 1   |           |
| 7 (1)          | OA7      | 1319           | [5024]  | 0      | [5025]         | ditch          | cattle                 | tooth              |             |                 | 8   |           |
| 7 (2)          | OA9      | 1590           | [4134]  | {195}  | [4135]         | tree hole      | cattle                 | tooth              |             |                 | 20  |           |
| 7 (2)          | OA9      | 1590           | [4134]  | {195}  | [4135]         | tree hole      | sheep/goat             | tooth, mandibular  | adult       |                 | 1   |           |
| 7 (2)          | OA10     | 1133           | [4969]  | 0      | [4974]         | well           | cattle                 | tooth              |             |                 | 6   |           |
| 7 (2)          | OA10     | 1319           | [5024]  | 0      | [5025]         | ditch          | cattle                 | tooth              |             |                 | 8   |           |
| 7 (2)          | OA10     | 1608           | [5026]  | {221}  | [5027]         | tree hole      | cattle                 | tooth              |             |                 | 6   |           |
| 7 (2)          | OA11     | 788            | [3172]  | {174}  | [2386]         | ditch          | cattle                 | tooth              |             |                 | 3   |           |
| 7 (2)          | OA11     | 1122           | [4534]  | 0      | [3313]         | well           | sheep/goat             | tooth              |             |                 | 2   |           |
| 7 (2)          | OA11     | 1122           | [4534]  | {209}  | [3313]         | well           | sheep/goat             | tooth              |             |                 | 1   |           |
| 7 (2)          | R2       | 2049           | [5311]  | 0      | [5312]         | cut            | horse                  | tooth, maxillary   | adult       |                 | 1   |           |
| 7 (2)          | S10      | 1380           | [4829]  | 0      | [4831]         | ditch          | cattle                 | tooth              |             |                 | 7   |           |
| 7 (2)          | S11      | 1258           | [3510]  | {81}   | [2638]         | ditch          | cattle                 | tooth              |             |                 | 4   |           |
| 7 (2)          | S15      | 1378           | [5782]  | 0      | [5502]         | ditch          | cattle                 | tooth, mandibular  |             |                 | 1   |           |
| 7 (2)          | S15      | 1391           | [4832]  | 0      | [4837]         | ditch          | cattle                 | tooth, maxillary   | adult       |                 | 1   |           |

|       |      |      |        |       |        |       |              |                    |                |       |        |
|-------|------|------|--------|-------|--------|-------|--------------|--------------------|----------------|-------|--------|
| 7 (2) | S15  | 1391 | [4832] | 0     | [4837] | ditch | horse        | skull              | adult          | 1     |        |
| 7 (2) | S15  | 1391 | [4834] | 0     | [4837] | ditch | cattle       | mandible           | young adult    | 1     |        |
| 7 (2) | S15  | 1391 | [4834] | 0     | [4837] | ditch | horse        | mandible           | adult          | 1     |        |
| 7 (2) | S15  | 1391 | [4835] | 0     | [4837] | ditch | cattle-sized | scapula            |                | 1     |        |
| 7 (2) | S15  | 1391 | [4835] | 0     | [4837] | ditch | horse        | femur              | adult          | fused | 1 >3.5 |
| 7 (2) | S15  | 1391 | [4937] | 0     | [4837] | ditch | cattle       | mandible           |                |       | 1      |
| 7 (2) | S15  | 1391 | [5125] | 0     | [4837] | ditch | cattle-sized | tibia              | foetal/neonate |       | 1      |
| 7 (2) | S15  | 1391 | [5317] | 0     | [4837] | ditch | cattle-sized | vertebra           |                |       | 1      |
| 7(2)  | S20  | 1363 | [4652] | 0     | [4627] | ditch | cattle       | tooth              |                |       | 6      |
| 7(2)  | S22  | 870  | [3531] | {186} | [3532] | cut   | sheep/goat   | tooth, mandibular  | adult          |       | 1      |
| 7(2)  | S22  | 870  | [3531] | {186} | [3532] | cut   | sheep/goat   | tooth              |                |       | 1      |
| 7(2)  | S22  | 886  | [3415] | {189} | [3415] | cut   | sheep/goat   | tooth              |                |       | 2      |
| 7 (3) | OA13 | 1142 | [5511] | 0     | [5513] | well  | cattle       | astragalus         |                |       | 1      |
| 7 (3) | OA13 | 1142 | [5511] | 0     | [5513] | well  | cattle       | mandible           | adult          |       | 1      |
| 7 (3) | OA13 | 2043 | [3900] | 0     | [3901] | cut   | cattle       | tooth, maxillary   | juvenile       |       | 1      |
| 8 (2) | B8   | 887  | [4215] | 0     | [4216] | cut   | sheep/goat   | tooth, maxillary   |                |       | 3      |
| 8 (2) | OA17 | 561  | [1389] | 0     | [1356] | ditch | cattle-sized | long bone midshaft |                |       | 25     |
| 8 (2) | OA17 | 561  | [1395] | 0     | [1356] | ditch | cattle       | tooth, mandibular  | young adult    |       | 2      |
| 8 (2) | OA17 | 591  | [2199] | 0     | [2200] | pit   | cattle-sized | rib                |                |       | 13     |
| 8 (2) | OA17 | 1138 | [5279] | 0     | [5280] | well  | cattle       | metatarsal         |                |       | 1      |
| 8 (2) | OA17 | 1138 | [5279] | 0     | [5280] | well  | cattle       | skull              |                |       | 7      |
| 8 (2) | OA17 | 1138 | [5492] | {244} | [5280] | well  | cattle       | mandible           |                |       | 1      |
| 8 (2) | OA17 | 1138 | [5492] | {244} | [5280] | well  | cattle       | sesamoid           |                |       | 2      |
| 8 (2) | OA17 | 1138 | [5492] | {244} | [5280] | well  | pig          | tooth, maxillary   | adult          |       | 1      |
| 8 (2) | OA17 | 1317 | [4371] | 0     | [4338] | ditch | cattle       | tooth, maxillary   | adult          |       | 2      |
| 8 (3) | S32  | 879  | [4427] | 0     | [4428] | cut   | horse        | tooth, maxillary   | adult          |       | 1      |

fragments were recorded, either as single or multiple records, at an approximate level of identification particularly ‘unidentifiable mammal’, ‘cattle-sized mammal’, ‘sheep-sized mammal’ and ‘sheep/goat’.

### Quantification and Preservation

A total of 1072 fragments (2.754kg) of animal bone was recovered from the site. Of these, 299 fragments of hand-collected and wet-sieved animal bone from prehistoric, Roman and medieval contexts (Table 17) are either identifiable to species or may be recorded as ‘cattle-sized’ or ‘sheep-sized’ (Table 18). Due to local soil conditions bone preservation was extremely poor, so that much of the assemblage comprised friable fragments of mammal bone recorded either as ‘unidentifiable mammal’ or as fragments of ‘cattle-sized’ and ‘sheep-sized’ mammal long bone mid-shaft. Identifiable mammal bone was limited to fragments of tooth enamel, individual maxillary (upper jaw) and mandibular (lower jaw) teeth, and fragments of particularly dense areas of robust bones; mandible (lower jaw), distal scapula (shoulder blade), distal humerus (‘elbow articulation’), innominate (pelvis) and distal tibia and astragalus (‘ankle’ and ‘heel’ articulation). Surface damage prevented measurement of fully-fused bone; and often prevented identification of species, skeletal element and body side, and obscured

fine surface details, particularly tool marks associated with slaughter, skinning and butchery.

### Faunal Composition and Skeletal Recovery

The identifiable assemblage mainly comprises cattle (*Bos taurus*) and, to a lesser extent, horse (*Equus caballus*) and sheep/goat (*Ovis aries*/*Capra hircus*) with only a single fragment, a maxillary tooth, of pig (*Sus scrofa*), from fill [5492] of waterhole [5280] (period 8, phase 2) (Table 18). There was no definite identification of either sheep (*Ovis aries*) or goat (*Capra hircus*). No other domesticated or wild species are represented. In general, the condition of the bone is so poor in terms of surface condition and fragmentation that the assemblage provides only very limited recovery in terms of species, carcase part, age-representation and modification. Although the bone group includes robust fragments of cattle, sheep/goat, pig and horse, it is probable that other more fragile species and bone elements that may have been deposited are absent from the assemblage as a result of ground conditions rather than as deliberate selection. Interpretation of the assemblage in terms of meat-diet and disposal practice is therefore possible at only a superficial level.

Table 19. Hand-collected and wet-sieved animal bone: mandibular dental eruption and wear (after Grant 1982; Payne 1973)

| Period (phase) | Land use | Subgroup/ Context group | Parent context | Sample            | Species | Grant 1982 |    |    |    | Payne 1979 |    |    |    | Age (yrs)  |
|----------------|----------|-------------------------|----------------|-------------------|---------|------------|----|----|----|------------|----|----|----|------------|
|                |          |                         |                |                   |         | Pm4        | M1 | M2 | M3 | Pm4        | M1 | M2 | M3 |            |
| 4              | OA3      | 1955                    | [335]          | pit [336]         | {54}    | cattle     | 8  | 0  | 0  | 0          | 0  | 0  | 0  | 0 4.0–5.0  |
| 7 (2)          | OA9      | 1590                    | [4134]         | tree throw [4135] | {195}   | sheep/goat | 0  | 0  | 0  | 11         | 0  | 0  | 0  | 14 4.0–5.0 |
| 7 (2)          | S15      | 1391                    | [4834]         | ditch [4837]      | 0       | cattle     | 0  | 12 | 8  | 0          | 0  | 0  | 0  | 0 1.0–2.0  |
| 7 (2)          | S22      | 870                     | [3531]         | posthole [3532]   | {186}   | sheep/goat | 0  | 0  | 0  | 12         | 0  | 0  | 0  | 15 4.0–6.0 |
| 7 (3)          | OA13     | 1142                    | [5511]         | waterhole [5513]  | 0       | cattle     | 12 | 15 | 15 | 12         | 0  | 0  | 0  | 0 >5.0     |
| 8 (2)          | OA17     | 561                     | [1395]         | ditch [1356]      | 0       | cattle     | 0  | 0  | 0  | 9          | 0  | 0  | 0  | 0 3.0–4.0  |
| 8 (2)          | OA17     | 561                     | [1395]         | ditch [1356]      | 0       | cattle     | 0  | 0  | 0  | 10         | 0  | 0  | 0  | 0 3.0–4.0  |

Table 20. Hand-collected and wet-sieved animal bone: modification

| Period (phase) | Group/subgroup | Sample | Parent context   | Identification          | No. | Modification     | Description     |
|----------------|----------------|--------|------------------|-------------------------|-----|------------------|-----------------|
| 2              | 87             | {63}   | pit [300]        | mammal, indet bone      | 2   | calcined         | white           |
| 2              | 298            | {77}   | pit [814]        | sheep-sized long bone   | 1   | calcined         | white           |
| 4              | 105            | {47}   | pit [400]        | mammal, indet bone      | 63  | calcined         | white           |
| 4              | 299            | 0      | pit [1018]       | cattle-sized long bone  | 2   | calcined         | white           |
| 4              | 299            | {83}   | pit [1018]       | sheep-sized long bone   | 1   | calcined         | white           |
| 4              | 300            | {92}   | pit [1114]       | sheep-sized long bone   | 1   | calcined         | white           |
| 4              | 301            | {90}   | pit [1116]       | sheep-sized, indet bone | 20  | calcined         | white           |
| 4              | 304            | {94}   | pit [1154]       | sheep-sized, indet bone | 2   | calcined         | white           |
| 4              | 306            | {97}   | pit [1202]       | sheep-sized long bone   | 1   | calcined         | white           |
| 4              | 308            | {101}  | pit [1238]       | sheep-sized long bone   | 1   | calcined         | white           |
| 4              | 1955           | {54}   | pit [336]        | cattle-sized long bone  | 2   | calcined         | white           |
| 4              | 1956           | {55}   | pit [338]        | mammal, indet bone      | 8   | calcined         | white           |
| 8 (2)          | 1138           | {244}  | waterhole [5280] | cattle mandible         | 1   | charred          | black           |
| 8 (2)          | 1138           | {244}  | waterhole [5280] | cattle mandible         | 1   | butchery         | chopped lateral |
| 8 (2)          | 1138           | {244}  | waterhole [5280] | cattle sesamoid         | 2   | charred/calcined | black/white     |

### Modification

Evidence of burning was seen in bones from periods 2, 4 and 8, phase 2, with the majority of burnt fragments showing calcination, evidence of combustion at a high temperature of at least 700°C (Table 20). Several fragments of bone from fill [5492] in waterhole [5280] of period 8, phase 2, had been charred black suggesting combustion at a lower temperature of 400–500°C (Lyman 1994, 386).

Despite severe erosion, clear evidence of butchery is apparent on a cattle mandible from fill [5492]. This had been chopped on the lateral (outer) side, probably during removal of the cheek meat.

### HUMAN BONE

*N Powers and D Walker*

#### Introduction

Burnt human bone was recovered from three pits, [676], [1422] and [1462] and two excavated segments of the fill of ring ditch S9 (Table 21). Pit [1422] is dated to period 4, while the other features are dated to period 5. Burnt material from the ditch also included animal bone, and there may be small unidentifiable fragments of human bone that cannot be differentiated from the burnt animal bone assemblage. The fill [5583] of the ditch was divided into segments in order to aid interpretation of the deposits. Burnt human bone was identified from the northernmost segment (fill [5588]) and from a segment to the north-east (fill [5646]).

Table 21. Cremated human remains

| Period | Land use | Context | Parent context    | Sample | Wt (g) | Colour                             | Comments                                        |
|--------|----------|---------|-------------------|--------|--------|------------------------------------|-------------------------------------------------|
| 4      | OA3      | [1421]  | pit [1422]        | {113}  | 2.1    | 100% off-white                     |                                                 |
| 5      | OA5      | [675]   | pit [676]         | {71}   | 14.0   | 90% off-white, 10% light blue grey |                                                 |
| 5      | OA5      | [1461]  | pit [1462]        | {109}  | 94.8   | 90% off-white, 10% light blue grey | Large quantity of charcoal fragments in residue |
| 5      | S9       | [5588]  | ring ditch [5584] | {241}  | 2.2    | 100% off-white                     |                                                 |
| 5      | S9       | [5646]  | ring ditch [5584] | -      | 9.3    | 50% white, 50% off-white           |                                                 |

### Methodology

The burnt bone was examined in accordance with current guidelines (McKinley & Roberts 1993; McKinley 2004), recording the total weight, largest and mean fragment size, and weight of bone within each of three fractions (>10mm, >4mm and >2mm). Identifiable fragments were divided into body areas and weighed accordingly.

### Results

A total of 14.0g of highly fragmentary burnt bone was recovered from pit [676] sample {71}, of which a few fragments of cranial vault (1.6g) and a single fragment of humeral head (1.8g) could be identified, together with possible fragments of juvenile pig (Alan Pipe pers comm). Pit [1422] {113} contained just 2.1g of highly calcined bone, including 1.0g of cranial vault fragments. This deposit is likely to represent redeposited human remains from a cremation in the vicinity. Pit [1462] contained 94.8g of burnt bone. This is also well calcined and sufficiently well preserved to establish that the remains are those of an adult. The residue comprises a large quantity of charcoal fragments suggesting incomplete separation of the remains from the pyre.

The colour and fragmentation of all the burnt bone is consistent with burning fleshed remains at an even, high temperature (Holden *et al* 1995a; 1995b; McKinley 2004). There is no patterning in the colour of the remains to suggest differential temperatures or exposure to oxygen. The small quantity of bone present and the degree of fragmentation may indicate that the bone from both pits [676] and [1422] was redeposited material from a cremation burial or possibly a pyre site. Sample {71} also contains a number of charred grains. The remains from pit [1462] appear to represent a highly truncated or deliberately token burial of an adult. There had been only a limited attempt to separate the bone from the pyre.

A total of 11.5g of burnt human bone was also recovered from two segments of ring ditch S9, [5588] and [5646]. Fill [5588] contained part of a proximal left ulna, and fill [5646] a left radial mid-shaft and a small fragment of proximal tibia shaft. The bone from the ditch represents the deposition of the remains of a minimum number of one adult individual by natural or casual agency, probably following disturbance from a site of primary interment. The fragments may have once formed part of a cremation burial or pyre site and its white colour reflects full oxidation at a temperature of

greater than approximately 600°C. The relatively large size of the identifiable fragments and the absence of clear signs of weathering imply that they were not lying on any ground surface (and exposed to the elements) for any significant period of time. The lack of apparent weathering may be the result of earthworks where the bone was disturbed and then rapidly reburied. However, as the true causal nature of the burnt human bone deposition is unknown, these probably secondary deposits add little to the interpretation of funerary-related ritual at this site. At the same time, the colour of the bone suggests that it was subject to cremation at high temperature.

### INSECT REMAINS

*Enid Allison*

#### Introduction

The insect remains came from three samples, one from each of three successive waterholes dating from the Late Bronze Age to the Late Iron Age/Early Roman period. The material submitted for analysis consisted of flots produced by wet-sieving for recovery of waterlogged plant remains.

The insect assemblages were dominated by aquatic taxa, although terrestrial insects were also present. The condition of the remains varied considerably. Fragmentation of large sclerites was high throughout. Material in sample {254} from Late Iron Age/early Roman waterhole [6095] was the best preserved with only a few sclerites or fragments showing signs of erosion. Greater fragmentation and erosion in the other two samples hindered identification of some taxa. In sample {256} from waterhole [6120] preservation was very varied: some sclerites were well preserved, but most showed various degrees of degradation in the form of thinning, surface modification, and loss of colour and 3-D structure. These remains were often very fragile and prone to tearing or breaking up on handling.

#### Methodology

Insect remains from the largest flot, from waterhole [6120] (sample {256}), were extracted by paraffin flotation following the methods of Kenward *et al* (1980). The other two flots were small so paraffin flotation was not deemed necessary. All the material is currently stored in industrial methylated spirits (IMS).

Table 22. Habitat and food preferences of strongly plant-associated beetles and bugs

| Species                                    | Food and habitat preferences                                                                                                                                                                                                       |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Coreus marginatus</i>                   | found in hedgerows, margins of cultivated fields, water meadows, wastelands and woodland edges. Nymphs develop on docks ( <i>Rumex</i> ) and other Polygonaceae. Adults found on diverse plants later in the year feeding on seeds |
| <i>Aphrophora</i> ? <i>alni</i>            | found on a wide variety of trees and shrubs                                                                                                                                                                                        |
| <i>Trioza urticae</i>                      | on nettles ( <i>Urtica</i> )                                                                                                                                                                                                       |
| <i>Byrrhus</i> sp                          | adults and larvae feed on moss                                                                                                                                                                                                     |
| <i>Agrypnus murinus</i>                    | the larvae feed at the roots of turf                                                                                                                                                                                               |
| <i>Agriotes</i> spp                        | in soil below plants and at the roots of turf                                                                                                                                                                                      |
| <i>Brachypterus</i> sp                     | on nettles ( <i>Urtica</i> )                                                                                                                                                                                                       |
| <i>Phyllotreta nemorum</i> group           | on wild and cultivated Brassicaceae                                                                                                                                                                                                |
| <i>Phyllotreta</i> sp                      | most species live on various Brassicaceae                                                                                                                                                                                          |
| <i>Longitarsus</i> sp                      | members of the genus are found on various herbaceous plants, especially Boraginaceae, Scrophulariaceae and Labiatae                                                                                                                |
| <i>Neocrepidodera</i> cf <i>ferruginea</i> | adults are polyphagous and hosts include grasses and cereals. Larvae feed in stems of grasses and cereals                                                                                                                          |
| <i>Tanyssphyrus lemnae</i>                 | on duckweeds ( <i>Lemna</i> )                                                                                                                                                                                                      |
| <i>Tychius</i> sp                          | associated with leguminous plants (Fabaceae)                                                                                                                                                                                       |
| <i>Ceutorhynchus</i> ? <i>contractus</i>   | in waste and open places on wild and cultivated Brassicaceae                                                                                                                                                                       |
| <i>Ceutorhynchus</i> spp                   | on various wild and cultivated Brassicaceae                                                                                                                                                                                        |
| <i>Microplontus rugulosus</i>              | on chamomiles ( <i>Matricaria</i> and <i>Tripleurospermum</i> )                                                                                                                                                                    |
| <i>Rhinoncus</i> sp                        | the various species are found on <i>Persicaria</i> and <i>Rumex</i>                                                                                                                                                                |
| <i>Sitona</i> sp                           | on leguminous plants (Fabaceae)                                                                                                                                                                                                    |
| <i>Hypera zoilus</i>                       | in grassland, agricultural land and on the coast, often in open situations, feeding on clovers ( <i>Trifolium</i> ), especially <i>T repens</i> and <i>T pratense</i>                                                              |

Aquatic taxa were recorded semi-quantitatively by scanning in IMS using a low-power stereoscopic zoom microscope (x10–x45). Terrestrial beetle (Coleoptera) and bug (Hemiptera) sclerites were picked out for identification by comparison with modern insect material and reference to standard texts. Numbers of individuals were estimated, and taxa were divided into broad ecological groups (Table 23) for interpretation based on Kenward *et al* (1986) and Kenward (1997). Invertebrates other than beetles and bugs were recorded semi-quantitatively.

Nomenclature follows Duff (2012a) for Coleoptera, Aukema & Reiger (1995–2006) for Hemiptera/Heteroptera, and Wilson *et al* (2015) for Hemiptera/Auchenorrhyncha. Information on the food plants of phytophagous species mentioned in the main text and shown in Table 23 has chiefly been obtained from Cox (2007), LeQuesne (1960), Morris (1997; 2002; 2008; 2012), and Southwood and Leston (1959).

## Results and Discussion

Results from each waterhole are presented below in chronological order. Hosts of plant-feeding beetles and bugs are shown in Table 22, and lists of insects and other invertebrates recorded from each sample are in Table 23.

A very similar range of water beetles was recorded from all three samples. *Helophorus* species were numerically dominant and *Agabus bipustulatus*, *A nebulosus*, *Colymbetes fuscus*, *Acilius*, *Hygrotus impressopunctatus*, *Hydroporus palustris*, *Hydrobius fuscipes* and *Ochthebius minimus* are all typical of standing water. Water flea ephippia (Cladocera spp resting eggs) were

abundant. These are produced at certain times of the year, particularly in the autumn, but also in response to environmental stress such as seasonal reductions in water level (Scourfield & Harding 1966, 3) so their abundance in waterlain deposits does not necessarily indicate permanent water. However, since insect remains are particularly sensitive to destruction in aerobic conditions, the fact that assemblages were preserved in all three deposits, together with large assemblages of plant macrofossils, indicates that standing water was permanently present, although there may have been periodic fluctuations in water levels. Terrestrial insects recovered from ancient water bodies to a large extent reflect the habitats and vegetation in their immediate vicinity. Species with good dispersal abilities, such as dung beetles, may have come from further afield but modern studies of beetle faunas from sediments in small water bodies have shown that these would generally have come from within a 100–200m radius of the sampling point (Smith *et al* 2010).

The results corroborate evidence from plant remains for grassland habitats in waterholes [6120] and [6114], dated to the Late Bronze Age and Middle Iron Age respectively, and for disturbed or cultivated ground in the Late Iron Age/early Roman waterhole [6095]. There was no evidence from the insect assemblages for the disposal of occupation waste into any of the features.

The range of recorded terrestrial taxa from Sipson Farm and ICSG was broadly similar, but there was a wider range of aquatics at Sipson Farm. Lesser silver water beetle (*Hydrochara caraboides*), from waterhole [6095] (sample {254}), is at present found only in the Somerset Levels and a few localities in Cheshire and north-east Wales and is currently classified as 'Near Threatened' (Foster 2010).

Table 23. Insects and other invertebrates recorded from the samples

| Sample<br>Parent context<br>Land use<br>Period (phase) | {256}<br>[6120]<br>OA4<br>5 | {255}<br>[6114]<br>OA6<br>6 | {254}<br>[6095]<br>OA7<br>7 (1) |
|--------------------------------------------------------|-----------------------------|-----------------------------|---------------------------------|
| <b>ANNELIDA</b>                                        |                             |                             |                                 |
| Oligochaeta sp (earthworm egg capsules)                | P                           | P                           | P                               |
| <b>CRUSTACEA</b>                                       |                             |                             |                                 |
| <i>Daphnia magna</i> group (ephippia)                  | P                           | P                           | A                               |
| <i>Daphnia</i> sp(p) (ephippia)                        | A                           | A                           | A                               |
| Cladocera spp (ephippia)                               | F                           | F                           | A                               |
| <b>INSECTA</b>                                         |                             |                             |                                 |
| <b>DERMAPTERA</b> (earwigs)                            |                             |                             |                                 |
| Dermaptera sp [u]                                      | -                           | +                           | -                               |
| <b>HEMIPTERA</b> (true bugs)                           |                             |                             |                                 |
| ?Cydnidae sp [oa-p]                                    | -                           | -                           | 1                               |
| Acanthosomatidae/Scutelleridae/Pentatomidae sp [oa-p]  | 1                           | -                           | 1                               |
| <i>Coreus marginatus</i> (L) [oa-p]                    | 1                           | -                           | -                               |
| ? <i>Coreus marginatus</i> (L) [oa-p]                  | -                           | 1                           | -                               |
| Lygaeidae spp [oa-p]                                   | -                           | 2                           | 1                               |
| Saldidae sp [oa-d]                                     | -                           | -                           | 1                               |
| Corixidae spp [oa-w]                                   | ++                          | +                           | +                               |
| Heteroptera sp (water bug) [oa-w]                      | +                           | -                           | -                               |
| Heteroptera sp                                         | -                           | 1                           | -                               |
| <i>Aphrophora</i> cf <i>alni</i> (Fallén) [oa-p]       | 1                           | -                           | -                               |
| <i>Aphrodes</i> sp [oa-p]                              | 1                           | -                           | -                               |
| Delphacidae spp [oa-p]                                 | 2                           | -                           | -                               |
| Auchenorrhyncha spp [oa-p]                             | 5                           | 1                           | 1                               |
| <i>Trioza urticae</i> (L) (nymph skins) [oa-p]         | ++                          | -                           | -                               |
| <i>Trioza</i> sp [oa-p]                                | -                           | 1                           | -                               |
| Aphidoidea sp                                          | +                           | -                           | +                               |
| Coccoidea sp                                           | +                           | -                           | -                               |
| <b>TRICHOPTERA</b> (caddis flies)                      |                             |                             |                                 |
| Trichoptera sp (adultwing fragments)                   | +                           | -                           | +                               |
| Trichoptera sp (larval fragments)                      | +                           | -                           | +                               |
| <b>DIPTERA</b> (flies)                                 |                             |                             |                                 |
| <i>Melophagus ovinus</i> (L) (puparia)                 | -                           | -                           | +++                             |
| Diptera spp (adults)                                   | -                           | +                           | -                               |
| Diptera spp (puparia)                                  | +                           | +                           | +                               |
| <b>HYMENOPTERA</b>                                     |                             |                             |                                 |
| Formicidae spp (ants)                                  | +                           | +                           | +                               |
| Hymenoptera Parasitica spp (parasitic wasps)           | +                           | +                           | +                               |
| <b>COLEOPTERA</b> (beetles)                            |                             |                             |                                 |
| <b>Halipidae</b> (crawling water beetles)              |                             |                             |                                 |
| <i>Haliphys</i> sp [oa-w]                              | +                           | +                           | +                               |
| <b>Dytiscidae</b> (diving beetles)                     |                             |                             |                                 |
| <i>Agabus bipustulatus</i> (L) [oa-w]                  | +                           | +                           | ++                              |
| <i>Agabus nebulosus</i> (Forster) [oa-w]               | +                           | +                           | +                               |
| <i>Agabus</i> or <i>Ilybius</i> spp [oa-w]             | +                           | -                           | +                               |
| <i>Colymbetes fuscus</i> (L) [oa-w]                    | +                           | +                           | +                               |
| <i>Acilius</i> sp [oa-w]                               | +                           | -                           | -                               |
| <i>Hydroporus palustris</i> (L) [oa-w]                 | +                           | -                           | -                               |
| <i>Hygrotus confluent</i> (Fabricius) [oa-w]           | -                           | -                           | +                               |
| <i>Hygrotus impressopunctatus</i> (Schaller) [oa-w]    | +                           | -                           | -                               |
| <i>Hygrotus ?inaequalis</i> (Fabricius) [oa-w]         | +                           | -                           | -                               |
| Hydroporinae spp [oa-w]                                | ++                          | -                           | +                               |

|                                                               |      |     |      |
|---------------------------------------------------------------|------|-----|------|
| Dytiscidae sp(p) (with blotchy cuticle) [oa-w]                | +    | -   | +    |
| Carabidae (ground beetles)                                    |      |     |      |
| <i>Carabus</i> sp [oa]                                        | -    | -   | 1    |
| <i>Notiophilus</i> sp [oa]                                    | -    | -   | 1    |
| <i>Clivina</i> sp [oa]                                        | -    | -   | 2    |
| <i>Bembidion</i> sp [oa]                                      | -    | 1   | -    |
| <i>Poecilus</i> ? <i>cupreus</i> (L) [oa]                     | 2    | -   | -    |
| <i>Pterostichus melanarius</i> (Illiger) [ob]                 | -    | -   | 2    |
| <i>Calathus fuscipes</i> (Goeze) [oa]                         | -    | -   | 1    |
| <i>Calathus</i> sp [oa]                                       | 1    | -   | -    |
| <i>Amara</i> spp [oa]                                         | -    | 1   | 6    |
| <i>Harpalus rufipes</i> (De Geer) [oa]                        | -    | -   | 1    |
| <i>Harpalus</i> sp [oa]                                       | -    | -   | 2    |
| ? <i>Harpalus</i> or <i>Ophonus</i> sp [oa]                   | -    | 1   | -    |
| <i>Acupalpus</i> sp [oa-d]                                    | -    | -   | 1    |
| <i>Syntomus</i> sp (L) [oa]                                   | -    | 1   | -    |
| Carabidae spp indeterminate [ob]                              | 3    | 4   | 5    |
| Helophoridae (crawling water scavenger beetles)               |      |     |      |
| <i>Helophorus aequalis</i> or <i>grandis</i> [oa-w]           | +    | -   | +    |
| <i>Helophorus</i> spp [oa-w]                                  | ++++ | +++ | ++++ |
| Hydrophilidae                                                 |      |     |      |
| <i>Enochrus</i> sp [oa-w]                                     | +    | +   | -    |
| <i>Helochares lividus</i> (Forster) [oa-w]                    | -    | -   | +    |
| <i>Hydrobius fuscipes</i> (L) [oa-w]                          | +++  | ++  | ++   |
| <i>Hydrochara caraboides</i> (L) [oa-w]                       | -    | -   | +    |
| <i>Laccobius</i> sp [oa-w]                                    | +    | -   | -    |
| <i>Cercyon</i> cf <i>haemorrhoidalis</i> (Fabricius) [rf-sf]  | 1    | -   | -    |
| <i>Sphaeridium</i> sp [rf]                                    | 1    | -   | -    |
| Histeridae (clown beetles)                                    |      |     |      |
| Histerinae sp [rt]                                            | 1    | -   | -    |
| Hydraenidae (moss beetles)                                    |      |     |      |
| <i>Hydraena</i> sp [oa-w]                                     | +    | -   | -    |
| <i>Limnebius</i> spp [oa-w]                                   | +    | -   | -    |
| <i>Ochthebius minimus</i> (Fabricius) [oa-w]                  | ++   | -   | -    |
| <i>Ochthebius</i> cf <i>minimus</i> [oa-w]                    | -    | +   | +    |
| <i>Acrotichis</i> sp [rt]                                     | -    | 1   | -    |
| Silphidae (carrion beetles)                                   |      |     |      |
| Silphidae sp [u]                                              | -    | -   | 1    |
| Staphylinidae (rove beetles)                                  |      |     |      |
| <i>Lesteva longelytrata</i> (Goeze) [oa-d]                    | -    | -   | 2    |
| <i>Tachyporus</i> spp [u]                                     | 1    | 1   | 1    |
| <i>Drusilla canaliculata</i> (Fabricius) [u]                  | 1    | -   | -    |
| Aleochariinae spp [u]                                         | 8    | 3   | 3    |
| <i>Anotylus nitidulus</i> (Gravenhorst) [rt-d]                | 2    | -   | 1    |
| <i>Anotylus tetracarinatus</i> group [rt]                     | 1    | -   | -    |
| <i>Platystethus cornutus</i> group [oa-d]                     | 4    | -   | 5    |
| <i>Platystethus nitens</i> (Sahlberg) [oa-d]                  | -    | 1   | 1    |
| <i>Carpelimus</i> spp [u]                                     | 3    | 1   | -    |
| <i>Astenus</i> sp [rt]                                        | 1    | -   | -    |
| <i>Lathrobium</i> spp [u]                                     | -    | -   | 1    |
| Paederinae sp (small) [u]                                     | -    | -   | 1    |
| <i>Gabrius</i> sp [rt]                                        | 3    | -   | 1    |
| <i>Quedius</i> sp [u]                                         | 1    | -   | -    |
| <i>Ocypus</i> / <i>Staphylinus</i> / <i>Tasgius</i> sp(p) [u] | 1    | -   | -    |
| <i>Xantholinus gallicus</i> or <i>linearis</i> [rt-sf]        | 1    | -   | -    |
| <i>Xantholinus linearis</i> (Olivier) [rt-sf]                 | -    | -   | 1    |
| Xantholinini sp [u]                                           | -    | 1   | -    |
| Staphylininae spp [u]                                         | -    | 1   | 3    |

|                                                             |     |     |    |
|-------------------------------------------------------------|-----|-----|----|
| Geotrupidae (geotrupid dung beetles)                        |     |     |    |
| Geotrupinae sp [oa-rf]                                      | 1   | 2   | 2  |
| Scarabaeidae (dung beetles)                                 |     |     |    |
| <i>Aphodius granarius</i> (L) [ob-rf]                       | -   | 2   | 3  |
| <i>Aphodius erraticus</i> (L) [oa-rf]                       | -   | -   | 1  |
| <i>Aphodius prodromus</i> or <i>sphacelatus</i> [ob-rf]     | 7   | 1   | 3  |
| <i>Aphodius contaminatus</i> (Herbst) [oa-rf]               | -   | 2   | 1  |
| <i>Aphodius</i> spp and sp indet [ob-rf]                    | 1   | 2   | -  |
| <i>Onthophagus joannae</i> Goljan [oa-rf]                   | 1   | -   | -  |
| <i>Onthophagus</i> sp (p) [oa-rf]                           | 1   | -   | 2  |
| Byrrhidae (pill beetles)                                    |     |     |    |
| <i>Byrrhus</i> sp [oa-p]                                    | -   | -   | 1  |
| ? <i>Byrrhus</i> sp [oa-p]                                  | 1   | -   | -  |
| Elmidae (riffle beetles)                                    |     |     |    |
| Elmidae sp [oa-w]                                           | +   | -   | -  |
| Dryopidae (long-toed water beetles)                         |     |     |    |
| <i>Dryops</i> sp [oa-d]                                     | -   | -   | 1  |
| Elateridae (click beetles)                                  |     |     |    |
| <i>Agrypnus murinus</i> (Linnaeus) [oa-p]                   | 1   | -   | 1  |
| <i>Agriotes</i> sp [oa-p]                                   | 1   | -   | 2  |
| Elateridae spp [ob]                                         | -   | 1   | -  |
| Ptinidae (spider and woodworm beetles)                      |     |     |    |
| <i>Anobium punctatum</i> (De Geer) [lsf]                    | 1   | -   | -  |
| Nitiulidae (sap and pollen beetles)                         |     |     |    |
| <i>Brachypterus</i> sp [oa-p]                               | 1   | -   | -  |
| Cryptophagidae (silken fungus beetles)                      |     |     |    |
| Cryptophagidae sp [u]                                       | 1   | -   | -  |
| Latridiidae (minute brown scavenger beetles)                |     |     |    |
| Corticariinae spp [rt]                                      | -   | 1   | -  |
| Chrysomelidae (leaf and seed beetles)                       |     |     |    |
| Chrysomelinae sp [oa-p]                                     | -   | -   | 1  |
| <i>Phyllotreta nemorum</i> group [oa-p]                     | -   | -   | 1  |
| <i>Phyllotreta</i> sp [oa-p]                                | -   | 1   | -  |
| <i>Longitarsus</i> sp [oa-p]                                | 1   | -   | -  |
| <i>Neocrepidodera</i> cf <i>ferruginea</i> (Scopoli) [oa-p] | -   | -   | 1  |
| Alticini sp [oa-p]                                          | -   | 1   | -  |
| <i>Cassida</i> sp [oa-p]                                    | -   | -   | 1  |
| Erirhinidae (erirhinid weevils)                             |     |     |    |
| <i>Tanysphyrus lemnae</i> (Paykull) [oa-p-w]                | -   | -   | +  |
| Curculionidae (weevils)                                     |     |     |    |
| <i>Tychius</i> sp [oa-p]                                    | -   | 1   | -  |
| <i>Ceutorhynchus</i> ? <i>contractus</i> (Marsham) [oa-p]   | -   | -   | 1  |
| <i>Ceutorhynchus</i> spp [oa-p]                             | -   | 1   | 2  |
| <i>Microplontus rugulosus</i> (Herbst) [oa-p]               | -   | -   | 1  |
| <i>Rhinoncus</i> sp [oa-p]                                  | -   | -   | 1  |
| Ceutorhynchinae sp [oa-p]                                   | -   | -   | 2  |
| ? Ceutorhynchinae sp [oa-p]                                 | 1   | -   | -  |
| <i>Strophosoma</i> sp [oa-p]                                | -   | -   | 1  |
| <i>Phyllobius</i> or <i>Polydrusus</i> sp [oa-p]            | -   | -   | 1  |
| <i>Sitona</i> sp [oa-p]                                     | -   | -   | 2  |
| <i>Hypera zoilus</i> (Scopoli) [oa-p]                       | -   | -   | 1  |
| Curculionidae sp and spp indet [oa-p]                       | 3   | 3   | 2  |
| Coleoptera spp and sp indet [u]                             | 2   | -   | -  |
| Insecta spp indet. larval fragments                         | +++ | +++ | ++ |
| <b>ARACHNIDA</b>                                            |     |     |    |
| Acarina spp (mites)                                         | F   | F   | F  |
| Araneae sp (spiders)                                        | P   | -   | -  |
| Pseudoscorpiones sp (pseudoscorpions)                       | P   | -   | -  |

Scarabaeoid dung beetles can be of particular use in interpreting local land use since their relative abundance in assemblages of terrestrial insects reflects the intensity of grazing in the surrounding area (Smith *et al* 2010; 2014). Studies indicate that dung beetles account for over 10% of the terrestrial fauna if large or dense populations of grazing animals are present, and less than 5% if there are natural populations of grazing animals or 'naturalistic' grazing by domestic animals. On this site dung beetles made up 15–22% of the terrestrial faunas. These figures should be treated with a little caution since the terrestrial assemblages were moderately-sized, but it appears that substantial numbers of livestock were present in the area throughout the time represented by the samples and that they were probably present close to the features. At least the two later waterholes had access ramps that sloped down at shallow angle, which would have provided easy access for humans and livestock. There was no evidence of similar access to the Late Bronze Age waterhole, but this may simply have not survived due to severe truncation. Even if direct access was difficult, water troughs may have been filled from waterholes.

Ked (*Melophagus ovinus*) puparia were common in sample [254] from the Late Iron Age/Early Roman waterhole [6095]. These ectoparasitic flies are found exclusively on sheep, spending their whole lives in the fleece. The adults feed on blood and heavy infestations can result in skin irritation, loss of condition and anaemia. The puparia are firmly glued to the wool fibres with a secretion produced by the females and are not easily dislodged. The occurrence of keds in archaeological deposits appears to be connected with the cleaning of sheep fleeces or wool, and not with the penning or close proximity of sheep. In Anglo-Scandinavian tenements in York for example, they were most frequently identified from house floors and only rarely from elsewhere (Kenward & Hall 1995, 775–7). Keds and their puparia would be removed most effectively from fleeces or wool by teasing (a process that loosens and spreads out wool fibres removing dirt and other unwanted matter prior to carding and spinning), an activity that would probably have taken place within buildings. Ked puparia and other remains are also frequently found in pits or other features where there is evidence for the disposal of waste from within buildings. A large number of keds and sheep lice (*Bovicola ovis*) were recorded from the fill of a drain or conduit beneath a room in an Icelandic farmstead, where they were thought to have accumulated as a result of washing fleece or wool (Buckland & Perry 1989). There was no evidence in the insect assemblage for the dumping of organic waste in this feature, either in the form of litter from within buildings or general waste disposal: the characteristic decomposers that would be expected if this had occurred were almost entirely absent (a single *Xantholinus linearis*, a facultative synanthrope, was recorded). Similarly, there was no evidence for waste disposal in the plant assemblage. It is therefore most likely that the ked puparia in this feature came from fleeces washed either in the waterhole, or close by in water drawn from it, with run-off from the process subsequently entering the waterhole. Dipping live sheep

in water is unlikely to dislodge large numbers of puparia.

## RADIOCARBON DATING

Mary Nichols

Ten samples were dated at Queen's University Belfast. The results, presented in Table 24, are conventional radiocarbon ages (Stuiver & Polach 1977) and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver & Kra 1986). Calibrations relate the radiocarbon measurements directly to the calendrical time scale and are calculated according to the maximum intercept method (Stuiver & Reimer 1986) using the datasets published by Reimer *et al* (2013) and the computer program OxCal v4.2 (Bronk Ramsey 1995; 1998; 2001; 2009). Calibrated date ranges are rounded out as recommended by Mook (1986) with modelled date ranges rounded out to 5 years.

## DENDROCHRONOLOGICAL DATING

Ian Tyers

### Methodology

Seven samples from oak (*Quercus* spp) timbers and one beech (*Fagus* sp) timber from waterlogged deposits in three medieval waterholes/wells ([3365/4343], [5245] and [5280]) were assessed. Each sample was supplied as a complete cross section, several as double samples. These were assessed for the wood type, the number of rings it contained, and whether the sequence of ring widths could be reliably resolved. Four of the oak timbers and the beech timber were successfully dated, the rest were not datable. Standard dendrochronological analysis methods (see English Heritage 1998) were applied to each suitable sample.

A complete sequence of the annual growth rings in each of these samples was measured to an accuracy of 0.01mm. The sequences of ring widths were then plotted onto semi-log graph paper to enable visual comparisons to be made between the sequences and reference data. In addition, cross-correlation algorithms (*eg* Baillie & Pilcher 1973) were employed to search for positions where the ring sequences were highly correlated. Highly correlated positions were checked using the graphs and where these were satisfactory, these locations were used to identify the calendar dates of the measured series.

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

Table 24. Radiocarbon dates

| Period (phase) | Land use | Context             | Parent context                  | Sample | Lab no.   | Material                                 | Radiocarbon Age (BP) | Calibrated date (cal yr BC/AD) (95% probability) |
|----------------|----------|---------------------|---------------------------------|--------|-----------|------------------------------------------|----------------------|--------------------------------------------------|
| 5              | B1       | [1084]              | posthole [1085]                 | {87}   | UBA-31131 | charcoal                                 | 3496±32              | 1920–1690 cal BC                                 |
| 5              | OA5      | [1461]              | pit [1462]                      | {109}  | UBA-31127 | cremated human bone                      | 2987±27              | 1290–1120 cal BC                                 |
| 5              | B3       | [1007]              | posthole [1008]                 | {86}   | UBA-31130 | charcoal                                 | 2898±28              | 1210–1000 cal BC                                 |
| 5              | OA5      | [6119]              | waterhole [6120]                | {256}  | UBA-31132 | Hawthorn seeds ( <i>Crataegus</i> sp)    | 2812±40              | 1060–840 cal BC                                  |
| 5              | S9       | (cremation?) [5654] | pit [5656] in ring ditch [5584] | {245}  | UBA-31128 | barley grains ( <i>Hordeum vulgare</i> ) | 2734±27              | 930–810 cal BC                                   |
| 6              | B4       | [5580]              | eaves drip gully [5582]         | {237}  | UBA-31125 | barley grains ( <i>Hordeum vulgare</i> ) | 2231±35              | 400–190 cal BC                                   |
| 7 (1)          | S9       | [5598]              | ring ditch [5584]               | {242}  | UBA-31129 | barley grains ( <i>Hordeum vulgare</i> ) | 2063±31              | 180 cal BC–cal AD 10                             |
| 7 (1)          | OA5      | [6094]              | waterhole [6095]                | {254}  | UBA-31133 | Wheat ( <i>Triticum</i> sp)              | 1988±26              | 50 cal BC–cal AD 80                              |
| 7 (1)          | S9       | [5721]              | Pit [5722] in ring ditch [5584] | {247}  | UBA-31134 | barley grains ( <i>Hordeum vulgare</i> ) | 1987±26              | 50 cal BC–cal AD 80                              |
| 8 (1)          | OA17     | [1320]              | waterhole [1182]                | None   | UBA-21269 | Oak board ( <i>Quercus</i> spp.)         | 979±27               | cal AD 1010–1160                                 |

Table 25. Tree-ring spot dates for timber samples: oak interpretations using a 10 ring minimum sapwood estimate; AGR = average growth rate mm/year

| Period (phase) | Land use | Parent context | Timber       | Size (mm) | Rings | Sap | AGR  | Date of measured sequence | Interpreted result |
|----------------|----------|----------------|--------------|-----------|-------|-----|------|---------------------------|--------------------|
| 8 (2)          | OA17     | [5280]         | [5591] oak   | 105 x 40  | 71    | -   | 1.56 | AD 939–1009               | after AD 1019      |
| 8 (3)          | OA18     | [3365/4343]    | [4393] oak   | 65 x 55   | 53    | -   | 1.25 | AD 1093–1145              | after AD 1155      |
| 8 (3)          | OA18     | [3365/4343]    | [4396] beech | 195 x 60  | 59    | n/a | 1.69 | AD 1051–1109              | after AD 1109      |
| 8 (3)          | OA18     | [3365/4343]    | [4399] oak   | 165 x 35  | 117   | -   | 1.02 | AD 994–1110               | after AD 1120      |
| 8 (3)          | OA18     | [5245]         | [6064] oak   | 95 x 5    | 52    | -   | 1.87 | AD 982–1033               | after AD 1043      |

## Results

All of the samples contained suitable tree-ring sequences for measurement and analysis (Table 25). Preservation appears to be sub-optimal; none of the oak samples retained sapwood, and several had quite soft heartwood surfaces. It is likely that some have lost a significant amount of outermost heartwood timber.

Comparisons between the measured series identified no particularly strong internal cross-matching within the assemblage. The individual oak series were compared with oak reference chronologies of Roman and post-Roman date from London and elsewhere across Britain and Europe. Four of the oak series cross-matched directly to medieval data sets from London. The beech sequence was matched to the London medieval beech data sets. These results indicated dates for timbers excavated from all three wells. The remaining, mostly short, oak sequences do not match any Roman or post-Roman sequences.

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