

Worcestershire Archaeology Research Report No.4

Archaeological Investigations in

ST JOHN'S WORCESTER



Jo Wainwright

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Archaeological Investigations in St John's, Worcester

(WCM 101591)

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Archaeological Investigations in
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Front cover illustration: view across the north-west of the site, towards Worcester Cathedral

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Summary

A programme of archaeological works was undertaken in St John's, Worcester (NGR SO 8415 5435), on behalf of Sainsbury's Supermarkets Ltd. Sainsbury's intended to develop land next to Swanpool Walk, as well undertake works at Christopher Whitehead School.

The excavations in St John's added greatly to our understanding of late Iron Age and early Roman settlement in Worcester and its environs. Excavation at the Bromwich Lane Tennis Club produced occupation activity from probably the middle Iron Age to the post-Roman period. A pit possibly dating from the middle Iron Age, and the presence of residual middle Iron Age pottery in the fills of a later enclosure ditch, indicated that there was activity on the site before the enclosure was constructed. However, the nature of the occupation at this period is unclear.

A rectangular enclosure was constructed in the late Iron Age, and the enclosure ditch was re-cut in the early Roman period. After a short period of silting up the ditch was rapidly backfilled. The finds assemblage from the abandonment of a short-lived early Roman settlement, is the only sizeable assemblage of the earliest post-conquest period from Worcester, and one of only a few from the county. Its significance is greatly enhanced by the dating provided by coins and brooches, which places its deposition sometime between AD 41–68 and of a Claudian/Neronian date, perhaps in the AD 50s. The finds assemblage indicates military connections. The short lifespan of the enclosure, and its abandonment in the early part of the Roman period, indicates a specialist function rather than a farmstead. The evidence for features within the enclosure ditch was sparse, with only a few pits dateable to this period. However, the construction of the tennis courts in the 20th century truncated the site to a degree and this may have removed any features within the enclosure.

The function of the enclosure was probably not associated with domestic or industrial activity. The exceptional finds assemblage, apparently dumped into the enclosure ditch when it went out of use, is very closely dated and a trading function for the site can be put forward. The pottery assemblage has a strong native tradition, so it is more than likely that this was a native settlement trading with the military. It is possible that as the Roman Army pushed west in the post-conquest period native trading posts sprung up to exchange goods with the army.

The enclosure was partially reused in the 2nd century, probably as part of a farmstead. It was during this period that an area of the site along Swanpool Walk was built-up. The enclosure was disused after the 2nd century, but its presence seems to have remained known. The significance of the enclosure in the landscape was indicated by the area being utilised as a burial ground in the later Roman/early post-Roman period. Indeed, it is probable that the irregular alignment of an early medieval routeway is due to it being deflected around the enclosure and burial ground.

During the medieval and post-medieval periods the usual activities associated with backlands of street frontages and field boundaries were excavated across the site. At the Old Council Depot waste from the heavy leather industry, horncores and horse bones, were recovered from pits. There is documentary evidence for a tannery situated close by to the rear of 7 Malvern Road where presumably this waste originated.

Background

Circumstances of the project

Archaeological investigations were undertaken in 2007–8 in St John's, Worcester, by Worcestershire Archive and Archaeology Service on behalf of Sainsbury's Supermarkets Ltd (NGR SO 8415 5435; [Fig 1](#)). The fieldwork was carried out in advance of the construction of a new supermarket and associated works including the construction of a new sports centre, youth centre and road construction. The area was considered to have the potential to contain significant archaeological remains from the prehistoric period onwards, including a putative prehistoric enclosure which follows the southern route of Swanpool Walk and the eastern line of Bromwich Lane ([Baker and Holt 2004](#); [Fig 2](#)).

The development area in St John's consisted of a largely flat, irregularly shaped area on the west side of the River Severn, overlooking the floodplain ([Fig 1](#)). The site lies on the third gravel terrace of the River Severn with the underlying geology comprising Mercia Mudstone ([Dalwood 2007](#)).

Previous to the archaeological investigations carried out in 2007–8, the application site and the surrounding area were studied in desk-based assessments ([Field and Tann 2000](#); [Tann 2000](#)), which were updated following changes to the development proposals ([Field and Tann 2001](#)), along with fieldwork at Christopher Whitehead School ([Wessex Archaeology 2002](#); [Fig 2](#)). The planning application was subsequently approved. A new planning application by Sainsbury's included car parks and all-weather football pitches at Christopher Whitehead High School.

A supplementary desk-based assessment was undertaken in order to update the archaeological assessment of the development site ([Dalwood 2007](#)). It included consideration of recent archaeological information from the immediate vicinity of the development site, and recently published research into the area ([Hughes 2000](#); [Baker and Holt 2004](#)).

The 2007–8 archaeological investigations consisted of a programme of evaluation, watching brief and excavation ([Fig 2](#)). As the project progressed it became clear that there were several elements of particular importance and these became the focus of investigation. These elements were; a prehistoric and Roman enclosure with a number of graves (in the areas of the former Bromwich Lane Tennis Club, now the car park of Sainsbury's Supermarket), a medieval oven (Old Council Depot); post-medieval industrial activity (represented by pits lined with horn cores in the area of the Old Council Depot); and three buildings of historic interest (building recording, and photographic survey at 19–21 St John's (the Transcad building, [Litherland 2009](#); to the rear of Jeynes Hardware [Robson-Glyde 2008a](#); and at the Zig Zag Club/St John's Cinema, 77 St John's, [Robson-Glyde 2008b](#)). The three historic buildings are considered in separate reports. The fieldwork was followed by an updated project design and assessment report ([Wainwright 2009](#)).

Aims and objectives

The research aims of the project related to research priorities set out in the *Worcester urban research framework* (WCMAS 2007). These research priorities were as follows.

The character of the prehistoric enclosure

- When was the enclosure first set out and when was it in use? When did the enclosure go out of use?
- What was the function and status of the enclosure? The analysis of the large assemblage of Late Iron Age pottery combined with the analysis of other artefactual evidence is a priority.
- What is the late Iron Age/early Roman enclosure's relationship with the putative enclosure (if the existence and dating of the enclosure can be established)?

The hinterland of Roman Worcester (ibid, RP 3.31) and identification of survival of Roman landscape elements (ibid, RP 4.5)

- When was the Roman enclosure established and when was it in use?
- What was the function and status of the enclosure? The analysis of the large assemblage of early Roman pottery combined with the analysis of other artefactual evidence is a priority.
- When were the burials interred in the backfilled enclosure? Dating of the skeletal remains would establish a more accurate age of the inhumations (i.e. using radiocarbon dating). A *terminus post quem* could then be ascertained for the enclosure.
- What do the skeletal remains tell us about the population of the area, their state of health and diet, and how they compare to other remains recovered, during the Roman period?
- What was the enclosure's position in the hinterland and landscape of Roman Worcester?

Medieval boundaries and land divisions (ibid, RP 5.27)

- Description of the medieval oven and its context.

Colonisation of back-plot areas and land in suburbs in the post-medieval period (ibid, RP 6.1)

- Description of the post-medieval industrial tanning remains.
- Analysis of the animal bone and in particular the mediumhorn and longhorn horncores which were dated to a time when there was a significant shift between these morphotypes as a direct result of selective breeding. It was

thought that this nationally important shift may have occurred in the West Midlands and that the remains from St John's may add to an evolving understanding of this aspect of history.

Methods

Fieldwork

The programme of archaeological work that was undertaken relating to the development scheme was complex, and a range of methods were utilised during different stages of the project. The locations of the evaluation trenches, areas of surveys, excavations and monitoring are indicated on [Figure 2](#).

The evaluation trenches and excavation areas were excavated by machine to the top of significant deposits. Subsequent cleaning and excavation was by hand. Deposits and features were sampled according to a predetermined strategy, and drawn, written and photographic records were made according to standard practice ([Wainwright 2009](#)).

A total of 34 evaluation trenches were excavated across the site. At the Old Council Depot on Malvern Road a small excavation and watching brief was carried out after medieval and post-medieval ditches and pits were identified in the evaluation. At 19–21 St John's a watching brief was carried out after medieval cess pits and rubbish pits were uncovered.

In the area of the new supermarket and in the immediate vicinity of the car park a small open area excavation was carried out to investigate an area of a putative prehistoric enclosure, followed by a watching brief on the whole area. The archaeological curator, however, decided that only large scale groundworks close to significant archaeological features and deposits were to be monitored, as smaller excavations were unlikely to yield any useful archaeological information. At the Bromwich Lane Tennis Club (new Sainsbury's car park) the evaluation identified Roman deposits and an open area excavation was carried out and a watching brief in areas outside of this area. Following on from the excavation it was agreed that preservation *in situ* for the remaining Roman deposits was required in this area. The archaeological curator produced a method statement for protection of the archaeological features ([Wainwright 2009](#)). The watching brief included monitoring groundworks to ensure that areas to be preserved remained undisturbed.

Along the length of the new access road and on St John's Green a watching brief was maintained after evaluation. Along the Malvern Road frontage of Christopher Whitehead School a limited watching brief was carried out. No features were hand excavated here as they were only observed when the impact level was reached and therefore would be preserved *in situ*.

The artefact recovery policy conformed to standard Service practice ([CAS 1995](#) as amended). This in principal determines that all finds, of whatever date, must be collected. However, in this case only a sample of modern material was collected from features and deposits.

Post-fieldwork analyses

All fieldwork records were checked and cross-referenced. A Harris matrix was constructed for the area of the early Roman enclosure, context groups (CG) were also allocated in this area. Analysis was effected through a combination of structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

A basic quantification of all finds by context has been undertaken as part of the assessment report ([Wainwright 2009](#)). This data, in a Microsoft Access database, forms the final record for the post-Roman finds from fieldwork at the St John's site. Where appropriate, specific details of post-excavation analysis methodologies are included in the individual specialist reports below.

The skeletal material was analysed according to professional standards. A programme of Accelerator Mass Spectrometry (AMS) dating was undertaken on samples of human skeletal remains. The remains were identified and quantified, before a sample of skeletal material from each individual was submitted to the Scottish Universities Environmental Research Centre (SUERC) for dating. Where possible, the material retrieved came from the right femur of the individual although this was not always achievable due to the variable preservation of each inhumation.

The environmental samples were processed by flotation using a Siraf tank. The flot was collected on a 300µm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds. The residues were scanned by eye and the abundance of each category of environmental remains estimated. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by the Service, and seed identification manual ([Cappers et al 2006](#)). Nomenclature for the plant remains follows the *New flora of the British Isles*, 2nd edition ([Stace 1997](#)). A magnet was also used to test for the presence of hammerscale.

The metalwork was X-rayed to aid identification and to inform the conservation process. Conservation was carried out on the metalwork where appropriate.

Acknowledgements and personnel

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Finds analysis was by Jane Evans, Angus Crawford and Dennis Williams; environmental processing and analysis by Elizabeth Pearson; illustration by Laura Templeton and Carolyn Hunt. Building and photographic recording was undertaken by Shona Robson-Glyde and Steve Litherland. The human osteological remains were analysed by Gaynor Western (Ossafreelance) and the animal osteological remains were analysed by Ian Baxter (freelance osteologist) who would like to thank Dr Naomi Sykes (University of Nottingham) for kindly making available a copy of the unpublished report on the animal bones from City Road, Chester. Cathy King (Ashmolean Museum) carried out identification of the coins, and would like to thank John Naylor (PAS advisor for medieval and modern coins) for his identification and dating of the jetton. Hilary Cool identified the brooches. Roger Tomlin commented on the graffiti on the pottery and Kay Hartley commented on the mortaria. Jane Evans would like to thank Steven Willis for his helpful suggestions regarding the early Roman assemblage. X-ray and assessment of the metal artefacts was undertaken by Kelly Abbott of Wiltshire Conservation Service, with additional conservation undertaken by Graham Morgan of University of Leicester Archaeological Services.

Archaeological and historical background

Prehistoric period

The development site occupies part of a large putative prehistoric enclosure following the southern route of Swanpool Walk and the eastern line of Bromwich Lane ([Baker and Holt 2004](#); WCM 96514; [Figs 1 and 2](#)). Archaeological evidence for the enclosure was absent, but the suggested scale of the earthwork enclosure implied substantial defences, comprising an earthwork bank and a wide external ditch ([Dalwood 2007](#)).

The configuration of plot boundaries in St John's, and the curving alignment of footpaths (now represented by Bromwich Lane and Swanpool Walk), has been interpreted as conforming to and deflected by an earthwork enclosure. The documentary evidence indicated that part of this footpath layout was in existence as a linear routeway in the 9th century, and its irregular, deflected, alignment was presumably in existence at this period. The upstanding earthwork that deflected the alignment of this linear routeway was presumed to have been fairly substantial and a prehistoric origin would be likely ([Baker and Holt 2004](#), 194–5). There is a c 1m drop in level between the old sports centre car park and Swanpool Walk, which is of some antiquity ([Field and Tann 2001](#), 9, plate 3). The hypothesis put forward by Baker and Holt is that most of the settlement of St John's lies within a prehistoric enclosure, c 350m north to south, and located on the edge of the river terrace. It was however admitted that archaeological evidence for this enclosure was absent ([Baker and Holt 2004](#), 195).

Roman period

The initial desk-based assessment could not provide much evidence for Roman occupation in the area of the development site, although it did draw attention to the suggestion that there was a bridge crossing at Worcester ([Field and Tann 2000](#), 6). Recent archaeological fieldwork at Newport Street, Worcester, has shown that a metalled Roman road is aligned on the site of the medieval bridge ([Davenport forthcoming](#)). Whether the Severn was crossed by a bridge or a ford in the Roman period is unknown at present, but this evidence supports the hypothesis that some elements of the historic road network west of the bridge in St John's are of Roman origin. Indeed Baker and Holt have suggested that the present road network (St John's, Bromyard Road, and Bransford Road) was in existence by the late conquest period ([Baker and Holt 2004](#), 195, fig 6.4), so it is possible that the east to west alignment of St John's (the street) follows a Roman road alignment. A recent excavation at The Butts, however, has uncovered a substantial Roman ditch running roughly east to west with buildings situated at right angles which suggests that the ditch formed the edge of a road ([Hal Dalwood pers comm](#)). If this is the case then it is possible that this road led westwards to a river crossing (roughly where the 19th century railway viaduct stands). Therefore the crossing would have existed further north than Newport Street, and this crossing point does not obviously relate to the road system across the river at St John's, in contrast to a more southerly crossing point.

An archaeological evaluation of land to the rear of 5 Bull Ring located Romano-British deposits (WCM 101422; [Cook 2006](#); [Fig 2](#)). Evaluation trenches located two enclosure ditches at right angles to each other, aligned south-west to north-east and north-west to south-east. One ditch was flat-based, 1.70m wide and 0.42m deep; the other was V-shaped

and 1.50m wide and 0.70m deep (Cook 2006; fig 3). The continuation of the south-east to north-west aligned ditch was excavated in this programme of works.

Elsewhere within the vicinity, one sherd of Roman pottery was recovered from evaluation trenches to the rear of 11–17 St John's (WCM 101415; Napthan 2006a; Fig 2).

Post-Roman to medieval periods

An early medieval routeway has been identified from documentary sources that follows the edge of the gravel terrace on a north–south alignment, and was recorded as the *folc hearpath* in a charter dated to 851 (Baker and Holt 2004, 194, fig 6.4; Field and Tann 2000, 7). This early medieval routeway is represented by Bromwich Lane to the east of the development site, and its irregular alignment is interpreted as due to deflection around a prehistoric enclosure (see above). This early medieval routeway is of considerable interest, although its alignment passes east of the development site (Figs 1 and 2).

Baker and Holt state that the basic network of roads in St John's was in existence by the late pre-conquest period, including St John's (the street), Bromyard Road and Bransford Road, with Malvern Road a possible later addition (Baker and Holt 2004, 195, fig 6.4). The development of the suburb of St John's around the church of St John in Bedwardine took place in the high medieval period. The church is first documented in c 1190 which is consistent with the earliest building fabric of the church dating to the late 12th century (Baker and Holt 2004, 214). Documentary evidence shows that settlement had developed by the 13th century (Field and Tann 2000; Hughes 2000). The layout of the medieval suburb has been studied, and medieval house plots have been identified north and south of Cripplegate (now Tybridge Street) and St John's (the street); the line of plots on the south side of St John's extends to the junction with Bransford Road (Baker and Holt 2004, 194–5, fig 6.4).

Baker and Holt state that the medieval plots south of St John's (the street) consisted of 'a long eastern series ending against a straight back-fence line running north-east to south-west; and a western series of plots representing subdivisions of a triangular block in the angle of St John's and the lane known as Powell's Row' running east to west (Baker and Holt 2004, 195, fig 6.4). The medieval back fence mentioned is represented by the modern boundary at the rear of properties on the south side of St John's, which marks the northern boundary of the development site. Similarly, the rear property boundaries of properties that adjoin the eastern side of the development area are probably of medieval date.

An archaeological evaluation of land to the rear of 11–17 St John's recorded cultivation soils containing pottery dating to the 13th/14th century and animal bone, and a shallow feature of medieval or post-medieval date (WCM 101415; Napthan 2006a; Fig 2). The evaluation trenches were to the rear of the back-plot, and it is possible that more extensive deposits survive closer to the street frontage. A subsequent watching brief on the construction work did not record any further medieval artefacts (WCM 101474; Napthan 2006b; Fig 2). A watching brief at the rear of 29 St John's did not record any medieval artefacts either (WCM 101480; Napthan 2006c; Fig 2).

The block of land between the rear of properties on St John's and Swanpool Walk is documented at the 'Frericroft' in the 13th century, open land leased by the Prior and Convent of Worcester (Hughes 2000, 9). The part of the development area south of Swanpool Walk was probably open ground in the medieval period (Baker and Holt 2004, fig 6.4).

To the south lay a lane (Swanpool Walk), and south of this there was a fishpond (*vivarium*) that was owned by Richard Bruton in the late 13th century; this was later known as the Swanpool (Hughes 2000, 8). The Swanpool is shown as a large pool immediately south of Swanpool Walk on the 1754 plan of Hardwick Manor (Fig 3). A large modern cut within an evaluation trench on the western edge of the new all-weather football pitch was interpreted as the edge of the Swanpool but from the cartographic evidence the Swanpool must be situated to the east of this trench (WCM 100866; Wessex Archaeology 2002; Fig 2). The wide eastern end of Bransford Road was a green in the medieval period and used as a cattle market until the 19th century (Field and Tann 2000, 8).

The Old Council Depot occupied part of a parcel of land known as Sexton's Close in the medieval period (Williams 2003, 3–4; WCM 101130; Fig 2). It has been suggested that it was the land that Adam of St John had from his father, Peter the 'seckestyn' of Bedwardine, sometime before 1316 (Hughes 2000). By the early 17th century John Ballard owned Sexton's Close and he leased it to Anthony Barnes in 1649 (Williams 2003, 4). There were several buildings and gardens mentioned in the lease for the plot. Building recording at 7 Malvern Road has identified elements within the fabric of the building dating from the 16th century (Williams 2003).

An archaeological evaluation at Christopher Whitehead School in 2002 (WCM 100866; Wessex Archaeology 2002; Fig 2) identified late medieval or post-medieval field or property boundaries east of the new all-weather football pitch.

Post-medieval to modern periods

The pattern of back-plots along St John's established in the medieval period (see above) saw little change in the post-medieval period. Archaeological evaluation in back-plots behind 11–17 St John's located post-medieval cultivation soils (WCM 101415; Napthan 2006a; Fig 2). The development site incorporated back-plot areas, which have potential for surviving archaeological deposits. The area to the south of the rear boundary is shown on the 1754 Map of Hardwick Manor as divided into three fields (Fig 3). The middle of the three fields is recorded as having the fieldname 'Small Barn', which suggests there was a barn in this field at this date; later mapping shows two buildings, probably barns, in this area (Field and Tann 2000, 10).

A tanning industry was recorded in St John's in the 17th century, and there was a tannery on Bromyard Road until 1861 (Field and Tann 2000, 8). Evaluation trenches in the grounds of Christopher Whitehead High School, close to Malvern Road, located dumps of cattle horncores in a post-medieval pit and a ditch fill, possibly associated with horn working (WCM 100866; Wessex Archaeology 2002; Fig 2). Research into the history of 7 Malvern Road indicated that the building was associated with the tanning industry, and suggested that buried remains of a tannery lay behind the house (WCM 101130; Williams 2003, 4; Fig 2). This area lies immediately north of the site of the Old Council Depot. The part of the development site south of Swanpool Walk (the Old Council Depot) was built on in the post-medieval period, with houses on the street frontage, and service buildings and gardens to the rear (Field and Tann 2000, 12).

In the post-medieval period the area of the Old Council Depot was divided into two Plots (Mr Hopkin's and Sexton's Close and Barns) which are shown on the 1754 *Plan of Hardwick*

[to previous view](#)

Manor (Fig 3). The southern boundary of the site follows one of these post-medieval subdivisions within Sexton's Close.

Sometime before 1748 a John Berkin owned Sexton's Close which was occupied by [?] Bayliss, a widow of Joseph (Williams 2003, 4). Joseph was a tanner by trade and in John Berkin's will dated 1748 messuages, a tan yard and garden are mentioned. By 1805 the house was known as the Tan Yard (Williams 2003, 4). Further references to tanning, including 68 timber lined pits, occur in a lease dated 1830 (Williams 2003, 4).

The 1886 Ordnance Survey 1:500 shows the western part of the Old Council Depot under formal gardens (Fig 4). In the south-western corner of the site the plan shows buildings, within what is probably a yard. The area of the all-weather pitch is shown as a field.

In the area of the Bromwich Lane Tennis Club the 1886 Ordnance Survey shows the area as being part of an informal garden associated with a property fronting onto St John's (Fig 4).

Results of fieldwork

Structural analysis

The areas focused on in this report will be the Bromwich Lane Tennis Club excavation and medieval to post-medieval features in the area of the Old Council Depot. The other parts of the site will be discussed in broad chronological periods. The trenches and features recorded are shown in [Figs 5–11](#).

The Bromwich Lane Tennis Club ([Figs 5–7](#))

Period 1 Geological deposits

The natural varied across the site and was observed during the intrusive investigations and watching brief. It generally consisted of yellow and orange sands and gravels with patches of red to pink clay (Mercia Mudstone). In the sections of the deeper excavations it was apparent that the natural was made up of separate bands of sands, gravels and clays. Several of the undated features recorded were probably of a geological nature. Amongst these were possible ice wedges.

Period 2 Middle Iron Age

Two intercutting pits probably date from before the early enclosure ditch was excavated, as they were truncated by the later ditch (CG2; ditches 1288 and 1296). One of these pits produced one small sherd of abraded pottery possibly of a middle Iron Age date, and it could be that these two pits date from that period. Several residual sherds of middle Iron Age pottery were recovered from the fills of the later enclosure ditch. A small irregularly-shaped pit located about 4m outside the enclosure produced late Iron Age pottery (CG7; fill 1316; pit 1317).

Period 3 Mid-1st century

An early ditch was identified in the north-west corner of the enclosure ditch (CG1; ditch 1431; [Figs 5 and 6](#)). This early ditch was shallower and had a more irregular profile than the later ditch. The fills were fairly homogenous and it would seem that this ditch silted up over a short period of time and was then backfilled. It is likely that this ditch represents the surviving part of a rectangular enclosure that was the same form as the later enclosure.

Three sides of an enclosure ditch, cut into the natural, were excavated in the north-east corner of the area (CG3; enclosure ditch 1195, 1265 and 1353; [Plate 1](#)). Previous works to the rear of 5 The Bullring had revealed two adjacent perpendicular ditches ([Cook 2006](#)), which can now be identified as the north-east corner of this enclosure. The enclosure is therefore considered to be approximately square in plan with sides c 40m in length, enclosing an area of c 1,600m². No entrance to the enclosure was uncovered during the excavations. It is probable that the entrance was situated on the eastern side of the enclosure, which lay outside the excavated area.

The width of the ditch varied as levelling works for the 20th century tennis courts had removed the higher levels, especially toward the north. At the widest point the ditch was approximately

3m wide and over 1.50m deep. The profile of the ditch was generally of a V-shape but in places the profile was more rounded. Each arm of the enclosure was not characterised by either a rounded or V-shaped profile. The ditch generally had only one broadly similar fill, or a maximum of four almost indistinguishable fills ([Plate 2](#)). These fills were generally yellowish-brown in colour and composed of sandy silt. Small to large pebbles were also present (CG4; fills 1196, 1244, 1249, 1260, 1261, 1262, 1263, 1264, 1276, 1315, 1354, 1362, 1366, 1367, 1404, 1407, 1408, 1422, 1423, 1427, 1428, 1429, 1430, 1441 and 1453). The exceptions to this were the fills along the southern arm of the enclosure ditch, towards the unexcavated area. Here it was thought that there was a later re-cut in the ditch, but during the post-excavation process it was deduced that this part of the enclosure ditch was characterised by a different sequence of fills and not a re-cut as parts of the same pottery vessels were recovered from the different fills (CG4; ditch 1365; fills 1297, 1371 and 1389). Another quite distinct fill was excavated in the northern arm of the ditch and cut by a grave. This fill contained quantities of iron slag and fired clay (CG4; fill 1406).

The majority of the artefacts recovered from the fills of the ditch date from the late Iron Age and early Roman period, but not after the mid-1st century. Seven coins and a brooch were found in close proximity in the top of the ditch and may therefore have formed a small hoard (CG4; fill 1260). Two iron brooches were also found close to each other in the ditch (CG4; 1297). The date of deposition of the AD 50s is likely. However, some of the fills produced dateable finds from the 1st and 2nd centuries (CG4; fills 1261, 1276, 1406, 1407, 1429, 1430 and 1441). These fills were located in the western and northern parts of the enclosure ditch, and it is likely that these fills or finds are intrusive, and represent a later period of activity on the site when the enclosure ditch had been filled in, but was still visible as a hollow in the landscape. This is discussed in more detail in the next section.

Only a handful of other features could be attributed to the mid-1st century in this area. Three pits which produced pottery dateable to the early Roman period were excavated within the enclosure (CG5; fills 1355, 1473, 1383; pits 1356, 1474 and 1384). A fourth pit produced no dating evidence but stratigraphically it must date from this period or earlier (CG6; fill 1270; pit 1271).

Period 4 2nd century

The 2nd century was characterised by the partial reuse of the enclosure and the excavation of several associated ditches perhaps associated with a small farmstead. The enclosure in the 2nd century must have been visible in the landscape as a hollow in the ground, and it is likely that the top part of the western and northern sections of the enclosure ditch were re-excavated. Although no visible cut was seen during the excavation the fills from this area produced 2nd century pottery. The fills from the more eastern parts of the ditch only produced a closely dating group of finds attributed to the mid-1st century. The top of the ditch had been removed by excavations for the tennis courts, so it is possible that this removed the re-cut and probably other features as well.

Two ditches were situated inside the enclosure and these were probably boundary features in operation during this period, perhaps associated with a farmstead or for stock rearing purposes. The first of these ditches was excavated roughly half way along the southern arm of the enclosure ditch and at perpendicular to it (CG10; fills 1302, 1341, 1352, 1358, 1359 and 1368; ditch 1303; [Plate 3](#)). The fills of this ditch produced quantities of 2nd century pottery and slag. The other ditch, although undated, had similarities in morphology and depositional

sequence and was at perpendicular to the enclosure ditch (CG10; fill 1268; ditch 1269). Running parallel to the enclosure ditch but outside it, was a similar ditch (CG10; fills 1201, 1304 and 1314; ditch 1200). All of these ditches had been truncated to some extent by the construction of the tennis courts.

A more substantial ditch adjoining the north-west corner of the enclosure ditch was presumably also part of this boundary system (CG8; fills 1438, 1439 and 1476; ditch 1437=1477). A pit cut into the top of this feature when the ditch had filled in must also be of a 2nd century date (CG9; fill 1436; pit 1435). One pit located to the west of the enclosure had 2nd century pottery within the fill (CG11; fill 1213; pit 1212). A small spread or dump of material within the enclosure close to the north-west corner also contained 2nd century pottery (CG12; context 1475).

Period 5 Late Roman/early post-Roman

No Roman pottery dated later than the 2nd century was recovered from the tennis court area. It would seem that the site was abandoned after this date or perhaps was only utilised for agrarian purposes.

Six graves cut into the top of the fills of the northern side of the enclosure ditch, represented a later phase of activity on the site (CG13, CG14, CG15, CG16, CG17, CG18; [Fig 7; Plates 4 and 5](#)). All of the graves were orientated roughly north to south and were aligned in a row, each being partially cut into the top of the ditch. Four of the grave cuts contained skeletons (CG15, SK1442; CG16, SK1440; CG17, SK1451; CG18, SK1447). Two of the burials were interred in a supine position (CG16, SK1440 and CG17, SK1451). The two others were buried in a different manner (CG15, SK1442 and CG18, SK1447). The skeletal remains and metalwork from the grave cuts are discussed in more detail below ([Western this report](#)). After the skeletons had been analysed hobnails were identified as being present in all four of the grave cuts where skeletons were present.

It is likely that the acidic nature of the soil was responsible for the eastern two grave cuts being devoid of any extant skeletal remains. The pottery from the graves was probably residual, redeposited when the graves were filled, therefore a reliable date for the burials cannot be ascertained from the pottery alone. The burial practices, however, rite of decapitation and hobnails in the areas of the feet (suggesting that the individuals were wearing hobnailed footwear when they were interred), points to a Roman tradition for the burials. Further refinement of the dating of the individuals was carried by radiocarbon dating.

Period 6 Medieval

No features or deposits excavated at Bromwich Lane Tennis Club dated from the medieval period. Several residual sherds of medieval pottery were recovered from later features.

Period 7 Post-medieval to modern

A large ditch running parallel to the eastern boundary of the area is considered to be the line of a former boundary shown on the 1886 Ordnance Survey ([Fig 4](#)). Planting holes running along the ditch to the west were also probably associated with this ditch. A series of features in the centre of the area were also dated to the post-medieval period. Towards the west of the area a pony or horse burial was excavated. The fill of the burial pit produced post-medieval

pottery. The overlying soil (context 1198) was dated to the post-medieval period and layers associated with the construction of the tennis courts were dated to the 20th century.

Other areas of the site ([Figs 8–11](#))

The Roman period

Sainsbury's supermarket and adjacent car parking

A sequence of Roman features and deposits were excavated in Trench D, positioned close to Swanpool Walk, where it had been conjectured that the bank and ditch of a prehistoric enclosure was situated ([Fig 8](#)). One pit (context 1026) and six postholes or small pits (contexts 1028, 1020, 1022, 1024 and 1030) were excavated cutting a sandy layer (context 1017/1393). One small sherd of pottery recovered from the fill of the posthole (context 1028) was dated to the 2nd century, and one sherd recovered from the pit fill was dated to the Roman period Layer (context 1017/1393) was about 1m deep and fairly homogenous and sterile of inclusions except iron slag. It is possible that the top part had been cultivated during the Roman period ([Plate 6](#)). A pit (context 1391) cutting natural (context 1169) was sealed by context 1017/1393. Roman pottery was recovered from the fills of this pit.

Trench CC ([Fig 8](#)) was excavated across Swanpool Walk, the upper layers (contexts 1457, 1458, 1459 and 1460) along the area of higher ground where the bank was thought to be located produced post-medieval pottery, but one small undiagnostic Roman sherd of pottery was recovered from a lower deposit (context 1461) which was about 0.15m thick. A lower soil horizon could be a relict soil (context 1463). Natural (contexts 1465 and 1471) was reached about 1m underneath the pathway along Swanpool Walk. No evidence for a ditch was uncovered.

Further evidence for Roman activity in this area was sparse and was limited to cultivation soils, along with occasional gullies and ditches probably representing drainage or field boundaries. Cultivation soils (layers 1011 and 1386) produced Roman pottery in Trenches C and Z. One sherd of Roman pottery was recovered from the fill of a large ditch (ditch 1419) in Trench BB, and a small gully (fill 1167, gully 1168) produced one sherd of Roman pottery in Trench O. It is possible that the Roman pottery in the ditch and the gully were residual.

Christopher Whitehead School

Four features identified during the watching brief produced Roman dating evidence. Context 912 contained late Iron Age/early Roman pottery and probable Roman slag. A pit and probable posthole (fills 910 and 962, pit 911 and posthole 963) produced Roman pottery. A number of Severn Valley Ware sherds were recovered from either a lower cultivation soil or spread of material above natural (layer 912).

Interpretation of the features and deposits excavated in this area is limited as none of the features were archaeologically excavated. It seems likely that quarrying was taking place along with other activities of unknown nature.

The rest of the site

Several features and deposits across the development site contained residual Roman pottery including relic cultivation soils at 19–21 St John's (context 831/803), along the new access road (context 1214) and the Old Council Depot (context 738). A pit fill at the Old Council Depot contained one sherd of Roman pottery (fill 562, pit 563) as well as post-medieval material and two sherds of Roman pottery together with a clay pipe stem were recovered from a pit fill to the rear of Jeynes Hardware (fill 3004, pit 3005).

The medieval period

Old Council Depot ([Figs 9 and 10](#))

The excavations at the Old Council Depot produced a scattering of features dating to the medieval period ([Fig 9](#)). Two ditches (216=716 and 712), with an entrance between them, ran roughly parallel to the modern street frontage. Towards the road frontage a figure-of-eight shaped oven was recorded (Trench 2, oven 212), backfilled with medieval and possibly post-medieval brick ([Fig 10](#); [Plate 7](#)). Stakeholes at one end could have been associated with the oven structure. A pit was situated close to the oven. It is possible that the two ditches formed a boundary between activity on the street frontage and an area behind which was utilised for agricultural purposes.

Two pits and two possible gullies/ditches (pits 506 and 565 and ditches 559 and 521), probably dating from the late medieval period, were excavated at the north-east of the site (Trench 5). These features were probably associated with late medieval plots fronting onto Swanpool Walk. Two pits were uncovered in the central part of the area (pits 656 and 408).

In the area of the new all-weather football pitch a probable medieval soil was observed (layer 774). A ditch or infilled watercourse (context 781) seen cutting natural in the south-west corner of the area could be of a medieval date, but the relationship between the medieval soil and the ditch or watercourse was not conclusive. This feature was not seen in the excavations further north.

19–21 St John's

In Trench 8, a large sub-circular pit (823) was recorded, that cut an earlier gully. It contained medieval pottery and is considered to be a rubbish pit. A square cess pit (818) was also of a medieval date as were two other pits. A medieval garden soil was above these features. No medieval features were observed in the watching brief. The medieval features and deposits excavated at 19–21 St John's represent activity of a domestic nature in back-plots to the rear of buildings fronting onto the street.

Other areas of the site

A large probable rubbish pit (906) was seen at Christopher Whitehead School. Residual medieval pottery was excavated in cultivation soils in all other areas of the site.

The post-medieval to modern period

Old Council Depot ([Figs 9 and 11](#))

The vast majority of the features and deposits excavated at the Old Council Depot were post-medieval. A large ditch (710) up to 3.50m wide and c 0.80m deep ran along the edge of the site close to the modern street frontage ([Fig 9](#)). A large pit (624) cut the ditch at the north end. It is probable that a ditch (737) seen to the north is the continuation of ditch 710. The ditch formed part of the boundary with the street and was probably used to keep stock. The fills (709 and 736) of this ditch produced quantities of horncores. Two further concentrations of post-medieval activity were observed at the Old Council Depot. The first area, to the rear of the Malvern Road frontage and south of Malvern House, was characterised by pits. Most of these pits date from probably the late 18th or 19th century and many of these pits were large (111 and 688=740); quantities of horncores were recovered from the fills (discussed below in detail).

The other concentration of post-medieval features was in the north-eastern corner of the site in the vicinity of Trench 5. Two ditches (531=671 and 521) were excavated. The largest (ditch 531) ran north to south and tallies with the boundary shown on the 1754 *Plan of Hardwick Manor* ([Fig 3](#)) and the 1886 Ordnance Survey ([Fig 4](#)). A double row of planting holes (pits 758, 760, 762, 764 and 785) and other garden features can also be tied in to the 1886 map in this area. A series of large pits (613, 615, 617, 748 and 750) were also uncovered in this area.

One pit (527) was partially lined (fill 526) with horncores laid flat and pressed into the side of the cut ([Fig 11](#); [Plate 8](#)). One of the earliest fills was of probably cess (fill 552) suggesting that this pit possibly started out being a cess pit, but perhaps became a rubbish pit by the 19th century. One of the latest fills (548) contained animal bone, horncores, charcoal and fuel ash.

19–21 St John's

A post-medieval garden soil (802) was observed, as were several pits (810, 814, 818 and 823), a well (828) and a large dump of 19th century bottles and china (context 835). Later features included a vehicle inspection pit associated with a 20th century garage.

Sainsbury's store and adjacent areas of car parking

This area was characterised by post-medieval soils (layers 1156 and 1336) and ditches (eg 1160). In the area of Trench V several ditches (1329 and 1331) and large pits (1325 and 1481) were observed. To the north of these features was a north-west to south-east aligned sandstone and brick wall and footing with a stone culvert alongside (1483). A brick-lined well (1482) was situated to the north of the wall.

Other areas of the site

At Christopher Whitehead School several post-medieval features were excavated, including garden features associated with the school. In the trenches (L and M) at Jeynes Hardware Store, garden soils (3001 and 3007) were observed as well as garden features. Along the new access road to the rear of Jeynes two large features (1131 and 1133) produced post-medieval pottery and were probably garden features shown on the 1886 Ordnance Survey.

In the area of St John's Green the remains of brick buildings (contexts 1072 and 1074) and an air raid shelter (1085) were excavated. The brick footings were probably part of the row of terraced houses shown on the 1886 Ordnance Survey ([Fig 4](#)). Pits (1059 and 1087) and a well (1305 and 1306) were seen within the gardens of the houses.

Undated deposits

Across the whole of the site there were deposits and features that were intrinsically undated. Their details are included in the assessment report and the site archive ([Wainwright 2009](#)).

Artefact analysis

The artefact assemblage

by C Jane Evans

The most significant finds from fieldwork in St John's came from excavation at Bromwich Lane Tennis Club. This assemblage is discussed in detail below. In summary, this site produced a regionally important assemblage of early Roman pottery, with good associated dating provided by coins and brooches, and evidence for 2nd century ironworking. Small quantities of Roman pottery were also noted in assemblages from other areas of the site. This, pottery, along with the post Roman finds, is summarised in the assessment report ([Wainwright 2009](#)). The largest group of medieval finds, pottery and ceramic building material, came from the Old Council Depot, but small quantities of medieval material were recovered from a number of areas. All areas of the site produced quantities of post-medieval and modern finds.

The pottery,

by C Jane Evans

Introduction

A total of 2784 sherds was recovered, weighing approximately 56.5kg and with a total rim estimated vessel equivalent (EVE) of 34.08. As can be seen from Table 1, most of the pottery came from stratified deposits. The majority came from the enclosure ditch and associated ditches, with smaller quantities coming from pits, graves and layers (Table 1).

Table 1 Summary of the assemblage by feature type

Feature type	Count	% count	Weight (g)	% Weight	% rim extant	% rim EVE	Average weight. (g)
Ditch	2531	90.9	52572	93.0	3175	93.2	21
Grave	91	3.3	1972	3.5	94	2.8	22
Pit	128	4.6	1143	2.0	99	2.9	9
Layer	4	0.1	27	0.0	5	0.1	7
Unstratified	30	1.1	842	1.5	35	1.0	28
Total	2784		56556		3408		20

Of particular importance is the mid-1st century pottery, which accounted for most of the assemblage and is described in detail below. This is the only sizeable assemblage of this date from Worcester, and one of only a few from the county. Its significance is greatly enhanced by the associated dating, provided by coins and brooches, which places its deposition sometime in the AD 50s. A handful of typically middle Iron Age rims, and a very abraded sherd from a Period 2 pit (fill 1287, pit 1288) may indicate some earlier activity on the site, and diagnostic 2nd century forms and fabrics provided evidence for later activity. No contemporary pottery was associated with the late Roman burials, although residual sherds were recovered from some of the graves.

Methodology

Sherds were examined using a x20 binocular microscope. Fabrics were recorded using the Worcestershire County Fabric Series (Hurst and Rees 1992, 200–9; <http://www.worcestershireceramics.org>, last updated 2005) with reference to the National Roman Fabric Reference Collection where possible (Tomber and Dore 1998). Where sherds did not match fabrics currently described in the county series, a related site specific code was allocated (eg Fabric 12.2.1). These fabrics are discussed below and will be added to the county series. The assemblage was quantified by sherd count, weight and rim EVE (estimated vessel equivalent); base EVEs are recorded in the archive but not published. Precise form types and broad vessel classes (eg bowl, cook pot) were recorded using a site specific form series (Table 2 and described in the catalogues below), together with any evidence for decoration, manufacture, repair, use or reuse.

Table 2 Summary of form codes

Form code	Form type
BKA	Butt beaker
BKI	Pedestal beaker with constricted waist
BA	Carinated bowl
BAB	Carinated bowl with constricted waist
BC	Curving sided bowl
B/D	Bowl/dish
B/DA	Bowl/dish, straight sided
BG	Wide mouthed bowl
BI	Flanged bowl
B/J	Bowl/jar
DB	Curving sided dish
DC	Platter
FF	Cup-mouthed flagon
FG	Disc-mouthed flagon
J	Jar
JE	Necked jar
JG	Globular jar
JK	Cook pot
JL	Large storage jar
JN	Narrow mouthed jar

Form code	Form type
JW	Wide mouthed jar
M	Mortaria
O	Oven?
TA	Tankard with upright walls
TB	Tankard with slightly splayed walls

The assemblage was laid out by fabric so that cross-joins could be identified. Wall thickness was recorded for the handmade Malvernian wares to see if large storage jars could be separated from tubby cooking pots on this basis. Data analysis was undertaken using Microsoft Access 2002 and Excel 2007. These digital data are included in the archive. The mid-1st century and earlier assemblage is illustrated in detail, to show the range and variation of forms in use. The less significant 2nd century assemblage is not illustrated, but is described with reference to published parallels.

Table 3 Summary of the assemblage by Ceramic Phase, stratigraphic phase and context group

Ceramic phase	Stratigraphic phase	Context group	Feature type	Count	Weight (g)	Average weight
CP 1				38	1048	28
CP 2				17	431	25
	Period 2	2	Pit	1	4	4
CP 1	Period 2	1	Ditch	7	34	5
CP 1	Period 3	4	Ditch	1733	42038	24
CP 1	Period 3	5	Pit	17	348	20
CP 1	Period 3	7	Pit	5	8	2
CP 1	Period 4	8	Ditch	3	44	15
CP 1	Period 5	13	Grave	75	1489	20
CP 1	Period 5	14	Grave	1	150	150
CP 1	Period 5	15	Grave	3	72	24
CP 1	Period 5	17	Grave	2	46	23
CP 1	Period 5	18	Grave	2	12	6
CP 1/2	Period 4	11	Pit	1	6	6
CP 2	Period 3	4	Ditch	338	5990	18
CP 2	Period 4	9	Pit	87	424	5
CP 2	Period 4	10	Ditch	444	4194.5	9
CP 2	Period 4	12	Layer	2	15	8
CP 2	Period 5	16	Grave	8	203	25
Total				2784	56556.5	20

Spot dating of the assemblage by feature revealed the presence of 2nd century pottery in some fills of the Period 3 enclosure ditch (Table 3, CG4). This has been interpreted as evidence for a 2nd century recut of the ditch, which could not be detected stratigraphically ([this report, p12](#)). As a result, two 'ceramic phases' (henceforth CP) were devised so that the two chronologically distinct assemblages could be characterised: CP1 for the mid-1st century assemblage, and CP2 for assemblages containing diagnostically 2nd century fabrics or forms.

These form the basis of the pottery discussion below and are referred to in some of the other finds reports.

Site formation

The average sherd weight was high even for unstratified sherds and sherds redeposited in the Period 5 late Roman graves, the exception being pottery from some of the pits and layers (Table 1). A number of sherds with fresh, modern breaks were noted, so the average sherd weight at the time of deposition would have been even higher. Numerous joining sherds were recorded, many from substantially complete vessels, and a number of cross-context joins were identified. Within the Period 3 enclosure ditch, some came from upper and lower fills within the same cut (eg fills 1261 and 1263). Others were noted between an earlier fill of the ditch (1366) and a later fill (1297) of what was on site interpreted as a later recut. The latter produced a substantial assemblage of pottery, similar in character to the earlier fill of the main enclosure ditch, and a Nauheim brooch dated pre-conquest to c AD 75 (see Cool below: Fig 27.1). This all tends to suggest that there was no recut, but that even if separate fills were distinguishable archaeologically, they must reflect contemporary events.

Other joins provided evidence of subsequent disturbance, for example those between Period 3 ditch fills and Period 5 graves cut into the ditch (fill 1422 and CG13, fills 1424; 1406 and 1407, CG15, fill 1443, CG16, fill 1409).

Abrasion was recorded on 74% of the assemblage, with abrasion particularly marked on the softer Severn Valley wares. This most likely reflects the soil conditions on the site.

Table 4 Summary of the pottery from pits

Ceramic Phase	Context type	Cut	Fill	Count	% Count	Weight (g)	% Weight (g)	Average weight (g)
	Pit	1288	1287	1	0.8	4	0.36	4
1	Pit	1212	1213	1	0.8	6	0.54	6
1	Pit	1282	1281	16	12.6	348	31.27	22
1	Pit	1317	1316	5	3.9	8	0.72	2
1	Pit	1380	1379	1	0.8	5	0.45	5
1	Pit	1384	1383	2	1.6	56	5.03	28
1	Pit	1435	1436	87	68.5	424	38.10	5
1	Pit	1474	1473	14	11.0	262	23.54	19
Totals				127		1113		9

Eight pits produced pottery (Table 4). Pit 1317 produced five sherds in a typically Iron Age, fabric 5.1 (fill 1316), and pit 1288 (fill 1287) a single sherd in the same fabric. The latter was very small and abraded, but appeared to have finger nail impressed decoration, dating it the middle Iron Age or possibly earlier. Pit 1474 (fill 1473) produced a range of fabrics and forms similar to those recorded in the Period 3 enclosure ditch. Of the pits attributed to CP2 only one (1435) produced a significant number of sherds (fill 1436), although the majority of these (81 sherds, 246g) came from a single Severn Valley ware jar. The low average sherd weight for this group is therefore misleading; the single vessel is in a soft friable fabric and

has broken into numerous small fragments. Three pits (1212, 1380 and 1384, fills 1213, 1379 and 1383) each produced one or two sherds of Severn Valley ware. Pit 1282 cut a fill of ditch 1195 (context 1276) which included 2nd century sherds.

Fabrics

A total of 39 fabrics were recorded (Table 5), the majority representing less than 1% of the assemblage (Table 6). Approximately half of the assemblage comprised a range of early Severn Valley ware variants, another quarter comprising handmade Malvernian ware. Fabrics are discussed in detail in the ceramic phase discussions below.

Table 5 List of fabrics represented

Fabric common name (NRFC code)	WCOD Fabric code	Site specific fabric code	Description and notes
Malvernian ware; Group A (MAL RE)	3		
Palaeozoic limestone; Group B1	4.1		
Shell and sand	4.4		
Sand	5.1		
Sandstone	5.2		Morris Fabric E (Morris 1983, 135-40),
Mudstone tempered ware; Group D	9		
Severn Valley ware (SVW OX 2)	12		
Reduced SV ware	12.1		
Variant with distinctive firing (cf Beckford 46)	12.1	12.11	Reduced plain SVW with grey core, oxidised margins and blackened surfaces (cf 12.31) cf 21.3 micaceous ware
Oxidised organically tempered Severn Valley ware	12.2		
Variant with organic and grog (cf Beckford 37)	12.2	12.21	Fine/sparse to moderate organic with rounded grog, sparse sand
Variant with more grog than organic	12.2	12.22	mainly grog, with very sparse organics
Variant with organic and sand	12.2	12.23	
Reduced organically tempered SV ware	12.3		
Variant with organic and grog (cf Beckford 37)	12.3	12.31	Reduced, moderate to abundant organic (some angular and some elongated) with grog
Variant with more grog than organic	12.3	12.32	Variant with more grog than organic
Severn Valley ware variant	12.4		
Severn Valley ware variant, sandy	12.5		
Severn Valley ware variant, yellow white inclusions	12.6		
Severn Valley ware variant, grog and sand		12.8	
Severn Valley ware variant, Malvernian?		12.9	

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Fabric common name (NRFC code)	WCOD Fabric code	Site specific fabric code	Description and notes
Sandy oxidized ware	13		
Sandy oxidized ware, coarse	13	13.1	13.1 distinctive coarse sandy ware, oxidised throughout, ill sorted inclusions of white/ milky quartz & other inclusions to be identified. Not quite like any Beckford fabric.
Fine sandy grey ware	14	14	Fabric 14 cf Beckford 38 or 54
Wheelmade grog tempered ware (Beckford 32/33)	16	16	
Savernake ware (SAV GT)	16.1	16.1	
Handmade grog tempered ware (Beckford 30/31)	16.2	16.2	
Wheelthrown Malvernian ware	19		
White slipped ware	20.1		
White slipped ware	20.2		
Black-burnished ware, type 1; BB1 (DOR BB 1)	22		
Worcester/Droitwich SV mortaria	37.5		Described by Kay Hartley as: reddish-brown with good traces of cream slip. Inclusions of fairly frequent, ill-sorted, iron slag and quartz. Trituration grit mixed quartz, brown and red-brown sandstone.
Gallo-Belgic sandy white ware (NOG WH 3?)		41.1	
Samian, SG La Graufesenque (LGF SA)	43	43.11	
Samian, CG Lezoux (LEZ SA)	43	43.21	
Miscellaneous Roman wares	98		
Brown colour coated ware, roughcast (CAR CC?)	98	98.1	
Sandy, micaceous oxidised ware (CAR OX?)	98	98.2	
South-west white slipped ware (SOW WS)	151		

Table 6 Summary of the whole assemblage by fabric

Fabric common name	WCOD fabric code	Site fabric code	Count	% count	Weight (g)	% weight	% rim extant	% rim EVE	Average sherd weight
Malvernian ware	3		746	26.8	22517	39.8	851	25.0	30
Palaeozoic limestone	4.1		38	1.4	530.5	0.9	8	0.2	14
Shell and sand	4.4		1	0.0	32	0.1	8	0.2	32
Sand	5.1		19	0.7	136	0.2	0	0.0	7
Sandstone	5.2		1	0.0	14	0.0	0	0.0	14
Mudstone tempered ware	9		331	11.9	1689	3.0	59	1.7	5
Severn Valley ware	12		381	13.7	5977	10.6	513	15.1	16
Reduced SV ware	12.1		15	0.5	240	0.4	6	0.2	16
Variant with distinctive firing	12.1	12.11	18	0.6	336	0.6	35	1.0	19
Oxidised organically tempered Severn Valley ware	12.2		62	2.2	1732	3.1	191	5.6	28
Variant with organic and grog	12.2	12.21	151	5.4	3810	6.7	514	15.1	25
Variant with more grog than organic	12.2	12.22	94	3.4	3386	6.0	137	4.0	36
Variant with organic and sand	12.2	12.23	31	1.1	270	0.5	24	0.7	9
Reduced organically tempered SV ware	12.3		2	0.1	101	0.2	360	10.6	51
Variant with organic and grog	12.3	12.31	229	8.2	8147	14.4	0	0.0	36
Variant with more grog than organic	12.3	12.32	7	0.3	48	0.1	0	0.0	7
Severn Valley ware variant	12.4		4	0.1	108	0.2	0	0.0	27
Severn Valley ware variant, sandy	12.5		71	2.6	1669	3.0	171	5.0	24

[to previous view](#)

Fabric common name	WCOD fabric code	Site fabric code	Count	% count	Weight (g)	% weight	% rim extant	% rim EVE	Average sherd weight
Severn Valley ware variant, yellow white inclusions	12.6		173	6.2	1885	3.3	123	3.6	11
Severn Valley ware variant, grog and sand		12.8	12	0.4	380	0.7	42	1.2	32
Severn Valley ware variant, Malvernian?		12.9	15	0.5	148	0.3	0	0.0	10
Sandy oxidized ware	13		6	0.2	34	0.1	0	0.0	6
Sandy oxidized ware, coarse	13	13.1	13	0.5	484	0.9	17	0.5	37
Fine sandy grey ware	14	14	43	1.5	429	0.8	83	2.4	10
Wheelmade grog tempered ware	16	16	4	0.1	40	0.1	8	0.2	10
Savernake ware	16.1	16.1	4	0.1	113	0.2	32	0.9	28
Handmade grog tempered ware	16.2	16.2	6	0.2	32	0.1		0.0	5
Wheelthrown Malvernian ware	19		8	0.3	313	0.6	19	0.6	39
White slipped ware	20.1		2	0.1	8	0.0		0.0	4
White slipped ware	20.2		4	0.1	74	0.1		0.0	19
Black-burnished ware, type 1; BB1	22		182	6.5	788	1.4	45	1.3	4
Worcester/ Droitwich SV mortarium		37.5	8	0.3	337	0.6	13	0.4	42
Gallo-belgic sandy white ware	41.1	109	1	0.0	4	0.0		0.0	4
Samian, SG La Graufesenque	43	43.11	4	0.1	1.5	0.0		0.0	0
Samian, CG Lezoux	43	43.21	3	0.1	130	0.2	3	0.1	43
Miscellaneous Roman wares	98		2	0.1	2	0.0		0.0	1
Brown colour coated ware, roughcast	98	98.1	2	0.1	8	0.0		0.0	4

Fabric common name	WCOD fabric code	Site fabric code	Count	% count	Weight (g)	% weight	% rim extant	% rim EVE	Average sherd weight
Sandy, micaceous oxidised ware	98	98.2	3	0.1	232	0.4	46	1.3	77
South-west white slipped ware	151	151	88	3.2	370	0.7	100	2.9	4
Total			2784		56556		3408		20

Middle Iron Age pottery

A handful of typically middle Iron Age forms are assumed to be residual and provide evidence for the earliest activity on the site (Fig 12). It should be noted, however, that the distinction between middle and late Iron Age in this region is not necessarily clear cut, and some of these forms could have continued in use (Moore 2007, 47). Most came from the 1st century enclosure ditch (Fig 12, 1–4 and 6). One (Fig 12, 5) came from a late Roman grave (SK 1425, fill 1424) which also produced a quantity of 1st century pottery, presumably removed from the ditch when the grave was excavated and redeposited when the grave was backfilled. Another rim (similar to Fig 12, 5 and therefore not illustrated) came from an enclosure ditch fill dated to the 2nd century, CP2 (fill 1407). If residual, it is uncertain whether these sherds date the original cut of the ditch, or come from features that were disturbed when the ditch was created, though the latter seems more likely. The vessel in shell and sand tempered ware (Fig 12, 4) probably dates to the early middle Iron Age, or earlier, based on evidence from Beckford (Evans *et al* nd). It is possible that some undiagnostic body sherds in Malvernian ware could be associated with these middle Iron Age forms. Two pits (1317 and 1288) produced small quantities of Fabric 5.1, a typically Iron Age fabric. The sherd from pit (1288) had possible finger impressed decoration, suggesting a middle Iron Age or earlier date.

Catalogue of middle Iron Age forms (Fig 12)

1. Barrel-shaped bowl or jar with simple upturned, flatted rim; Beckford type 2.2. Decorated with a single row of wedge-shaped stamps, angled right (Beckford decoration type Ba8). The form and decoration are typical of middle Iron Age assemblages at Beckford (Evans *et al* nd). Diameter 26cm (6%). CG4, ditch 1365, context 1297A. Fabric 3, Form J2.2, record number (rec no) 85.
2. Barrel-shaped or globular jars with gently everted rims and burnished surfaces; a middle Iron Age type (Beckford form 3.8). It is not particularly common at Beckford (Evans *et al* nd) but seems to be slightly more frequent in later middle Iron Age contexts (CP C). Diameter 14cm (15%). CG4, ditch 1365, context 1297B. Fabric 3, Form JE7.01, rec no 9.
3. Similar, though larger jar with a flatted rim. Diameter 18cm (10%). CG4, ditch 1365, context 1297B. Fabric 3, Form JE7.01, rec no 57.
4. Similar larger jar, with a rounded rim. Vertical burnish on the neck and with sooting just below the rim. Diameter 16cm (8%). CG4, ditch 1365, context 1297B. Fabric 4.4,

Form JE7.01, rec no 694.

5. Very large storage jar with a flat, thickened rim, similar to Beckford type 3.5 ([Evans et al nd](#), fig 7.4.21f CP9–11). The jar is burnished, and decorated below the rim with a crude band of linear tooled 'lattice,' bordered by horizontal lines. The appearance of this decoration defines the later middle Iron Age assemblages at Beckford; it is not characteristic of the late Iron Age assemblages there, which are characterised by burnished decoration. Diameter 55 cm (9%). CG13, grave 1425, context 1424. Fabric 3, Form JL22.08, rec no 230.
6. Barrel-shaped jar with flattened bead rim, also broadly Beckford Form 3.5 ([Evans et al nd](#), 7.4.21f CP9–11). The jar is burnished, and decorated below the rim with a band of linear tooled 'lattice,' bordered by horizontal lines. The appearance of this decoration defines the later middle Iron Age assemblages at Beckford. It does not continue in use in the late Iron Age there. Diameter 14cm (7%). CG4, ditch 1195, context 1362. Fabric 3, Form J22.01, rec no 664.

The mid-1st century (Claudio-Neronian) assemblage: Ceramic Phase 1

The majority of the assemblage dated to the mid-1st century: 68% by count, 80% by weight and 72.5% by rim EVE came from contexts attributed to CP1. In addition, a quantity of 1st century pottery was mixed in with the CP2 assemblages. The best dated group came from the Period 3 enclosure ditch ([Table 3](#), CG4). The presence of associated coins, dating to the AD 40s, and brooches, most likely dating to the AD 50s, provide close independent dating ([Cool and King this report, p47](#)). This was enhanced by the fact that much of the pottery appeared to have been used and, when the site was abandoned, dumped contemporaneously. This group included a number of near-complete vessels and average sherd weights were high. Another interesting aspect of this group is the number of vessels with ownership marks ([Tomlin this report, p45](#)). One, and one more doubtful example, came from (ditch 1195, fill 1362; [Tomlin this report, p45](#), 4 and 5), and three from the later fill (ditch 1365, fill 1297; [Tomlin this report, p45](#), 1–3).

The stratigraphically earliest CP1 pottery came from the Period 2 ditch, CG1, and pit, CG2. The small assemblage from the ditch was very fragmentary and badly abraded, to the degree that it was not absolutely certain that it was pottery rather than fired clay. However, the fabric and firing were similar to pottery typical of the CP1 assemblage. The single sherd from the pit (1288, fill 1287), while included in CP1, was probably Iron Age in date and is discussed above. Other CP1 pottery came from Period 3 pits, CG5 and 7, or was residual in later features such as the Period 4, CG8 ditch and the Period 5 late Roman graves (CG13–5 and 18). Amongst the latter, grave (1425, fill 1424) produced the largest assemblage (75 sherds, 1489g), redeposited from the dump of pottery in the enclosure ditch below it (fill 1423). Other graves produced only a couple of sherds.

The pottery assemblage from nearby excavations at 5 Bullring ([Hancocks 2006](#)) was re-assessed as part of this analysis. The small assemblage (11 sherds, 981g) was very similar in character to the Period 3 enclosure ditch assemblage, with similar fabrics (Fabrics 3, 12.2 and 9) and forms; including Severn Valley ware carinated bowls (cf [Fig 18](#), 14 and 15) and handmade Malvernian storage jars ([Fig 13/14](#), 10–12 and 18–19). Although originally dated to the late 1st to early 2nd century, a mid-1st century date now seems more likely, confirming that the ditch recorded there is part of the same enclosure.

It is mainly the pottery from Period 3 that is described and illustrated below, predominantly from the enclosure ditch (CG4). Occasionally where a diagnostic form is best represented by a residual sherd from a later period, this has been included. The pottery is described and illustrated by fabric.

Fabrics

The mid-1st century (CP1) assemblage was dominated by handmade Malvernian ware (Table 5; Fig 15). The very high percentage by weight is probably biased by number of large storage jars in this fabric. The remainder of the assemblage mainly comprised a range of early Severn Valley ware fabrics. Most common were the Belgic-influenced fabrics containing clay pellets and grog (Fabrics 12.2.1, 12.2.2, 12.3.1 and 12.3.2), the significance of which, is discussed below.

Other fabrics, represented in smaller quantities, mainly comprised native Iron Age wares. These included: Mudstone tempered ware (Fabric 9), produced from the mid-5th century BC through to the later Iron Age (Morris 1983; Tomber 1985, 113–5); Palaeozoic limestone tempered ware (Fabric 4.1); and in smaller quantities, Sandstone tempered ware (Fabric 5.2), Savernake ware (Fabric 16.1) and other grog tempered wares (Fabrics 16 and 16.2) and handmade, Sand tempered wares (Fabric 5.1). A programme of radiocarbon dating at Beckford suggested an end-date for the use of Palaeozoic limestone tempered wares of c AD 60–80 (Evans *et al* *nd*. section 7.9.6.13.) and this dating is supported elsewhere (Willis 2012, 44). Very small quantities of wheelmade sandy ware were present (Fabrics 13, 13.1, 14 and 98.2), representing a more Romanised element of the assemblage. The forms occurring in all these fabrics are described below.

Given the secure dating of this assemblage, it is worth noting the absence of briquetage. The evidence from Droitwich suggests that briquetage ceased to be exported by the Neronian period (Derek Hurst *pers comm*). The evidence from St John's might support this.

Forms

Handmade Malvernian ware (Fabric 3)

Apart from a single necked jar/bowl (Fig 14, 20), all forms in handmade Malvernian ware were classified as tubby cooking pots or large storage jars (Figs 13 and 14, 1–20). There is some overlap between these categories, and some of the larger tubby cooking pots (with diameters up to 26cm) could in functional terms be classified as large storage jars. Tubby cooking pots were more common. As can be seen from Figure 16, many of these were quite small. The smallest had a diameter of 7cm and the most common diameter was 12cm. Wall thicknesses varied between 5 and 17mm, though there could be considerable variation along the profile of a single vessel. Most ranged between 7–10mm thick. Tubby cooking pots mainly had upright, rather than in-turned, walls (Fig 13, 1–6). The presence of these in a securely dated, pre-Flavian context is of interest. The form was originally dated by Peacock to the 2nd century (Peacock 1965–7, 16–18), although examples from pre-Flavian contexts have subsequently been recorded from early military sites in the region (Green *et al* 2001; Rees 2006, fig 19, 15). At Beckford they first appear in late Iron Age CP E and are increasingly common in CPs F–G and G (Evans, *et al* *nd*, section 7.4). The large storage jars had walls ranging from 12–38mm, most falling within a range of 14–17mm.

Vessels classified as large storage jars/bowls mainly had diameters of between 20 and 28cms, though there were some much larger outliers (Fig 16). The jars or large bowls with angular rims (Fig 13, 10–13) may be a long-lived form. They are equivalent to Beckford form 16.6, first found in Iron Age CP F (Evans *et al* nd). Peacock illustrates examples of these from a late Roman kiln at Malvern (Peacock 1965–7, fig 4.81–2), though they were not thought to be kiln products. Similar forms were also noted at the predominantly mid- to late 2nd to 3rd century production site at Newland Hopfields, Malvern (Evans *et al* 2000, fig 36, JLS2 and 3). There is great variation in the precise form of these rims; a selection is illustrated below. One of the rims illustrated may be from a portable oven or other ceramic object rather than a jar (Fig 14, 14).

Catalogue of Claudio-Neronian forms, handmade wares: Fabrics 3, 4.1 and 9
(Figs 13 and 14)

1. Tubby cooking pot with near upright walls. The rim is very distinctive, with a sharply tooled flat top and an internal facet, presumably a lid seat. The rim form is quite unusual. Diameter 20cm (15%). CG4, ditch 1195, context 1366 and ditch 1365, context 1297. Form JK14.11, rec no 75 and, 600).
2. Tubby cooking pot with a gently in-turned, tapering rim; vertical burnish externally. Diameter 18cm (7%). CG4, ditch 1365, context 1389. Form JK22.01, rec no 267.
3. Tubby cooking pot with a simple rim; vertical burnish externally with horizontal burnish above the base. Diameter 12cm (44%). CG4, ditch 1365 context 1297B. Form JK22.03, rec no 61–3).
4. Variant with slight bead rim. Diameter 15cm (37%). CG4, ditch 1195 context 1362. Form JK22.05, rec no 608.
5. Similar but larger variant with a bead rim. Diameter 22cm (20%). CG4, ditch 1365 context 1297B. Form JK22.05, rec no 71.
6. Variant with a flat rim. Diameter 23cm (6%). CG4, ditch 1365, context 1389. Form JK22.07, rec no 268.
7. Larger variant with an in-turned flat rim. Diameter uncertain. CG4, ditch 1195, context 1244. Form JL22.07, rec no 262.
8. Large variant with an expanded rim. Diameter 36cm (9%). CG4, ditch 1365, context 1297B. Form JL22.08, rec no 83.
9. Large, high shouldered and neckless storage jar, with a short everted rim. Diameter 24cm (13%). CG4, ditch 1353, context 1423. Form JL1.2, rec no 412.
10. Horizontal burnish over the rim and vertical burnish on the external walls. Diameter 28cm (15%). CG4, ditch 1365, context 1297B. Form JL1.3, rec no 79 and 80.
11. Larger variant, with heavy wipe marks/rilling below the rim. Diameter 53cm (6%). CG4, ditch 1353, context 1354. Form JL1.3, rec no 601.
12. Variant with less pronounced angular rim. Diameter 35cm (15%). CG4, ditch 1365,

context 1297B. Form JL1.3, rec no 81–2.

13. Very large bowl with a less pronounced angular rim. Diameter 56cm (17%). CG4, ditch 1365, context 1389. Form JL1.3, rec no 271.
14. Vary large jar with a flattened rim. Diameter 35cm (6%). CG4, ditch 1365, context 1389. Form O22.07, rec no 270.
15. Very large storage jar with flattened, slightly squared rim. Diameter uncertain. CG4, ditch 1195, context 1315. Form JL22.09, rec no 625–6.
16. Large jar with a flattened, almost T-shaped rim. A similar rim was recovered from ditch fill (1389), possibly from the same vessel. The rims are particularly crudely made, raising the possibility that they are not jar rims but the bases of portable ovens. While such ovens are known from late Roman contexts, however, they have not so far been associated with earlier Roman deposits. Diameter uncertain. CG4, ditch 1365, context 1297B. Form JL22.08, rec no 84.
17. Large, necked storage jar with a beaded rim. Diameter 26cm (7%). CG4, ditch 1365, context 1297B. Form JL15.03, rec no 10.
18. Neckless, high shouldered, large storage jar with a sharply everted rim. Related forms have been noted on other sites in Worcester, at Sidbury ([Darlington and Evans 1992](#), fig 24.8, 9) and Deansway ([Bryant and Evans 2004](#), fig 164.1), though these have a slacker profile and are perhaps a chronological development from this form. The vessel illustrated has a graffito inside the rim, discussed in detail below ([Fig 25.2](#)). Diameter 23cm (29%). CG4, ditch 1365, context 1297. Form JL7.12, rec no 19, and 24–26.
19. Very short necked, high shouldered, large storage jar, with a thickened, out-turned rim. Diameter 20cm (63%). CG4, ditch 1195, context 1362. Form JL7.12, rec no 611–2.
20. Necked, wide mouthed jar or bowl, with a prominent shoulder, an upright neck, and a beaded rim; a form more commonly associated with Severn Valley ware ([Fig 18](#), 19–21). The section of the ditch in which this was found produced relatively little pottery, and the context of this vessel is consequently less secure. It comes from a context assigned to CP2 on the basis of a single sherd of BB1, probably intrusive from the context above (1430), which overlies a context from which the only find was the platter base illustrated below ([Fig 19](#), 24). A body sherd from a similar form, though with a small cordon on the base of the neck, was recovered from a fill of the enclosure ditch (context 1389). Diameter uncertain. CG4, ditch 1353 context 1429. Form JW7.01, rec no 410–1.

Palaeozoic limestone tempered ware (Fabric 4.1)

The only form represented in Palaeozoic limestone tempered ware was a large storage jar ([Fig 14](#), 21).

21. Neckless, large storage jar with an everted rim. A similar form is illustrated from Beckford, CP G ([Evans *et al* nd](#), fig 7.4.22e.5) and at *Ariconium* the form is dated

to c 70 BC – AD 75 (Willis 2012, fig 4.3, 3 and 4). Diameter 30cm (8%). CG4, ditch 1365, context 1297B. Form JL7.12, rec no 212.

Mudstone tempered ware (Fabric 9)

Mudstone tempered ware was represented by small jars (Fig 14, 22), with diameters of 13 and 15cm, and large/very large storage jars (Fig 14, 23–5), with diameters of 27, 30 and 52cm.

22. Handmade jar with a short everted rim, similar to Beckford late Iron Age to early Roman form 10, associated there with CPs E–H (Evans *et al* nd, fig 7.4.22a). Similar forms in Palaeozoic limestone tempered ware are dated c 70 BC–AD 75 at *Ariconium* (Willis 2012, fig 4.2, 8, 16 and 17). Diameter 13cm (16%). CG4, ditch 1365, context 1297B. Form JG7.12, rec no 219–20.
23. Large, neckless storage jar with a bead rim. A similar form from *Ariconium*, though in Fabric 4.1, is dated c 70 BC – AD 75 (Willis 2012, fig 4.2, 18), and similar Savernake ware forms are described from Oare (Swan 1975, fig 3.30). This is consistent with the dating evidence here. CG4, ditch 1195, context 1244. Form JL1.01, rec no 223.
24. Very large jar or bowl with two grooves on the rim; Beckford form 16, first noted there in CP F (Evans *et al* nd) and dated at *Ariconium* to c 70 BC–AD 75 (Willis 2012, fig 4.3, 13). Not a type noted at Dodderhill or Metchley. Diameter 52cm (12%). CG4, ditch 1195, context 1315. Fabric 9, Form JL17.07, rec no 662–3.
25. Neckless large storage jar with a flattened bead rim; similar to Beckford form 17, which first occurs in CP F (Evans *et al* nd). Diameter 27cm (10%). CG4, ditch 1195, context 1315. Form JLI7.13, rec no 658.

Severn Valley ware (Fabrics 12, 12.1, 12.1.1, 12.2, 12.2.1, 12.2.2, 12.2.3, 12.3, 12.3.1, 12.3.2, 12.4, 12.5, 12.6, 12.8 and 12.9)

26. A detailed summary of forms by fabric can be found in Table 7. A summary by vessel class is presented below (Table 8). Similar forms were produced in a range of early Severn Valley ware fabrics, though some variations are evident. Large storage jars were particularly common in the reduced organic and grog tempered fabric and in the organic tempered Severn Valley ware (Fabrics 12.3 grog and 12.2; Table 8, Fig 17). This is consistent with evidence elsewhere; the coarse tempering is suited to the production of thick walled vessels, and large storage jars are often in the reduced variant. Belgic-derived forms such as the carinated bowls, pedestal beakers and wide mouthed jars were amongst the most common forms in the oxidised grog tempered wares (Table 8, Fabric 12.2 grog). A wider range of carinated bowls was represented in these fabrics, with a variety of waisted forms (Fig 18/19, 12–16). The upright walled form (Fig 18/19, 15 and 16), more typical of Severn Valley ware, was the only type noted in the other fabrics.

Catalogue of Severn Valley ware forms (Figs 18 and 19)

Flagons

1. Cupped mouth or ‘funnel mouth’ flagon, with a bead rim and an external cordon at the

base of the funnel mouth. The form is similar to *Camulodunum* form 170, derived from Haltern 53, Hofheim 50 (Hawkes and Hull 1947, 249, plate LXVI). 'Hofheim' flagons are common on Claudio-Neronian military sites (Swan 1975, 47). A similar Severn Valley ware form is published from Dodderhill fort, Droitwich (Rees 2006, fig 19, 2.0) and related forms are illustrated from Metchley fort, Birmingham (Green et al 2001, fig 33 F6) and from the military assemblage at Wroxeter (Timby et al 2000, fig 4.50, F5.61). The general form appears to have continued into production through the Flavian period (Evans et al forthcoming) into the 2nd century (Evans et al 2000, fig 4.50, F6.51; Rawes 1982, fig 2.2), though the 2nd century examples illustrated from Newland Hopfields (Evans op cit.) have less pronounced cordons and out-turned rims. Diameter 11cm (20%). CG4, ditch 1195, context 1249. Fabric 12, Form FF1.04, rec no 356–8.

2. Neck, possibly from a similar flagon. Of particular interest is the round hole which has been cut into the neck before firing, presumably for attaching a handle. A similar handle attachment is described on a Hofheim-type flagon from Oare (Swan 1975, 47, fig 2.2), demonstrating a shared technological influence. CG4, ditch 1265, context 1263. Fabric 12.6, rec no 348.

Butt beakers

3. Butt-beaker, with a slightly cupped rim; *Camulodunum* form 111 or 112 (Hawkes and Hull 1947, 238, fig 50 and plate LVII). The form is similar to the Savernake ware butt-beakers from Oare, described by Vivien Swan (Swan 1975, fig 2, 49). Swan dates these copies of continental imports from shortly before the conquest to at least the reign of Nero, consistent with the evidence here, and notes that they were a popular form with early military suppliers. Timby includes a similar form amongst her early, pre-conquest Severn Valley ware types (1990, fig 4.49). Examples are known from other Worcester sites (Bryant and Evans 2004, fig 157.6). Similar forms are published from contexts dated c AD 45–55 at Ditches hillfort, Gloucestershire (Moore 2008, fig 37.29, 31) and from pre-Flavian contexts at Dodderhill fort, Droitwich (Rees 2006, fig 19 5.1), Metchley fort, Birmingham (Green et al 2001) and Kingsholm fort, Gloucester (Darling 1977, fig 6.9, 27). The illustrated vessel has a band of finely incised decoration, bordered by grooves and cordons. Diameter 13cm (28%). CG4, ditch 1365, context 1297. Fabric 12.2.1, Form BKA6.02, rec no 128–9.
4. Rim and neck from a similar vessel. Diameter 10cm (55%). CG4, ditch 1365, context 1297B. Fabric 12, Form BKA6.02, rec no 180.
5. Butt beaker with a slightly angular bead rim, similar to *Camulodunum* native form 117 (Hawkes and Hull 1947, 240, plate LVIII). Diameter uncertain. CG4, ditch 1353, context 1408. Fabric 12.2.2, Form BKA1.01, rec no 475.
6. Developed butt beaker, with an everted, thickened rim; *Camulodunum* form 119 (Hawkes and Hull 1947, 240, plate LVIII) and similar to Bagendon form 62B (Fell 1961, fig 63) and Beckford form 24 (Evans et al nd.). Like those described at Bagendon, this vessel has a fumed and burnished external surface. Diameter 15cm (32%). CG4, ditch 1365, context 1297. Fabric 12.3.1, Form BKA1.04, rec no 108–10.

7. Wide mouthed jar with a simple, out-curving rim, and a cordon at the base of the neck, Webster type A1 (1976, fig 1.1), dated by him very broadly from the 1st to 4th centuries. A similar rim is published from Dodderhill fort, Droitwich (Rees 2006, fig 19 16.2). Diameter 13cm (100%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form JN7.01, rec no 118–9.

Tankards

8. Upright walled tankard, Webster E38, dated by him to the mid- to late 1st century (1976, fig 7); one of the early, pre-conquest Severn Valley ware forms identified by Timby (1990, fig 4.45). There is no sign of decoration, though the sherd is very abraded. Diameter 14cm (5%). CG4, ditch 1353, context 1423. Fabric 12.2.3, Form TA1.01, rec no 552.
9. Similar vessel with a round hole cut into the wall, into which a plug of clay was presumably pushed to attach a handle. The handle scar can be seen on the external surface. The vessel was found in a context which produced 2nd century pottery and is otherwise dated to CP2, but is thought to be residual. Diameter 16cm (22%). CG4, ditch 1353, context 1406. Fabric 12.2.2, Form TA1.01, rec no 574.

Pedestal beaker/carinated bowls

10. Pedestal beaker, or carinated bowl with a pedestal base; with a sharp carination and constricted waist, decorated with cordons and pattern burnish (very abraded). The form derives from Gallo-Belgic types and most closely matches *Camulodunum* form 78 (Hawkes and Hull 1947, 232, plate LIV). Similar forms are illustrated from Ditches hillfort, Gloucestershire, from a context dated to c AD 45–55 (Moore 2008, fig 37.24), and a Neronian context at Brandon Camp, Herefordshire (Anderson 1987, fig 20.19). Diameter 13cm (43%). CG4, ditch 1365, context 1389. Fabric 12.2.2, Form BKI1.01, rec no 253.
11. Rim from a similar, sharply-waisted carinated bowl, with a slight cordon at the waist and a groove above the carination. The base does not survive; it may have had a pedestal base but could be from a flat-based bowl more similar to *Camulodunum* 212 (Hawkes and Hull 1947, 259, plate LXXV). Similar carinated forms are first noted at Beckford in CP F (Evans *et al* nd), and a similar form is also published from Kingsholm fort, Gloucester. Diameter 16cm (22%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form BKI1.01, rec no 125–6.

Table 7 Summary of forms by fabric

Pot form code	Total rim %	Fabric																									
		3	4.1	4.4	9	12	12.1	12.11	12.2	12.21	12.22	12.23	12.31	12.5	12.6	12.8	13.1	14	16	16.1	19	22	37.5	43.21	98.2	151	
B/D8.31	33	8																			19	6					
B/DA1.01	21																							21			
B/J19.10	3								3																		
BA	66									66																	
BA1.01	194					40			31	83	22		7	11													
BA1.01?	12									12																	
BA16.03	34												34														
BA2.01	62									58	4																
BAB1.01	18									18																	
BC1.01	16														16												
BG7.01	20							20																			
BI1.01	24																							24			
BI8.01	46																								46		
BKA1.01	3										3																
BKA1.04	42												42														
BKA1.2	45										10	19	16														
BKA6.02	78					50				28																	
BKI																											
BKI1.01	65									22	43																
DB1.01	10																					10					
DC1.01	13													13													
DC1.01?	8					8																					
FF1.04	20					20																					
FG4.5	100																									100	
J2.2	6	6																									
J20.05	7													7													
J22.01	7	7																									
J7.01	6				6																						
JE7.01	47	39		8																							
JG7.12	25				25																						
JK	13																					13					
JK1.4	8	8																									
JK14.11	19	19																									
JK22.01	52	52																									
JK22.02	30	22																	8								
JK22.03	194	194																									
JK22.05	139	139																									
JK22.07	20	20																									
JK7.2	6						6																				
JK7.20	67	18																33				16					
JL1.01	4				4																						
JL1.2	126	28											98														
JL1.3	84	84																									
JL15.03	7	7																									
JL17.07	12				12																						
JL19.10	12														12												

Pot form code	Total rim %	Fabric																									
		3	4.1	4.4	9	12	12.1	12.11	12.2	12.21	12.22	12.23	12.31	12.5	12.6	12.8	13.1	14	16	16.1	19	22	37.5	43.21	98.2	151	
JL20.01	114					12			72				30														
JL22.07	3	3																									
JL22.08	35	35																									
JL22.09	3	3																									
JL7.02	17																17										
JL7.12	193	130	8		8								47														
JLI7.13	10				10																						
JN																											
JN1.01	66												66														
JN1.2	62								30											32							
JN19.10	36					36																					
JN7.01	118					8				100	10																
JW	7					7																					
JW19.10	173					50					12			57	12	42											
JW20.01	70					55		15																			
JW20.05	37														37												
JW7.01	362	4				61			44	133				24	46			50									
JW7.01?	22					7			4		11																
JW7.02	20												20														
JWS7.01	29					29																					
M8.00	13																						13				
O22.07	13	13																									
T	15					15																					
TA1.01	27										22	5															
TB1.01	261					127				75				59													

Table 8 Seven Valley ware vessel classes by fabric (rim EVE)

Fabric	12	12.11	12.2	12.2 grog	12.3 grog	12.5	12.6	Total rim EVE
Flagons	0.20							0.20
Butt beakers BKA	0.50			0.60	0.48			1.58
Pedestal beakers BKI				0.65				0.65
Carinated bowls BA	0.40		0.31	1.73	0.41			2.85
Other bowls		BG 0.20					BC 0.16	0.36
Tankards TA				0.27				0.27
Wide mouthed jars JW	0.83	0.15	0.48	1.44	0.20	0.58		3.68
Narrow mouthed jars JN	0.12		0.30	1.10	0.66			2.18
Large storage jars JL			0.72		1.75	0.12		2.59
Total rim EVE	2.05	0.35	1.81	5.79	3.5	0.7	0.16	14.36

Bowls and wide-mouthed jars

12. Carinated bowl with a slightly waisted profile, decorated with cordons at the waist and just below the rim, the latter producing a 'pulley rim' effect. Typologically this form might be a predecessor of the more common type described below ([Fig 18](#), 15), and may have devolved from Gallo-Belgic girth beakers such as Camulodunum type 83 ([Hawkes and Hull 1947](#), plate LV), itself a copy of a continental type. Diameter 14cm (58%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form BA2.01, rec no 134–5.
13. Similar form, with grooves below the rim, at the waist and above the carination. Diameter 16cm (4%). CG, ditch 1265, contexts 1263 (2nd fill, CP1) and 1261 (upper fill, CP2). Fabric 12.2.2, Form BA2.02, rec no 338.
14. Carinated bowl with a bead rim and a well defined waist, marked by a slight cordon. Feint decoration survives on the lower half of the wall, though the sherd is very abraded. One of the early, pre-conquest Severn Valley ware forms identified by Timby ([1990](#) fig 4.43), and similar to forms illustrated from contexts dated c AD 45–55 at Ditches hillfort, Gloucestershire ([Moore 2008](#), fig 43, 144 and 146. Diameter 15cm (14%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form BAB1.01, rec no 127.
15. Carinated bowl, with a very slightly curving, concave wall and a bead rim. This is Webster's group H Iron 'C' derived bowl ([1976](#), fig 9, 59 and 60) which he dates broadly to the 1st to 2nd century. This form is first noted at Beckford in CP G ([Evans et al nd](#)), and it is a regular find in assemblages within the date range proposed by Webster. It is present in the pre/early Roman assemblage from Frocester, Gloucestershire ([Price 2000](#), fig 9.5, 121), in contexts dated c AD 45–55, at Ditches hillfort ([Moore 2008](#), fig 36.15, fig 37.34), and is one of the early pre-conquest Severn Valley ware forms identified by Timby ([1990](#), fig 4.42). It has been noted on other Worcester sites, such as Sidbury ([Darlington and Evans 1992](#), fig 18.11 and 21.5) and Deansway ([Bryant and Evans 2004](#), fig 155.4). It is present in the military assemblages from Kingsholm, Gloucester ([Darling 1977](#), fig 6.9, 28) and Dodderhill, Droitwich ([Rees 2006](#), fig 20 23.2). It was found at the Malvern, Swan Inn kiln site, dated to the early 2nd century, and at the Malvern, Newland Hopfields kiln site where it was probably residual ([Evans et al 2000](#), fig 26.BT3 and BT4, table 12). Example with plain, upright wall and groove above carination. Diameter 13cm (19%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form BA1.01, rec no 131–2.
16. Similar carinated bowl with grooves and cordon half way down the wall. Diameter 18cm (1%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form BA1.01, rec no 121–3.
17. Carinated bowl, with plain rim and slightly out-curving walls. There is a shallow groove half way down the wall and another just above the carination. The vessel is very abraded, but has a distinctive reduced core, oxidised margins and fumed surfaces. Diameter 20cm (34%). CG4, ditch 1365, context 1389. Fabric 12.3.1, Form BA16.03, rec no 288–9.
18. Bead-rimmed bowl. The form falls within Webster's type D bowls ([1976](#), fig 7), dated by him to the 2nd to 4th century. The presence of this vessel in a well dated mid-1st century context provides evidence for the form's earlier origins. The bowl is

similar to the most common type noted at Oare ([Swan 1975](#), fig 3.24, 25), though the vessel illustrated here does not have such a markedly enclosed rim. Nor does this vessel have the elongated rim of the type D bowls illustrated by Webster. Similar bead rim bowls continued to be produced at the Malvern kilns into the 2nd century ([Evans et al 2000](#), fig 29, type 4, BT51). The form has been noted elsewhere in Worcester ([Darlington and Evans 1992](#), fig 19.1). Interestingly, the diameter of this bowl is the most common size noted at the Newland Hopfields kiln site ([Evans et al 2000](#), table 6, BT type 4). Diameter 14cm (16%). CG4, ditch 1195, context 1260. Fabric 12.6, Form BC1.01, rec no 369–70.

19. Necked, wide-mouthed jar or bowl with a prominent shoulder and a simple out-curving rim; a Gallo-Belgic type, similar to *Camulodunum* form 221 (cf [Hawkes and Hull 1947](#) form 221, plate LXXVI). Broadly dated by Webster from the mid- to late 1st century to the 2nd century ([1976](#), fig 4, type C20). Unlike the examples illustrated by Webster, the jars illustrated here do not have cordons, but do have horizontal burnish. Timby ([1990](#), fig 4.52, 53) identifies this as one of the early, pre-conquest, Severn Valley ware forms. At Beckford this form (form 19) first appears in CP E, but is most common in CPs G to H ([Evans et al nd](#)). Similar forms in Savernake ware were noted in the early post-conquest assemblage at Oare, Wiltshire ([Swan 1975](#), fig 4.40–42). It is recorded in the pre-/early Roman assemblage from Frocester, Gloucestershire ([Price 2000](#), fig 9.5, 113) and is one of the most common forms in contexts dated c AD 45–55 at Ditches Hillfort ([Moore 2008](#) fig 36.11 and fig 42.140). Swan ([1975](#)) suggests the form emerges in the early 1st century AD, and that its spread was accelerated by the Roman army. The form has been noted on other Worcester sites, such as Sidbury ([Darlington and Evans 1992](#), fig 18.7 and fig 23.8) and Deansway ([Bryant and Evans 2004](#), fig 160.6), and is present in Neronian assemblages from Dodderhill fort, Droitwich ([Rees 2006](#), fig 20.2), Kingsholm fort, Gloucester ([Darling 1977](#), fig 6.9 31), Brandon Camp, Herefordshire ([Anderson 1987](#), fig 20.11, 13), and in a Neronian context with military associations at Alcester ([Fergusson 2001](#), fig 45.5). One example of this form, from enclosure ditch fill 1297B and in Fabric 12.2.1, was misfired, indicating that it may have been a fairly local product. The illustrated example is a near complete vessel with a very pronounced shoulder. Similar jars are illustrated from Beckford CP G ([Evans et al nd](#)), and in the post-conquest assemblage at Oare ([Swan 1975](#), fig 4.42). Diameter 16cm (100%). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form JW7.01, rec no 115/116.
20. Similar, near complete vessel with a less pronounced shoulder, which might argue for a slightly later date ([Swan 1975](#), 54). Diameter 15cm (44%). CG4, ditch 1365, context 1297B. Fabric 12.2, Form JW7.01, rec no 112–4.
21. Similar vessel with grooves on shoulder. Diameter 16cm (29%). CG4, ditch 1365, context 1389. Fabric 12.6, Form JW7.01, rec no 335.
22. Spouted bowl or jar. The form, with pronounced shoulder and gently out-curving rim, is similar to the near complete bowls illustrated above but with the addition of a spout on the shoulder. Spouted jars are never common in this region. Two are illustrated from early Roman Cirencester. One, in a Severn Valley ware fabric, was found in a Neronian context and is quite similar to the vessel illustrated here ([Rigby 1982](#), 169, fig 51.71). The other, from a Flavian context has a distinctly different rim (*ibid*, fig 50.33). Another example, found in a 2nd century context but associated with pre-

Flavian mortaria, is illustrated from Childswickham ([Timby 2004](#), fig 23.11). All of these, however, have very upright spouts. The angle and positioning of the spout on this example is more similar to one from the Newland Hopfields kiln site, Great Malvern ([Evans *et al* 2000](#), fig 31.MS1). A spout, probably from a similar vessel, is published from Sidbury, Worcester ([Darlington and Evans 1992](#), fig 20.4). Diameter 20cm (29%). CG4, ditch 1365, ditch 1297B. Form JWS7.01, rec no 148–53.

23. Wide-mouthed bowl with a cordoned shoulder: *Camulodunum* form 230 ([Hawkes and Hull 1947](#), 263, plate LXXVIII). The form has been recorded in Worcester at Deansway ([Bryant and Evans 2004](#), fig 158.12 and fig 162.8) and Sidbury ([Darlington and Evans 1992](#), fig 22.7), where it is dated broadly to the 1st to 2nd centuries. Diameter 21cm (20%). CG4, ditch 1353, context 1354. (Fabric 12.1.1, Form BG7.01, rec no 669.

Platter

24. Base of a platter with a vestigial footring hinted at by parallel grooves, similar to Oare group B ([Swan 1975](#), 50, fig 2.13, 17). Swan cites a platter with a vestigial footring from a mid-1st century context at Mildenhall. Unfortunately no joining sherds were recovered so the precise form of the platter is uncertain. There is a smaller, decorative circle of grooves on the upper side but no evidence for a stamp within this, although the sherd is abraded. CG4, bottom fill of ditch 1353, context 1428. Fabric 12.2.2, rec no 532.

Narrow-mouthed jars

25. Globular jar with an upright neck and a well-defined bead rim. It is similar to *Camulodunum* form 231 ([Hawkes and Hull 1947](#), 263, plate LXXVIII 232Ab). The form is similar to Webster's type A2 ([1976](#), fig 1), dated late 1st to mid-2nd century, but has a more pronounced shoulder, which supports an earlier date. This form is first noted at Beckford in CP G ([Evans *et al* nd](#)). The illustrated example has a feint cordon at the base of the neck and a band of incised decoration on the shoulder, bordered by 'false' cordons and grooves. Diameter 12cm (66%). CG4, ditch 1365, context 1297B. Fabric 12.3.1, Form JN1.01, rec no 99–102.
26. Shoulder of a narrow-mouthed jar decorated with herringbone pattern burnish. The decoration is similar to a jar illustrated from Beckford CP G ([Evans *et al* nd](#)). CG4, ditch 1365, context 1297B. Fabric 12.2.1, Form JN, rec no 130.
27. Shoulder from a similar jar decorated with a vertical zigzag, burnished motif. CG4, ditch 1365, context 1297B. Fabric 12, Form JN, rec no 182.
28. Shoulder from a similar jar with crude cross-hatch burnish. The illustrated sherd is overfired and is likely to be a fairly local product. Unstratified. Fabric 12.1, rec no 291.
29. Shoulder from a similar jar with a vertical, feather-like motif. CG4, ditch 1353, context 1423. Fabric 12.2.2, rec no 557.

Large storage jars

30. Large storage jar with an elongated bead rim. The illustrated example has a graffito

(Tomlin this report, p45, Fig 25, 1), and it is this form in particular that is noted for having graffiti at Alcester (Lee *et al* 1994, fig 4, R59–64). It is recorded from Bagendon (Fell 1961, fig 57.13) and is found on a variety of sites in Worcestershire, for example in Worcester (Bryant and Evans 2004, fig 159.13; Darlington and Evans 1992, fig 23.5) and Droitwich (Rees 1992, fig 27.19, 20). It is also in the pre-Flavian assemblage at Metchley fort, Birmingham (Green *et al* 2001, fig 36 JS3). Diameter 20cm, (64%). CG4, ditch 1365, context 1297/1297E. Fabric 12.3.1, Form JL1.2, rec no 86–8, 224.

31. Neckless, high-shouldered, large storage jar with a slightly thickened, everted rim. Similar Severn Valley ware forms were noted at Beckford in CP G (Evans *et al* nd) and are known from other sites in Worcester, such as Sidbury (Darlington and Evans 1992, fig 23, 5). The illustrated example has a graffito on the shoulder, which is described in detail below (Tomlin this report, p45, Fig 25, 3). Diameter 20cm (47%). CG4, ditch 1365, context 1297. Fabric 12.3.1, Form JL7.12, rec no 225.
32. Necked storage jar with a triangular rim, a form dated by Webster to the 2nd to 4th centuries (1976, fig 1.A4). The association of this form with mid-1st century material here may provide evidence for the earlier production of this form, although the possibility remains that it is intrusive from Period 4 activity. Diameter 18cm (72%). CG4, ditch 1353, context 1354. Fabric 12.2, Form JL20.01, rec no 741–2.

Miscellaneous wares (Fabrics 13, 14, 16.1 and 98.2)

33. Short necked, large storage jar with a rolled-over bead rim. The form sits happily with some of the other storage jars from the 1st century assemblage. However, the illustrated vessel is from a pit rather than the enclosure ditch and might not be contemporary. Diameter 25cm (17%). CG5, pit 1474, context 1473. Fabric 13.1, Form JL7.02, rec no 497.
34. Necked, wide-mouthed jar with a prominent shoulder, an upright neck, and a simple out-curving rim. For a detailed discussion of parallels and dating see Fig 18, 19–21 above. Diameter 14cm (50%). CG4, ditch 1365, context 1297B. Fabric 14, Form JW7.01, rec no 213–6.
35. Necked jar with an elongated bead rim. Diameter 11cm (32%). CG4, ditch 1365, context 1389. Fabric 16.1, Form JN1.2, rec no 287.
36. Hemispherical bowl with a curved flange set below the rim. The rim is in-turned. The form is similar to *Camulodunum* form 46, Hofheim 129 (Hawkes and Hull 1947, 225, plate LII), and is probably derived from the pre-Flavian samian form Ritterling 12. CG4, ditch 1353, context 1354. Fabric 98.2, Form BI8.01, rec no 759.

The 2nd century assemblage: Ceramic Phase 2

Ceramic Phase 2 was defined by the presence of a range of diagnostically 2nd century fabrics and forms, most of which are well defined elsewhere and are not therefore illustrated here. The pottery evidence suggested activity dating from at least c AD 120 to c AD 160. It is uncertain whether activity spanned the whole of this period or was focussed towards the end of the date range. The assemblage from ditch fill (1406) suggests the latter is more likely

for the infilling of the enclosure ditch (CG4), including a number of sherds reliably dated to the end of this period. The assemblage is quantified by fabric (Table 9; Fig 20, A and B), illustrating the appearance of new fabrics (eg Fabrics 19, 22 and 37.5) and the presence of residual mid-1st century and earlier fabrics (eg Fabrics 4.1, 5.1, 9, 12.2.1–23, 12.3.1–2, 16 and 16.1). Much of the Malvernian ware (Fabric 3) is also likely to be residual, although this ware continued in use in the 2nd century.

Table 9 Summary of the CP 2 assemblage by fabric

Fabric code	Count	% count	Weight (g)	% wt.	% rim extant	% rim EVE	Average weight
3	67	7.5	1146.0	10.2	119	12.7	17
4.1	1	0.1	0.5	0.0	0	0.0	1
5.1	2	0.2	12.0	0.1	0	0.0	6
9	10	1.1	21.5	0.2	0	0.0	2
12	197	22.0	3065.5	27.2	308	32.9	16
12.1	11	1.2	166.0	1.5	6	0.6	15
12.11	3	0.3	72.0	0.6	0	0.0	24
12.2	15	1.7	219.0	1.9	3	0.3	15
12.21	27	3.0	401.0	3.6	75	8.0	15
12.22	21	2.3	1239.0	11.0	16	1.7	59
12.23	3	0.3	12.0	0.1	0	0.0	4
12.3	1	0.1	57.0	0.5	0	0.0	57
12.31	12	1.3	148.0	1.3	10	1.1	12
12.32	3	0.3	4.0	0.0	0	0.0	1
12.5	45	5.0	1023.0	9.1	98	10.5	23
12.6	117	13.1	668.0	5.9	37	4.0	6
12.8	12	1.3	380.0	3.4	42	4.5	32
12.9	11	1.2	72.0	0.6	0	0.0	7
13	1	0.1	10.0	0.1	0	0.0	10
13.1	5	0.6	198.0	1.8	0	0.0	40
14	27	3.0	209.0	1.9	33	3.5	8
16	2	0.2	18.0	0.2	8	0.9	9
16.1	3	0.3	86.0	0.8	0	0.0	29
19	8	0.9	313.0	2.8	19	2.0	39
20.1	2	0.2	8.0	0.1	0	0.0	4
20.2	4	0.4	74.0	0.7	0	0.0	19
22	180	20.1	787.0	7.0	45	4.8	4
37.5	8	0.9	337.0	3.0	13	1.4	42
43.11	3	0.3	1.0	0.0	0	0.0	0
43.21	3	0.3	130.0	1.2	3	0.3	43
98	2	0.2	2.0	0.0	0	0.0	1
98.1	2	0.2	8.0	0.1	0	0.0	4
151	88	9.8	370.0	3.3	100	10.7	4
Total	896		11257.5		935		13

Sherds of BB1 (Fabric 22) indicated the *tpq* of c AD 120, the date after which BB1 is thought to have become more widely marketed. Typical 2nd century forms included upright-necked jars (Seager Smith and Davies 1993, fig 122, WA type 1), flat rimmed bowls/dishes (*ibid*, fig 123, WA type 22), and a bead-rimmed bowl dating to the mid- to late 2nd century, from enclosure ditch fill 1441 (Gillam 1976, fig 4.52). Of the sixteen decorated sherds from BB1 jars, ten had acute cross hatch typically dated to c AD 120–60 and one had right-angle cross hatch, typically dated to c AD 160–280 (ditch fill 1406). Five had a variant of the acute cross-hatch motif, also dating to the 2nd century (Seager Smith and Davies 1993, fig 132 WA D4.). Copies of 2nd century BB1 forms were noted in other fabrics; the upright necked jars occurred in Fabrics 3 and 14 and a pulled-bead rim jar (*op cit* fig 122, WA type 8) was copied in Fabric 3 (context 1406).

Three sherds of Central Gaulish Lezoux samian provided further dating evidence: a Drag 37 bowl dating to c AD 120–200, and two Drag 31 bowls, one dated to c AD 120–50 and the other to c AD 150–200 (context 1406). Other datable forms included a disc-necked flagon in South-west white slipped ware (Fabric 151), probably dating to the late 2nd century (cf Gillam 1970, fig 3.17).

Of particular interest was a mortarium from ditch fill 1406, thought by Kay Hartley to be a local product (Hartley this report, p46, Fig 26). This is thought to have been produced in the 2nd century, sometime before c AD 160. The Severn Valley wares also provided evidence for 2nd century production somewhere in the vicinity: Eighteen overfired or bloated sherds were recorded from the ditch (CG10, fill 1302), in Fabrics 12, 12.1 and 12.5. These included a tankard with moderately splayed walls and pattern burnish (cf Webster 1976, fig 7.E40). A range of similar 2nd century tankards (*op cit* E40–43) provided dating evidence for other contexts assigned to CP2. Other 2nd century forms included jars with triangular or thickened rims (Webster 1976, fig 1 A6, fig 4 C21, 22 and fig 5 C24, 25).

A significant proportion of the CP2 pottery was recovered from the Period 3 enclosure ditch (Table 3, CG4). It was this pottery that indicated the existence of a 2nd century re-cut of the ditch, which had not been identified during excavation. The fact that these two phases of activity could not be separated on site means that this assemblage includes a particularly high quantity of 1st century fabrics (shaded in grey in Fig 20, A below) and forms, as well as the diagnostically 2nd century material types described above. The presence of this earlier material is reflected in the high average sherd weight (18g), comparable with the CP1 assemblages, and the discrepancies between fabric quantifications by % weight and % rim EVE (Fig 20, A and B). The quantification by rim EVE may be more indicative of what was in use in the 2nd century.

The largest CP2 assemblage, by sherd count, came from the Period 4 ditch (CG10). This group was more fragmentary, with an average sherd weight of 9g, suggesting a different pattern of deposition to the CP1 assemblage. Less residual material was evident in this group, though some typically 1st century fabrics (Fig 20, B) and forms were noted.

The CP2 pottery from CG9 all came from a single pit (1435, fill 1436). All but four sherds came from a 2nd to 3rd century Severn Valley ware jar in Fabric 12.6, similar to Webster type C24, 25 (Webster 1976, fig 5).

Small quantities of CP2 pottery were also residual in the Period 4 graves. One (CG16), included a sherd of the 2nd century mortarium discussed above, redeposited from the ditch fill into which the grave was cut.

Discussion of the pottery assemblage

Excavation at the Bromwich Lane Tennis Club produced an assemblage of stratified, early Roman pottery that appeared to have been dumped in a single episode when the site was abandoned in Period 3; an exceptional assemblage for this area. Its significance is greatly enhanced by the presence of well-dated associated finds: Claudian coins ([King below](#)), and brooches thought on balance to date to the Neronian period ([Cool this report, p49](#)). There is little evidence for earlier activity on the site, and as a result no problem of residuality. In addition, the assemblage is well above the statistically valid assemblage size of 50 sherds recommended for reliable characterisation of assemblages ([Evans 1985](#); [Willis 1996](#), 182). The assemblage can therefore be compared with confidence to similarly dated assemblages elsewhere, and characterised in terms of the function and status of the site.

Parallels for this mid-1st century assemblage (CP1) have been noted from a range of sites. The best parallels for the assemblage as a whole come from sites to the south: rural sites at Beckford ([Evans et al nd](#)) and Childswickham ([Timby 2004](#)) in south Worcestershire; the oppidum at Bagendon ([Fell 1961](#)), Ditches Hillfort ([Trow 1988](#); [Moore 2008](#)) and the civitas capital at Cirencester ([Rigby 1982](#)), all in Gloucestershire; the so-called 'late celtic rubbish heap' near Oare in Wiltshire ([Swan 1975](#)); and the ironworking settlement at *Ariconium*, Weston-under-Penyard, Herefordshire ([Willis 2012](#)). A number of individual forms have parallels on Neronian sites with known or suspected military associations: Alcester, Warwickshire ([Fergusson 2001](#)); the Wroxeter *vicus*, Shropshire ([Evans 2013](#)); Dodderhill fort, Droitwich ([Rees 2006](#)); Metchley fort, Birmingham ([Green et al 2001](#)); Kingsholm fort, Gloucester ([Darling 1977](#)); and Brandon Camp, Leintwardine, Herefordshire ([Anderson 1987](#)). It should be noted though, that the report has been produced within the constraints of a developer-funded project, and undoubtedly more synthetic research could be done to place the assemblage in its wider context. It is intended that the publication of detailed data and comprehensive illustration of the forms will facilitate any future studies.

Date

In terms of dating, the forms and fabrics represented compare well with those described from the other Claudio-Neronian and Neronian sites studied. The pottery itself cannot be used to distinguish whether the date is earlier in this period, as suggested by the coins, or later, as thought likely for the brooches. However, given the similarities with pottery from the Ditches hillfort, dated to c AD 45–54 by Trow ([1988](#), 76), and the number of parallels from well-dated Neronian military contexts, the latter is likely. The assemblage provides useful comparative dating for the as yet unpublished early Roman material from Beckford ([Evans et al nd](#)). Excavations there produced a large, well-stratified sequence, though there were no coins or other well-dated artefacts to provide associated dating. The Ceramic Phase 1 assemblage described here is comparable with Ceramic Phases F–G and, in particular, G at Beckford. These ceramic phase assemblages were both thought to be broadly contemporary with the early Roman assemblage from the Ditches; Ceramic Phase F–G was thought to be pre-, and G early Flavian. The evidence here suggests Ceramic Phase G might be a little earlier. Like this assemblage, Beckford Ceramic Phase G is characterised by necked and carinated

bowls, and the appearance of butt beakers, upright tankards, bead rim bowls, platters and everted rim storage jars. Interestingly, large storage jars and Malvernian tubby cooking pots were not common at Beckford until Flavian-Trajanic Ceramic Phase H, a phase characterised by high proportions of the high fired, consistently oxidised Severn Valley ware fabric.

While this is undoubtedly the best early Roman assemblage found to date in modern Worcester, it should be remembered that this is not the first evidence for pre-Flavian activity in the city. As can be seen from the catalogue above, a number of the forms have parallels elsewhere in Worcester, though as residual vessels in later contexts. The coin assemblage from excavations at Sidbury showed an unusual Claudian peak, reflecting the presence of a contemporary group in the base of an early 2nd century pit ([Darlington and Evans 1992](#), 56–7). The earliest stratigraphic activity on the Sidbury site was the Phase 1 ditch (*ibid*, 10–12). Unfortunately this only produced eleven sherds (one in Severn Valley ware and the rest from a Malvernian tubby cooking pot), which could be Claudian or Neronian, but are not in themselves closely datable.

Sources

The pottery is assumed to have come from a limited range of sources. Most came from the Malvern area (Fabric 3). The dominance of this fabric over the Palaeozoic limestone ware (Fabric 4.1) is a marked contrast with the evidence from Beckford ([Evans *et al* nd](#)) in south Worcestershire and *Ariconium* ([Willis 2012](#)) and Wellington Quarry ([Hurst 2004](#)) in Herefordshire. Increasing quantities of Fabric 4.1 characterised the later Iron Age assemblages at all of these sites. The difference may reflect the relative proximity of this site to the Malvern source, or a bias in distribution of Malvernian ware at this date. A late Iron Age assemblage from Bath Road, Worcester is also dominated by Malvernian ware ([Griffin with Evans forthcoming](#)) as is a broadly contemporary assemblage from Stonebridge Cross, Westwood, to the north of Worcestershire ([Miller *et al* 2004](#), 26). It might mark the initial resurgence of this ware in the early Roman period, responding to a Roman market, or it could have a cultural/functional explanation. The mudstone-tempered ware (Fabric 9) has a source in the Martley area of Worcestershire. At Croft Ambrey it occurred mainly in the later phases of occupation ([Stanford 1974](#), 194) and at Midsummer Hill it occurred in the last two centuries cal BC ([Stanford 1981](#), 148). It was not present in the sizeable assemblage from *Ariconium* ([Willis 2012](#)). The wide variety of Severn Valley ware variants seems typical of early Roman assemblages and is paralleled at Beckford ([Evans *et al* nd](#)). It has not been possible within the remit of this project to physically compare fabrics with type sherds from other sites. A number of sherds had a distinctive firing, with a reduced core and brown margins, and brown or blackened surfaces, which has been noted in other early assemblages such as *Ariconium* ([Willis 2012](#)). This, however, more likely reflects similar firing technology rather than similar sources. The source of the grog-tempered wares is unknown. Similar fabrics at Beckford were thought to have affinities with sites in Gloucestershire and the Cotswolds, but did not have inclusions diagnostic of source ([Evans *et al* nd](#)). Fabrics 12.2.1 and 12.2.2 seem broadly similar to Frocester Fabric 12a ([Price 2000](#), 128) and Gloucester TF11b, TF11c. This is something that could be investigated in the future, perhaps using XRF analysis, should the opportunity arise.

Function and status

The reports on the brooches and coins ([Cool and King this report](#), p47, 49) both suggest military connections for the site: the brooches, it is thought, are ‘highly likely’ to indicate a

military presence, and the coins are thought to represent small change carried by a Roman soldier, or money exchanged with locals for goods and services. On balance, the pottery evidence supports the latter interpretation.

The assemblage is native in character and most of the forms have pre-Roman origins. A number of forms, and fabrics, reflect a Belgic influence. The presence of similar Gallo-Belgic and early Severn Valley wares, along with Colchester brooches, is commonly used to characterise late Iron Age assemblages in the Severn-Cotswolds region ([Moore 2007](#), 45). Some of the forms are those used by Timby as evidence for the pre-military origins of the Severn Valley ware industry ([1990](#), fig 4). The spread of the Belgic influence may, however, have increased in response to military supply needs: Webster, in his preliminary study of Severn Valley ware, suggests that local indigenous potters may have been producing early Severn Valley wares for a mainly military market ([Webster 1976](#), 41); while Swan argues for an actual movement of Belgic potters to the Savernake forest from the Hertfordshire and Essex area, to meet a military market ([Swan 1975](#), 45).

As can be seen from the detailed catalogue of forms above, many of the vessels from this site do have parallels in contemporary military assemblages in the region: Dodderhill fort (Droitwich); Metchley fort (Birmingham); Wroxeter *vicus* (Shropshire); Brandon Camp, (Herefordshire); and Kingsholm fort (Gloucester). However, this does not necessarily prove a military connection for this site. There are parallels from a range of other sites, including the rural sites at Beckford and Childswickham, and the assemblage is dominated by local products of the Malvern industry, very much in a native tradition.

The defining factor may be the paucity of imported and more Romanised wares on the site. All the forts listed above produced imports such as amphorae, samian, mortaria and Lyons ware. The lack of these is comparable to the rural assemblage from Beckford ([Evans *et al* nd](#)). Such imports should have been available to the occupants of the St John's site as they are found over the river in central Worcester. At Sidbury, for example, most of the small, 1st century samian assemblage was pre-Flavian rather than Flavian ([Dickinson 1992](#), 57). The site also produced Rhodian-style amphorae, often associated with early military sites, and three sherds of probable pre-Roman amphorae ([Williams 1992](#)), Gallia Belgica mortaria dated to AD 50–85, Lyons ware, and a lamp dated to the second half of the 1st century ([Darlington and Evans 1992](#), 56–7). The Claudian coins described above were associated with animal bone thought to be waste from an abattoir ([Darlington and Evans 1992](#), 56–7), which could be related to military supply.

The composition of the assemblage in terms of vessel classes is informative. Large storage jars and Malvernian cook pots are particularly common ([Fig 21](#)); these and narrow-mouthed jars make up half of the assemblage. Five jars had graffiti/possible graffiti cut after firing, crude marks of ownership rather than literate graffiti. Tomlin ([this report](#), p45) interprets the need to mark ownership as evidence for communal activity on the site. Cool ([2006](#), 35), following Evans ([1987](#)), notes that graffiti on pottery are more common from forts and *vici*, than small towns and rural sites. However, the focus of Evans' study was on literate graffiti. It may be that these cruder marks represent non-literate communities trading with, or being taxed by, communities where the use of writing was more common. Similar jars with graffiti, also in organic tempered Severn Valley ware, have been noted from a 1st century settlement in the southern extramural area of Alcester ([Evans *et al* 1994](#), 124–30). The Alcester site was thought to have a function relating to storage or trade; associated finds included early iron brooches, amphorae, styli and seal boxes. It is possible that the St John's site also had a

trading function, situated on high ground near the river. Another, probably contemporary, jar with graffiti, in organic-tempered Severn Valley ware, is recorded from the *vicus* at Wroxeter (Evans 2013). That assemblage has many similarities with this; dominated by Malvernian ware and organic tempered Severn Valley ware, storage jars and cook pots, though it also produced amphorae and samian (Evans 2007, fig 5.7a, fig 5.8b). Similar graffiti have been recorded previously from Worcester, for example at Deansway (Bryant and Evans 2004, fig 157, 21–2), also on jars in Fabric 12.2. The Belgic forms include table wares that are representative of late Iron Age dining habits, paralleled for example at the King Harry Lane cemetery, Verulamium: carinated bowls and butt beakers, the pedestal beaker, platter and flagon (Cool 2006, 155–6, fig 16.1). The spouted bowl is also a late Iron Age form in origin, common in pre-Boudican contexts at Sheepen, and is thought to have been used for serving infused beer rather than the more Romanised wine (*ibid*, 144–5).

Taking all this evidence into account it seems most likely that the site is a native settlement. It may represent a settlement from which commodities from the west, such as Malvernian pottery, could be traded across the river. It may even be part of a *vicus* settlement, associated with a fort on the other side of the river. The pottery itself provides no direct evidence for military activity, though it may reflect a military influence, but the associated finds suggest that trade with the military may have been taking place.

Characterising the Claudio-Neronian assemblage

In his review of 1st century AD assemblages from the east and north-east of England, Willis (1996) attempted to quantify broad trends in patterns of Romanisation. To do this he produced charts comparing categories of pottery from contemporary sites. Similar charts have been produced here to see if any comparisons can be made, although a slightly different methodological approach has been used (Figs 22 and 23). Willis amalgamated fabrics and types to produce his categories. This proved difficult with the assemblage here: for example, some of the Belgic forms were produced in what might otherwise be categorised as ‘Roman coarse oxidised wares’ (eg Fabric 12), and it was possible that more Romanised forms such as flagons would not have been identified if only represented by body sherds. The native wares, as discussed above, occurred mainly as large, thick-walled jars which biases quantification by weight. For these reasons two charts are presented here, quantifying forms by percentage rim EVE and fabrics by percentage weight. The decision about what counts as native, Romanised or Belgic is subjective, and open to debate, but the method does help to characterise the assemblage. Romanised fabrics are poorly represented by % weight, and arguably some of these (the Severn Valley ware variants) could be classified as Iron Age/transitional types. Romanised forms seem better represented, though the largest category comprises bead rim and everted rim jars, types which are common in the Roman period but again have their origins in pre-Roman types. The low level of Romanisation suggested by this analysis is consistent with the evidence from other regional assemblages (Willis 2012, 107–110) and wider studies (Evans 1997), with no abrupt change in ceramics following the conquest, and more typically Romano-British assemblages first appearing in the Flavian period.

Discussion of the 2nd century assemblage (CP2)

The small 2nd century assemblage is of far less significance, though it adds to the mapping of 2nd century activity in the Worcester area, and provides dating for the ironworking taking place

on the site. The most interesting aspect is the evidence it provides for 2nd century pottery production in the vicinity of Worcester, particularly if this includes mortaria.

Other ceramic finds

A rim from a possible crucible was recovered from the enclosure ditch (1195, fill 1196; [Fig 24, 1](#)). Not enough of the profile survives to be sure of its precise form, including whether, for example, it had a lip. The vessel curves in quite sharply towards the base, suggesting it was hemispherical rather than conical. The form is similar to crucibles illustrated from *Verulamium* ([Clay 1947](#), 345–6, fig 65), associated predominantly with features dated from c AD 49–61 to the end of the 1st century. A similar crucible is recorded from excavations at Sidbury in Worcester ([Darlington and Evans 1992](#), 68–9, fig 35.5) which, based on XRF analysis, was used for melting non-ferrous alloys. There is, however, no evidence for the vessel illustrated here having been used. It is handmade, in a coarsely-tempered fabric with ill-sorted inclusions of quartz, grog and organic material, and has a diameter 10cm (18%). If this is indeed a crucible, then it is amongst the earliest evidence for metal working from Worcester. The Sidbury crucible came from a feature attributed to sub-Phase 3.3. Although this phase had a *tpq* of c AD 130–70 the finds were thought to have been largely derived from earlier occupation levels. Residual finds from similarly dated features included a Claudian *dupondius* dating to c AD 41–54, contemporary with the coins found here, and a Neronian glass intaglio ([Darlington and Evans 1992](#), plate 10).

The only other ceramic finds comprised a counter recovered from one of the Period 5 burials ([Fig 24, 2](#)) and a base, rounded off for use as a lid, from the 1st century enclosure ditch ([Fig 24, 3](#)). The burial produced a quantity of redeposited 1st century pottery, so this is likely to be residual rather than deliberately deposited in the grave.

Catalogue of other ceramic finds (Fig 24)

1. Plain rimmed crucible. The diameter is estimated as c 10cm (18%), although the crucible was most likely not round. The crucible is presumed to be made from a local clay source; it has ill-sorted angular inclusions of white quartz (sparse, <2mm) and rounded, clear quartz (moderate, <0.5mm), sparse black organics, and occasional rounded ?clay pellets. CG4, ditch 1195, fill 1260. Rec no 838.
2. Carefully rounded counter made from a small pottery base. Diameter c 4cm. CG15, grave 1444 context 1443. Fabric 12, rec no 518.
3. Crude lid or stopper made from a re-used vessel base. Diameter c 10cm. CG4, ditch 1195, context 1196. Fabric 12.6, rec no 378.

The graffiti on Roman pottery, *by Roger Tomlin*

Five sherds with graffiti or possible graffiti were identified during analysis. The significance of illustration numbers 1, 2, 3 and 5 ([Fig 25](#)) is difficult to determine. With the possible, but unlikely, exception of no 5, they are non-literate, and best understood as marks to identify particular vessels. Little work has been done on 'marks of identification' as opposed to literate graffiti. They do not fall within the remit of Roman Inscriptions of Britain (but see the remarks prefacing RIB II.7, 2501), exceptions being the note that Wendlebury (Oxon) produced

46,000 sherds, but only six with literate graffiti, and another eight with 'possible marks of identification' (Tomlin and Hassall 1998, 441, 58); and that Abbots Ann (Hants) produced one literate sherd and twelve with a 'cross' (Tomlin and Hassall 2007, 353, 21). The need to 'identify' coarseware vessels that would otherwise be confused or misappropriated implies communal activity (to the preface of RIB II.7 add Jeremy Evans' remarks (1987), which are confined to literate graffiti), but this activity was not necessarily military.

Sherds with graffiti (Fig 25)

1. Rim sherd (14%) of a large storage jar in reduced, organic tempered Severn Valley ware (Fabric 12.3.1). Now much abraded, but with a simple graffito made after firing: on the shoulder below the rim, a 'cross' formed by a vertical score intersecting with a horizontal. This is not formed like a numeral (X, ie '10'), and was presumably a mark of identification. Ditch 1365, fill 1297.
2. Rim sherd (29%) of a large storage jar in handmade Malvernian ware (Fabric 3). On the inner face of the rim, a vertical incision made after firing. The inner face is c 50mm deep, and this incision is close enough to the break (40mm and less away) not to exclude the possibility that it forms part of a numeral of capacity; but it is likeliest to be only a mark of identification. Ditch 1365, fill 1297.
3. Rim sherd (47%) of a large storage jar in reduced, organic tempered Severn Valley ware (Fabric 12.3.1). Incised on the shoulder after firing, two lines converging to form a 'V'. Most probably a mark of identification, not a numeral ('5'). Samian vessels have occasionally been found scratched with 'V' opposite 'X', but although graffito 1 (above) raises this possibility, it seems most unlikely. Ditch 1365, fill 1297.
4. Base sherd (23%) in Severn Valley ware (Fabric 12). It has been marked underneath before firing by a line 35mm in length crossed mid-way at right-angles by a line of only 6mm. The longer line apparently continues a deeper incision, the interval (4mm) between the two having been smudged while the clay was moist. This might be an illiterate potter's mark, but is more likely to be casual damage in manufacture. Ditch 1195, fill 1362, rec no 228.
5. Body sherd of a storage jar in a reduced organic and grog tempered fabric (Fabric 16? or Fabric 12.3 variant?). Incised after firing by a (?)figure now incomplete and of uncertain orientation. To one side of a scored line, or perhaps above it, two shorter lines converge at right-angles, and the angle is divided by a still shorter line which does not meet the others. This is probably a mark of identification, quite likely a 'star' between two verticals (similar figures are incised on the face of building-stones); but in one orientation it could be seen as an incomplete denarius sign (an 'X' with a short horizontal stroke to the right) followed by a vertical stroke for '1'. However, this (?)vertical stroke is rather close to the others for such an interpretation, and is not identified as a numeral by any short horizontal stroke above. Ditch 1195, fill 1362.

The stamped mortaria, catalogue by Kay Hartley

Seven sherds of mortaria were sent to Kay Hartley for identification. Six came from a single vessel (Fig 26). The other, a flange fragment, was from a separate vessel in a similar fabric

(not illustrated), also recovered from (ditch 1353, context 1406; rec no 732). The pottery was examined with hand lens at X20 magnification.

The stamped mortarium (Fig 26)

1. Six sherds from a single mortarium, showing some wear. The mortarium was stamped at right-angles to the rim, to the left and right of the spout and fragments of both stamps survive. These are from the same die as a more complete one from Sidbury in Worcester ([Hartley 1992](#), 65, 34.6, and fig 34, no 6, published vertically instead of horizontally). Other stamps from the same die have been recorded from Caerwent (unpublished); Bays Meadow villa, Droitwich ([Barfield 2006](#), 157, no 2 and fig 104, 2 and p157, the first line is in error and refers to another sherd); Hanbury Street, Droitwich ([Lentowicz 2006](#), fig 39, no 24 and CD 17–18, no 171) and Winfrith Heath, Dorset ([Fowler 1963](#), 130, Appendix II and fig 6). The rim-profile of this example is identical to that of the mortarium from Hanbury Street, Droitwich. Diameter 28cm (23%). CG4, ditch 1353, context 1406, rec no 727 and 729; context 1407, rec no 726; CG16, grave 1410, context 1409, rec no 728). Fabric 37.5, Form M8.

The fabric of these vessels is reddish-brown with good traces of a cream slip. Inclusions are fairly frequent, ill-sorted, iron slag and quartz, and trituration grit mixed quartz, brown and red-brown sandstone. The stamp can be identified with certainty, but the name of the potter remains uncertain.]ASILA[could be correct, but further examples are needed to give the beginning and end of the stamp. One of the stamps on the St John's mortarium shows part of a letter before the blind A; although too little is visible for certainty, V seems to be the most likely letter. There is a good possibility that this potter worked in the same workshop as Crispi..., a stamp which has been recorded only at Worcester. The fabric of the Crispi mortaria is virtually identical to that of the vessels described here. If so the limited distribution, with four of the six mortaria known being from Worcester and Droitwich which are only 10km apart, suggests that these rare potters worked in the vicinity of one of these two settlements. The overall distribution of]asila [and Crispi... would fit Worcester better than Droitwich. All of the rim-profiles are of 2nd century date and they would best fit a date before AD 160 at the latest, consistent with the dating evidence from this site. Further examples will make the two names clear.

The coins, by Cathy King with Philip De Jersey

Eight coins were recovered ([Table 10](#)), all of base metal (probably copper or a copper alloy). Of particular interest was an Iron Age piece, the bronze core of a plated gold stater of Esup Rasu of the Corieltavi (CCI number – 08.9281; [van Arsdell A920](#); [Spink 2008](#) no 405) whose plating has worn or flaked off ([Plate 9](#)). The coin was shown to Philip De Jersey, who noted that it had most of the IISVP visible above the horse, and a small part of the RASV (usually inscribed back to front) below the horse. There is still a great deal of dispute about the precise dates for Esup Rasu (De Jersey pers comm), but the coin can be dated approximately to the end of the 1st century BC and beginning of the 1st century AD. There are six bronze coins all of Claudius I (AD 41–54), two of which are genuine and the other are contemporary ancient copies ([King 1996](#), 237–46 and 247–56). The final coin, a 4th century *nummus* of the emperor Licinius I, which was minted in London between AD 312 and 317, is a late intrusion since the other pieces are datable to the 1st century AD. All of the coins, with the exception of the

unstratified 4th century piece, were found in close proximity and may therefore have formed a small hoard.

Table 10 The Iron Age and Roman coins

NO	SF	CXT	OBSERVE	REVERSE	DEN	MINT	MM	DATE	IM	REF
1	9	1260	Apollo wreath	Horse left, ESV above horse, ASV below	Stat			c, 1c	Y	VanA 920-3
2	5	1260	Illeg, bare head, l.	CERES [AVGVSTA], Ceres std. l., hldg. corn-ears and torch	Dp	Rome		41-54		BMC 1. 137
3	7	1260	Illeg, bare head, l.	CE[RES AVGVSTA], Ceres std. l., hldg. corn-ears and torch	Dp	Rome		c, 41-54		BMC 1. 137
4	4	1260	Illeg, bare head, l.	CE[], Ceres std. l., hldg. corn-ears and torch	Dp	Rome		41-54	Y	BMC 1, 138
5	8	1260	Illeg, bare head, l.	S C, Minerva advg. right, holding javelin and shield	As	Rome		c, 41-54	Y	BMC 1, 155
6	10	1260	Illeg, bare head, r.	S C, Minerva advg. right, holding javelin and shield	As	Rome		c, 41-54	Y	
7	6	1260	Illeg, bare head, l.	S C, Minerva advg. right, holding javelin and shield	As	Rome		c, 41-54	Y	BMC 1, 155
8	14	U/S	IMP LICINIVS P F AVG, laur., cuir., r.	SOLI INVICTO COMITI, Sol stg. facing, raising r. hand, globe in l.	Num	Lon	S/F// MLN	313-317		RIC 7, no 48

The six Claudian bronze coins, three of which are *dupondii* and three are asses, are worn and the majority of the obverse and reverse legends illegible. However, the seated figure on the *dupondii* (Special Find (SF) no 4, 5, and 7) holding corn ears and a torch is recognizable as Ceres and this identification is supported by the letters CE signalling the beginning of the CERES AVGVSTA legend running clockwise from the bottom left of the coin to the bottom right.

The remaining three bronzes are asses with a reverse type depicting a female figure walking right, holding a javelin in her right hand a shield in her left, identifiable as Minerva. The type is relatively common in finds of early imperial bronzes in Britain and was frequently copied. The copies can generally be distinguished from their genuine prototypes on the basis of their smaller size, lighter weight and cruder style or a mixture of these features.

Claudian copies are relatively common in Britain, Gaul and to a lesser extent, Spain and some occur in a military context. It has been argued in regard to *Camulodunum* which yielded large numbers of these coins that the copies may have been produced there or nearby ([Kenyon 1987](#), 24–41). These coins cannot be dated earlier than the conquest period since their prototypes are Claudian, but the absence of any other bronzes of the 1st or 2nd centuries suggests that they were minted not long after the genuine pieces.

The Iron Age core is not incompatible in this group. As a ‘small bronze’ piece it must have survived in circulation or been reused into the conquest period and possibly a bit later. Its association in a group of coins, the majority of which were also copies, certainly supports the view that it was not circulating as gold by this time.

It is tempting to speculate that the Claudian bronzes may have been associated either with the conquest itself or the later rebellion under Boudicca in AD 61. If this were the case, these coins could represent either the small change carried by a Roman soldier or money exchanged, initially, by Romans with locals in return for goods and services.

The brooches, *by Hilary Cool*

The site produced five brooches ([Fig 27](#)). Two are of copper alloy. Of these no 3 is in good condition and has been fully conserved. No 2 is in less good condition with eroded surfaces obscured in places. The other three are iron. These have been studied from X-radiographs with no 4 undergoing investigative conservation to clarify details. It is the two copper alloy brooches that provide the closest dating evidence and these will be considered first.

No 2 is an Aucissa brooch and thus a continental import ([Bayley and Butcher 2004](#), 151). On the continent this type is in use from the Augustan period. In Britain most arrive with the Roman army in AD 43, very occasionally being found in pre-conquest contexts. Classifications within the Aucissa type generally depend on the cross-section of the upper bow. The defining features of this example are the hollow central channel and the double rib at either edge. This approximates to Riha’s type 5.2.3 though on those the border ribs are often beaded. Given the state of no 2, it is not possible to be completely sure that the border ribs were not beaded here, but it appears unlikely they were. Brooches of Riha’s type 5.2.3 have been found at Augst in Augusto-Tiberian and Tiberian-Claudian contexts ([Riha 1979](#), 115).

Also important in classifying an Aucissa brooch is how precisely the head is formed whether it is bent down and in (ie to the interior) or up and out (ie to the exterior). The former method is typical of the Alesia brooches in use in the 1st century BC from which the true Aucissa with the stamped names on the head plate is derived ([Mackreth 1995](#), 974, no 90). The latter have external hinges. Again the state of no 2 makes it difficult to be completely sure of the nature of its hinge as the interior and part of the exterior are obscured, but it appears most likely that the hinge is an internal one. The combination of the cross-section type and the hinge type would mean that no 2 falls into Feugère’s type 22b1 for which he proposes a manufacture date of 20/10 BC to the beginning of Tiberius’s reign, whilst noting that some are contemporary with his type 22b2 whose manufacture extends into the reign of Claudius ([Feugère 1985](#), 323–4).

Within a British context it may be noted that two of the Aucissa brooches at Skeleton Green are assigned to the pre-conquest period; one to period liii (AD 15–25) and one to period

liv (AD 30–40) ([Mackreth 1981](#), 134: 15, 139: 36, fig 71: 50–51). Both have similar eyes to those seen on no 2 and the hinge appears to be formed in a similar way. By contrast those from Claudian and Claudio-Neronian sites almost invariably have the external form of hinge. Those from Hod Hill provide a very useful example of a Claudian assemblage ([Brailsford 1962](#), 8, C44–52) whilst those from Usk provide examples of a Claudio-Neronian one ([Manning et al 1995](#), 67, no 10–11). This would suggest that the continental dating can be used to help date the British examples with the internal hinge. A pre-conquest date would thus be possible for no 2. Aucissa brooches are rare in pre-conquest contexts but early variants are known on western rural sites with no obvious Claudio-Neronian military activity (see [Miles et al 2007](#), fig 9.10, no 10). Equally though, the features of no 2 would be consistent with it being deposited during the Claudian period, though possibly being old by that time.

The second copper alloy brooch (no 3) is a two-piece native brooch belonging to the Colchester Derivative family. The development of the Colchester Derivative brooches took place at around or just before the conquest. The brooch makers experimented with various methods of fixing the separate spring and pin in place. The preferred method in the west was the Polden Hill method where the spring was held by a bar passing through the centre with the ends lodged in perforations in the terminals of the semi-cylindrical wings. In the earliest examples the chord was held by a hook. In the fully developed Polden Hill brooches it is held in a pierced lug as on no 3 ([Bayley and Butcher 2004](#), 159–60). Fully developed Polden Hill brooches continue in use into the early 2nd century but various features point to this being early in the series. The pierced lug for the chord continues as a low rib skeuomorphing the original chord hook and the large piercing in the foot with a dog-leg bar is also an early feature ([Mackreth 2000](#), 146 no 2).

Quite when the developed form came into being is a matter of some debate. Mackreth (in [Ellis and White 2006](#), 87, no 1) has defined a slender form which lacks the characteristic mouldings at the bow/wing junction as being a predecessor of what he regards as the typical developed Polden Hill with the side mouldings. These normally have perforated catch plates, grooves on the spring cover and ribs extending the chord lug as a skeuomorphic hook. The example he was discussing came from a context assigned to the period AD 60–80 at Wroxeter, but he dated the type to the AD 50s to 60s on the admittedly thin evidence of one associated with Claudio-Neronian material at Longthorpe ([Dannell and Wild 1987](#), 87, no 5). No 3 closely resembles this variant other than the presence of the mouldings at the bow/spring cover junction. Three examples from fortress contexts at Usk show that this slender form was certainly in use in the Neronian period ([Manning et al 1995](#), 74, no 28–30). One of these has the bow mouldings like no 3, whilst one of the others has a similar dog leg bar perforation in the catchplate. An example from the Neronian Dodderhill fort at Droitwich ([Butcher 2006](#), 38, no 3) came from a phase 1b make-up layer which also contained Claudian copies of asses assigned to the period AD 43–64 ([Davies 2006](#), 37, no 8–10). This too has side mouldings and slightly more elaborate spring cover decoration. Prior to the discovery of no 3, the evidence suggested this slender Polden Hill type was of Neronian rather than Claudian date. There was no evidence as to whether it should be regarded as an early or late Neronian form. No 3 came from the same context as the coin hoard containing only Claudian Roman coins (regular and irregular). Given the longevity of Claudian irregular small coins into the Neronian period, it is probably best to continue regarding the dating of this brooch type as Neronian rather than Claudian, though the association does open up the possibility of a slightly earlier date.

The iron brooches can be less closely dated, but the presence of three certainly indicates an early to mid-1st century date as the incidence of iron brooches falls markedly in the second half of the 1st century. No 1 belongs to the Nauheim Derivative family (Bayley and Butcher 2004, 147). This is a 1st century AD form that was in use in pre-conquest Britain but is commonest in the mid-1st century after the invasion. His example belongs to variant with a simple wire bow and, it would appear from the X-radiograph, a markedly inturned head. Olivier (1988, 37, no 12) notes the variant is common across south and east Britain with Worcester being on the northern margin.

No 4 is a most unusual iron brooch, most of which tend to be one piece brooches. This example is hinged with the head rolled down and in to hold the hinge bar. The brooch also has an expanded rectangular panel on the upper bow and a deep catch plate. It belongs to the family of British early hinged brooches which have a strip bow (Bayley and Butcher 2004, 154), but the expanded upper bow and the deep catchplate are unusual features. A group of iron hinged brooches from Baldock show the normal range of types encountered in Britain which generally have simple strip bows of uniform or slightly tapering width (Stead and Rigby 1986, 120, no 127–30). The features on this piece correspond to those seen on some early one-piece iron brooches. The deep catchplate occurs on some of the earliest iron brooches in the King Harry Lane cemetery at *Verulamium* (Stead and Rigby 1989, 96, types R and S), whilst the wide upper and thin lower bow feature are similar to some continental forms of the late 1st century BC to early 1st century AD (Feugère 1985, 253 type 12). No 4 appears to be unparalleled at present but the features would be consistent with the dating for the Aucissa brooch no 2.

Overall this is an interesting group of brooches. Of those that have been identified a post-conquest Claudio-Neronian date would be appropriate, most probably in the later part of that period though the Aucissa does have early features. It is highly likely that they indicate a military presence. As noted the Aucissa brooch does occasionally occur in pre-conquest contexts, but generally it is typical of the Claudio-Neronian army. Slender developed Polden Hills such as no 3 are a native form but as can be seen from the comparanda quoted for it, regularly occur as part of the brooch assemblage of Neronian military sites.

Catalogue of brooches (Fig 27)

1. One-piece brooch. Iron. Spring probably passing underneath curved bow; lower part of triangular or trapezoidal catch-plate probably missing; pin missing. Present length 45mm. SF 21, CG4, context 1297.
2. Aucissa brooch. Copper alloy. Head probably bent down and in to form hinge, retaining bar with rounded ends and upper part of pin; head has punched ring on either side, transverse rib; arched tapering bow with groove parallel to either side forming two ribs and deep channel centrally, lower part plain; broken triangular catch-plate; sweated-on foot knob, probably cylindrical originally. Brooch cracked centrally and bent slightly out of shape. Present length 29mm, width of hinge bar 12mm. SF 20, CG4, context 1389.
3. Polden Hill brooch. Copper alloy. Semi-cylindrical spring cover with perforated end plates, pair of grooves parallel to each end and by junction with bow; spring of nine turns with chord passing through cast lug on the head of the bow, bar passes through centre of spring and is lodged in perforations in end plates; lug continues as rib with

two transverse grooves; flat half circular moulding on either side of bow at junction with wings; D-sectioned bow tapering to chipped foot; triangular catch-plate with large triangular perforation divided in two by dog leg bar, upper and lower part of catch plate return chipped; complete pin still in place in catch place. Length 60mm, width of wings 25mm. SF 3, CG4, context 1260.

4. Hinged brooch. Iron. Arched head rolled under to hold hinge pin; rectangular head and upper bow; rod-shaped lower bow; long trapezoidal catch plate; long hinged pin still in place in catch-plate. Length 73mm, head width 15mm. SF 26, CG4, context 1297B.
5. Bow brooch. Iron. Strip bow lacking upper part; small trapezoidal catch-plate. X-radiograph suggests the brooch may have transverse grooves on upper bow. Present length 51mm. SF 19, CG4, context 1297.

The other metalwork, *by Dennis Williams*

A total of 519 ferrous finds, with a total weight of 2.182kg were recovered. All were heavily corroded, although the extent of this corrosion was variable. An initial visual inspection enabled many of these finds to be identified as nails (including hobnails, from footwear). X-ray examination of a sample of irregularly-shaped lumps showed that some of these were also recognisable as nails, surrounded by their corrosion products. The ferrous finds are summarised by context group (CG), and individual contexts, in Table 11.

Table 11 Quantification of iron objects, by context group

Context group	Feature type	Context	Object type	Count	Weight (g)
4	Ditch	1354	Unidentified	5	122
4	Ditch	1260	Nail	1	18
4	Ditch	1315	Unidentified	1	86
4	Ditch	1406	Hobnail	1	2
4	Ditch	1406	Nail	8	46
4	Ditch	1406	Unidentified	5	68
4	Ditch	1423	Nail	2	74
10	Ditch	1302	Hobnail	117	138
13	Grave	1424	Nail	5	182
14	Grave	1448	Nail	11	486
15	Grave	1443	Hobnail	24	52
16	Grave	1409	Hobnail	190	552
16	Grave	1409	Nail	5	32
16	Grave	1409	Unidentified	7	40
17	Grave	1450	Hobnail	101	260
18	Grave	1446	Hobnail	53	72
Totals				515	2182

The majority of the finds related to graves. Four graves contained hobnails: grave CG15 (cut 1444, fill 1443, SK1442), grave CG16 (cut 1410, fill 1409, SK1440), grave CG17 (cut 1452,

fill 1450, SK1451) and grave CG18 (cut 1445, fill 1446, 1447). In each of these burials, the hobnails were recovered from the area of the feet, whether or not bones had actually survived in that part of the grave. A single hobnail was retrieved from the 2nd century enclosure ditch CG4 (cut 1353, fill 1406). This find lay immediately below the grave in CG15 (fill 1443, SK1442), and was therefore likely to have been intrusive. A substantial number of hobnails was also recovered from context 1302, both at the time of excavation and during subsequent sorting of environmental samples. There is no evidence that this context, the fill of 2nd century ditch CG10 (ditch 1303), relates to a burial, so the finds may represent the remains of one or more boots dumped in the ditch.

Parts of five larger nails in grave CG16 (fill 1409) suggested that a coffin may have been used. Two further graves (CG13 and CG14) also produced large nails (up to 90mm in length, with heads up to 25mm across), which were consistent with the presence of burials in coffins. Grave CG13 (cut 1425, fill 1424) produced five nails, four only identifiable from X-rays, though no human remains were recovered. Grave CG14 (fill 1448) contained a line of large nails, similar in size to those from context 1424, but only a minute amount of bone. This feature had been truncated at one end, so it is possible that further evidence in the form of hobnails at the foot of the grave had been displaced.

As well as the hobnail discussed above, larger nails and five small, unidentified iron objects were also found in ditch 1353 (fill 1406), associated with 2nd century pottery and slag. The remaining few finds were associated with the early Roman deposits in the CG4 ditch. These comprised a single nail from ditch 1195 (fill 1260), possible bent nails from ditch 1353 (fill 1354) and a tapered bar or tang, formed into a small offset hook at the wide end, from ditch 1195 (fill 1315). The latter was badly corroded and not more closely identifiable.

In addition to the metalwork described from the excavation at the Bromwich Lane Tennis Club, a jetton was recovered from a post-medieval cultivation soil (1073) at St John's Green ([Plate 10](#)). A later 15th century (c 1461–97) date was attributed to this (C King pers comm, following advice from John Naylor). The jetton bears the quartered arms of France. Jettons of this type were struck in Paris for use in Dauphinè, though the majority found are copies struck at Nuremberg ([Mitchener 1988](#), 619). It is uncertain which category this example belongs to. The design is close enough to the French originals for this to be the source, but the weight of the jetton is somewhat lighter than expected (3.56g compared to 4.71g and 5.51g for the published examples; [Mitchener 1988](#), 619, 919a). Precise identification is made more complex by the fact that French issues were sometimes made from imported German brass.

Ironworking residues: slag, fired clay, charcoal and coal, *by Dennis Williams*

There were 269 pieces of Roman iron-manufacturing slag, with a total weight of 16.357kg recovered from the Bromwich Lane Tennis Club.

A total of 91% of the slag (by weight) was waste from smithing activities; porous lumps, mostly discrete and unfractured and in a wide range of sizes, that solidified from liquid slag expelled during the forging of iron blooms. A small number, large and lenticular in shape, were identified as hearth bottoms, slag that accumulated at the bottom of a smithing heath, directly below the iron work-piece. The largest of these discs, from the CG4 enclosure ditch (1262), weighed 1.2kg and was 130mm in diameter, with a pronounced convex shape to its under surface. The fills of the CG4 enclosure ditch (contexts 1244, 1249, 1262, 1263 and

1297, associated with 1st century finds; 1406 and 1407 associated with 2nd century finds) accounted for 99% by weight of the slag recovered. The remainder was found in the fills of two late Roman graves (CG16, fill 1409 and CG18, fill 1446) and a pit (CG5, pit 1474, fill 1473, associated with 1st century pottery). Further evidence for smithing on site was provided by hammerscale recorded in environmental samples ([Table 21](#)), often associated with fragments of slag, fired clay, heat-cracked stone and coal. This was only noted as 'occasional' (rather than moderate or abundant) and is usually recorded as a mixture of flake and sphere hammerscale. Hammerscale was noted in the CG4 ditch (fills 1297, 1315, 1367 and 1406), the CG10 ditch (1268 and 1302) and from grave fills (CG13, 14, 15, 16, 17 and 18).

The greatest concentration of smelting slag was found in the CG4 ditch. Fill 1406 produced thirteen pieces, weighing 364g, which exhibited pre-solidification flow-lines, typical of tap slag. Smaller quantities of tap slag were recovered from ditch fills 1244, 1264, 1297 and 1406, all in the form of small fragments. Fills 1244 and 1406 contained a total of three pieces of smelting slag that were free from flow lines, and which probably solidified as 'blocks' within the bases of smelting furnaces.

Fragments of fired clay were found in a number of the slag-containing contexts, and in other fills of the enclosure ditch (1264, 1423, 1429, 1430, 1315 and 1362). A small amount of fired clay was also recovered from the ditch (1431, fill 1433), and from context 1409, in one of the graves. The fired clay generally had an 'oxidised', orange-brown colour, but in some cases had vitrified, to produce a dark grey, glassy surface. Some of these fragments had slag deposits adhering to them, but most did not. This absence of contamination would be expected if the clay surface was exposed to high temperature, as part of a smithing hearth, but without direct contact with the material being processed.

There was no evidence of substantial pieces of charcoal among the slag and fired clay, though charcoal flecks were noted for several of the fills containing these finds. A small amount of coal was recovered from a fill (1297) of the enclosure ditch, which also yielded slag and fired clay. The use of coal may have been acceptable in smithing hearths, whereas charcoal would have remained the choice of fuel for smelting ([Jones 2001](#)). This avoided the transfer of impurities from the coal, particularly sulphur, which can cause embrittlement of iron.

Discussion by context group and ceramic phase

The distribution of slag and fired clay by period is summarised in [Table 12](#). Contexts in Period 3 accounted for most of the slag and fired clay recovered at the site. This period was dated to the mid-1st century, but some contexts incorporated 2nd century material from a later re-use of the ditch. As described in the pottery report above, Period 3 contexts were split between two ceramic phases (CP), CP1 associated with 1st century pottery and CP2, associated with 2nd century pottery.

With slag and fired clay quantified in relation to CP1 and 2, these finds are seen to be mainly associated with 2nd century deposition, as shown in [Figures 28 and 29](#). Furthermore, [Figure 28](#) demonstrates the high ratio of slag from smithing, to that from smelting. While it may be concluded that smithing was the main iron-processing activity at this site, this is marked contrast with the predominance of smelting activity in Worcester, as at Deansway ([McDonnell and Swiss 2004](#), 368–77).

Table 12 Quantification of slag, fire clay and coal, by stratigraphic phase

Stratigraphic period	Context group	Material	Count	Weight (g)
Period 2: Late Iron Age	1	fired clay	6	36
Period 3: Mid-1 st century (with intrusive 2 nd century material)	4	coal	1	2
		fired clay	141	2536
		slag (undiagnostic)	1	72
		smelting slag	17	496
		smithing slag	228	13784
	5	smithing slag	1	6
Period 4: 2 nd century	12	smithing slag	4	124
Period 5: late Roman burials	16	fired clay	3	140
	16	smithing slag	10	35
	18	smithing slag	1	60
Undated		coal	7	17
		fired clay	1	82
		slag (undiagnostic)	1	406
		smelting slag	3	930
		smithing slag	3	444

Although the presence of smelting slag means that some primary processing may have been carried out on a small scale at the St John's site, it is also plausible that small amounts of this waste may have been accidentally brought there with iron blooms produced elsewhere.

AMS radiocarbon dating of skeletons, *by Nick Daffern*

Results and discussion

Four burials identified as late Roman during excavation, were radiocarbon dated ([Table 13](#)). The full results of the analysis are contained in Appendix 1. The results of the radiocarbon dating show that the burial of the four individuals occurred within a 400 year span from AD 240–AD 640 covering the mid- to post-Roman. Despite this overall broad range, the dating of the individual burials indicates that three phases of interment occurred ([Table 14](#); [Figs 30 and 31](#)).

The first phase of burials, (CG15, SK1442 and CG17, SK1451), date from the mid-3rd to late 4th or early 5th century. The striking thing about these burials is that the radiocarbon age for both samples is exactly the same. Although this is not unusual, the results were checked to ensure no inadvertent repetition of data (SUERC pers comm). Despite this, the potential for cross-contamination at some stage during excavation, sampling or post-excavation analysis cannot be completely discounted despite the highest possible standards being employed during these procedures.

The second burial phase consists of a solitary inhumation (CG16, SK1440), and dates between the mid-4th and mid-6th century. It is offset to the south-west of the Period 1 burials by approximately 2m.

Table 13 Results of AMS radiocarbon dating

Context	Material	Laboratory code	$\delta^{13}\text{C}$ ‰	Radiocarbon age BP	OxCal calibrated age (95.4% probability or 2s)
1440	Human bone – right femur	SUERC-25800 (GU-19645)	-19.5	1625 ± 40 ^{14}C BP	Cal AD 330 – AD 540 (95.4%)
1442	Human bone – right femur	SUERC-25801 (GU-19646)	-19.6	1710 ± 40 ^{14}C BP	Cal AD 240 – AD 420 (95.4%)
1447	Human bone – fragments possibly originating from different bones	SUERC-25802 (GU-19647)	-20.5	1510 ± 40 ^{14}C BP	Cal AD 430 – AD 640 (95.4%)
1451	Human bone – right femur	SUERC-25803 (GU-19648)	-18.9	1710 ± 40 ^{14}C BP	Cal AD 240 – AD 420 (95.4%)

Table 14 Burial Phases and dating

Burial Phases	OxCal calibrated Date (% Probability)	Context group(s)	Skeleton number(s)	
Phase 1	Cal AD 240 – AD 420 (95.4%)	Cal AD 250 – AD 390 (68.2%)	CG15, CG17	SK1442, SK1451
Phase 2	Cal AD 330 – AD 540 (95.4%)	Cal AD 380 – AD 540 (68.2%)	CG16	SK1440
Phase 3	Cal AD 430 – AD 640 (95.4%)	Cal AD 530 – AD 610 (61.2%)	CG18	SK1447

The third and final phase is again only represented by one burial, (CG18, SK1447), and dates to the mid-5th to early or mid-7th century: a post-Roman date. In this case, the individual was subject to post-mortem decapitation. The ritual removal of the head appears to increase in frequency in the 4th century and later ([Philpott 1991](#)).

Despite the graves cutting the infilled enclosure ditch, the dating from the ditch fills (mid-1st century) and the dating of the earliest burial (mid-3rd century) show that the infilling of the enclosure ditch and the interment of the remains were not related events. Although this statement is not certain as no dating was retrieved from the two undated ‘empty’ graves to the north-east of the four burials. It is unfortunate that no remains and/or datable material were recovered from the two empty graves as it is unclear how, or if, they fit into the phasing that has been presented here. Not only would they have provided additional material for osteological analysis, but the additional radiocarbon dates from the skeletal remains would have allowed an improved and more accurate pattern regarding the spatial distribution and temporal development of the burials ([Fig 32](#)).

Osteological analysis, *by Gaynor Western*

Results

There were four skeletons from the Bromwich Lane Tennis Club. These were analysed in detail ([Table 15](#)).

Table 15 Summary of the findings of the osteological analysis of skeletons

	SK1440	SK1442	SK1447	SK1451
Condition	2–3 fair, varied	4–5 poor, varied	5 poor, varied	2–3–4, varied
Completeness	25–50%	25–50%	<25%	25%
Age	Middle adult 35–45?	Adult	Young adult 20–25	Adult
Sex	Male??	Indeterminate	Female?	Indeterminate
Stature	1.77m	Unobservable	Unobservable	Unobservable
Skeletal Pathology	None	Enthesophytes, periostitis	Unobservable	None
Dental Pathology	Minor calculus, Minor enamel Hypoplasia	None	Minor calculus, Minor enamel Hypoplasia	Unobservable

Age assessment

All the contexts were observed to contain fully developed skeletal elements. Additionally, elements of permanent dentition were recovered from skeletons SK1447, SK1440 and SK1442. The dentition of two of these contexts (SK1447 and SK1440) survived in sufficient condition to allow assessment of dental attrition. None of the contexts contained the skeletal elements required for age estimation using the auricular surface and pubic symphysis.

The presence of fully developed skeletal elements in all contexts suggested that all the skeletal remains were those of adult individuals. Furthermore, using dental attrition age estimates (after [Miles 1963](#)), the relative lack of wear observed on the permanent molars retrieved from SK1447 suggested that this individual was a young adult, aged between 20–25 years at death. The heavier attrition observed of the dentition of SK1440 tentatively suggested that this individual was likely to be a middle aged adult, between 35 and 45 years old at death.

Sex determination

Little skeletal material was present in any of the contexts that would reliably allow sex estimations to be made. Mastoid processes from SK1447, SK1442 and SK1451 were available for observation, but this feature alone provides insufficient evidence for an overall sex estimation. Metric assessment of the femoral head was also taken from SK1451 and SK1440 in order to provide a secondary source of information and compared to the data provided by Bass ([1995](#)).

One individual, from SK1447 was determined very tentatively as a probable female from observations of the mastoid process. Analysis of the remains from SK1442 and SK1451 resulted in the sex of the individuals being ‘indeterminate’, the former displaying neither particularly male nor female observable morphological traits and the latter appearing to have a ‘probable female’ mastoid process in contrast to the metric assessment of the femoral head that indicated the remains to be ‘male’. Whilst the metric assessment of SK1440 indicated the remains to be male, it was felt that given the contradictory results of the morphological and metric analysis of SK1451 that metric assessment alone was not a reliable indicator of sex.

Non-metric traits

The level of preservation of both skeletons prevented observation of many of the non-metric traits. Observations were noted on recording sheet I (contained in the archive).

SK1440 exhibited a tibial squatting facet on the right tibia. No other non-metric traits were observed.

Stature and metric analysis

SK1440 contained an ulna from which stature could be estimated. None of the other contexts contained any complete long bones or long bone fragments that could be reconstructed.

Estimation of stature for SK1440 was 1.77m.

Skeletal pathology

The poor bone preservation prevented the analysis of pathological changes of most of the elements recovered. However, minor lesions were observed on the tibia of SK1442.

The pathological changes observed in the right tibia of SK1442 consisted of a small area of lamellar bone periostitis and two small enthesophytes or bony nodules projecting out from the bone surface.

Periostitis is associated with localised inflammation of the periosteum, a layer of soft tissue covering the outer surface of the bone, which can be caused by minor trauma or infection ([Roberts and Manchester 1997](#)). Since the lesion, located on the mid-shaft of the tibia on the lateral side, consisted of smooth lamellar bone it can be inferred that the lesion had healed and was not active at the time of death. Enthesophytes are associated with similarly localised soft tissue trauma, usually occurring, as in this case, in the vicinity of muscle attachments ([Roberts and Manchester 1997](#)). These lesions were located on the posterior and medial aspects of the tibia on the proximal third of the shaft, subadjacent to the soleal muscle attachment site. The enthesophytes and periostitis may well be linked to a single traumatic event or may represent two separate minor injuries to the tibia.

Dental pathology

Elements of permanent dentition were recovered from SK1447, SK1440 and SK1442. The preservation of the teeth was generally quite poor, with only the crowns surviving in a fairly fragile state. Most of the dentition that was recovered was loose. Some could not be identified as belonging to a specific side of the mouth and pathological changes could not be observed for many of the teeth present due their fragmented nature.

SK1447 presented with the most complete dentition of 26 observable permanent teeth. This individual exhibited minor calculus and minor enamel hypoplastic defects. SK1440 contained 10 teeth, again demonstrating minor calculus and enamel hypoplastic defects. The minor calculus deposits indicate good standards of oral hygiene, whilst the enamel hypoplastic defects may indicate some stress to health incurred by the individuals during development (ie febrile illness).

Only one complete tooth crown and one partially observable tooth crown were recovered from SK1442. No changes were observed. No teeth were present in SK1451.

Comparisons with general Roman burial practices

Two skeletons (CG16, SK1440 and CG15, SK1442) were found with hobnails in the areas of the feet, suggesting that the individuals were wearing hobnailed footwear when they were interred (see also [Williams this report, p52](#)). The provision of footwear for the dead to allow them to undertake their journey to the afterlife appears to have been an important aspect of Roman funerary ritual, with footwear on occasion being placed beside the body as well as more commonly on the feet. The osteological analysis suggests that one of the individuals associated with hobnails was a robust middle-aged possible male of tall stature, possibly 1.77m, well above the average 1.69m reported for males of the Roman period ([Roberts and Cox 2003](#)). The other individual associated with hobnails had suffered minor soft tissue trauma to one lower leg involving damage around the muscle insertion point. It has been noted that hobnailed footwear is recorded more frequently on rural sites ([Philpott 1991](#)) and may be associated with a physically demanding agricultural lifestyle ([Simmonds et al 2008](#)). Although there are numerous exceptions to the claimed rural - urban dichotomy, [Simmonds et al \(2008\)](#) found that both male and female individuals associated with hobnails at the cemetery serving the *colonia* at Gloucester (120–122 London Road) were all adult and all young or middle-aged adults, suggesting that the choice of footwear worn by the dead may have reflected status or occupation during life. It is unclear, however, to what extent fashion and individual tastes would have influenced choice, which is similarly influenced by age. Nonetheless, the evidence from St John's suggests that the hobnail footwear found here may have been associated with a physically active lifestyle.

In addition to the inclusion of hobnails, one burial contained the remains of an individual (CG15, SK1442) laid out in a prone position. This is often observed amongst Roman burials and has been noted to occur at London Road, Gloucester in both 1st to early 2nd century as well as in 3rd to 4th century burials ([Simmonds et al 2008](#)). This practice is found in many Roman cemeteries ([Philpott 1991](#)) and in some cemeteries (ie Bath Gate, Cirencester) occurs in up to 8% of the burials although a figure of around 3% is more commonly reported (ie East Cemetery of Roman London and Lankhills School, Winchester; [Simmonds et al 2008](#)). At London Road, Gloucester more females than males appear to have interred in a prone position but due to small sample numbers this is difficult to substantiate statistically.

Another aspect of Roman burial rite revealed by the excavations was ritual post-mortem removal of the head. Decapitation burial is a fairly common practice of the period, with an estimate of approximately 2.5% of all Roman burials containing decapitated remains ([Watts 1998](#)). Whilst it has been demonstrated by [Philpott \(1991\)](#) that there is an increase in this practice by the 4th century and that it tends to be found in more rural areas, there are again many exceptions to this (ie Lankhills, Winchester, and East Cemetery of Roman London). [Watts \(1998, 88\)](#) has observed that decapitations tend to occur in areas that are highly Romanised and that where there are decapitations there seems to be little evidence of Christianity. There appears to be no association of the practice with a particular sex or age group, but rather than representing a purposeful denigration of the body, it is now believed to have consisted of a carefully carried out procedure requiring some skill. Many decapitated skeletal remains reveal no evidence of cut marks (ie at the East Cemetery of Roman London), but those that do indicate that the head was removed from the front ([Simmonds et al 2008](#)), with the head subsequently being placed back in the grave in a

variety of locations. There is little differentiation between decapitated burials and other Roman inhumations regarding the provision of grave goods and the remains themselves appear to have been laid out with equal care. Some authors suggest that the ritual of decapitation may be associated with placating 'ghosts' or 'souls' of the individuals who died in inauspicious circumstances ([Simmonds et al 2008](#)). Skeleton (CG18, SK1447) from St John's was found to have been decapitated, with the head having been placed in the grave by the feet. This burial contained the remains of a young adult probable female, which would certainly have represented an untimely demise, although without further osteological data it is difficult to fully understand the context of the use of the rite here.

The implications of these slightly more unusual burial practices in the context of the location of the burial site are interesting. Two of the burials in this small cluster revealed deviant, albeit fairly common, funerary rituals. Philpott ([1991](#)) notes that discrepant burials tend to be located towards the edges of a burial area. The excavation at St John's suggests that this small cluster of inhumations were cut into a ditch that forms part of a rectangular enclosure. The burials, whilst cutting into the ditch, clearly respect its alignment so it is likely that this was filled in with the purpose of creating an area for disposal of the dead. This is frequently observed in Roman cemetery and burial sites associated urban and small town settlements (ie Winchester and Ilchester; [Cleary 2000](#)) as is the re-allocation of farming land to cemetery sites (ie East Cemetery of Roman London and London Road, Gloucester). The location of Roman burial sites are almost always near boundaries due to the fundamental Roman belief in the existence of 'ghosts' or 'spirits of the dead' that should not be disturbed by the living ([Macdonald 1977](#); [Henig 1995](#)), thus making it imperative to physically separate the dead from the living in clearly bounded areas. Although the ditch associated with the burials has been filled in at St John's, it appears that this feature still acted as a socially constructed boundary, even though its actual construction no longer facilitated this purpose physically, emphasising the phenomenological importance of pre-existing features in the creation of Roman funerary spaces. The area contained by the enclosure ditch does not contain burials. It is also unclear due to the limits of the excavation whether any burials were located outside of the enclosure on the north side of the portion of the ditch associated with burials so it is not possible to confirm Philpott's observation regarding discrepant burials.

The burials in their local context

Overall, the funerary practices identified from among the individuals from St John's are representative of those commonly noted at other cemeteries of known Roman date. Radiocarbon dates, subsequently derived from a bone sample from each skeleton, revealed that although the late Roman date ascertained through stratigraphic analysis was accurate, there may well have been some variation in date of deposition.

It is possible that the interments occurred over a longer period of time, with the total date range lying between AD 240 and 640 ([Daffern this report, p55](#)). Interestingly, it also appears that two burials (CG16, SK1440 and CG18, SK1447) may have been later in date than a further pair (CG15, SK1442 and CG17, SK1451), following an east to west progression of interment along the line of the backfilled ditch.

Rural Roman burials excavated to date in Worcestershire share certain characteristics in terms of the overall nature of their deposition, although individual variation is seen. For example, two burials excavated at Upper Moor, thought to be of late Roman date, were located within an enclosure and on a north to south alignment ([Western 2003](#)). No further

burials were identified within the enclosure and these appear to be isolated graves. Other rural burials are also aligned along a north to south axis and are similarly isolated and dispersed. At Furzen Farm, a single burial was located on the exterior side of a possible boundary ditch to the focus of settlement activity during the Roman period (Western 2004). At George Lane, the alignment of the burials appears to be of paramount importance, since one of the interments cuts across the line of a bank that ran east to west. A second interment, interpreted as belonging to the same period as the first, follows the north to south direction of the bank. Clearly, a north to south alignment of interment is an important aspect of funerary ritual during the Roman period in Worcestershire. The isolated nature of the rural burials may represent small household groups or landowners interred in close proximity to the area of their habitation. To date, only adult remains have been identified in rural locations.

Two urban inhumation cemeteries have been excavated in the centre of Worcester, one at Deansway (Dalwood and Edwards 2004) and another at the King's School, St. Albans (Brown and Wichbold 1991). A cluster of fourteen inhumation graves were identified at Deansway Site 4 along with two further isolated burials located at Site 3, one of which was independently dated to the late Roman period. The remains of nine individuals were recovered from King's School (St Albans), though this is likely to be an underestimation of the total number of individuals buried there since the site was heavily truncated and disturbed by post-depositional activity. Burials at Deansway were aligned north to south and east to west, and those at King's School (St Albans) were aligned east to west, in what would appear to indicate a more traditional Christian burial practice. The date of both cemeteries has been attributed the Roman period, although no independent dating of the burials of King's School (St Albans) has been undertaken. At least one of the cemetery boundaries at Deansway and King's School (St Albans) appears to have been demarcated with a ditch, exemplifying the Roman tradition of strict observance of physically separating the living from the dead in urban spaces. Both sites contained the sub-adult and adult remains.

The inclusion of funerary objects occurs in both the rural and urban graves. Hobnails and artefacts of personal adornment have been excavated from both types of graves. All the graves seem to be at most modestly furnished. Variation on a personal level also is evident from the inclusion of a dog burial at King's School (St Albans), and one female at George Lane apparently being gifted with a neonate sheep/goat joint of meat offering. Decapitation has only been noted at Deansway and at the St John's site.

Burials from urban and rural settings reveal that funerary rites in late Roman Worcestershire were a complex of diverse, individual practices within a continuous spectrum of ritual observances. Whilst there are trends within certain areas of burial, including a distinct preference for north to south alignment in rural areas, or a higher frequency of discrepant body positioning in urban cemeteries, there are clearly many similarities between the two groups. The location of the graves at St John's would appear to mirror more closely rural burials in Worcestershire, with a sparse number of graves aligned directly with an enclosure ditch. This may reflect that the St John's area was an open and rural environment during the Roman period and that burial practice here followed the norms of a local tradition. Conversely, the deviant prone and decapitated burials present at St John's suggest a greater 'Roman' influence, perhaps due to the proximity of the site to the town itself. Esmonde Cleary (2000, 129) notes that at the Roman small town of Ilchester, there occurred 'backland burials', where during the 4th century inhumations were located at the rear of plots that were simultaneously occupied along the road frontage. These burials were often located around the edges of or alongside boundary ditches. It can be seen both from the example

of 'backland burials' and from those at St John's, that distinctions regarding rural or major urban burial rites during this period may not be as clear-cut in small towns or peripheral urban areas. Whilst there appears to be an inclusion of more 'Romanised' elements or burial practice, there is clearly also an element of emphasising local or familial identity in the positioning of the graves in contrast to the relative displacement of the grave in a collective urban cemetery.

Of additional note is the late date of the burials and the implications for understanding the continuation of burial rites through the transition period. Generally, there is a paucity of Anglo-Saxon burials outside south-east Worcestershire and it has been argued that Anglo-Saxons never directly occupied the neighbouring county of Gloucestershire, and that the local populations assimilated facets of Germanic culture (Sermon 2000). This stands in direct opposition to the traditional interpretation of the presence of overtly Anglo-Saxon burial grounds in the western counties, such as the Beckford (Worcestershire) cemeteries dated to the 5th to 6th century (Evison and Hill 1996) and to the lack of continuity in settlement and land-use patterns during the transition period (Montgomery 2002). Recent stable isotope analysis of Anglo-Saxon cemeteries indicate a chain migration of Anglo-Saxon individuals to family units already settled in the country (*op cit*) so that individuals of Anglo-Saxon descent would integrate quickly into local society, generally supporting recent assertions that the 'Anglo-Saxon invasion' may not have involved a mass movement of people (Hamerow 1997). Analysis of dental non-metrics (epigenetic traits) also suggests that traits are clustered according to locality, so that there was more similarity amongst populations traditionally regarded as ethnically distinct in one region compared to populations perceived as ethnically similar that were distant to one another spatially (Lloyd Jones 1997). Whilst a degree of identity within these mixed populations may have been asserted in burial rites through items of personal adornment and inclusion of particular types of grave goods (Montgomery 2002), there has, nonetheless, been no identification of a distinct 'native' burial rite during this period (Dalwood 2003). It is clear that closer dating of 'late Roman' and 'early Anglo-Saxon' burials, especially the more isolated rural graves, may help to elucidate the extent and timing of both Roman and Germanic influence in funerary rituals of native populations in Worcestershire during the transition period and that stable isotope analysis would provide a useful means of identifying local and non-local groups.

Osteological analysis of the remains recovered from the excavations at St John's has provided a limited but intriguing insight into funerary rites of Roman Worcestershire. The inclusion of decapitated and prone burials appears to indicate a more 'Romanised' influence on funerary practices despite the relatively late date of interment, suggesting a continuation of Roman influence on cultural norms during the early transition period. The combination of attitudes towards the body in death and placement of the graves seen at St John's also suggests that there is no clear cut rural - urban dichotomy in burial practices at this time. Future research is required to qualify the information ascertained here to gain a contextualised understanding of these burials, which may make an invaluable contribution to our understanding of the complex nature of burial rites during this period at a regional level. Furthermore, integration of bioarchaeological data and funerary customs within the broader archaeological context of settlement pattern and landscape use may aid our understanding of aspects of human activity, such as migration and cultural adaptation, during the transition period in Worcestershire.

Animal bone, by Ian Baxter

Every complete tooth and animal bone fragment (both proximal and distal ends) together with all cattle horncores exhibiting a measurable base (maximum width, minimum width and circumference) and cattle frontal fragments with significant morphological characters preserved has been recorded on an Access database and used in counts.

The shape of the enamel folds (Davis 1980; Eisenmann 1981) was used for identifying equid teeth to species. Equid postcrania were checked against criteria summarised in Baxter (1998). Wear stages were recorded for all P_4 s and dP_4 s as well as for the lower molars of cattle and sheep/goat, both isolated and in mandibles. Tooth wear stages follow Grant (1982) and remain on file. Measurements are listed in Appendix 2. These in general follow von den Driesch (1976). Humerus HTC and BT measurements were taken for all species as suggested by Payne and Bull (1988) for pigs. Measurements taken on equid teeth follow Levine (1982). Cattle horncores have been aged using the method of Armitage (1982) and the morphology of the frontal bone recorded according to the typology published by Grigson (1976).

The number of hand-collected animal bones identified to species (NISP) from both sites is small with 16 fragments from Bromwich Lane Tennis Club and 139 from the Old Council Depot (Table 16).

*Table 16 Number of hand-collected mammal bones (NISP).
Numbers of cattle horncores shown in square brackets*

Taxon	Phase of excavation/Site/Period		Total
	Bromwich Lane Tennis Club: Roman	Old Council Depot: C18th-early C19th	
Cattle (<i>Bos f domestic</i>)	11	125 [115]	136 [115]
Sheep/goat (<i>Ovis/Capra f domestic</i>)	3	-	3
Pig (<i>Sus scrofa</i>)	1	-	1
Equid (<i>Equus</i> sp)	1	3	4
Horse (<i>Equus caballus</i>)	-	9	9
Large mammal	-	2	2
Total	16	139	155

Bromwich Lane Tennis Club

The few faunal fragments recovered are from the enclosure ditch. Teeth and tooth fragments of cattle are the most frequent remains. Very little recognisable bone survives but includes a tibia fragment found in the enclosure ditch (CG4; fill 1297). Sheep/goat remains include a mandible and a metatarsal shaft fragment. The lower canine of a male pig and a proximal equid metacarpal were also recovered from the enclosure ditch (CG4; fill 1297). The latter is from a small animal, most probably a pony although the species cannot be certainly ascertained. The only fragment recorded from the environmental sample residues is a small, probably Cyprinid, vertebra. While the assemblage is far too small to draw any conclusions regarding husbandry practices, the presence of all three of the main food species is suggestive of mixed farming.

The Old Council Depot

Two ditches (ditch 710, fill 709 and ditch 737, fill 736) probably represent a boundary with the street frontage and produced a small number of cattle horncores and a complete horse 3rd metacarpal. A very large pit (740=688) was only slightly sampled. It produced cattle horncores from two fills (686 and 687). Pit 111 contained cattle horncores, cattle and equid bones and teeth (fill 110). Pit 527 was lined (fill 526) with cattle horncores in similar fashion to an industrial pit of unknown function excavated at Cutler's Gardens, City of London illustrated by Armitage (1989, figs 4 and 5). Fills 526 and 548 contained cattle horncores and equid bones but the six other layers within the pit were sterile.

Cattle

The few cattle bones recovered from these pits comprise a distal humerus, proximal tibia and cattle-sized vertebra and rib fragments found in pit fill 111. A total of 115 cattle horncores with a complete base were recovered from the site, all but 9 from the three pits. However, comparatively few cattle horncores were recovered intact and consequently much information regarding the type of cattle represented has been lost.

Of complete horncores where the length can be measured along the outer curve three are short horned and four medium horned according to the typology based on horncore length of all the authors presented in Table 17. In addition, it is possible to ascertain from the preserved extent of broken horncores that a further four short horned, twelve medium horned and four long horned cores can be identified with reasonable certainty from among the pit assemblages.

Table 17 Variation in the size categories employed to classify archaeological cattle type (after Sykes and Symmons 2007)

Type	Cattle 'type' size categories (mm)				
	Armitage and Clutton-Brock (1976)	Armitage (1982)	Armitage (1993)	Luff (1994)	Sykes and Symmons (2007)
Small Horn	<96			<150	<145
Small/Short Horn			<100		
Short Horn	96–150	<220	100–220	150–220	145–195
Short/Medium Horn			200–205		
Medium Horn	150–200	220–360	220–360	221–360	195–350
Long Horn	>200	>360	>360	>360	>360

In pit 111 a total of 7 short horned and 6 medium horned cores can be positively identified. This is the only pit in which short horned cattle are certainly present and they appear to be absent from the other two where medium horned cattle predominate. Long horned cattle are only certainly present in pit 527 (fill 548) and the very large pit 688 (fill 687). As far as can be established from largely fragmentary material most horncores curved downwards and forwards.

In Figure 33 the cattle horncores recorded for each pit and ditch are plotted in terms of size and shape. The long horned cores from pits 527 (fill 548) and 688 (fill 687) group towards

the top right in [Figure 33A](#). In [Figure 33B](#) shorthorns fall to the left and medium horns to the right, a situation reversed when shape independent of size is the criterion as in [Figure 33C](#). [Figure 34](#) plots the cattle horncores in terms of basal circumference and smallest basal diameter for the pits as a whole and as individual assemblages. While this kind of plot cannot be used to sex this assemblage, as was attempted for City Road, Chester by Sykes *et al* (2009) due to the small number of length measurements possible for the Worcester sample, it does appear to mirror the distribution of long horned cores seen in [Figure 33](#). Typical examples of short horned, medium horned and long horned cattle are illustrated in [Figure 35 A–C](#). The same figure also illustrates the types of frontal profile and intercornual ridge present in the St John's assemblage. In a majority of cases substantial portions of one side of the frontal bone posterior to the orbit remain attached to the horncores enabling the recording of frontal morphology.

The frontal profile seen from above was found to be closely related to breed in a study of modern cattle crania ([Grigson 1976](#)). Only two main variations are present in the Old Council Depot assemblage: convex and flat/very slightly convex. In all the pits the convex form is most frequent accounting for between 80–91% of the total (Table 18; [Fig 35B](#)). The intercornual ridge or frontal profile seen from the front is highly variable and a less certain indicator of breed affinities (*op cit*). Three forms occur amongst the Old Council Depot assemblage: low single arch, high single arch and high double arch. Of these a high single arch is most frequent ranging between 68–81% of the total (Table 18; [Fig 35B](#)).

Table 18 Cattle frontal morphology ([Grigson 1976](#))

Frontal profile (<i>from above</i>)				Intercornual ridge (<i>frontal profile seen from the front</i>)							
Convex		Flat/slightly convex		Low single arch		Low double arch		High single arch		High double arch	
N	%	N	%	N	%	N	%	N	%	N	%
49	83	10	17	4	7	-	0	43	74	11	19

Horncores were aged using the method published by Armitage (1982) in combination with the state of fusion of the parietal where this was preserved following Grigson (1982). The majority of cores derive from adult and old adult beasts although sub-adults and young adults are also represented. No infant or juvenile horncores were seen ([Table 19](#), [Fig 36](#)). Ante-mortem occipital perforations with rounded margins were observed affecting several posterior cranial fragments: three from fill 110 and two from 526. The lesions display considerable variation in size ([Fig 37A](#)). Occipital perforations have been recorded in wild bovids and are thought to have a congenital origin ([Manaseryan *et al* 1999](#); [Baxter 2002](#)) although it is speculated that use as draught animals may, possibly, exacerbate the condition ([Dobney *et al* nd](#)). Two horncores, from pit fill 110 and ditch fill 736, have depressions running around the core base very similar to those reported from Neolithic Bronocice in Poland ([Milisauskas and Kruk 1991](#)) and Roman Namur, Belgium ([Bartosiewicz *et al* 1997](#)) interpreted as cord impressions caused by yoking for draught ([Fig 37B](#)). Similar examples have been observed from post-medieval City Road, Chester ([Sykes *et al* 2009](#)) and the Birmingham Waterfront sites ([Baxter 2005](#)).

Two cattle frontal bones, from fills 526 and 548 have central depressed fractures and three, from 526 have chop marks in the same region caused by poll-axing ([Fig 38A–B](#)). A frontal fragment from fill 110 has multiple transverse cut marks posterior to the horncore from

skinning (Fig 38C). Two horncores from fill 526 have nails driven into them to secure the horn sheath (Fig 38D–F).

Table 19 Cattle horncore ages (Armitage 1982)

111	Type	Infant		Juvenile		Subadult		Young adult		Adult		Old adult	
		N	%	N	%	N	%	N	%	N	%	N	%
	Short Horn	-	0	-	0	3	50	-	0	3	15	1	14
	Medium Horn	-	0	-	0	-	0	1	8	3	15	2	29
	Long Horn	-	0	-	0	-	0	-	0	-	0	-	0
	Unknown	-	0	-	0	3	50	11	92	14	70	4	57
Total		0		0		6		12		20		7	
527	Type	Infant		Juvenile		Subadult		Young adult		Adult		Old adult	
		N	%	N	%	N	%	N	%	N	%	N	%
	Short Horn	-	0	-	0	-	0	-	0	-	0	-	0
	Medium Horn	-	0	-	0	-	0	1	7	5	31	3	30
	Long Horn	-	0	-	0	-	0	1	7	-	0	1	10
	Unknown	-	0	-	0	5	100	13	87	11	69	6	60
Total		0		0		5		15		16		10	
688	Type	Infant		Juvenile		Subadult		Young adult		Adult		Old adult	
		N	%	N	%	N	%	N	%	N	%	N	%
	Short Horn	-	0	-	0	-	0	-	0	-	0	-	0
	Medium Horn	-	0	-	0	-	0	-	0	-	0	1	14
	Long Horn	-	0	-	0	-	0	-	0	2	25	-	0
	Unknown	-	0	-	0	-	0	1	100	6	75	6	86
Total		0		0		0		1		8		7	

Discussion

With the exception of pit 111, where short horned cattle appear to be most frequent, medium horned cattle are the most common type in the pits and ditches at the Old Council Depot. Frontal profiles are exclusively convex and very slightly convex or flat. At Floodgate Street (Birmingham) in deposits dating from the 16th to 17th century (Baxter 2005) flat or very slightly convex frontals are more frequent than convex. Here the predominant types are medium horned and long horned. Cattle crania with a flat frontal profile were also present at Edgbaston Street (Birmingham) in the 17th to 18th century deposits where most of the cattle were mediumhorn (Baxter 2009), both convex and flat at Tan Yard (Bromyard) in the 17th century where the type present was mediumhorn (Baxter 2004). Medium horned cattle began to replace shorthorns at many sites in England in the later medieval period. Their presence was observed in 15th to 16th century deposits at Millbridge (Hertfordshire), for example (Baxter 2001), and they have also been reported from sites in Hereford (Noddle 2002). These cattle appear to have been larger than the preceding shorthorns and primarily bred for beef production and more efficient traction. The true unimproved longhorn type has been recorded

from Gibb Street (Birmingham) dating from the late 17th to 18th century and 19th century (Baxter 2005). The basal circumferences of the long horned horncores from the Old Council Depot is much greater than those of the true longhorns from Gibb Street but within the range of the horncores with a length of 360mm or more from City Road, Chester (Sykes *et al* 2009).

The evidence for the exploitation of cattle, sheep and goats in the Midlands by tanners, tawyers and horn workers is the subject of a paper by Albarella (2003). He concluded that only when concentrations of horncores, with or without the frontal part of the skull, and foot bones are found together in primary contexts can we confidently attribute an assemblage to one of the activities associated with the leather trade. However, as there is independent evidence for tanning taking place in St John's and at Malvern Street in the later post-medieval period, the accumulations of cattle horncores in the boundary ditch and pits at the Old Council Depot may be considered as most probably waste from these activities. No cattle foot bones were recovered in these assemblage but foot bones were not always left attached to skins (Serjeantson 1989, 141, fig 5). A 16th century German woodcut is reproduced in Figure 39 showing a tanner at work. The cattle skins hanging from the beam behind him retain their horns and tails but *not* their feet.

The possibility remains that the caches of horncores derive from horn working, a trade allied to those of butchery and tanning, although the available evidence suggests that in most places this was more of an itinerant craft than a trade and generally in decline by the post-medieval period (Albarella 2003). Also none of horncores found at the Old Council Depot exhibit working such as was occasionally recorded from Floodgate Street, Birmingham (Baxter 2005) and City Road, Chester (Sykes *et al* 2009). The much larger broadly contemporary assemblage excavated at City Road (Chester) contains a similar mix of cattle horncores and equid bones and has been interpreted as waste from the heavy leather industry (*ibid*). Also at City Road a number of cattle horncores had nails driven into them or preserved the holes where such nails had been affixed. Horncores bearing nails or holes where nails had been have been recorded from several post-medieval tannery sites in London (Lisa Yeomans pers comm) and have also been recorded in tannery assemblages from post-medieval Bruges (Ervynck *et al* 2003) and the Netherlands (Prummel 1978). The horn sheath was fixed to the core in this manner when skins were imported to their final destination, often over considerable distances, in order to facilitate the ageing of the animal by counting the rings on the horn (Grigson 1976; Sykes *et al* 2009). The presence of horncores with nails still embedded in them found in pit 527 indicates that at least some of these horncores, and the skins to which they were attached, had travelled some distance subsequent to butchery.

Equids

Several equid bones and teeth were recovered from pits 111 and 527 mixed in with the cattle horncores. From pit fill 110 came a mandible fragment containing a broken M₂, two lower 1st or 2nd molars possibly belonging to the same animal, two scapulae, a distal humerus, a complete metacarpus and a 4th cervical vertebra. The lower molar teeth, though fairly small, have the wide U-shaped internal sulcus that is typically caballine and the bones are also horse (*Equus caballus*) sized. The teeth came from an animal aged approximately 8 to 10 years based on the comparative wear curves of Levine (1982). The cervical vertebra has a wide chop mark through the lateral surface on one side. From pit fill 526 came a distal femur shaft and from 548 a scapula and a proximal radius with ulna shaft fragment attached. The bones from 548 are small and could derive from either a pony or a donkey

(*Equus asinus*). A complete horse-sized 3rd metacarpal was found in ditch 737. These two complete metacarpals came from horses 15 hands high based on the multiplication factors of May (1985).

A discriminant analysis comparing the Old Council Depot metacarpals with a modern equid dataset (derived from Johnstone 2004) and archaeological specimens of similar period from City Road, Chester (Sykes *et al* 2009) and the Peacock Hotel, Market Harborough (Baxter 1996) failed to determine whether the Worcester equids are more likely to be horses or mules (Fig 40). Full results are retained in archive.

Unfortunately, in her thesis Cluny Johnstone (2004) concluded that the metacarpal was the least useful for distinguishing mules and horses using this method.

The horse metacarpus recovered from pit fill 110) has the Mc.II and Mc.IV fused to the Mc.III (Fig 41A–C). This condition, *desmoiditis ossificans ligamentum interosseum*, is caused by the ossification of the ligaments between the metapodials and is thought to be linked to how the weight of the animal acts through the legs, occurring earliest and generally becoming more advanced in the forelimb (Bendrey 2007). The ligament ossifies due to concussion or trauma caused by working a horse on a hard surface resulting in movement between the bones and periosteal tearing (Bone 1963; Daugnora and Thomas 2006), although the age of the animal is also thought to be a major factor in the development of the condition (Bendrey 2007).

Summary and conclusion

The combination of cattle horncores and equid remains at the Old Council Depot is exactly similar to a much larger assemblage excavated at City Road, Chester (Sykes *et al* 2009). In both cases the cattle horncores were found attached to frontal fragments and there was an absence of corresponding quantities of cattle foot bones. Also, some horncores still retained the nails used to secure the horn sheath during transport. The shedding of all elements except the horns, which could be used to indicate the age of the beasts, in both cases strongly suggests the importation of skins over some distance where the weight of the consignments and hence the cost of their transport were critical factors. The frequent equid bones point to the knacker and skinning of horses in the vicinity of the other industrial activities such as has been noted at sites such as City Road, Chester and the Peacock Hotel, Market Harborough. This is a combination typical of the heavy leather trades.

Environmental analysis, by Elizabeth Pearson

The environmental evidence recovered is summarised in [Tables 20–3](#). Both charred and uncharred plant remains were recovered from the site. The latter are thought to be modern or intrusive as they are unlikely to survive for long in the sandy well-drained soils at this location. Only the charred plant remains are therefore considered here.

Results; Periods 3 to 5: late Iron Age/early Roman to late Roman/sub-Roman.

These results are discussed together as evidence is sparse and similar across the phases. Occasional poorly-preserved charred plant remains were recovered from fills of graves, of late Roman to post-Roman date ([Table 23](#)). These included grains of wild or cultivated oat (*Avena* sp), fescue/ryegrass (*Festuca/Lolium* sp), possible hulled barley (cf *Hordeum vulgare*), emmer or spelt wheat (*Triticum dicoccum/spelta*) and unidentified cereal grains. A small amount of chaff and weed seeds included spelt wheat glume bases (*Triticum spelta* glume base), dock (*Rumex* sp) and vetch seeds (*Vicia* sp). This material was recovered from grave fills 1409 (CG16, SK1440) and 1443 (CG15, SK1442). Most of the remains were recovered from the pelvic area of skeleton (SK1442) and the backfill of this grave (fill 1443). Small quantities of fragmented animal or human bone, iron slag, hob nails and heat-cracked stone were also recovered from these samples.

Occasional charred cereal grains were also recovered from contexts other than graves ([Table 22](#)), such as hulled barley (*Hordeum vulgare*), free-threshing wheat (*Triticum* sp free threshing) and emmer or spelt wheat grain from contexts 1268 and 1297. A larger assemblage was recovered from the upper fill of the enclosure ditch in the area where the graves cut the ditch. This assemblage was similar to context 1443, the backfill of the grave containing skeleton SK1442.

Discussion

Environmental evidence was sparsely scattered across the site consisting of, with the exception of the human bone, a low density of charred plant remains and highly fragmented large mammal bone. The low density of material may partly reflect the slightly sandy nature of the soils in which preservation of this material can often be poor. It may, however, also indicate that only small-scale processing of cereal crops and other agricultural products was carried out on the settlement.

There appears to be no obvious difference between the environmental remains from the graves and other Roman features on the site, and also, as the charred remains from backfill of grave 1444 (SK1442) are similar to those from the upper fill of the enclosure ditch it cuts (ditch 1353), it is likely that these are residual from the main enclosure ditch and do not represent grave goods or votive offerings. This would complement the finds data as it is thought that the artefacts recovered are also residual from the ditch.

It is difficult to make any detailed interpretation of the arable economy from the charred plant remains from any period. They are most likely to result from small-scale domestic processing of grains prior to milling or storage, or as a result of grain used in cooking or crop waste used as fuel for fires.

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Table 20 List of environmental samples from Periods 3 to 5

Context group	Sample	Feature type	Description	Context group	Period	Sample volume (l)	Volume processed (l)	Residue assessed	Flot assessed
1260	051	Ditch	Fill of enclosure ditch 1195	4	3	40	0	N	N
1276	058	Ditch	Fill of enclosure ditch 1195	4	3	10	0	N	N
1297	074	Ditch	Fill of enclosure ditch re-cut 1365	4	3	40	10	Y	Y
1297B	072	Ditch	Fill of enclosure ditch re-cut 1365	4	3	10	0	N	N
1297C	104	Ditch	Fill of pot	4	3	2	2	Y	N
1302	065	Ditch	Fill of 1303	10	4	40	10	Y	Y
1304	064	Ditch	Fill of 1200	10	4	40	10	Y	Y
1315	067	Ditch	Fill of enclosure ditch 1195	4	3	30	0	Y	Y
1316	068	Pit	Fill of 1317	7	3	40	0	N	N
1354	080	Ditch	Fill of 1353	4	3	40	0	N	N
1362	071	Ditch	Fill of enclosure ditch 1195	4	3	40	0	N	N
1367	073	Ditch	Fill of enclosure ditch 1195	4	3	30	10	Y	N
1371	075	Ditch	Fill 1297 of re-cut enclosure ditch 1365	4	3	10	10	Y	Y
1406	079	Ditch	Fill of enclosure ditch 1353	4	3	40	10	Y	Y
1408	081	Ditch	Primary fill of enclosure ditch 1353	4	3	10	0	N	N
1409	090	Grave	Fill of Grave 1410	16	5	10	10	Y	Y
1409B	082	Grave	Fill of Grave 1410, hip area	16	5	40	10	Y	Y
1409C	089	Grave	Fill of Grave 1410, chest area	16	5	10	10	Y	Y
1409D	088	Grave	Fill of Grave 1410, lower limbs	16	5	10	10	Y	Y
1409E	087	Grave	Fill of Grave 1410, head	16	5	10	10	Y	Y
1422	083	Ditch	Fill of enclosure ditch	4	3	40	10	Y	Y
1424	095	Grave	Fill of 1425	13	5	10	10	Y	Y
1428	086	Ditch	Fill of enclosure ditch	4	3	20	10	Y	Y
1430	085	Ditch	Fill of 1353	4	3	40	0	N	N
1436	084	Pit	Fill of 1435	9	5	20	0	N	N
1442	091	Grave	Fill of grave 1444, head area	15	5	10	0	Y	Y
1442B	092	Grave	Fill of grave 1444, chest area	15	5	10	10	Y	Y

[to previous view](#)

Context group	Sample	Feature type	Description	Context group	Period	Sample volume (l)	Volume processed (l)	Residue assessed	Flot assessed
1442C	093	Grave	Fill of grave 1444, pelvic area	15	5	10	10	Y	Y
1443	094	Grave	Fill of grave 1444, backfill	15	5	40	10	Y	Y
1446	096	Grave	Fill of grave 1445, head area	18	5	10	10	Y	Y
1446B	097	Grave	Fill of grave 1445, general	18	5	10	10	Y	Y
1446C	098	Grave	Fill of grave 1445, legs	18	5	10	10	Y	Y
1448	099	Grave	Fill of grave 1449	14	5	10	10	Y	Y
1450	100	Grave	Fill of grave 1452, backfill	17	5	30	10	Y	Y
1450B	101	Grave	Fill of grave 1452, pelvic area	17	5	10	10	Y	Y
1450C	102	Grave	Fill of grave 1452, chest area	17	5	10	10	Y	Y

Table 21 Summary of environmental remains from Periods 3 to 5 environmental samples (occ = occasional, mod = moderate)

Context	Sample	Large mammal	Human bone	Fish	Charcoal	Charred plant	Waterlogged plant	Hammerscale	Comment
1297	074	occ		occ		occ	abt*	occ	occ pot, fired clay, heat-cracked stone
1297C	104		occ						occ pot, Fe slag, heat-cracked stone
1302	065	occ				occ	occ*	occ	occ pot, Fe nail, heat-cracked stone
1304	064	occ					occ*		occ coal
1315	067							occ	occ heat-cracked stone
1367	073	occ			occ			occ	occ pot, fired clay, heat-cracked stone
1371	075	occ				occ	occ*		occ fired clay, heat-cracked stone
1406	079	occ	occ		occ-mod	mod	occ	occ-mod	coal, Fe slag, Fe nails, fired clay
1409	082	occ	occ		occ	occ	occ-mod*	occ	occ Fe nails, pot, coal
1409B	087		occ					occ-mod	occ Fe slag
1409C	088				occ-mod			occ	occ pot, Fe slag and nail, heat-cracked stone
1409D	089		occ		occ	occ	mod*	occ	occ Fe slag, heat-cracked stone. burnt flint
1409E	090	occ				occ	occ*	occ	occ pot, Fe slag, nail, fired clay, coal
1422	083	occ				occ			occ pot, brick, burnt flint?, heat-cracked stone
1424	095	occ					occ*	occ	occ pot, Fe slag and nail, clinker/coal

[to previous view](#)

Context	Sample	Large mammal	Human bone	Fish	Charcoal	Charred plant	Waterlogged plant	Hammerscale	Comment
1428	086					occ			
1442	091		occ			occ	occ*	occ	occ pot, heat-cracked stone
1442B	092		occ		occ	occ	occ*	occ	occ coal
1442C	093		occ			occ	mod*	occ	occ heat-cracked stone, coal
1442D	094					occ	occ*	occ	occ coal
1446	096								occ Fe nail, ?coal
1446B	097						occ*	occ	occ coal
1446C	098						occ*	occ	occ Fe nail
1448	099		occ		occ	occ	occ*	occ	occ coal
1450	100							occ	occ coal, ?burnt flint
1450B	101						occ*	occ	occ coal

Table 22 Charred plant remains from Periods 3 and 4

Latin name	Family	Common name	Habitat	1297 Sample 74	1302	1371	1406	1422	1428
Period				3	4	3	3	3	3
<i>Triticum spelta</i> grain	Poaceae	spelt wheat	F					+	
<i>Triticum dicoccum/spelta</i> grain	Poaceae	emmer/spelt wheat	F		+				
<i>Triticum dicoccum/spelta</i> spikelet fork	Poaceae	emmer/spelt wheat	F						+
<i>Triticum</i> sp (free-threshing) grain	Poaceae	free-threshing wheat	F	+					
<i>Triticum</i> sp grain	Poaceae	wheat	F	+			+		
<i>Hordeum vulgare</i> grain (hulled)	Poaceae	barley	F				+		
<i>Festuca/Lolium</i> sp grain	Poaceae	fescue/ryegrass	A				+		
<i>Bromus</i> sp grain	Poaceae	brome grass	AF				+		
<i>Avena</i> sp grain	Poaceae	oat	AF				+		
Poaceae sp indet grain (small)	Poaceae	grass	AF			+			
<i>Rumex</i> sp	Polygonaceae	dock	ABCD		+	+	+		
<i>Eleocharis</i> sp	Cyperaceae	spike-rush	E				+		

[to previous view](#)

Table 23. Charred plant remains from Period 5 graves

Latin name	Family	Common name	Habitat	1409 backfill	1409 Lower limbs	1409 Head	1442 Head	1442 Chest	1442 Pelvic area	1443 Backfill
<i>Triticum spelta</i> glume base	Poaceae	spelt wheat	F						+	+
<i>Triticum dicoccum/spelta</i> grain	Poaceae	emmer/spelt wheat	F						+	
<i>Triticum</i> sp grain	Poaceae	wheat	F					+		+
cf <i>Hordeum vulgare</i> grain (hulled)	Poaceae	barley	F							+
Cereal sp indet grain	Poaceae	cereal	F	+			+	+	+	+
cf Cereal sp indet grain	Poaceae	cereal	F		+					
cf <i>Festuca/Lolium</i> sp grain	Poaceae	fescue/ryegrass	A					+		
<i>Avena</i> sp grain	Poaceae	oat	AF			+				
cf <i>Avena</i> sp grain	Poaceae	oat	AF						+	
<i>Rumex</i> sp	Polygonaceae	dock	ABCD							+
<i>Vicia</i> sp	Fabaceae	vetch	ABD							+

Key:

Habitat	Quantity
A= cultivated ground	+ = 1 - 10
B= disturbed ground	++ = 11- 50
C= woodlands, hedgerows, scrub etc	+++ = 51 -100
D = grasslands, meadows and heathland	++++ = 101+
E = aquatic/wet habitats	
F = cultivar	

Discussion and conclusions

The middle Iron Age and possible late Iron Age enclosure

A possible middle Iron Age pit, and the presence of residual middle Iron Age pottery in the fills of the later enclosure ditch, suggests that there was activity on the site before the enclosure ditch was constructed. However, the nature of this activity is uncertain.

There was probably an enclosure at the Bromwich Lane Tennis Club at St John's during the late Iron Age, as the corner of an earlier cut for the main enclosure ditch was identified. However, a comprehensive re-cutting of the enclosure ditch removed most of the earlier ditch fills and only two pits can be tentatively thought of as contemporary with this period of occupation.

The excavated evidence for the late Iron Age in the region suggests that small rectilinear enclosures became more common and they functioned as small household sized farmsteads, within distinct clusters and were part of a wider community (Moore 2006, 69). It has been argued by Wigley that in the Welsh Marches they were often situated close to rivers on lower ground (Wigley 2007, 178). Although the excavated evidence for this period is sparse at the site, it is possible that the enclosure had parallels with the settlement uncovered at Bath Road, situated on the other side of the river about 2km to the south. Here excavation revealed a series of enclosures, pits, a roundhouse and evidence of smithing (Rogers forthcoming). The site at Bath Road is situated on a spur of land overlooking the River Severn to the west, and the site at St John's has a similar though eastward outlook over the river.

It has been suggested that Worcester was the site of a nucleated settlement or *oppidum* with smaller enclosed settlements surrounding it in the late Iron Age (WCMAS 2007, 19). Although the evidence for this is slim, a bank and ditch at Lychgate and a concentration of Dobunnian coins in the city centre could point to an important settlement at this period, rather than a farmstead. *Oppida* tended to be situated on the confluence of routeways (Moore 2006, 76) and the location of Worcester situated between Droitwich, a known Iron Age salt production site and Malvern a pottery production area could have been an appealing location. If this was the case then the enclosure at St John's was part of a wider community which had its focus across the River Severn in the environs of modern Worcester. It is thought that a natural ford was the site of a river crossing for routes running east to west.

Early Roman enclosure and associated settlement

The enclosure ditch was re-excavated in the early Roman period, probably just after the conquest. After a short period of silting up the ditch was backfilled over a rapid period of time. The evidence from the pottery, coins and brooches from the fills of the ditch suggest a Claudian/Neronian date (AD 41–68), perhaps c AD 50s for the backfilling of the ditch and the abandonment of the enclosure.

The evidence for features within the enclosure was sparse. Only a handful of pits can be dated with any certainty to this period. However, the construction of the tennis courts in the 20th century truncated the site to a degree and may well have removed any features within the enclosure.

The evidence for late Iron Age enclosures being reused, or continuing to be used in the Roman period, can be seen elsewhere in the wider area, as at Duntisbourne Grove ([Mudd et al 1999](#)). Closer to St John's, at Bath Road, late Iron Age enclosures were reused during the Roman period and the site continued as a small rural settlement ([Rogers 2014](#)). The evidence from St John's, however, points to the enclosure being re-excavated for a more specialist function than a rural settlement. The exceptional finds assemblage, apparently dumped into the enclosure ditch when it went out of use, is very closely dated and a trading function for the enclosure can be put forward. The pottery assemblage has a strong native tradition so it is more than likely that this was a native settlement trading with the military. It is possible that as the Roman army pushed west in the conquest period, native trading posts sprung up to exchange goods with the military. Although the pottery from the site cannot be described as a military-type assemblage, the brooches and coins have military connotations. The lack of evidence for industrial activity in the form of iron smelting or smithing and large-scale processing of cereal crops and other agricultural activities on the site for this period also points to a more specialized function for the enclosure.

If the enclosure was a trading post then what place did it occupy in the Roman landscape and what was it trading? It has always been presumed that there was a fort at Worcester. The location of this fort, however, has never been found, though military-type assemblages of metalwork have been uncovered during several excavations including Deansway and Lich Street ([WCMAS 2007](#), 22–24). If a fort was situated on the east bank of the river then the ford would provide access to the west bank and onwards into the Welsh Marches. The road network of St John's has been much debated (this report, p7). If the St John's enclosure was a trading post then it must have been situated close to a routeway and if one of the goods traded was Malvernian pottery then it would seem highly likely that after the route crossed the Severn it turned south, following the high ground towards the Malvern Hills where pottery kilns were situated. Perhaps this route joined up with the Roman road at Stretton Grandison (Margary road 63a: [Margary 1973](#)). It is tempting to suggest that there was also a routeway leading northwards perhaps towards the supposed fort at Grimley, on the west bank of the Severn, and onwards to Wroxeter.

It is tempting to speculate that the Roman fort was not situated on the east bank of the Severn, but on the west bank, and that the enclosure at St John's was part of the *vicus* that grew up around the fort. Indeed the finds assemblage does have parallels with the extramural settlement at Alcester (this report, p17; [Evans et al 1994](#), 124–30). However, there is no evidence for a fort being situated in the area of St John's and a position on the west side of the Severn would seem to lack the strategic advantages of a position on the east bank of the river.

The reasons for the rapid abandonment of the enclosure at St John's are difficult to ascertain. It is possible that this area was taken over by newcomers and the site was taken over in a symbolic act to remove power from the natives, as has been speculated at the enclosure at The Ditches on the Cotswolds ([Trow et al 2009](#), 64–5). A more likely scenario is that as the settlement across the river became established it took over trading functions, and the site at St John's became obsolete and was abandoned. Whatever the reason, activity on the site ceased sometime in probably the AD 50s until the site was reused in the 2nd century.

The collection of seven coins and a brooch excavated in close proximity to each other within the enclosure ditch could be seen as a possible deliberate deposition. A further two iron brooches also found close together in a different part of the ditch, could also represent a

similar act. It is possible that these two depositions were buried in the hope that they could be retrieved at a later date or were just lost by the owner and ended up in the ditch fill. It is also, however, possible that they were deposited for ritual or religious reasons. The ditches of enclosures have long been seen as areas where objects were deliberately buried for symbolic reasons, and it is tempting to suggest that, when the enclosure and settlement was abandoned, some sort of ritualistic purpose was attached to the area (for a discussion of deposition of iron objects see [Hingley 2006](#), 213–57). The re-use of the enclosure as a cemetery at a later date perhaps reinforces this idea that the area was somehow symbolic.

The 2nd century activity

The enclosure ditch, although filled, was partially reused in the 2nd century. The pottery evidence suggested activity dating from at least c AD 120 to sometime around c AD 160. It is uncertain whether activity spanned the whole of this period or was focussed towards the end of the date range. Other ditches within the enclosure and outside of the enclosure were excavated as were several pits of an unknown function during this period. The site probably functioned as a small farmstead during this period, which has similarities with the re-use of enclosures at the Bath Road site during the Roman period ([Rogers 2014](#)). Smithing was taking place on the site and other Roman activities, including quarrying, were taking place in the area of the Christopher Whitehead School.

Investigations across the putative prehistoric enclosure at Swanpool Walk uncovered a pit (1391) cutting the natural which contained (fill 1392) Roman pottery. A sequence of thick deposits overlay this pit. Therefore the layers above this pit must have been deposited during the Roman period or later. One small undiagnostic sherd of Roman pottery was recovered from one of these deposits and a posthole (1028, fill 1027) cutting into the top of these deposits contained one sherd of 2nd century pottery and one sherd recovered from pit fill was dated to the Roman period. The absence of a ditch below Swanpool Walk, and the stratigraphy of the putative 'bank' suggest that the drop in ground level here has always been quite steep. Possibly Swanpool Walk represents a natural feature, or that it is a holloway that formed over a considerable period. Either way it seems likely that this part of the site was probably built-up during the Roman period, perhaps to level the area for agricultural activities associated with the enclosures of the farmstead situated to the north.

No Roman pottery dated later than the late 2nd century was recovered from the area of the enclosure at St John's. It would seem that the enclosure site was abandoned after this date. It is a possibility that the land was being utilised for agrarian purposes on the peripheries of a settlement after this period but no evidence for this was excavated.

Late Roman/early post-Roman cemetery

Sometime during the mid-3rd to late 4th to early 5th century the area of the enclosure became a cemetery, with two graves, roughly aligned north to south partially cut into the top of the northern arm of the backfilled enclosure ditch. Both burials were adults and hobnails were recovered from the grave fills in the area of the feet suggesting they were wearing hobnailed footwear when interred. One of the bodies was laid out in a prone position. The wearing of hobnailed footwear and the laying out of a body in a prone position is often observed in Roman burials.

The use of the enclosure ditch as a burial ground after it had gone out of use has parallels on other sites, with small gullies being used for burials at Deansway Site 4 (Dalwood and Edwards 2004). Even though the enclosure had been abandoned and had been backfilled the location of the enclosure must have been visible during the later Roman period as the burials respect the line of the ditch. The importance of existing features, even though they were not in use anymore, was important when Roman funerary areas were created.

A further individual was interred, sometime between the mid-4th to mid-6th century, following the east to west alignment of the earlier two burials. In the post Roman period, between the mid-5th to early to mid-7th century, an individual was buried, and was decapitated before burial and the head was placed between the feet. Again this grave was excavated to the west of the earlier burials. Two graves situated to the east of these two graves and on the same alignment did not contain skeletons, but hobnails were excavated from the grave fills. It is tempting to suggest that these graves were excavated sometime before the graves containing skeletons.

The two later burials, especially the decapitated individual, can be classed as being interred in a Roman manner. Therefore this shows that during the early post-Roman period there was a continuation of Roman traditions at least in burial rites. There is no archaeological evidence for settlement on the site or even in St John's in the early post-Roman period, although it is likely that there was a settlement nearby if there was a cemetery.

Post-Roman activity

An early medieval routeway has been identified from documentary sources, that follows the edge of the gravel terrace on a north to south alignment, and was recorded as the *folc hearpath* in a charter dated to 851 (Baker and Holt 2004, 194, fig 6.4; Field and Tann 2000, 7). This early medieval routeway is represented by Bromwich Lane, to the east of the Bromwich Lane Tennis Club, and its irregular alignment was interpreted as due to deflection around a prehistoric enclosure (Fig 2). It is, however, possible that the irregular alignment could be because the routeway avoided the Roman enclosure and the later burial ground. Therefore the burial ground and probably the Roman enclosure must have been visible, or known about, when the routeway was in use by at least the early medieval period.

Across the river during the late Roman period the settlement contracted and in places reverted to agricultural land (WCMAS 2007, 43–6). However, little is known about the early post-Roman period in Worcester except that some of the land was being utilised for pastoral purposes (Dalwood and Edwards 2004, 52–5).

Medieval occupation in the suburb of St John's

Residual medieval pottery was recovered from all areas of the site. Medieval activity on the site was, however, mainly confined to the areas of the Old Council Depot and 19–21 St John's. At the Old Council Depot an oven situated close to the street frontage was possibly associated with a building on the street. Two ditches with an entrance between them and set back from the frontage and parallel to it was probably a boundary between the back-plots fronting onto the street and fields behind.

At 19–21 St John's rubbish pits, cess pits and garden soils represent the usual type of domestic activities which would have taken place at the rear of the medieval burgage plots.

Historically the area of St John's Green was the site of a fair and market during the medieval period and the find of a jetton, which was used to trade goods, can be seen as evidence for a market here in the medieval period.

Post-medieval occupation in the suburb of St John's

Post-medieval features and deposits were excavated across all areas of the site and included pits, ditches and gullies.

Activities at the Old Council Depot consisted of a large ditch running along the edge of the site close to the modern street frontage. The ditch formed part of the boundary with the street, perhaps to keep stock in. The fills of this ditch produced quantities of horncores, probably derived from the tanning industry. Two further ditches were excavated in the north-eastern corner of the site. The largest ran north to south and tallies with the boundary shown on the 1754 *Plan of Hardwick Manor* (Fig 3) and the 1886 Ordnance Survey map (Fig 4).

The area, to the rear of the Malvern Road frontage and south of Malvern House, was characterised by pits. Most of these pits date from probably the 19th century and many of these pits were large and quantities of horncores were recovered from the fills.

One pit was partially lined with horncores laid flat and pressed into the side of the cut. One of the earliest fills was of probably cess suggesting that this pit possibly started out being a cess pit but perhaps became a rubbish pit by the 19th century. A later fill contained animal bone, horncores, charcoal and fuel ash.

It is probable that the two concentrations of post-medieval pits situated close to the boundary with 7 Malvern Road were filled with the waste from the tanning industry in the 18th or early 19th century. Previous research into the history of 7 Malvern Road indicated that the building was associated with the tanning industry, and suggested that buried remains of a tannery lay behind the house (Williams 2003, 4).

Although no direct evidence for tanning, such as timber-lined pits, was uncovered, the quantity of horncores and equid bones has been interpreted as waste from the heavy leather industry. It is probable that the beasts were not slaughtered on site and had been skinned elsewhere. The evidence for this is that many of the horncores were still attached to frontal fragments and some horncores had nails driven through them so that they could be easily handled and secured during transport.

There is evidence from other sites for using horncores as building materials or as linings for pits. In London at Cutler Street several pits lined with horncores were excavated (Yeomans 2008, 141). It has been suggested that horncores used as linings for pits would have acted as a natural soakaway allowing the waste water from rubbish pits to drain away (Morse 2008, 1). During the 19th century horncores ceased to be discarded as a waste product and were being ground up and utilised as fertiliser (Armitage 1989, 158).

To the south of the Old Council Depot at Christopher Whitehead School post-medieval garden features were excavated. At 19–21 St John's excavations to the rear uncovered features of a domestic nature including a well. In the main development area, behind 19–21

St John's, the maps show this as an area of fields with a barn and gardens. A sandstone and brick footing excavated in Trench V could be part of this barn. The well situated close was probably associated with this barn. Garden features were seen at the rear of Jeynes.

Conclusions

The excavations at the Sainsbury's site in St John's have added greatly to our understanding of late Iron Age and early Roman settlement in Worcester. The area of the Bromwich Lane Tennis Club has produced occupation activity from probably the middle Iron Age period to the post-Roman period. The finds assemblage from the abandonment of the short-lived early Roman enclosure is the only sizeable assemblage of this date from Worcester, and one of only a few from the county. Its significance is greatly enhanced by the dating provided by coins and brooches, which places its deposition sometime between AD 41–68 and of a Claudian/Neronian date, perhaps in the AD 50s. The finds assemblage indicates definite military connections, and the site is interpreted as a native trading settlement, although this is not conclusive. Moreover the short lifespan of the enclosure and its abandonment in the early part of the Roman period indicate a function other than a farmstead.

The enclosure was partially reused in the 2nd century, probably as part of a farmstead. The pottery evidence suggested activity dating from at least c AD 120 to sometime around c AD 160. The significance of the backfilled enclosure in the landscape after the 2nd century is attested by the area being utilised as a burial ground in the later Roman period to early post-Roman period. The use of cemeteries through the 4th and 5th centuries is important evidence for continuity of settlement through this period, and can be seen as reflecting demographic, cultural and religious continuity. The small size of the excavated cemetery, however, precludes sweeping claims. It is probable that the irregular alignment of the early medieval routeway is due to deflection around the enclosure and burial ground.

During the medieval period and post-medieval period the usual activities associated with backlands of street frontages and field boundaries were observed. At the Old Council Depot waste from the heavy leather industry, including cattle horncores and horse bones, were recovered from pits. There is documentary evidence for a tannery situated close by to the rear of 7 Malvern Road, the probable source of this waste.

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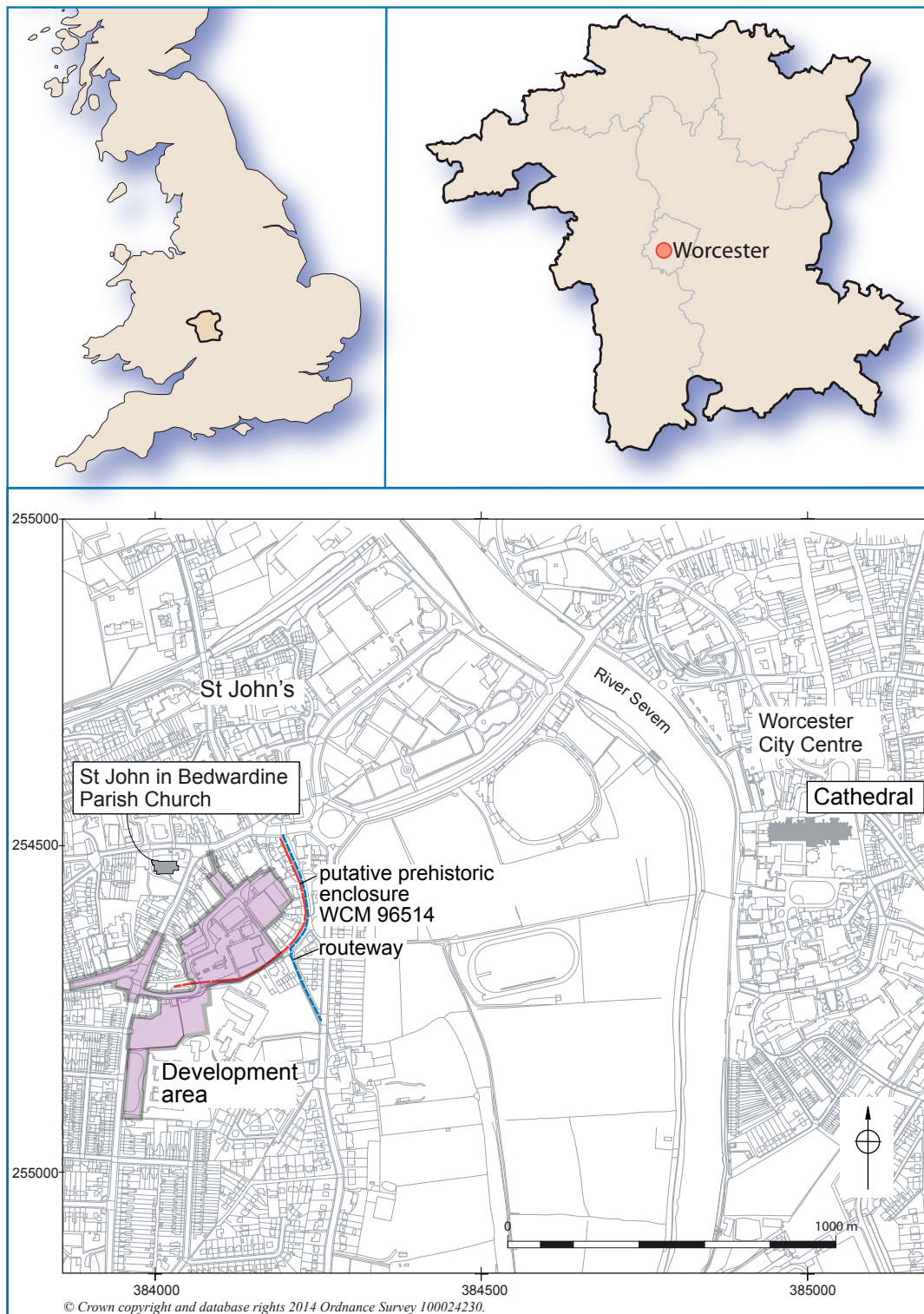


Figure 1: Location of the St John's site

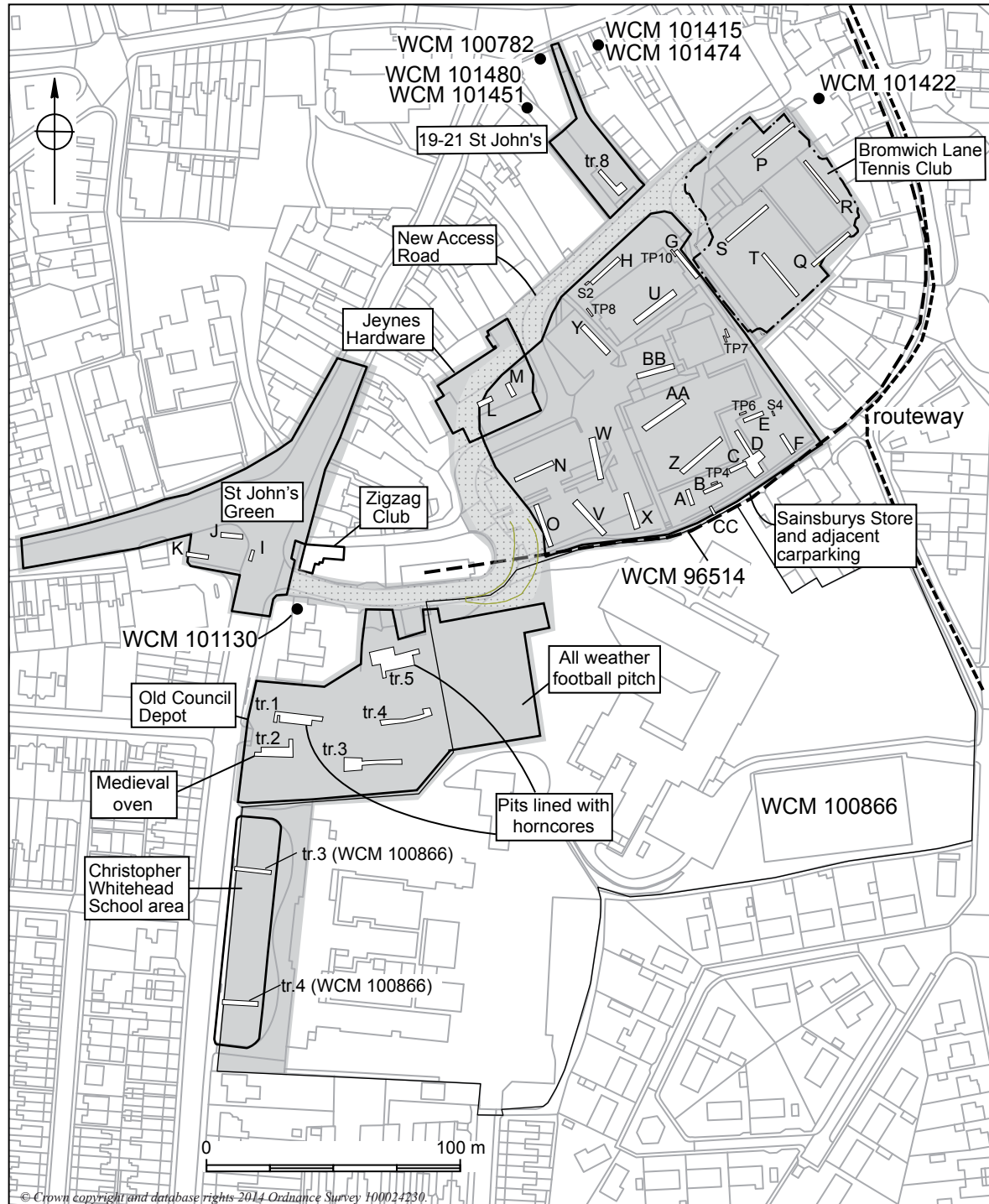


Figure 2: Areas of archaeological investigation

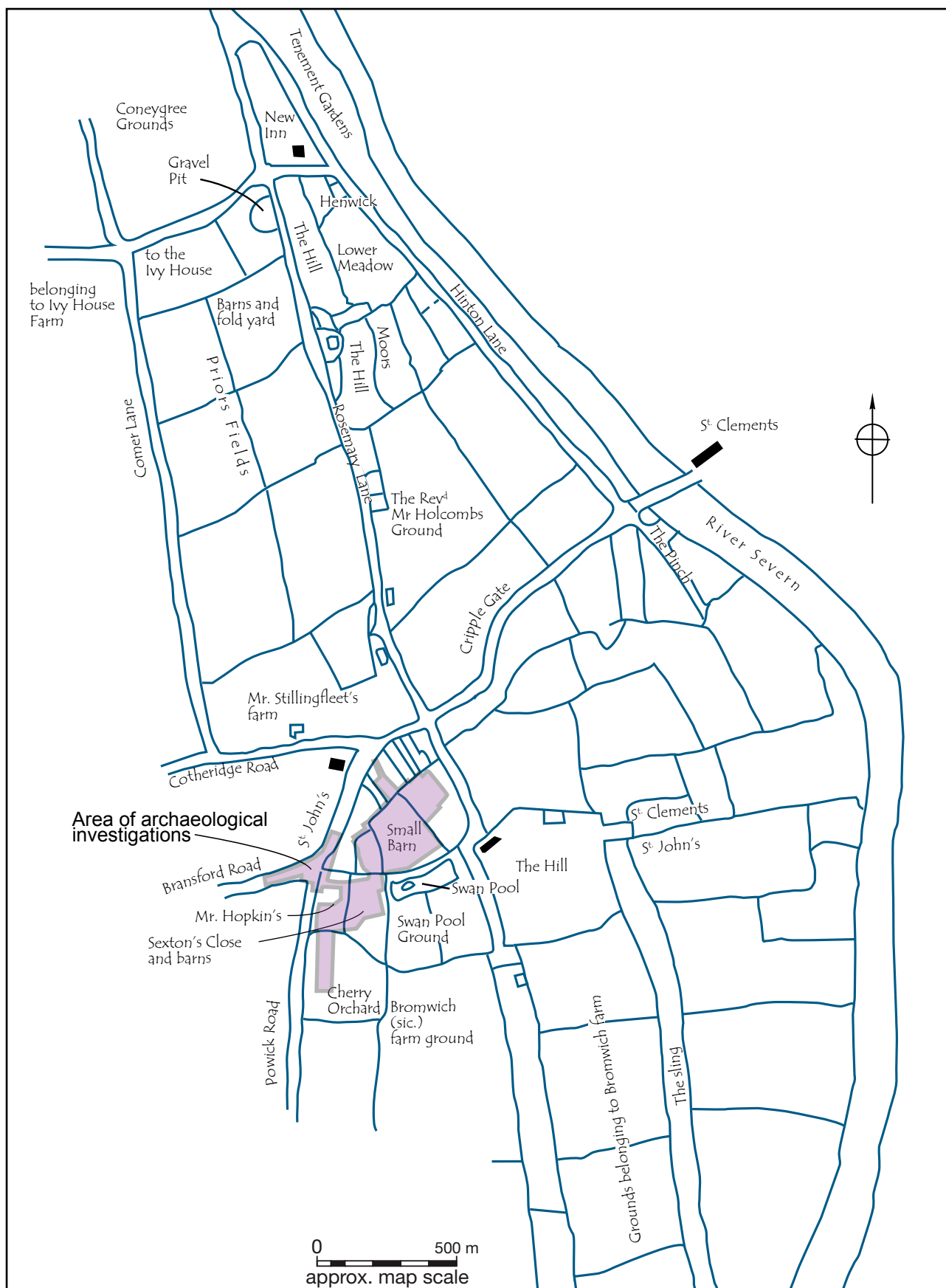


Figure 3: Plan of Hardwick manor, 1754, WRO 971.2BA 1691/48

[to previous view](#)

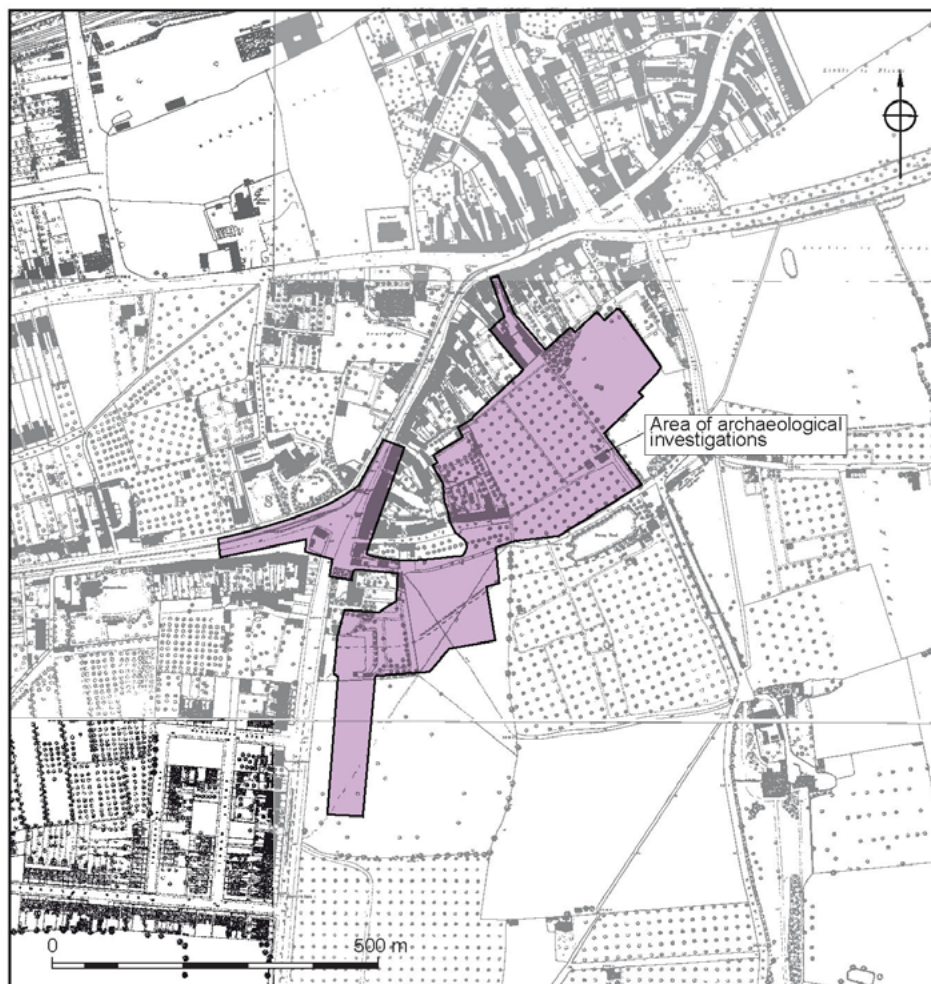


Figure 4: Extract from Ordnance Survey (1886)

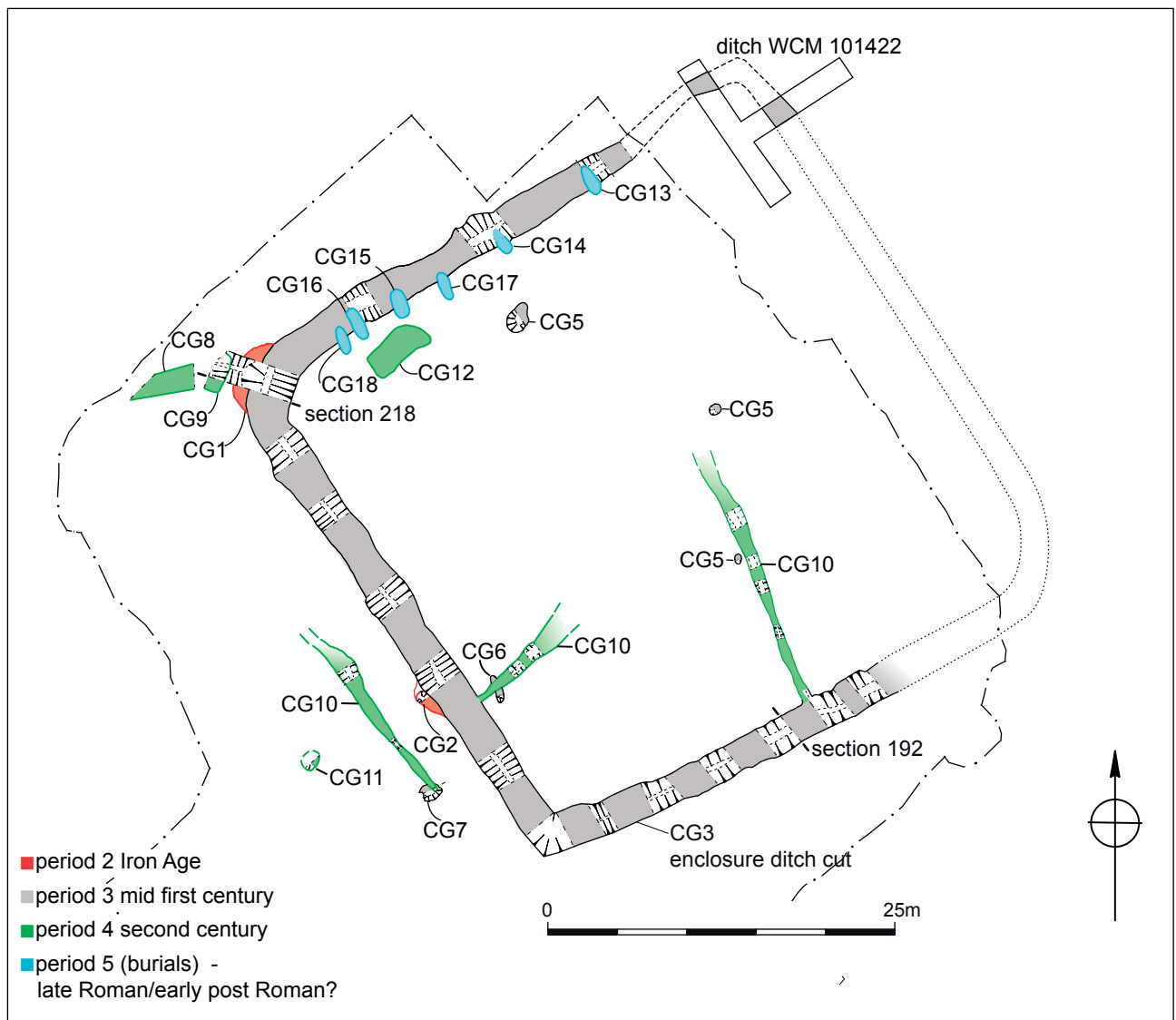


Figure 5: Bromwich Lane Tennis Club, Archaeological features discussed in text.

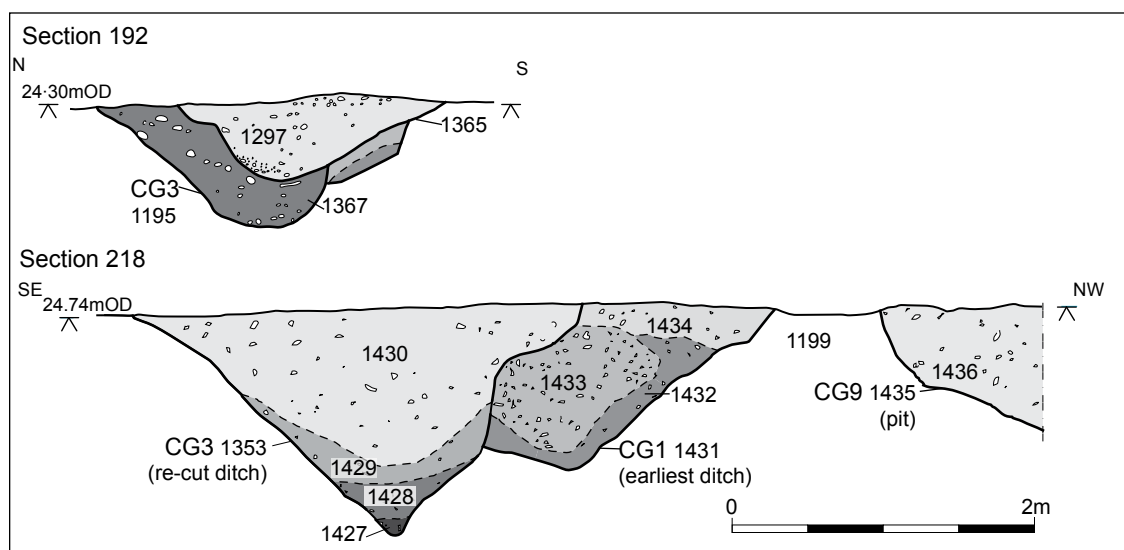


Figure 6: Sections through enclosure ditch

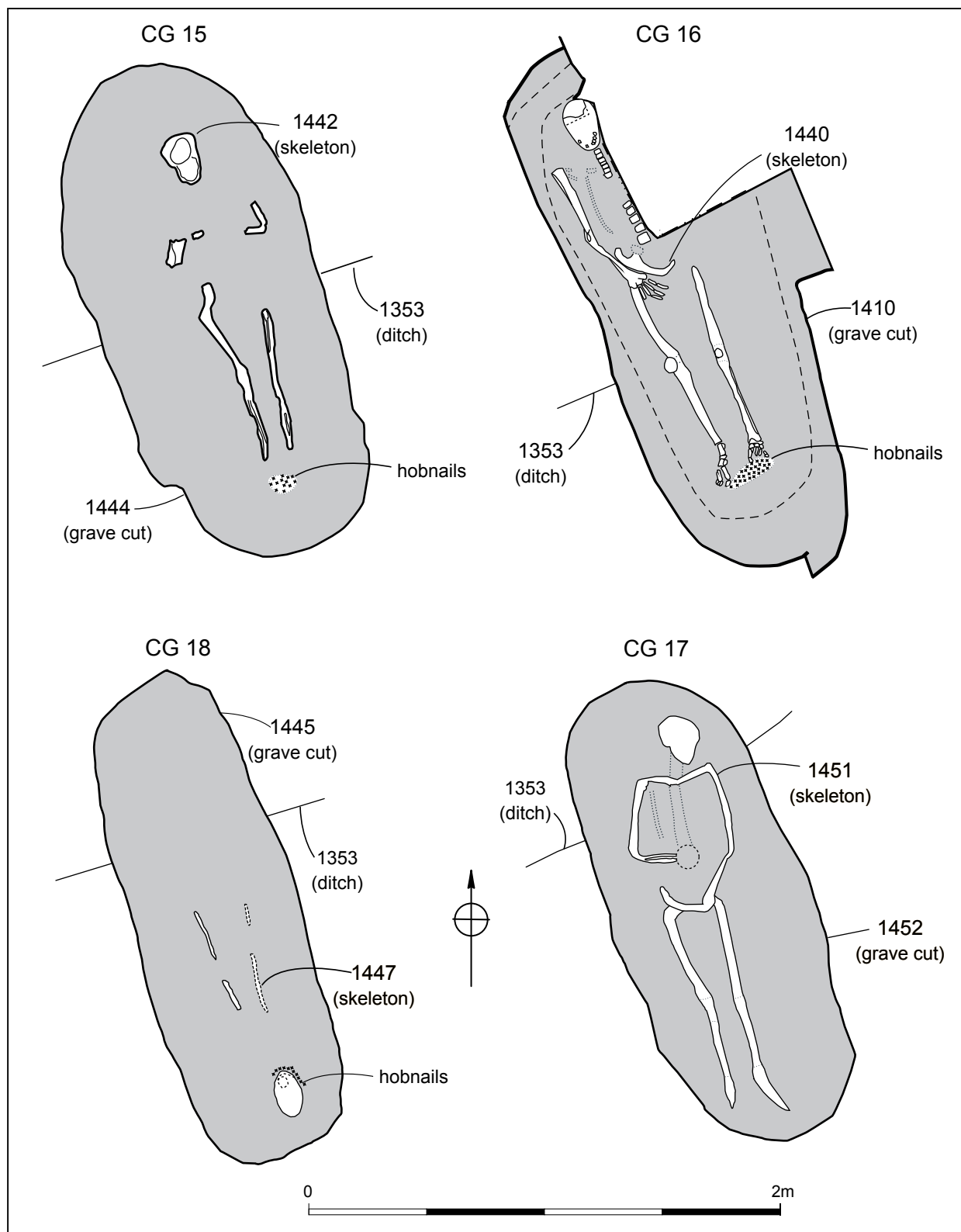


Figure 7: The graves

to previous view

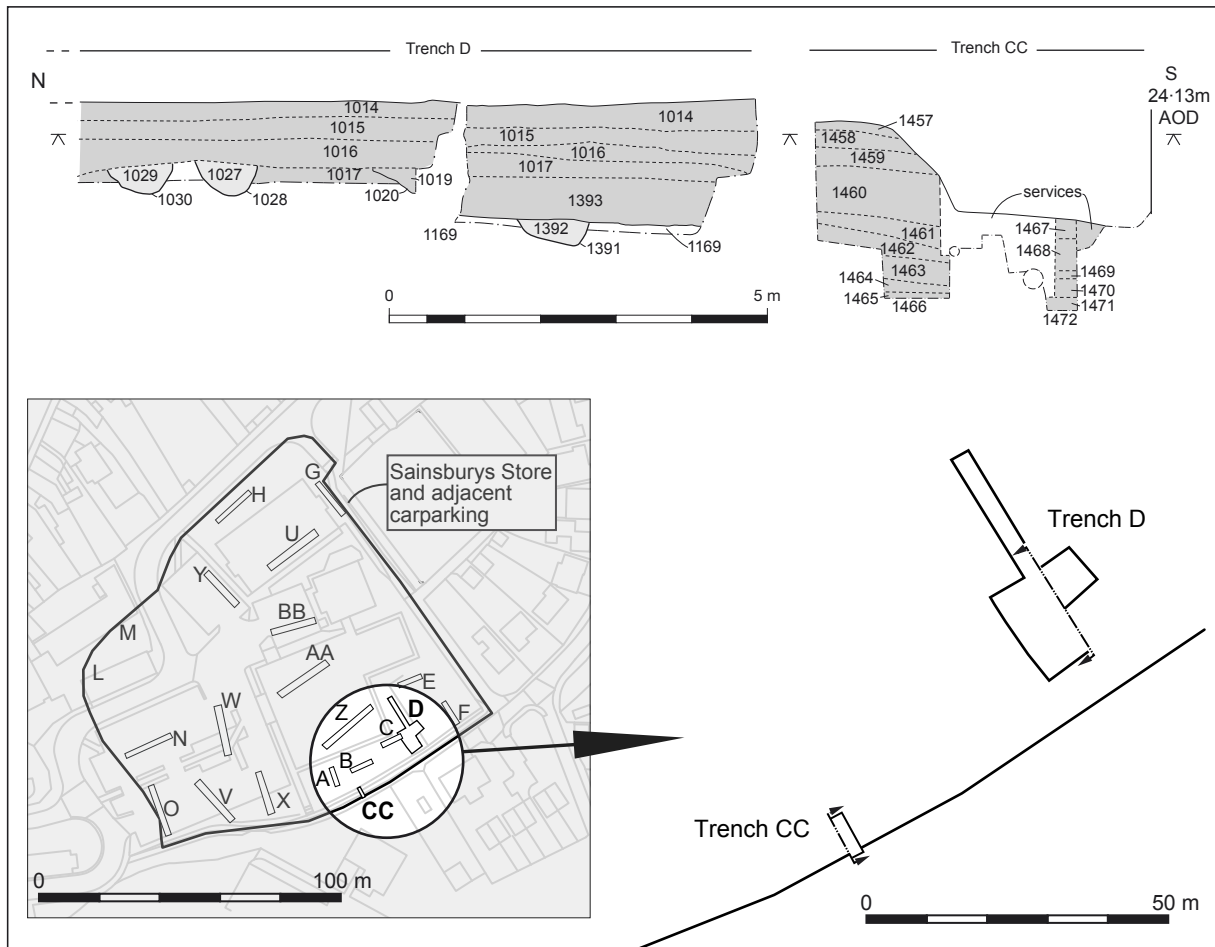


Figure 8: Composite section, Trench D and CC

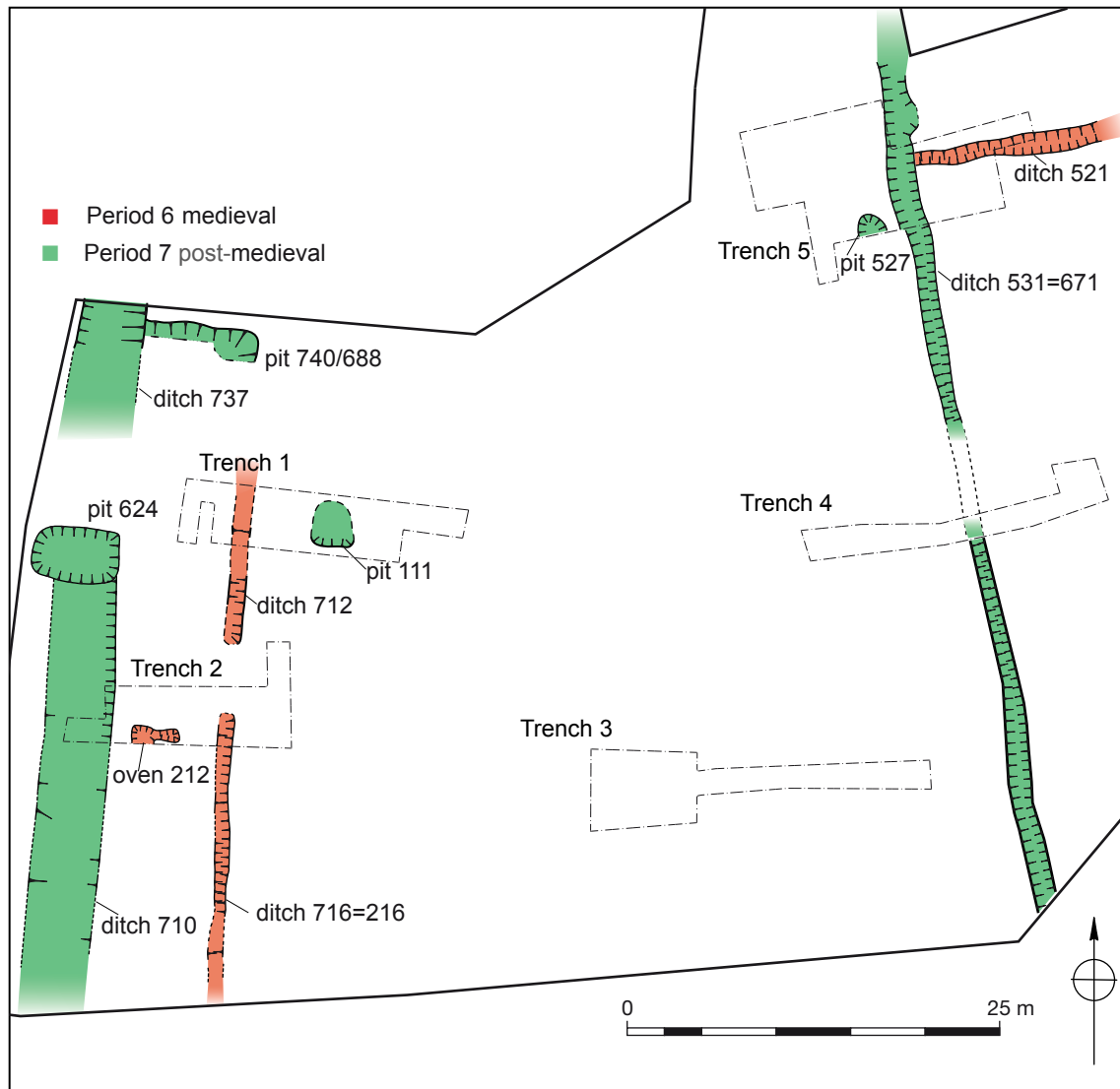


Figure 9: Old Council Depot. Medieval and post-medieval features discussed in text

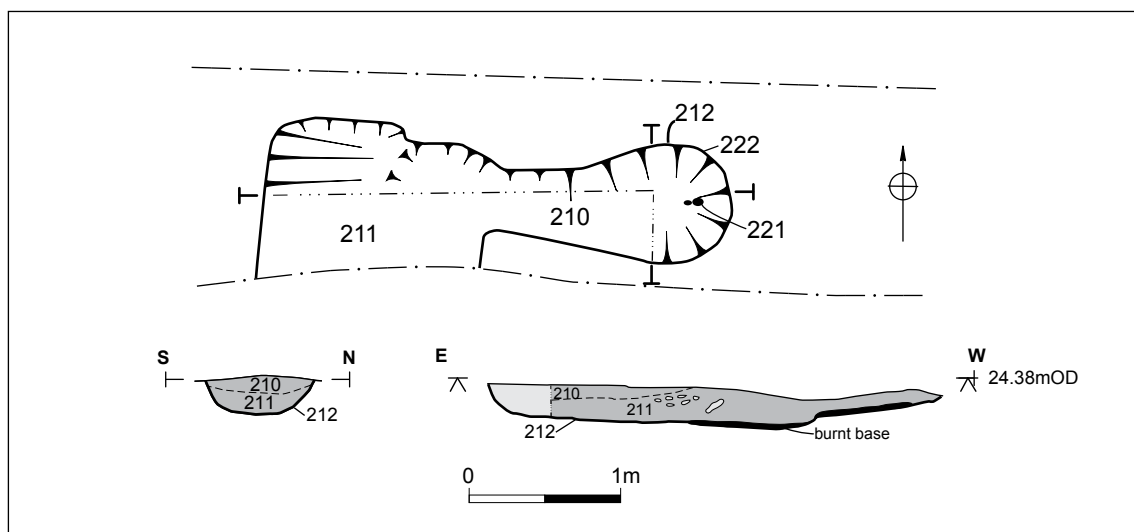


Figure 10: Old Council Depot. Medieval oven

[to previous view](#)

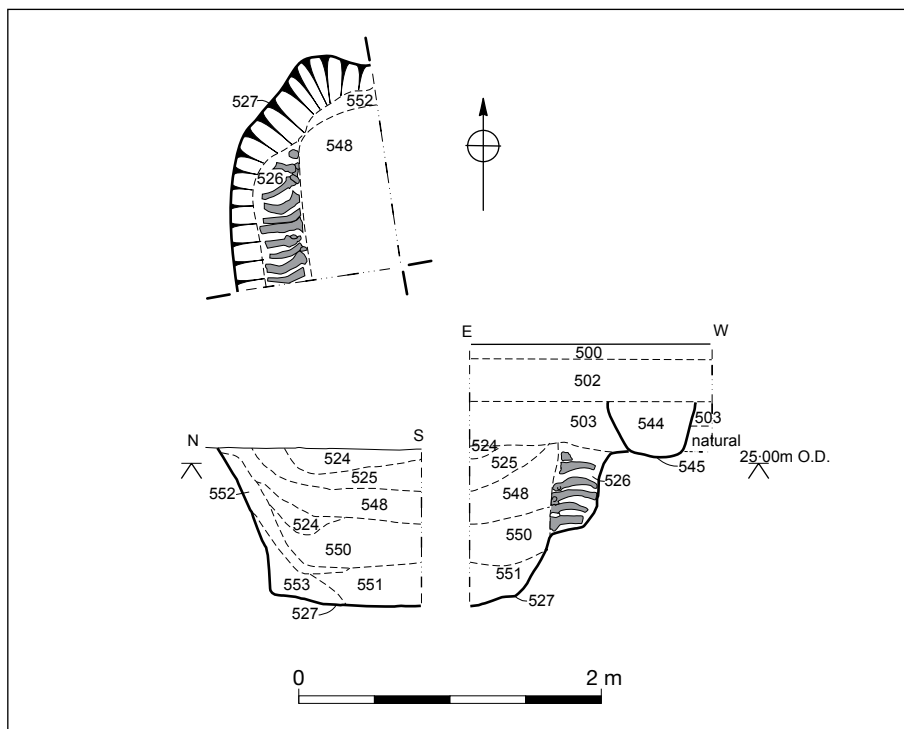


Figure 11: Old Council Depot. Horncore lined pit (527)

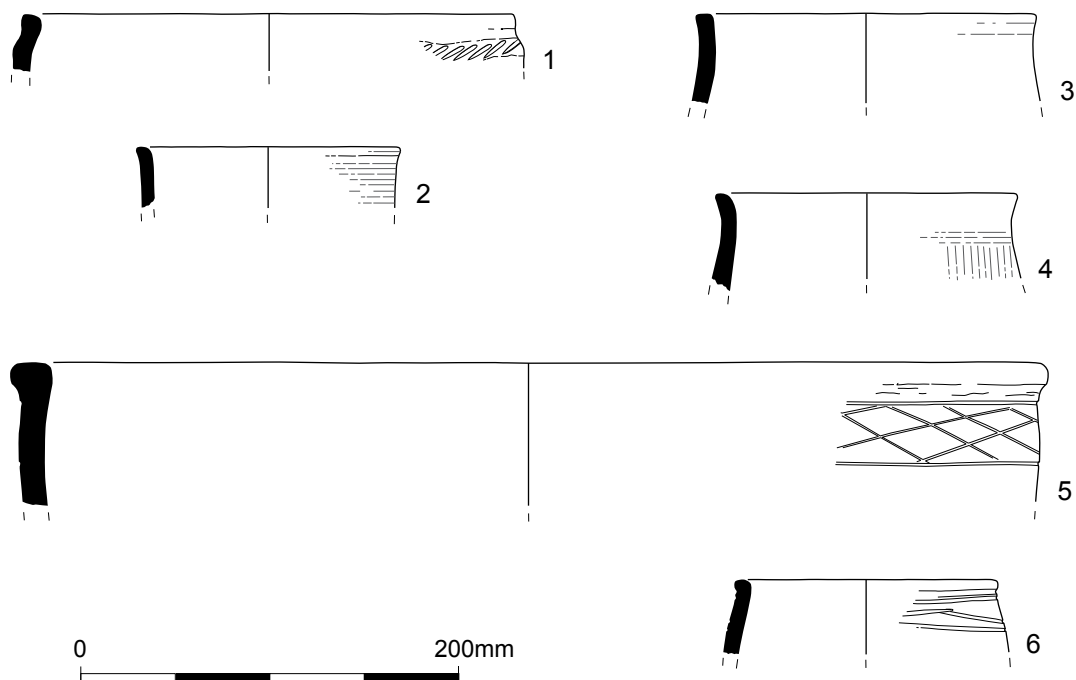


Figure 12: Middle Iron Age forms

[to previous view](#)

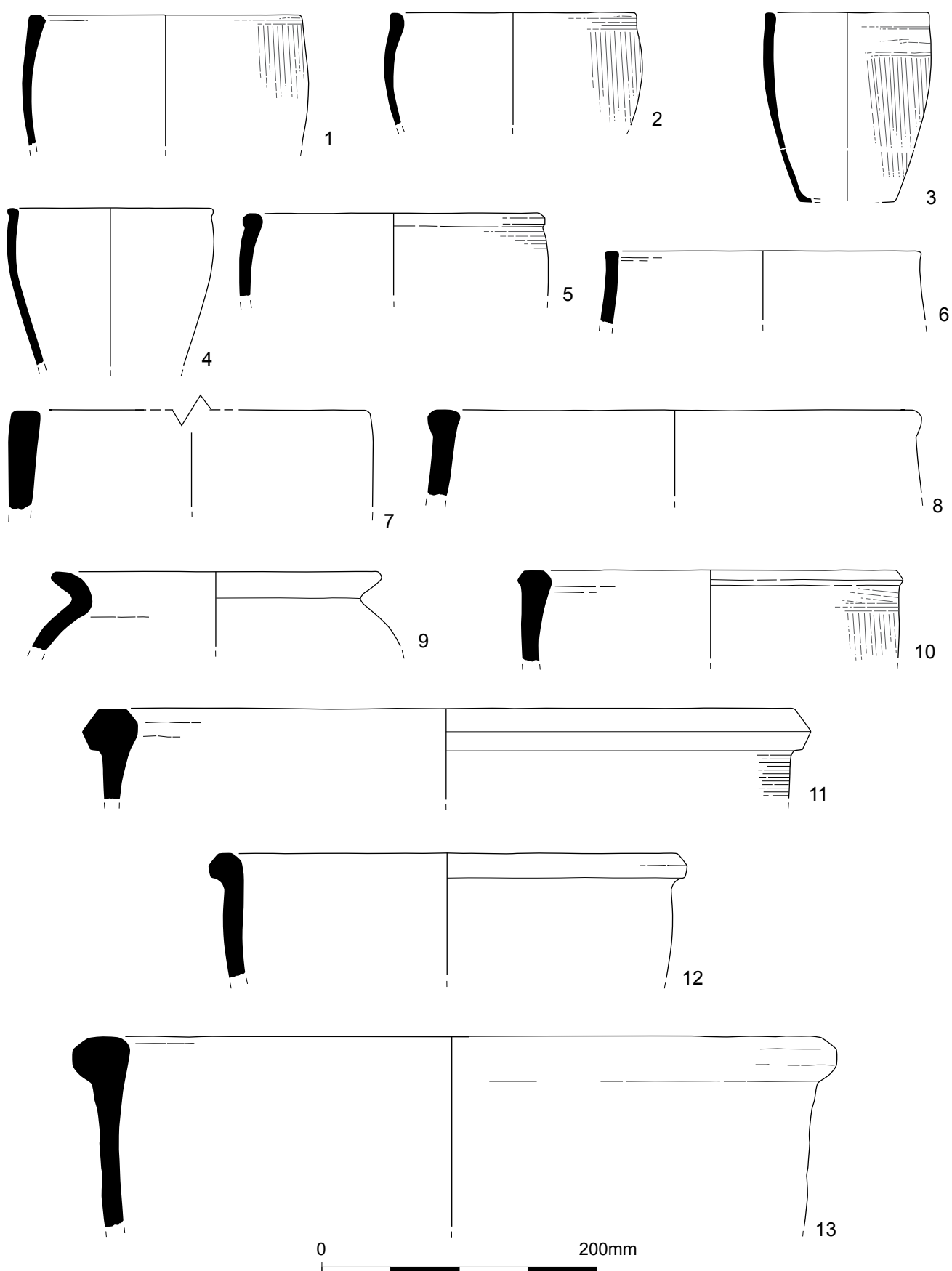


Figure 13: Ceramic Phase 1 forms, handmade wares (1–13)

[to previous view](#)

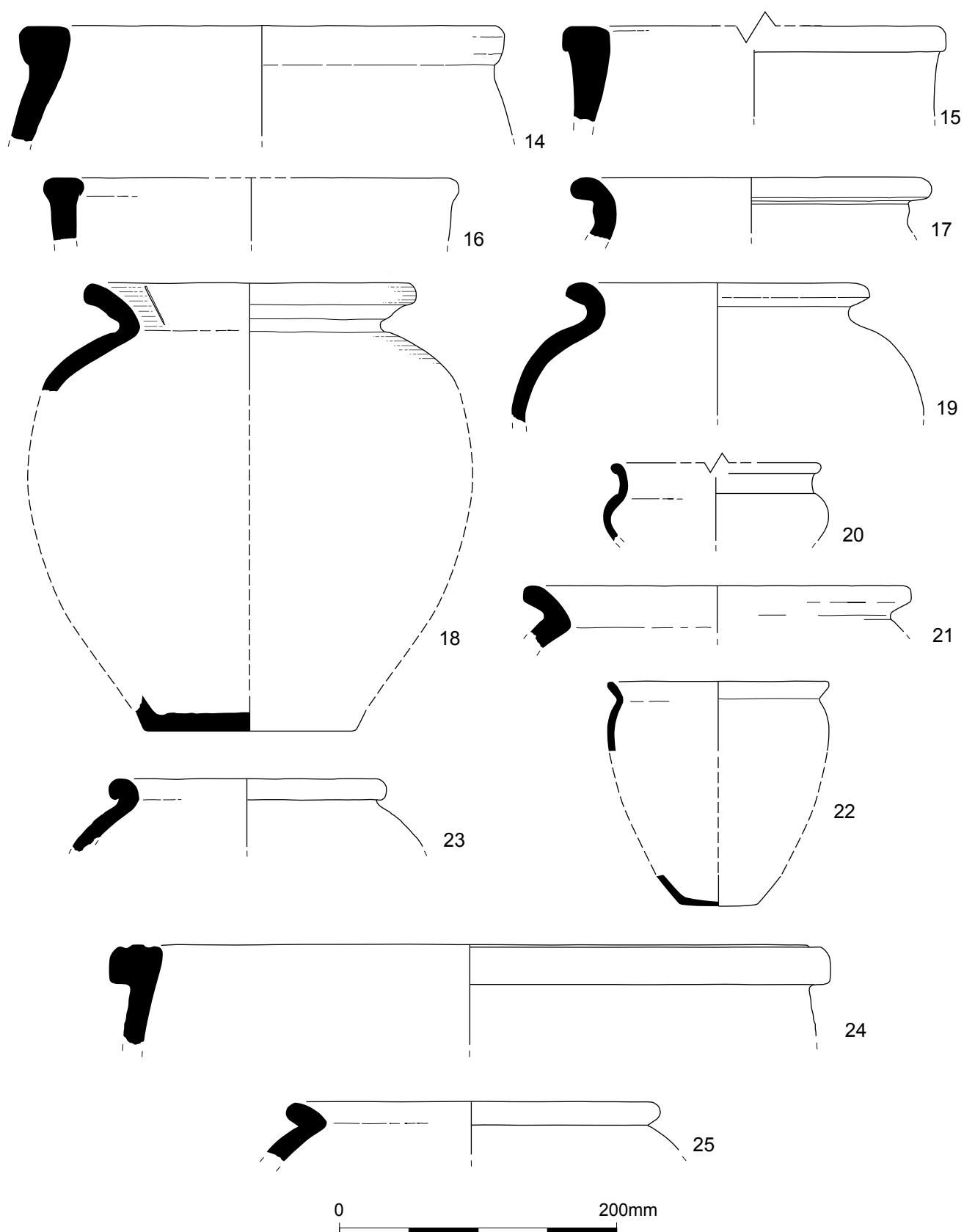


Figure 14: Ceramic Phase 1 forms, handmade wares (14–25)

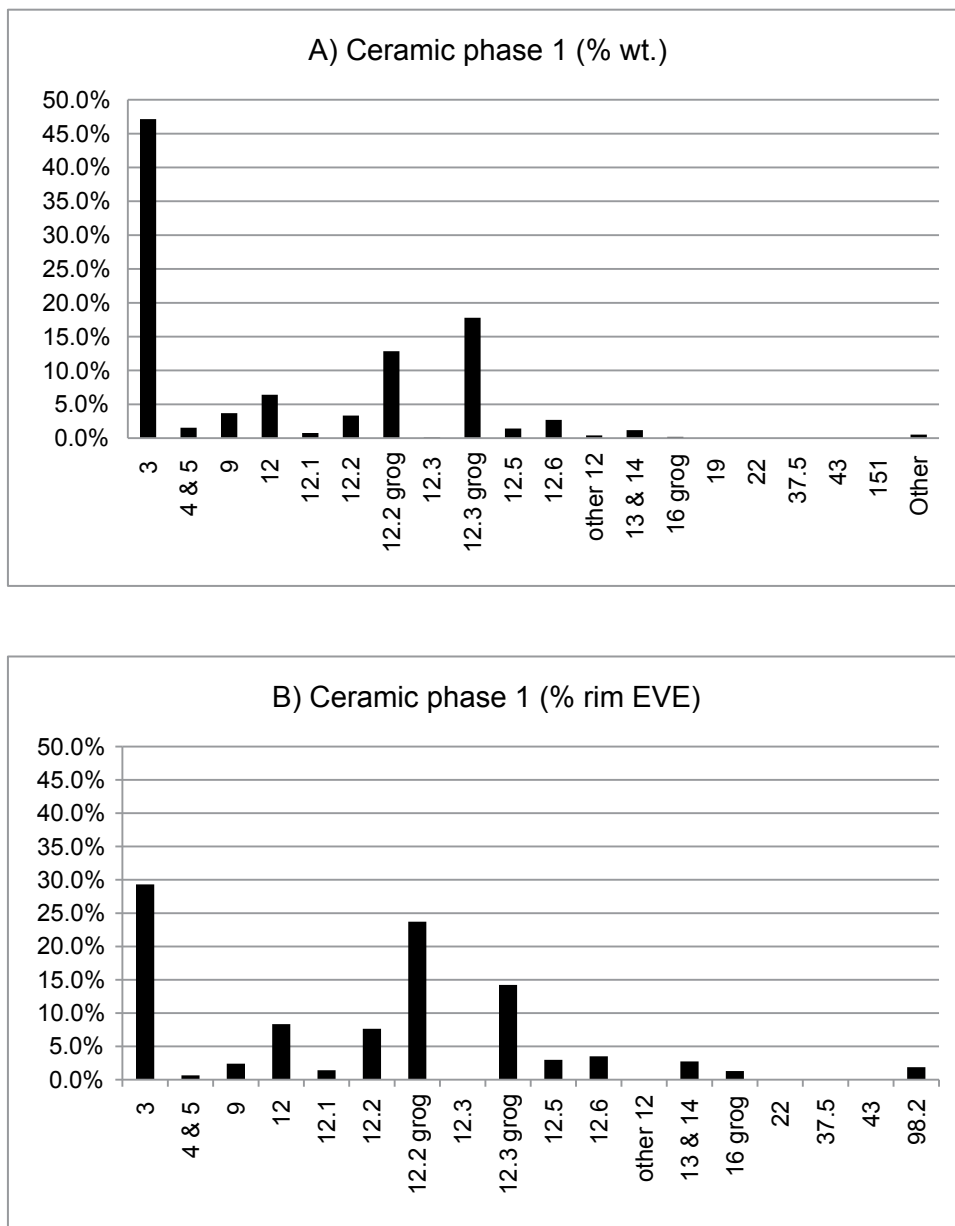


Figure 15: Ceramic Phase 1 fabrics (A:percentage weight; B: percentage rim EVE)

[to previous view](#)

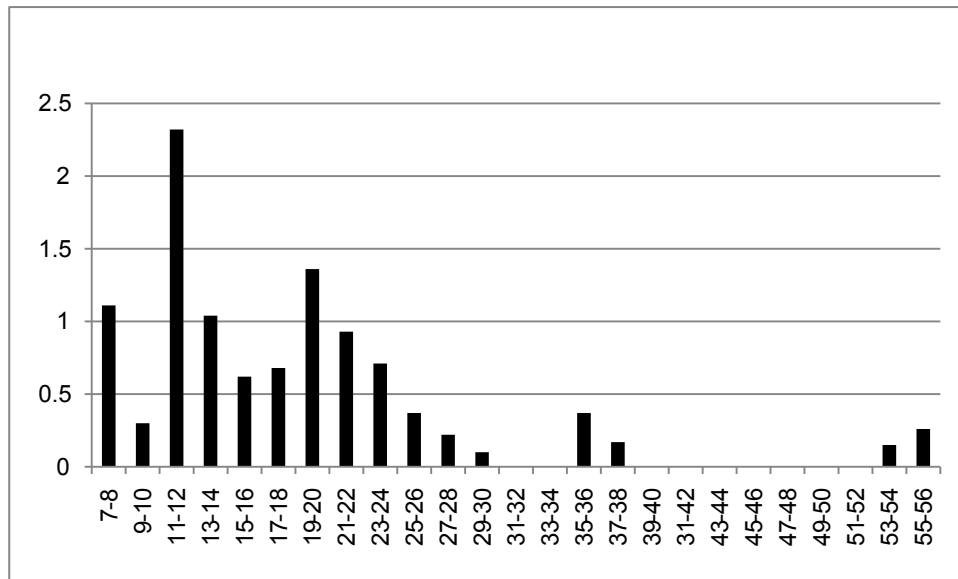


Figure 16: Handmade Malvernian ware rim diameters (rim EVE)

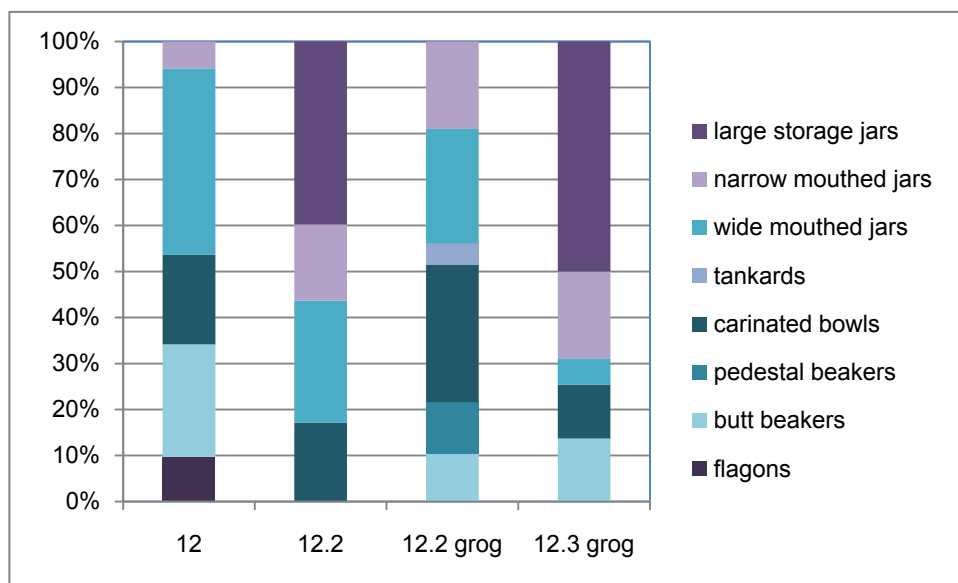


Figure 17: Severn Valley ware vessel classes for main fabric groups percentage rim EVE

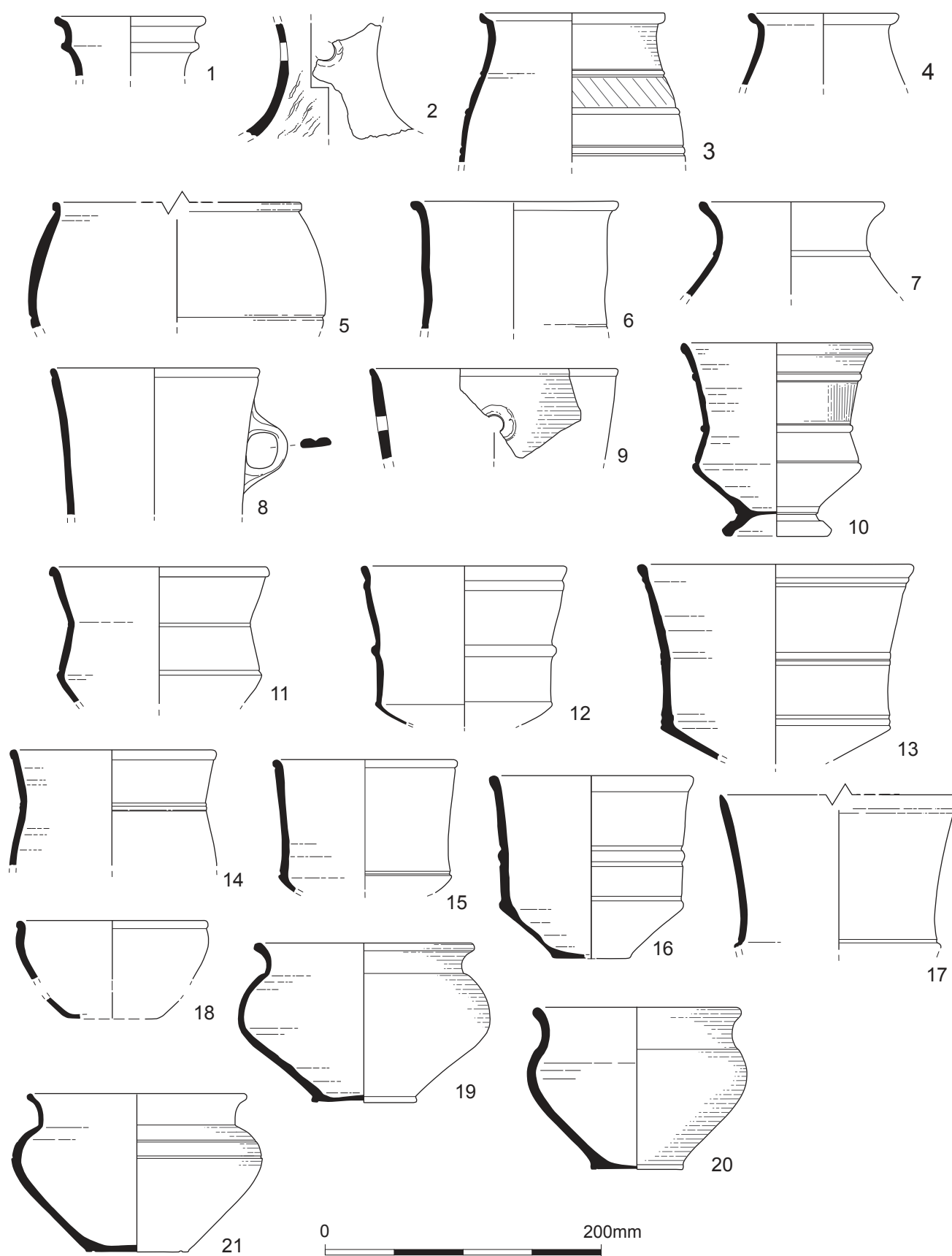


Figure 18: Ceramic Phase 1 forms, Severn Valley ware (1–21)

[to previous view](#)

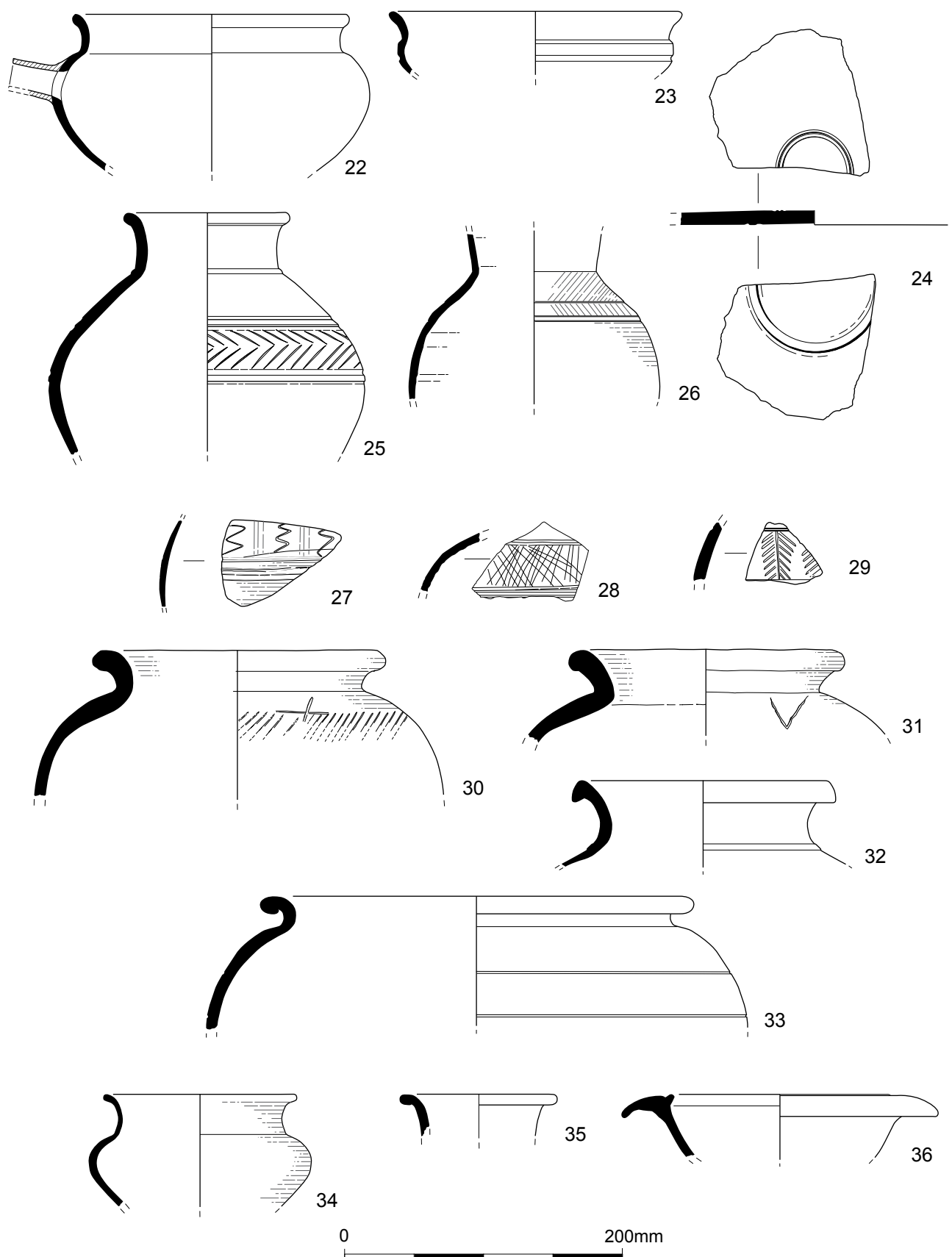
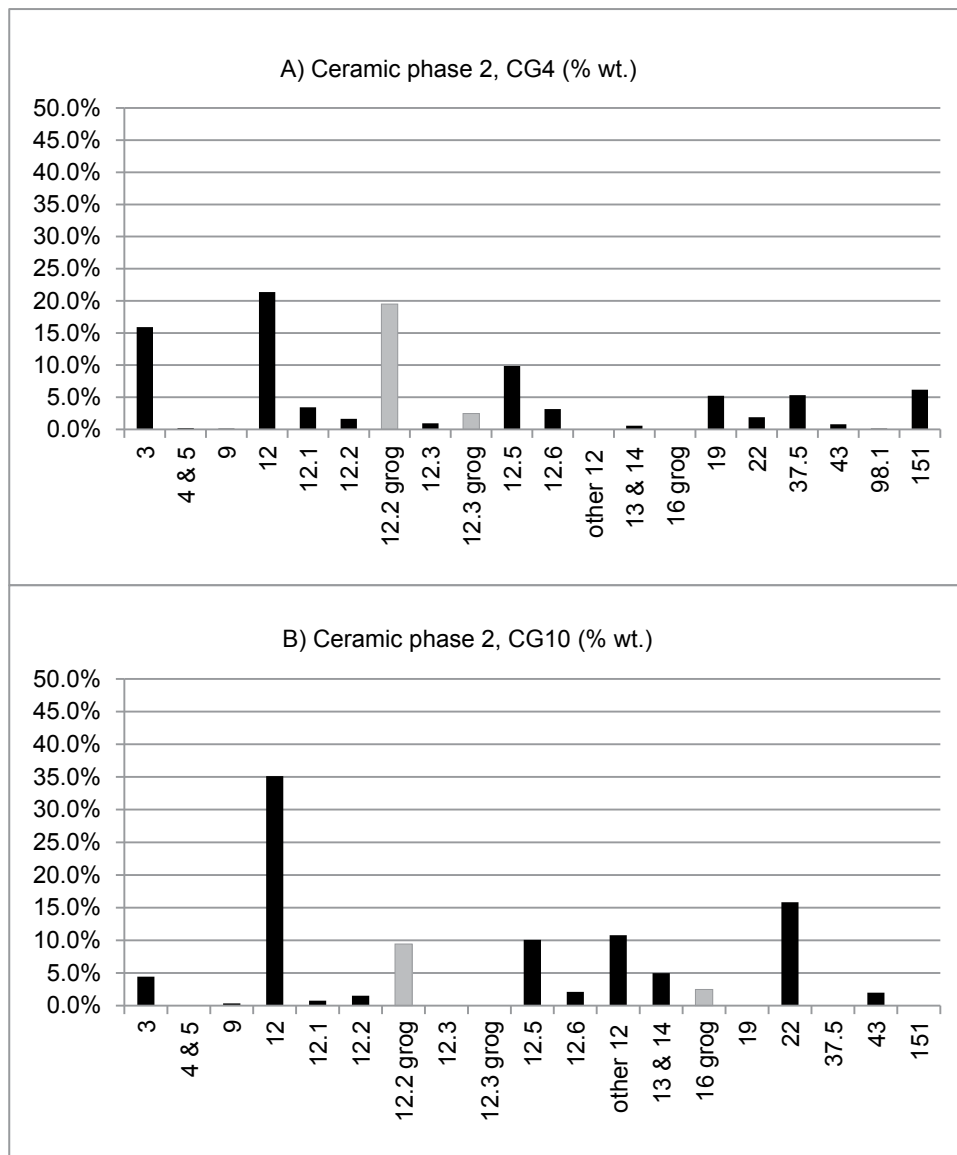


Figure 19: Ceramic Phase 1 forms, Severn Valley ware (22–32) and miscellaneous wares (33–36)



*Figure 20: Ceramic Phase 2 fabrics by percentage weight
(A context group 4, B context group 10, residual fabrics shaded grey)*

[to previous view](#)

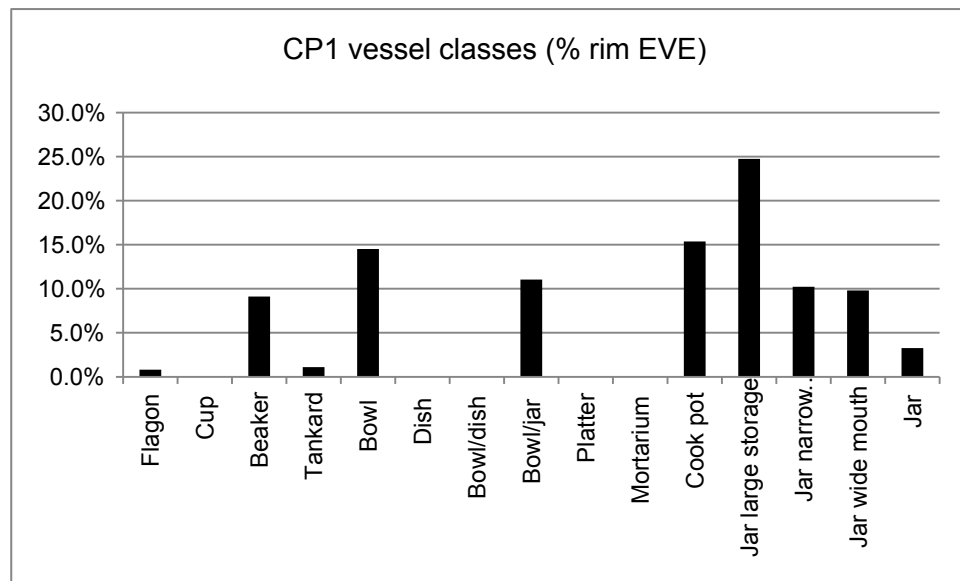


Figure 21: Ceramic Phase 1 vessel classes

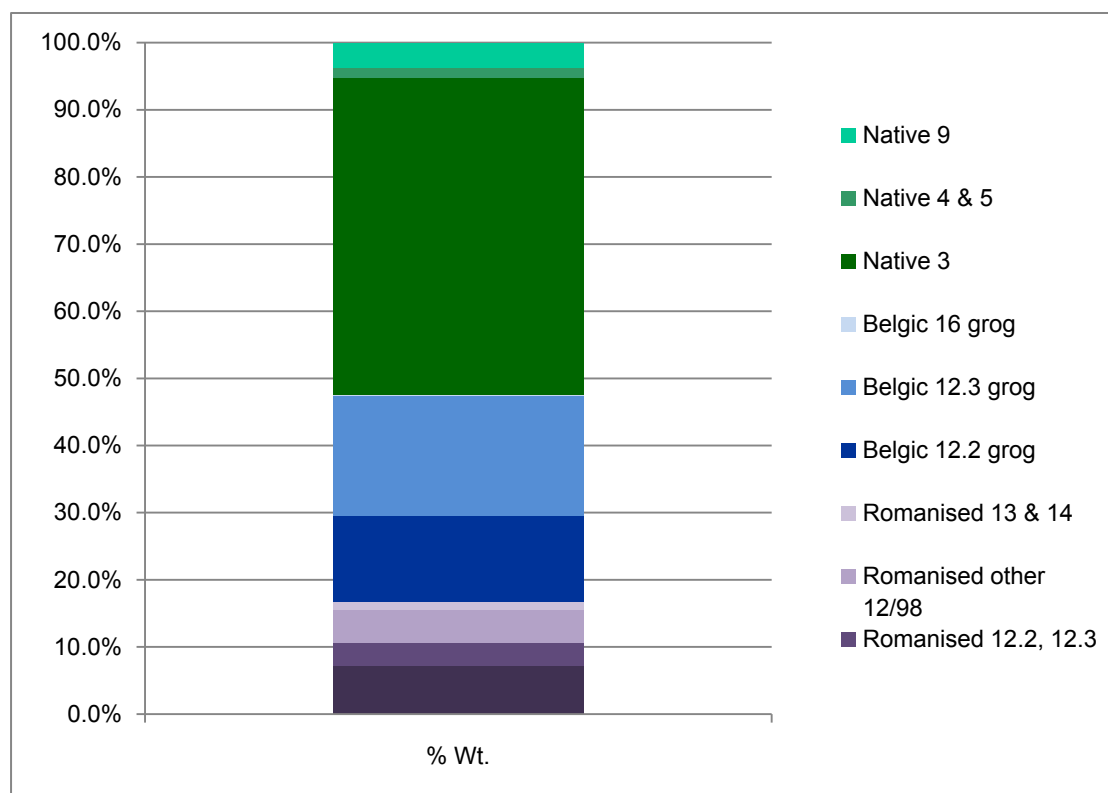


Figure 22: Characterisation of the Ceramic Phase 1 assemblage by fabric (percentage weight)

[to previous view](#)

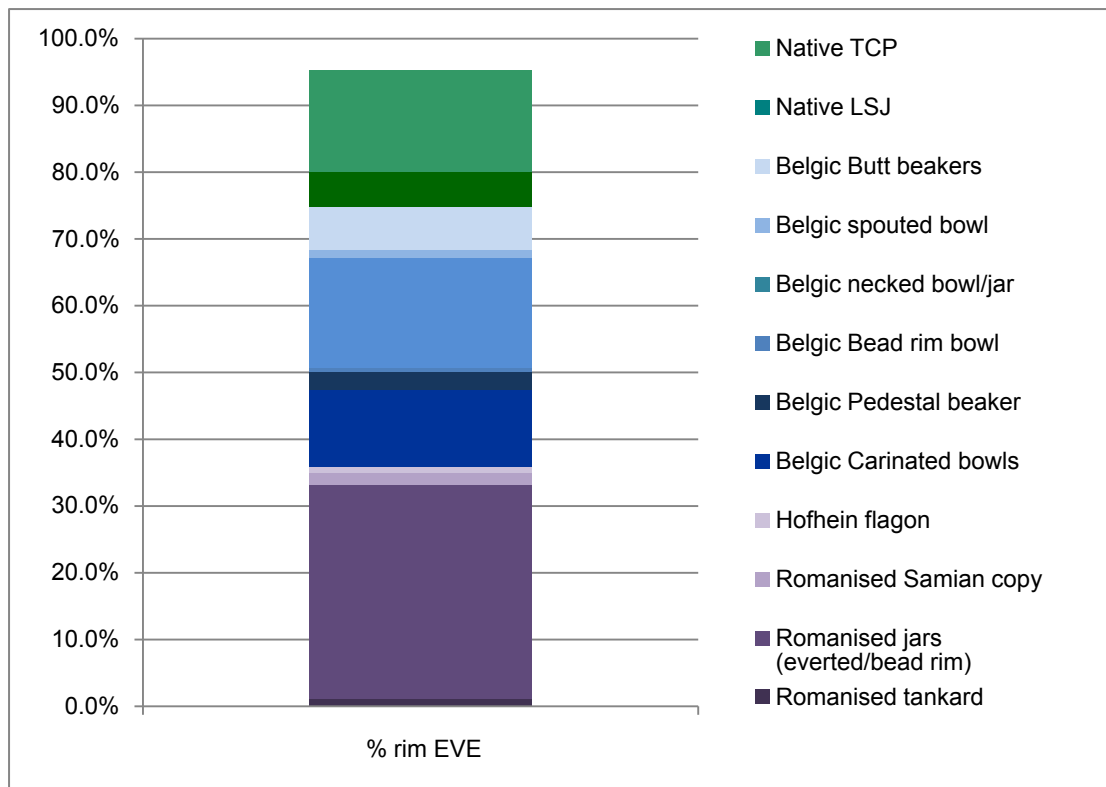


Figure 23: Characterisation of the Ceramic Phase 1 assemblage by form (percentage rim EVE)

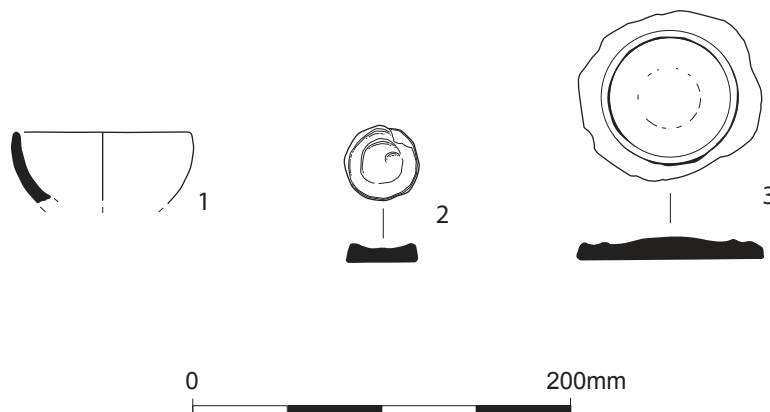


Figure 24: Other ceramic finds

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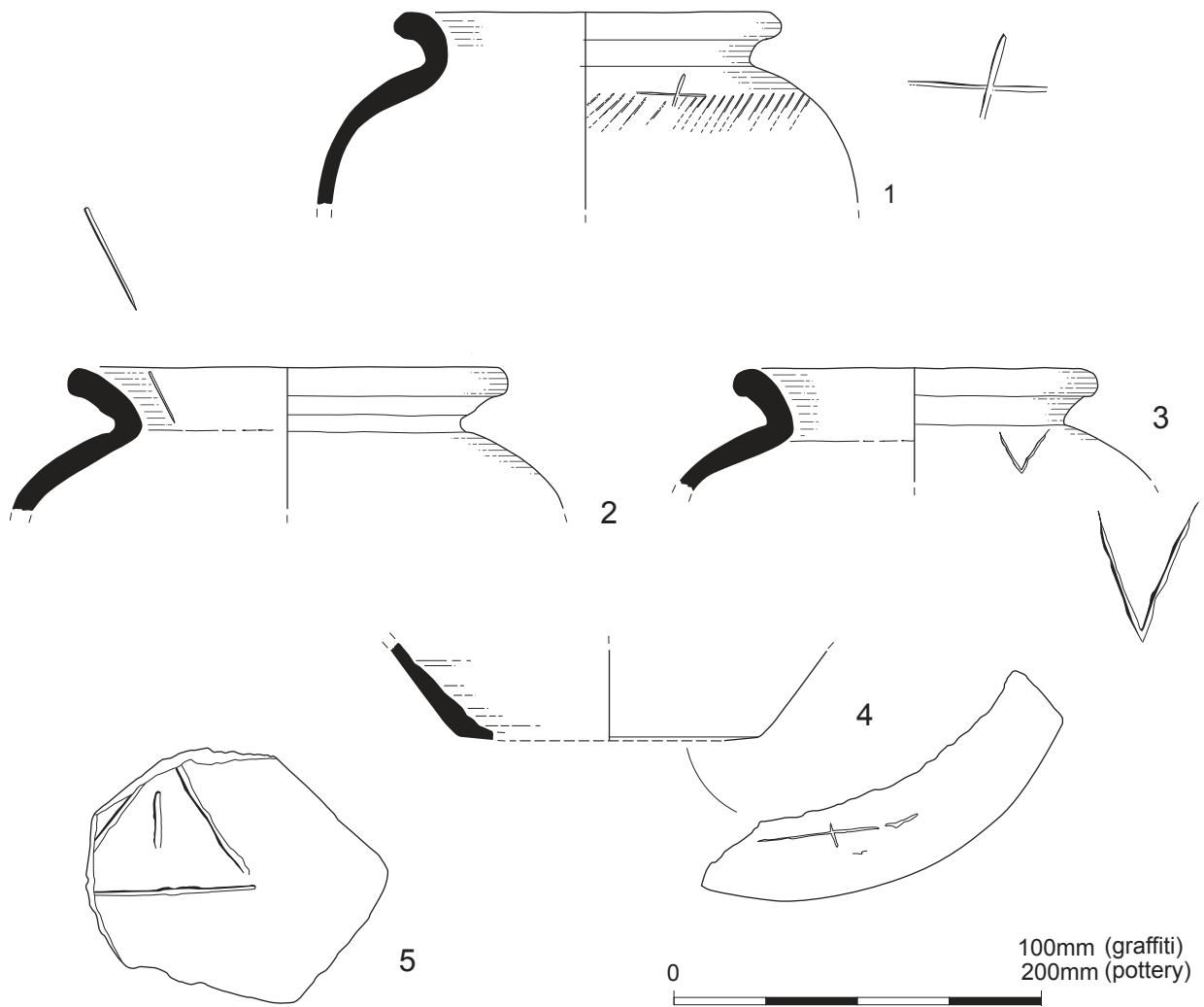


Figure 25: The graffiti on Roman pottery

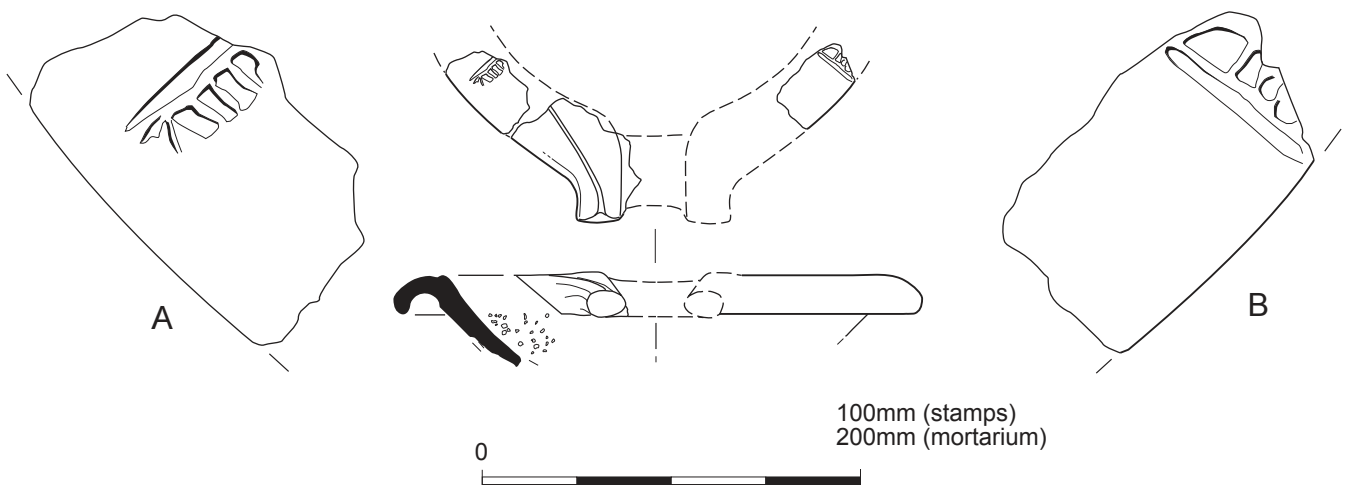


Figure 26: The stamped mortarium

[to previous view](#)

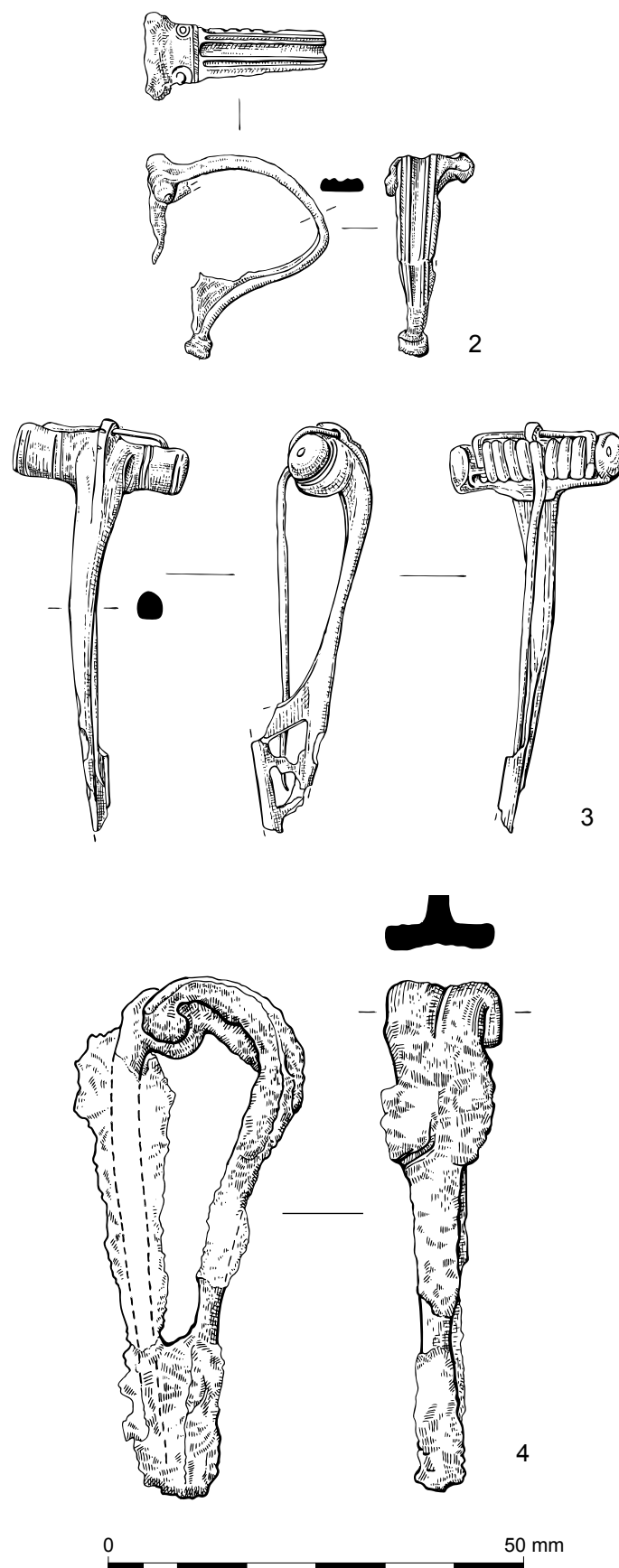


Figure 27: The brooches

[to previous view](#)

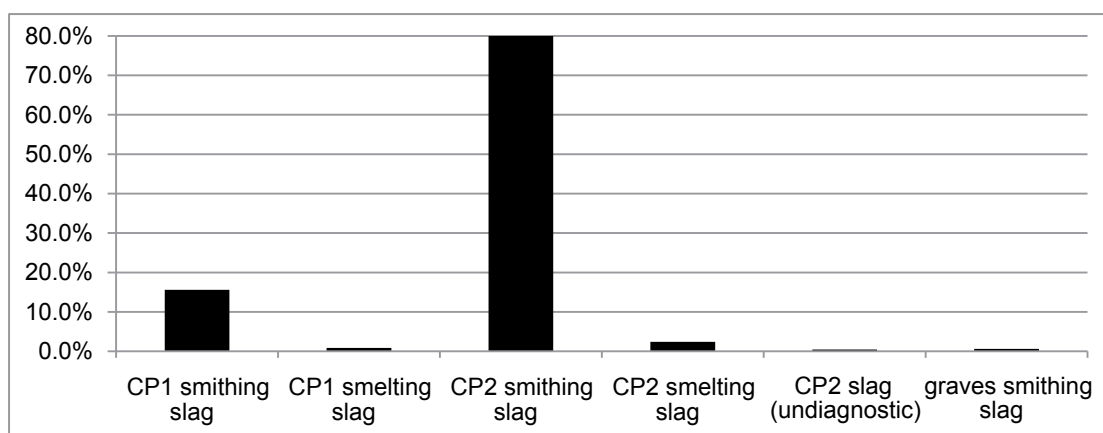


Figure 28: Relative abundance of smelting and smithing slags, in CP1 and 2 and in graves.
Weight percentage

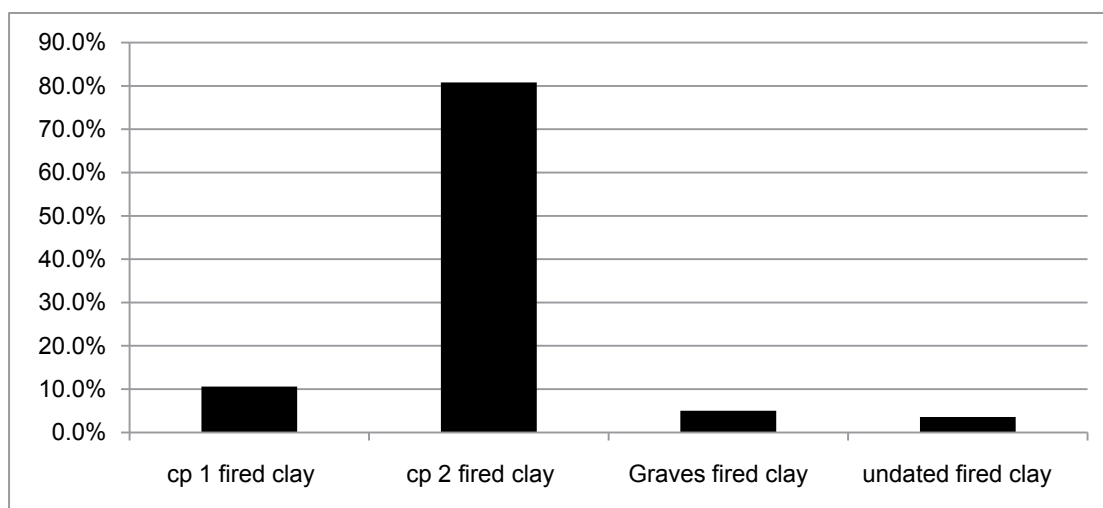


Figure 29: Relative abundance of fired clay in CP1 and 2 and in graves.
Weight percentage

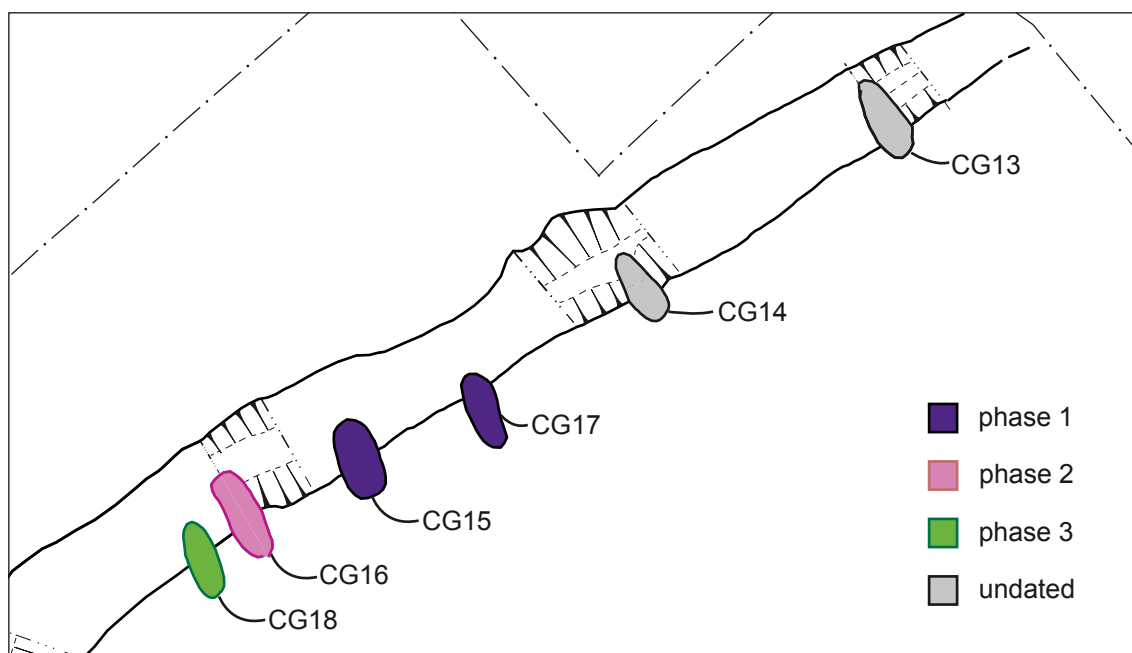


Figure 30: Grave locations and phases

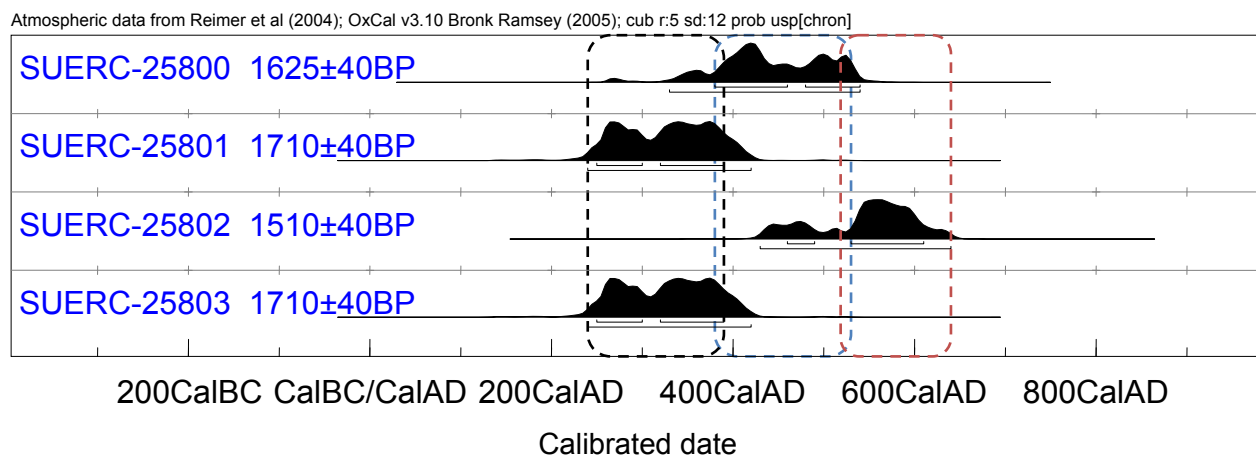


Figure 31: Calibrated date ranges for radiocarbon samples
(Black-Phase 1, Blue-Phase 2, Red-Phase 3)

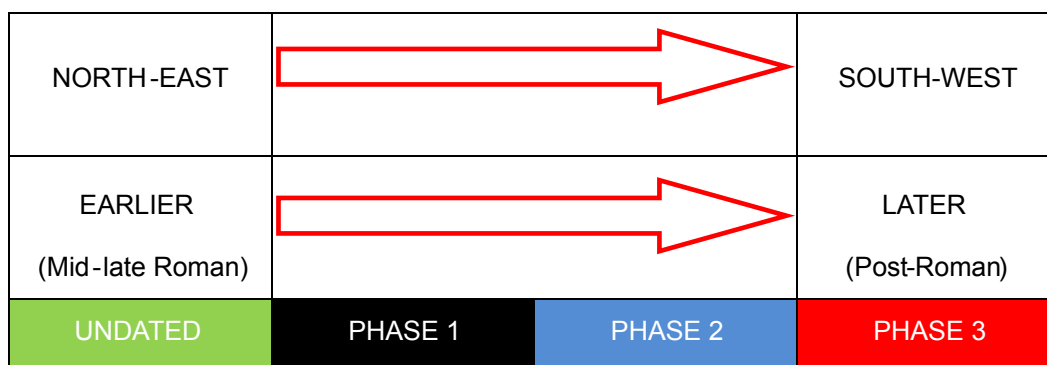


Figure 32: Hypothetical phasing and spatial distribution model

[to previous view](#)

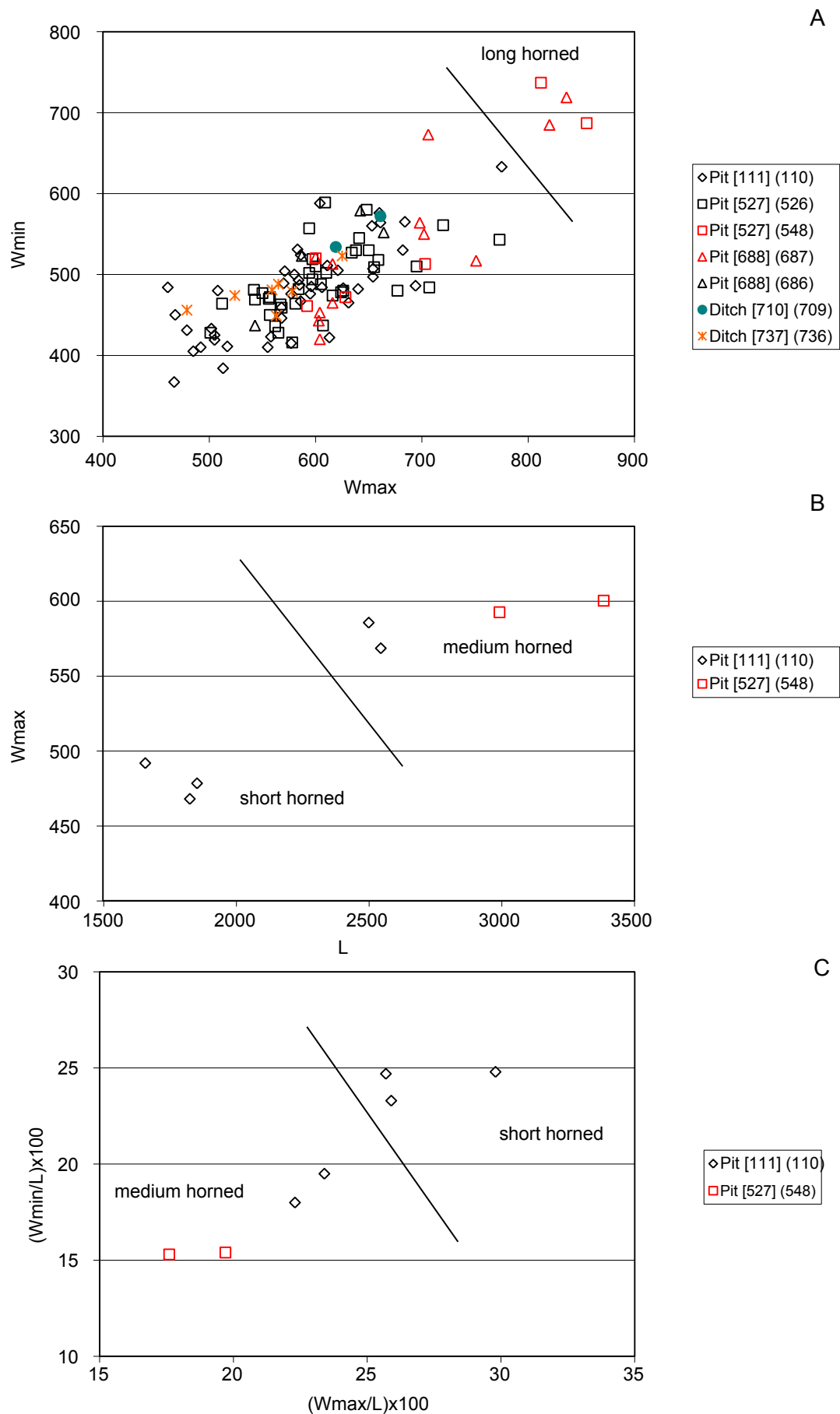


Figure 33: Size (A and B) and shape (C) of cattle horncores at the Old Council Depot

[to previous view](#)

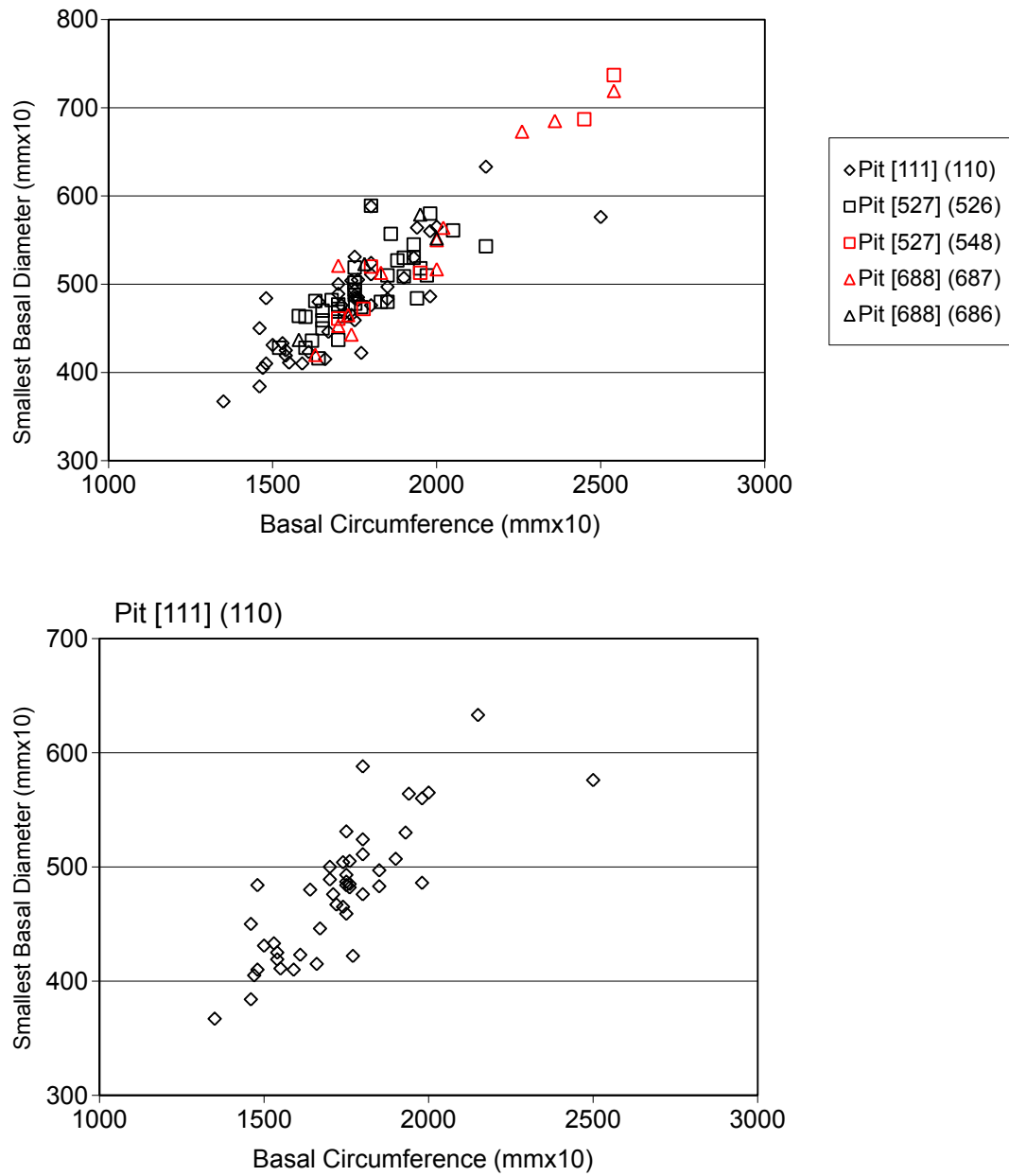


Figure 34a: Size of cattle horncores at the Old Council Depot

[to previous view](#)

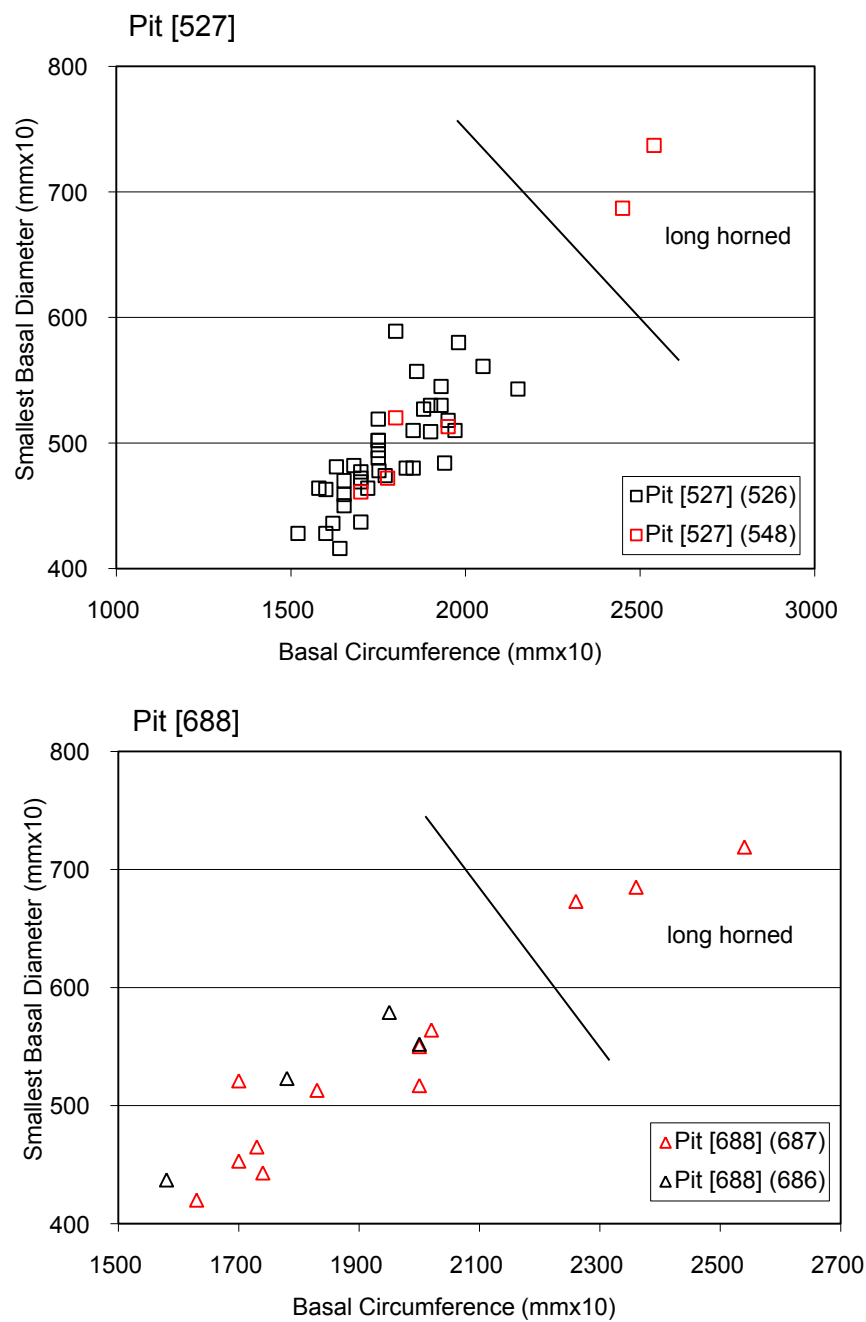


Figure 34b: Size of cattle horncores at the Old Council Depot

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A) Short Horn



a) Intercornual Ridge: High single arch



b) Frontal profile from above: Convex

B) Medium Horn



a) Intercornual Ridge: High double arch



b) Frontal profile from above:
Very slightly convex

C) Long Horn



a) Intercornual Ridge: High single arch



b) Frontal profile from above: Flat

Figure 35: Cattle horncore and frontal types at the Old Council Depot

[to previous view](#)

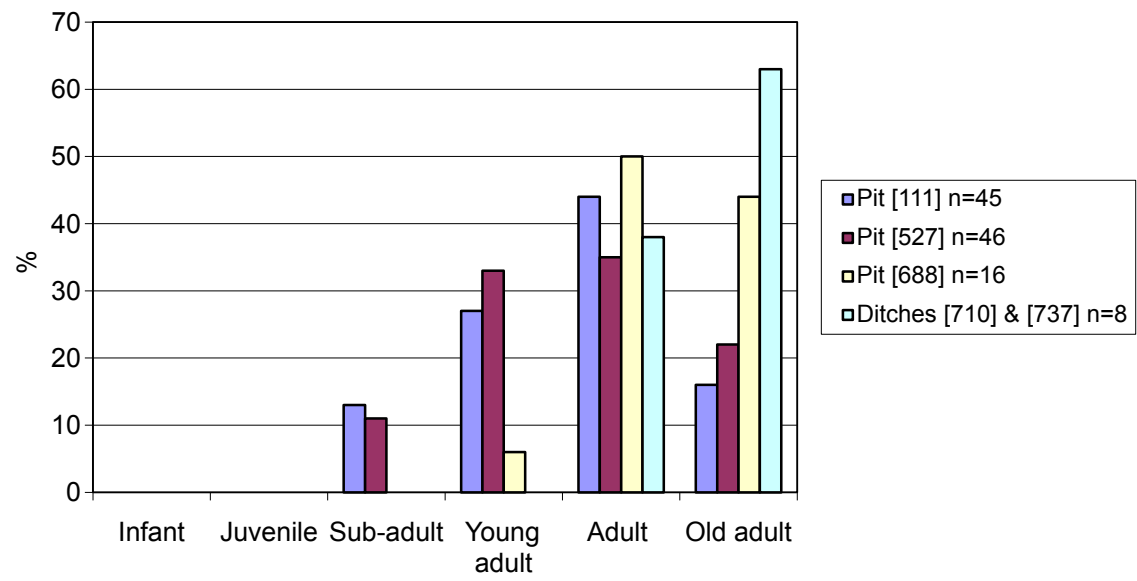
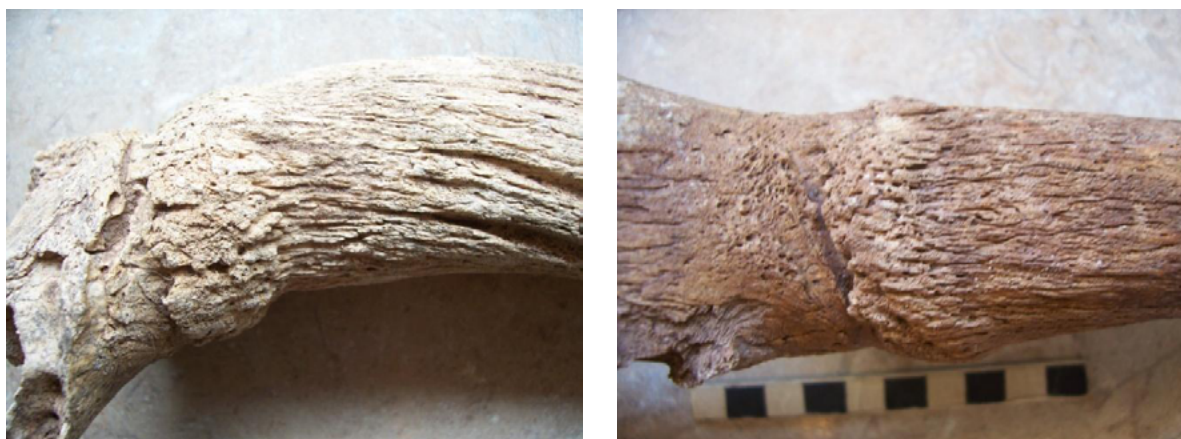


Figure 36: Cattle horncore ages at the Old Council Depot

[to previous view](#)



A) Pre-mortem occipital perforations



B) Depressions round horncore base

Figure 37: Cattle horncore; pathologies at the Old Council Depot

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A) Blunt trauma impact from poll axing across central frontal.



B) Chop mark across frontal.



C) Skinning cuts across frontal adjacent to horncore base.



D) Nail driven through horncore to secure horn sheath.



E) Nail driven through horncore to secure horn sheath.



F) Detail of nail driven through horncore to secure horn sheath.

Figure 38: Cattle horncores; butchery and post-mortem processes at the Old Council Depot

[to previous view](#)



Figure 39: German woodcut of 1568 of a tanner at work, showing a cow hide hanging up with the horns and tail still attached (after [Serjeantson 1989](#))

[to previous view](#)

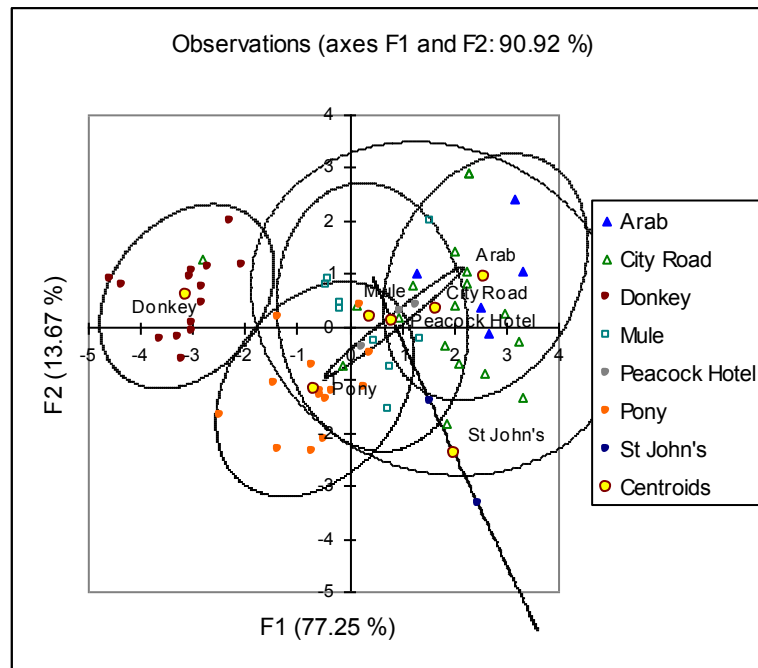


Figure 40: Discriminant analysis of equid metacarpals at the Old Council Depot. Based on Johnstone (2004; 2006). City road, Chester after Sykes et al (2009); Peacock Hotel, Market Harborough after Baxter (1996).



A) Posterior aspect of metacarpus.



B) Lateral aspect of metacarpus.



C) Medial aspect of metacarpus.

Figure 41: Equid pathology at the Old Council Depot

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Plate 1: Enclosure ditch, facing south-east

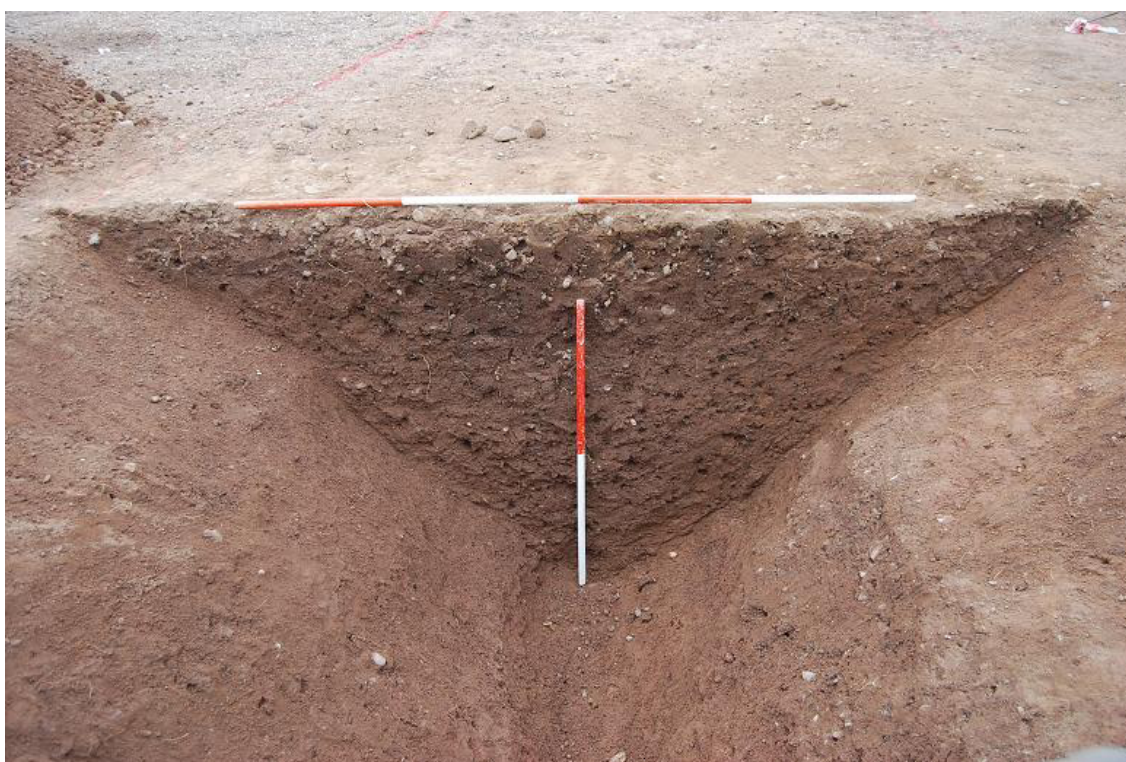


Plate 2: South-east facing section of enclosure ditch 1315

[to previous view](#)



Plate 3: Enclosure ditch with ditch 1303 in centre, facing north-west



Plate 4: Skeleton 1442, facing north

[to previous view](#)



Plate 5: Grave cuts 1410,1444,1445 and 1452, facing south-east



Plate 6: Trench D, south-west facing section (south-east end)

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Plate 7: Oven, facing south-east



Plate 8: Old Council Depot, horncore lined pit 527

[to previous view](#)



Plate 9: Stater of the Corieltauvi



Plate 10: Jetton

Appendix 1 Radiocarbon dating

RADIOCARBON DATING CERTIFICATE

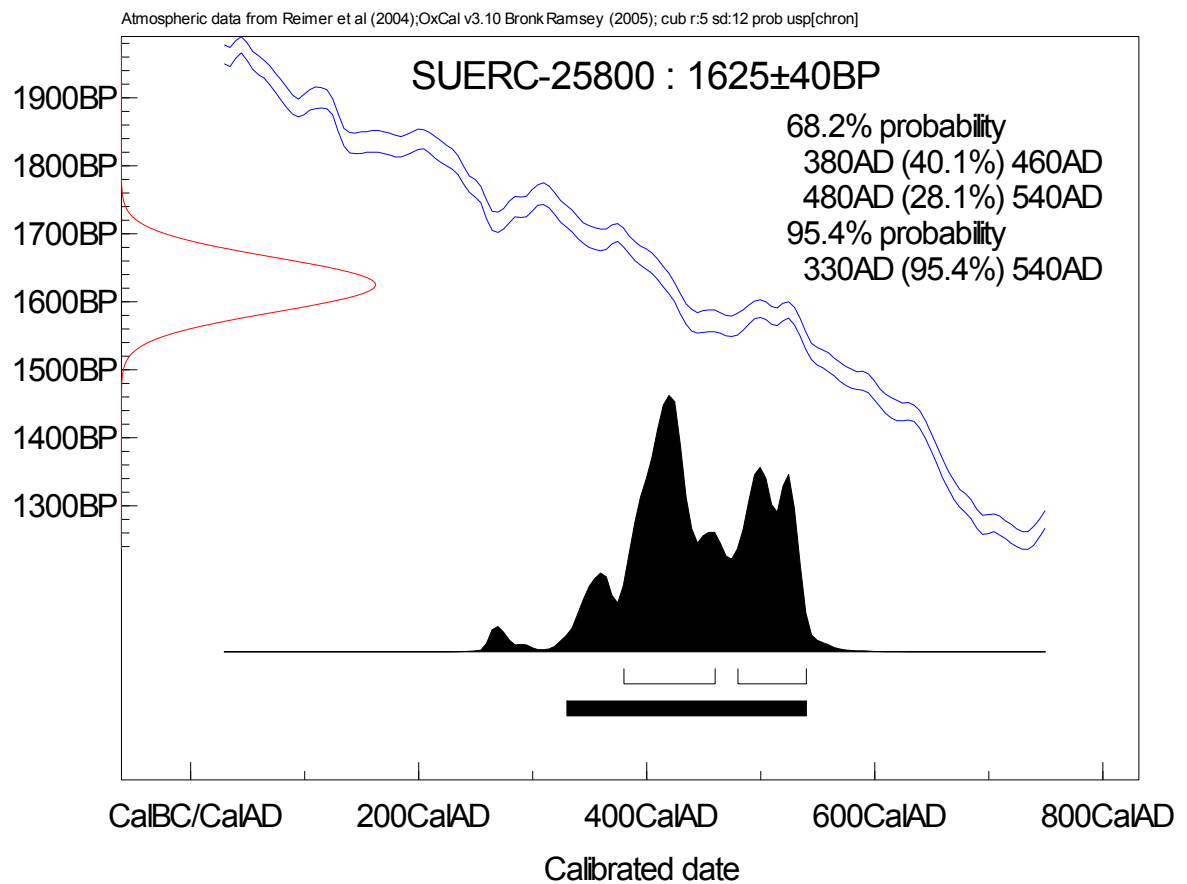
14 October 2009

Laboratory Code	SUERC-25800 (GU-19645)
Submitter	Elizabeth Pearson Worcestershire Historic Environment and Archaeology Service Woodbury Hall, University of Worcester Henwick Grove Worcester WR2 6AJ
Site Reference	Sainsbury's St John's, Worcester
Sample Reference	WCM101591/1440
Material	Bone: Human right femur
$\delta^{13}\text{C}$ relative to VPDB	-19.5 ‰
Radiocarbon Age BP	1625 \pm 40

N.B.	1.	The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
	2.	The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
	3.	Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

[to previous view](#)

Calibration Plot SK1440



RADIOCARBON DATING CERTIFICATE

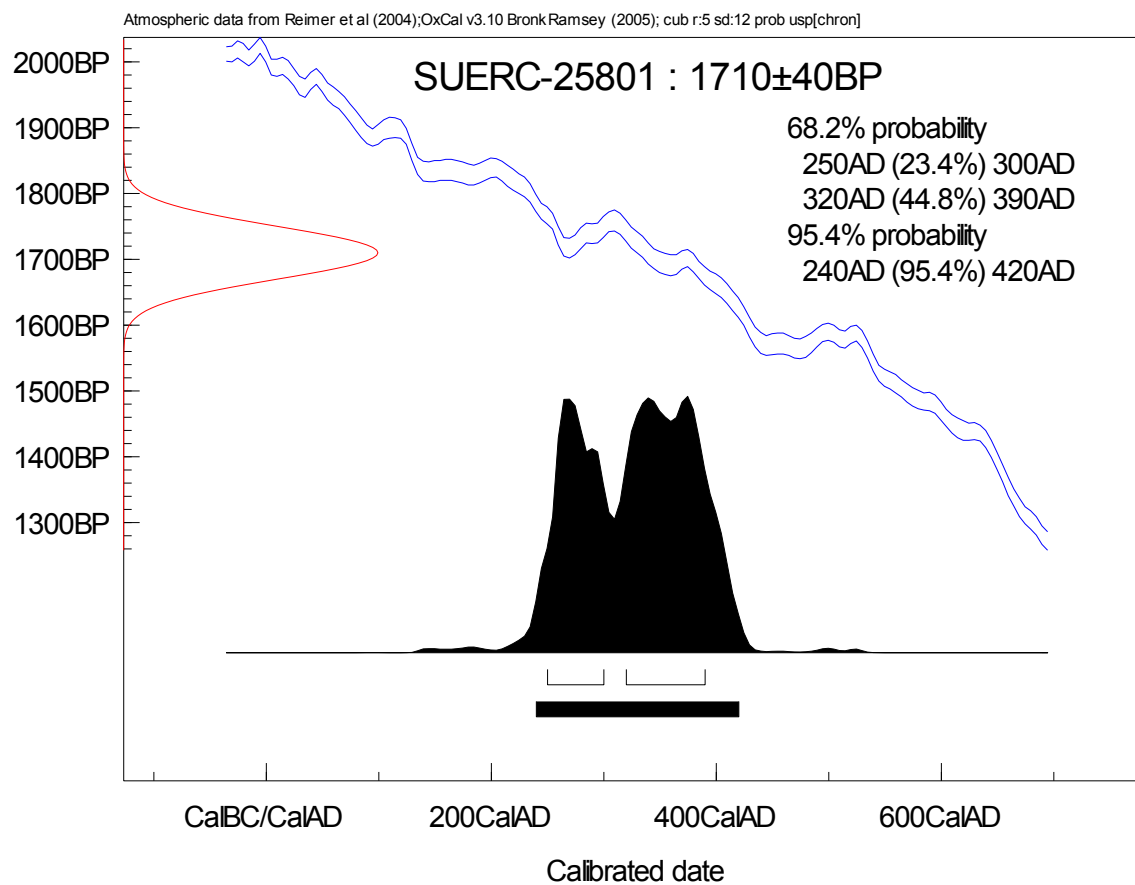
14 October 2009

Laboratory Code	SUERC-25801 (GU-19646)
Submitter	Elizabeth Pearson Worcestershire Historic Environment and Archaeology Service Woodbury Hall, University of Worcester Henwick Grove Worcester WR2 6AJ
Site Reference	Sainsbury's St John's, Worcester
Sample Reference	WCM101591/1442
Material	Bone: Human right femur
$\delta^{13}\text{C}$ relative to VPDB	-19.5 ‰
Radiocarbon Age BP	1710 \pm 40

N.B.	1.	The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
	2.	The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
	3.	Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

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Calibration Plot SK1442



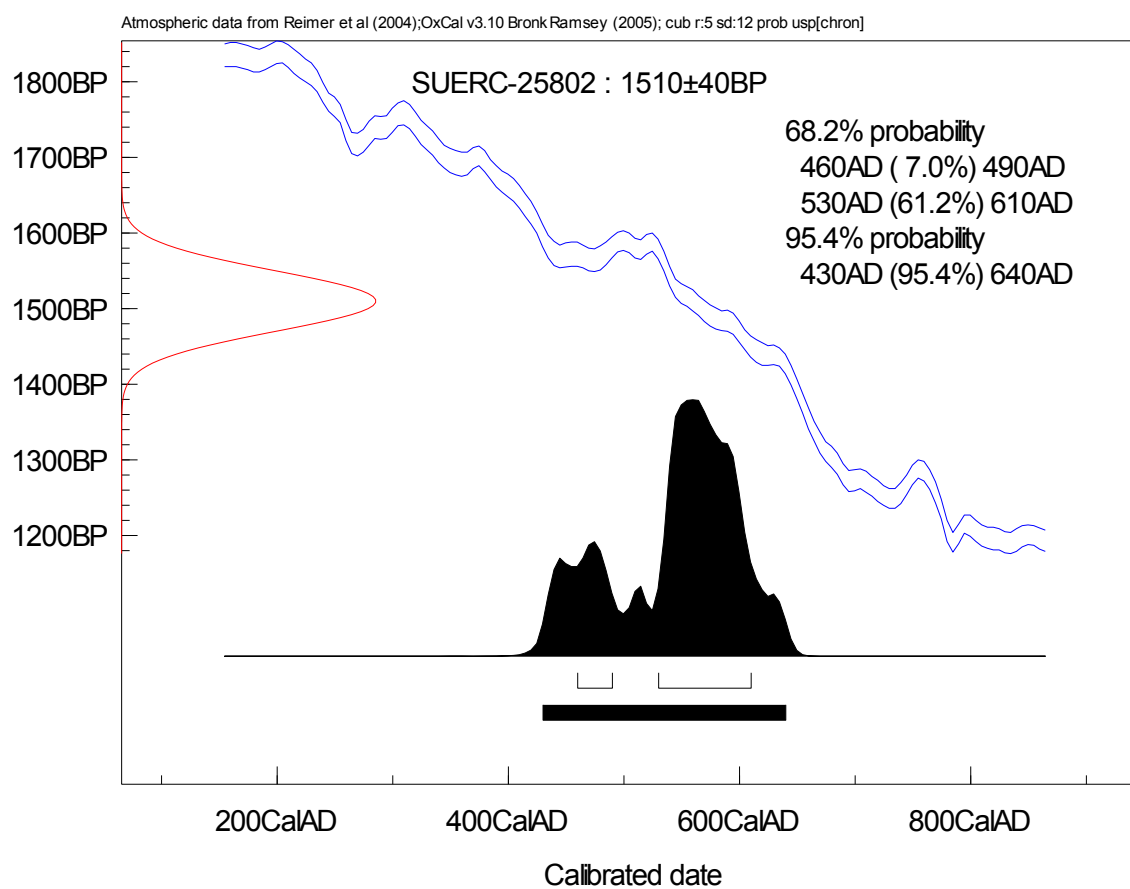
RADIOCARBON DATING CERTIFICATE

14 October 2009

Laboratory Code		SUERC-25802 (GU-19647)
Submitter		Elizabeth Pearson Worcestershire Historic Environment and Archaeology Service Woodbury Hall, University of Worcester Henwick Grove Worcester WR2 6AJ
Site Reference		Sainsbury's St John's, Worcester
Sample Reference		WCM101591/1447
Material		Bone: Human - fragments, may be from different bones
$\delta^{13}\text{C}$ relative to VPDB		-19.5 ‰
Radiocarbon Age BP		-20.5 ‰
N.B.	1.	The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
	2.	The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
	3.	Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

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Calibration Plot SK1447



RADIOCARBON DATING CERTIFICATE

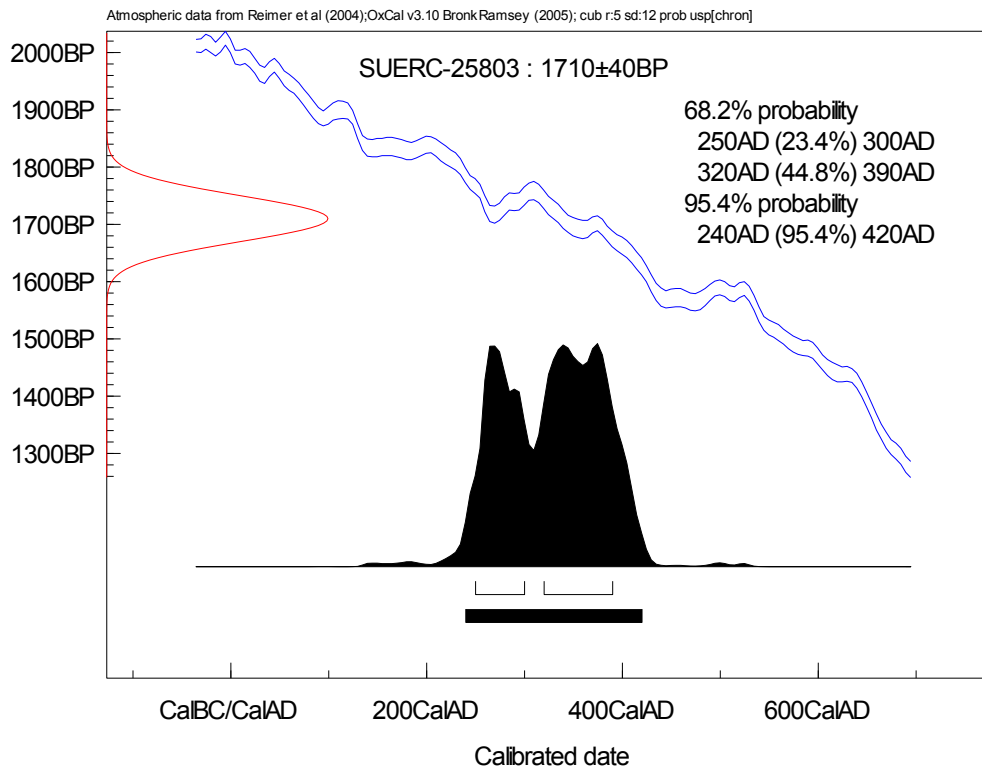
14 October 2009

Laboratory Code	SUERC-25803 (GU-19648)
Submitter	Elizabeth Pearson Worcestershire Historic Environment and Archaeology Service Woodbury Hall, University of Worcester Henwick Grove Worcester WR2 6AJ
Site Reference	Sainsbury's St John's, Worcester
Sample Reference	WCM101591/1451
Material	Bone: Human right femur
$\delta^{13}\text{C}$ relative to VPDB	-18.9 ‰
Radiocarbon Age BP	1710 \pm 40

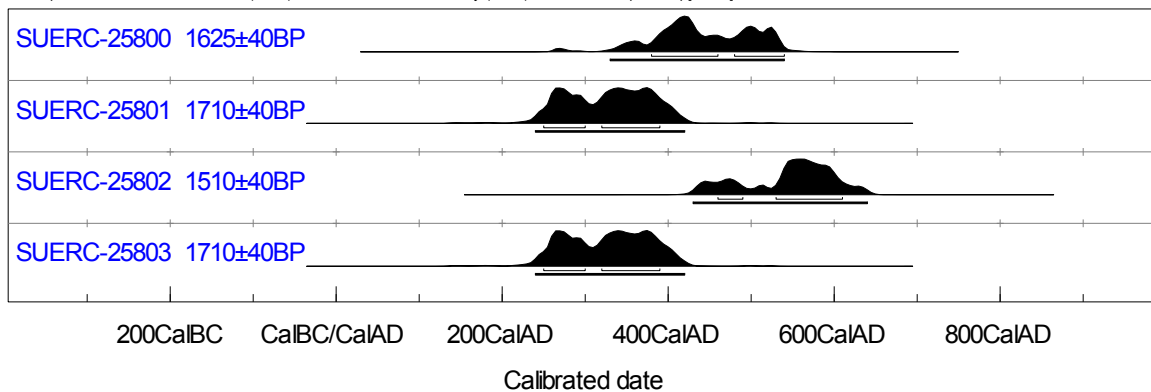
N.B.	1.	The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
	2.	The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
	3.	Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

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Calibration Plot SK1451



Atmospheric data from Reimer et al (2004);OxCal v3.10 Bronk Ramsey (2005); cub r:5 sd:12 prob usp[chron]



Appendix 2 Animal bone quantification

Measurements of animal bones and teeth, arranged by taxon, part of the skeleton and period.

All measurements are in tenths of a millimetre. See text for an explanation of how measurements are taken. Measurements are given in the following order: horncores, teeth, mandible, postcranial bones. All material is from the Old Council Depot and dates from the 18th or early 19th century.

Key

Taxa are coded as follows:

B *Bos* (cattle)

EQC *Equus caballus* (horse)

Approximate measurements are designated:

C: within 0.2mm; e: within 0.5mm

Parts of skeleton (Element) are coded as follows:

HU humerus

MC complete distal metacarpal III

Epiphyseal fusion/ageis coded as follows:

F fused

H fused/fusing

G fusing

UM unfused diaphysis

UE unfused epiphysis

UX unfused diaphysis+epiphysis

Horncore measurements

Taxon	Feature	Context	I	Wmax	Wmin	C
B	111	110		654	497	1850
B	111	110		775	633	2150
B	111	110		467	367	1350
B	111	110	2550	568	459	1750
B	111	110	1650	492	410	1480
B	111	110		485	405	1470
B	111	110		694	486	1980
B	111	110		577	476	1710
B	111	110		513	384	1460
B	111	110		604	588	1800
B	111	110		682	530	1930
B	111	110		584	493	1750
B	111	110	2500	585	487	1750
B	111	110		558	423	1610

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Taxon	Feature	Context	I	Wmax	Wmin	C
B	111	110		660	576	2500
B	111	110		568	446	1670
B	111	110		580	500	1700
B	111	110		505	419	1540
B	111	110		502	433	1530
B	111	110		583	531	1750
B	111	110		661	564	1940
B	111	110		611	511	1800
B	111	110		654	507	1900
B	111	110		555	410	1590
B	111	110		586	467	1720
B	111	110		508	480	1640
B	111	110		595	476	1800
B	111	110		505	425	1540
B	111	110		606	484	1750
B	111	110		626	483	1850
B	111	110		621	505	1760
B	111	110		653	560	1980
B	111	110		684	565	2000
B	111	110		577	415	1660
B	111	110		586	524	1800
B	111	110		571	504	1740
B	111	110		517	411	1550
B	111	110	1850	479	431	1500
B	111	110		596	485	1760
B	111	110		631	465	1740
B	111	110		570	489	1700
B	111	110		613	422	1770
B	111	110		640	482	1760
B	111	110		461	484	1480
B	111	110	1820	468	450	1460
B	527	526		578	416	1640
B	527	526		659	518	1950
B	527	526		594	557	1860
B	527	526		641	545	1930
B	527	526		581	464	1720
B	527	526		610	502	1750
B	527	526		650	530	1900
B	527	526		677	480	1850
B	527	526		655	509	1900
B	527	526		720	561	2050
B	527	526		501	428	1520
B	527	526		624	478	1752

[to previous view](#)

Taxon	Feature	Context	I	Wmax	Wmin	C
B	527	526		556	470	1652
B	527	526		600	510	1850
B	527	526		594	502	1750
B	527	526		557	472	1700
B	527	526		634	527	1880
B	527	526		543	469	1700
B	527	526		609	589	1800
B	527	526		584	482	1680
B	527	526		542	481	1630
B	527	526		568	459	1652
B	527	526		695	510	1970
B	527	526		597	494	1750
B	527	526		557	450	1652
B	527	526		773	543	2150
B	527	526		626	480	1830
B	527	526		512	464	1580
B	527	526		550	477	1700
B	527	526		616	474	1770
B	527	526		605	488	1750
B	527	526		707	484	1940
B	527	526		607	437	1700
B	527	526		648	580	1980
B	527	526		565	428	1600
B	527	526		638	530	1930
B	527	526		562	436	1620
B	527	526		597	519	1750
B	527	526		567	463	1600
B	527	548		855	687	2450
B	527	548		703	513	1950
B	527	548	3000	592	461	1700
B	527	548		812	737	2540
B	527	548		628	472	1777
B	527	548	3400	600	520	1800
B	688	687		600	521	1700
B	688	687		603	443	1740
B	688	687		751	517	2000
B	688	687		616	465	1730
B	688	687		836	719	2540
B	688	687		706	673	2260
B	688	687		616	513	1830
B	688	687		702	550	2000
B	688	687		604	453	1700
B	688	687		604	420	1630

[to previous view](#)

Taxon	Feature	Context	I	Wmax	Wmin	C
B	688	687		820	685	2360
B	688	687		698	564	2020
B	710	709		619	534	1840
B	710	709		661	572	1950
B	737	736		625	523	1820
B	737	736		563	449	1680
B	737	736		524	474	1610
B	737	736		559	481	1720
B	737	736		578	479	1740
B	737	736		479	456	1500
B	737	736		565	488	1700
B	740=688	739=686	587	523	1780	
B	740=688	739=686	543	437	1580	
B	740=688	739=686	642	579	1950	
B	740=688	739=686	664	552	2000	

Lower teeth

Taxon	Feature	Context	Tooth	Crown height
EQC	111	110	M1/2	483
EQC	111	110	M1/2	500

Bone measurements

Taxon	Element	Feature	Context	Fusion	BT	HTC	Bd
B	HU	111	110	F	835	382	
EQC	HU	111	110	F	811	432	916

Taxon	Element	Feature	Context	Fusion	GL	LI	Bd	Dp	SD	Dd	Bp	
EQC	MC	111	110	F	2535	2440	575	414	404	432	623	
EQC	MC	737	736	F	2519	2392	597		421	440	437	619



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