

# Prehistoric, Romano-British, and Anglo-Saxon Activity at Whitelands Farm, Bicester

JON MARTIN

with contributions by ALISTAIR BARCLAY, PHILIPPA BRADLEY, LORRAIN HIGBEE, KAYT MARTER BROWN, MANDY JAY, JACQUELINE I. MCKINLEY, JANET MONTGOMERY, J. PETER NORTHOVER, MAURA PELLEGRINI, RUTH PELLING, CHRIS J. STEVENS, SARAH F. WYLES, and illustrations by S.E. JAMES and KAREN NICHOLS

## SUMMARY

*Excavations undertaken by Wessex Archaeology at Whitelands Farm south-west of Bicester revealed a multi-period site ranging from the early Bronze Age to the mid Anglo-Saxon period. A total of eighteen areas were investigated, but the density of features across the site was very varied. Area 1 contained a scatter of middle to late Iron-Age settlement features, a rock-cut ditch, and pit clusters. Most features recorded in Area 7 were late Iron Age and reveal evidence for settlement and agriculture, the exceptions being a Romano-British ditch and a Beaker burial. Areas 14, 15, and 16 contain the remains of two enclosure ditches, stone-lined tanks and culverts, quarry pits, ditches, corn driers/ovens, pits, and post-hole structures, mostly dated to the late Iron Age or Romano-British period, and providing evidence for settlement, domestic activity, and quarrying. Stone-lined tanks and associated stone-lined channels in Area 16 contained evidence for grain processing. These areas also revealed some mid Anglo-Saxon features and re-use of one of the stone-lined tanks.*

## PROJECT BACKGROUND

A programme of archaeological excavations on land south-west of Bicester, Oxfordshire (NGR **A**457100 222000; Fig. 1) was carried out in 2008 by Wessex Archaeology before development of the site for housing. The excavations followed geophysical survey and two phases of evaluation which had highlighted the archaeological potential of certain locations within the development. Seventeen areas of potential interest were identified and excavated in 2008; Area 18 was excavated in 2009 (see below).

### *Archaeological Background*

The existence of archaeological remains within the immediate environs had been known for some time. This was confirmed by evaluation at two sites, the first adjoining Middleton Stoney Road and Oxford Road,<sup>1</sup> and the second at the site of a proposed community hospital.<sup>2</sup> Slight evidence was found for Iron-Age activity (middle and middle-late) at both sites. The remains of a first- to second-century Romano-British farmstead were identified at the proposed community hospital site. Evidence from the Oxford Road site was less clear but did point to Romano-British activity in the vicinity. A low level of Anglo-Saxon activity was also identified during the evaluation of the proposed community hospital.<sup>3</sup>

<sup>1</sup> 'Land adjoining Middleton Stoney Road and Oxford Road, Bicester, Oxfordshire, Archaeological Evaluation', unpublished OA client report (ref. 1250, 2002).

<sup>2</sup> 'Proposed Community Hospital, Bicester, Oxfordshire, Archaeological Evaluation', unpublished OA client report (ref. 1286, 2002).

<sup>3</sup> Ibid.

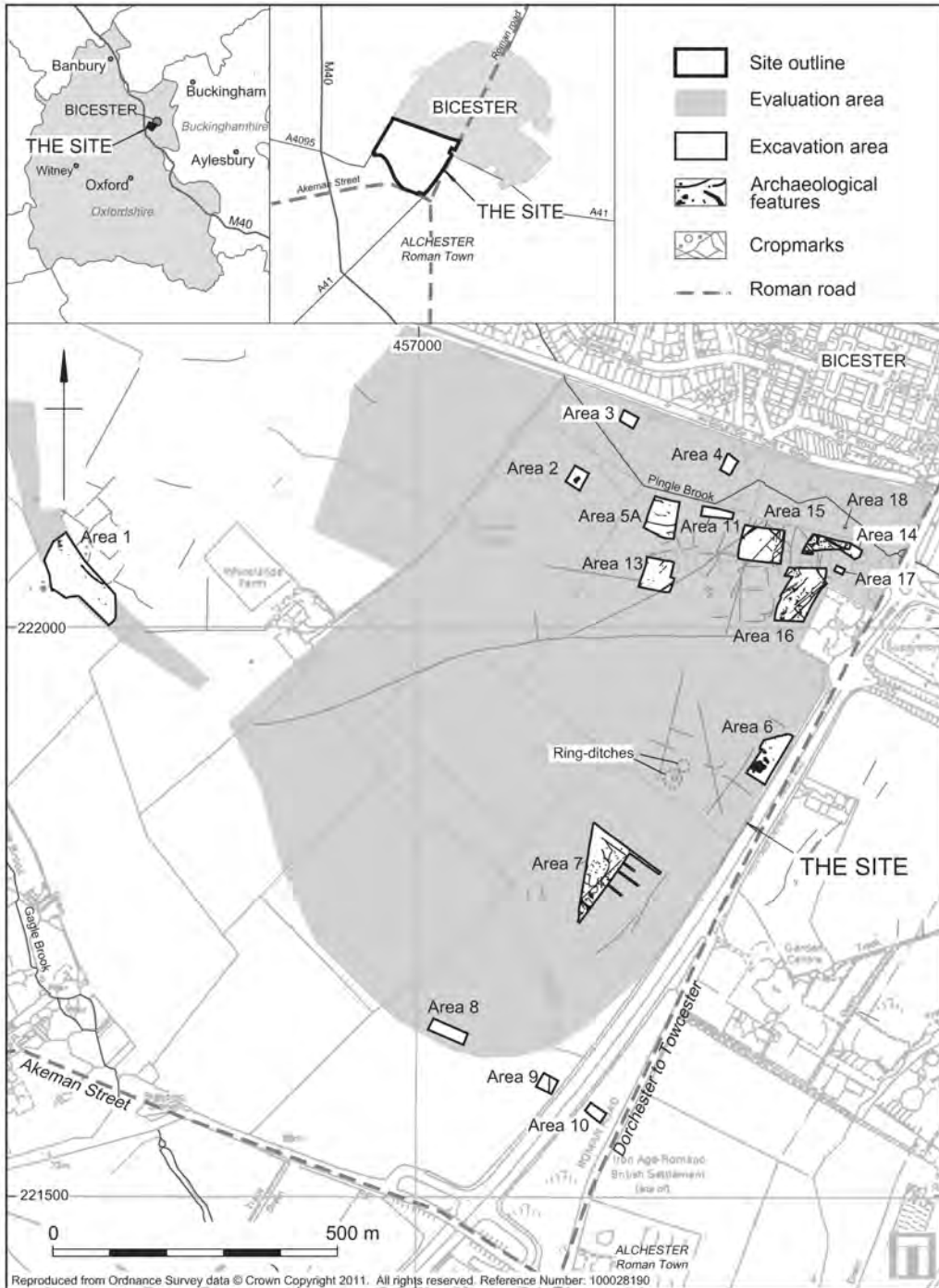


Fig. 1. Site location, showing area evaluated and subsequent excavation areas.

Previous archaeological excavations in the vicinity also include work on the Wendlebury–Bicester road (A421) that produced evidence for Neolithic or Bronze-Age activity, a middle Iron-Age settlement, extensive activity throughout the Romano-British period, and Anglo-Saxon burials.<sup>4</sup> Whitelands Farm lies north-west of the Roman town of Alchester ('old Roman fort'), first described by Stukeley in the eighteenth century and the subject of considerable archaeological interest.<sup>5</sup>

#### *Site Location, Topography, and Geology*

Whitelands Farm is located south-west of the town of Bicester, south of Middleton Stoney road, west of the Oxford road (A41), and north of Chesterton (Fig. 1). Two watercourses, the Pingle brook and the Gagle brook traverse the site. The site is gently undulating, falling away more noticeably down to the Gagle brook. It lies between c.74 m OD in the north and c.68 m OD near Gagle brook. The underlying geology is Oxford Clay and Kellaway beds, while the landscape across the higher ground on site is underlain by Corallian beds of sand and sandy limestone. In places there are mid to late Jurassic Cornbrash outcrops comprising a limestone that breaks into loose rubble or brash (up to 0.50 m thick). Upper Corallian Rag also occurs in the area, and sinkholes and springs are common.<sup>6</sup> Prior to the excavation, the land use was a mixture of arable and pasture.

#### THE EXCAVATION

The excavation sought to address the archaeological potential as determined by the previous archaeological work and by Paul Smith (County Archaeologist, Oxfordshire County Council). The principal aim of the programme of excavation was to focus on locations that had suggested Iron-Age, Romano-British, and Anglo-Saxon settlement, agriculture, and quarrying.

The Written Scheme of Investigation identified seven areas for targeted excavation and three areas to be subject to strip, map and record. This strategy was altered during the programme of excavations to accommodate the location and varying densities of archaeological remains encountered. Areas that after partial machine stripping revealed little of archaeological interest were discontinued in favour of areas with greater potential. A total of 17 areas were investigated initially. Area 5 was subdivided into eight smaller, targeted areas (Areas 5A and 11–17; Figs. 1, 3). The size and extent of these areas was determined by the density and orientation of features revealed. Further work in 2009 (Area 18) was undertaken to locate and record the north-west to south-east axis of an enclosure ditch previously identified in Area 14.

Widely differing results were obtained across the excavated areas (Figs. 1–2). Areas 3, 10 and 17 were completely blank. Areas 8 and 11 were discontinued due to a combination of localised flooding and a paucity of archaeological features. It was decided not to excavate Area 12 because Area 11 immediately to the north had very rapidly flooded and Areas 5A and 13 to the west had revealed very low densities of features. Area 14 was extended in order to ascertain whether the high density of features continued to the east. Areas 2, 4, 6, and 9 contained relatively low densities of mostly undated archaeological remains (quarry pits, ditches, and small hearths). Area 1 revealed a low density of features, concentrated on the northern edge of the site and mostly dated to the middle/late Iron Age.

Much greater numbers of securely dated features were recorded in Areas 7, 14, 15, and 16. These comprised ditches, enclosures, pits, post-holes, hearths, corn driers/ovens, and evidence for quarrying. Two stone-lined features, a stone-revetted ditch, and stone-capped and -lined culverts

<sup>4</sup> P.M. Booth et al., *Excavations in the Extramural Settlement of Roman Alchester, Oxfordshire, 1991*, OA Monograph, 1 (Oxford, 2001).

<sup>5</sup> *VHC Oxon.* 1, p. 283.

<sup>6</sup> Geological Survey of Great Britain (England & Wales) solid and drift 1:50,000, sheet 219 (2002 edn).

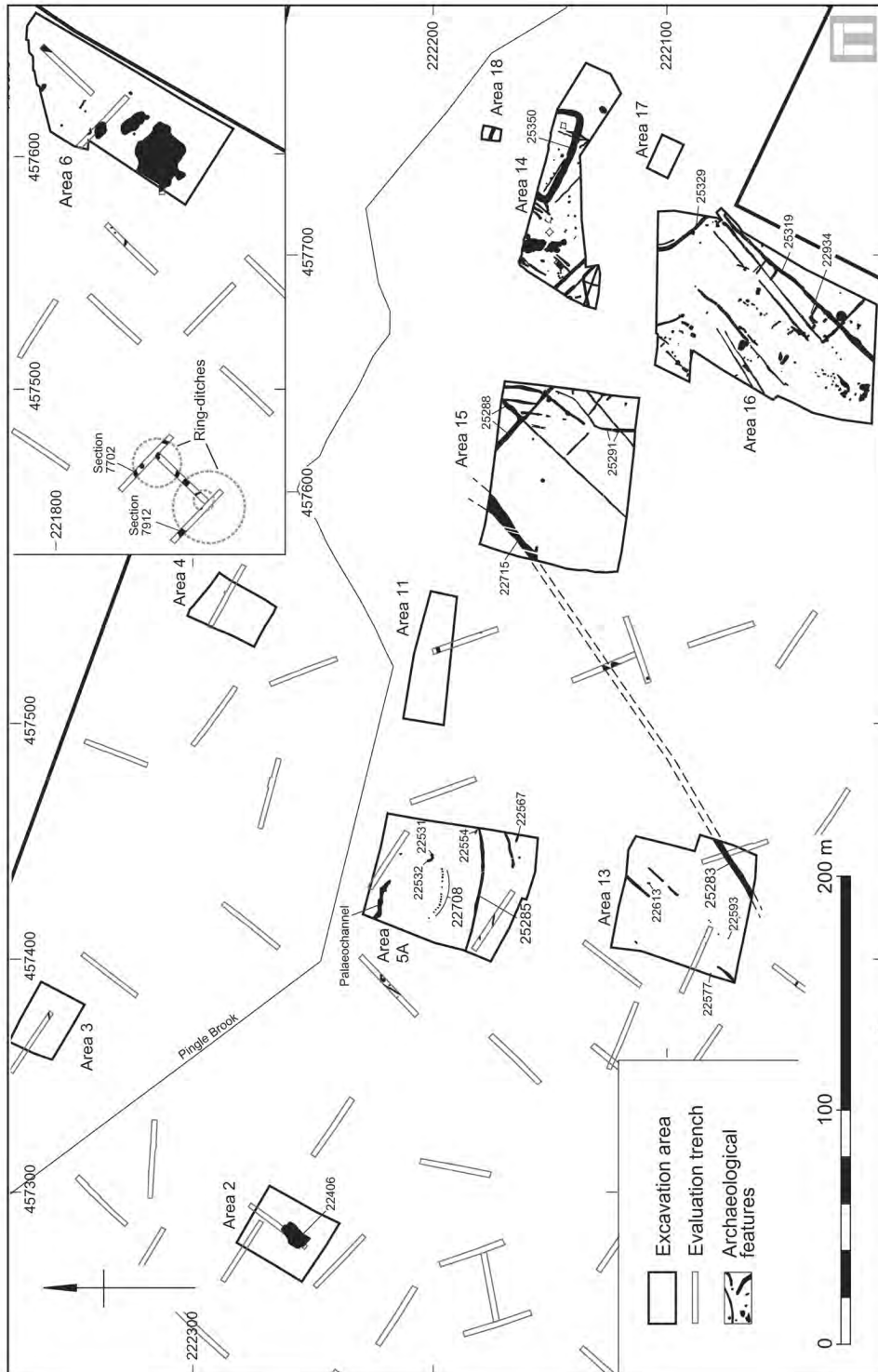


Fig. 2. Areas 2-6 and 11-18, showing location of Bronze-Age cremation burial 22593 and Anglo-Saxon heath 22613.

were excavated in Area 16. Area 14 contained a circular, stone-lined pit and a large, sub-rectangular enclosure ditch.

The great variation in the underlying geology affected the density and character of archaeological features encountered. For example, there were fewer features in the areas of underlying clay. Many of the features were shallow and had not been dug into the underlying limestone, although there were some notable exceptions (see below).

#### *Site Sequence*

The archaeological features and finds have been assigned to the following phases: late Neolithic/early Bronze Age; middle Iron Age; late Iron Age; late Iron Age/early Romano-British; Anglo-Saxon; and medieval. The phasing is based mainly on dates provided by the pottery and other finds with additional information coming from stratigraphic relationships and selected radiocarbon determinations (Table 1, below). Pottery from excavated features was relatively abundant, which in some way compensated for the lack of stratigraphy; many features were very shallow and relationships between them were often unclear.

#### DISCUSSION

The discussion in this section highlights selected aspects of the excavations; the detailed results are presented in the next section. In summary, the site sequence can be characterised as follows:

Limited earlier prehistoric activity

Some middle and late Bronze-Age activity

Middle and late Iron-Age occupation, establishment of fields, some settlement features

Romano-British fields, pit post-holes, corn driers, stone-lined tanks, quarries and other settlement and agricultural features; evidence for crop processing

Early to mid Anglo-Saxon activity (re-use of stone-lined tanks, pit digging)

#### *Early Activity*

Pre-Iron-Age activity on the site was limited. The upper portion of a Palaeolithic hand axe was recovered from a field boundary ditch. The majority of the Palaeolithic finds in Oxfordshire have been located in the river valleys, and all were some distance to the south-west of the site;<sup>7</sup> this find extends the known distribution. Previous evidence for late Neolithic or early Bronze-Age activity in the immediate area was fairly sparse, although a scattering of features tentatively dated to this period, and residual finds including Beaker pottery and flint, were recorded during excavation of the extramural settlement north of Alchester.<sup>8</sup> Neolithic and Bronze-Age utilisation of the landscape at Whitelands Farm was largely represented by funerary monuments and burials, and was restricted to two ploughed-out barrows, a cremation burial, and a Beaker burial (Figs. 2–3, 6). There is no evidence for settlement or agricultural use of the land during this period, although the discovery of a little Neolithic and Bronze-Age flint does hint at some sporadic activity.

The Beaker burial (25126) is a rare example for this part of Oxfordshire, in contrast to the high number of Beaker finds from the Oxford area of the upper Thames valley. There was no evidence to indicate whether the burial (an adult male) had been placed under a mound or limestone cairn but, given the degree of plough damage, this is not surprising. The position of the inhumation burial and the range of grave goods is fairly typical, although the quantity of goods (bone toggle, bone point, flint knife, and Beaker vessel) makes this a relatively rich grave.<sup>9</sup> The vessel found with

<sup>7</sup> T. Hardaker, 'The Lower and Middle Palaeolithic of Oxfordshire', Solent Thames Archaeological Research Framework: <http://www.buckscc.gov.uk>.

<sup>8</sup> Booth et al., *Roman Alchester*, p. 42.

<sup>9</sup> D.L. Clarke, *Beaker Pottery of Great Britain and Ireland* (Cambridge, 1970).

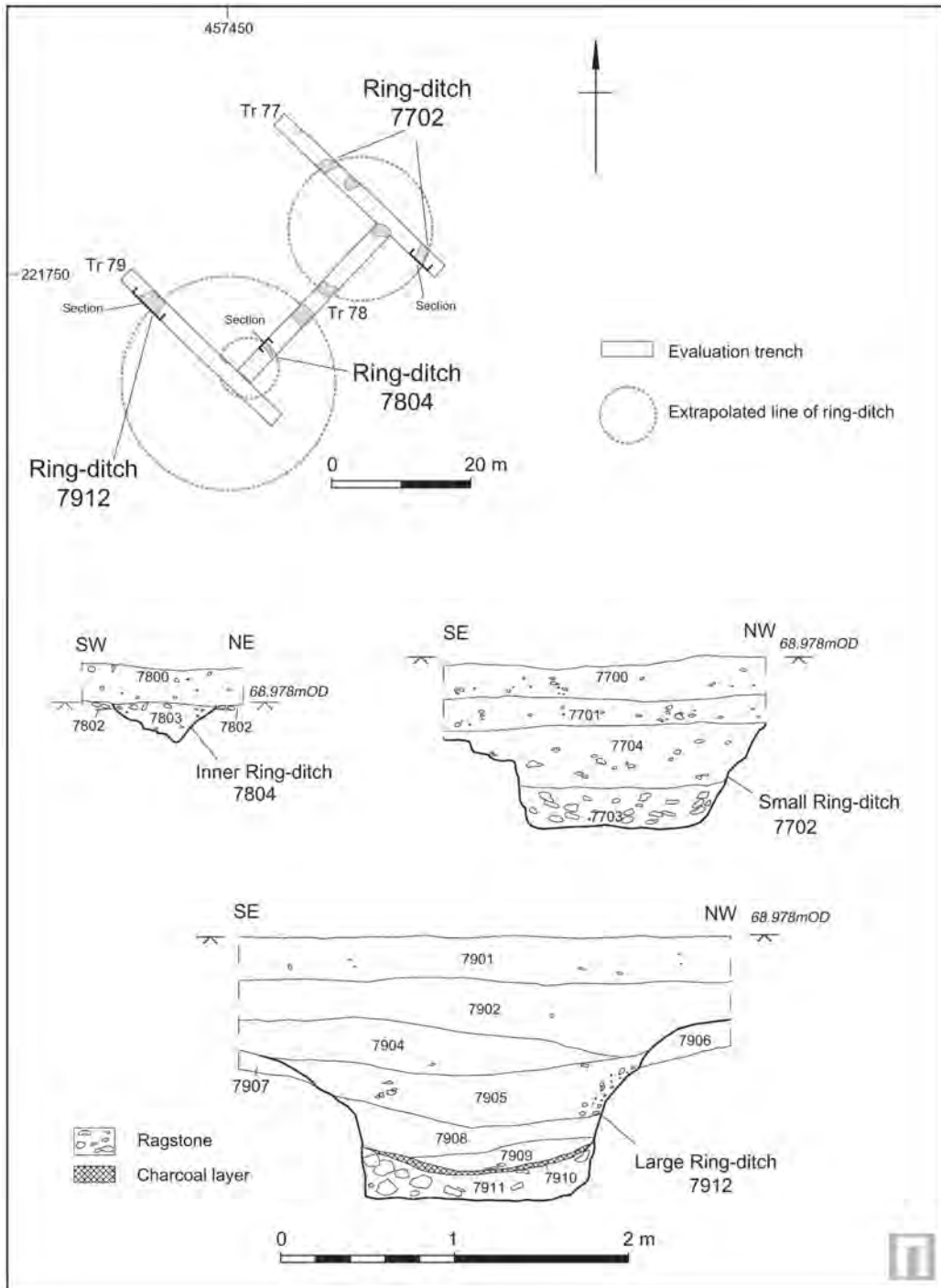


Fig. 3. Plan and sections of ring-ditches.

Table 1. Radiocarbon determinations

Area and Feature	Context/sample	Material	Identifications	Lab ref.	δ <sup>13</sup> C	Date BP	calibration (2 sig. 94.5%)
Area 16 ditch 23361	23362 <93>	charred grain	3x <i>Triticum</i> cf. <i>spelta</i>	SUERC-30811	-23.1‰	1810±35	cal. AD 90–330
Area 16 corn-drier 23502	23505 <96>	charred grain	3x <i>T. cf. spelta</i> (germinated)	SUERC-30812	-21.6‰	1970±35	cal. 50 BC–AD 130
Area 16 stone-lined pit 22837	22840 <61>	charred grain	3x <i>Triticum</i> cf. <i>spelta</i>	SUERC-30813	-22.9‰	1935±35	cal. 40 BC–AD 140
Area 14 ditch g.25332 [22977]	22979 <72>	charcoal	<i>Betula</i> sp.	SUERC-30819	-26.5‰	1550±35	cal. AD 420–590
Area 13 cremation burial 22593	22594 <496>	Cremated bone	Femur shaft 2.4g	SUERC-30818	-25.5‰	3630±35	2140–1890 cal. BC
Area 14 beaker inhumation 25126	25127 Duplicated measurement	human bone	Left femur 2.7g	SUERC-30814	-22‰	3800±35	2340–2140 cal. BC

the burial places it at the beginning of the Beaker period (2450–2250 cal. BC). This is supported by radiocarbon dates obtained on the left femur, which produced a calibrated date of 2340–2140 cal. BC (Table 1). The location of the burial, on limestone geology rather than gravel, adds to its comparative rarity. The burial can be compared with other examples from the region such as Radley and Yarnton.<sup>10</sup> The form of the Beaker pot provides a link with other sites and burials on the gravel terraces (like Yarnton), while the bone toggle can be paralleled at Thomas Hardy School in Dorset and at Sewell near Totternhoe on the Chiltern ridge in Bedfordshire.<sup>11</sup> Isotope analysis of bone and teeth from the Whitelands Farm inhumation burial has shown that the man was local and his diet was predominately meat-based (see Jay et al. below).

A middle Bronze-Age palstave recovered from the ploughsoil during evaluation was located c.30 m from the Beaker burial and c.190 m down slope from the barrows. The construction of the barrows, the Beaker burial, and the deposition or loss of the palstave may be separated by hundreds of years but it is interesting to note that all the recorded Bronze-Age activity took place within a relatively small area of the site. Evidence for other Bronze-Age activity in the wider environs includes an isolated cremation burial within a Deverel-Rimbury urn found within the easement of what is now the A41 dual carriageway.<sup>12</sup>

#### *Iron-Age and Romano-British Occupation*

Evidence for settlement and agricultural activity during the middle Iron Age is represented by the rock-cut ditch (22440) and pit groups recorded in Area 1 (Fig. 4). Aerial photography identified an extensive field system and features outside the area investigated which are probably associated with the excavated features (Fig. 1).<sup>13</sup> The quantity of pottery and animal bone recovered from the ditch and pits suggests a low-status farmstead that had fallen into disuse by the time of the

<sup>10</sup> A. Barclay and C. Halpin, *Excavations at Barrow Hills, Radley, Oxfordshire, Vol. 1: The Neolithic and Bronze Age Monument Complex*, Thames Valley Landscapes Monograph, 11 (1999); G. Hey, *Yarnton: Neolithic and Bronze Age*, Thames Valley Landscapes Monograph, forthcoming.

<sup>11</sup> J. Gardiner et al., 'A Matter of Life and Death: Late Neolithic, Beaker and Early Bronze Age Settlement and Cemeteries at Thomas Hardy School, Dorchester', *Proceedings of the Dorset Natural History and Archaeological Society*, 128 (2007), pp. 17–52; C.L. Mathews, *Occupation Sites on a Chiltern Ridge. Part 1: Neolithic, Bronze Age and Early Iron Age*, BAR, 29 (1976), pp. 19–22, plate III; I.A. Kinnes, *British Bronze Age Metalwork. A7–16, Beaker and Early Bronze Age Grave Groups* (London, 1985), pp. 12–14, no. 4; Clarke, *Beaker Pottery of Great Britain*, plate 3; D.V. Clarke et al., *Symbols of Power at the Time of Stonehenge*, HMSO (Edinburgh, 1985), pp. 85, 265.

<sup>12</sup> Booth et al., *Roman Alchester*, p. 11.

<sup>13</sup> C. Cox, 'Land South-West of Bicester, Oxfordshire, Interpretation of Aerial Photographs for Archaeology', unpublished report by Air Photo Services Ltd for Wessex Archaeology (2005).

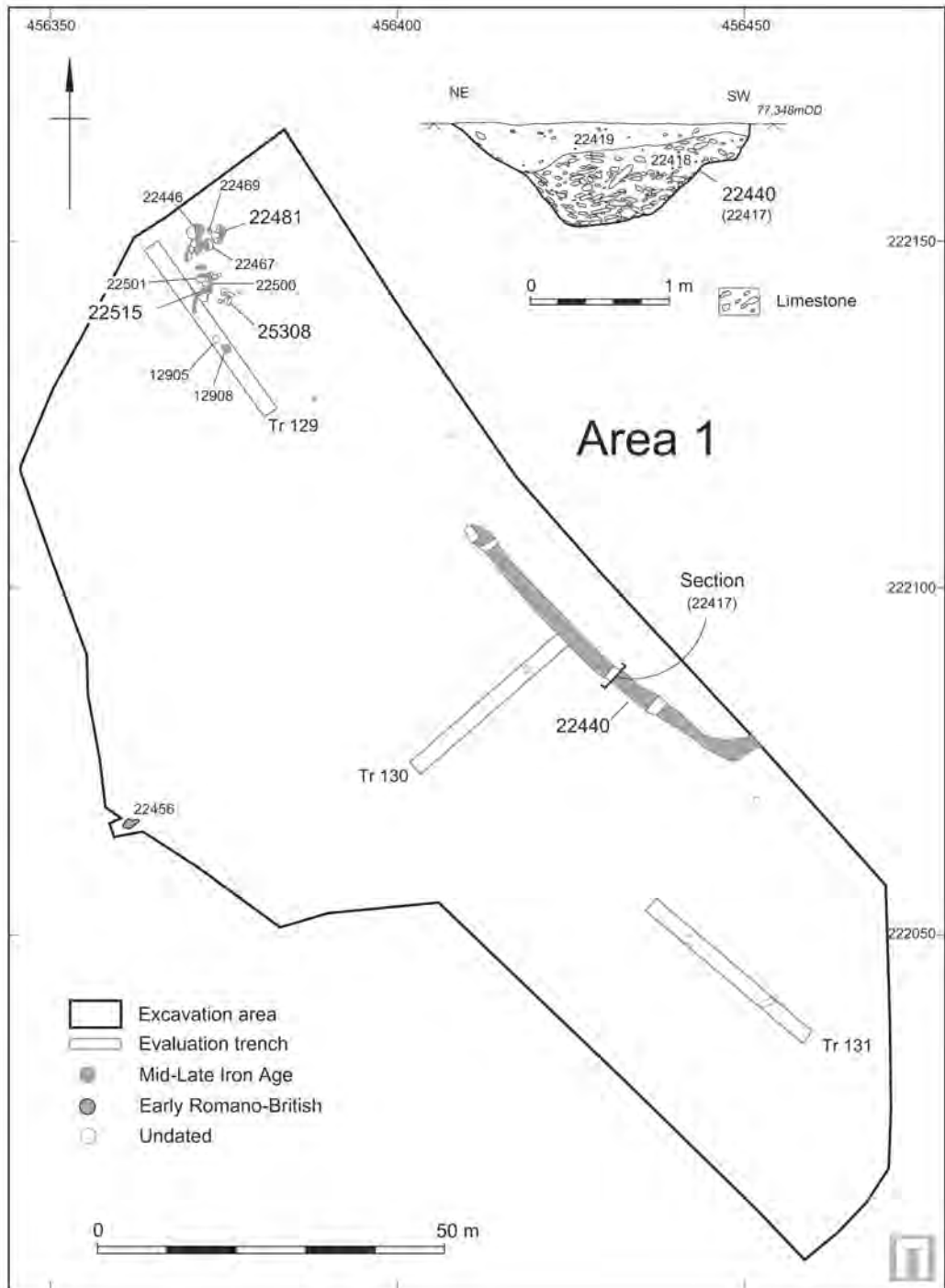


Fig. 4. Area 1: plan of features and section of ditch 22440. Note Romano-British pit 22456 in the south-west of the site.



Roman conquest. The settlement in Area 1 appears to have been abandoned during the late Iron Age: only one small pit containing Romano-British pottery was recorded, and that at some distance from the focus of Iron-Age activity. A site at Bicester Fields Farm, approximately 1.2 km to the east, revealed a similar, possibly shorter, period of occupation terminating at the time of or immediately before the Roman conquest.<sup>14</sup> Other Iron-Age settlements in the vicinity, for example those at Oxford Road and Slade Farm,<sup>15</sup> appear to have been abandoned at a later date, during the early Romano-British period, although the settlement at Slade Farm was in decline by the middle of the first century AD. The settlement at Whitelands Farm may have shifted to Area 7, a kilometre to the south-east, where late Iron-Age features were found, but its focus probably lay outside the excavated area (Fig. 1). Analysis of the pottery supports the idea of settlement shift (see Marter Brown, below).

With the exception of ditch 25375, which was not bottomed, the features revealed in Area 7 were relatively small and shallow. They were mostly of late Iron-Age date. One small ditch, 25184, was dated to the late Iron Age or early Romano-British period and a small number of features contained sherds of middle Iron-Age pottery. There is evidence for at least two phases of ditch digging within the period of occupation of this site: the sparse remnants of a rectilinear field system appear to have been superseded by more sinuous ditches. The remains of several sub-circular and sub-rectangular enclosures were recorded as well as four-post structures, pits and post-holes, but there was no direct evidence for roundhouses. The fills of various features contained domestic refuse (pottery, animal bone, charcoal, oyster shell, and fired clay), indicative of settlement. This particular area of the excavation flooded badly when the first attempt at excavation was made in March; the site was abandoned and re-excavated during June/July when the ground had dried out. It is possible that the site represents seasonal occupation, or it may be that the dwellings were located on an unexcavated area, perhaps up slope. The site was abandoned during the early Romano-British period. The intensification of agriculture during the Iron Age led to marginal ground being cultivated and settled which, it has been suggested, was abandoned during the late Iron Age after episodes of flooding due to a rise in the water table.<sup>16</sup> Parallels may be drawn with the sites at Oxford Road and Farmoor, which both fell into disuse at roughly the same time after episodes of flooding.<sup>17</sup> The large ditch (22715) recorded at the southern extremity of Area 7 at Whitelands Farm may represent an attempt to control rising water levels.

The chronologies of Areas 1 and 7 reinforce the pattern of intermittent Iron-Age settlement observed in this area. Another explanation for the abandonment of these sites is that the military occupation of the area had a profound effect on local settlement patterns, shifting the focus of settlement to the north-east, closer to the route of the Roman road.

The function of a substantial late Iron-Age ditch recorded across Areas 13 and 15 (22715) is not yet understood. The gentle profile and shallow depth of the feature suggests that this was not a defensive ditch, and the paucity of archaeological material recovered from it indicates that it was some distance from domestic activity. In addition, the ditch seems to have been too large to have served merely as a field boundary or drainage ditch. It may represent a territorial boundary, or possibly it carried water from the Pingle brook to the south-west.

Areas 14, 15, 16, and 18 contained features dated overwhelmingly to the late Iron Age and Romano-British period, with a few isolated features of Anglo-Saxon date. All four areas are

<sup>14</sup> A.M. Cromarty et al., 'The Excavation of a Late Iron Age Enclosed Settlement at Bicester Fields Farm, Bicester, Oxfordshire', *Oxoniensia* 64, (1999) pp. 153–233.

<sup>15</sup> C. Mould, 'An Archaeological Excavation at Oxford Road, Bicester, Oxfordshire', *Oxoniensia*, 61 (1996), pp. 65–108; P. Ellis et al., 'An Iron Age Boundary and Settlement Features at Slade Farm, Bicester, Oxfordshire', *Oxoniensia*, 65 (2000), pp. 211–65.

<sup>16</sup> M. Robinson, 'Wider Aspects of Environmental Archaeology', in Booth et al., *Roman Alchester*, pp. 439–40; idem, 'Environment, Archaeology and Alluvium on the River Gravels of the South Midlands', in S. Needham and M.G. Macklin (eds.), *Alluvial Archaeology in Britain* (Oxford, 1992), pp. 197–208.

<sup>17</sup> Mould, 'Oxford Road'.

concentrated in the north-east corner of the site, south of the Pingle brook and west of the A41, the route of the Dorchester–Towcester Roman road (also known as the Stratton Audley Road). Here late Iron Age/Romano-British enclosures and ditches were identified and it can be seen that these form the nucleus of a larger field system. Rectangular enclosures 25288 and 25350 were not fully excavated and their exact function remains unclear, but both represent a considerable amount of effort. A great many of the features in this area were very shallow (less than 0.20 m), but the enclosure ditches were cut into the limestone to a depth of c.1.00 m. They may have also served as defensive features; the military base at nearby Alcester was in existence as early as AD 44,<sup>18</sup> and this settlement may have been established at roughly the same time. Analysis of the pottery recovered from the enclosures indicates that enclosure 25350 was in use around the time of the Roman conquest and had fallen into disuse and been backfilled by the second century AD. The three features dated exclusively to the late Iron Age recorded inside 25350 may represent the remnants of the late Iron-Age settlement that was superseded by the Romano-British enclosure.

Enclosure 25288 contained wares indicative of a second-century or later date, which suggests that the focus of the settlement moved a short distance to the west, away from the Pingle brook. The stratigraphic relationships of the ditches recorded in Area 15 seem to show that the earlier sinuous ditches were replaced by more regular ditches aligned parallel with, and at 90° to, the enclosure. Only one corner of enclosure 25288 was revealed (the remainder of the feature lay beneath a hedgerow, culvert and power lines) and probably as a consequence no internal features were recorded. Within enclosure 25350 there were contemporary gullies, small pits, post-holes and a four-post structure, but no evidence for other structures.

The quantities of pottery, animal bone and other domestic refuse recovered from rubbish pits and backfilled ditches across Areas 14, 15, 16, and 18 indicate settlement activities. Fragments of quernstones and the presence of corn driers or ovens show that crop processing, baking and possibly brewing was occurring. The recovery of a small quantity of loom-weight fragments indicates textile production. The presence of amphorae sherds, samian pottery, glass, toiletry items, and jewellery indicate that the inhabitants were reasonably affluent, but the finds assemblage is fairly typical for a Romano-British farmstead (see Marter Brown below). It is likely that imported items such as the amphorae came from the Roman town of Alchester rather than as direct Continental imports. Very small quantities of CBM were recovered; the abundant availability of easily split and shaped limestone would have made the use of tile and brick almost unnecessary. Several limestone quarry pits were recorded across the site, and two quarry pits were excavated adjacent to enclosure 25350. Further evidence for settlement was indicated by the presence of hearths and four- and six-post structures. Many of the post-holes recorded were very shallow, and others have almost certainly been lost altogether; it is possible that late Iron-Age/Romano-British roundhouses existed but the remains have been wholly or partially lost.

The function of stone-lined tank 22934 is not yet fully understood, though it may have been used for malting barley. Environmental samples taken from the tank and an associated culvert and ditch produced quantities of grain, mostly spelt but also barley, some of which was germinated. Stone-lined feature 22837, roughly 24 m to the north-east, and corn drier 23502, roughly 34 m to the north-west, both contained spelt, barley, and charred grain (see Stevens, below). Samples from the corn drier and feature 22837 were radiocarbon dated and the features appear to be broadly contemporaneous, falling within the range 50 BC–140 AD (see Table 1). The stone-lined tanks and the corn drier may all represent structures used during different stages in the brewing process. It may perhaps be significant that one of the trackways recorded on Area 16 appears to lead directly to tank 22934, passing close by pit 22837, and the other leads up to and past the corn drier.

<sup>18</sup> E. Sauer, 'Alchester Roman Fortress', *Current Archaeology*, 173 (2001), pp. 190–1; idem, 'Wendlebury (Alchester), an Annex of AD 44 and the Earlier (?) Main Fortress (SP 570 203)', *SMidIA*, 32 (2002), p. 84.

A feature similar to 22934, although much larger, was excavated at Weedon Hill (Bucks.).<sup>19</sup> It was later Romano-British and comprised a rectangular stone-floored structure that was located at the entrance to a small, double-ditched enclosure. Water was supplied by a natural stream rather than a culvert and exited the feature via two parallel ditches. The fills of the feature excavated at Weedon Hill also contained germinated grain, and an oven/corn drier was positioned within the nearby enclosure. Environmental evidence for malting and brewing, comprising a large number of germinated grains, mainly of spelt wheat, was also recorded at a Romano-British site at Holybourne near Alton (Hants.).<sup>20</sup> Unlike Whitelands Farm or Weedon Hill, no structures that could be directly linked with grain processing were discovered, but the site was located adjacent to a Roman road and the name Holybourne suggests the proximity of a stream or spring.

The south-east extremity of Whitelands Farm was approximately 1.25 km north-west of the Roman town of Alchester and the route of Roman Akeman Street passed c.500 m to the south (Fig. 1). The eastern boundary of the site was adjacent to the line of the south-west to north-east aligned Dorchester–Towcester road that extended north from Alchester. The north-eastern areas (Areas 14–18) of the site, which had the highest density of features, were positioned less than 50 m from the route of the Roman road (Fig. 1), and the trackways visible on site may have converged with the Roman road to the north of the excavated area. The earlier phases of Romano-British land use may have been connected with the construction of the two roads, in particular the creation of the large quarry pits (Area 6) immediately to the west of the Roman road, although the dating of these is uncertain.

It seems likely that the Roman presence in north Oxfordshire commenced soon after the initial Roman occupation. There is evidence for a military presence in the environs of Alchester as early as AD 44.<sup>21</sup> There appear to have been several phases of military activity. The remains of a large temporary camp were identified to the south-east of the town, and the camp was succeeded by a rectangular enclosure that has been interpreted as a parade ground.<sup>22</sup> Items of military equipment and early imperial coins have been recovered from the excavation of the double-ditched defences of a fort to the west of the town walls.<sup>23</sup>

The construction of Akeman Street has been dated to the first century AD. Evidence from Wilcote, to the west of Alchester, indicates that the road had been built by c.AD 47.<sup>24</sup> A Roman settlement aligned on Akeman Street was excavated at Asthall further west and was given a broadly similar date.<sup>25</sup> The date of the construction of the Dorchester to Towcester Roman road appears to have been contemporary with the earlier civilian settlement of Alchester. North of the site, the ‘outlines of six stone buildings’ dated to the Romano-British period were observed at South Farm, Bicester and stone foundations were noted at King’s End Farm.<sup>26</sup> The sites were not fully excavated so little is known about these potentially substantial farmsteads/villas. King’s End Farm and South Farm were approximately 2 km and 3 km north of Whitelands Farm.

Pottery analyses has shown that Romano-British activity at Whitelands Farm appears to have

<sup>19</sup> G. Wakeham and P. Bradley, *A Probable Romano-British Malt House Complex and Other Remains at Weedon Hill, Aylesbury, Buckinghamshire*, forthcoming.

<sup>20</sup> A.B. Powell, ‘Recent Excavation in the Romano-British Town at Neatham, The Depot Site, London Road, Holybourne’ (forthcoming).

<sup>21</sup> Sauer, ‘Alchester Roman Fortress’, pp. 190–1; idem, ‘Wendlebury (Alchester)’, p. 84.

<sup>22</sup> Ibid.

<sup>23</sup> E. Sauer, ‘The Military Origins of the Roman Town of Alchester, Oxfordshire’, *Britannia*, 30 (1999), p. 289; idem, ‘Alchester, a Claudian ‘Vexillation Fortress’ near the Western Boundary of the Catuvellauni: New Light on the Roman Invasion of Britain’, *Archaeological Journal*, 157 (2000), pp. 22–38, illustrations 10 and 12.

<sup>24</sup> A.R. Hands, *The Romano-British Roadside Settlement at Wilcote, Oxfordshire I: Excavations 1990–92*, BAR BS, 232 (1993), p. 11.

<sup>25</sup> P.M. Booth, *Asthall, Oxfordshire: Excavations in a Roman ‘Small Town’*, Thames Valley Landscapes Monograph, 9 (1997), p. 149.

<sup>26</sup> R. Chambers, ‘Bicester: South Farm Development’, *SMIdLA*, 19 (1989), pp. 49–50; idem ‘Bicester: King’s End Farm’, *CBA Group 9 Newsletter*, 9 (1979), pp. 123–5.

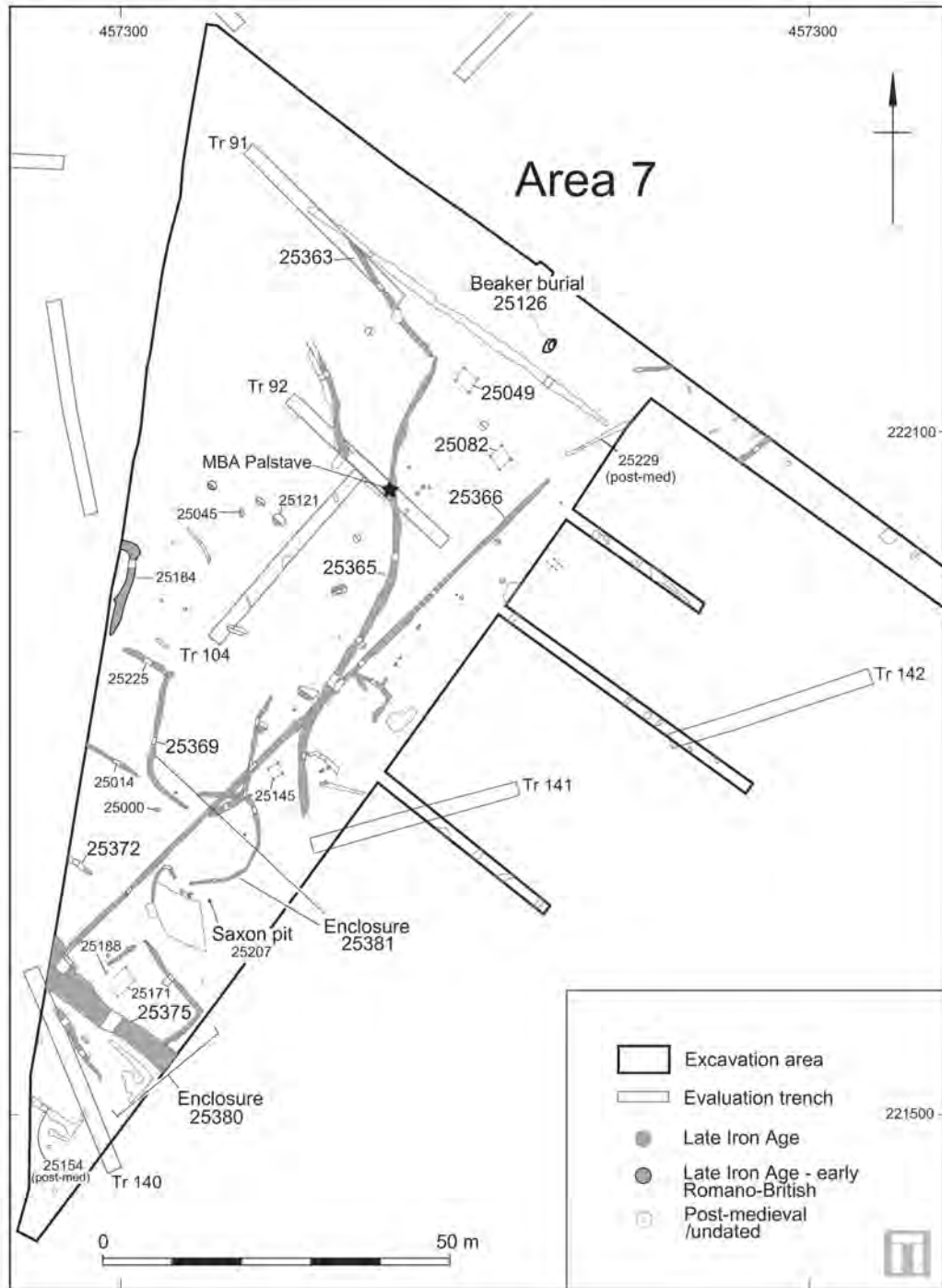


Fig. 5. Area 7, showing phased features.

decreased significantly by the early third century and the site seems to have largely fallen into disuse by the beginning of the fourth century. The stone-lined tank 22934 and associated ditch 25319 contained small quantities of late Roman pink grog ware and seems to have been in use until the mid fourth century and possibly later.

#### *Anglo-Saxon and Later Activity*

There is very little evidence for Anglo-Saxon occupation at Whitelands Farm, only a few dispersed features. The most noteworthy of these is a cluster of seven shallow pits (25321) located adjacent to Romano-British stone-lined tank 22934 in Area 16. The pits and the tank contained quantities of Anglo-Saxon pottery that comprised sandy and organic-tempered wares of broadly fifth- to seventh-century date. In total forty-five sherds of Anglo-Saxon pottery were recovered from the tank and eighty sherds from the pit cluster; refitting sherds came from the pits, including 22928 and 234210, and the tank. A fragment of an antler composite comb (Object Number (ON) 74, Fig. 20) was recovered from pit group 25321. The ceramic evidence suggests that the stone-lined tank was emptied and re-used during the Anglo-Saxon period and that the pits are contemporary with the re-use of the tank. Nine trimmed pot bases were retrieved from the fill of the tank (Fig. 15); all were from British colour-coated fine wares dated from the mid third century onwards. Although the pottery is Romano-British it is possible that it was deposited during the Anglo-Saxon re-use of the feature; Anglo-Saxon curation and re-use of Roman artefacts is well known, both locally and nationally. There are several theories about the function of trimmed pot bases, including their use as counters, gaming pieces, or weights; often they seem to have been chosen for their colour or fabric.<sup>27</sup>

Evidence for early Anglo-Saxon occupation in and around Bicester has been steadily increasing, with a number of sites producing remains broadly contemporary with Whitelands Farm.<sup>28</sup> At Chapel Street, approximately 1 km to the north-east, three sixth- to the seventh-century sunken-featured buildings were discovered, as well as late Anglo-Saxon timber-framed halls.<sup>29</sup> A single early to middle Anglo-Saxon sherd was found residually at Proctor's Yard.<sup>30</sup> At Alchester residual early Anglo-Saxon pottery and possible continuation of the late Roman cemetery indicate occupation, although its duration is uncertain.<sup>31</sup> Continued occupation or re-use of Roman sites is known from numerous sites in the county,<sup>32</sup> although the remains from Whitelands Farm provide a useful addition to the picture for this part of north Oxfordshire.

Limited evidence for medieval and post-medieval occupation was recovered, suggesting that the area was largely abandoned, other than for agriculture.

## EXCAVATION RESULTS

### *Late Neolithic and Bronze Age*

Evidence for late Neolithic and Bronze-Age activity is restricted to two features (a Beaker burial and an urned cremation burial) recorded during the excavation and two barrows investigated during evaluation (Fig. 1). A middle Bronze-Age palstave was recovered from the ploughsoil during evaluation (Figs. 5 and 19; see Northover, below).<sup>33</sup>

<sup>27</sup> S. West, *West Stow: The Anglo-Saxon Village*, East Anglian Archaeology, 24 (1985), p. 84; R. Chambers and E. McAdam, *Excavations at Radley Barrow Hills, Radley, Oxfordshire, 1983–5, Volume 2*, Thames Valley Landscapes Monograph, 25 (2007), pp. 36–8, 257–8.

<sup>28</sup> See, for example, J. Blair, 'Anglo-Saxon Bicester: The Minster and the Town', *Oxoniensia*, 67 (2002), pp. 133–40.

<sup>29</sup> P.A. Harding and P. Andrews, 'Anglo-Saxon and Medieval Settlement at Chapel Street, Bicester: Excavations 1999–2000', *Oxoniensia*, 67 (2002), p. 147.

<sup>30</sup> G. Hull and S. Preston, 'Excavation of Late Saxon, Medieval and Post-Medieval Deposits on Land at Proctor's Yard, Bicester', *Oxoniensia*, 67 (2002), p. 184.

<sup>31</sup> Booth et al., *Roman Alchester*, pp. 433–5.

<sup>32</sup> Blair, *Anglo-Saxon Oxfordshire*, p. 11; H. Hamerow, 'Anglo-Saxon Oxfordshire, 400–700: The Tom Hassall Lecture for 1998', *Oxoniensia*, 64 (1999), p. 25.

<sup>33</sup> 'Land South-West of Bicester, Oxfordshire, Report on Archaeological Evaluation', unpublished Wessex Archaeology client report (2006).

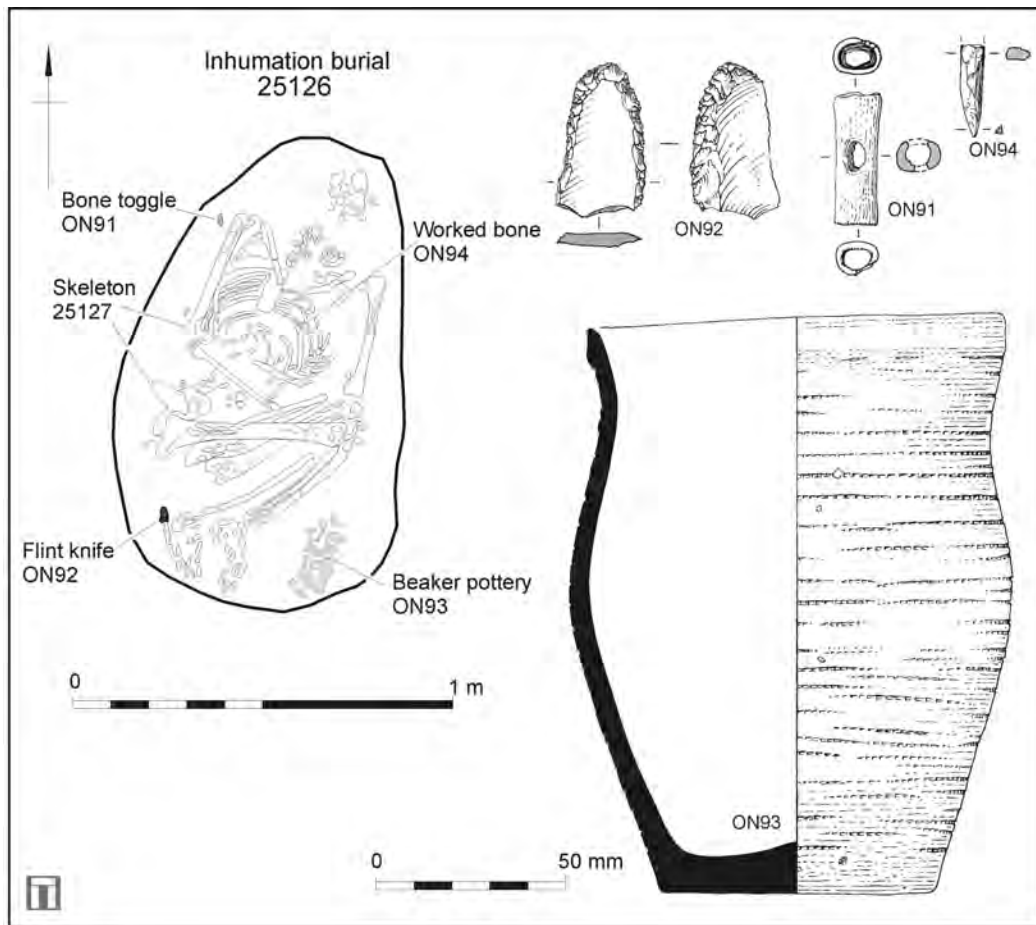


Fig. 6. Detailed plan of Beaker burial, and drawings of accompanying grave goods.

### *Beaker Burial*

The Beaker burial (25126), on the edge of Area 7 (Fig. 5), was placed in a sub-rectangular feature, aligned south-west to north-east, measuring 1.25 m by 0.77 m and 0.05 m deep (Fig. 6). The barrows recorded during evaluation were approximately 150 m to the north-east of this grave.

The grave contained a crouched male inhumation burial, with the skull orientated to the north-east. The remains of what had probably been a complete comb-decorated beaker (ON 93) were in the south-east corner of the grave, immediately to the east of the feet and ankles. A backed flint knife was recorded adjacent to the left heel (ON 92) and a cylindrical worked bone toggle (ON 91) next to the right shoulder. A fragmentary bone point (ON 94) was recovered from between the ribs and the left humerus. The shallowness of the grave meant that the feature had suffered considerable plough damage; both skeleton and pottery were in poor condition. Radiocarbon dates obtained on the left femur produced a date of 2340–2140 cal. BC (SUERC-30814, Table 1).

### *Cremation Burial 22593*

A shallow, unurned cremation burial (22593) was recorded towards the southern edge of Area 13 (Fig. 2). The grave was sub-circular in plan, measured 0.48 m by 0.37 m and was 0.07 m deep. The fill, 22594, contained charcoal and small fragments of human bone of an adult, possibly male. Some redeposited pyre debris was also recovered. No dating evidence was recovered from the deposit, but the cremated bone was radiocarbon dated to the early Bronze Age with a date of 2140–1890 cal. BC (SUERC-30818, Table 1).

## Barrows

Aerial photographs and geophysical evidence had strongly suggested the presence of the two Bronze-Age round barrows which were recorded during evaluation (Figs. 1, 3). The barrows were cut into the solid limestone and as a result the ring-ditches had been very well preserved. The barrow to the south-west was approximately a third larger than that to the north-east. The construction sequence is unknown as they do not intercut and only the larger ring-ditch contained any dating evidence. Pottery was recovered from a fill deposited soon after construction and suggests an early Bronze-Age date for the western ring-ditch.

The larger barrow comprised a ring-ditch (7912), the top of which was 0.50 m below ground level. The external diameter was approximately 32 m. The ditch was c.4.00 m wide and 1.5 m deep, with steep, slightly convex sides and a fairly flat base. The ditch appears to have been open for some time after construction, allowing a charcoal-rich deposit, possibly from mortuary activity, to form. Immediately above this was a layer containing a probable Collared Urn.<sup>34</sup> The mound had been largely destroyed by modern ploughing. Approximately half-way between the central point and the outside of the outer ditch was evidence for a second much smaller and shallower ditch approximately 17 m in diameter.

The smaller eastern ring-ditch (7702) measured 0.58 m deep and 1.45 m wide and had a flat base and steep, fairly straight sides; it was approximately 21.30 m in diameter. The ditch was partially backfilled, probably by collapsed material and then appears to have been backfilled deliberately in a single event. The top of the ditch was 0.30 m to 0.40 m below ground level.

There was no evidence for any burials.

## Middle Iron Age/Late Iron Age

The features recorded in Area 1, towards the south-west corner of the site (Figs. 1, 3), have mostly been assigned a middle Iron Age/late Iron Age date.

Ditch 22440 measured 2.17 m wide by 0.76 m deep and was cut into the underlying natural limestone terminating 55 m to the north-west (Fig. 3). There was no opposing terminal. It contained abundant quantities of fire-cracked limestone and middle Iron-Age pottery with some late Iron-Age pottery. This ditch appears to be part of the southern extremity of a field system visible on aerial photographs (Fig. 1).<sup>35</sup>

## Pit Groups

Three groups of intercutting pits (22481, 22515, and 25308; Fig. 3) were excavated in the north-west corner of Area 1. An undated pit and a late Iron-Age pit, identified during the evaluation (12906 and 12908) were located south of these intercutting groups. Pit group 22481 consisted of two clusters of intercutting pits containing four and six pits, and two discrete pits (22467, 22469) located between the two clusters. The pit group has been broadly dated to the middle to late Iron Age. The pits were sub-circular in plan, the largest (22446) measured 2.42 m long by 2.06 m wide and was 1.03 m deep. The fills of pit 22446 contained animal bone and moderate quantities of late Iron-Age calcareous and grog-tempered wares. The other pits in this group were less than 0.60 m deep and produced smaller quantities of finds.

Pit group 22515 contained seven intercutting pits. The pits were sub-circular in plan and mostly less than 0.50 m deep. The largest pit, 22500, measured 1.96 m long by 1.40 m wide and 0.51 m deep. The fills of two pits (22500 and 22501) contained small quantities of animal bone and late Iron-Age pottery. Group 25308 consisted of four irregular features of probable natural origin; no finds were recovered from them.

## Late Iron Age

### Area 7

This area contained a large number of features dated to the late Iron Age (Fig. 5). These included ditches, gullies, pits, hearths, and post-holes. Three possible enclosures and four-post structures were recorded, a complex of features that suggests settlement and agricultural activity.

*Enclosures.* Enclosure 25380 was a small rectangular feature located at the southern extremity of Area 7. It measured approximately 17 m by 13 m. The ditches were up to 1.04 m wide and 0.25 m deep. The ditch fills contained animal bone, charcoal, fired clay, and late Iron-Age pottery. Two post-holes (25171 and 25188) were excavated inside the enclosure and the faint traces of two further post-holes were observed, forming a sub-rectangular structure; no dating evidence was recovered. To the north-east of 25380 four curved ditches formed two sub-circular enclosures (enclosure group 25381). The maximum width of the ditches was 0.62 m and the maximum depth 0.16 m. Animal bone, a fired clay 'brick', and late Iron-Age pottery was recovered from the ditch fills. Two ditches aligned north-west to south-east (25014 and group 25372) extended from the western baulk. The eastern terminal of a third

<sup>34</sup> Ibid.

<sup>35</sup> Cox, 'Land South-West of Bicester'.

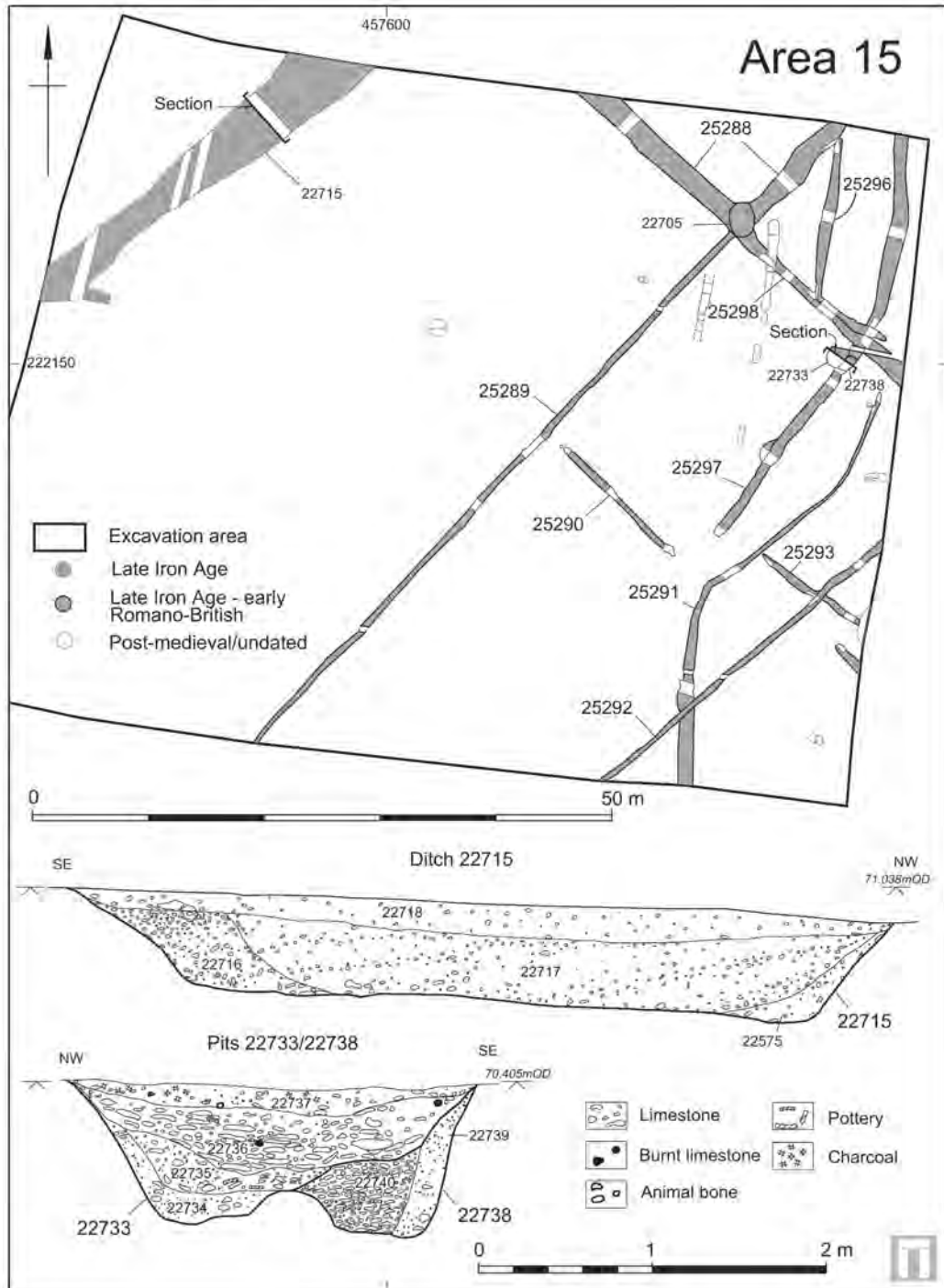


Fig. 7. Area 15, showing phased features.



ditch (25225) butted up to ditch 25369. The ditches were severely truncated but may have formed part of a field system (possibly ladder enclosures), or may have been associated with the small irregular enclosures. However, not enough of these features survived for a firm interpretation to be established. There were no finds from the fill of ditch 25372, but ditches 25014 and 25225 contained animal bone, charcoal, and late Iron-Age pottery.

Enclosure 25380 was cut by a wide ditch aligned north-west to south-east (group 25375). It was up to 2.76 m wide and was at least 0.57 m deep (the depth at which the feature flooded). The ditch contained late Iron-Age pottery; a few small sherds of Romano-British pottery are probably intrusive.

Three four-post structures were identified (groups 25145, 25082, and 25049); two were located towards the northern end of the site (25049 and 25082), with the third (25145) positioned between ditches 25365 and 25366. Group 25145 measured 2.13 m by 1.99 m; group 25082 was 2.89 m by 2.65 m; and group 25049 was 2.85 m by 2.45 m. No dating evidence was recovered from these features, but the fills of post-holes within group 25049 contained charcoal.

A number of pits and post-holes were scattered across Area 7, mostly concentrated in the central part of the site. Pit 25000 was a small oval-shaped feature located immediately to the south of enclosure 25369. The upper fill, 25002, contained over 100 sherds of late Iron-Age pottery. Pit 25121 was a small sub-circular feature located in the central area of the site; it contained 43 sherds of late Iron-Age pottery. Nearby pit 25045 contained one large sherd of middle Iron-Age pottery, which may be residual.

#### *Areas 13 and 15*

*Ditch 22715.* This ditch was in the western quarter of Area 15 (Fig. 2). It crossed the site from north-east to south-west, continuing beyond the northern and western edges, and was identified in Area 13, where it was less substantial, as ditch 25283 (Fig. 2). The ditch was also recorded in trenches 24 and 29 during evaluation.<sup>36</sup> In Area 15 one section was hand-excavated; it measured 4.85 m wide and 0.62 m deep and had a flat base (Fig. 7). The ditch was widest (5.76 m) at the northern edge of the site and was narrowest (2.45 m) towards the eastern boundary. There were three fills, the middle one of which (22717) produced very small quantities of late Iron-Age grog-tempered pottery and animal bone. The paucity of finds in this feature contrasts with the majority of the features recorded in Area 15, where even very shallow fills often produced good dating evidence. In Area 13 sections through this feature contained a small quantity of abraded late Iron-Age pottery. The fills reveal evidence for an initial slump of bank material (22716), followed by a gradual silting up of the feature. The function of this ditch is not entirely clear, though it may have drained water across the site.

#### *Late Iron Age/early Romano-British*

The majority of the features recorded in Areas 14, 15, 16, and 18 were dated to the late Iron Age and Romano-British period, the exception being a small number of Anglo-Saxon features. Very low densities of late Iron-Age/early Romano-British features were recorded in Areas 1–13 (Figs. 1–2).

#### *Area 14*

A high density of features was identified in Area 14. These included a large enclosure ditch, three quarry pits, a stone-lined pit, shallow ditches, pits, and post-holes (Fig. 8).

*Enclosure.* Ditch group 25350 formed three sides of what was probably a sub-rectangular enclosure. It was a well defined, steep-sided feature that typically measured 2.40 m wide by 1.10 m deep. The ditches forming the east and west sides of the enclosure continued beyond the northern limit of the excavation. The north-west to south-east aligned fourth side of this enclosure (ditch 25382) was subsequently revealed and recorded during trial trenching in 2009 (Area 18, Fig. 8). The one side fully exposed was 41.46 m long and aligned north-west to south-east. The fills contained burnt stone, animal bone, and late Iron-Age and Romano-British pottery. A section cut through the south-east corner of the ditch produced only pottery dated to the late Iron Age. A dump of pyre debris and fragments of cremated human bone were recovered from section 23031 (context 23037) dug through the eastern side of the enclosure. Pottery analysis suggests that the feature was backfilled by the late first to early second century AD.

No entrance was identified in the area of the enclosure that was exposed. The enclosure may represent one of the earlier phases of occupation as it cut only one feature, a shallow ditch (group 25352). The enclosure ditch was cut by two shallow, north-south aligned ditches (groups 25357 and 25358), a short south-west to north-east-aligned ditch (25349), and four apparently unrelated post-holes.

A number of features were excavated within the enclosure, including pits, post-holes, gullies, and a four-post structure. Ditch 25352 was a shallow feature aligned north-west to south-east. The fill produced animal bone and late Iron-Age/Romano-British pottery. It cut two small pits (22996 and 23167), both of which were dated to the late Iron Age, and was in turn cut by the enclosure ditch. A four-post structure was recorded in the south-east corner of the enclosure (group 23123). The post-holes formed a sub-rectangular feature measuring 2.02 m by 1.53 m. No dating evidence was recovered. To the west of the four-post structure was a short, shallow gully (25359) of late Iron-Age/Romano-British date. In addition two small pits and an isolated post-hole of late Iron-Age date were

<sup>36</sup> 'Land South-West of Bicester', unpublished Wessex Archaeology report.

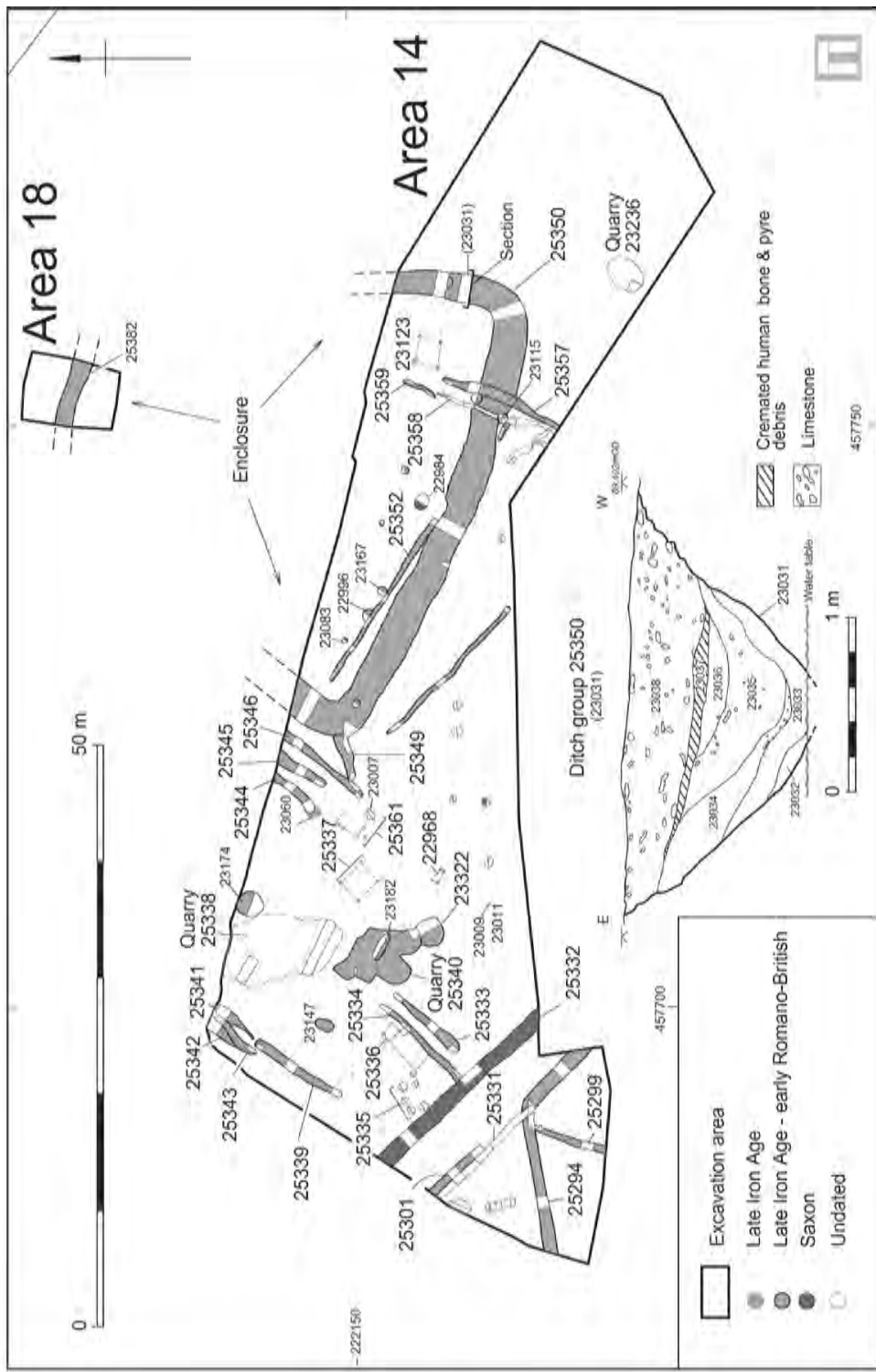


Fig. 8. Areas 14 and 18, showing phased features showing section of ditch group 25350.

recorded within the enclosure, as was a small pit and a post-hole containing Anglo-Saxon pottery. The Iron-Age features may represent the remnants of a late Iron-Age settlement superseded by the Romano-British enclosure.

The density of archaeological features was much higher over the western part of Area 14. Three parallel ditches aligned north-east to south-west (groups 25344, 25345, and 25346) lay immediately to the west of the enclosure ditch. All three extended from the northern edge of the excavation and terminated less than 10 m to the south-west. The ditches were less than 1 m apart and contained late Iron-Age/Romano-British pottery. The terminal of ditch 25344 cut a sub-circular pit (23060) that was dated to the late Iron Age.

*Field boundaries.* A number of intercutting ditches (groups 25341, 25342, and 25343) were located in the north-west corner of Area 14. Only short lengths of these ditches were revealed in the excavation. Ditch 25339 was located less than 1 m to the south of this group on the same alignment. All the ditches, with the exception of 25341 (which was undated), contained mostly late Iron-Age pottery and small quantities of Romano-British pottery. The exact function of feature 25341 was not determined; it may have been an irregular gully or the edge of another area of quarrying. These ditches share a similar alignment with ditch groups 25344, 25345 and 25346, also with parallel ditches 25333 and 25334, located to the south-east, and with ditches 25357 and 25358, which cut the enclosure ditch to the east. The four clusters of ditches may represent the repeated cutting of shallow field boundaries after the enclosure had fallen into disuse and the ditch had been back-filled.

Four ditches (groups 25294, 25299, 25301, and 25331) were excavated in the south-west corner of Area 14. Ditch 25331 was not dated; the remaining ditches were dated to the late Iron Age/early Romano-British period and appear to represent successive field boundaries. The interpretation of these ditches is somewhat hampered by the size of the area excavated. Ditch 25301 was aligned at right angles to ditches 25333 and 25334; they may have been components of the same field system, perhaps forming an entrance. However, the interpretation of the spatial relationships in this area is made difficult by the presence of an Anglo-Saxon ditch (25332; Fig. 8). Ditch 25331 was dug at some stage across this probable entrance.

*Structures.* Three four-post structures were recorded to the south-west of the enclosure ditch. Group 22968 comprised four small post-holes forming a sub-rectangular structure measuring 1.31 m by 0.73 m. All the post-holes were less than 0.25 m in diameter and 0.15 m in depth. Post-hole 22956 contained one sherd of Romano-British pottery and a glass bead dated to the first or second century AD. Post-hole 22960 contained one small sherd of Anglo-Saxon sandy ware, which may be intrusive. Immediately south of four-post structure 22968 were two very shallow post-holes (23009 and 23011) which may represent the remains of another four-post structure.

Post-hole group 25336 was located immediately to the west of ditch 25334 and was sub-rectangular in plan. The feature measured 1.36 m by 1.12 m. All four post-holes were 0.40 m or less in diameter and 0.26 m or less in depth. The two post-holes forming the southern half of the feature (23061 and 23077) were much smaller and shallower than the two to the north. None of the post-holes were dated, but 23048 and 23054 each contained a fragment of metalworking slag.

Located south-west of the enclosure ditch, group 25337 was sub-rectangular in plan. It measured 2.75 m by 2.37 m, roughly twice the size of 22968 and 25336, and was similar in form to though larger than four-post structure 23123 (recorded inside the enclosure). The post-holes were between 0.26 m and 0.30 m in diameter and 0.20 m or less in depth. No dating evidence was recovered.

Group 25361 comprised a cluster of post-holes located c.8 m south-west of the enclosure ditch. None of the post-holes in this group were dated. These features may have formed part of a six-post or larger structure. Pit 23007 was adjacent to this group and was a shallow sub-circular feature containing burnt stone, animal bone, and Romano-British pottery.

*Quarry pits.* Pit 23236 was located to the east of the enclosure and was a shallow, undated feature. Two large, irregularly shaped quarry pits (groups 25338 and 25340) were recorded towards the north-west corner of Area 14 (Fig. 8). Pit 25338 measured at least 9.38 m long by 8.75 m wide, and had a maximum depth of 0.25 m. The fills produced large quantities of burnt and fire-cracked limestone and one worked flint. It was cut by a sub-circular refuse pit (23174) which was 2.13 m in diameter, 1.17 m deep and contained abundant animal bone, ash, charcoal, CBM, and late Iron-Age and Romano-British pottery.

Quarry pit group 25340 comprised several intercutting sub-circular pits and measured 9.91 m by 3.61 m. It was located immediately to the south of quarry pit 25338 and may previously have formed part of that feature (the fills were very similar). This area of shallow pits cut a much deeper pit (23322). This pit was roughly circular with undercutting edges and was at least 1 m deep; the feature was not fully excavated. The fills of the deeper pit contained burnt limestone, late Iron-Age pottery, and a badly crushed cattle skull (ABG 48). Sub-rectangular pit 23182 contained late Iron-Age pottery and was cut into the upper fills of quarry pit 25340.

Pit 23147 was oval in plan and measured 1.38 m by 0.80 m and was 0.44 m deep. The feature possibly represents a consolidation of an earlier, larger pit (23185). Unshaped limestone slabs measuring up to 0.30 m in diameter covered the bottom and sides of the pit. Five fills produced animal bone and small quantities of Romano-British grey ware. Pit 23185 had been partially backfilled before it was lined and revealed three fills which produced animal bone, late Iron-Age/Romano-British pottery, and an iron nail (ON 41). The pottery assemblage included late Iron-Age calcareous ware, samian, Oxfordshire white ware, and a grey ware base stamped [XIIIVV].

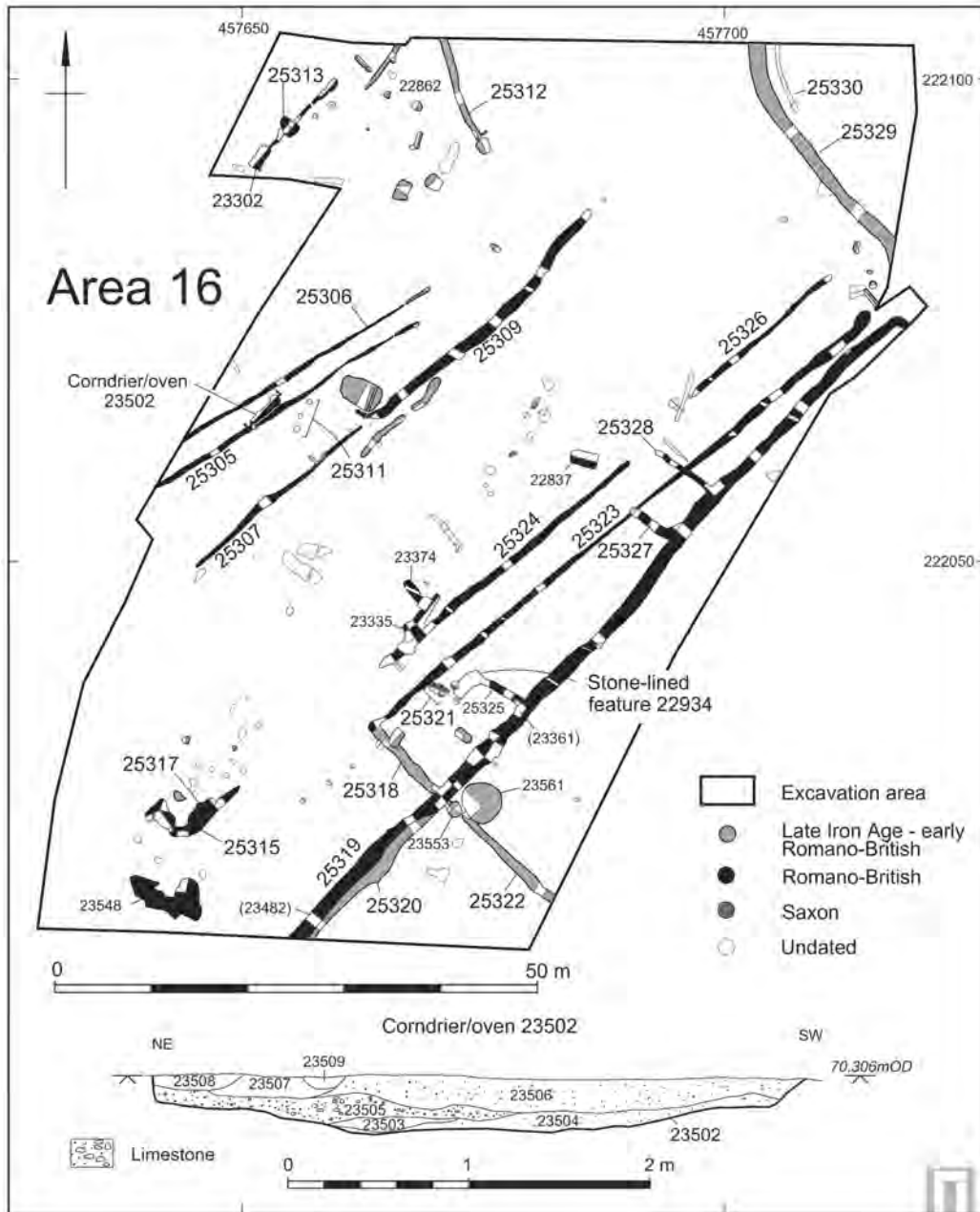


Fig. 9. Area 16, showing phased features.

### Area 15

Area 15 was located to the west of Area 14 and 8–10 m south of the Pingle brook (Fig. 1). The features comprised an enclosure ditch, a number of smaller ditches, and a few pits (Fig. 7). The majority were late Iron Age and Romano-British.

*Enclosure.* The corner of a possible rectangular enclosure ditch (group 25288) was visible in the north-east part of Area 15. A section through the ditch measured 1.92 m wide by 0.76 m deep. The fills produced animal bone and late Iron-Age/Romano-British pottery. The south-west to north-east axis of ditch 25288 appears to be cut by, or contemporary with, a smaller north–south aligned ditch (group 25296), which also contained late Iron-Age/Romano-British pottery. A machine-excavated slot through ditch 25288 produced large quantities of pottery, including 218 sherds of late Iron-Age calcareous ware and 411 sherds of Romano-British grey ware.

*Field boundaries and pits.* Ditches 25291, 25296, and 25297 were all late Iron Age/Romano-British and appear to represent an early phase of activity in this area. All three ditches were irregular sinuous features that appear to have been cut by a later grid of more regular, straighter ditches. Ditch 25297 was cut by two pits (22733 and 22738; Fig. 7) which were both steep-sided, circular features containing large quantities of animal bone and pottery. Pit 22733 cut pit 22738; both pits contained late first-century to early second-century pottery (two sherds of later pottery retrieved from the uppermost fill of 22733 appear to be components of a tertiary layer).

Ditches 25289, 25290, 25292, 25293, and 25298 were all late Iron Age/Romano-British and appear to be components of a more regular, rectangular field system that replaced the earlier, more curved ditches. Ditches 25289 and 25292 were aligned south-west to north-east, and ditches 25290, 25293 and 25298 were aligned north-west to south-east. These alignments match the alignment of the two visible sides of the enclosure, ditches 25289 and 25298 extending from the corner of the enclosure. It was not possible to discern the stratigraphic relationship between the ditches and the enclosure because the corner of the enclosure was cut by a large tree throw hole 22705, the lowest fill of which contained a copper alloy nail cleaner with a spherical bone head (ON 24, Fig. 20; see Marter Brown, below).

### Area 16

In common with Areas 14 and 15, the overwhelming majority of the excavated features dated to the late Iron Age/Romano-British period. This area was the closest of the excavations to the line of the Dorchester–Towcester Roman road (Fig. 1) and had the potential to characterise Romano-British roadside settlement north of the Roman town of Alchester.

A number of shallow ditches were identified, many of which were aligned south-west to north-east, on a similar alignment to the Roman road to the east. Pits, post-holes, hearths, small enclosures, trackways, a corn drier or oven, and a number of stone-lined features were also recorded.

A few features were late Iron Age to early Romano-British (Fig. 9), but most were of Romano-British date. Notable Anglo-Saxon activity included pit group 25321 and the re-use of the stone-lined tank 22934.

*Trackways and ditches.* In the north-east corner of Area 16 a meandering ditch (group 25329) crossed the site and continued beyond the edge of the excavation (Fig. 9). The ditch was recorded during evaluation, plotted on aerial photographs, and revealed in Area 14 as ditch 25294. The ditch had a wide, shallow profile, and the fills produced charcoal, animal bone, and late Iron-Age and Roman pottery (including small quantities of samian and black-burnished ware). A narrow, but comparatively deep, curved gully (group 25330) was aligned parallel to ditch 25229 and positioned c.1 m to the east.

Ditch 25318 was orientated south-east to north-west and combined with ditches 25319, 25323, and 25325 to form an open-ended enclosure with the stone-lined tank 22934 at the northern end. Ditch 25318 formed an entrance way with ditch 25322, which was also aligned from south-east to north-west. This entrance way appears to have been later blocked by two pits (23553 and 23561), both of which were late Iron-Age/Romano-British. The larger pit (23561) measured 4.30 m in diameter and was 1.30 m deep. The fills produced very small quantities of animal bone, CBM, and late Iron-Age/Romano-British pottery; this was unusual for a site where features generally contained an abundance of archaeological evidence. This was the largest pit excavated on Area 16. It was also the only pit recorded east of ditch 25319.

Ditch 25320 extended from the southern boundary of the site parallel and adjacent to ditch 25319 and was cut away by ditch 25319 immediately to the south of ditch 25318. Pottery recovered from ditch 25320 was late Iron Age/Romano-British. Based on stratigraphic evidence and pottery dating, ditches 25318 and 25320 and pits 23553 and 25361 appear to represent part of an earlier phase of the site containing late Iron-Age and early Romano-British pottery, but none of the later Romano-British wares found elsewhere.

A trackway formed by ditch groups 25324 and 25323 was aligned south-west to north-east across the central part of the site. The ditches were small, shallow features positioned 3.50 m apart. Ditch group 25326 appears to have been a continuation of ditch 25324; here the trackway became wider, measuring 5 m across. The fills of all three ditches contained late Iron-Age/Romano-British pottery. Ditch 25319 was located to the east of the trackway on a converging alignment and cut through a small, sub-rectangular enclosure (25327, 25328). Ditch 25319 was connected to stone-lined tank 22934 by a short length of stone-capped culvert (25325; Figs. 9–10). Ditch, pit and

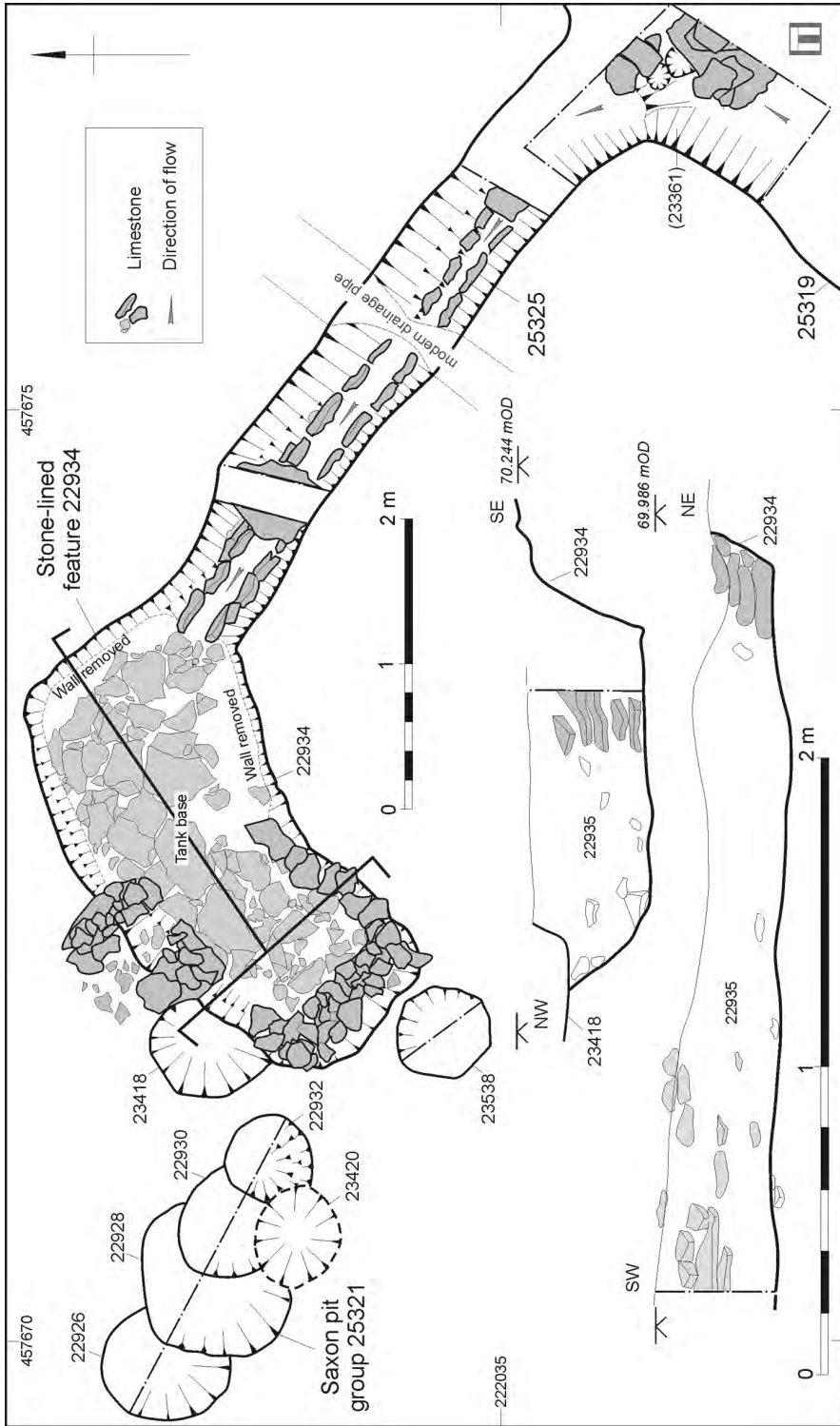


Fig. 10. Area 16: detailed plan of stone-lined tank 22934 and associated features.

enclosure all dated to the late Iron Age/Romano-British period. A sample taken from the junction of the culvert and ditch 25319 (section 23361) produced quantities of grain, mainly of spelt (*Triticum spelta*), but also barley. Significantly, in some cases grain could be seen to have germinated (see Stevens, below).

Part of ditch 25319 appears to have been lined or revetted with limestone slabs. The revetting consisted of a double row of overlapping, unshaped stones that were intermittently visible on the surface of the feature. A slot dug through the feature (section 23482) revealed a ditch 1.33 m wide and 0.32 m deep, with heavy clay fills. The stone lining was first apparent near the southern end of the ditch; the revetting appeared to continue to the south beyond the edge of the excavation. There was no evidence for revetment in other sections dug through the ditch. The land here falls gently away to the north; the water in the ditch would have flowed from the south-west to the north-east, towards the Pingle brook and the Roman road.

Ditch groups 25305 and 25306 were narrow, shallow, truncated features, aligned north-east to south-west, which formed a second trackway on the eastern edge of the site. These ditches were almost parallel with ditches 25307 and 25309, located roughly 6 m to the east, and may represent a widening or repositioning of the track. Three of the four ditches contained small quantities of late Iron-Age/Romano-British pottery. Although ditch 25305 did not produce any pottery, it has been tentatively dated to the late Iron Age/Romano-British period by association with ditch 25306; it was cut on the western edge by corn drier/oven feature 23502.

*Stone-lined tank, culvert, and associated features.* A stone-lined, rectangular tank (22934) was located to the north-west of ditch 25319 (Figs. 9–10). The tank was connected to 25319 by a short stone-lined gully (25325); all three features appear to have been contemporary.

Feature 22934 had vertical sides and a flat base. It measured 3.34 m long by 2.30 m wide and was 0.42 m deep. The natural clay base and all four sides were lined with unshaped limestone slabs. The quantity of stone recorded from the fill and immediate vicinity of the tank suggested that the walls originally extended above ground level. It was positioned with the long side aligned south-west to north-east, parallel to ditch 25319. It was revealed c.0.25 m below the ground surface; any upstanding remains were probably destroyed by ploughing or robbed for building material.

There was one fill which produced abundant quantities of charcoal, animal bone, Romano-British, and early Anglo-Saxon pottery, including samian and fourth-century grey ware. A significantly high percentage of the Roman pottery assemblage comprised trimmed pot bases and rim sherds (Fig. 15). The Anglo-Saxon assemblage comprised sandy and organic-tempered wares and was given a broad fifth- to seventh-century date. In total 45 sherds of Anglo-Saxon pottery (604 g) and 219 Romano-British sherds (4,076 g) were recovered from the fill. The presence of Anglo-Saxon pottery and an adjacent group of Anglo-Saxon pits may indicate re-use of the feature (see Marter Brown, below). Finds from the fill included iron nails, an iron ring, an unidentified socketed iron object, a possible broken knife blade, a stamped pot base, an incomplete shale bracelet (ON 98, Fig. 20), and a copper alloy object (ONs 65–72, 78, 81).

At the south-east corner of the tank, culvert 25325 linked the pit to ditch 25319 located to the east (Fig. 10). It was 0.67 m wide and 0.40 m deep. The culvert curved gently and was neatly lined and capped with unshaped limestone slabs. A set of upright and horizontal slabs and a post-hole positioned at the junction of the culvert and the ditch appear to be the remains of a sluice gate system. The slabs lining the culvert were fitted closely together and bedded into the natural clay. The capping stones were covered in a layer of clay that did not produce any finds. The fills of the culvert (23356, 23360) contained small quantities of animal bone, oyster shell and pottery dated to the late Iron Age/Romano-British period. Environmental samples taken from the pit, culvert and ditch produced quantities of grain, mostly spelt but also barley, some of which had germinated. These germinated grains may be evidence for brewing. A sample of charred spelt (*Triticum spelta*) taken from the junction of the culvert and ditch 25319 (section 23361) was dated to cal. AD 90–330 (SUERC-30811, Table 1; see Stevens, below).

*Other stone-lined features.* Feature 22837 was a similar to 22934 but not as elaborate. It was located to the north-west of trackway ditch 25324 and to the west of a small three-sided enclosure (groups 25327, 25328, Fig. 9). It was a slightly irregular rectangular pit with vertical sides, measuring 2.90 m long by 2.56 m wide and 0.40 m deep. A close-fitting layer of unshaped limestone slabs was recorded within the pit but unlike 22934 these were positioned c.0.20 m above the base of the feature. Two shallow fills lay beneath the slabs; the upper contained small amounts of animal bone and Romano-British pottery. A single fill above the slabs yielded greater quantities of animal bone and pottery, as well as oyster shell and two iron nails (ONs 31, 32). There was no evidence for any internal walls. The southern edge of the pit had been disturbed by an evaluation trench, and the upper layer of the feature had suffered plough damage. The pottery recovered included Oxfordshire colour-coated ware, black-burnished and Oxfordshire white ware. In common with feature 22934, environmental samples taken from the fills contained mostly grains of spelt with a lesser quantity of barley, some of which had germinated. Radiocarbon dating of charred grain from the fill gave a calibrated date of cal. 40 BC to AD 140 (SUERC-30813, Table 1). There was no evidence for an associated culvert, ditch or pits.

Another stone-lined feature (23335) was of completely different morphology to the other rectangular features. It was located a short distance to the north-west of the more elaborate stone-lined tank 22934 and the functions of the two features may have been related. Feature 23335 had an irregular linear plan; it measured 5.87 m long by 1.79 m wide and 0.22 m deep. It was located immediately north of the terminal of ditch 25324, cutting into the

western edge of the ditch. The feature comprised two adjacent stone capped gullies which were associated with four post-holes. The gully to the west was 0.29 m wide by 0.18 m deep; the gully to the east was 0.22 m wide and 0.08 m deep. The fills of the gullies produced small quantities of animal bone and late Iron-Age/Romano-British pottery. Pit 23374 was a sub-rectangular feature adjacent to 23335 and aligned north-west to south-east, roughly at right angles to 23335. Two sherds of Romano-British pottery were recovered from the lower of the two fills.

*Corn drier/oven.* Corn drier/oven 23502 was located close to the western edge of Area 16 and was cut on the western side by trackway ditch 25305 (Fig. 9). It was an irregular lozenge shape, measuring 4.04 m long by 1.16 m wide and up to 0.54 m deep. A small circular post-hole was cut into the ditch adjacent to the south-western corner of the feature. The fills contained small quantities of charcoal, fired clay, animal bone, and Romano-British grey ware pottery; the lowest fill showed traces of *in situ* burning. A small amount of charred grain recovered from fill 23505 produced a calibrated radiocarbon date of cal. 50 BC–AD 130 (SUERC-30812, Table 1). A line of three post-holes (group 25311), aligned north-north-east to south-south-west, was located between the trackway ditches and may represent the remains of a structure associated with the corn drier/oven. One of the post-holes contained Roman pottery.

*Pits.* In the south-west corner of Area 16 there was a scatter of irregularly shaped pits (group 25317), a pit cluster (23548), a post-hole, and a short curved ditch (group 25315) (Fig. 9). There were at least 22 pits, seven of which were excavated. The pits were mostly sub-circular or sub-oval in shape and measured from 3.75 m to 0.52 m in length and had a maximum depth of 0.50 m. Late Iron-Age/Romano-British pottery was recovered from the pit fills and as surface finds. Feature 23548 measured 8.28 m long by 4.35 m wide and appears to have been composed of several intercutting features. Only a small part of the feature was excavated; six sherds of Romano-British grey ware and one sherd of samian pottery were recovered. Excavation revealed frequent limestone inclusions ranging from small fragments to large flat slabs. These features may have been quarry pits for clay, which occurs in this part of the site. The limestone slabs may represent an attempt to consolidate the backfill of the pits.

A similar scatter of features was recorded in the north-west corner of Area 16, where three ditches, nine pits, a post-hole, and three tree throw holes were recorded. These features contained varying quantities of late Iron-Age/Romano-British pottery, animal bone, and CBM. One pit (23302) contained a nearly complete narrow necked grey ware jar (ON 47). Pit 22862 was partially clay-lined and produced late Iron-Age/Romano-British pottery, one sherd of amphora, CBM, animal bone, and a complete copper alloy hair pin dated to the second half of the first or the early second century AD (ON 33, Fig. 20). A copper alloy finger ring (ON 35) of probable late Iron-Age/Romano-British date came from the fill of ditch 25312. The two pits that comprised pit group 25313 (23404, 23406) contained animal bone and a large quantity and variety of Romano-British wares. Pit 23404 also contained a small fragment of Roman glass.

### *Late Iron Age/Romano-British Activity in Other Areas*

A shallow pit (22456) was located on the southern edge of Area 1 (Fig. 4). A section of the baulk was extended in order to reveal the full extent of this feature. It was sub-oval in plan, measuring 2.42 m long, 1.34 m wide and 0.14 m deep. The fill (22457) contained animal bone, pottery, burnt and struck flint, a fragment of copper alloy, and a Roman glass bead. The pottery comprised late Iron-Age sandy tempered ware and Romano-British oxidised ware and grey ware.

Ditch 25285 recorded in Area 5A was 1.26 m wide and 0.27 m deep and was aligned approximately east–west (Fig. 2). Three sherds of Romano-British pottery and a small quantity of CBM were recovered from the fills.

Three corn drier/ovens were recorded in Area 5A (Figs. 2, 11). Corn drier/ovens 22531 and 22532 were recorded north of ditch 25285 and were positioned together in an ‘L’-shape. Both of these features were an elongated, irregular oval shape in plan. Feature 22531 measured 2.37 m long, 0.87 m wide and had a maximum depth of 0.32 m. It was orientated approximately north–south. There were five fills, all of which contained evidence of *in situ* burning: ash, charcoal and fragments of burnt limestone. Samples taken from fills yielded only one cereal fragment, a glume base of hulled wheat.

Corn drier/oven 22532 was 2.40 m long, 0.99 m wide, and had a depth of 0.19 m at its deepest point. It was aligned east–west. There were nine fills, three of which contained ash and charcoal. Relatively small quantities of ash and charcoal were observed in both features, which is consistent with structures that would have been cleaned out between episodes of firing. The surrounding natural soil did not show signs of intense burning, which suggests the gentle heat needed to dry grain rather than the intense heat needed to fire ceramics. The arc of post-holes (22708) recorded to the immediate south-west of the corn driers may represent an associated structure.

Corn drier/oven 22554 was located on the eastern edge of the site, adjacent to ditch 25285. It measured 1.99 m long by 0.95 m wide and 0.33 m deep. Two fills were recorded, both of which contained charcoal. This feature flooded and the sides collapsed before it could be fully recorded.

None of the corn drier/ovens excavated in Area 5A contained any dating evidence. They were, however, very similar in morphology to corn drier/oven 23502 recorded in Area 16, which was Romano-British.

Ditch 25184 was located on the western edge of Area 7 (Fig. 5). It measured 1.02 m wide by 0.36 m deep and had a single fill that yielded small quantities of late Iron-Age/Romano-British pottery.



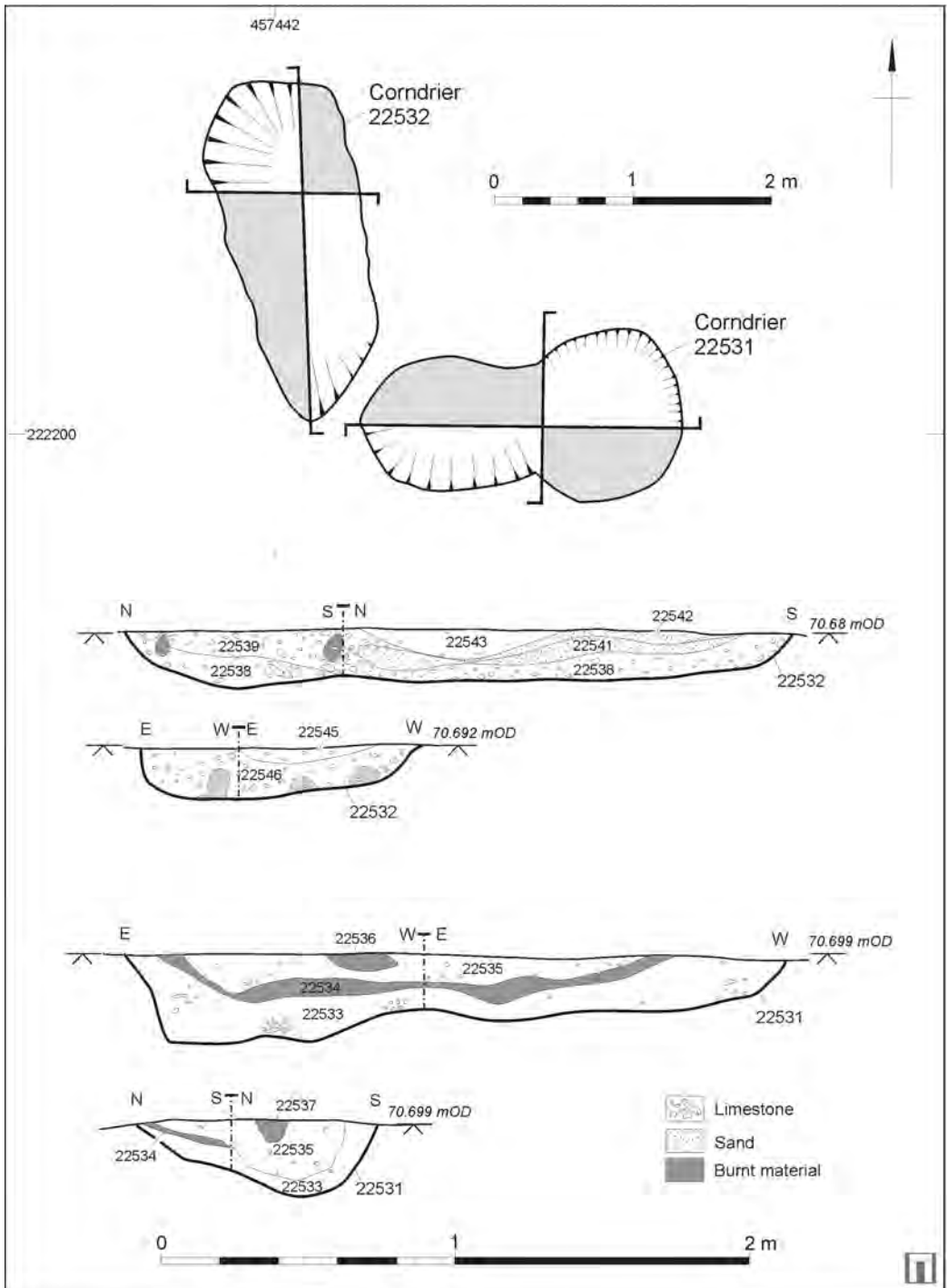


Fig. 11. Area 5A: plan and sections of corn driers 22531 and 22532.

*Anglo-Saxon*

A very small number of features were dated to the Anglo-Saxon period. These were two ditches, two pits, three post-holes, a hearth, and a pit cluster, scattered over Areas 5A, 7, 13, 14, and 16.

*Areas 7 and 5A*

A short length (3.52 m) of ditch 22567 was recorded at the eastern edge of Area 5A (Fig. 2). It measured 0.71 m wide by 0.12 m deep and contained one small sherd of Anglo-Saxon sandy ware. An isolated pit (25207) in Area 7 (Fig. 5) contained four sherds of Anglo-Saxon organic-tempered pottery.

*Area 13*

Hearth 22613 was located in the north-east corner of Area 13 between the remains of two modern hedge lines (Fig. 2). It was sub-oval in plan and measured 1.20 m by 0.62 m and was 0.15 m deep. The fill (22614) contained charcoal, burnt stone, animal bone, one sherd of Roman grey ware pottery, an Anglo-Saxon firesteel/pursement (ON 16, Fig. 20), a small ring (a fitting rather than decorative), and a nail (ONs 16, 17, and 18).

*Area 14*

Ditch 25332 was located in the south-west corner of Area 14 and was aligned north-west to south-east (Fig. 8). It measured 1.40 m wide by 0.60 m deep, making it one of the largest and deepest features on this part of the site. The feature contained a relatively large quantity and variety of early Anglo-Saxon pottery, animal bone, charcoal, slag, fired clay, and a fragment of glass. Radiocarbon dating of charcoal from the fill produced a calibrated date of cal. AD 420–590 (SUERC-30819, Table 1).

*Area 16*

Pit group 25321 comprised seven circular or sub-circular features clustered around the southern end of stone-lined tank 22934 (see above, Figs. 9–10). The pits measured from 1.16 m to 0.62 m in diameter and from 0.30 m to 0.12 m deep. Five of the pits formed an intercutting group, the edge of which was located adjacent to the south-west corner of the tank. The fills typically contained charcoal, animal bone, shell, and pottery. Six of the seven pits contained a mixture of Romano-British and Anglo-Saxon pottery, the seventh pit (23538) was not dated. The quantities of pottery recovered were generally small for both Roman and Anglo-Saxon wares, one to four sherds of ten different pottery types, eight Romano-British wares and two Anglo-Saxon. The exceptions were pits 22932 and 23420, which both contained 12 sherds of Anglo-Saxon sandy ware (see Marter Brown, below). Pit 22932 contained an iron nail (ON 80); pit 22928 contained an iron nail, a fragment of bone comb, and the rim of a Romano-British flagon (ONs 73, 74, and 79). These pits may have served some function connected with the stone-lined feature but their final function appears to have been as rubbish pits.

Anglo-Saxon pottery was also retrieved from the fill of stone-lined tank 22934. The Anglo-Saxon assemblage comprised sandy and organic-tempered wares and was given a broad fifth- to seventh-century date. In total 45 sherds of Anglo-Saxon pottery (604 g) were recovered.

*Medieval, Post-Medieval, and Undated Features*

Evidence for settlement at Whitelands Farm during the medieval and post-medieval periods is very sparse; no features recorded during the excavation dated to the medieval period. Extensive areas of medieval ridge and furrow were identified by aerial photography, geophysical survey, and in the evaluation.<sup>37</sup>

A large, irregular, sub-rectangular quarry pit (22406; Fig. 2) in Area 2, was previously identified during evaluation, and a single sherd of medieval pottery was recovered. A machine-excavated slot was taken down to 1.2 m at which point flooding became so severe that excavation was discontinued. Five fills were recorded, one of which contained a small sherd of post-medieval red ware. Medieval pottery of twelfth- to fourteenth-century date was recovered from the topsoil and subsoil.

A few post-medieval features were identified (ditches 25154 and 25229 in Area 7; Fig. 5). Ditch 25154 contained glass and nineteenth- to twentieth-century pottery.

A modern quarry approximately 110 m in diameter was located in Area 4. A shallow modern ditch (25347), and an irregular linear feature, the probable course of a silted stream, were recorded in the quarry. The base of the quarry flooded soon after excavation so further investigation of these features could not take place. A penny dated to the reign of George VI was recovered from the topsoil.

Undated features mostly comprised shallow ditches and isolated pits and post-holes. A small number of features were excavated in Areas 5A, 6, and 14 that are worthy of further description; these comprise quarry pits and a post-hole alignment.

An arc of 15 post-holes was recorded roughly in the centre of Area 5A (group 22708; Fig. 2). The post-holes were all circular or sub-circular and regular in plan with steep sides and flat bases. They ranged from 0.44 m to

<sup>37</sup> Cox, 'Land South-West of Bicester'; Stratascan, 'Geophysical Survey Report: Land South-West of Bicester, Oxon.', unpublished report (2006).

0.68 m in diameter and 0.22 m to 0.37 m in depth. The post-holes were not evenly spaced: the two closest were 0.55 m apart while the two with the greatest distance between them were 2.97 m apart. Environmental samples were taken from three post-holes, one of which (22688) contained large quantities of charcoal, probably of oak. The post-holes were located to the south-west of corn driers 22531/2 and may represent the remnants of an associated structure.

In Area 6 four large, irregularly shaped quarry pits were photographed and mapped but not fully recorded (Fig. 2). One quarry pit on the northern edge of the site was machine-excavated to a depth of 1.4 m. It contained a single silty clay fill but no dating evidence was recovered. The largest pit measured 24.40 m by 25.60 m, the smallest 7.70 m by 4.90 m. These features correspond with the undated pits recorded in this area during evaluation. Five possible pits/post-holes and a linear feature were investigated and proved to be natural hollows.

Two undated quarry pits (25338 and 23236; Fig. 8) were recorded in Area 14. Pit 25338 measured at least 9.38 m long by 8.75 m wide, with a maximum depth of 0.25 m. The fills produced large quantities of burnt and fire-cracked limestone and one worked flint. A shallow, sub-oval quarry pit (23236), from which no finds were recovered, was located to the east of enclosure 25350.

#### BEAKER by ALISTAIR J. BARCLAY

A fragmentary beaker (ON 93, Fig. 6) was recovered from inhumation grave 25126 (context 25127). It had been placed just to the east side of the feet, possibly on its side.

#### *Fabric, Firing, Decoration, and Surface Treatment*

The vessel is typically grog-tempered (15%, 1–3 mm). The grog is generally lighter in colour than the surrounding clay matrix and appears to have flat surfaces suggesting that it could be made from broken pottery rather than dried or fired clay. The vessel is fired reddish-brown on the outside, a lighter reddish-brown on the inside, and has a non-oxidised black core. Its surfaces have been smoothed. Decoration consists of all-over comb impressions that have been made with a relatively short comb. These impressions are generally evenly spaced (c.5 mm) across the upper part of the vessel and are rather haphazard lower down, where the pattern of circumferential lines is replaced by broken lines and blocks with spacing between lines reduced to 2–3 mm in places. Comb marks are 25–30 mm long on the upper part of the vessel and only 15 mm long lower down.

#### *Manufacture and Use*

The vessel was manufactured from strips of clay added using the diagonal bonding technique. These strips were attached to a single roundel of clay that formed the base. The rim and bevel appear to have been made by folding over a strap of clay and then thickened with the addition of a further strip of clay. There are no obvious signs of use (residues or wear on the interior surface), although the base of the pot does have a roughened surface and its exterior appears worn rather than fresh. This could indicate that it was used prior to burial and was not made specifically for the grave.

#### *Form, Date, and Affinities*

The vessel is 160 mm high and has a diameter of 105 mm. The form would fit within Clarke's early styles (European, Wessex, and North Middle Rhine groups) or Needham's mid-carinated group that can be placed within the period 2450–2200 cal BC.<sup>38</sup> There are a number of similar vessels from the Oxford area of the upper Thames valley, including one from Yarnton (found inside a Wessex Middle Rhine beaker) from a flat grave, another from Summertown, Oxford, and others from the Thames gravel terraces.<sup>39</sup> Based on rim, vessel form and decoration the vessel is likely to be early within the Beaker sequence (after 2300 cal BC), which is confirmed by the two radiocarbon dates (combined as 2340–2140 cal BC; see Barclay, below). All-over-comb impressed Beakers are relatively common in the south of Britain and are known to occur from an early date (2400–2300 cal BC)<sup>40</sup> and perhaps within a few generations of the first Beaker pottery. The earliest all-over-comb decorated vessels tend to

<sup>38</sup> Clarke, *Beaker Pottery of Great Britain*; S. Needham, 'Transforming Beaker Culture in North-West Europe: Processes of Fusion and Fission', *Proceedings of the Prehistoric Society*, 71 (2005), p. 188 and fig. 6; A. Barclay and P. Marshall, 'Chronology and the Radiocarbon Dating Programme', in A.P. Fitzpatrick, *The Amesbury Archer and the Boscombe Bowmen. Early Bell Beaker Burials at Boscombe Down, Amesbury, Wiltshire*, Wessex Archaeology Monograph, 27 (2011).

<sup>39</sup> A.J. Barclay and E. Edwards, 'The Prehistoric Pottery', in G. Hey, *Yarnton*, forthcoming; Clarke, *Beaker Pottery of Great Britain*, p. 216 (W/MR 761).

<sup>40</sup> R.M.J. Cleal, 'The Pottery', in Fitzpatrick, *The Amesbury Archer*; Barclay and Marshall, 'Chronology and the Radiocarbon Dating Programme'.

be of low carinated form,<sup>41</sup> and this includes a vessel from Sutton Courtenay near Abingdon.<sup>42</sup> Probably of slightly later date than the above are the shape II vessels from Summertown (mentioned above) and Cassington,<sup>43</sup> which have bellies or shoulders positioned at mid-height. The slight rim cordon is a trait found on a number of the above examples but also on slightly earlier vessels (for example, Radley 4A comb zoned maritime Beaker).<sup>44</sup>

Beaker pottery, including some sherds decorated with all-over-comb impressions, was found at the nearby site of Alchester.<sup>45</sup> It is a relatively rare find in north Oxfordshire but occurs in some abundance in graves and pits in the Oxford area of the upper Thames gravel terraces.

Table 2. Overall assemblage by ware/fabric groups and quantified by sherd count and weight (g)

Broad Date Range	Ware/fabric group	No. Sherds	Weight (g)
<b>Later Prehistoric</b>	Calcareous	687	5041
	Sandy	102	614
	Flint	2	10
	Shelly	55	322
<i>Prehistoric sub-total</i>		973	6468
<b>Late Iron Age/Early Roman</b>	Grog-tempered	2102	28594
<b>Romano-British</b>	Amphora	44	3151
	Samian	80	628
	British Finewares	68	1018
	Mortaria	18	1152
	White-slipped wares	5	30
	White wares	89	977
	Black-burnished ware	23	532
	Calcareous wares	22	123
	Grey wares	3402	28600
	Grog-tempered	237	5847
	Oxidised sandy wares	489	3158
	Shell-tempered	448	2459
<i>Romano-British sub-total</i>		4925	47675
<b>Saxon</b>	Calcareous wares	28	275
	Organic-tempered wares	54	565
	Sandy wares	107	1220
<i>Saxon sub-total</i>		189	2060
<b>Medieval</b>		46	591
<b>Post-medieval</b>		79	1063
<b>Total</b>		<b>8314</b>	<b>86451</b>

<sup>41</sup> Clarke, *Beaker Pottery of Great Britain*, appendix 1.2, shape I; Needham, 'Transforming Beaker Culture'.

<sup>42</sup> Clarke, *Beaker Pottery of Great Britain*, p. 81 (E 34).

<sup>43</sup> *Ibid.* p. 240 (N/MR 717).

<sup>44</sup> *Ibid.* p. 63 (E 33).

<sup>45</sup> A. Barclay, 'Beaker Pottery', in Booth et al., *Roman Alchester*, p. 215 and fig. 6.2 (8).

## LATER PREHISTORIC AND ROMANO-BRITISH POTTERY by KAYT MARTER BROWN

A total of 8,314 sherds (85,970 g) of later prehistoric and Romano-British date were recorded (Table 2). These were predominately mid first to early second century AD in date. Although reference will be made to the pottery from the previous evaluations, this report primarily focuses on the material from the excavation.

The assessment record was enhanced with 39% (by count, 41% by weight) of the assemblage recorded in more detail, by fabric and form, and quantified by count, weight and estimated vessel equivalents (EVEs) (Tables 3 and 4). Material recorded in detail includes groups with more than 50 sherds and features of stratigraphic importance and/or of ceramic interest. The pottery was recorded in accordance with the Wessex Archaeology system,<sup>46</sup> with reference to other relevant typologies, such as Young and the Oxford Archaeology Roman pottery recording system, to facilitate comparison with assemblages from Alchester, Bicester Fields Farm, and numerous other sites in the region.<sup>47</sup> Overall, the sherds were in a relatively good condition, and the average sherd weight was 11 g. There was some survival of diagnostic surface treatments, although reconstructable profiles were sparse.

Table 3. Fully recorded assemblage by fabrics/ware group and quantified by sherd count, weight, and estimated vessel equivalent (EVEs)

	Fabric/Ware group (WA code)	No. Sherds	Weight (g)	EVEs
<b>Iron Age</b>				
	Sandy wares (Q99)	1	18	
	Shelly wares (S99)	55	322	0.22
	Grog-tempered (G101; G103; G104; G105; G106)	1079	17375	9.2
	<i>Sub-total</i>	<i>1135</i>	<i>17715</i>	<i>9.42</i>
<b>Romano-British wares</b>				
<b>Fine and Specialist wares</b>				
	Samian (E301: E304)	13	157	0.07
	Oxfordshire colour-coat (E170)	60	900	0
	Oxfordshire Parchment ware (E172)	2	29	0
	Oxfordshire white wares (E173)	33	573	0.08
	white wares (Q210)	1	6	0
	White-slipped wares (Q220)	5	30	0
	Mortaria (unspecified) (E200)	1	12	0
	Oxfordshire white ware mortaria (E209)	5	392	0.14
	Oxfordshire white-slipped mortaria (E210)	2	330	0
	Oxfordshire colour coat mortaria (E211)	2	72	0
<b>Coarse wares</b>				
	Black Burnished ware (E101)	8	348	0.41
	Calcareous wares (C101)	21	109	0.1
	Shell-tempered wares (S101)	386	2166	1.11
	Oxidised wares (Q201)	73	601	1.85
	Oxidised wares (Q202)	78	386	0.33
	Oxidised wares (Q203)	24	123	0.25
	Reduced sandy wares (Q101)	450	2550	4.55
	Reduced sandy wares (Q102)	674	6312	5.63

<sup>46</sup> E.L. Morris, 'The Analysis of Pottery', unpublished Wessex Archaeology guideline, 4 (1994).

<sup>47</sup> C.J. Young, *The Roman Pottery Industry of the Oxford Region*, BAR, 43 (1977); P. Booth, 'Oxford Archaeological Unit Roman Pottery Recording System', unpublished OA document; Booth et al., *Roman Alchester*; Cromarty et al., 'Bicester Fields Farm'.

	<b>Fabric/Ware group (WA code)</b>	<b>No. Sherds</b>	<b>Weight (g)</b>	<b>EVEs</b>
	Reduced sandy wares (Q103)	31	133	0
	Vitrified sherd	1	7	
	Nene Valley greyware (E180)	3	68	0
	Pink grogged ware (G102)	31	734	0.49
	<i>Sub-total</i>	<i>1904</i>	<i>16038</i>	<i>15.01</i>
<b>Anglo-Saxon</b>				
	Calcareous wares (C410; C402; C403; C404)	28	275	0.1
	Sandy wares (Q400-Q408)	107	1220	0.86
	Organic-tempered wares (V400; V401)	54	565	0
	<i>Sub-total</i>	<i>189</i>	<i>2060</i>	<i>0.96</i>
<b>Post-medieval</b>	(E770)	1	6	0
		<b>3229</b>	<b>35819</b>	<b>25.39</b>

Table 4. Features from which pottery fully analysed

<b>Area</b>	<b>Feature</b>	<b>No. Sherds</b>	<b>Weight (g)</b>
<b>7</b>	25000	109	812
	25045	1	67
	25121	25	209
	25225	37	496
	25365	19	120
	25380	329	1758
<b>14</b>	25332	77	791
	25334	61	439
	25350	136	1062
<b>15</b>	22733	229	2122
	22738	285	3849
	25288	1138	8389
	25292	16	340
	25293	4	183
<b>16</b>	22871	37	51
	22934	267	4652
	25313	152	7766
	25319	127	1093
	25321	80	959
	25325	34	223
<b>18</b>	25382	15	63
<b>X</b>		51	375
		<b>32229</b>	<b>35819</b>

X = additional Anglo-Saxon sherds recorded

### *Later Prehistoric Fabrics*

The later prehistoric assemblage amounted to 846 sherds (5,987 g) and the average sherd weight of just 7 g reflects the residual nature of much of this material, found within later features. Calcareous fabrics were dominant within the assemblage (81% by count, 84% by weight), with other fabric groups providing minor quantities by comparison (sand 12% by count, 10% by weight; shell 6.5% by count, 5% by weight; flint-tempered fabrics <1% by count and weight).

There were few diagnostic sherds, their forms restricted to barrel and shouldered jars. A group of over 200 sherds recovered from enclosure ditch 22440 (Area 1), in a shell and limestone fabric (minimum 3 vessels; Fig. 12, nos. 1–3), are comparable in both fabric and form to middle Iron-Age vessels identified at both Bicester Fields Farm and Alchester,<sup>48</sup> and a further shouldered jar in a shelly fabric was identified from within pit 25045 (Fig. 12, no. 4). Calcareous fabrics were used during the middle Iron Age to the north and east of the Thames, and this small assemblage is typologically similar to those at Bicester Fields Farm, Oxford Road, and Slade Farm.<sup>49</sup> The dominance of calcareous fabrics and restricted form types is also comparable to that recovered at nearby Alchester.<sup>50</sup>

### *Late Iron Age and Romano-British Pottery*

Within this assemblage, as at other sites in the area (including Bicester Fields Farm),<sup>51</sup> a distinction has been drawn between contexts where grog-tempered wares occur alongside wheelthrown 'Romanised' wares and are therefore likely to be post-conquest in date, and those which lack this association with Romanised wares. The grog-tempered wares are of indigenous late Iron-Age origin, but continue in use into the early post-conquest period (late first century to early second century AD).

Grog-tempered material accounted for 2,102 sherds (28,594 g) of which 1,079 sherds (17,375 g) were recorded during analysis (51% by count, 74% by weight). Six grog-tempered fabrics (Class E wares),<sup>52</sup> were initially identified within the analysed material, of which five are discussed here, the sixth fabric being a late Roman product (pink grogged ware). However, during analysis it became clear that the distinctions between these early grog-tempered fabrics were arbitrary, due to the variability of surface colour, texture and tempering. For ease of discussion they have therefore been treated as a single group (fabric descriptions in the archive). Rim sherds derived from 33 vessels (8.70 EVEs), with simple necked jars being the single most common form (4.31 EVEs; Fig. 12, nos. 5 and 10, and Fig. 13, no. 23). Other jar forms included everted rim jars with cordons on the shoulder (Fig. 12, no. 6),<sup>53</sup> jars with rilled shoulders (Fig. 12, nos. 8 and 12),<sup>54</sup> and a single faceted rim jar. Bowl forms comprised simple bead rim and corrugated vessels (Fig. 12, no. 11),<sup>55</sup> while beakers were represented by a single rim from an imitation Butt Beaker.<sup>56</sup>

### *Fine and Specialist Wares*

Amphorae sherds, although not within the fully recorded sample, came predominately from Dressel 20 type amphorae, including fragments from a neck with sawn-off handle, indicative of the reuse of this vessel. An additional three sherds of amphora are of unknown provenance. Samian accounted for less than 2% of the Roman material by sherd count (1.2% by weight), often surviving just as small flakes or abraded fragments. Identified forms comprised Dragendorff dish/bowls 18, 18/31, 29, 31, 36; cup/small bowls 33, 35; and plate 79. Three stamped bases were recovered, two of which were unidentifiable, being either illegible or incomplete. The third stamp, from the base of a central Gaulish Dr33 cup, reads [CIIRTIANI], which although not directly paralleled, is possibly the work of an Antonine, Lezoux-based potter, Certus ii.<sup>57</sup> The only decorated samian sherds belonged to a Dr29 bowl with panel decoration typical of that employed in the third quarter of the first century AD. The Dr79 plate can be assigned a mid to late second-century date.

British colour-coated fine wares were restricted to products of the Oxfordshire industry and did not appear on the site until the mid third century at the earliest. They are very poorly represented, making up less than 1% of the Romano-British assemblage (by count, 1.3% by weight), although, to some extent, this may be due to adverse

<sup>48</sup> K. Brown, 'The Pottery', in Cromarty et al., 'Bicester Fields Farm', fig. 22, nos. 28–30; J. Evans and P. Booth, 'Iron-Age Pottery', in Booth et al., *Roman Alchester*, p. 272, fig. 7.1, fabric P02.

<sup>49</sup> Brown, 'The Pottery', in Cromarty et al., 'Bicester Fields Farm', fig. 22, nos. 28–30; P. Booth, 'Pottery and Other Ceramic Finds', in Mould, 'Oxford Road', pp. 75–89; A. Woodward and J. Marley, 'The Iron Age Pottery', in Ellis et al., 'Slade Farm, Bicester', pp. 233–48.

<sup>50</sup> J. Evans, 'Iron Age, Roman and Saxon Pottery', in Booth et al., *Roman Alchester*, pp. 263–83.

<sup>51</sup> Brown, 'The Pottery', pp. 182–95.

<sup>52</sup> Evans, 'Iron Age, Roman and Saxon Pottery'.

<sup>53</sup> I. Thompson, *Grog-Tempered 'Belgic' Pottery of South-Eastern England*, BAR, 108 (1982), B3–1 jars.

<sup>54</sup> *Ibid.* C7–1.

<sup>55</sup> *Ibid.* D2–3.

<sup>56</sup> *Ibid.* G5.

<sup>57</sup> B.R. Hartley and B.M. Dickinson, *Names on Terra Sigillata, Volume 3 (Certianus to Exsobano)*, Institute of Classical Studies, University of London (London, 2008).

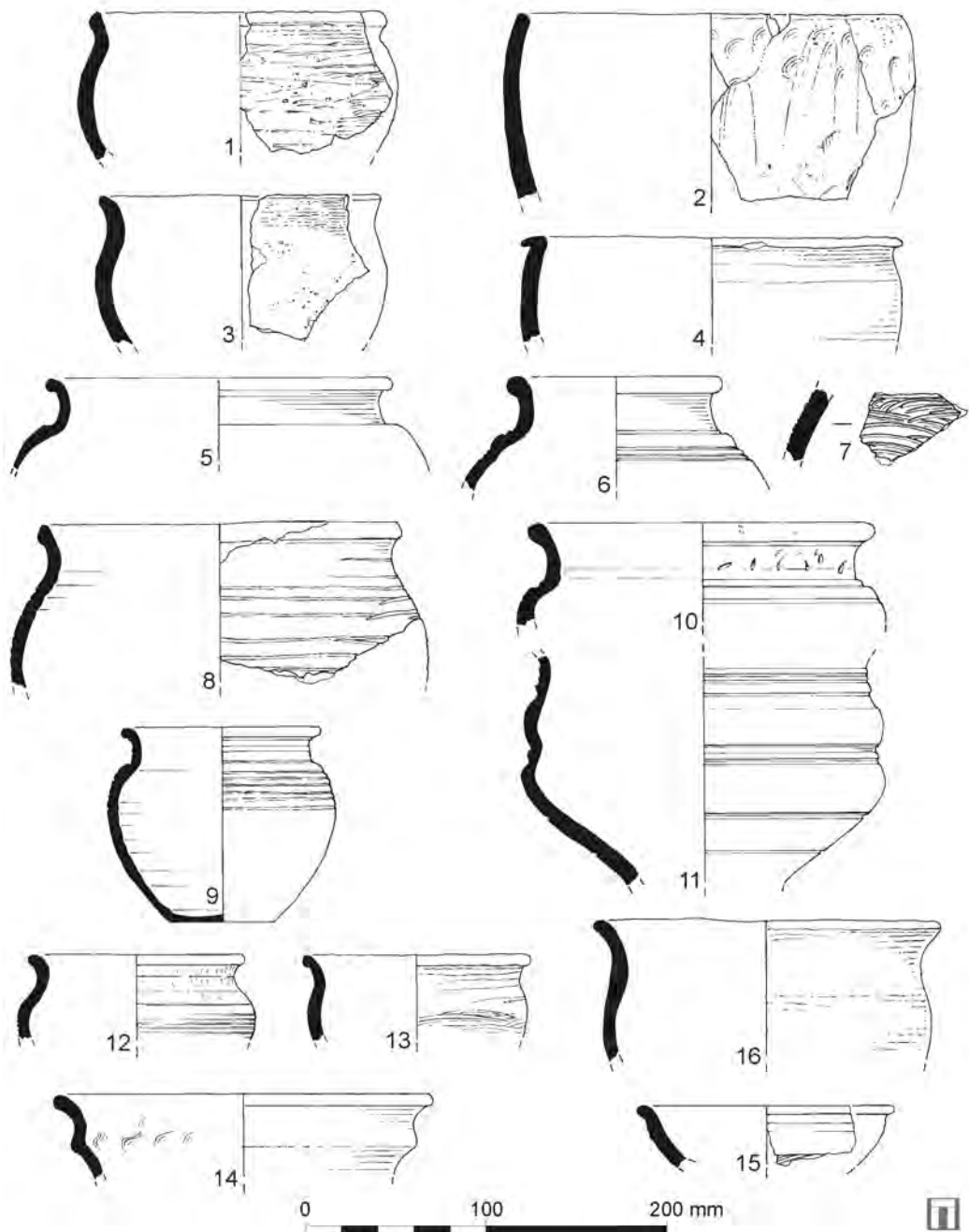


Fig. 12. Iron-Age and Romano-British pottery, numbers 1-16.



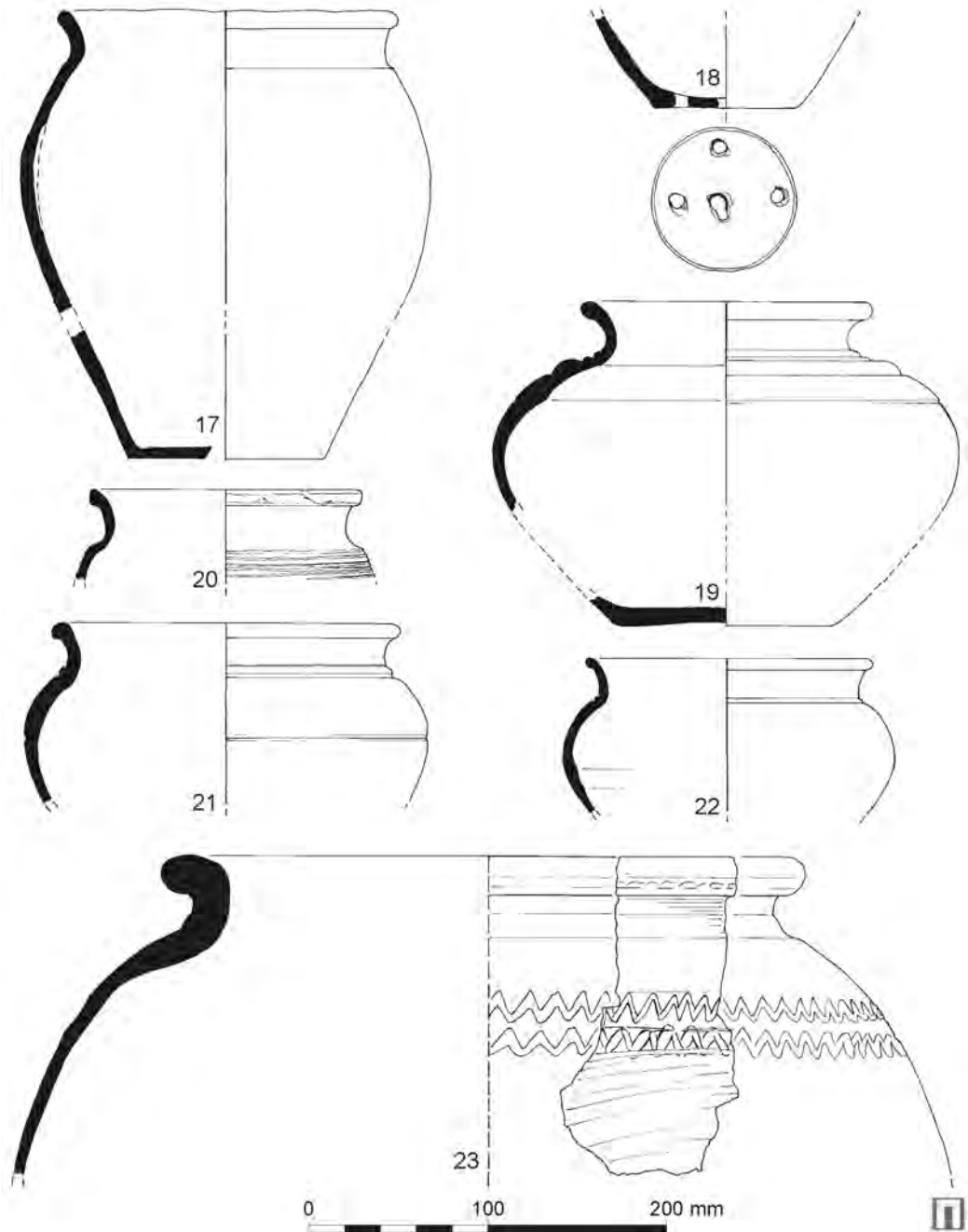


Fig. 13. Iron-Age and Romano-British pottery, numbers 17–23.

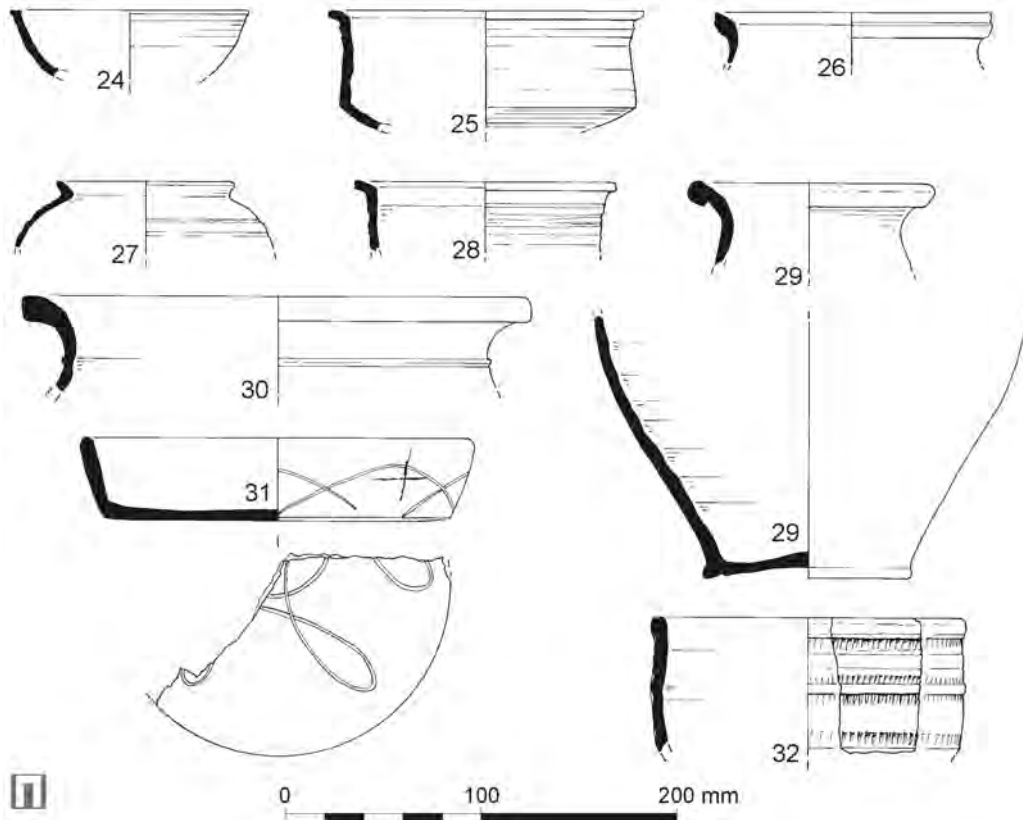


Fig. 14. Iron-Age and Romano-British pottery, numbers 24–32.

soil conditions affecting the survival of surface finishes and thus the identification of these wares (for example, a proportion of the finer oxidised sherds may in fact comprise unidentifiable Oxfordshire colour-coat sherds). A significant proportion of the colour-coated sherds were recovered from the stone-lined feature in Area 16 (22934) and included a Young type C29 beaker with vertical comb-stamping on the body and a type C84 carinated bowl (Fig. 14, no. 32).<sup>58</sup> While the beaker is of mid third- to mid fourth-century date, the carinated bowl was introduced only in the mid fourth century.<sup>59</sup> This feature also contained six complete trimmed colour-coated bases and two re-shaped bases as well as an Oxfordshire parchment ware trimmed base with a drilled hole (Fig. 15) and a partial white-slipped mortaria base.

Other Oxfordshire products comprised a parchment ware body sherd and white wares, including single examples of a flagon neck, a beaker rim, and a chamfered bowl with a bead rim,<sup>60</sup> copying the equivalent reduced grey ware form R52 of mid second- to fourth-century date. White slipped wares from this region were very uncommon, with just five body sherds identified, and fine oxidised vessel forms were limited to a single Young type O20 beaker rim.<sup>61</sup> All mortaria fragments derived from the Oxfordshire industry; they included rims from white ware forms M17 and M18,<sup>62</sup> and red colour-coated body sherds.

#### *Coarse Wares*

This element of the assemblage was, as ever, dominated by the ubiquitous reduced sandy coarse wares (48% by count, 37% by weight), most of which are likely to have been locally produced, the only recognizable exception

<sup>58</sup> Young, *The Roman Pottery Industry*.

<sup>59</sup> *Ibid.* pp. 154, 170.

<sup>60</sup> *Ibid.* type W42.

<sup>61</sup> *Ibid.*

<sup>62</sup> *Ibid.*



Fig. 15. Romano-British trimmed bases; note the one with a perforated base.

being a single Nene Valley vessel base. Given the condition of the assemblage and the notorious difficulty of identifying specific grey ware fabrics within the Oxfordshire industry,<sup>63</sup> a simple broad distinction between fine grey wares (Q101) and medium/coarse grey wares (Q102, Q103) was employed. Whilst production of the medium/coarse grey wares spanned the Romano-British period, the finer grey ware variant is more chronologically distinct in being restricted to the late first and second centuries.

Jars were the predominant form (5.62 EVEs), though often insufficient profile survived to enable the identification of specific types. The readily identifiable rim fragments generally fall within the Young type R24 necked jar (3.88 EVEs),<sup>64</sup> a single fourth-century narrow necked jar being a notable exception.<sup>65</sup> Bowls were likewise well represented, including forms with out-turned, flat-topped rims and curved walls, straight-sided bowls with chamfered base and an out-turned occasionally grooved rim, straight-sided bowls with flat bases and burnished decoration, and second-century copies of samian forms Dr27 and 37.<sup>66</sup> A single stamped bowl base reads [XIIIVV]. Other forms included a second-century poppy-head and globular beakers (Fig. 14, no. 27), a late second- to mid third-century ring-necked flagon, and a narrow-necked flagon.<sup>67</sup>

Two grog-tempered vessels, both of probable second- to third-century date, are of particular note. The first was a complete, grog-tempered jar (Fig. 16) with handle scars and post-firing perforations on the shoulder and lower body; the second was a very substantial grog-tempered storage jar, with herringbone decoration below the rim, measuring approximately 480 mm in diameter (Fig. 13, no. 23). Both were recovered from pit group 25313. South-east Dorset black-burnished wares formed a small component of the coarse wares. Diagnostic forms comprised a jar rim, a drop flange bowl, and three shallow, straight-sided plain-rimmed dishes, including a complete profile from feature 22935 with a graffito mark on the exterior (Fig. 14, no. 31). Similarly, late Roman pink grogged ware was present in small quantities (Fig. 14, no. 30),<sup>68</sup> all but one body sherd from Area 16. Pink grogged ware

<sup>63</sup> Ibid. p. 202.

<sup>64</sup> Ibid.

<sup>65</sup> Ibid.

<sup>66</sup> Ibid. bowl types R41, R43, R45, R53, R62, and R68 respectively.

<sup>67</sup> Ibid. R34, R6, and R12 respectively.

<sup>68</sup> P.M. Booth and S. Green, 'The Nature and Distribution of Certain Pink, Grog Tempered Vessels', *Journal of Roman Pottery Studies*, 2 (1989), pp. 77–84.



Fig. 16. Grog-tempered jar showing handle scars and post-firing perforation.

originated in the Milton Keynes-Towcester area in the second century, with known production at Stowe Park, Buckinghamshire;<sup>69</sup> it does not appear to have reached Alchester until the third century,<sup>70</sup> while at Whitelands Farm it generally occurs in groups assigned a mid third-century or later date.

At Alchester shell-tempered fabrics were present in the earliest Roman occupation and remained in use until the end of the Roman period.<sup>71</sup> A similar scenario is likely at Whitelands Farm, where these fabrics were prevalent from the early Roman period. Diagnostic forms were restricted to necked jars, 110–180 mm in diameter.

### Discussion

Clear chronological and spatial trends are visible within the ceramic assemblage. Middle Iron-Age activity is suggested by the significant quantity of fine calcareous fabrics and forms typologically of this date from Area 1, although in most instances these are present alongside grog-tempered sherds of characteristically later Iron-Age date. The middle Iron-Age component of the assemblage shows considerable similarities with the pottery derived from the phase 2 enclosure fills at Bicester Fields Farm,<sup>72</sup> although it is debatable whether the Area 1 material at Whitelands Farm conforms to the same tightly defined chronology. Within Area 1, pit 22481 was the only feature which contained exclusively middle Iron-Age material, although the upper fill of section 22417 (22419; Fig. 4) of enclosure ditch 22440 contained over 200 sherds from at least three vessels (Fig. 12, nos. 2–4); though no complete profiles could be reconstructed, the sherds were in good condition. With the exception of four tiny flakes of Romano-British grey wares and two post-medieval sherds from topsoil there is nothing later than the mid first century AD within this material. Late Iron-Age activity was prevalent in Area 7, where the proportions of calcareous to grog-tempered wares was reversed, with a large group of material recorded from the enclosure ditch 25380 (Fig. 12, nos. 5–6). Romano-British wares were present in this area, but restricted to less than 20 sherds of samian, grey wares, and oxidised sandy wares from upper ditch fills and a single post-medieval pit.

Conversely, significant Romano-British activity was attested in Areas 14, 15, and 16. Here, although earlier fabrics continued to be present, there was a much greater emphasis on Romanised fabrics and forms spanning the first to fourth centuries, while small quantities of Anglo-Saxon material were also found in Areas 14 and 16. Enclosure ditch 25350 (Area 14) contained early Roman material, including grog-tempered sherds from a

<sup>69</sup> P.M. Booth, 'Pink Grogged Ware Again', *SGRP Newsletter*, 27 (1999); J. Taylor, 'The Distribution and Exchange of Pink, Grog Tempered Pottery in the East Midlands: An Update', *Journal of Roman Pottery Studies*, 11 (2004), pp. 60–6.

<sup>70</sup> Evans, 'Iron Age, Roman and Saxon Pottery', p. 328.

<sup>71</sup> *Ibid.* p. 367.

<sup>72</sup> Brown, 'The Pottery', fig. 21.

squat, globular bowl with cordoned neck,<sup>73</sup> and from a bead-rimmed bowl (Fig. 12, no. 15). Neither form is particularly early and their occurrence alongside white wares and sandy grey wares would suggest a post-conquest date which need not extend into the second century. The upper fill of pit 22738 (Area 15), contained numerous good-sized grog-tempered sherds, including two jar bases, one of which showed considerable use-wear around the circumference, while the second base (Fig. 13, no. 18) had been deliberately perforated four times. With the exception of three small later Roman sherds found in the upper fill (which were probably intrusive), the finds from both pits need not be later than the late first or possibly early second century. Likewise, good vessel profiles of the same date were retrieved from the fills of ditches 25292 and 25293 (Figs. 13, nos. 21–2, and 14, nos. 24–5).

There is also some, albeit limited, evidence for occupation or other activity during the second and third centuries. Common ceramic markers for this period (such as later samian and continental finewares) are absent, but some vessel forms have production dates in the second century, for example ring- and narrow-necked flacons, jars with out-turned bead rim, poppy-head beakers, a straight sided bowl, a bowl copying samian form 27, and a white ware bead rim bowl.<sup>74</sup> A significant number of these (seven vessels) were identified within the fills of enclosure ditch 25288; very few grog or calcareous sherds were present, with Romanised grey wares the dominant fabric, along with small amounts of white wares, Oxfordshire white ware mortaria, and two oxidised sherds, possibly of Oxford colour-coat (although no surface finish survived). Ditch 25334 also contained sherds assigned a second- to third-century date, whereas vessel forms of this date from Area 16 all occur as residual finds. It is likely, therefore, that activity continued at Whitelands Farm during the second to third centuries, but either at a reduced level or in areas largely beyond the scope of these excavations.

Similarly, there were very few definitively late Roman features. Oxfordshire colour-coated wares were, with the exception of a few small, abraded sherds, restricted to feature 22934 and the nearby Anglo-Saxon pit group. Pit 22837 contained both Oxfordshire colour-coated fragments and a black-burnished ware everted rim jar, indicative of a mid third-century or later date. Black-burnished ware was present at Alchester from the mid second century,<sup>75</sup> increasing in popularity up to the mid fourth century, although the three forms present at Whitelands Farm (everted rim jars, dog dishes, and drop flanged bowls) indicate a date in the late third to fourth century. A spattering of late Roman pink grogged ware was restricted (with the exception of a single sherd from Area 15) to within the fill of stone-lined feature 22934 and ditch 25319 in Area 16. Although feature 22934 also contained a small number of Anglo-Saxon sherds, it is probable that these are intrusive, as three of them derive from the same vessel as pieces found within pit group 25321.

#### Catalogue of Illustrated Vessels (Figs. 12–14):

1. Organic-tempered sherd from shouldered jar. PRN 390.
2. Calcareous fabric comparable to PO2.<sup>76</sup> Barrel-shaped jar with simple inturned rim (cf. fig. 7.1 PO2.1a-d). Ditch group 22440, Context 22419, Area 1.
3. Calcareous fabric comparable to PO2.<sup>77</sup> Jar with flat-topped/expanded rim (cf. fig. 7.1 PO2.7). Ditch group 22440, Context 22419, Area 1.
4. Calcareous fabric comparable to PO2.<sup>78</sup> Shouldered jar with upright rim (cf. fig. 7.1 PO2.9a-b). Ditch group 22440, Context 22419, Area 1.
5. Fabric G104. Necked jar rim. Context 25110. PRN 367.
6. Fabric G104. Everted-rim jar with cordons/bulges on shoulder. Context 25110. PRN 368.
7. Fabric G104. Scored decoration. Context 25191. PRN 374.
8. Fabric G104. Rilled decoration on shoulder. Context 25225. PRN 398.
9. Fabric G104. Context 25225. PRN 400.
10. Fabric G104. Necked jar. Context 25225. PRN 399.
11. Fabric G104. Body sherds. Context 25000. PRN 387.
12. Fabric G104. Rilled decoration on shoulder. Context 25123. PRN 405.
13. Fabric G104. Context 25123. PRN 406.
14. Fabric G104. Bowl rim. Context 23016. PRN 337.
15. Fabric G104. Dish rim imitating Cam16 form. Context 23016. PRN 338.
16. Fabric S101. Jar rim. Context 23016. PRN 345.
17. Fabric G104. ON 26, jar with perforated base. PRN 215. PRN 217, Context 22740, Fabric G104 base sherds join PRN 215.
18. Fabric G104. Base with post-firing perforations. Context 22740. PRN 219.
19. Fabric G104. Jar with multiple cordons, base very worn. Context 22740. PRN 223.

<sup>73</sup> Thompson, *Grog-Tempered 'Belgic' Pottery*, D2–3.

<sup>74</sup> Young, *The Roman Pottery Industry*, types R6, R12, R21, R34, R43, R62, W42 respectively.

<sup>75</sup> Evans, 'Iron Age, Roman and Saxon Pottery', p. 364.

<sup>76</sup> Evans and Booth, 'Iron-Age Pottery', p. 272.

<sup>77</sup> *Ibid.*

<sup>78</sup> *Ibid.*

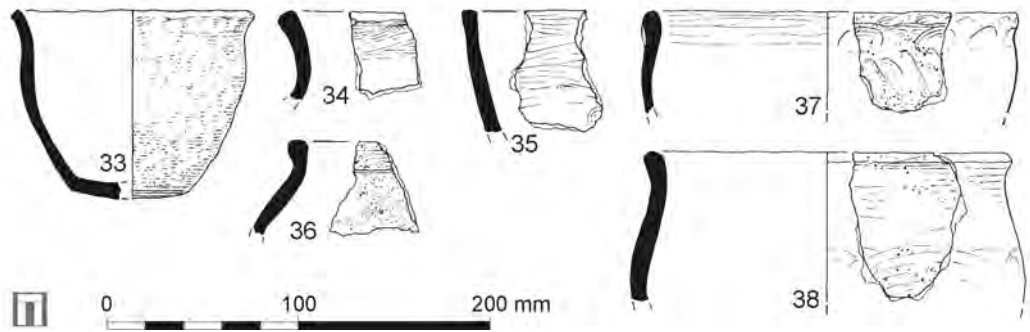


Fig. 17. Anglo-Saxon pottery, numbers 33–8.

20. Fabric G104. Jar rim. Context 22740. PRN 221.
21. Fabric G104. Jar rim. Context 22751. PRN 189.
22. Fabric G104. Jar rim. Context 22754. PRN 192.
23. Fabric G101. Large storage jar. Context 23405. PRN 188.
24. Fabric Q101. Bowl, Young type R62.<sup>79</sup> Context 23574. PRN 420.
25. Fabric Q101. Bowl, Young type R57.<sup>80</sup> Context 23574. PRN 422.
26. Fabric Q101. Jar rim. Context 23754. PRN 423.
27. Fabric Q101. Young type R21.<sup>81</sup> Context 23574. PRN 425.
28. Fabric Q101. Bowl with flat top rim. Context 23574. PRN 428.
29. Fabric Q102. Jar. Context 23574. PRN 408.
30. Fabric G102. Pink grog storage jar rim. Context 22935. PRN 3–7.
31. Fabric E101. Dog-dish with burnished decoration. Context 22935. PRN 16.
32. Fabric E170. Young type C84.<sup>82</sup> Context 22935. PRN 31.

#### ANGLO-SAXON POTTERY by KAYT MARTER BROWN

The Anglo-Saxon pottery comprised 189 sherds (2,060 g) from Areas 5A, 7, 13, 14, and 16 (Table 5). The Whitelands fabrics are largely comparable to those identified at Chapel Street,<sup>83</sup> although a site-specific fabric series has been created (Table 3) this has been correlated where possible with those from the Chapel Street site. Both sites produced a similar range of sandy, organic-tempered, and calcareous fabrics, but those containing igneous rock inclusions were not present at Whitelands Farm. A small assemblage (67 sherds) was also present at Alchester, where the main fabrics were sand- or sand- and calcareous-tempered.<sup>84</sup>

#### Fabrics:

- C401/C403 Calcareous fabric containing common to very common, moderately well-sorted, sub-angular/sub-rounded limestone <1 mm; rare sub-rounded quartz <0.25 mm. Chapel Street fabric L400.
- C402 Sparse sub-angular ?calcareous inclusions <2 mm, common well-sorted, sub-angular/sub-rounded quartz <0.25 mm.
- C404 Coarse calcareous fabric, common moderately sorted calcareous inclusions <1 mm, occasionally <5 mm Chapel Street fabric L401.
- Q400/Q406 Coarse fabric with prominent, sub-angular quartz <2 mm, some polycrystalline. Q406 is a finer variant. Chapel Street fabric Q400.
- Q401 Sandy fabric with common, poorly sorted sub-angular quartz <2 mm.
- Q401/Q408 Sparse to moderate, fairly well sorted, sub-rounded quartz, rare ?calcareous inclusions. Chapel Street fabric Q402.

<sup>79</sup> Young, *The Roman Pottery Industry*.

<sup>80</sup> *Ibid.*

<sup>81</sup> *Ibid.*

<sup>82</sup> *Ibid.*

<sup>83</sup> L. Mephram, 'Pottery', in Harding and Andrews, 'Anglo-Saxon and Medieval Settlement at Chapel Street', pp. 151–5, 166–7.

<sup>84</sup> Evans, 'Iron Age, Roman and Saxon Pottery', p. 382.

Q403/Q404	Moderate quartz, fairly well-sorted <1 mm. Chapel Street fabric Q401.
Q405	Hard, sandy fabric, moderate poorly sorted, sub-rounded quartz <0.5 mm, rare polycrystalline quartz <2 mm, rare iron oxides.
Q407	Fine, sandy fabric, common well-sorted, sub-angular/sub-rounded quartz <0.25 mm. Chapel Street fabric Q405.
V400	Organic-tempered fabric, slightly sandy; moderately coarse matrix containing moderate to common, poorly sorted, organic inclusions <10 mm; rare sub-rounded quartz <0.5 mm; rare mica <1 mm. Chapel Street fabric V400.
V401	Sandy. Organic-tempered fabric; moderately coarse matrix containing moderate to common, poorly sorted organic inclusions <7 mm; moderate sub-rounded quartz <0.5 mm. Chapel Street fabric V401.
V402	Sparse to moderate, poorly sorted, sub-rounded calcareous inclusions <3 mm, moderate to common organic inclusions <10 mm.

Table 5. Anglo-Saxon assemblage quantified by fabric, sherd count, and weight

Fabric	No.	Weight
C401	8	85
C402	3	33
C403	16	153
C404	1	4
Q400	48	534
Q401	7	52
Q402	12	234
Q403	7	96
Q404	22	212
Q405	5	45
Q406	3	27
Q407	1	12
Q408	2	8
V400	10	47
V401	35	457
V402	9	61
<b>Total</b>	<b>189</b>	<b>2060</b>

Diagnostic sherds comprised thirteen rims, with a single complete profile (Fig. 17, no. 33). Bases were either rounded or had slight basal angles. There was no evidence for decoration on any sherds. There was nothing functionally deterministic about these vessels, which were all gently convex or rounded forms with simple upright or everted, occasionally slightly thickened rims (Fig. 17, nos. 34–7). Any conclusions drawn from such a small assemblage are inevitably limited. The similarity of fabric types with the material from Chapel Street suggests that the two groups are at least partly contemporary in date, but neither group provides sufficient evidence to refine the broad fifth- to eighth-century date range and the diagnostic forms (stamped decoration, pedestal bases, ‘swallow’s nest’ lug) seen at Chapel Street were not present at Whitelands Farm. It is possibly significant, however, that the proportion of organic-tempered wares varies between the two sites: 28% of the assemblage by weight at Whitelands Farm, 4.5% by weight at Chapel Street. Within the region, these fabrics generally show an increase during the sixth century,<sup>85</sup> so this difference may indicate a date later in the sixth century and into the seventh century for the Whitelands Farm assemblage.

Catalogue of Illustrated Vessels (Fig. 17):

33. Fabric V401. Jar rim. Context 22577. PRN 453.
34. Fabric Q400. Jar rim. Context 22927. PRN 145.
35. Fabric V401. Jar rim. Context 22967. PRN 130.
36. Fabric C401. Jar rim. Context 22967. PRN 229.
37. Fabric C401. Jar rim. Context 22967. PRN 300.
38. Fabric Q400. Jar rim. Context 22979. PRN 314.

<sup>85</sup> C. Underwood-Keevill, ‘The Pottery’, in G.D. Keevill, ‘An Anglo-Saxon Site at Audlett Drive, Abingdon, Oxfordshire’, *Oxoniensia*, 57 (1992), pp. 67–73; Mephram, ‘Pottery’, p. 155.

## WORKED FLINT by PHILIPPA BRADLEY

Fifty-three pieces of worked flint and four pieces of burnt unworked flint (83 g) were recovered, mostly from Roman and later features (Table 6). Typologically distinctive pieces of Palaeolithic and Beaker date were identified, but the majority of the material consists of fairly undiagnostic debitage of probable Neolithic and Bronze-Age date, and is not discussed further here. Additional details of the assemblage may be found in the site archive.

Table 6. Summary of worked flint

Flakes	Blades	Cores, core fragments	Retouched forms	Total
44 (incl. 1 core rejuvenation flake)	2	3 (1 flake core, 2 flake core fragments)	4 (1 handaxe fragment, 1 backed knife, 1 scraper, 1 serrated flake)	53

The majority of the flint was fairly poor quality and probably derived from local gravel deposits. A little slightly better quality flint was also used, which may have come from the Berkshire Downs to the south or the Chilterns to the east.

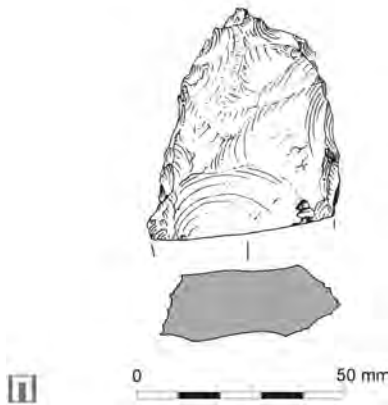


Fig. 18. Fragmentary Palaeolithic hand axe.

The upper portion of a Palaeolithic hand axe was recovered from a field boundary ditch (23345; Fig. 18). It has suffered some post-depositional damage, but the break is an old one. This find is of some interest as it indicates activity away from known find spots of Palaeolithic material.<sup>86</sup> However, the precise form of the axe cannot be identified due to the size of the piece recovered.

A neatly worked backed knife came from near the heel of the inhumation within grave 25126 (Fig. 6). The knife has been worked on an oval blank with invasive retouch; slightly steeper retouch forms the backing. Damage at the base of the knife appears to be an old break. It is a fairly typical piece for a burial of this date.

### Discussion

Although the hand axe fragment extends the known distribution of these artefacts within the county, little further comment can be made due to the fragmentary nature of the piece. The flint knife from the Beaker burial is itself fairly unremarkable, though it was found with a Beaker pot, a worked bone toggle, and bone point (see above). Clarke lists a variety of associations for simple flint knives, some of which are similar to the Whitelands Farm example.<sup>87</sup> The remainder of the assemblage seems to represent a background scatter of Neolithic and Bronze-Age date, which can be paralleled in the vicinity.<sup>88</sup>

<sup>86</sup> Hardaker, 'The Lower and Middle Palaeolithic'; D. Roe, *A Gazetteer of British Lower and Middle Palaeolithic Sites*, CBA Research Report, 8 (1968), pp. 247–55; D. Roe, 'Artefact Distributions and the British Earlier Palaeolithic', in C.S. Gamble and A.J. Lawson (eds.), *The English Palaeolithic Reviewed*, Trust for Wessex Archaeology Ltd (Salisbury, 1996), pp. 1–6, and fig. 1.1.

<sup>87</sup> Clarke, *Beaker Pottery of Great Britain*, pp. 315 (no. 278), 448.

<sup>88</sup> See, for example, P. Bradley, 'Worked Flint', in Booth et al., *Roman Alchester*, pp. 213–14.



## WORKED BONE FROM BEAKER BURIAL by PHILIPPA BRADLEY

A bone toggle and a fragmentary bone point (ONs 91 and 94) were recovered from the Beaker burial (25127). The toggle was found next to the right shoulder of the inhumation burial (Fig. 6). It is made from the tibia of a sheep or goat. A small neat oval perforation is located approximately centrally through the bone. There are no obvious signs of wear around the perforation. The toggle is in good condition with only a small area of damage at one end.

A small fragmentary bone point was also recovered from the Beaker burial from between the ribs and the left humerus (Fig. 6). It has been shaped and worked to a point.

Bone toggles are not commonly found with Beaker inhumations;<sup>89</sup> those, apart from the Sewell find, that Clarke does list are of a different form to the Bicester example. The closest parallels to the Whitelands Farm find are toggles from Beaker burials at Thomas Hardy School, Dorchester and Sewell (Beds.),<sup>90</sup> although the latter is only perforated through its upper surface. Another similar toggle has been found in a Beaker burial at Le Déhus, Guernsey.<sup>91</sup> It is noteworthy that some of these examples have come from rich burials (including at Thomas Hardy School and Sewell), where associations include wrist guards and a spiral-headed pin.

The position of the Bicester toggle, close to the right shoulder of the individual, may indicate that it was used to secure clothing. These artefacts have been interpreted variously as belt toggles, closures for bags, or fasteners to secure other clothing.<sup>92</sup> Kinnes has discussed the functional associations of bone toggles with a range of objects in bone and jet.<sup>93</sup>

The fragmentary bone pin from the Bicester grave may also have been used to secure clothing, but the small size of the fragment precludes any firm conclusions about its function.

Catalogue (Fig. 6):

ON 91. Bone toggle, sheep/goat tibia shaft. L 33 mm, W 11 mm, oval perforation located approximately centrally through the bone, L 7 mm W 6 mm. Context 25127, Beaker burial.

ON 94. Bone point (fragment), unidentifiable long bone shaft. Small fragment shaped to a point. L 24 mm W 6 mm Th 4 mm. Context 25127, Beaker burial.

## METALWORK by KAYT MARTER BROWN with J. PETER NORTHOVER

A small metalwork assemblage comprising 13 copper alloy and 84 iron objects was recovered from all stages of fieldwork. With the exception of a Bronze-Age palstave (Fig. 19) recovered during the evaluation (Northover, below) an Anglo-Saxon firesteel/purse-mount, and a post-medieval horse shoe and spur, the remainder of the assemblage is Romano-British in date. A full catalogue of the metal objects is available in the archive, with illustrated objects described in more detail below.

*Bronze-Age Palstave by J. Peter Northover*

An unlooped mid-rib palstave was submitted for metallurgical study (Fig. 19). Its sides are straight to the stop-ridge and then splay to the slightly asymmetric cutting edge; leaf-shaped flanges continue below the stop-ridge to form edge-flanges to the blade. The flanges on one side are damaged, and the butt broken obliquely, possibly when the sprue was removed. The flash line is somewhat asymmetrical in places and almost removed. There is a strong mid-rib on one face of the blade not quite reaching to the stop, and a much fainter rib on the other face ending at a slight depression below the stop. There is a dark grey green patina over lighter corrosion products. L 152 mm; BW 72 mm; BW 22 mm; T(max) 24 mm.

It has been more than three decades since the palstaves of southern England were comprehensively reviewed, first by Rowlands and then by O'Connor as part of a much broader study of cross-Channel relations in the later Bronze Age.<sup>94</sup> The Bicester palstave, with its flanges forming a smooth, elongated leaf-shaped outline with no break at the stop ridge, is among the early side-flanged palstaves, Rowlands' Class, Group 1. These are distributed mainly

<sup>89</sup> Clarke, *Beaker Pottery of Great Britain*, p. 448, table 3.3.

<sup>90</sup> Gardiner et al., 'A Matter of Life and Death', pp. 37–8, plate 9b–c; Mathews, *Occupation Sites on a Chiltern Ridge*, pp. 19–22, plate III; Kinnes, *British Bronze Age Metalwork*, pp. 12–14, no. 4; Clarke, *Beaker Pottery of Great Britain*, plate 3; Clarke et al., *Symbols of Power*, p. 85, plate 4.5, 265.

<sup>91</sup> L. Salanova, 'Le Statut des Assemblages Campaniformes en Contexte Funéraire: la Notion de "Bien de Prestige"', *Bulletin de la Société Préhistorique Française*, 95 (1998), p. 321, fig. 5.

<sup>92</sup> Cf. Clarke et al., *Symbols of Power*, p. 224; Kinnes, *British Bronze Age Metalwork*, p. 14.

<sup>93</sup> Kinnes, *British Bronze Age Metalwork*.

<sup>94</sup> M.J. Rowlands, *The Production and Distribution of Metalwork in the Middle Bronze Age in Southern Britain*, BAR, 31 (1976), pp. 30–2, plate 29; B.J. O'Connor, *Cross-Channel Relations in the Later Bronze Age*, BAR IS, 91 (1980), pp. 52–3.

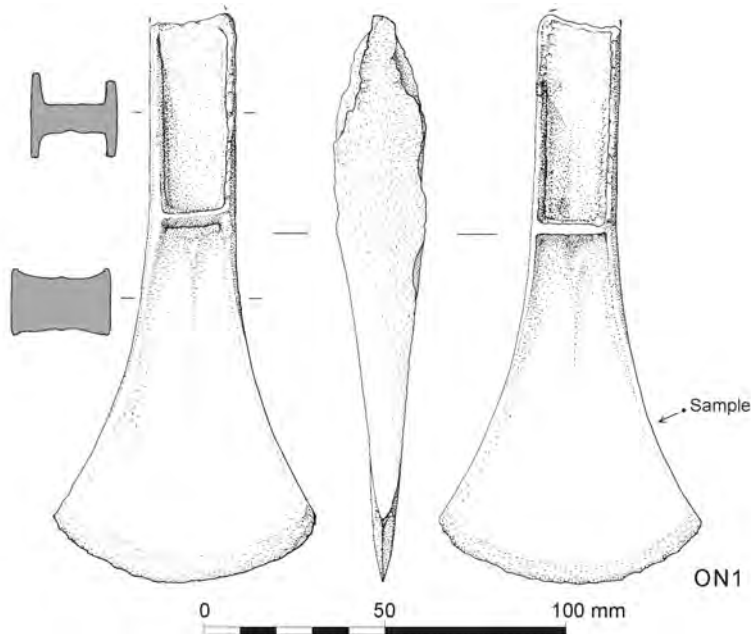


Fig. 19. Middle Bronze-Age palstave found during the evaluation.

along the Thames valley and areas to the south, generally as single finds. It can also be related to Burgess's 'early mid-ribbed palstaves' in Wales and the Marches,<sup>95</sup> and can be dated to the Acton Park period of the middle Bronze Age (MBA I), perhaps Acton Park 2, exemplified by the developed Acton Park shield pattern palstave.

### Sampling and Analysis

A single sample, labelled #R3905, was cut from the bottom of the left foot. The sample was hot-mounted in a carbon-filled thermosetting resin, and ground and polished to a 1  $\mu\text{m}$  finish. Analysis was by electron probe microanalysis using wavelength dispersive spectrometry. Operating conditions were an accelerating voltage of 20kV, a beam current of 30nA, and an X-ray take-off angle of 40°. Counting times were 10 seconds or 20 seconds per element, and pure element and mineral standards were used. Eighteen elements were analysed (Table 7); detection limits were 100ppm for most elements, except 300ppm for gold.

Seven areas, each 30x50 $\mu\text{m}$ , were analysed on the sample. The individual analyses, normalised to 100%, are given in Table 7; all concentrations are in weight %.

### The Alloy

The palstave was cast in an unleaded high tin bronze, containing 15.1% tin. The principal impurities were 0.12% iron, 0.34% nickel, 1.03% arsenic, 0.06% bismuth, and 0.36% lead. There were also small traces of cobalt, zinc, silver, and possibly cadmium, although a spectral interference may contribute to this last result.

Using the scheme of labels developed for Bronze-Age impurity patterns by the present writer this composition can be classed as 'M1'.<sup>96</sup> In Britain this is very much associated with the Acton Park period, its use declining steadily during the succeeding Cemmaes/Taunton period. One source of the metal was undoubtedly north-west Wales,<sup>97</sup>

<sup>95</sup> C.B. Burgess, 'A Palstave from Chepstow and Some Observations on the Earliest Palstaves from the British Isles', *Monmouthshire Antiquary*, 1(4) (1964), pp. 117-34.

<sup>96</sup> J.P. Northover, 'The Analysis of Welsh Bronze Age Metalwork', appendix to H.N. Savory, *Guide Catalogue to the Bronze Age Collections*, National Museum of Wales (Cardiff, 1980).

<sup>97</sup> J.P. Northover, 'The Exploration of the Long Distance Movement of Bronze in Bronze Age and early Iron Age Europe', *Bulletin of the Institute of Archaeology, University of London*, 19 (1983), pp. 45-72; B. Rohl and S. Needham, *The Circulation of Metal in the British Bronze Age: The Application of Lead Isotope Analysis*, British Museum Occasional Paper, 102 (London, 1998).

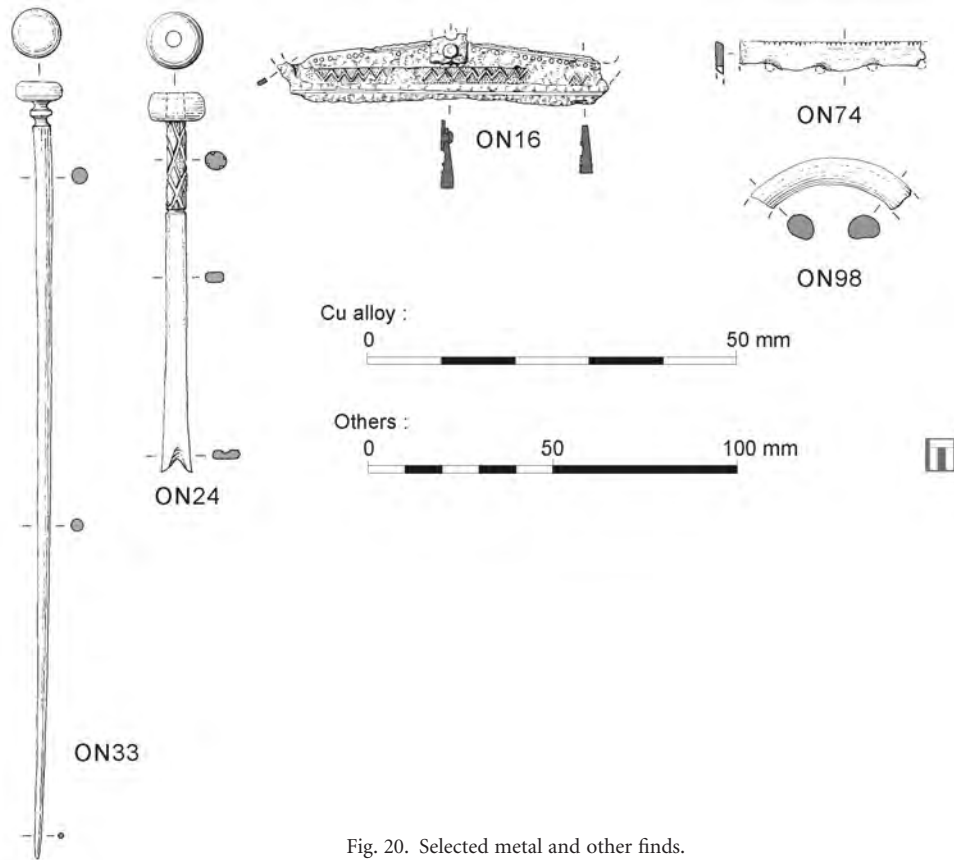


Fig. 20. Selected metal and other finds.

but it is not impossible that some had a continental origin. The most interesting feature of the composition, however, is the tin content of 15.1%. This is right at the upper end of the distribution for Acton Park period palstaves in Wales and is more typical of imported bronze re-used in Britain in the Cemmaes/Taunton period. It is suggested that bronze from the Alps with a modest tin content was re-alloyed with additional tin in north-west France and, possibly, southern England, and on both sides of the Channel palstaves and other objects with 13–16% tin became common. The Bicester palstave may be an early example of this alloying tradition and, on this basis, it could be placed towards the end of the Acton Park period.

Both the form of the Bicester palstave and its composition mean that we can assign it to the Acton Park period of the middle Bronze Age, perhaps towards its end.

#### *Romano-British and Anglo-Saxon Objects by Kayt Marter Brown*

Copper alloy objects include a complete button and a cordon hair pin (ON 33, Fig. 20) comparable to Cool's Group 6 and of probable first- to second-century date.<sup>98</sup> There was also a nail cleaner (ON 24, Fig. 20) with a spherical head made of bone, a circular shaft decorated with incised lattice pattern, and a flattened double point. None of the nail cleaners recorded at Alchester were of the same bone-headed type as this example,<sup>99</sup> although an otherwise virtually identical nail cleaner was identified at Alchester (Warks.).<sup>100</sup>

<sup>98</sup> H.E.M. Cool, 'Roman Metal Hair Pins from Southern Britain', *Archaeological Journal*, 147 (1990), pp. 157–8, fig. 5.

<sup>99</sup> G. Lloyd-Morgan, 'Objects of Copper-Alloy, Bone, Antler, Jet and Shale', in Booth et al., *Roman Alchester*, p. 228.

<sup>100</sup> N. Crummy and H. Eckardt, 'Regional Identities and Technologies of Self: Nail Cleaners in Roman Britain', *Archaeological Journal*, 160 (2003), p. 53 (fig. 3, no. 33).

Table 7. Analysis of unlooped palstave

Sample	Object	Part	Fe	Co	Ni	Cu	Zn	As	Sb	Sn	Ag	Bi	Pb	Au	Cd	S	Al	Si	Mn
R3905/1	Unlooped mid-rib palstave	blade	0.10	0.03	0.35	83.76	0.00	1.06	0.00	14.45	0.00	0.08	0.13	0.00	0.05	0.00	0.00	0.00	0.00
R3905/2			0.10	0.00	0.37	82.84	0.08	1.05	0.00	15.10	0.02	0.00	0.32	0.05	0.08	0.00	0.00	0.00	0.00
R3905/3			0.19	0.04	0.32	82.36	0.00	0.99	0.00	15.39	0.02	0.06	0.52	0.00	0.10	0.00	0.00	0.01	0.00
R3905/4			0.09	0.04	0.35	82.06	0.00	1.08	0.00	15.50	0.04	0.07	0.60	0.01	0.06	0.00	0.05	0.04	0.00
R3905/5			0.10	0.04	0.38	81.71	0.00	1.06	0.00	16.20	0.00	0.00	0.44	0.02	0.04	0.00	0.01	0.01	0.00
R3905/6			0.10	0.02	0.29	83.72	0.00	0.99	0.00	14.50	0.01	0.09	0.27	0.00	0.00	0.00	0.00	0.01	0.00
R3905/7			0.17	0.00	0.32	83.13	0.01	0.97	0.00	14.86	0.02	0.09	0.24	0.11	0.01	0.00	0.01	0.01	0.02
R3905/Mean	Unlooped mid-rib palstave	blade	0.12	0.02	0.34	82.80	0.01	1.03	0.00	15.14	0.02	0.06	0.36	0.03	0.05	0.00	0.01	0.01	0.00

Structural nails form the bulk of the ironwork, with the remainder of the assemblage composed primarily of fastening and fitting fragments and unidentifiable pieces. Personal items include a group of hobnails from within pit 23450, in all likelihood the remains of a single item of footwear. Identifiable tools include a socketed chisel (ON 67) from within stone-lined feature 22934, and a probable knife fragment (ON 109).

The only Anglo-Saxon object present was a firesteel or purse-mount – part of a purse or pouch containing flint and tinder which could be worn on a belt. The item was recovered from hearth 22613 (ON 16; Fig. 20) alongside a single Romano-British grey ware sherd, an iron loop, and a nail. There is evidence of a rivet in the middle of the upper edge, where presumably a buckle would have been attached; the ends of the clasp were incomplete but appeared to turn upwards forming a curl at each end. One face is highly decorated: two thin inlaid copper alloy bands follow the slightly arched upper edge and lower straight edge, and the central section is decorated with raised zig-zag lines and stippled infill. The sloping shoulders and elaborate decoration are more akin to continental examples, although a similarly decorated purse-mount is known from Portchester, dated to the second half of the fifth century.<sup>101</sup>

#### Catalogue of Illustrated Pieces:

ON 1. Palstave. Context 09200, subsoil.

ON 33. Complete button and cordon head pin,<sup>102</sup> 120 mm long, 2 mm diameter. Context 22863, feature 22862.

ON 24. Complete nail cleaner with spherical head of bone.<sup>103</sup> Circular section, 50 mm long, 2 mm diameter, flattening to end in double point. Incised open lattice design at top of shaft. Head 8 mm diameter. Context 22706, feature 22705.

ON 16. Anglo-Saxon firesteel/purse-mount, decorated. Context 22614, feature 22513.

#### *Other Finds* by Kayt Marter Brown

A small number of other finds were recovered from the excavations, the most significant of which are summarised here.<sup>104</sup> Two coins were recovered: a badly damaged plated silver *denarius* of early Roman date, and a penny of George VI. Three Romano-British *tegula* pieces and a small quantity of medieval roof tile fragments were the only diagnostic CBM recovered, while the fired clay assemblage comprised small abraded fragments of indeterminate type. A small collection of Romano-British vessel glass included a single dark blue vessel fragment with opaque white spirals (ON 99), presumably from a cup or bowl, and a long cylindrical phial neck fragment with a broad, horizontal folded rim (ON 49). Two dark blue glass beads, also of Romano-British date, from pit 22456 (ON 12) and post-hole 22956 (ON 39), measured 15 mm and 4 mm in diameter respectively. Two further objects comprise a single fragment from a shale bracelet (ON 98, Fig. 20) from stone-lined tank 22934, and an antler composite comb fragment (ON 74, Fig. 20) from pit group 25321, both of which occurred alongside Romano-British and Anglo-Saxon pottery in Area 16.

#### Catalogue of Illustrated Pieces:

ON 98 Fragment of shale bracelet. Context 22935, feature 22934, Area 1.

ON 74 Fragment from side plate of an antler composite comb. Context 22929, feature 22928, group 25321.

#### HUMAN BONE by JACQUELINE I. MCKINLEY

Human bone was recovered from three contexts, one each from Areas 7, 13, and 14. That from Area 7 represents the remains of a flexed inhumation burial dated (by associated grave good and radiocarbon analysis) to the Beaker period. The remains of an unurned cremation burial in Area 13 were dated by radiocarbon analysis to the early Bronze Age. A deposit of cremated bone and fuel ash recovered from one of the upper fills of a ditch in Area 14 is likely to be of a similar late Iron-Age/Romano-British date to the fills in which it lay.

#### *Methods*

Recording and analysis of the cremated bone followed the writer's standard procedure.<sup>105</sup> Age (cremated and

<sup>101</sup> D. Hinton and M. Welch, 'Iron and Bronze', in B. Cunliffe (ed.), *Excavations at Portchester Castle. Vol. II: Anglo-Saxon* (London, 1976), pp. 195–219.

<sup>102</sup> Cool, 'Roman Metal Hair Pins', p. 157, fig. 5.3.

<sup>103</sup> Cf. Crummy and Ekhardt, 'Regional Identities and Technologies', p. 53 (fig. 3, no. 33).

<sup>104</sup> Full details of the finds are in the site archive.

<sup>105</sup> J.I. McKinley, *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VIII: The Cremations*, *East Anglian Archaeology*, 69 (1994), pp. 5–21; idem, 'The Analysis of Cremated Bone', in M. Cox and S. Mays (eds.), *Human Osteology in Archaeology and Forensic Science* (London, 2000), pp. 403–21.

unburnt bone) was assessed from the stage of skeletal and tooth development,<sup>106</sup> and the patterns and degree of age-related changes to the bone.<sup>107</sup> Sex was ascertained from the sexually dimorphic traits of the skeleton.<sup>108</sup> Very few of the bones from the inhumation burial survived sufficiently intact to allow measurements to be taken and it was not possible to calculate any skeletal indices. A few non-metric traits were recorded in accordance with Berry and Berry and Finnegan.<sup>109</sup> The degree of erosion to the bone was recorded using the writer's system of grading.<sup>110</sup> A summary of the results is presented in Table 8; details are held in the archive.

Table 8. Summary of results from analysis of human bone

Context	Cut	Deposit type	Quantification	Age/sex	Pathology
<i>cremated bone</i>					
22594	22593	un. burial + rpd	713.5 g	adult c.35–45 yr.	osteophytes – T articular process
23037	23031	rpd/ ?un. burial + rpd	450.5 g	adult c.35–50 yr.	osteophytes – C1–2 anterior facets, C articular process
<i>unburnt bone</i>					
25127	25126	inhumation burial	c. 75%	adult c.30–40 yr. male	calculus; hypercementosis; osteophytes – scapulae glenoid fossae

KEY: un. – unurned; rpd – redeposited pyre debris; C – cervical; T – thoracic.

### Results

The inhumation and cremation graves (25126 and 22593) were heavily truncated and survived to depths of only 0.05 m and 0.07 m. There were some indications for displacement of bone within the former as a result of this disturbance, but the main impact was that of heavy fragmentation of the bone, with almost no skeletal elements surviving intact and some heavily comminuted (Fig. 6). The level of skeletal recovery (Table 8) is partly a consequence of accidental removal of some bone from the grave (for example, frontal skull), but the loss of most of the axial trabecular bone is due to degradation within the burial environment (compact bone graded 1–2). A variety of factors may affect bone preservation, the most important of which generally comprise the nature of the soil matrix and water permeability.<sup>111</sup> In this instance, it appears that the alkaline burial environment coupled with its effect on the water permeability has had a particularly deleterious affect on the trabecular bone.

Some bone may have been lost from cremation grave 22593 as a result of disturbance, but the quantity is unlikely to have been substantial. The cremation-related deposit (possible burial remains) in ditch 23031 was sealed by the final episode of backfilling/silting and does not appear to have been disturbed. The cremated bone is in good visual condition and includes a relatively high proportion of trabecular as well as the more taphonomically stable and robust compact bone.

A minimum of three individuals are represented within the assemblage, one from each deposit (Table 8). Two small fragments of cranium from cremation burial 22594 are noticeably thinner than the rest of the skull fragments recovered and are likely to be derived from a young immature (neonate/infant) individual. The absence of any other remains suggestive of this second individual may reflect a number of influences. Where cremated and buried alone such young individuals are often represented by very small quantities of bone, and where cremated

<sup>106</sup> G. van Beek, *Dental Morphology: An Illustrated Guide* (Bristol, 1983); L. Scheuer and S. Black, *Developmental Juvenile Osteology* (London, 2000).

<sup>107</sup> D.R. Brothwell, *Digging Up Bones* (London, 1972); J.E. Buikstra and D.H. Ubelaker, *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeological Survey Research Series, 44 (1994).

<sup>108</sup> W.M. Bass, *Human Osteology*, Missouri Archaeological Society (1987); Buikstra and Ubelaker, *Standards for Data Collection*; N.-G. Gejvall, 'Determination of Burnt Bones from Prehistoric Graves', *Ossa Letters*, 2 (1981), pp. 1–13.

<sup>109</sup> A.C. and R.J. Berry, 'Epigenetic Variation in the Human Cranium', *Journal of Anatomy*, 101(2) (1967), pp. 261–379; M. Finnegan, 'Non-Metric Variations of the Infracranial Skeleton', *Journal of Anatomy*, 125(1) (1978), pp. 232–7.

<sup>110</sup> J.I. McKinley, 'Compiling a Skeletal Inventory: Disarticulated and Co-Mingled Remains', in M. Brickley and J.I. McKinley (eds.), *Guidelines to the Standards for Recording Human Remains*, British Association for Biological Anthropology and Osteoarchaeology and Institute for Field Archaeology (2004), fig. 6.

<sup>111</sup> J. Henderson, 'Factors Determining the State of Preservation of Human Remains', in A. Boddington et al. (eds.), *Death, Decay and Reconstruction* (Manchester, 1987), pp. 43–54; C. Nielsen-Marsh et al., 'The Chemical Degradation of Bone', in Cox and Mays, *Human Osteology*, pp. 439–54; A. Millard, 'The Deterioration of Bone', in D.R. Brothwell and A.M. Pollard (eds.), *Handbook of Archaeological Sciences* (Chichester, 2001), pp. 637–48.

and buried together with an older individual (as often appears to have been the case) the lack of representation can be decreased still further where the proportion of the bone collected from the pyres site for inclusion in the burial is dominated by the remains of the larger individual (incomplete skeletal recovery from the pyre site for burial is a characteristic of the cremation rite).<sup>112</sup> Another alternative is that these few immature bone fragments represent a 'token' inclusion of remains derived from another cremation, most of the remains of which have been disposed of elsewhere.

Early Bronze-Age singletons and small groups of cremation burials such as these are relatively common.<sup>113</sup> Adults of both sexes appear to be represented in such burials and immature remains are present in some cases (most frequently in dual burials). Locally, the remains of a middle Bronze-Age cremation burial were recovered during the excavations at Alchester (Site A) c.1.5 km south, together with small groups of early Romano-British cremation burials from Sites B and C (c.1–1.25 km to the south).<sup>114</sup>

A few minor pathological changes were observed in the remains of all three adults (Table 8). Slight calculus deposits (calcified plaque/tartar) were observed on most of the 14 teeth recovered from inhumation grave 25126. No destructive lesions were observed in the teeth or supportive structure (11 socket positions). Slight hypercementosis (abnormal root cement formation, possibly reflective of minor trauma) was seen in one molar root. The only other lesions recorded were slight osteophytes (new bone on joint surface margins) seen in spinal and non-spinal joints of all three adults. Such lone lesions often appear to be a 'normal accompaniment of age', reflective of 'wear-and-tear'.<sup>115</sup> Although the heavily fragmented condition of the remains made it impossible to record much metric data, it was observed that the upper limb bones of the mature adult male 25126 are robust, the supinator crests of the ulna being particularly strongly marked, suggesting he was regularly engaged in activity requiring forceful turning (pronating) action in the forearms.

Most of the cremated bone is white in colour, indicating a high level of oxidation.<sup>116</sup> Some slight colour variations reflective of incomplete oxidation were recorded in a few bone fragments from both deposits: 22594 was slightly grey in two elements of the upper/lower limb shafts, and 23037 grey/blue and a few brown/black in 12 elements from all skeletal areas. This level of variation is unlikely to be indicative of any unusual aspects in the cremation process/rite, but the difference between the two deposits may indicate a disparity in the size of the pyres (insufficient temperature maintained for a long enough period in the later cremation) which could be of temporal significance, or possibly something as simple as wet weather curtailing the processing in the case of 23037.<sup>117</sup>

The weight of bone recovered from the early Bronze-Age burial represents c.44.6% by weight of the average expected from an adult cremation,<sup>118</sup> and lies in the median range of weights recovered from Bronze-Age burials.<sup>119</sup> The weight of bone from the later deposit represents a much smaller proportion of the expected average (c.28.1%) and falls within the lower-median range recovered from Romano-British burials.<sup>120</sup> A similar temporal variation in bone weights was observed in the cremated remains from Alchester.<sup>121</sup>

In both deposits the majority of the bone was recovered from the 10 mm sieve fractions (53–63%), with maximum fragment sizes of 62 mm and 79 mm respectively. The higher figures recorded from deposit 23037 in both cases is likely to reflect its undisturbed status. There is no evidence to indicate deliberate fragmentation of the bone occurred prior to burial.

As is commonly observed, identifiable fragments from all skeletal areas were included in both burials (c.52–56% of bone by weight identifiable to skeletal element). The paucity of axial skeletal elements (c.5–7% identifiable bone), largely at the expense of lower limb elements (55–61%), is common and is more likely to represent poor survival of trabecular bone than deliberate selection. Fragments of the small bones of the hand/foot and tooth root/enamel were recovered from both deposits: three and twenty-five elements respectively from the early Bronze-Age

<sup>112</sup> McKinley, *The Anglo-Saxon Cemetery at Spong Hill*, J.I. McKinley, 'Bronze Age "Barrows" and the Funerary Rites and Rituals of Cremation', *Proceedings of the Prehistoric Society*, 63 (1997), pp. 129–45.

<sup>113</sup> For example, J.I. McKinley, 'The Human Remains from Imperial College Sports Ground and Harlington RMC Land, Middlesex', unpublished report for Wessex Archaeology (2009).

<sup>114</sup> A. Boyle, 'Human Skeletal Assemblage', in Booth et al., *Roman Alchester*, pp. 385–94.

<sup>115</sup> J. Rogers and T. Waldron, *A Field Guide to Joint Disease in Archaeology* (Chichester, 1995), pp. 25–6.

<sup>116</sup> J.L. Holden et al., 'Scanning Electron Microscope Observations of Incinerated Human Femoral Bone: A Case Study', *Forensic Science International*, 74 (1995), pp. 17–28; J.L. Holden et al., 'Scanning Electron Microscope Observations of Heat-Treated Human Bone', *Forensic Science International*, 74 (1995), pp. 29–45.

<sup>117</sup> J.I. McKinley, 'In the Heat of the Pyre: Efficiency of Oxidation in Romano-British Cremations – Did it Really Matter?', in C.W. Schmidt and S.A. Symes (eds.), *Beyond Recognition: The Analysis of Burned Human Remains* (Oxford, 2008), pp. 163–84.

<sup>118</sup> J.I. McKinley, 'Bone Fragment Weights and Size of Bone from Modern British Cremations and its Implications for the Interpretation of Archaeological Cremations', *International Journal of Osteoarchaeology*, 3 (1993), pp. 382–7.

<sup>119</sup> McKinley, *Bronze Age "Barrows" and the Funerary Rites*.

<sup>120</sup> J.I. McKinley, 'Human Remains, Pyre Technology and Cremation Rituals', in H.E.M. Cool (ed.), *The Roman Cemetery at Brougham, Cumbria: Excavations 1966–67*, Britannia Monograph, 21 (2004), pp. 296–7.

<sup>121</sup> Boyle, 'Human Skeletal Assemblage', table 8.1.

burial, seven and thirteen from the later deposit. It has been suggested that the frequency of these small bones may be linked to the method adopted to recover the bone from the pyre site for burial: raking or scraping-off of the upper levels of the *in situ* pyre debris (where the bone would be concentrated) with subsequent winnowing (using a basket or water) being more likely to ensure the random recovery of all bone, including the smaller elements, than could be achieved via hand recovery of individual bones.<sup>122</sup> In this case both deposits appear likely to have been recovered via raking. A temporal variation in the frequency of these small elements has been observed at some sites, with earlier prehistoric burials including more in comparison with later prehistoric and Romano-British,<sup>123</sup> but there is inconclusive evidence for a general shift in practice.

A small quantity (0.2 g, two fragments) of small mammal/bird bone was recovered amongst the human remains from grave 22593. The inclusion of animal offerings on the pyre is a fairly common characteristic of the rite; for example, an average of c.15% of Bronze-Age burials examined by the writer (from a sample of 31 cemeteries) contained cremated animal bone.<sup>124</sup>

Both deposits of cremated bone formed part of a charcoal-rich matrix (pyre debris). Recovery of the fill from grave 22593 as quadrants allowed the distribution of the archaeological components to be analysed and this showed that the majority of the bone (90%) lay in the western half of the grave (54% in the north-west quadrant). In this case, the pyre debris is likely to have been deposited after the bone collected for burial, probably held within an organic container of skin or textile, was placed in the grave. The formation process of deposit 23037 is unclear since the material was recovered as a single entity. The presence of pyre debris within grave fills is believed to indicate the proximity of the pyre sites to the place of burial, even where no direct evidence for the sites survives.

#### ISOTOPE ANALYSIS OF THE BEAKER BURIAL by MANDY JAY, JANET MONTGOMERY, and MAURA PELLEGRINI

Isotope analysis was undertaken on the inhumation burial from grave 25126 as part of the Beaker People Project.<sup>125</sup> The analyses were of bone collagen, dentine collagen, and tooth enamel, producing data for  $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{34}\text{S}$  (all from collagen), and  $^{87}\text{Sr}/^{86}\text{Sr}$  and  $\delta^{18}\text{O}$  (both from enamel mineral, the latter from phosphate). These data are useful for interpreting mobility, environment, subsistence, and diet and are presented in Table 9. They are all considered to be of acceptable quality, based on normal quality indicators. These, together with analytical method information, will be available in the Beaker People Project monograph and database which was in the process of preparation for public access at the time of writing. The reference number for this individual within that database is SK 314.

Table 9. Detailed results of isotope analysis

	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	$\delta^{34}\text{S}$ (‰)	$^{87}\text{Sr}/^{86}\text{Sr}$	Sr concentration (ppm)	$\delta^{18}\text{O}_{\text{phosphate}}$ (‰)
Bone collagen	-21.8	9.6	1.6			
Dentine collagen	-21.6	9.9	No data			
Tooth enamel mineral				0.708137	29	18.8

In the context of over 350 individuals of similar late Neolithic or early Bronze-Age date from across Britain in the project database, the  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values are consistent with the contemporaneous populations both in terms of local environmental background and dietary input. The data are indicative of an individual consuming significant terrestrial animal protein, without a visible contribution from aquatic, in particular marine, proteins. In other words he was likely to have been eating plenty of domesticated animal products, but very little, if any, fish. Since this man was buried in Oxfordshire, the location is about as far from the sea as is possible in England. The

<sup>122</sup> J.I. McKinley, 'The Cremated Human Bone from Burial and Cremation-Related Contexts', in A.P. Fitzpatrick (ed.), *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, Volume 2*, Wessex Archaeology Report, 12 (1997), p. 68.

<sup>123</sup> McKinley, 'Human Remains, Pyre Technology and Cremation Rituals'; McKinley, 'The Human Remains from Imperial College'; F.E. Zeuner, 'Cremations', in R.J.C. Atkinson et al. (eds.), *Excavations at Dorchester, Oxon* (Oxford, 1951), pp. 124–7.

<sup>124</sup> J.I. McKinley, 'Human Bone and Funerary Deposits', in K.E. Walker and D.E. Farwell (eds.), *Twyford Down, Hampshire Archaeological Investigations on the M3 Motorway from Bar End to Compton, 1990–93*, Hampshire Field Club Monograph, 9 (2000), pp. 85–119.

<sup>125</sup> The Beaker People Project is an inter-disciplinary and multi-institutional project funded by the AHRC, looking particularly at mobility, diet and environment through the isotopic analysis of late Neolithic and early Bronze-Age burials from across Britain.



$\delta^{34}\text{S}$  data are likely to be reflecting local environmental factors, including distance from the coast ('sea spray' effects being relevant closer to the coast, involving higher sulphur isotope ratios) and geology. The lowest values obtained for the project are all from central English counties such as Oxfordshire, Buckinghamshire, and Northamptonshire. The low  $\delta^{34}\text{S}$  value for bone collagen is, therefore, consistent with the location. Unfortunately, the collagen yield for the dentine collagen was too low to obtain an analysis.

The burial site is in an area of Jurassic oolite geology and the relatively low  $^{87}\text{Sr}/^{86}\text{Sr}$  ratio is consistent with this, matching, for instance, other samples in the database from Oxfordshire such as Barrow Hills, Radley and Linch Hill, Stanton Harcourt. The  $\delta^{18}\text{O}_{\text{phosphate}}$  value, in the context of the project database, is also consistent with the burial location, although it is the highest value obtained for the central England area for contemporaneous material. The average for this area is  $17.8 \pm 0.6\%$ , so that it fits easily within  $2\sigma$  and is not an outlier in the dataset. The differences between dentine collagen values and those for bone collagen are not significant. Since the formation period of the dentine will cover a period of childhood and that from bone will be an averaged value over an individual's lifetime, significant differences might indicate lifetime movements between environments or changes in diet. Since significant differences are not present, these changes are not indicated. Overall, the data are consistent with a lifetime spent in the general location of the burial area.

#### ANIMAL BONE by LORRAIN HIGBEE

The animal bone assemblage comprises 5,171 fragments, or c.33.3 kg (Table 10), the majority of which was recovered during the normal course of hand-excavation. This figure is a basic fragment count; once conjoins are taken into account the number falls to 3,034 (Table 10).

Table 10. Quantity of animal bone by area (the other areas category includes material recovered from the evaluation or of uncertain provenance)

Area	Fragment count	%	Weight (g)	%
1	248	5	2066	6.2
5A	3	0.05	3	0.009
7	870	17	3863	11.6
10	18	0.3	20	0.06
13	56	1	482	1.4
14	1201	23.2	6966	20.9
15	521	10	4311	12.9
16	1359	26.2	11543	34.7
other areas	895	17.3	4009	12
<b>Total</b>	<b>5171</b>	<b>100</b>	<b>33263</b>	<b>100</b>

This report focuses on the animal bone from late Iron-Age and Romano-British contexts. The individual assemblages from these two periods are rather modest in size and this limits their potential for detailed analysis. Combining the results in order to overcome the problems associated with small samples of bones improves this situation slightly; the sample is still quite modest in size but fits the minimum requirements for more detailed analysis.<sup>126</sup> The small groups of bones from other periods are summarised in the archive.

#### Methods

All anatomical elements were identified to species where possible, with the exception of ribs, which were assigned to general size categories. Where appropriate, the following information was recorded for each fragment: element, anatomical zone, anatomical position, fusion data, tooth ageing data, butchery marks, metrical data, gnawing, burning, surface condition, pathology, and non-metric traits. Associated bone groups (ABGs)<sup>127</sup> were assigned an additional unique number. This information was directly recorded into a relational database (in MS Access) and

<sup>126</sup> E. Hambleton, *Animal Husbandry Regimes in Iron Age Britain: A Comparative Study of Faunal Assemblages from British Archaeological Sites*, BAR BS, 282 (1999), pp. 39–40.

<sup>127</sup> A. Grant, 'Animal Husbandry', in B. Cunliffe (ed.), *Danebury: an Iron Age Hillfort in Hampshire. Volume 2. The Excavations 1969–1978: The Finds*, CBA Research Report, 52 (1984), pp. 496–548; J. Morris, 'Re-Examining Associated Bone Groups from Southern England and Yorkshire, c.4000 BC to AD 1550', Bournemouth University PhD thesis (2008);

Table 11. Number of specimens identified to species (or NISP) by period (counts include ABGs)

Species	Late Neolithic/ Early Bronze Age	Late Iron Age	Late Iron Age/ Romano-British	Romano- British	Anglo- Saxon	Medieval	Post- Medieval	UD/US	Total
cattle		49	68	97	27	2	14	13	270
sheep/goat	1	70	57	101	16		4	3	252
pig		15	11	10	14		1	1	52
horse		13	24	26	2		2	2	69
dog		1	5	7			1	1	15
red deer		1	1	1	1			1	5
deer			1		1				2
field vole				1					1
mole				4					4
domestic fowl				1					1
small wader				1					1
<b>Total identified</b>	<b>1</b>	<b>149</b>	<b>167</b>	<b>249</b>	<b>61</b>	<b>2</b>	<b>22</b>	<b>21</b>	<b>672</b>
large mammal	2	112	113	173	40	3	46	11	500
medium mammal		34	65	93	52			6	250
small mammal				1					1
bird indet.	1	1	1	3	1			1	8
unidentifiable	2	372	479	447	162	2	70	69	1603
<b>Total unidentifiable</b>	<b>5</b>	<b>519</b>	<b>658</b>	<b>717</b>	<b>255</b>	<b>5</b>	<b>116</b>	<b>87</b>	<b>2362</b>
<b>Overall total</b>	<b>6</b>	<b>668</b>	<b>825</b>	<b>966</b>	<b>316</b>	<b>7</b>	<b>138</b>	<b>108</b>	<b>3034</b>
Overall %	0.2	22	27.2	32	10.4	0.2	4.5	3.5	100

cross-referenced with relevant contextual information. The site archive includes the database and an archive version of this report, complete with supporting tables and figures of summary data.

Quantification methods applied to the assemblage include the number of identified specimens (NISP), minimum number of elements (MNE), minimum number of individuals (MNI), and meat weight estimates (MWE).

### Results

Bone preservation is generally good to fair. The vast majority of post-cranial bones have intact cortical surfaces with little or no signs of weathering. A small number of poorly preserved fragments are present (7% of the total), most are from late Iron-Age and Romano-British ditch fills, notably boundary ditch group 22440 and enclosure ditch group 25350. These contexts include bones in different states of preservation and this suggests that the poorly preserved fragments are likely to be residual having been redeposited from surface accumulations or reworked from earlier deposits.

The proportion of gnawed bones is very low (only 2%), which suggests that bone waste was largely inaccessible to scavenging carnivores, perhaps because it was rapidly deposited into open features.

### Spatial Distribution

Bone was recovered from Areas 1, 5A, 7, 10, and 13–16 of the site. The quantity of animal bone from each area is extremely variable and this limits the possibility of spatial comparison. Areas 1, 5A, 10, and 13 all produced very small amounts of bone (<1%–5% of the total by fragment count: see Table 10), while Areas 7 and 14–16 produced modest sized assemblages (10%–26% of the total) of largely late Iron-Age and Romano-British date.

J. Morris, 'Associated Bone Groups: Beyond the Iron Age', in J. Morris and M. Maltby (eds.), *Integrating Social and Environmental Archaeologies: Reconsidering Deposition*, BAR IS, 2077 (2010), pp. 12–23.

In terms of the distribution between different feature types, most of the animal bone is from pits (c.46%) and ditches (c.41%) (Table 12). The rest is from a range of other feature types, including post-holes, gullies, corn driers, layers, and a grave. There was very little difference in the distribution of bone fragments between feature types for the main periods of occupation. The small Anglo-Saxon assemblage is almost entirely from pits (c.78%) and stone-lined feature 22934 (c.20%), while most (c.77%) of the later material is from layers.

### *Species Represented*

Approximately 22% of fragments are identifiable to species and a further 25% to general size categories (Table 11). The assemblage is dominated by the bones from livestock species, in particular cattle and sheep, which together with pig account for c.85% of the total NISP. Horse bones are also fairly common and account for a further c.10% of NISP. Less common species include dog, red deer, field vole, mole, domestic fowl, and an indeterminate species of small wader. A few frog/toad and eel bones were recovered from sample residues (not quantified in Table 11).

### *Late Iron Age/Romano-British*

The combined late Iron-Age and Romano-British components account for 81% of the total assemblage, of which c.23% can be identified to species and element.

### *Livestock Species*

Hambleton has demonstrated that the optimum sample size for a reliable assessment of the relative importance of livestock species is a NISP count over 300 and an MNI count over 30.<sup>128</sup> The combined NISP counts for the two main periods at Whitelands Farm exceed this minimum requirement by just 178 bones, and the MNI count is precisely 30.

Three of the four standard quantification methods (NISP, MNE, and MNI: Table 13) indicate that cattle and sheep were present in near equal proportions, 43%–44% and 46%–48% respectively, but perhaps with marginally more emphasis on sheep. Meat weight estimates on the other hand clearly indicate that cattle, by virtue of their greater size, provided the majority of the meat consumed during the late Iron Age/Romano-British period. All four methods indicate that pigs were of minor importance (6%–10%).

Table 12. NISP by feature/deposit type and period (the other periods category includes material from early prehistoric, medieval, post-medieval, and modern contexts)

Period	Pit		Ditch		Other		Total
	No.	%	No.	%	No.	%	
Late Iron Age	289	43.2	370	55.3	9	1.3	668
Late Iron Age/Romano-British	425	51.5	375	45.4	25	3	825
Romano-British	383	39.6	459	47.5	124	12.8	966
Anglo-Saxon	246	77.8	8	2.5	62	19.6	316
other periods	12	7.9	22	14.5	117	77.4	151
undated/unstratified	47	43.5	4	3.7	57	52.7	108
<b>Total</b>	<b>1402</b>		<b>1238</b>		<b>394</b>		<b>3034</b>
<i>% Total</i>	<i>46.2</i>		<i>40.8</i>		<i>13</i>		<i>100</i>

This pattern of relative frequency is fairly typical of the majority of late Iron-Age/Romano-British sites in the upper Thames Valley. The sites in this region do not generally exhibit the same high sheep bone frequencies recorded at contemporary sites in other English regions (for example Wessex).<sup>129</sup> Contemporary sites in Oxfordshire with similar species proportions include Alchester, Asthall, and Barton Court Farm.<sup>130</sup> There is of course some variation to this general pattern and at other sites in the county there is a more obvious difference in species proportions; some have high cattle bone frequencies (>50%), for example Farmoor, Fields Farm, and Watkins Farm, while others have high sheep bone frequencies, for example Ashville Trading Estate.<sup>131</sup>

<sup>128</sup> Hambleton, *Animal Husbandry Regimes in Iron Age Britain*, pp. 39–40.

<sup>129</sup> *Ibid.* p. 46.

<sup>130</sup> A. Powell and K.M. Clark, 'Animal Bone', in Booth et al., *Roman Alchester*, pp. 395–416; A. Powell et al., 'The Animal Bones', in Booth, *Asthall*, pp. 141–7; B. Wilson, 'Faunal Remains', microfiche 8: A1–G10, in D. Miles, *Archaeology at Barton Court Farm* (Oxford, 1984), table 6 and fig. 2; Table 14.

<sup>131</sup> B. Wilson, 'The Vertebrates', in G. Lambrick and M. Robinson, *Iron Age and Roman Riverside Settlements at Farmoor, Oxfordshire*, CBA Research Report, 32 (1979), pp. 128–33; B. Charles, 'The Animal Bone', in Cromarty et al.,

Table 13. Late Iron-Age/Romano-British: relative frequency of livestock species by number of specimens present (NISP), minimum number of elements (MNE), minimum number of individuals (MNI), and estimated weight (MWE), combined result for late Iron Age and Romano-British assemblages

Quantification method	cattle	%	sheep	%	pig	%
NISP	214	43.9	237	48.6	36	7.3
MNI	13	43.3	14	46.6	3	10
MNE	161	44.1	169	46.3	35	9.5
MWE	3575	82	525	12	255	6

(Note: meat weight estimate based on 275 kg for cattle, 37.5 kg for sheep, and 85 kg for pig.)

### Cattle

All parts of the beef carcass are represented in the assemblage, suggesting local slaughter and consumption. Some elements are under-represented, but this is likely to be a product of small sample size. Loose teeth are the most common skeletal elements and this suggests that the body part data are skewed due to fragmentation. Mandibles are also fairly numerous and the most common post-cranial bones are from the forequarters (humerus and radius) and lower hindquarters (tibia and metatarsal).

Age information is available for only 17 mandibles. Most (41%) are from animals aged 18–30 months, the rest from adult (23.5%), old adult (12%), and senile (23.5%) animals. The information is limited, but the bimodal mortality pattern suggests that there was no particular emphasis on any one product. Young, probably male, animals were slaughtered at the optimum age for prime beef, but most animals were maintained into adulthood, presumably because secondary products (milk and probably manure) and traction were more important.<sup>132</sup> The epiphyseal fusion data indicates a similar pattern, with c.30% of cattle slaughtered before the age of 24–30 months (intermediate fusion category) and a high (46%) survival rate beyond five years.

Contemporary sites in Oxfordshire with similar mortality curves (c.60% survival rate beyond mandibular wear stage D) that have been interpreted as indicative of an emphasis on secondary products include Alchester, Asthall, Ashville Trading Estate, Barton Court Farm, and Watkins Farm.<sup>133</sup>

### Sheep

The body part data for sheep are similar to those for cattle and suggest local slaughter and consumption. Some skeletal elements are under-represented or entirely absent, but this is likely to be a product of small sample size. Loose teeth are the most common skeletal elements and again this suggests that the body part data are skewed due to fragmentation. Mandibles are also present in reasonable numbers and the most common post-cranial bones are from the lower extremities (tibia, metacarpal, and metatarsal). These elements generally show a good survival and recovery rate in most animal bone assemblages.<sup>134</sup>

Two ABGs were recorded from Romano-British pit fill 23478, one the partial skeleton of a juvenile animal less than 13–16 months old and the other the partial remains of a foetus. Sheep generally lamb between March and May, depending on the breed;<sup>135</sup> it is therefore likely that these two animals were deposited sometime in the late winter or spring. The presence of neonatal sheep remains further indicates that the sheep flock, or at least pregnant ewes, were kept close to the site during the difficult winter months and into the spring lambing season.

'Bicester Fields Farm', pp. 201–22; B. Wilson and E. Allison, 'The Animal and Fish Bones', in T.G. Allen, *An Iron Age and Romano-British Enclosed Settlement at Watkins Farm, Northmoor, Oxon.*, Thames Valley Landscapes Monograph, 1 (1990), pp. 57–98.

<sup>132</sup> Hambleton, *Animal Husbandry Regimes in Iron Age Britain*, p. 82.

<sup>133</sup> Powell and Clark, 'Animal Bone', p. 403; Powell et al., 'The Animal Bones', pp. 141–3; J. Hamilton, 'A Comparison of the Age Structure at Mortality of Some Iron Age and Romano-British Sheep and Cattle Populations', in M. Parrington, *The Excavation of an Iron Age Settlement, Bronze Age Ring-Ditches and Roman Features at Ashville Trading Estate, Abingdon, Oxfordshire 1974–76*, CBA Research Report, 28 (1978), pp. 126–33; Wilson, 'Faunal Remains'; Wilson, and Allison, 'The Animal and Fish Bones', pp. 60–1.

<sup>134</sup> Hambleton, *Animal Husbandry Regimes in Iron Age Britain*, p. 31.

<sup>135</sup> G. Jones, 'Tooth Eruption and Wear Observed in Live Sheep from Butser Hill, the Cotswold Farm Park and Five Farms in the Pentland Hills, UK', in D. Ruscillo (ed.), *Recent Advances in Ageing and Sexing Animal Bones* (Oxford, 2006), pp. 155–78.

Table 14. Late Iron-Age/Romano-British: relative frequency of livestock species by number of specimens present (or NISP) compared to contemporary sites in Oxfordshire

Site	Cattle		Sheep		Pig	
	NISP	%	NISP	%	NISP	%
Bicester (this report)	214	43.9	237	48.6	36	7.3
Alchester (Powell and Clark, 2001)	1256	47.7	1106	42	268	10
Ashville Trading Estate (Wilson et al., 1978)	1136	33.2	1932	56.6	344	10
Asthall (Powell et al., 1997)	409	40	495	48.5	118	11.5
Barton Court Farm (Wilson, 1984)	443	46.6	415	43.6	93	9.7
Farmoor (Wilson, 1979)	293	58.2	175	34.7	35	7
Fields Farm (Charles, 2000)	437	65.9	192	28.9	34	5.2
Watkins Farm (Wilson and Allison, 1990)	914	55	602	36.2	146	8.8

Note: in some instances the NISP totals from separate phases have been combined.

Age information is available for 23 sheep mandibles. These indicate that animals from a range of ages were selected for slaughter, from lambs aged 6–12 months through to mature adults aged 8–10 years. The kill-off pattern shows a fairly gradual rate of mortality with minor peaks of slaughter amongst animals aged 1–2 years and 4–6 years. No firm conclusions can be drawn from the limited age information available from epiphyseal fusion of the post-cranial skeleton.

The mortality pattern based on mandibles indicates a high (87%) survival rate beyond 6–12 months; this reflects a regime in which older animals were exploited for meat and suggests that secondary products (wool, milk, and manure) were more important than meat production. This fits with the general notion that sheep husbandry during the late Iron-Age/Romano-British period was closely associated with extensive arable cultivation.<sup>136</sup> Contemporary sites in Oxfordshire with similar mortality profiles include most of those already listed above.

### Pig

Only 36 pig bones were recovered from late Iron-Age/Romano-British contexts; the range of body parts indicates that whole carcasses are represented, as is typical of most contemporary assemblages.<sup>137</sup> Age information is available for two mandibles, both of which are from animals under two years of age (mandibular wear stages C and D). Pigs are essentially meat animals and are generally killed at an earlier age than other livestock species.

### Horse

Of the 63 horse bones from late Iron-Age/Romano-British contexts, 33% belong to the semi-complete skeleton of a neonate from dump layer 23532. The bones and teeth of this animal are rather fragmented but general assessment of the available age information suggests that the animal was probably full-term but died soon after birth. Natural losses at this vulnerable age are to be expected.

The other horse bones are divided almost equally between a number of pits and ditches, and with the exception of a single humerus from an immature animal (<15–18 months), all are from adult animals. Most parts of the horse carcass are represented in the assemblage and the remains are fairly scattered between contexts, with few articulating units or associated groups. A notable exception to this is a small group of thoracic vertebrae from pit fill 22884.

It is unclear whether or not horse carcasses were processed for their meat or skins due to the lack of butchery marks. However, evidence from other contemporary sites, including the nearby extramural site at Alchester, indicates that this is highly likely, although it is suggested that dogs were the probable recipients of the meat.<sup>138</sup>

<sup>136</sup> Hambleton, *Animal Husbandry Regimes in Iron Age Britain*, p. 70; A. King, 'Animal Bones and the Dietary Identity of Military and Civilian Groups in Roman Britain, Germany and Gaul', in T.F.C. Blagg and A. King (eds.), *Military and Civilian in Roman Britain: Cultural Relationships in a Frontier Province*, BAR BS, 136 (1984), p. 198; A. King, 'Food Production and Consumption – Meat', in R.F.J. Jones (ed.), *Roman Britain: Recent Trends* (Sheffield, 1991), p. 17; R. Thomas and S. Stallibrass, 'For Starters: Production and Supplying Food to the Army in the Roman North-West Provinces', in S. Stallibrass and R. Thomas (eds.), *Feeding the Roman Army: The Archaeology of Production and Supply in NW Europe* (Oxford, 2008), p. 11.

<sup>137</sup> Hambleton, *Animal Husbandry Regimes in Iron Age Britain*, p. 30; Powell and Clark, 'Animal Bone', p. 398.

<sup>138</sup> Powell and Clark, 'Animal Bone', p. 401.

### *Dog*

Thirteen dog bones were recovered from eight separate features. One of the bones, a tibia from pit fill 23187, has several fine knife cuts across its surface, marks consistent with skinning. Evidence that dogs were processed for their skins has previously been recorded at other local sites, including Asthall, Ashville Trading Estate, and Watkins Farm.<sup>139</sup>

### *Other Mammals*

Four pieces of red deer antler were recovered from late Iron-Age/Romano-British contexts; one includes the burr, indicating that it was collected after it was shed naturally, and all four show signs of having been reduced into smaller sections using a saw. This evidence overwhelmingly indicates that antler was valued as a raw material for the manufacture of objects.<sup>140</sup>

A few small mammal bones were also recovered. The mole is likely to be intrusive, due to its burrowing habit, while others such as the field vole were merely part of the general environmental background to the site.

### *Birds*

Only two bird bones were recovered from the entire assemblage. One is a domestic fowl coracoid and the other a scapula from a small indeterminate species of wader. The presence of medullary bone in the marrow cavity of the domestic fowl coracoid indicates that this particular bone is from a female in-lay.

### *Butchery*

Despite the generally excellent preservation state of the Whitelands Farm assemblage, butchery marks are extremely rare. Most cut and chop marks (72%) were observed on cattle bones and relate to skinning, disarticulation, and filleting meat off the bone. Limited evidence for marrow extraction was also noted. Butchery marks were noted on a small number of horse and dog bones; the former might have been processed for their skins and/or meat, while the latter appear to have been processed for their skins. The use of saws was restricted to craft activities, notably the reduction of antlers into smaller sections for the manufacture of objects.

### *Conclusions*

Detailed analysis of the animal bone assemblage from Whitelands Farm has been significantly limited due to small sample size. The unequal spread of material between areas of the site and between periods has severely hampered analysis of any spatial and chronological changes at the intra-site level. The same limiting factors also affect the validity of comparing species proportions, mortality patterns, and biometric data at the inter-site level, since even the moderately sized late Iron Age/Romano-British assemblage includes only a small sample of age and biometric data.

In general terms, the Whitelands Farm assemblage is similar to those from contemporary sites in the upper Thames valley, where the majority of late Iron-Age/Romano-British assemblages have near equal proportions of cattle and sheep, and few pigs. Slaughter patterns suggest that both main livestock species were managed for secondary products and that meat production was of minor importance. This mortality pattern contrasts with the more intensive husbandry regimes recorded at some sites in other English regions and is probably linked to extensive arable agriculture. This notion is supported by the low frequency of pig bones at the site which probably indicates that much of the landscape had been opened up to cultivation. There is little evidence for the exploitation of wild resources beyond the collection of shed antler for object manufacture or the occasional acquisition of small wading birds for food.

## CHARRED PLANT REMAINS by CHRIS J. STEVENS

Seventy-two environmental samples taken from the excavation were processed by standard flotation methods and assessed for wood charcoal and charred plant remains.<sup>141</sup>

A large number of the samples, especially those outside the main area of activity, had few charred plant remains and on the basis of the assessment eleven of the richer and more contextually significant samples were selected

<sup>139</sup> Powell et al., 'The Animal Bones', p. 145; B. Wilson et al., 'The Animal Bones', in Parrington, *Ashville Trading Estate*, p. 122; Wilson, and Allison, 'The Animal and Fish Bones', in Allen, *An Iron Age and Romano-British Enclosed Settlement at Watkins Farm*, p. 97.

<sup>140</sup> A. MacGregor, *Bone, Antler, Ivory and Horn: The Technology of Skeletal Materials since the Roman Period* (London, 1985), p. 68.

<sup>141</sup> 'Land South-West of Bicester, Oxfordshire, Post-Excavation Assessment Report and Updated Project Design for Analysis and Publication', Wessex Archaeology, unpublished client report (2009).

for analysis. These were from Romano-British features in Area 16: the stone-lined pits (22837 and 22934), and the stone-lined channel (23354; group 25325) and drainage ditch (23361; group 25319) associated with stone-lined tank (22934). The other sampled features analysed from Area 16 included the Romano-British corn drier (23505) and pits 23452, 23561, and 22837. An undated ditch (25358) and probable late Roman pit (23174, Area 14), and a late Iron-Age ditch (22779, Area 15) were also analysed.

### Methods

Samples were sorted and charred material extracted, identified, and quantified (Table 15). The nomenclature follows that of Stace for wild plants and the traditional nomenclature given in Zohary and Hopf for cereals.<sup>142</sup> The sample from pit 23179 had an exceedingly large fine fraction (0.5–1 mm), containing a large number of weed seeds and glume bases. Only one-tenth of this fraction was examined and the resultant counts were then multiplied by 10 to provide estimates, prefixed by an 'e.' in Table 15.

### Results

The main cereal was spelt wheat (*Triticum spelta*), represented by grain and glume bases. In all the samples except that from the late Iron-Age ditch 22778 (group 25293), glume bases outnumbered grains. Barley was fairly well represented in two samples, that from the late Iron-Age ditch 22778, where grains outnumbered those of hulled wheat, and pit 23174, which was one of the richer samples in terms of remains of hulled wheat. The presence of both hulled grains and 6-row rachis fragments would suggest that the majority, if not all, of the barley was of the hulled 6-row variety (*Hordeum vulgare* subsp. *vulgare*).

Glumes, and potentially grains, of emmer wheat (*Triticum dicoccum*) were recovered from the late Iron-Age ditch 22778 (22779), and it is notable that no spelt was identified from this deposit.

Several deposits yielded both germinated grain and detached sprouted coleoptiles. It is probable that many of the degraded, deformed, often hollow grains in some of these deposits had also germinated, but were not well enough preserved to ascertain this with certainty.

The main deposits containing germinated grain and coleoptiles were from pit 23174 in Area 14, corn drier 23502, drainage ditch 23361 (group 25319), and the associated stone-lined tank 22934 and channel 23354 (group 23525). The deposits from pits 23561, 23452, and the stone-lined pit 22837 all contained smaller amounts. The only deposit not to contain any germinated grain or sprouts was that from the late Iron-Age ditch 22778.

The other crops included flax (*Linum usitatissimum*), represented by a possible single mineralised seed from pit 22856 and two possible fragments of capsule from corn drier 23503 and pit 23452. Both the late Iron-Age ditch 22778 and Romano-British pit 22857 had large seeds of legumes that may be of pea (*Pisum sativum*) or bean (*Vicia faba*). Several samples had a few fragments of hazelnut shell (*Corylus avellana*), including pits 22856, 23174, 22934, and 23452.

Seeds of wild species were relatively common in the samples (Table 15), and probably in the majority of cases, given their association with cereal remains, represent the remains of weeds brought in with the harvested crop from the field.

The seeds derived from a relatively large number of species representative of a wide range of habitats. Wetland species, including spikerush (*Eleocharis* sp.), were well represented, while the majority of other species were common arable weeds, some of which are more indicative of the cultivation of drier, calcareous soils, for example corn gromwell (*Lithospermum arvense*), self-heal (*Prunella vulgaris*), narrow-fruited corn salad (*Valerianella dentata*), yellow-rattle (*Rhinanthus* sp.), and grass-pea (*Lathyrus aphaca*), the latter species along with corn-cockle (*Agrostemma githago*) and grass vetchling (*Lathyrus nissolia*) being probable Roman introductions.<sup>143</sup> A further species possibly falling into this same category, whose seeds were present within six of the analysed samples, is stinking mayweed (*Anthemis cotula*) which is characteristic of heavier clay soils.

The sample from pit 23174 was unusual, containing charred conglomerated material, with many monocot (probably grass and sedge) stems, grass seeds, and frequent quartz/sand grains embedded with this material. While this sample was relatively rich in cereal remains, proportionally it contained a much greater number of seeds. Species associated with wet-grasslands were very numerous, including dock (*Rumex* sp.), clover (*Trifolium* sp.), probable perennial rye grass (*Lolium perenne*), oats (*Avena* sp.), and spikerush. The high presence of straw and conglomerated material is consistent with the presence of dung, but while the grassland seeds could be associated with dung, relatively few were seen within the charred conglomerated lumps themselves. Possibly the straw derived from dung that had been mixed with cereal waste prior to being charred, including waste from earlier processing stages.

<sup>142</sup> C. Stace, *New Flora of the British Isles*, 2nd edn (Cambridge, 1997); D. Zohary and M. Hopf, *Domestication of Plants in the Old World: The Origin and Spread of Cultivated Plants in West Asia, Europe, and the Nile Valley*, 3rd edn (Oxford, 2000), p. 28, and tables 3 and 65.

<sup>143</sup> H. Godwin, *History of the British Flora*, 2nd edn (Cambridge, 1984), p. 479.

### Discussion

The predominance of spelt is a common feature of Romano-British sites in Britain as a whole. The presence of emmer in the late Iron-Age ditch 22778 (group 25293) is of some interest. To the south, in the Thames valley, spelt dominates throughout the Iron Age.<sup>144</sup> However, emmer has been noted in early Romano-British deposits to the north-east around Milton Keynes,<sup>145</sup> and this incidence may represent continued use of this crop in the area through to the late Iron Age. That the sample also has a higher number of seeds of fat-hen (*Chenopodium album*) is also potentially of some significance given Jones's observation that seeds of the Chenopodiaceae are often higher in Iron-Age samples but decline in the Romano-British period, perhaps because of declining soil fertility and/or increased amounts of autumn sowing.<sup>146</sup>

The evidence for malting in the Romano-British samples is interesting, since it gives a clue about the possible purpose of the stone-lined features seen on the site. Similar features associated with malting waste were seen at Weedon Hill, Aylesbury, also situated just off Akeman Street, some 15 to 20 miles to the south-east.<sup>147</sup> However, the evidence for malting in the form of charred waste was considerably greater than seen at Whitelands Farm,<sup>148</sup> and it might be noted that while stone-lined features (although of a somewhat different nature) were seen at Alchester,<sup>149</sup> along with a corn drier, no evidence for malting could be securely attributed to the Romano-British period there.<sup>150</sup>

The evidence for malting at Whitelands Farm is certainly sufficient to suggest that brewing was taking place, even if the function of the stone-lined features remains enigmatic. During malting, spelt spikelets would first be soaked in water for one to two days, and this process may have been carried out in the stone-line tanks. With hulled wheats dehusking to release the grain often damages the embryo and for these operations the grain must be left within the spikelet.<sup>151</sup> The spikelets would then be taken from the tanks and left to germinate on a malting floor, probably for around four to six days. The grain was then dried in a kiln (or possibly drying oven) to arrest the germination process. Within these assemblages, glumes usually outnumbered grain.<sup>152</sup> After drying, during the final preparation of the malt, the germinated spikelets would be pounded and the glumes, light chaff, and germinated coleoptiles (sprouts) removed. The resultant waste may then have been thrown into the drying kilns where it became charred. It must be remembered that the assemblages are almost certainly very mixed (as seen below) with waste from the processing of grain destined for flour potentially also present. It would seem probable that the brewing itself was also carried out on-site.

Several radiocarbon dates were obtained from the charred material (Table 1). A determination on spelt grains from the stone-lined pit (22837) indicated a mid first-century to early second-century date, cal. 40 BC–AD 140 (1935±35BP; SUERC-30813), although the pottery from this same feature provided a mid third-century date. A radiocarbon date on germinated spelt grains from the corn drier (23502) yielded a similar determination, cal. 50 BC–AD 130 (1970±35BP; SUERC-30812). The final date on cereal remains came from a material deposited during the infilling of drainage ditch group 25319 (23361, 23362), associated with the stone-lined channel 25325 and the stone-lined pit 23525, and was dated to the first to third century, cal. AD 90–330 (1810±35; SUERC-30811). The ditch itself (group 25319), along with the stone-lined channel, had pottery within it dating to the late third to fourth century.

The dates indicate that malting activities took place from the mid to late first century until at least the second to third centuries. That the radiocarbon dates were often earlier than the pottery recovered from the same features indicates that much of this material had been reworked from earlier activity on the site and probably laid around in dumps on the surface for some period. If the stone-lined features were related to malting then potentially they could have been constructed at some point during the early Romano-British period.

At Alchester only one deposit produced evidence for malting, and this was tentatively assigned to the early Anglo-Saxon period on the basis of finds of Anglo-Saxon pottery overlying the upper fills of the deposit. However, while spelt malting waste is a common feature of Romano-British sites, such evidence for the malting of spelt is unknown for the Anglo-Saxon period, as is, with a few exceptions, the cultivation of spelt wheat itself. In the

<sup>144</sup> M. Robinson and B. Wilson, 'A Survey of Environmental Archaeology in the South Midlands', in H.C.M. Keeley (ed.), *Environmental Archaeology: A Regional Review*, 2 (London, 1987), pp. 16–100.

<sup>145</sup> C. Stevens, 'Charred Plant Remains', in C. Budd and A.D. Crockett, 'The Archaeology and History of Renny Lodge: Romano-British Farmstead, Workhouse, Hospital, Houses', *Records of Buckinghamshire*, 49 (2009), pp. 118–20.

<sup>146</sup> M. Jones, 'The Development of Crop Husbandry', in M. Jones and G. Dimbleby (eds.), *The Environment of Man, the Iron Age to the Anglo-Saxon Period*, BAR BS, 87 (1981), pp. 95–127.

<sup>147</sup> Wakeham and Bradley, *A Probable Romano-British Malt House*.

<sup>148</sup> Cf. C.J. Stevens, 'The Charred Plant Remains', in Wakeham and Bradley, *A Probable Romano-British Malt House*.

<sup>149</sup> Booth et al., *Roman Alchester*.

<sup>150</sup> R. Pelling, 'Charred Plant Remains', in Booth et al., *Roman Alchester*, pp. 418–22.

<sup>151</sup> D. Samuel, 'Brewing and Baking', in P.T. Nicholson and I. Shaw (eds.), *Ancient Egyptian Materials and Technology* (Cambridge, 2000), pp. 537–76.

<sup>152</sup> Cf. Stevens, 'The Charred Plant Remains'.



Table 15. Charred plant remains from selected features

Area	14	14	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
	no date	LRB	LJA	RB	ERB?	RB-Sax?	LRB	LRB	LRB	LRB	LRB	LRB	LRB	LRB	LRB	LRB	LRB	
Probable Date	23085	23174	22778	22837	22856	22934	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	
Feature	23085	23174	22778	22837	22856	22934	23354	23354	23354	23354	23354	23354	23354	23354	23354	23354	23354	
Type	ditch	pit	ditch	stone-lined pit	pit	stone-lined pit	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	stone-lined channel	
Context	23086	23179	22779	22840	22857	22935	23356	23356	23356	23356	23356	23356	23356	23356	23356	23356	23356	
size litres	10	18	9	20	15	15	7	7	7	7	7	7	7	7	7	7	7	
<b>Cereals</b>																		
<i>Hordeum vulgare</i> L. <i>sl</i> (hulled grain)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Hordeum vulgare</i> L. <i>sl</i> (germinated hulled grain)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Hordeum vulgare</i> L. <i>sl</i> (grain)	-	31	75	4	4	-	-	-	-	-	-	-	-	-	-	-	-	
<i>H. vulgare</i> L. <i>sl</i> (6-row rachis fragment)	-	1	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	
<i>H. vulgare</i> L. <i>sl</i> (rachis fragment)	-	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Triticum</i> sp. L. (grains)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Triticum</i> cf. <i>dicoccum</i> (Schübl)	-	cf.1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Triticum dicoccum</i> (Schübl) (glume base)	cf.1	-	6	2	cf.1	-	-	-	-	-	-	-	-	-	-	-	-	
<i>T. dicoccum</i> (Schübl) (spikelet fork)	-	-	-	1	cf.1	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Triticum spelta</i> L. (glume bases)	54	406	1	70	15	57	32	32	32	1326	-	69	96	-	-	-	-	
<i>Triticum spelta</i> L. (spikelet fork)	-	6	-	-	-	-	-	-	-	3	-	1	-	-	-	-	-	
<i>Triticum dicoccum/spelta</i> (grain)	66	248	48	25	9	14	3	3	3	279	6	32	9	-	-	-	-	
<i>Triticum dicoccum/spelta</i> (germinated grain)	-	20	-	cf.2	4	7	-	-	-	25	5	-	5	-	-	-	-	
<i>Triticum dicoccum/spelta</i> (spikelet fork)	16	52	3	5	3	2	1	1	1	13	7	4	2	-	-	-	-	
<i>Triticum dicoccum/spelta</i> (glume bases)	376	e.2478	20	500	120	345	321	321	321	1154	540	420	431	-	-	-	-	
Cereal indet. (grains)	31	165	-	7	14	4	6	6	6	65	6	14	10	-	-	-	-	
Cereal frag. indet. (est. whole grains from frags.)	40	200	80	20	16	15	5	5	5	110	11	38	26	-	-	-	-	
Cereal (germinated coleoptile)	-	e.140	-	1	-	6	6	6	6	65	26	2	-	-	-	-	-	
Cereal indet. (culm node)	-	-	2	-	1min	1	-	-	-	-	-	1	-	-	-	-	-	

	Area	14	14	15	16	16	16	16	16	16	16	16	16	16	16
	Probable Date	no date	LRB	LIA	RB	ERB?	RB-Sax?	LRB	LRB	ERB?	LRB	ERB?	LRB	ERB?	ERB?
	Feature	23085	23174	22778	22837	22856	22934	Middle 23354	23361	23502	23452	23561			
	Type	ditch	pit	ditch	stone- lined pit	pit	stone- lined pit	stone-lined channel	drainage ditch	corn- drier	pit	pit			
	Context	23086	23179	22779	22840	22857	22935	23356	23362	23505	23451	23568			
<b>Species</b>															
<i>Caltha palustris</i>	marsh-marigold	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ranunculus</i> sp. subg <i>Ranunculus</i> arb	buttercup	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Fumaria</i> sp.	fumitory	-	-	-	-	-	1	-	-	-	-	-	-	-	-
<i>Corylus avellana</i> L. (fragments)	hazel	-	3	-	-	4	2	-	-	-	-	-	2	-	-
<i>Chenopodium polyspermum</i>	many-seeded goosefoot	-	-	2	-	-	-	-	-	-	-	-	-	-	-
<i>Chenopodium album</i>	fathen	-	-	44	-	-	-	-	2	-	-	7	-	-	-
<i>Atriplex</i> sp. L.	oraches	2	e.42	1	-	-	9	-	4	-	2	1	-	-	-
Chenopodiaceae L./Caryophyllaceae L.	goosefoot/campion	2	-	-	1	cf.1min	-	1	-	-	-	-	-	-	-
<i>Stellaria media</i>	stitchwort	1	e.40	-	-	-	-	-	11	-	-	-	-	-	-
<i>Agrostemma githago</i>	corn cockle	1	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Silene</i> sp. L.	campions	1	4	-	-	1	-	-	6	-	3	1	-	-	-
<i>Persicaria lapathifolia/maculosa</i>	persicaria	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Polygonum/Persicaria</i> sp.	knot grasses	c f.2	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Fallopia convolvulus</i> (L.) A. Löve	black bindweed	-	1	1	-	1	-	-	-	-	-	-	1	-	-
<i>Polygonum aviculare</i> L.	knot grass	1	3	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rumex</i> sp. L.	docks	22	e.165	2	3	4	9	1	32	-	4	6	-	-	-
<i>Rumex acetosella</i> group	sheeps sorrel	-	-	-	-	-	-	-	cf.1	-	-	-	-	-	-
<i>Malva</i> sp. L.	mallow	cf.1	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Raphanus raphanistrum</i> (capsule)	charlock	2f.	1+2f.	-	-	1	-	1	-	-	-	-	-	-	-
<i>Brassica</i> sp.	wild mustard	5	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Potentilla</i> sp.	cinquefoil/strawberry	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crataegus monogyna</i> (fruit stones)	hawthorn berries	-	-	-	1	-	-	-	-	-	-	-	-	-	-
<i>Pisum/Vicia</i>	pea/bean/large vetch	-	-	3	-	1	-	-	-	-	-	-	-	-	-

	Area	14	14	15	16	16	16	16	16	16	16	16	16	16
	Probable Date	no date	LRB	LIA	RB	ERB?	ERB?	RB-Sax?	LRB	LRB	ERB?	ERB?	ERB?	ERB?
	Feature	23085	23174	22778	22837	22856	22857	22934	Middle 23354	23361	23502	23452	23561	
	Type	ditch	pit	ditch	stone-lined pit	pit	stone-lined pit	stone-lined pit	stone-lined channel	drainage ditch	corn-drier	pit	pit	
	Context	23086	23179	22779	22840	22857	22857	22935	23356	23362	23505	23451	23568	
<i>Vicia L./Lathyrus</i> sp. L.	vetch/pea	25	-	9	6	8+8f.	8+8f.	15	-	7	-	9	1	
<i>Vicia tetrasperma</i>	smooth tare	-	-	-	-	cf.1	cf.1	-	-	-	-	-	-	
<i>Lathyrus</i> cf. <i>nissolia</i> type	grass vetchling	5	13	-	-	1	1	1	-	-	-	-	-	
<i>Lathyrus</i> cf. <i>aphaca</i> type	grass-pea	-	-	-	-	1	1	1	-	1	-	-	-	
<i>Medicago lupulina</i>	black medick	-	-	-	3	-	-	-	-	-	-	3	-	
<i>Trifolium</i> sp. L.	clover	48	e.555	2	1	3+1m	32	32	1	5	-	2	2	
<i>Linum usitatissimum</i> (cp=capsule/ms=min seed)	flax	-	-	-	-	cf.1ms	-	-	-	-	cf.1cp	cf.1cp	-	
<i>Scandix pecten-veneris</i>	shepherd's needle	-	5	-	-	cf.1f	1	1	-	-	-	-	-	
<i>Aethusa cynapium</i>	fools parsley	-	cf.1	-	-	-	-	-	-	-	-	-	-	
<i>Apium</i> sp.	fool's watercress	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Torilis</i> sp. Adans.	hedge parsley	-	1	-	-	-	-	1	-	-	-	1	-	
<i>Hyoscyamus niger</i>	henbane	-	-	-	-	-	-	-	-	-	cf.1	cf.1	-	
<i>Lithospermum arvense</i>	corn gromwell	-	-	-	-	-	-	10	-	1	-	-	-	
<i>Stachys</i> sp. L.	woundwort	-	-	-	-	-	-	-	-	1	-	-	-	
<i>Galeopsis</i> sp.	hemp-nettle	-	-	-	-	-	-	-	-	cf.1	-	-	-	
<i>Prunella vulgaris</i>	self-heal	1	-	1	-	1	1	-	-	-	1	-	-	
<i>Plantago lanceolata</i> L.	ribwort plantain	2	11	-	-	-	-	3	-	-	-	-	-	
<i>Odonites vernus</i> (Bellardi) Dumort	red bartsia	-	-	-	-	2	2	7	1	2	-	1	1	
<i>Rhinanthus</i> sp.	yellow-rattle	-	cf.1	-	-	-	-	-	-	-	-	-	-	
<i>Sherardia arvensis</i>	field madder	-	1	-	-	1	1	2	-	-	-	-	-	
<i>Galium</i> sp. (small)	bedstraw	-	34	-	-	-	-	2	-	-	-	-	-	
<i>Galium aparine</i> L.	cleavers	1	28	1	-	3	-	-	-	1	-	1	-	
<i>Valerianella dentata</i> (L.) Pollich	narrow fruited corn salad	1	-	-	-	-	-	1	-	-	-	-	-	
<i>Carduus L./Cirsium</i> sp. Mill.	thistle	-	-	-	-	-	-	-	-	1	-	-	-	

	Area	14	14	15	16	16	16	16	16	16	16	16	16	16	16
	Probable Date	no date	LRB	LIA	RB	ERB?	RB-Sax?	LRB	LRB	LRB	ERB?	LRB	ERB?	LRB	ERB?
Feature	Type	ditch	pit	ditch	stone-lined pit	pit	stone-lined pit	Middle 23354	23361	23362	23502	23452	23561		
Context		23086	23179	22779	22840	22857	22935	23356	23362	23505	23451	23568			
<i>Centaurea</i> sp. L.	knapweed	-	3	-	-	-	cf.1	-	1	-	-	-	-		
<i>Anthemis cotula</i> L.	stinking chamomile	-	-	-	10	-	7	18	72	-	6	17			
<i>Tripleurospermum inodorum</i> (L.) Sch. Bip.	scentless mayweed	3	e.40	-	-	-	-	-	5	-	-	2			
<i>Leucanthemum vulgare</i> Lam.	Oxeye daisy	-	1	-	-	-	-	-	-	-	-	-			
<i>Monocot Root stems</i>	grass/sedge stems	-	10	7	-	-	-	-	-	-	-	-			
<i>Eleocharis cf. palustris</i> (L.) Roem. & Schult.	common spike-rush	42	e.285	2	-	9	4	-	5	-	10	5			
<i>Carex</i> sp. L. lenticular	sedge flat seed	-	14	-	-	-	-	-	-	-	-	-			
<i>Carex</i> sp. L. trigonous	sedge trigonous seed	2	e.76	4	-	2	-	cf.2	-	-	1	3			
Poaceae (mid-large indet.)	grass seed	2	-	10	3	-	-	-	-	3	-	-			
Poaceae (small indet.)	small grass seed	1	e.40	-	-	-	-	-	-	-	-	-			
POACEAE (culm node)	grass culm node	16	++	-	-	-	1	-	8	-	-	-			
POACEAE (culm internode)	grass stem	23	+++	-	-	-	-	-	1	-	-	-			
<i>Lolium cf. perenne</i> L.	rye grass	18	e.230	-	15	1	-	12	52	10	8	16			
<i>Poa</i> sp. L.	meadow grass	-	-	-	-	-	-	-	9	-	-	-			
<i>Poa/Phleum</i> sp. L.	meadow grass/cats-tail	-	e.50	16	5	5	-	-	4	-	2	2			
<i>Arrhenatherum elatius</i> var. <i>bulbosus</i>	false oat-grass	4	-	-	-	-	1	-	-	-	-	-			
<i>Avena</i> sp. L. (grain)	oat grain	8	136	23	3	16	10	5	112	6	8	4			
<i>Avena</i> sp. L. (floret base wild)	wild oat floret base	-	-	2	-	-	-	-	-	-	-	-			
<i>Avena</i> sp. L. (floret base indet.)	oat floret base indet.	-	-	3	-	-	-	-	-	-	-	-			
<i>Avena</i> sp. L. (awn)	oat awn	-	++	+	-	+	-	-	-	-	+	-			
<i>Avena</i> L./ <i>Bromus</i> L. sp.	oat/brome	-	2	-	-	1	-	-	5	-	-	3			
<i>Bromus</i> sp. L.	brome	-	2	2	3	-	-	-	9	-	-	-			
<i>Sparganium erectum</i> (fruit/achene)	branched bur-reed	-	-	-	-	1	-	-	-	-	cf.1	-			
Seed indet. Small		-	-	-	-	-	3	-	-	-	-	-			
Tuber indet. (? <i>Ranunculus bulbosus</i> ?)		-	2	3	-	-	-	-	-	-	-	-			

absence of radiocarbon dating it would therefore seem highly probable that the material is also Roman and not Anglo-Saxon in date (Ruth Pelling, personal communication).

The site at Whitelands Farm, as well as lying close to the Roman town at Alchester, was situated on the junction of two major Roman Roads, the Dorchester–Towcester Road and Akeman Street (Fig. 1). As a result, it was well situated for the provision of beer to the town, and/or to military or other travellers.

The weed seeds indicate the cultivation of drier, calcareous, possibly even chalk soils, heavier clays, and lower lying wetter, probably seasonally flooded soils. Elsewhere it has been noted that stinking mayweed generally only occurs in more Romanised settlement and is absent from more traditional native rural farming settlements. The suggestion, following Jones,<sup>153</sup> is that often only more Romanised settlements utilised asymmetrical ploughs capable of tilling heavier clay soils.<sup>154</sup> That weed seeds from different ecological environments are present may indicate the mixing of crops from different fields, or that charred material from different activities has become mixed.

## CHARCOAL by RUTH PELLING

Three samples from corn drier 23502 and pit 23174 were selected during assessment for wood charcoal analysis.<sup>155</sup>

### Methods

A representative proportion of each sample was randomly selected for identification, with 100 fragments >2 mm selected from corn drier 23502 and up to 60 fragments from each deposit within pit 23174. Fragments were prepared according to the standard methodology.<sup>156</sup> Identification was to the highest anatomical level possible, usually genus, and follows the anatomical characteristics described by Schweingruber and Hather.<sup>157</sup> Nomenclature follows Stace.<sup>158</sup>

### Results

The charcoal from within the corn drier tended to be well preserved, while that from the pit had suffered a greater degree of mineral deposition within the vessels due to fluctuations in the water table and occasional vitrification (due to a high temperature of burn). A minimum of eight taxa were identified from the charcoal assemblages (Table 16).

The identifiable charcoal examined from the corn drier consisted entirely of oak (*Quercus* sp.). A scan through the remaining fragments suggested they were also oak. The charcoal assemblage within the pit fills was more mixed – at least eight taxa were represented. The proportions of the various taxa varied between the two samples: hazel (*Corylus avellana*) and oak dominated sample 85 (fill 23179), but pomaceous fruit wood dominated sample 84 (context 23177). Smaller quantities of cherry/blackthorn type (*Prunus* sp.), willow/aspens (*Salix/Populus* sp.), and ash (*Fraxinus excelsior*) were noted, while a single fragment of beech (*Fagus sylvatica*) was tentatively identified in sample 85 (fill 23179).

### Discussion

The range of wood taxa represented suggests the collection of firewood from open-canopy woodland and possibly scrub or hedgerows, as well as willow/aspens from damp areas, such as channel margins. The mixed nature of the assemblage from the pit is possibly more indicative of chance collection of fallen branches rather than deliberate targeting of specific species. It is possible that oak was targeted as fuel for the corn drier, although this may simply represent the remains of a single branch. The principal fuel source used in corn driers appears to have been cereal processing waste.<sup>159</sup> A large corn drier at Fullerton (Hants.) produced evidence for mixed charcoal, principally

<sup>153</sup> Jones, 'The Development of Crop Husbandry'.

<sup>154</sup> C.J. Stevens, 'The Romano-British Agricultural Economy', in J. Wright et al., *Cambourne New Settlement: Iron Age and Romano-British Settlement on the Clay Uplands of West Cambridgeshire*, Wessex Archaeology Report, 23 (2008), pp. 110–14.

<sup>155</sup> 'Land South-West of Bicester', Wessex Archaeology post-excavation report.

<sup>156</sup> L. Leney and R.W. Casteel, 'Simplified Procedure for Examining Charcoal Specimens for Identification', *Journal of Archaeological Science*, 2 (1975), pp. 153–9; R. Gale and D. Cutler, *Plants in Archaeology* (London, 2000).

<sup>157</sup> F.H. Schweingruber, *Microscopic Wood Anatomy*, Swiss Federal Institute for Forest, Snow and Landscape (1990); J.G. Hather, *The Identification of the Northern European Woods. A Guide for Archaeologists and Conservators* (London, 2000).

<sup>158</sup> Stace, *New Flora of the British Isles*.

<sup>159</sup> M. van der Veen, 'Charred Grain Assemblages from Roman-Period Corn Driers in Britain', *Archaeological Journal*, 146 (1989), pp. 302–19; C.J. Stevens, 'Charred Plant Remains, in M.G. Fulford et al., *Iron Age and Romano-British Settlements and Landscapes of Salisbury Plain*, Wessex Archaeology Report, 20 (2006), pp. 152–8; R. Pelling, 'Charred and Waterlogged Plant Remains', in A. Mudd et al., *Excavation alongside Roman Ermin Street, Gloucestershire and Wiltshire. The Archaeology of the A419/A417 Swindon to Gloucester Road Scheme* (Oxford, 1999), pp. 469–90; G. Campbell, 'Plant

Table 16. Charcoal taxa present in selected Romano-British features

		Corndrier	Pit	
Feature		23502	23174	23174
Context		23505	23177	23179
Sample		96	84	85
<i>Corylus avellana</i>	Hazel	90	1	19
<i>Fagus sylvatica</i>	Beech	-	-	1
<i>Quercus</i> sp.	Oak	-	2	16
<i>Fraxinus excelsior</i>	Ash	-	1	3
Pomoideae	Whitebeam, apple, pear, hawthorn, etc.	-	23	2
Pomoideae roundwood		-	-	1 <sup>4yr</sup>
cf. Pomoideae		-	5	-
<i>Prunus</i> sp.	Cherry, blackthorn, etc.	-	5	-
cf. <i>Prunus</i> sp.		-	1	-
<i>Salix/Populus</i> sp.	Willow/aspens	-	2	5
Indet		10	10	11
Indet twig wood		-	-	2
No. fragments id'd		100	50	60
% of assemblage id'd		50	30	30

ash, with smaller amounts of birch, oak, and field maple, and traces of hazel and sloe/plum type, as well as cereal chaff, possible stable waste, and general rubbish.<sup>160</sup> In contrast a corn drier at High Post (Wilts.) produced only oak charcoal in addition to cereal chaff and weed seeds.<sup>161</sup> The range of charcoal present in such features is therefore likely to be random and of secondary importance to the chaff.

#### MOLLUSCAN REMAINS by SARAH F. WYLES

Eight spot samples were selected for detailed molluscan analysis, four of which included significant numbers of fresh-water species together with terrestrial species. The assemblages should provide a broad indication of the local landscape rather than the detailed localised environments, as they are single spot samples from individual features, with a degree of mixing in a number of them.

#### Methods

The samples were analysed using standard methods,<sup>162</sup> and the identification of apical and diagnostic mollusc fragments >0.5 mm followed the nomenclature of Kerney.<sup>163</sup> Numbers of *Pisidium* valves were recorded as minimum numbers of individuals. The histograms produced are relative percentage diagrams for the fresh-water and terrestrial components of the assemblages (Fig. 21). A number of species diversity indices were calculated for the complete assemblages: the Shannon index, the Brillouin index, Delta 2, and Delta 4 (Table 17). Details of the ecological preferences of the species follow Evans and Kerney.<sup>164</sup>

The results are presented in Table 17 and Fig. 21.

#### Results

##### Area 1, Late Iron-Age Ditch 22417 (22419)

The assemblage included only terrestrial species and was dominated by the shade-loving *Clausilia bidentata*, the intermediate *Trichia hispida*, and the open country *Vallonia costata* and *Vallonia excentrica*.

Utilisation in the Countryside around Danebury: A Roman Perspective', in B. Cunliffe, *The Danebury Environs Roman Programme, A Wessex Landscape during the Roman Era, Vol. 1, Overview*, English Heritage and Oxford University School of Archaeology Monograph, 70 (2008), pp. 53–74.

<sup>160</sup> Campbell, 'Plant Utilization', p. 71.

<sup>161</sup> R. Pelling, 'The Charred Remains and Charcoal', in A.B. Powell, *An Iron Age Enclosure and Romano-British Features at High Post, near Salisbury*, Wessex Archaeology, forthcoming.

<sup>162</sup> J.G. Evans, *Land Snails in Archaeology* (London, 1972).

<sup>163</sup> M. Kerney, *Atlas of the Land and Freshwater Molluscs of Great Britain and Ireland* (Colchester, 1999).

<sup>164</sup> Evans, *Land Snails in Archaeology*; Kerney, *Atlas of the Land and Freshwater Molluscs*.

*Area 5A, Possible Romano-British Post-Hole 22692 (22693)*

Large numbers of shells were recovered from this feature, with high species diversity. There were significant numbers of shells of amphibious species, forming 40% of the assemblage, in particular shells of *Anisus leucostoma*. There was also a marsh component, which included a few shells of *Vertigo antivertigo* and *Vertigo angustior*. These relatively rare species are generally restricted to moist or wet places 'which are affected neither by periodic desiccation nor by flooding'.<sup>165</sup>

The terrestrial species were dominated by the shade-loving species, in particular *Carychium tridentatum*, and included a number of species which thrive in woodland, such as *Acanthinula aculeata* and *Clausilia bidentata*. The presence of *Discus ruderatus* is noteworthy as this species is thought to have become extinct during the mid Postglacial forest optimum about 8,000 years ago.<sup>166</sup> It therefore seems probable that these have eroded out of earlier deposits. The shade-loving component included a small number of shells of *Vertigo alpestris* and *Vertigo pusilla*, species which are relatively rarely recovered.

*Probable Romano-British Kiln 22531 (22533)*

The assemblage recovered from this feature was similar to that examined from post-hole 22692 and was dominated by amphibious and shade-loving species. There was a smaller open-country component in comparison with post-hole 22692. Shells of *Discus ruderatus* and the rarer Vertignids were also recorded within this assemblage. The assemblage from this feature is likely to reflect a similar local environment to that indicated by the assemblage from post-hole 22692.

*Probable Romano-British Kiln 22532 (22542)*

Shell numbers per litre were similar to those recovered from the other analysed samples from Area 5A. The assemblage only contained low numbers of fresh-water snails and these were mainly amphibious species. *Carychium tridentatum* was the predominant species within the assemblage, with shade-loving species forming the largest component. The rarer Vertignids consisted of a few shells of *Vertigo pusilla* and *Vertigo moulinsiana*, 'a species restricted to old calcareous wetlands'.<sup>167</sup>

Although limestone rubble deposits can provide a variety of micro-habitats and may be rich in shade-loving species,<sup>168</sup> it is thought that the shade-loving molluscs in these assemblages were more likely to have exploited some woodland habitats in the vicinity, particularly as the highest percentage of shade-loving species was retrieved from context 22542 in kiln 22532, which had no recorded limestone inclusions. In addition, *Carychium tridentatum*, dominant in the assemblages from post-hole 22692 and kiln 22531, is not that prolific within stabilized limestone scree deposits.<sup>169</sup>

*Area 14, Romano-British Enclosure Ditch 23031 (Group 25350)*

The molluscan assemblage examined from this feature was dominated by the open-country species, in particular *Vallonia costata* and *Vallonia excentrica*. There was a significant number of *Trichia hispida* shells along with a small fresh-water component, mainly comprising shells of *Anisus leucostoma* and *Lymnaea truncatula*.

*Romano-British Ditch 22977 (22978) (Group 25332)*

Large numbers of shells were recovered from this feature and approximately two-thirds of the assemblage comprised fresh-water species. Although the amphibious species *Anisus leucostoma* was dominant, there were also significant numbers of *Valvata cristata*, a species favouring richly vegetated places on muddy substrates, with well-oxygenated slowly flowing or still water.

Terrestrial species were again dominated by *Vallonia costata*, *Vallonia excentrica* and *Trichia hispida*, with significant numbers of shells of *Punctum pygmaeum*, a species which can inhabit micro-environments within the ditch itself.

*Area 16, Romano-British Stone-Lined Tank 22934 (22935)*

Snail numbers were lower from this area of the site compared to the other areas. The few fresh-water species shells were of amphibious species. The terrestrial assemblage mainly comprised open-country species, in particular *Vertigo pygmaea* and *Vallonia costata*. There were also a few of the rarer Vertignids present, *Vertigo antivertigo* and *Vertigo angustior*.

*Romano-British Drainage Ditch 23361 (23362) (Groups 25319, 25325)*

Only a small assemblage was recovered from this feature, consisting of shells of *Vallonia costata* and *Trichia hispida* and a few fresh-water or marsh-loving shells.

<sup>165</sup> Kerney, *Atlas of the Land and Freshwater Molluscs*, p. 101.

<sup>166</sup> *Ibid.* p. 117.

<sup>167</sup> *Ibid.* p. 95.

<sup>168</sup> Evans, *Land Snails in Archaeology*, p. 288.

<sup>169</sup> *Ibid.* p. 136.

Table 17. Molluscs

	Phase	LIA	?RB	?RB	?RB	RB			
	Area	1	5a			14		16	
	Feature type	Ditch	Post-hole	Corn drier/ oven	Corn drier/ oven	Enc. ditch	Ditch	Tank	Drainage ditch
	Feature	22417	22692	22531	22532	23031	22977	22934	23361
	Context	22419	22693	22533	22542	23037	22978	22935	23362
	Sample	38	53	45	47	75	69	89	93
	Weight/Volume	9 L	10 L	9 L	1.5 L	10 L	1500 g	16 L	15 L
<b>LAND</b>									
<i>Carychium cf. minimum</i> Müller	-	28	42	10	7	1	2	-	-
<i>Carychium tridentatum</i> (Risso)	5	173	178	73	11	-	3	-	-
<i>Carychium</i> spp.	-	18	37	45	6	2	-	-	-
<i>Oxyloma/Succinea</i> spp.	-	9	24	-	3	-	2	-	-
<i>Cochlicopa lubrica</i> (Müller)	4	1	1	-	2	-	2	1	-
<i>Cochlicopa lubricella</i> (Porro)	2	2	-	-	-	-	-	-	-
<i>Cochlicopa</i> spp.	16	5	5	1	19	3	5	-	-
<i>Vertigo cf. pusilla</i> Müller	-	2	5	2	-	-	-	-	-
<i>Vertigo cf. antivertigo</i> (Draparnaud)	-	4	16	-	-	-	2	-	-
<i>Vertigo pygmaea</i> (Draparnaud)	10	19	7	1	13	3	70	3	-
<i>Vertigo cf. moulinsiana</i> (Dupuy)	-	-	-	1	-	-	-	-	-
<i>Vertigo cf. alpestris</i> Alder	-	2	3	-	-	-	-	-	-
<i>Vertigo cf. angustior</i> Jeffreys	-	3	3	-	-	-	4	-	-
<i>Vertigo</i> spp.	5	3	6	-	5	5	22	-	-
<i>Vertigo</i> spp. (sinestral)	-	-	3	-	-	-	1	-	-
<i>Pupilla muscorum</i> (Linnaeus)	9	8	-	-	15	12	8	5	-
<i>Vallonia costata</i> (Müller)	50	37	29	6	211	80	36	21	-
<i>Vallonia excentrica</i> Sterki	36	36	12	2	123	31	15	6	-
<i>Vallonia</i> spp.	7	-	-	-	1	5	3	2	-
<i>Acanthinula aculeata</i> (Müller)	10	3	8	1	-	-	-	-	-
<i>Ena obscura</i> (Müller)	1	-	-	-	1	-	-	-	-
<i>Punctum pygmaeum</i> (Draparnaud)	2	5	6	2	1	30	-	-	-
<i>Discus ruderatus</i> (Férussac)	-	4	2	-	-	-	-	-	-
<i>Discus rotundatus</i> (Müller)	6	24	56	13	-	-	-	-	-
<i>Vitrina pellucida</i> (Müller)	1	-	-	-	-	-	-	-	-
<i>Vitrea crystallina</i> (Müller)	-	-	-	2	3	-	-	-	-
<i>Vitrea contracta</i> (Westerlund)	-	2	-	2	3	-	-	-	-
<i>Vitrea</i> spp.	5	-	4	-	-	1	-	-	-
<i>Aegopinella pura</i> (Alder)	3	17	43	6	5	-	-	-	-
<i>Aegopinella nitidula</i> (Draparnaud)	16	19	40	8	33	8	4	1	-
<i>Oxychilus cellarius</i> (Müller)	3	6	10	2	8	1	1	-	-
Limacidae	4	8	3	1	1	7	4	-	-
<i>Ceciloides acicula</i> (Müller)	510	9	6	0	308	13	361	126	-
<i>Cochlodina laminata</i> (Montagu)	2	4	2	1	-	-	+	-	-



Phase	LIA	?RB	?RB	?RB	RB			
Area	1	5a			14		16	
Feature type	Ditch	Post-hole	Corn drier/ oven	Corn drier/ oven	Enc. ditch	Ditch	Tank	Drainage ditch
Feature	22417	22692	22531	22532	23031	22977	22934	23361
Context	22419	22693	22533	22542	23037	22978	22935	23362
Sample	38	53	45	47	75	69	89	93
<i>Clausilia bidentata</i> (Ström)	28	37	38	3	-	-	6	2
Clausiliidae	18	4	-	3	-	-	-	-
<i>Helicella itala</i> (Linnaeus)	20	3	4	-	11	19	6	3
<i>Trichia hispida</i> (Linnaeus)	43	43	34	17	178	26	10	20
<i>Helicigona lapicida</i> (Linnaeus)	-	+	-	+	-	-	-	-
<i>Cepaea nemoralis</i> (Linnaeus)	-	-	-	-	-	1	-	-
<i>Cepaea hortensis</i> (Müller)	-	1	-	1	-	1	-	-
<i>Cepaea/Arianta</i> spp.	7	15	6	5	+	1	1	+
<b>FRESH-/BRACKISH-WATER</b>								
<i>Valvata cristata</i> Müller	-	-	-	-	-	112	-	-
<i>Bithynia tentaculata</i> (Linnaeus)	-	-	3	-	-	-	-	-
<i>Lymnaea truncatula</i> (Müller)	-	21	15	-	8	3	2	-
<i>Lymnaea peregra</i> (Müller)	-	-	-	-	-	3	-	-
<i>Lymnaea</i> spp.	-	31	48	4	5	3	-	-
<i>Planorbis planorbis</i> (Linnaeus)	-	-	-	-	1	26	-	-
<i>Anisus leucostoma</i> (Millet)	-	327	290	8	31	332	1	1
<i>Pisidium</i> spp.	-	1	-	1	-	-	-	-
Taxa	22	30	28	24	21	20	19	11
TOTAL	313	924	983	221	705	716	210	66
Shannon Index	2.572	2.317	2.418	2.021	2.043	1.876	2.024	1.783
Brillouin Index	2.447	2.254	2.359	1.866	1.987	1.824	1.886	1.575
Shannon Index – Brillouin Index	0.125	0.063	0.059	0.155	0.056	0.053	0.139	0.209
Delta 2	0.8988	0.8191	0.8496	0.718	0.8078	0.7389	0.7652	0.7668
Delta 4	9.1683	4.5552	5.6861	2.5882	4.235	2.8455	3.3258	3.5158
% Shade-loving species	30.99	36.69	47.41	77.38	10.92	1.82	7.62	4.55
% Intermediate species	25.24	8.66	5.6	12.22	28.51	9.64	10.48	33.33
% Open country species	43.77	11.47	6.21	4.07	53.76	21.65	76.67	60.61
% Unassigned species	0	2.16	4.58	0.45	0.43	0	3.81	0
% Amphibious species	0	37.66	31.03	3.62	5.53	46.79	1.43	1.52
% Intermediate freshwater species	0	0	0	0	0	0.42	0	0
% Ditch loving species	0	0	0	0	0.14	19.27	0	0
% Moving water	0	0	0.31	0	0	0	0	0
% Unassigned freshwater species	0	3.46	4.88	2.26	0.71	0.42	0	0

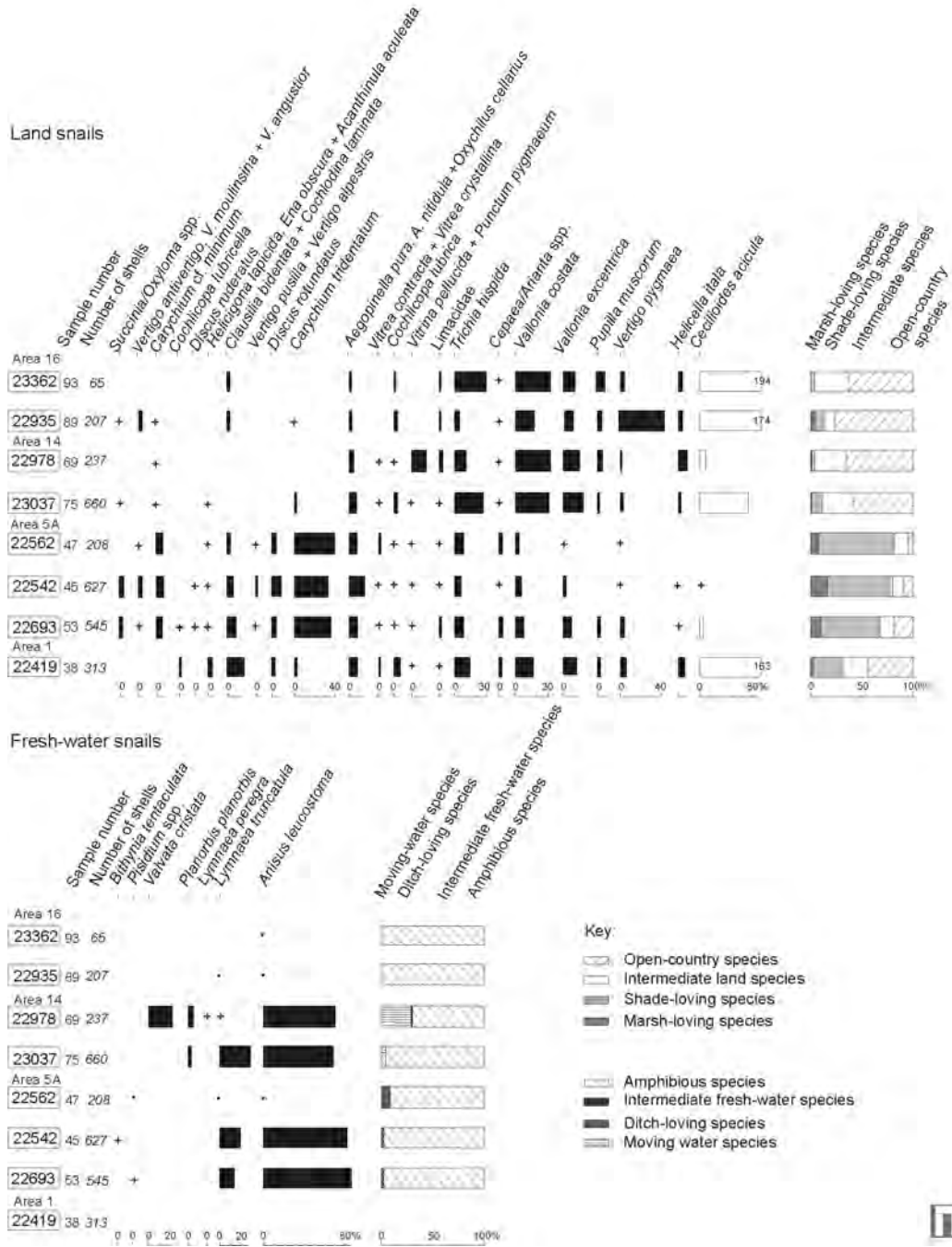


Fig. 21. Mollusc assemblage diagrams.

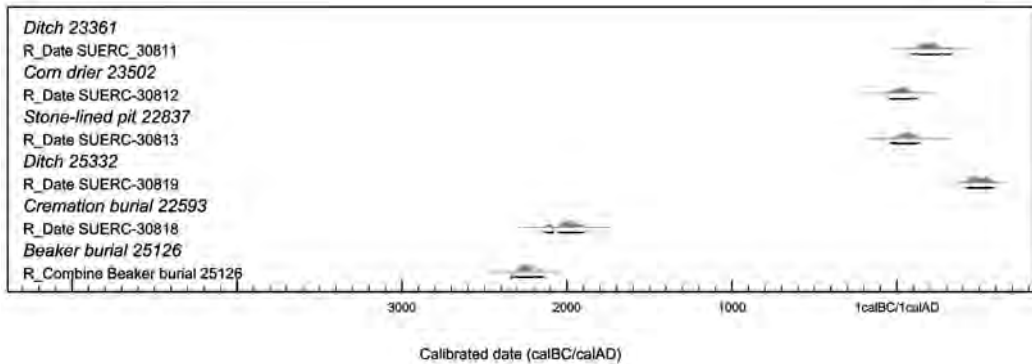


Fig. 22. Plot of radiocarbon determinations.

### Discussion

The mollusc assemblages provide a broad indication of the nature of the environment and local landscape during the late Iron Age and Romano-British period in the vicinity of the four areas of the site from which molluscs were examined.

In the west of the site, around Area 1, there is an indication of a local landscape of open grassland with a shady element, with probable open woodland nearby. In the vicinity of Area 5A, the mollusc assemblages indicate a mixed, probably permanently damp landscape, with open woodland together with grassland and areas of swampy marshland.

The local environment reflected by the mollusc assemblages from Area 14, in the west of the site, near the Pingle brook, is one of open landscape, probably grazed grassland, with some areas of longer grass possibly along the edge or within the enclosure ditch 23031. There is also some indication of swampy marshland along the edge of ditch 22977, and there may have been some still or slow-moving water within the ditch itself. There are likely to have been limited occasional periods of flooding in the area as well. To the south of this, around Area 16, the environment is generally much drier and is likely to have been one of open grassland, probably mainly short grass with areas of longer grass and a few small patches of marshier grassland.

The local environment at this site was generally drier than those reflected at other local sites. The few mollusc assemblages from the extramural settlement of Roman Alchester mainly reflected wet open ground, with some species also present which favour drier ground and others indicative of flowing water.<sup>170</sup> At Oxford Road, Bicester, the small number of mollusc assemblages fall into two groups, one indicating wetland/marshy habitats and the other more associated with damp fields.<sup>171</sup> It is noteworthy that a number of the rarer Vertiginids, such as *Vertigo angustior* and *Vertigo antivertigo*, were also observed at this site.

### RADIOCARBON DATING by CHRIS J. STEVENS and ALISTAIR J. BARCLAY

Six samples (Table 1) were submitted for radiocarbon dating to Scottish Universities Environmental Research Centre (SUERC), East Kilbride. A duplicate measurement was obtained on a single sample of human bone from 25126 and since the two results are statistically consistent a weighted mean has been calculated.<sup>172</sup>

The radiocarbon measurements have been calculated using the calibration curve of Reimer et al.,<sup>173</sup> and the computer program OxCal v4.0.5.<sup>174</sup> The calibrated date ranges cited in the text are those for 95% confidence. They

<sup>170</sup> M. Robinson, 'Waterlogged Macroscopic Plant and Invertebrate Remains' in Booth et al., *Roman Alchester*, pp. 417–19.

<sup>171</sup> A. Moss, 'Mollusca', in Mould, 'Oxford Road', pp. 99–102.

<sup>172</sup> G.K. Ward and S.R. Wilson, 'Procedures for Comparing and Combining Radiocarbon Age Determinations: A Critique', *Archaeometry*, 20 (1978), pp. 19–31.

<sup>173</sup> P.J. Reimer et al., 'IntCal04 Terrestrial Radiocarbon Age Calibration, 0–26 Cal Kyr BP', *Radiocarbon*, 46 (2004), pp. 1029–58.

<sup>174</sup> C.B. Ramsey, 'Bayesian Analysis of Radiocarbon Dates', *Radiocarbon*, 51 (2009), pp. 337–60.

are quoted in the form recommended by Mook,<sup>175</sup> with the end points rounded outwards to 10 years, and the ranges have been calculated according to the maximum intercept method.<sup>176</sup>

Details of the samples and measurements are given in Table 1 and Fig. 22, and the results are discussed in the main text.

#### ACKNOWLEDGEMENTS

Wessex Archaeology is grateful to Terence O'Rourke Ltd, on behalf of Countryside Properties (Bicester) Ltd, for commissioning the project. Advice and assistance was provided by John Trehy of Terence O'Rourke Ltd and Paul Smith (formerly County Archaeologist, Oxfordshire County Council). The fieldwork project was managed by Paul McCulloch, directed by Jon Martin, and supervised by Julia Sulikowska, Naomi Hall, Sian Reynolds, and Neil Fitzpatrick. The site staff were Andy Sole, Georgina Cox, Martin Harrington, Claire McGlenn, Ben Atfield, Sophie Nias Cooper, Simon Flaherty, and Michael Fleming. This report was edited by Pippa Bradley and Julie Gardiner. Richard Oram (Oxfordshire County Council) and the anonymous referee are thanked for commenting on an earlier draft. Jörn Schuster and Lorraine Mephram commented on some of the metal small finds and Anglo-Saxon pottery respectively. The coins were identified by Nicholas Cooke. The illustrations were drawn by Elizabeth James and the photographs taken by Karen Nichols. Wessex Archaeology would like to thank those involved with the Beaker People project for facilitating the isotope analysis, including Mandy Jay and Mike Richards (Durham University and Max Planck Institute for Evolutionary Anthropology, Leipzig), Mike Parker Pearson (University of Sheffield), Janet Montgomery (Durham University and University of Bradford), Jane Evans (NERC Isotope Geosciences Laboratory, Nottingham), and Maura Pellegrini (Max Planck Institute). The archive (Wessex Archaeology project codes 63560–3) will be deposited with the OXCMS under accession number 2006–83.

<sup>175</sup> W.G. Mook, 'Business Meeting: Recommendations/Resolutions Adopted by the Twelfth International Radiocarbon Conference', *Radiocarbon*, 28 (1986), p. 799.

<sup>176</sup> M. Stuiver and P.J. Reimer, 'A Computer Program for Radiocarbon Age Calculation', *Radiocarbon*, 28 (1986), pp. 1022–30.