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UPDATED PROJECT DESIGN

MNL 638

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District: Forest Heath	Site Code: MNL 638
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1 INTRODUCTION

This document provides a method statement for post-excavation analysis and production of the Research Archive Report and Publication Report for archaeological excavations at The Former Smoke House Inn, Beck Row, Mildenhall, Suffolk (NGR TL 6894 7787; Suffolk Historic Environment Record (HER) Site MNL 638; Fig. 1).

The site has been phased, phased concordances of features and finds produced, specialist identification and quantification of finds and environmental evidence carried out and databases compiled, and the narrative of the site's stratigraphic development over time finalised (Mustchin forthcoming).

This method statement sets out the elements of post-excavation analysis and reporting that remain outstanding, and proposed themes and questions for further research.

2 RESULTS OF THE EXCAVATION

2.1 Introduction

The excavation revealed a complex archaeological sequence (Fig. 2). Encountered remains were chiefly associated with a Romano-British agricultural landscape dating between the late 1st/ early 2nd and mid to late 4th centuries+ AD; more ephemeral evidence of other periods was also present. In total, seven chronological sub-phases of Romano-British occupation were interpreted based on recorded stratigraphy and an evaluation of the datable pottery assemblage. The Romano-British Period (Period II) was preceded by a comparatively poorly represented prehistoric phase (Period I) and was succeeded, indirectly, by sparse medieval/ post-medieval evidence (Period III). A summary of the phasing is presented in Table 1.

Chronological Phase	Sub-Phase	Date
Period I (pre-Roman)	-	*c.* 2100 BC to AD 43
Period II (Romano-British)	Roman Sub-Phase 1	Late 1st – early 2nd century AD
	Roman Sub-Phase 2	Early – mid/ late 2nd century AD
	Roman Sub-Phase 3	Late 2nd – early 3rd century AD
	Roman Sub-Phase 4	Early – mid-3rd century AD
	Roman Sub-Phase 5	Mid-3rd – early 4th century AD
	Roman Sub-Phase 6	Early – mid/late 4th century AD
	Roman Sub-Phase 7	Mid – late 4th century+ AD
Period III (medieval/ post-medieval	-	*c.* AD 1150 to 1750

Table 1: Chronological phasing

2.2 Phase Summaries

2.2.1 *Period I (pre-Roman)*

Period I (Fig. 3) was represented by features dating broadly to the Bronze Age and Iron Age (*c.* 2100 BC to AD 43). Some features that did not contain diagnostic material were assigned to this phase based on their stratigraphic relationships and/ or their similarities to/ location in respect of dated features. Period I features were found scattered across much of the site, predominantly in the northern, south-eastern and south-western quadrants. A single prehistoric gully was also identified in the western quadrant. Some prehistoric evidence had undoubtedly been lost however due to truncation by later features and/ or post-medieval and modern (predominantly agricultural) activity. In addition to scattered linear features, including at least two possible enclosures, this period contained a fragment of ring-ditch, representing a possible roundhouse (Structure 1), a possible four-post structure (Structure 2) and a cluster/ alignment of pits and postholes.

2.2.2 *Period II (Romano-British)*

The Romano-British period at the former Smoke House Inn spanned the late 1st to late 4th centuries+ AD and comprised seven distinct chronological sub-phases of activity (Table 1). Period II features appeared almost exclusively agricultural in nature being foremost characterised by a series of complex, rectilinear enclosure systems. These first appeared in the northern quadrant of the site with enclosures in the south and west developing later. The enclosure systems culminated in a 'ladder' system dated to the mid-3rd to early 4th centuries, which was in turn superseded by one very large and several smaller enclosures prior to the cessation of Roman activity.

2.2.2.1 Roman Sub-Phase 1 (late 1st to early 2nd century AD)

Roman Sub-Phase 1 comprised the late 1st and early 2nd centuries AD. The pottery record implies significant levels of Roman activity from the first quarter of the 2nd century onwards. Roman Sub-Phase 1 features, mainly ditches and gullies, were most concentrated in the northern quadrant (Fig. 4) and formed at least one definable enclosure (Enclosure 3). Features were also present, to a lesser extent, in the western and south-western quadrants. No structural evidence was associated with this phase.

2.2.2.2 Roman Sub-Phase 2 (early to mid/ late 2nd century AD)

Roman Sub-Phase 2 witnessed a large-scale intensification of activity, chiefly characterised by three successive systems of enclosures (Fig. 5). These were mostly confined to the northern quadrant, although an increased level of activity was also noted in the south-eastern and south-western quadrants. The Roman Sub-Phase 2 linear features appeared to have been cut, recut and/ or superseded continually within a relatively small area and over a short period of time. Fourteen layers/ spreads and a single grave were also assigned to this sub-phase, further attesting to an intensification of activity at the site, although structural remains were again absent.

2.2.2.3 Roman Sub-Phase 3 (late 2nd to early 3rd century AD)

Roman Sub-Phase 3 was characterised by successive systems of rectilinear enclosures (Fig. 6), the constituent features of which had been greatly modified and/ or superseded over a short space of time. This sub-phase also witnessed increasing levels of activity and more formalised enclosure in the south-eastern and south-western quadrants. The later (Roman Sub-Phase 5) 'ladder' system of enclosures in this part of the site (see below) conformed to longstanding boundary alignments first established during Roman Sub-Phase 3. This implies significant continuity of land use. No structures were identified within this sub-phase.

2.2.2.4 Roman Sub-Phase 4 (early to mid-3rd century AD)

Roman Sub-Phase 4 was again characterised by a system of rectilinear enclosures, mostly confined to the northern quadrant of the site (Fig. 7). Linear features were less abundant to the south. Nonetheless, continued enclosure of the south-eastern and south-western quadrants throughout Roman Sub-Phase 4 was suggested by continuity of earlier (Roman Sub-Phase 3) and later (Roman Sub-Phase 5) ditch alignments in this area (Figs. 6 and 8). A possible aisled building (Structure 3) was also identified within this sub-phase. This building appeared to be of modest construction.

2.2.2.5 Roman Sub-Phase 5 (mid-3rd to early 4th century AD)

Roman Sub-Phase 5 witnessed an intensification of enclosure activity across the south-eastern and south-western quadrants of the site as well as the establishment of enclosures in the western quadrant (Fig. 8). A large rectilinear 'ladder' system of enclosures was identified along with three associated structures (Structures 4-6). These appeared to comprise the remains of post-built 'granaries' (see Cunliffe 2010, 411). Various possible trackways were also present in the south-eastern and south-western quadrants. In contrast, the northern quadrant of the site contained relatively few Roman Sub-Phase 5 features and no definable enclosures.

2.2.2.6 Roman Sub-Phase 6 (early to mid/ late 4th century AD)

The most prominent feature of Roman Sub-Phase 6 was a massive enclosure/ field (Enclosure 35) traversing much of the excavated area (Fig. 9). A possible livestock pen/ race was identified close to the south-eastern edge of Enclosure 35, although molluscan evidence from Layer L3947, *c.* 80m to the east, was not suggestive of grazing activity. Nonetheless, the Roman Sub-Phase 6 animal bone assemblage contained all major 'farmyard' species. At least four other Roman Sub-Phase 6 enclosures were identified.

Four structures were also identified within Roman Sub-Phase 6, including a possible roundhouse (Structure 10) located in the western quadrant. The remaining structures comprised a post-built granary and two possible pens. Various pit and posthole/ stakehole clusters were also encountered.

2.2.2.7 Roman Sub-Phase 7 (mid to late 4th century+ AD)

Roman Sub-Phase 7 comprised just three ditches/ gullies, two pits and two layers (Fig. 10). The successive C-shaped 'footings' of two structures (Structures 11 and 12) were present within the northern quadrant.

2.2.3 *Period III (post-Roman)*

Post-Roman activity at the site (Fig. 11) was largely agricultural in nature and on a much reduced scale compared with earlier periods. The majority of Period III ditches and gullies were broadly parallel to boundaries depicted on the 1882 and 1904 Ordnance Survey maps. A short section of walling (M4379) and six animal burials were also encountered. Three of the latter were partially enclosed by an area defined by Wall M4379 and associated features. A possible quarry Pit was identified in the far northern corner of the northern quadrant.

3 ACADEMIC AIMS AND OBJECTIVES

Together, the following tasks and research themes comprise a method statement for post-excavation analysis and production of the Research Archive Report and Publication Report. Resources/ staffing requirements are stated in each case (a full staff list is presented in Section 5). Many tasks/ themes are heavily reliant upon the results of specialist analysis. Individual specialist statements are presented in Section 4, below.

3.1 Preparative Tasks

3.1.1 *Task 1*

Integrate the results of the trial trench evaluation (Suffolk County Council Archaeological Service (SCCAS))

- Arrange collection of site archive from Suffolk HER.
- Correlate features/ deposits recorded during the evaluation with those found during the excavation and amend/ expand the site narrative and feature concordances accordingly.
- Add finds and environmental evidence to specialist databases.
- Add finds and environmental evidence to finds distribution plots (see Section 2.1.3, below).

3.1.2 *Task 2*

Investigate the feasibility of analysing and integrating elements of the unpublished SCCAS sites immediately surrounding MNL 638 (Sites MNL 570, MNL 598, MNL 619 and MNL 608).

- It would be desirable to jointly analyse these sites during post-excavation and publish them together as they represent elements of the same archaeological settlement landscape.

- Consult the grey literature reports/ archives for these sites, specifically the state of phasing and specialist analysis and reporting. Discuss progress and intended publication format with the Project Officer/ Manager at SCCAS and the County Archaeologist.
- It is anticipated that these sites are insufficiently progressed for full inclusion of their stratigraphic and specialist data in the archive and publication reports for MNL 638.
- Assuming the above, consideration of these sites is likely to be limited to discussion of: apparent links/ continuations between enclosures and other features and broad comments regarding the overall scale, diversity, character and layout of the Roman settlement suggested when the sites are viewed collectively. The reports on MNL 638 must therefore emphasise the caveat that only one part of the settlement is being subjected to full analysis. Greater integration may however be possible.
- Comparison and discussion of links with the adjoining Roman Maltings (MNL 502; Bales 2004) will be more detailed.

3.1.3 *Task 3*

Compile distribution plots of finds by phase (struck flint (for Period I only); pottery (separately by sherd count and weight so that 'primary' deposits can be better distinguished from heavily reworked and redeposited material); CBM) in order to appreciate any spatial and chronological patterning of different activities, or discard, within the settlement.

- As they are relatively few in number, the locations of small finds, coins and any particularly rich assemblages of plant macrofossils/ crop processing debris will be indicated on the relevant phase plans rather than on separate distribution maps.
- The plotting of animal bone distribution by either fragment count or weight is liable to lead to a skewed picture due to the high number of variables involved (e.g. the weight of some particularly large or robust skeletal elements, particularly those of cattle and horse, the weight of soil contained within marrow cavities and high levels of fragmentation). Therefore, plotting of animal bone distribution on the phase plans will be restricted to the Roman (Period III, Sub-Phase 6) Associated Bone Groups (ABG's; complete or partial articulated skeletons) and any particularly large or distinctive assemblages as identified by the specialist (see Section 4, below).
- The locations of human burials and other skeletal material will also be indicated on the individual phase plans.

3.1.4 *Task 4*

Complete specialist finds and environmental analysis and reporting.

- Specialists' MAP2 statements are presented below (Section 4).

3.2 Research Themes

3.2.1 *Local Context*

Identify links between MNL 638 and those sites immediately surrounding it, both the published 'Maltings' site (MNL 502, Bales 2004) and the unpublished SCCAS evaluations and excavations (Sites MNL 570, MNL 598, MNL 619 and MNL 608).

- Is it possible to identify continuations of enclosures, boundaries and other features between the sites?
- Are there features seen at the other sites which are not present at MNL 638 or vice versa (e.g. there are at least two large aisled buildings on the maltings and adjacent sites) and what does this indicate about the overall nature and organisation of the settlement?
- Does MNL 638 'fit' with the chronology, sequence of development and layout seen at the adjacent sites or is it different/ anomalous?
- The scope and depth of this investigation will depend to some extent on the results of Task 2 (see Section 2.1.2, above). As a minimum, it will be possible to look for continuations of features between the different sites and to make a provisional assessment of the overall scale, layout and character of the Roman settlement over time.

Investigate the context of MNL 638 and associated sites within the local Romano-British landscape.

- How do MNL 638 etc. relate to other Romano-British sites in the local area? How were different parts of the local landscape/ different natural environments being used during the Romano-British period?
    - Perform an HER search for Romano-British sites/ finds within a *c.* 5-10km radius of MNL 638.
    - Plot HER records by type (e.g. building/ 'villa', coins, metalwork, burials etc.) against the natural and human topography (e.g. rivers, contours, the fen edge, drift geology, Roman roads and infrastructure, Icklingham 'small town'). Sources of background information for the local landscape include the relevant sections in Dymond and Martin (1999, Sections 2-5), Scarfe (2002), Warner (1996) and the Suffolk Landscape Characterisation project (website).
    - Look for any patterns in the distribution of different kinds of activity. How does the Beck Row settlement fit into this pattern of land use?
    - The sites form part of a dense band of Romano-British rural settlement extending along the North-west Suffolk and West Norfolk fen-edge, known from surface finds (Moore *et al.* 1988, 56-7) and other excavations.
- How, if at all, does the Beck Row settlement relate to other excavated Romano-British settlement sites in the local area, e.g. Base Perimeter Road (MNL 600; Brooks 2010) and the 'villa' at Thistley Green, Mildenhall (MNL 064; Moore *et al.* 1988, 57)? Could the Beck Row settlement represent part of a farm/ agricultural estate associated with the latter?
- Is it possible to identify similarities/ differences between the Roman rural settlement at Mildenhall and that at Caudle Head, Lakenheath (Caruth 2008),

which represents another part of the band of intensive Roman settlement along the fen-edge? The potential for detailed comparison is likely to be limited by the status of post-excavation analysis on the latter site.

3.2.2 *Settlement Morphology*

Investigate the (evolving) layout and organisation of the settlement/ enclosure system(s).

- MNL 638 must be viewed as just part of a larger settlement (see Section 2.1.2, above). How do the boundaries at the site relate to those on the surrounding sites (MNL 502, MNL570, MNL 598, MNL 608 and MNL 619)?
- Where were buildings (including conjectured buildings; see Section 2.2.3, below) and occupation areas located in relation to the enclosures and did this change over time?
- Was the evolution of the settlement and enclosure system gradual or were there periods/ episodes of more wholesale change and reorganisation (considerations will include expansion or contraction of the settlement, abandonment of specific areas, elaboration, subdivision or enlargement of individual enclosures, redefinition, repositioning or removal of major boundary features, changes in points of access or axes of movement, movement of buildings and focuses of occupation, shifts in patterns of discard)?
    - Due to the probable lack of detailed phasing information for the surrounding sites (see Section 2.1.2, above), detailed discussion of this theme may necessarily be limited to MNL 638 and, possibly, MNL 502 (Bales 2004).
- What, if anything, does the size and layout of the enclosures suggest about the nature of agricultural land use (e.g. stock management)? The extent to which the size and shape of fields can be related to different agricultural regimes has been identified as a regional research question (Medlycott 2011a, 47). Clear associations between Romano-British landscape features and livestock husbandry have been identified, for example, at Cambourne New Settlement (Wright *et al.* 2009, 89), *c.* 40km west-south-west of Beck Row, and at the Brandon Road site, Thetford (Atkins and Connor 2010, 11, 108), *c.* 17km to the north-east. Analysis of the archaeozoological assemblage from MNL 638 (Cussans and Curl, *this volume*) will guide any conclusions.
- Does the size and layout of the enclosures and positions of buildings (both identified and conjectured) at Beck Row suggest anything about the social structure of the community or their attitudes towards land allotment?
    - It will probably not prove possible to say much beyond the fact that the inhabitants seem keenly concerned with demarcating what land was owned by whom or used for what, suggesting some level of order, organisation and pressure on the available land, although it may be possible to suggest changes over time in regard to these issues.
- Can any links be identified between changes over time in settlement layout and the nature of the principal activities being carried out, *i.e.* shifts in the agricultural regime?
- Are patterns in the spatial distribution of different activities apparent from the phased finds plots (see Section 2.1.3, above)? Is there any correspondence

between these patterns and the positions of buildings (including conjectured buildings) or particular enclosures? Can 'functions' be ascribed to different parts of the site on this basis? Do the artefact distributions appear to relate directly to the locations where particular activities were carried out or do they relate more to the dumping of waste/ residues from those activities?

Identify similarities/ differences with the layout of other Roman rural settlements, both locally and regionally.

- How can the overall layout of the enclosures, buildings and other features at the Beck Row settlement (when viewed, as far as possible, together) be characterised?
    - Applying a terminological label to the excavated plan of the settlement may be both difficult (given the lack of consistency in the terminology used for different settlement 'types' (*cf*. Medlycott 2011a, 47)) and of little value for reaching a better understanding of the factors responsible for its growth and development, its economic basis, its 'function' and place in the local/ regional settlement hierarchy and the status and cultural affiliations of its inhabitants (*cf*. Taylor 2001, 48-9). Recent research into Roman rural settlement has highlighted that investigating the way that settlement space was used by the inhabitants is of more importance than the outward forms of its boundaries and buildings (*ibid*.).
    - In view of these considerations, a better way to investigate the morphology of the Beck Row settlement and what it tells us is to analyse how the layout of the settlement and enclosure system developed over time and the changing spatial distribution of different activities within it (see above) and to then compare and contrast this with other excavated Romano-British rural settlements in Suffolk and the wider region (principally East Anglia). Principle sites for comparison are listed below (Section 3).
- Can morphological similarities/ differences between Beck Row and other Roman rural sites in the region be explained in terms of their respective locations, topographical/ geological contexts, agricultural regimes or 'status'? Do any aspects of the current site's morphology/ layout stand out as unusual or distinctive when compared with other rural settlements and what does this suggest about its social/ economic context?

3.2.3 *The Buildings*

Identify any 'missing' buildings

- Intensive occupation is indicated by the large (and in many cases un-abraded) pottery and animal bone assemblages but this is difficult to reconcile with the paucity of archaeological evidence for structures. Is it possible that other buildings were constructed in a way that did not leave any archaeological trace, for example, being built on above-ground sill beams or foundation pads, without 'cut' foundations?

  - Some other Roman sites in Suffolk and Norfolk are thought to have had 'missing' structures, including Brancaster (Hinchliffe with Sparey Green 1985, 32) and Hacheston (Moore *et al.* 1988, 39, *Ill*. 21).
- Could any of the focuses of activity/ rubbish dumping indicated by the artefact distribution plots represent the positions of 'lost' buildings?
- Could the 'gaps' in the busy site plan, where there are no enclosure ditches, indicate the positions of 'missing' buildings?
  - It may be worthwhile adding the positions of any conjectured missing buildings to the phase plans.
- Do the concentrations of ceramic building material (mostly roof tile and mainly present in two or three specific layers/ dumps) correspond in any way with other artefact distributions or 'blank' spaces in the enclosure system? If so, could they represent the collapsed or cleared tile roofs of timber-framed buildings constructed without earth-fast foundations? Alternatively, they might simply represent CBM imported to the site for use as hardcore/ levelling material.

The sub-rectangular buildings in the south-east quadrant of the site

- The small group of *c*. 3 distinctive sub-rectangular foundation slots/ eaves-drip gullies in the south-eastern quadrant of the site (F4190=4982, F4363=4192 and F5134), in some cases also associated with postholes, are unusual and of interest for understanding rural Romano-British building types. They are broadly similar in appearance to later Roman Structures 6 and 8 excavated at Kilverstone (Garrow *et al*. 2006, 117, figs. 4.17-8). Do they represent a local building 'type' or do parallels exist further afield, either in East Anglia or beyond?
- Is it possible to identify the method of their construction from the surviving foundations (e.g. beam slot, post-in-trench)?
- Do the finds from the structural features themselves or from the immediate vicinity reveal anything about their construction/ function/ use?
- Does the identification of these features as structural (possible here because of their relatively complete nature and spatial clustering) help in the identification of other more partial/ truncated examples of similar structures elsewhere on the site, e.g. there are some possible examples in the south-western quadrant (Gullies F3903, F4004 and F4042) and in the northern quadrant (Gully F1408)?
  - Further interrogation of the stratigraphic evidence and period/ sub-phase plans, looking particularly at any unresolved short and narrow gullies that are not obviously related to contemporary enclosures.

Other Buildings

- At least two identified buildings, the possible Period I roundhouse and Period II (Sub-Phase 4) six-post sub-rectangular structure, are typical of late Iron Age and Romano-British rural sites and of limited interest in themselves (especially in the absence of surviving surface features or large quantities of associated occupation material). Of greater interest is their 'function' within the settlement and in relation to the daily lives of the Romano-British population. Do the positions of these buildings in relation to the contemporary

enclosures or to artefact distributions (see Section 2.1.3, above) reveal anything about their function(s)? Were any similar structures identified on other sites in the immediate vicinity or further afield?

- The Period I ?roundhouse, although much extrapolated, was similar to examples from nearby MNL 502 (Bales 2004), Structure 5 at Kilverstone, Norfolk (Garrow *et al.* 2006, 118) and two possible examples from the Brandon Road site, Thetford (Atkins and Connor 2010, 11). Similar structures further afield include a 2nd to 3rd century roundhouse (SG183) at Ash Plantation (near Bourn Airfield; Abrams and Ingham 2008, 48-9, fig. 3.10), *c.* 40km west-south-west of Beck Row.
- The Period II six-post structure was located towards the south-eastern corner of a contemporary enclosure system with which it was aligned. A similar relationship was observed between Building 2 (Period III) and surrounding ditches at the adjacent Maltings site (Bales 2004, 15, fig. 7). In fact, the orientation of the six-post structure at MNL 638 was identical to Buildings 1 and 2 at MNL 502.

- Could the shallow hollow containing L3609 (Grid Square R15) represent the remains of a structure (which may also have had 'lost' above-ground elements)? It is somewhat similar in appearance to several of the 'sunken' Roman buildings identified at Lower Cambourne and Jeavon's Lane, Cambourne (Wright *et al.* 2009, 23-6, fig. 10, 46-7, fig. 18).
- Is it possible to identify any other structures in the central south-eastern area of the site (SCCAS site MNL 608), as this area appears to be a particular focus for structures, domestic or otherwise?

3.2.4 *The Agricultural Economy*

The kinds of agricultural activities that were taking place?

- What types of agriculture were being practised – arable, pastoral, mixed? Was the regime specialised or broad-based? What were the principle cultivars? What level(s) of crop processing occurred? Were animals being exploited for primary (e.g. meat) or secondary (e.g. milk, wool, and traction) products? Is there any evidence, environmental or archaeological, for surplus production and, if so, what 'market' might this surplus have been intended for?
  - This theme will be principally addressed via specialist analysis (see Section 4, below). However, overall synthesis and consideration of broader questions will be a joint task with the Project Officer (Post-Excavation).

Shifts in economic foci over time

- Are any changes detectable in the types of agriculture being carried out, or the scales/ focuses of production over time?
- Can any temporal changes in the agricultural regime be linked to concurrent changes in site layout?
- Is there any change in the size of livestock over time, which might contribute to debates regarding Roman period stock introductions/ improvements?

- This theme will be principally addressed via specialist analysis (see Section 4, below).
- The extent to which the size and shape of fields can be related to different agricultural regimes has been identified as a regional research question (Medlycott 2011a, 47; see Section 2.2.2, above).

Identify links with the site's topographical and environmental context

- How might agricultural land use relate to the site's specific topographical and environmental context and the local geology/ soils? Millett (1995, 29-37) identifies the analysis of Romano-British settlements within their "landscape context" as crucial to our understanding of this period (after Atkins and Connor 2010, 109).
  - For example, evidence from RAF Lakenheath suggests the existence of Romano-British droveways connecting winter heathland pastures to summer grazing lands on the Fen edge (Caruth 2003; Craven 2005). At the early Bronze Age settlement of West Row Fen (Martin and Murphy 1988), it was suggested that the occupants were engaged in similar medium-distance transhumance between seasonal pasturelands. Although a different period, the environmental backdrop is to some extent a constant and would have had a similar influence on local agriculture during the Romano-British period.
  - The density of Romano-British settlement indicates that the Suffolk fen-edge was a very productive area in agricultural terms but its economic basis is not yet well understood (Moore *et al.* 1988, 56-7). Regionally, there is still a need to "…understand the Roman agricultural 'norm', against which [ecofactual] assemblages can be compared" (Medlycott 2011a, 46); the large faunal assemblage recovered from MNL 638 will make an important contribution to this regional research theme.

Identify similarities and differences with other Romano-British rural sites

- How does the agricultural economy of the Beck Row settlement compare with other Roman rural settlements in East Anglia? This theme will be principally addressed via specialist analysis (see Section 4, below); comparative sites for specialist analysis include Cedars Park (Nicholson and Woolhouse, forthcoming) and Melford Meadows (Mudd 2002) in Suffolk, Brancaster (Hinchliffe with Sparey Green 1985) in Norfolk, Bottisham (McConnell *et al.* forthcoming) and Haddon (Hinman 2003) in Cambridgeshire and Stansted Airport (Havis and Brooks 2004; Cooke *et al.* 2008). A working list of comparative sites is presented in Section 3.
- What do the similarities/ differences suggest about the social and economic character of the Beck Row settlement and its inhabitants?

3.2.5 *Industry*

- What, if any, forms of industry were being practiced on the site – pottery production, smithing, malting? Can the scale of industrial enterprise be determined? How does this compare to other sites, both locally and regionally?

- It is likely, given the existence of a Romano-British ?maltings at neighbouring MNL 502 (Bales 2004), that activities being carried out on both sites were linked to this industry. Malted cereal grain has been identified from MNL 638 (see Summers *this report*).
- There is no clear evidence for pottery production at the site. Nonetheless, any concentrations of industrial waste products, such as slag, might indicate some level of industry in the immediate vicinity.
- The possible *kiln* (F3605) identified in the northern quadrant of the site is physiologically similar to *Ovens* reported from Foxholes Farm, Hertfordshire (Partridge 1989, 42-4, figs. 21-3). Similar features have been reported from sites across East Anglia. What does comparison with these features and assessment of environmental samples from F3605 tell us about the function of this feature?

3.2.6 *Wider Economic and Social Contexts*

Roman administration and land ownership in the Fenland

- Does the settlement reveal anything about the nature of Roman-period land ownership, administration and taxation in this Fen-edge area, particularly anything relevant to the ongoing debate about whether the Fenland was an imperial estate? Identification or dismissal of an imperial fenland estate has been highlighted as a regional research theme (Medlycott 2011a, 47).
  - It is unlikely that this excavation alone can make a significant contribution to this research theme. However, the site report will need to include a brief discussion of this background context and the issues of land tenure, control and taxation will need to be borne in mind throughout post-excavation analysis. Sources of information for the 'debate' about the Roman Fenland include Phillips (1970), Potter (1981; 2000), Gurney (1986a), Hingley (1989; 1991), Jackson and Potter (1996), Taylor (2000), Potter (2000), Salway (2001) and the *East Anglian Archaeology Fenland Survey* volumes.
  - Any evidence for formal settlement planning or reorganisation or for agricultural surpluses leaving the site could be relevant to these themes. However, neither is necessarily related to external control or tax collection. This theme will involve an assessment of the sites morphology over time (Section 2.2.2, above), integrated with specialist data (see Section 4, below).

Roman-period society in northern East Anglia

- What, if anything, does the overall character of the site reveal about the social organisation, 'status', cultural affiliations and 'identity' of its inhabitants?
  - Some research has suggested that northern East Anglia had some distinctive characteristics during the Roman period – essentially, that the local population remained to some extent 'Iron Age' in their social structure and cultural identity/ aspirations (after Garrow *et al.* 2006, 99ff). Rather than investing wealth in traditional Roman status symbols such as civic munificence and masonry buildings (there are few towns and villas), they may have been more interested in investing in cattle,

displays of portable wealth (perhaps accounting for the large number of spectacular late Roman metalwork hoards in the area), and communal feasting (Hingley 1989, 159; Hingley 1991, 79; Taylor 2000, 56). This is not necessarily evidence of 'backwardness' or a lack of Romanisation but a conscious choice.

- Investigation of this rather large-scale theme will involve a synthesis of all the various strands of evidence and an assessment of what they show about the settlement's development cycle, organisation, architecture, economic basis, trade and communication links, patterns of production/ consumption and the beliefs of its inhabitants. This overall picture can then be compared with that from other excavated Roman settlements in East Anglia (see Section 3, below) and an assessment made of similarities/ differences. Unusual or distinctive aspects may become apparent, as may local or regional patterns.
- Potentially distinctive aspects of the site, which might have a bearing on this theme include: the absence of masonry buildings (though there is evidence for some in the wider area, for example, at Thistley Green close to the findspot of the Mildenhall Treasure; Moore *et al.* 1988, 57), the unusually large proportions of samian cups (pottery analysis so far suggests that the proportions are more in keeping with military and urban sites than rural settlements, and are higher than some villas) and other tableware – which might tentatively be linked to communal or ritual feasting, and the scarcity of coins and other metalwork such as personal dress items[1] (though, again, there is no shortage of coins and metalwork in the wider area; Moore *et al.* 1988, 56-7). In view of the large quantities of regionally-imported pottery, the inhabitants of Beck Row clearly had something to trade (likely agricultural surpluses) and were connected with the major Roman markets, so poverty seems an unlikely explanation for the lack of stone buildings and metalwork. These aspects will be further investigated through specialist analysis of the relevant finds assemblages and comparison with other Roman settlements to see if they are indeed unusual or whether they fit with wider regional patterns of behaviour.

3.2.7 *Chronology*

Are major junctures in the Roman conquest, occupation and abandonment of Britain archaeologically identifiable at MNL 638 and/ or within the wider region?

- What impact did the Roman Conquest/ 'Romanisation' have on rural settlement in East Anglia?
  - Investigation of this theme will involve a synthesis of archaeological (PO) and specialist data (see Section 4, below). The results of this inquiry will be compared with the 'picture' of prehistoric/ Roman transition reported from other sites, both local and regional (see section 3). Is MNL 638 comparable or dissimilar?

[1] It should be noted that, based on the findings of the trial trench evaluation (Craven 2009) and the excavation of adjacent site MNL 598, a greater number of metal artefacts were expected from the site (Plouviez *pers. comm.* 2013)

- Rates of 'Romanisation' (if such a thing exists); when and at what rate do major changes in site morphology and economy occur (see Section 2.2.2, above)?
    - Are there any signs of major changes at particular times, e.g. the impact of '3rd century crisis'? The latter 3rd century has long been seen as a period of turmoil, in the East of England especially, linked to high levels of inflation and the threat of Saxon raids (after Abrams and Ingham 2008, 79).
- End date – what settlement pattern is reported from the wider area in 4th and early 5th century? How does the Beck Row settlement compare to the wider regional pattern?
    - This theme relies heavily on defining an end-date for Romano-British settlement at the site (see Section 4).

3.2.8 *Burial/ Ritual*

Infant burial

- A single infant burial was found dating to the mid/ late 4th century AD. It should prove possible to assess this burial within a regional (rural) Romano-British context.
    - For example, two infant burials were found interred within 'scoops' at Kilverstone in Norfolk (Garrow *et al.* 2006, 112). The older of the two was aged 9 months ±3 months while the younger individual died at birth ±2 months (*ibid.*). The partial, disarticulated remains of neonates/ infants were recovered from six other features at Kilverstone (*ibid.*).

Cremated bone

- Two cremations, one unstratified and one from Roman Sub-Phase 6 (early to mid/ late 4th century AD) Pit F1068, were found. Both were contained within Wattisfield reduced ware jars. The unstratified jar dates between the 2nd and 4th centuries AD, while that from F1068 is a shouldered jar with an everted bead rim (Arthur and Plouviez 2004: type 29), an early form that could feasibly have retained currency throughout the Romano-British period (Peachey forthcoming a).
    - Both cremations are worthy of comparative study, especially considering the relative scarcity of later Roman evidence; the cremation rite was gradually superseded by burial throughout the empire from the 1st/ 2nd century AD transition (Toynbee 1996, 33-4). An urned cremation of early/ mid 2nd to late 3rd/ early 4th century date is known from St Clare Road, Colchester (Shimmin 2011, 11), while a late 4th century AD cremation associated with 'Romano-Saxon' ware (after Baker 2006) was found at Billericay (Weller *et al.* 1975).

Isolated unburnt remains

- Isolated, unburnt human bone was recovered from twelve Romano-British contexts. These include the fragmented remains of an adult from Grave F3289, a young juvenile from Grave F2731 and disarticulated adult remains

from the fill of Ditch F3502. Isolated neonatal and adult elements were also encountered. It should prove possible to assess these burials and occurrence of disarticulated remains within a regional (rural) Romano-British context.

- Regional examples of Romano-British adult inhumations within a similarly rural context include a single inhumation from the corner of Enclosure G5 at Childerley Gate (Site 5), Cambridgeshire (Abrams and Ingham 2008, 55, 57, fig. 3.15), and three adult inhumations from within a later Roman enclosure at Kilverstone, Norfolk (Dodwell and Challands 2006, 118-20). The fragmented and degraded remains of a single sub-adult (14-17 years) individual were found along the route of the A505 Baldock Bypass, Hertfordshire (McKinley 2009, 121).
- The disarticulated remains of neonates/ infants were also found at Kilverstone, Norfolk (Garrow *et al.* 2006). Examples of disarticulated adult bones were recovered from four mid Roman (non-funerary) deposits at Childerley Gate, Cambridgeshire (Powers 2008, appendix 12).

Animal burials

- Period II animal bone ABG's have been identified in comparatively high numbers from the site.
  - Assessment of this material (Section 4) may shed light on possible ritual activity, as well as adding to our knowledge of Romano-British ABG's on a national level. More prosaic explanations for animal burial will also be discussed.

Other structured deposits

- Are any other structured deposits identifiable? If so, discuss the nature of the debate and the problems of identifying them.

3.3 Compile Research Archive Report

- Write report background (circumstances of project; location, topography and geology; archaeological and historical background; excavation and sampling methodologies; methodology for post-excavation analysis and phasing). This section will make detailed reference to earlier archaeological work undertaken in the area, including the trial trench evaluation of the current site (MNL 618) and excavation in the area of the former hotel buildings (MNL 608). Elements of this work have already been completed.
- Finalise site narrative, including incorporation of editor's/ mentor's changes and suggestions for improvements, changes of interpretation arising from post-excavation analysis and research, and fuller integration of the finds and environmental evidence. The narrative will make detailed reference to the findings of earlier archaeological projects in the immediate area, including the trial trench evaluation of the current site (MNL 618) and excavation in the area of the former hotel buildings (MNL 608), with a view to broader integration of earlier work at the publication stage.
- Format, edit and incorporate completed specialist reports.
- Proof-read and edit Discussion.

- Compile appendices and accompanying specialist data CD.
- Check and correct figures.

3.4 Compile Publication Report

3.4.1 *Proposed Format*

It is anticipated that the results of the excavation will be published as an *East Anglian Archaeology* (EAA) monograph, so that the results of specialist analyses can be included in full. A joint publication including the current site and those sites in the immediate environs (i.e. MNL 608 and MNL 598) would be preferable as it would facilitate a more detailed analysis of archaeological, finds and environmental data. A reassessment of results from the nearby Roman Maltings site (MNL 502) may also be possible based on the publication findings.

Although large (2.6ha), the range of settlement-related features identified on site was limited, with relatively few structures, burials or 'service features' such as latrines or wells. However, the significance of the excavation is considerably enhanced by the large artefactual and environmental assemblages, particularly the pottery and animal bone, but also to some extent the carbonised plant macrofossils, which derive from an extensive bulk sampling programme. The research value of these for examining Roman pottery supply, trade and consumption in Suffolk and on the agrarian economy of the Roman-British fen-edge settlements is of regional significance. In two respects, both relating to the large faunal assemblage, the site is significant on a national level and comparisons with sites beyond northern East Anglia may be appropriate: the large number of Roman ABG's and the possibility of identifying and discussing changes in livestock size over time. The latter will facilitate further discussion of Roman stock introduction/ improvement.

3.4.2 *Summary*

The monograph will comprise a discussion of the background of the project followed by a detailed description and analysis of features, principally those constituting major landscape divisions, structures and other significant entities, with emphasis being placed on the overall structure and development of the site and adjoining sites MNL 598 and 608. The archaeological description will focus on Period II (Romano-British) as this constitutes the principle episode of human activity. Local and regional comparisons will enable subsequent discussion of the site within the broader Romano-British landscape. As the principle interest of the site lies in the large artefactual and environmental assemblages recovered, specialist reports will be presented in full and data tables will be included as appendices, including electronic appendices if necessary. Significant finds, animal bone assemblages and environmental data will also be integrated within the archaeological narrative. An overall discussion will be presented at the end of the monograph.

3.4.3 *Report Breakdown*

Table 2 presents a breakdown of anticipated monograph statistics.

Summary of anticipated monograph statistics	**Approximation**
Words	*c.* 21,050 – 32,200
Tables	1+ (pending specialist analyses)
Figures	39
Plates	pending specialist analyses

Table 2: Anticipated monograph statistics

3.4.3.1 *Front End* (*c.* 500 words)

The following sub-sections comprise an edited/ abridged version of those specified by EAA (notes for authors):

Title page
Contents
List of Plates/ Figures/ Tables
Contents of Additional Material (electronic, if any)
List of Contributors (with affiliations)
Acknowledgements

3.4.3.2 *Summary* (*c.* 250-300 words)

- Contents — Summary of the project background, phasing, features/ layers, major landscape entities (e.g. enclosures and structures) finds and interpretation.
- Tables -
- Figures -
- Plates -

3.4.3.3 *Introduction and Background* (*c.* 300-400 words)

- Contents — Context of the project and a summary of background information. List of any conventions adopted in the text.
- Tables — Period/ sub-phase numbers and date ranges.
- Figures — Site location plan and detailed site location plan, including areas of previous excavation.
- Plates -

3.4.3.4 *Geology and Topography* (*c.* 200 words)

- Contents — Description of the site's situation, with particular emphasis placed on its fen-edge location and references to the immediate environment (summarised later).
- Tables -
- Figures — Topographical plan of the site and its hinterland.
- Plates -

3.4.3.5 *Archaeological and Historical Background* (*c.* 700 words)

- Contents Overview of the archaeological and historical background of the Beck Row/ Mildenhall area with particular emphasis on the Romano-British period. This section will draw heavily from the Historic Environment Record (HER) and grey/ published literature (joint authorship with P. Thompson, AS).
- Tables -
- Figures -
- Plates -

3.4.3.6 *Excavation and Recording* (400 words)

- Contents Requirements of the brief and specification briefly outlined. Summary of the methods and results of the evaluation. Aims and methods of the excavation described, with particular emphasis on artefact/ ecofact recovery and the environmental sampling programme.
- Tables -
- Figures Overlay plan of the evaluation trenches and excavation quadrants.
- Plates -

3.4.3.7 *Excavation Results*

Period I (pre-Roman) (1000 words)

- Contents Description and interpretation(s) of the Period I features. Comparisons with surrounding sites, e.g. MNL 502 (Bales 2004). Transition between the Bronze Age/ Iron age and Romano-British period.
- Tables -
- Figures Period (phase) plan, sections, plan of the Period I ?roundhouse and plan showing finds (struck flint) distribution.
- Plates -
- Specialist Integration of specialist data as appropriate.

Period II (Romano-British) (5000-10,000 words)

Roman Sub-Phase 1 (Late 1st to early 2nd century AD)

- Contents Description and interpretation(s) of the Roman Sub-Phase 1 features. Local and regional comparisons.
- Tables -
- Figures Sub-phase plan (including numbered enclosures), sections and plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist Integration of specialist data as appropriate.

Roman Sub-Phase 2 (early to mid/ late 2nd century AD)

- Contents — Description and interpretation(s) of the Roman Sub-Phase 2 features. Local and regional comparisons.
- Tables -
- Figures — Sub-phase plan (including numbered enclosures) and sections. The sub-phase plan must be shaded or similar in order to clearly define individual enclosure systems. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist — Integration of specialist data as appropriate.

Roman Sub-Phase 3 (late 2nd to early 3rd century AD)

- Contents — Description and interpretation(s) of the Roman Sub-Phase 3 features. Local and regional comparisons.
- Tables -
- Figures — Sub-phase plan (including numbered enclosures) and sections. The sub-phase plan must be shaded or similar in order to clearly define individual enclosure systems. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist — Integration of specialist data as appropriate.

Roman Sub-Phase 4 (early to mid-3rd century AD)

- Contents — Description and interpretation(s) of the Roman Sub-Phase 4 features. Local and regional comparisons.
- Tables -
- Figures — Sub-phase plan (including numbered enclosures) and sections. The sub-phase plan must be shaded or similar in order to clearly define individual enclosure systems. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist — Integration of specialist data as appropriate.

Roman Sub-Phase 5 (mid-3rd to early 4th century AD)

- Contents — Description and interpretation(s) of the Roman Sub-Phase 5 features. Local and regional comparisons.
- Tables -
- Figures — Sub-phase plan (including numbered enclosures), sections and plan(s) of the Roman Sub-Phase 5 structures. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist — Integration of specialist data as appropriate.

Roman Sub-Phase 6 (early to mid/ late 4th century AD)

- Contents Description and interpretation(s) of the Roman Sub-Phase 6 features. Local and regional comparisons.
- Tables -
- Figures Sub-phase plan (including numbered enclosures) and sections. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist Integration of specialist data as appropriate.

Roman Sub-Phase 7 (mid to late 4th century+ AD)

- Contents Description and interpretation(s) of the Roman Sub-Phase 7 features. Local and regional comparisons.
- Tables -
- Figures Sub-phase plan (including numbered enclosures) and sections. Plan showing finds (CBM and pottery) distribution.
- Plates -
- Specialist Integration of specialist data as appropriate.

Period III (medieval/ post-medieval) (500 words)

- Contents Description and interpretation(s) of the Period III features. Comparisons with surrounding sites, e.g. MNL 502 (Bales 2004).
- Tables -
- Figures Period (phase) plan and sections
- Plates -
- Specialist Integration of specialist data as appropriate.

Unphased (*c.* 200 words)

- Contents Description and interpretation(s) of the unphased features.
- Tables -
- Figures -
- Plates -
- Specialist If appropriate.

3.4.3.8 *Specialist Reports* (*c*. 10,000-15,000 words)

This section will constitute the presentation of specialist analyses beneath appropriate sub-headings. The provisional order of the latter is as follows:

The Prehistoric (Period I) Pottery
The Roman (Period II) Pottery
The post-Roman (Period III) Pottery
The Small Finds
The Coins
The Struck Flint
The Ceramic Building Materials
The Mortar and Plaster
The Slag
The Animal Bone
The Human Remains
The Environmental Samples
The Terrestrial Molluscs

3.4.3.9 *Discussion and Conclusions* (*c.* 2000-3000 words)

- Contents — A fully integrated discussion of the excavated evidence which will reflect the project's central research themes (Section 2.2). The discussion will focus principally on Phase II (Romano-British) and will concern the evolution of the site within its local, regional and, if appropriate, national context. The central themes for discussion are outlined below.
- Tables -
- Figures -
- Plates -
- Specialist — Many of the discussion themes (below) are reliant on the results of specialist analysis. Reference will be made to specialist reports that support or refute specific hypotheses and/ or conclusions.

<u>Central themes for discussion</u>

Local context and site environment

It is clear that the former Smoke House Inn site forms part of a broader rural settlement landscape, especially during the Roman period, with previously excavated sites in the immediate vicinity (e.g. MNL 502; Bales 2004) and beyond. As such, similarities and contrasts to contemporary sites, both local and regional, will be discussed in order to better understand the nature of the present site within its wider context. Discussion of the site's physical environment will be based on analysis of bulk sample residues, including terrestrial mollusca, from the current site (analysed by Summers) and neighbouring/ regional sites (to include palynological evidence (e.g. Wiltshire 2004)), and the site's geographical and topographical location, especially in relation to Mildenhall Fen-edge. The local context and environment of the site will influence discussion of all subsequent research themes.

Settlement morphology over time

Settlement morphology over time, broadly reflecting the evolving layout and organisation of the enclosure system(s), will directly feed into a discussion of economy and social organisation. Any similarities or differences in settlement morphology between the current site and neighbouring sites (e.g. MNL 502) will form the basis of this discussion. The location, morphology and function of buildings, including conjectured buildings (see Section 2.2.3), will also be key to understanding settlement morphology. The identification of 'Missing' buildings will be based on analysis of finds distribution plots (specifically any concentrations of pottery and building materials; analysed by Peachey).

Economy

Settlement economy, including comparisons to contemporary sites (both local and regional) will form the central discussion theme, being largely based on the results of specialist analyses: *The Charred Plant Macrofossils and Charcoal* (Summers), *The Animal Bone* (Cussans and Curl) and *The Roman Pottery* (Peachey). Industrial evidence, principally Fe finds and metalworking residues (to be analysed by the University of Leicester Archaeological Service), is scarce and will only be briefly considered. Any evidence of other industrial activities, e.g. pottery production (Peachey) and malting (Summers) will also be discussed if appropriate.

Discussion of the agricultural economy will be far more detailed; focusing chiefly on site morphology and the combined analysis of environmental and zoological remains (Summers; Cussans and Curl). Links to the location/ function of buildings will also be made where/ if appropriate. The local and regional context of the site will be integral to any discussion of site economy, especially as regards key economic foci (likely agricultural), trade links and exported/ imported commodities (identification of the latter will depend upon the results of specialist analyses). The sites specific topographical location will have heavily influenced the nature of the rural economy.

Social organisation and ritual

Funerary features were few in number and there is so far little to indicate other 'special' or ritual deposits. As such, discussion of burials and cremations will be brief.

Understanding levels of social organisation, 'status', cultural affiliations and 'identity' in the past will involve a synthesis of all the various strands of evidence (above) and an assessment of what they show about the settlement's development cycle, organisation, architecture, economic basis, trade and communication links, patterns of production/ consumption and the beliefs of its inhabitants. This overall picture will be discussed in relation to evidence from other excavated Roman settlements in East Anglia.

3.4.3.10 *Bibliography*

See section 7 (below) for a provisional list of references, including all those cited within this report.

3.5 Provisional List of Illustrations

Fig. 1 *Site location plan*

Fig. 2 *Detailed site location plan*

Fig. 3 *Topographical plan*
Topographical plan showing the location of the site in respect to known archaeological sites and finds within a 5-10km radius. This plan should also show the location of the fen-edge.

Fig. 4 *All features plan*
This plan should include excavation quadrants but not the site grid

Fig. 5 *Overlay plan of the evaluation trenches*
This plan should include excavation quadrants but not the site grid

Fig. 6 *Period I phase plan*[2]

Fig. 7 *Period I, selected sections*[3]

Fig. 8 *Period I finds distribution plan*

Fig. 9 *The Period I ?roundhouse*
Detail plan of Gully F4032, including extrapolated section(s), and Postholes F4089 and F4096 (sections of all three features should also be included). Other Period I features in the immediate vicinity should be represented (in plan only).

Fig. 10 *Roman Sub-Phase 1 sub-phase plan*

Fig. 11 *Roman Sub-Phase 1 finds distribution plan*

Fig. 12 *Roman Sub-Phase 1, selected sections*

Fig. 13 *Roman Sub-Phase 2 sub-phase plan*

Fig. 14 *Roman Sub-Phase 2 finds distribution plan*

Fig. 15 *Roman Sub-Phase 2, selected sections*

Fig. 16 *Roman Sub-Phase 3 sub-phase plan*

Fig. 17 *Roman Sub-Phase 3 finds distribution plan*

Fig. 18 *Roman Sub-Phase 3, selected sections*

[2] All period and sub-phase plans should include the alphanumeric site grid
[3] Only sections of features forming major landscape entities (e.g. enclosures) will be published

Fig. 19 *Roman Sub-Phase 4 sub-phase plan*

Fig. 20 *Roman Sub-Phase 4 finds distribution plan*

Fig. 21 *Roman Sub-Phase 4, selected sections*

Fig. 22 *The Roman Sub-Phase 4 ?structure*
Detail plan and sections of Postholes F3669, F3748, F3766, F3771, F3773 and F3781. Other Roman Sub-Phase 4 features in the immediate vicinity should be represented (in plan only). Overlying Roman Sub-Phase 5 features (F3746 and F3763) should be included as 'watermarks'.

Fig. 23 *Roman Sub-Phase 5 sub-phase plan*

Fig. 24 *Roman Sub-Phase 5 finds distribution plan*

Fig. 25 *Roman Sub-Phase 5, selected sections*

Fig. 26 *The Roman Sub-Phase 5 structures*
Plans and sections of the features forming the two Roman Sub-Phase 5 structures in the south-east quadrant (nearby Roman Sub-Phase 5 features should be included in plan only):
1. Gully F4192 (=4363) and Pits F4316 and F4328
2. Gully F5135 and Postholes F5141, F5143 and F5153

Fig. 27 *Roman Sub-Phase 6 sub-phase plan*

Fig. 28 *Roman Sub-Phase 6 finds distribution plan*

Fig. 29 *Roman Sub-Phase 6, selected sections*

Fig. 30 *Roman Sub-Phase 7 sub-phase plan*

Fig. 31 *Roman Sub-Phase 7 finds distribution plan*

Fig. 32 *Roman Sub-Phase 7, selected sections*

Fig. 33 *Period III phase plan*

Fig. 34 *Inhumations and cremations*
Combined plans and sections of all burials, by period and sub-phase

Fig. 35 *Animal Burials*
Selected plans of the Period II animal burials

Fig. 36 *The Period I pottery*
Noteworthy sherds only

Fig. 37 *The Period II pottery*
Noteworthy sherds only

Fig. 38 *The Period III pottery*
Noteworthy sherds only

Fig. 39 *Small finds*
Noteworthy finds only, by period/ sub-phase

4 COMPARATIVE SITES

The following tables (Tables 3-7) comprise a working list of comparative sites (alphabetically by county; see Section 6 for full references):

CAMBRIDGESHIRE		
Site Name	***Site Type***	***Reference***
A428 Sites	Rural (various)	Abrams and Ingham 2008
Bottisham	Farmstead and high-status building	McConnell *et al.* forthcoming
Cambourne	Farmsteads (various)	Wright *et al*. 2009
Camp Ground and Langdale Hale	Large settlement	Regan *et al.* 2004
Haddon	Rural settlement	Hinman 2003
Orton Hall Farm	'Villa'	Mackreth 1996
Stonea Grange	?Administrative centre and settlement	Jackson and Potter 1996
Vicar's Farm	Farmstead	Lucas, G. forthcoming

Table 3: Comparative sites, Cambridgeshire

ESSEX		
Site Name	***Site Type***	***Reference***
Stansted Airport	Settlement sites, cemeteries and field systems (various)	Cooke *et al*. 2008; Havis and Brooks 2004

Table 4: Comparative sites, Essex

HERTFORDSHIRE		
Site Name	***Site Type***	***Reference***
Foxholes Farm	Rural Settlement	Partridge 1989

Table 5: Comparative sites, Hertfordshire

NORFOLK		
Site Name	***Site Type***	***Reference***
Brancaster	Part of a 'vicus'	Hinchliffe with Sparey Green 1985
Brandon Road, Thetford	Rural settlement (part of a larger 'site')	Atkins and Connor 2010
Kilverstone	Rural settlement	Garrow *et al.* 2006
Scole	'Small town'	Ashwin and Tester forthcoming

Table 6: Comparative sites, Norfolk

SUFFOLK		
Site Name	***Site Type***	***Reference***
Cedars Park, Stowmarket	Farmstead	Nicholson and Woolhouse forthcoming
Hacheston	large village/ 'small town'	Blagg *et al.* 2004
Melford Meadows	Rural settlement	Mudd 2002
RAF Lakenheath	Rural settlement	Caruth 2008

Table 7: Comparative sites, Suffolk

5 SPECIALIST STATEMENTS

5.1 The Prehistoric Pottery

Andrew Peachey

Excavations recovered a total of 168 sherds (2293g) of prehistoric pottery. The bulk of the prehistoric pottery (Table 8) occurred in fabrics tempered with medium-coarse calcined flint (F1) with low quantities tempered with fine calcined flint (F2) or sand (Q1). Fabrics F1 and F2 are associated with late Bronze Age to early Iron Age bowls and jars with angular shoulders or carinations, while Fabric Q1 is associated with middle to late Iron Age barrel-shaped/ ovoid jars with upright rims.

Fabric	Sherd Count	Weight (g)	R.EVE
F1	132	1396	0.07
F2	9	106	0.15
Q1	27	791	0.17
Total	*168*	*2293*	*0.39*

Table 8: Quantification of prehistoric pottery fabrics

The bulk of the prehistoric pottery was contained as relatively small, slightly abraded residual sherds associated with Roman pottery. However, sparse features contained only prehistoric sherds suggesting the potential presence of *in situ* prehistoric deposits. Notably Gullies F3363 and F3428 contained burnished carinated bowls with flaring rims that equate to Class VI of the early Iron Age vessels at West Harling (Clark and Fell 1953, 15), but could feasibly also be late Bronze Age. Ditch F4303 also contained a potentially *in situ* late Bronze Age to early Iron Age vessel with an angled shoulder, while Pit F4320 contained a small concentration of 14 sherds (129g) of Fabric F1 and F2 body sherds. The remaining sherds of Fabrics F1 and F2 that are potentially in situ are limited to very low quantities in individual features, typically 1-4 sherds (2-30g).

The potentially in situ mid to late Iron Age pottery (Fabric Q1) comprises small groups in Pits F4506 and F4570 including a jar contained in Pit F4506 with a high shoulder that exhibits a row of finger-nail impressions that is characteristic of 3rd to 1st century BC vessels in the region.

Methodology

The prehistoric pottery has been be quantified by sherd count, weight (g) and R.EVE with fabrics examined at x20 magnification. Rim type, profile and decoration were also recorded in free text comments in accordance with the guidelines developed by

the Prehistoric Ceramics Research Group (PCRG 1995). All data has been entered into a Microsoft Excel spread sheet that will form part of the site archive.

Research Potential

The prehistoric pottery in this assemblage has a low potential for further research, but questions that should be addressed are:

- Is any of the prehistoric pottery in situ, and how do the vessel types date this ephemeral activity?
- How do the identifiable vessel types compare to other vessels and general ceramic styles in the region?
- (The prehistoric pottery has the potential for 4-5 illustrations).

5.2 The Roman Pottery

Andrew Peachey

Excavations produced a total of 7590 sherds (144,264g) of Roman pottery in a moderately fragmented, well-preserved condition, including a high degree of diagnostic rim and decorated sherds. The assemblage includes a diverse range of fabrics including samian ware, imported and regional fine wares, mortaria and amphorae that indicate quite dense activity across the site from the early 2nd century AD through to the final phases of Roman occupation in the late 4th century AD, if not later.

Methodology of Recording and Assessment

The pottery was quantified by sherd count, weight (g) and R.EVE with fabrics examined at x20 magnification in accordance with the guidelines of the Study Group for Roman Pottery. Fabric codes and descriptions were cross-referenced, where possible, to the National Roman Fabric Reference Collection (Tomber and Dore 1998) or appropriate regional kiln groups, while local or indistinguishable coarse wares were assigned an alpha-numeric code and will be fully described in the research archive and publication reports. Samian ware forms reference Webster (1996). All data have been entered into a Microsoft Excel spread sheet that will form part of the site archive.

The assemblage was fully recorded and spot-dated in advance of the MAP2 assessment, and will not require any further recording. The MAP2 assessment was completed prior to the establishment of any stratigraphic phasing of the archaeological features, therefore the summary of results is structured around fabric groups, although comments could also be made on depositional contexts and chronology.

Depositional contexts and distribution

The bulk of the assemblage, in total 72.4% by sherd count (69.7% by weight) was contained in ditch and gully features, with a significant component also contained in layers or spreads (Table 9). Ditch and gully feature types also accounted for 75.8% of the diagnostic material by R.EVE, which has implications for the dating and

analysis of the assemblage. Ditch and gully features may have remained as open functional elements of the local landscape over lengthy durations, potentially spanning 'phases' imposed by archaeologists and accumulating pottery of contrasting date within the Roman period. The ditch and gully features may also have been re-cut or scoured during their lifespan resulting in the re-deposition of earlier pottery in secondary later deposits. Therefore a degree of caution is necessary in assessing the integrity of pottery groups from ditch and gully features, notably those with early to mid-2nd century dates in the earlier part of the site's Roman occupation. However the pottery from the ditch and gully features does not typically exhibit a higher level of abrasion that may be associated with being rolled and re-deposited in a ditch or gully and has an average sherd weight of 18.3g. This is only fractionally lower than the 19.1g for the pit features on the site, suggesting a low degree of secondary fragmentation and therefore, possibly not a high degree of re-deposition. The apparent high proportion of 2nd century pottery may reflect the bias of diagnostic form types and the dating of ceramic typologies in the region, but equally may be the result of a period of high ceramic consumption on the site.

Concentrations of pottery, typically *c*.50-100 sherds (*c*. 1.1-2.5kg) were immediately identifiable in numerous features, particularly ditches, gullies and layers. However once the stratigraphic phasing of the archaeological features has been established many of these features may be proven to form part of more wide-ranging enclosures that may allow larger homogenous pottery groups to be established by the functional association of the features that contained them. The pottery from the layers, pots and postholes may also yet be identified with structures with domestic or industrial function, which may explain the high quantity and range of the vessel types in the assemblage.

Feature Type	Sherd Count	Weight (g)	R.EVE
Ditch	4022	70329	38.17
Gully	1470	30182	19.74
Pit	736	14073	6.70
Posthole	69	846	0.40
Layer/Spread	966	20564	8.85
Cremation/Grave	164	5012	2.05
Oven/Kiln	18	367	0.05
Other/Uncertain	68	1198	0.07
Un-stratified	77	1693	0.33
Total	*7590*	*144264*	*76.36*

Table 9: Quantification of Roman pottery in feature types

A high proportion of features could be dated to the 2nd century, often either the early/ mid-2nd century or the latter half of the 2nd century AD. Despite some chronological ranges including the late 1st century AD, there are no fabric or form types that are distinct from those in definite early 2nd century AD groups that indicate Roman activity on the site pre-dating the 2nd century AD. Notable groups associated with the first half of the 2nd century AD include those contained in Ditches F1145, F1282, F1334, F1729, F2255, F4536, Gullies F2711, F4090 and Pit F3128. Concentrations associated with the latter half of the 2nd century AD include Ditches F1139, F3404 and especially Layer L3609, which contained a very high total of 250 sherds (6703g). Numerous pottery groups including the concentrations contained in Ditch F1929 and Spread F3599 could be dated between the mid/ late 2nd century and the late 3rd century AD, while sparse features including Ditch F1923 and Layer L2321 could be

assigned to the late 3rd century AD. A range of features could also be assigned to the later Roman period from the late 3rd to 4th centuries AD including Gullies F2322, F3154 and F3188. Significantly the late Roman features included sparse pottery concentrations that could be assigned to the 4th century AD, possibly post-dating the mid-4th century AD and extending to the final decades of Roman occupation in Britain. These features included Ditch F2174, Gully F4069 and Layer L3354.

Summary of Pottery by Fabric Group

A total of 53 fabrics could be isolated within the assemblage (Table 10), with the GRS and BSW fabrics likely representing multiple local and regional kiln sources including the Horningsea kilns. The location of Beck Row allowed the occupants to have access to the diverse products of several major pottery industries in the region including Wattisfield, Horningsea and the Lower Nene Valley with other nearby industries including West Stow, Pakenham and the Nar Valley also represented. This has resulted in less of a bias or dependence to a single local coarse ware industry than is often observed on sites in the region. The presence of significant components of samian ware and fine ware also suggests access to higher status wares throughout the Roman period.

Samian ware accounts for 2.3% of the assemblage by sherd count (1.7% by weight). The earliest samian ware is comprised of scarce sherds from the south Gaulish kilns of La Graufesenque (LGF SA) and Montains (MON SA), and central Gaulish fabrics from Les Martres-de-Veyre (LMV SA) and Lezoux (LEZ SA1). These fabrics were probably imported in the early 2nd century AD, although the LGF SA may have been produced in the late 1st century AD, and each is limited to a very select range of forms suggesting either limited availability or a deliberate pattern of consumption during the earliest Roman occupation of the site. The south Gaulish samian ware (LGF SA and MON SA) is limited to a total of four Dr.27 cups, all only represented by body sherds with the distinctive double-curved wall of the form type. The LMV SA is represented by Dr.18/Dr.18/31 platters and dishes (the distinction is unclear with small rim sherds), while the LEZ SA1 is represented by the base of a single Dr.18/31R dish, all of which were produced in the early 2nd century AD.

By the mid-2nd century AD the import and consumption of samian ware had increased, predominantly by Lezoux in the form of LEZ SA2 Dr.33 cups and Dr.18/31 and Dr.31 dishes/ bowls, although a single Dr.36 dish is also present. The most common form is the 2nd century AD conical cup Dr.33, of which fragments of at least 20 examples are present including two with maker's stamps that both appear to date to the latter half of the 2nd century AD. These comprise stamps of Quintus iv (*c*. AD 140-170) and Maternus iv (*c*. AD 160-190). The LEZ SA2 also includes four Dr.18/31 dishes, five Dr.31 bowls and a single Dr.31R bowl that also exhibit a bias to the latter half of the 2nd century AD. A Dr.31 bowl exhibits a stamp of Paullus V (*c*. AD 165-200), while the Dr.31R bowl bears the stamp of Cambus i (*c*. AD 150-180). Decorated ware is extremely limited and although three Dr.37 bowls are represented, only a single example exhibits moulded decoration, which can be assigned to Paternus (*c*. AD 145-190).

Fabric	Sherd Count	Weight (g)	R.EVE
Samian ware fabrics			
LGF SA	3	13	0.00
MON SA	2	27	0.00
LMV SA	7	98	0.27
LEZ SA1	8	97	0.00
LEZ SA2	106	1416	2.72
CHF SA	6	92	0.25
TRI SA	22	361	0.77
RHZ SA	19	302	0.68
Fine ware fabrics			
CNG CC2	1	3	0.07
CNG BS	1	6	0.00
KOL CC	2	11	0.00
LON MD	1	79	0.00
COL CC1	17	153	0.17
LNV CC	215	4692	4.61
PAK CC	11	113	0.07
OXF RS	36	1129	1.49
HAD OX	23	341	0.75
OXF1	55	612	0.55
WES FR	56	815	2.40
GRF1	8	84	0.10
GRF2	31	470	1.30
White and white-slipped ware fabrics			
WES CR1	139	2905	4.00
WES CR2	126	1830	0.40
LNV WH	32	735	0.65
VER WH	12	285	0.10
OVW WH	1	17	0.05
OXF WS	3	63	0.06
UNS WS1	11	257	1.10
UNS WS2	2	36	0.15
UNS WS3	10	175	0.17
Local and regional coarse ware fabrics			
WAT RE1	1591	21256	11.91
WAT RE2	179	2993	3.10
HOR OX1	622	17629	3.10
HOR RE1	433	17165	5.79
GRS1	2001	30714	12.47
GRS2	168	2619	4.65
GRS3	43	884	0.37
BSW1	552	7255	3.39
BSW2	601	9603	2.48
NAR RE1	15	267	0.39
COL BB2	2	69	0.17
LNV GS	14	258	0.17
ROB SH1	227	5167	2.10
Mortaria fabrics			
COL WH (M)	8	573	0.25
LNV WH (M)	32	2188	1.17
OXF RS (M)	5	195	0.60
OXF WS (M)	12	332	0.55
HAD OX (M)	4	132	0.15
SWN WS (M)	2	70	0.10
MAH WS (M)	1	25	0.05
Amphorae and storage jar fabrics			
BAT AM2	10	2423	0.00
NOM AM	1	68	0.25
STOR1	101	5162	0.27
Total	*7590*	*144264*	*76.36*

Table 10: Quantification of fabric types within the assemblage

East Gaulish samian ware was generally imported from the late 2nd to mid-3rd century AD, but some may have been imported slightly earlier in the latter half of the 2nd century AD, and includes products from Chemery-Falquemont (CHF SA), Rheinzabern (RHZ SA) and Trier (TRI SA). Notably this includes fragments from a Dr.37 mould-decorated bowl with a griffin in its decorative scheme that was produced by Ianus ii (*c*. AD 160-190, possibly earlier) probably at Rheinzabern but possibly at Heiligenberg. The east Gaulish samian plain ware largely continues in the pattern of forms set by the LEZ SA2, with the common forms comprising Dr.33 cups, Dr.18/31R, Dr.31, and Dr.31R dishes/ bowls. However also present are sparse examples of Dr.32 dishes, Dr.38 bowls, Dr.40 and OandP LV13 cups, and a single cup with barbotine decoration on the rim that, most unusually, does not conform to the established typologies of samian ware form types. This vessel may have been an apprentice piece, or may represent a very unusual vessel such as incense pot, but its interpretation remains unclear.

The fine wares in the assemblage are dominated by Lower Nene Valley colour-coated ware (LNV CC) that was produced from the mid-2nd century AD onwards, and later supplemented by Oxfordshire red-colour-coated ware from the mid/ late 3rd century AD, perhaps not until into the 4th century AD. However a range of fine wares including colour-coated ware from Colchester (COL CC1), West Stow fine reduced ware (WES FR) and fine reduced and oxidised wares from unknown sources (GRF1, GRF2, OXF1) appear to form an important component of the assemblage in the first half of the 2nd century AD, after which they were largely superseded by LNV CC. These earlier fine wares predominantly occur as beakers, with COL CC1 limited to beakers with roughcast decoration, WES FR, GRF1 and GRF2 dominated by beakers decorated with panels of barbotine dot decoration. OXF1 also includes a beaker with painted dot decoration. The WES FR also includes at least three 'London ware' bowls with inscribed decoration, while rare flagons and bowls in OXF1 and GRF2 suggest these may have an origin at West Stow or nearby. GRF1 is also notable for containing the 'switchback' lip of an inkwell that is probably an imitation of a samian form, while a an isolated lamp in London mica-dusted ware (LON MD) was deposited (discarded) with a broken spout, and is a distinct product of the Northgate kilns in the first half of the 2nd century AD.

The Lower Nene Valley colour-coated ware (LNV CC) includes a diverse range of form types, predominantly beakers and jars but also including dishes, bowls and flagons. The beakers exhibit a high degree of variation and include types with bag-shaped, folded or globular bodies, short or funnel necks, rouletted, painted and barbotine decoration, and range in date from the mid-2nd to 4th centuries AD. In contrast the remaining jars, dishes and bowls are all types that date no earlier than the late 3rd century AD, often in the 4th century AD. In the mid-2nd to 3rd centuries AD the LNV CC is supplemented by low quantities of colour-coated fabrics produced locally at Pakenham (PAK CC) and imported from central Gaul (CNG CC2, CNG BS) and eastern Gaul (KOL CC) with each of these fabrics also limited to beakers, typically roulette decorated. From the mid to late 3rd century AD the LNV CC was supplemented by Oxfordshire red-slipped ware (OXF RS), mainly flanged bowls imitating samian form Dr.38 or bowls with stamped rosette decoration, and also by Hadham oxidised ware (HAD OX), which is largely limited to flagons.

The white wares in the assemblage are dominated by ring-necked flagons from West Stow (WES CR1 and WES CR2) that date to first half of the 2nd century AD, and are supplemented in this period by rare jars from Verulamium (VER WH) and dishes, bowls and flagons in white-slipped wares from unknown, probably local sources (UNS WS1-3). From the late 2nd century AD, low quantities of dishes and bowls with red-painted decoration were imported from the Lower Nene Valley (LNV WH), and in the 4th century rare vessels in other regional white ware fabrics also occur (OVW WH, OXF WS).

The most common coarse wares that could be assigned a provenance are the micaceous reduced products of the Wattisfield/ Waveney Valley region kilns (WAT RE1 and WAT RE1). These fabrics appear ubiquitous in the assemblage and typically include utilitarian vessel types whose form varies little relative to chronology. The most common of these are bowl-jars with sinuous profiles and a girth groove, or plain shouldered jars with everted rims. Also common in the 2nd to 3rd centuries AD are 'pie' dishes with bead rims, while from the late 3rd century AD bead and flange rim dishes are relatively common. These same forms also dominate the local and regionally produced sandy grey wares (GRS1-3, BSW1-2) in the assemblage. Intriguingly GRS2 also include several beakers with panels of barbotine dot decoration, possibly produced at West Stow or other Suffolk kiln such as Pakenham. The WAT RE1 also includes early Roman imitation Gallo-Belgic platters and the base of a cheese press.

The range of vessel types that occurred in the products of the Horningsea kilns (HOR OX1 and HOR RE1) provides an interesting contrast that may be related to the output of the respective kilns, the economics of supply, or the function of the vessels as containers. The Horningsea pottery includes a string component of the storage jar the industry is renowned for, along with a range of everted bead rims or constricted necks, but only a single bowl. Potentially from the mid-2nd century, although probably in the late Roman period, these were supplemented by shell-tempered jars (ROB SH) with everted bead rims probably produced at the Harrold, Bedfordshire kilns, from which almost no other vessel types were supplied. The remaining coarse wares in the assemblage are represented by low quantities of well-finished dishes from Colchester (COL BB2) and the Lower Nene Valley (LNV GS), and rusticated jars from the Nar Valley, north-west Norfolk (NAR RE1).

The bulk of the mortaria in the assemblage comprise 3rd to 4th century AD types including reeded rim types from the Lower Nene Valley (LNV WH (M)), wall-sided and angular bead and flange rim types from the Oxfordshire (OXF RS (M) and OXF WS (M)) and Hadham (HAD OX (M) kilns. However there are also two mortaria with drooping flanges from Colchester (COL WH (M)) that may be attributed to the first half of the 2nd century AD, as well as a single mortaria from Mancetter-Hartshill (MAH WS (M)) from the same period. All of the mortaria exhibit moderately to heavily worn trituration grits.

Amphorae and storage jars (excluding Horningsea vessels) appear to be relatively scarce in the assemblage, which may be the result of a lack of consumption on the site of the products they contained, or the lack of a need for these vessels due to the ready availability of Horningsea storage jars. The amphorae that are present are predominantly Baetican (BAT AM2) Dressel 20 olive oil amphora, although a single

Normandy (NOM AM) furrowed rim wine amphorae is also present. The Baetican amphorae is notable for including a manufactures stamp on a body sherd, below a handle stump, that reads PNN or PNAV, and is attributed to production at Arva (Baetica) in the latter half of the 2nd century AD. Storage jar fabric (STOR) vessel types are limited to large jars with 'golf club' rims that may have been produced in Essex, and were possibly imported as containers for a product not carried in Horningsea storage jars.

Research Agenda

This assemblage has a high potential to expand and clarify the archaeological interpretation of Roman activity and occupation at Beck Row. The definition of Roman rural settlement, occupation and economy has long been a research priority in East Anglia (Going 1997, 37-38; Going and Plouviez 2000, 22; Medlycott 2011a, 34) and nationally (Willis 2004, 11), while the Roman activity at Beck Row may also expand our understanding of rural industry (Medlycott 2011a, 40).

Excavations adjacent to the site that recorded a Roman maltings recovered a total of 1482 sherds (22kg) of Roman pottery that ranged from the 1st to 3rd centuries AD (Tester with Willett 2004), while other archaeological investigations in the close vicinity have also recorded Roman features and finds (Craven 2006; 2008; Caruth 2007). It is clear that this assemblage represents a highly significant addition in terms of quantity and diagnostic material, to the corpus of Roman artefactual evidence from Beck Row.

Specific research questions that may be addressed by the analysis of this assemblage include:

- What is the chronology that the pottery defines for activity within this site, and how does this chronology compare, contrast or expand on the results of adjacent and nearby excavations?
- How does the presence/absence of fabric and form types change through the phased groups?
- Do any of the phased groups exhibit flourits of imported or regional fine wares, including samian ware, or amphorae that may be related to the fortunes of the site?
- How does the pattern of samian import and consumption compare to other sites in Beck Row, the local and regional areas?
- Can the range of pre- to mid-2nd century AD fine ware forms and fabrics comment on site function/ status before the emergence of LNV CC?
- Can any variations in the forms of LNV CC be defined through the stratigraphic phases?
- Can any of the late Roman fine wares provide a chronological framework for the end of Roman occupation on the site? Did the functions of the site continue or decline in the 4th century AD?
- Is there any visible evolution in coarse ware forms or function in different phases?
- Can the mortaria be associated with any areas of processing/ occupation on the site, and are other vessel types associated with these areas?

- How does the range of amphorae compare to those imported to different types of site in Suffolk and East Anglia?
- Can functional analysis be applied to fine or coarse wares in individual phases, or to the complete assemblage, to create a ceramic profile of the site that can be compared others in the region (c.f. Evans 2001)?
- How does the assemblage compare to and expand upon other Roman pottery assemblages in Beck Row, notably from the adjacent Roman maltings (Tester 2004 with Willett)?
- How does the assemblage compare to other assemblages from the surrounding region (Suffolk, Norfolk and Cambridgeshire), notably those associated with fen edge settlement and activity?

Proposed Bibliography

Andrews 1985; Brown 1994; Callender 1965; Caruth 2007; Craven 2006; Craven 2008; Darling 1999; Davies *et al.* 1994; Evans 2003; Evans 1990; Evans 1991; Evans 2001; Evans *et al.* forthcoming; Gibson and Lucas 2002; Going 1997; Going and Plouviez 2000; Gurney 1986b; Hartley and Dickinson 2008; Hartley and Dickinson 2011; Howe *et al.* 1981; Hull and Pullinger 1999; Lyne and Jefferies 1979; Martin 1988; Medlycott 2011a; Oswald 1936-7; Peachey 2011; Peachey forthcoming b; Perrin 1999; Plouviez 1976; Plouviez *et al.* 2001; Pullinger and White 1991; Ricken and Fischer 1963; Rodwell 1978; Rogerson 1977; Seeley and Drummond-Murray 2005; Smedley and Owles 1961; Symonds 1992; Symonds 2002; Tester with Willett 2004; Tomber and Dore 1998; Webster 1996; West with Martin 1990; Williams 2005; Willis 2004; Wilson 1984; Young 2000

5.3 The post-Roman Pottery

Peter Thompson

The excavation recovered 114 sherds of post-Roman pottery weighing 2561g. The assemblage is in mixed condition but generally abraded with a smaller number of sherds in quite good condition. The pottery has been quantified and recorded on an Excel spreadsheet by context (included as part of the archive), and has also been quantified by date and period below (Table 11).

Ware	Date Range	Sherd number	Fabric weight (g)	% of sherd total
Prehistoric sand and flint ware	Iron Age?	1	6	0.9
Hedingham fine ware?	Mid 12th-13th/ 14th	1	10	0.9
Grimston coarse ware	12th-mid 13th/ 14th	5	115	4.3
Grimston glazed ware	Late 12th-15th/ early 16th	7	172	6.1
Late medieval transitional and early post-medieval	Late 14th-early 17th	19	488	16.7
Raeren stoneware	Late 15th-early 17th	2	60	1.7
Post-medieval red earthenware	Late 16th-19th	71	1,598	61.7
Staffordshire marbled slip ware	Late 17th-18th	3	59	2.5
Creamware	Mid 18th-late 19th	5	36	4.3
Factory made white earthenware	Late 18th-20th	1	23	0.9
Total		115	2,567	

Table 11: Quantification of pottery by ware

The medieval pottery

The 13 medieval sherds (297g) were almost exclusively glazed Grimston ware or Grimston coarse wares with grey sandy cores and grey or brown surfaces. The exception is an oxidised sherd from Gully F3581 (L3582 A) in a fine sandy fabric consistent with Hedingham fine ware, although unusually the external surface is polished. It was associated with 3 sherds of Grimston coarse ware including a wheel made carinated bowl with hammerhead rim containing wavy line decoration. Examples of quite similar bowl forms were present at Kings Lynn (Clarke and Carter 1977, 196-7). Grimston coarse ware production probably began by the early 12th century while it seems to have gone out of use, or almost so, by the middle of the 13th century (Leah 1977, 90-1). Layer 3947 C produced a residual glazed Grimston strap handle, and Pit F5172 (L5173) contained part of a glazed Grimston anthropomorphic face from a decorative jug indicating a date between c. AD 1225 and 1375 (Jennings and Rogerson 1977, 116)

The post-medieval pottery

Twenty-one sherds (548g) are of late medieval transitional to early post-medieval date. The bulk of these (15/332g) came from Pit F4054 (L4055) and include two sherds of imported Raeren stoneware suggesting a date centred on the 16th century. The majority of the assemblage accounting for nearly two thirds of the sherd total (71, 1598g) comprises post-medieval red earthenwares. Also present are post-medieval Staffordshire marbled slip ware, early modern creamware and modern factory made refined white earthenware.

5.4 The Small Finds

Nicholas J. Cooper

Introduction

A total of 346 individual objects (including bulk accessions of iron nails) registered under 123 small finds records and 185 unregistered finds ID records were submitted for assessment. The following assessment report identifies the range of material represented, the potential for further analysis and the conservation requirements necessary to realise that potential.

Range and quantity of material

Table 12 (below) summarises the range of material and the requirements recommended.

Beck Row Small Finds Assessment Summary				
Material	**Description**	**Conservation**	**Further Work**	**Total**
Silver (Ag)	Coins Roman	Cleaning	Yes	5
Silver (Ag)	Coins Medieval	Cleaning	Yes	1
Copper Alloy (CuA)	Coins Roman	Cleaning	Yes	40
Copper Alloy (CuA)	Brooch Roman	Cleaning	Yes	5
Copper Alloy (CuA)	Rings Roman	Cleaning	Yes	2
Copper Alloy (CuA)	Hairpin Roman	Cleaning	Yes	2
Copper Alloy (CuA)	Toilet instr. Roman	Cleaning	Yes	3
Copper Alloy (CuA)	Dec sheet Roman	Cleaning	Yes	1
Copper Alloy (CuA)	Misc sheet Roman	None	No	6
Iron (Fe)	Fittings Roman	x-ray/ cleaning	Yes	2
Iron (Fe)	Knives/ Tools Roman	x-ray/ cleaning	Yes	3
Iron (Fe)	NailsType1B Roman	x-ray	Comment	183
Iron (Fe)	NailsType1A Roman	x-ray	Comment	11
Iron (Fe)	Misc objects Roman	x-ray	No	22
Iron (Fe)	?modern	None	No	6
Lead (Pb)	Weights Roman	None	Yes	2
Lead (Pb)	Misc waste Roman	None	No	11
Stone	Whetstone Roman	None	Yes	2
Stone	Quernstones	None	Yes	5
Stone	Misc	None	No	20
Industrial waste	Vesic. Hearth slag	None	Comment	2
Glass	Vessel Roman	None	Comment	5
Glass	Modern	None	No	1
Bone	Hair pin Roman	None	Yes	2
Bone	WeavingToolRoman	None	Yes	3
Shell	Oyster Roman	None	No	1
Total				*346*
Total for cleaning				*64*
Total x-ray				*221 (5)*
Total Further work				*78*

Table 12: Range of material (small finds) and requirements

Conservation requirements and potential for analysis

All the silver and copper alloy objects (59) comprising mainly coins (46), and five of iron (total 64) require cleaning in order to realise their potential for detailed identification at the analysis stage. All of the ironwork requires x-raying as a permanent archive record (221) and to allow the detailed identification of objects, five of which have been identified as requiring further work at the analysis stage including a bone-handled knife. The bulk of the ironwork comprises nails of Manning Type 1B with some of the larger Type 1A also present. Measurement of complete examples and a comment on stratigraphic/spatial distribution would be sufficient at the analysis stage.

Besides coins, the copper alloy comprises a range of objects of personal adornment. The brooches are noticeably early in date and there are rings, hairpins and toilet instruments also present. Hairpins and weaving tools in bone are also present alongside lead weights and quernstones, including imported examples of Mayen lava from Germany. The small amount of Roman bottle glass and industrial residue also requires a brief comment at the analysis stage.

5.5 The Coins

John Davies

Roman coin catalogue

1	SF 82	GS N13	Context L2315 (F2314=3663)
	Trajan	*Dupondius*	AD 104 -111
	Obv Illegible		
	Rev [SPQR OPTIMO PRINCIPI; SC]		
	As BMC 3: 948	Rome	
2	SF 62	GS P16	Context -
	Hadrian	*Denarius*	AD 119-38
	Obv [IMP CAES]AR TRAIAN HADRIANVS [AVG]		
	Rev PM TR P COS III		
	RIC 2: 63	Rome	
3	SF 65	GS P16	Context L1730 (F1729=1760)
	Antoninus Pius	*Denarius*	AD 153-54
	Obv ANTONINVS AVG PIVS PP TR P XVII		
	Rev COS IIII; Fortuna		
	RIC 3: 232	Rome	
4	SF 108	GS -	Context -
	Antoninus Pius	*Denarius*	AD 160-61
	Obv ANTONINVS AVG PIUS PP TR P XXIIII		
	Rev LIBERALITAS AVG VIIII COS III		
	RIC 3: 311	Rome	
5	SF 60	GS P16	Context L2000 (F1999)
	Marcus Aurelius	*Denarius*	AD 161-62
	Obv IMP M AVREL ANTONINVS AVG		
	Rev PROV DEOR TRP XVI COS III; Providentia		
	RIC 3: 48		
6	SF 63	GS P16	Context L1987 (F1986)
	Lucius Verus	*Denarius*	AD 166-67
	Obv [L VERVS AVG ARM] PARTH MAX		
	Rev TRP VII IMP IIII [CO]S III; Aequitas		
	BMC 4: 447		
7	SF 59	GS P16	Context L1920 (F1999)
	Lucilla	*Denarius*	AD 176-80
	Obv LVCILLA AVGVSTA		
	Rev CONCORDIA		
	RIC 3: 759		

8 SF 120 GS T16 Context L3175 (F3174)
Gallienus *Antoninianus* AD 260-8
Obv [GAL]LIEN[VS AVG]
Rev [DIANAE CONS AVG]; antelope walking l.
As RIC 5: 180 Rome

9 SF 99 GS - Context -
Claudius II *Antoninianus* AD 268-70
Obv IMP CLAVDIVS PF AVG
Rev Illegible. Female figure l., holding cornucopiae

10 SF 44 GS R16 Context -
Tetricus I *Antoninianus* AD 270-4
Obv [IMP C G] P ESV TE[TRICVS AVG]
Rev PAX [AVG]

11 SF 45 GS R16 Context L3280 (F3279)
Tetricus I *Antoninianus* AD 270-4
Obv Illegible
Rev [PAX AVG]
As Elmer 775 Cologne

12 SF 101 GS - Context -
Tetricus I *Antoninianus* AD 270-4
Obv Illegible and reduced flan
Rev Illegible. Figure of Laetitia
Elmer 786/787 Trier

13 SF 97 GS Q10 Context L3369 (F3368)
Tetricus II *Antoninianus* AD 270-4
Obv [C PIV ESV TETRICVS CAES]
Rev [PRINC IVVENT]
Elmer 781 Cologne

14 SF 46 GS R16 Context L1708 (F1707)
Barbarous radiate minim AD 270-84
Obv [DIVO CLAUDIO]; no legend. Clear portrait.
Rev Altar. Simple linear engraving.
13mm diam

15 SF 90 GS N10 Context -
Barbarous radiate AD 270-84
Obv Illegible
Rev Virtus pin figure. ----G
17mm diam

16 SF 124 GS - Context -
Barbarous radiate AD 270-84
Obv Tetricus II; --RIIC--
Rev Spes figure
15mm diam

17 SF 77 GS N14 Context L2321
Barbarous radiate AD 270-84
Obv Tetricus II. Very faint strike.
Rev C----L; Spes figure
16mm diam

18 SF 75 GS N14 Context L2058 (F2057)
Barbarous radiate minim AD 270-84
Obv No lettering
Rev Spes holding flower
10mm diam

19 SF 88 GS N10 Context L3434 (F3385)
Barbarous radiate minim AD 270-84
Obv Basic head
Rev Ewer
10mm diam

20 SF 76 GS N14 Context L2058 (F2057)
Barbarous radiate minim AD 270-84
Obv Faint impression of head
Rev Illegible
10mm diam

21 SF 79 GS M13 Context L2486 (F2485)
Carausius *Antoninianus* AD 287-93
Obv IMP CARAVSIVS P AVG
Rev PAX AVG; transverse sceptre
24mm diam

22 SF 64 GS Q15 Context -
Carausius *Antoninianus* AD 287-93
Obv Illegible. Good portrait.
Rev [SALVS AVG]
21mm diam

23 SF 100 GS - Context -
Carausius *Antoninianus* AD 287-93
Obv Illegible
Rev Illegible
24mm diam

24 SF 35 GS R20 Context L3412 (F2586)
House of Constantine Triangular fragment AD 309-10
Obv No lettering on fragment
Rev [SOLI I]NVIC[TO COMITI]

25 SF 109 GS - Context -
House of Constantine follis AD 332-33
Obv [CONSTANTINOPOLIS]
Rev Victory on prow
RIC 7: 543 Trier

26 SF 73 GS N14 Context L1431 (1429=1814)
House of Constantine AE3 AD 330-48
Obv CON ---
Rev Illegible

27 SF 83 GS M11 Context L3355
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [GLORIA ROMANORVM]

28 SF 84 GS N10 Context L3377 (F3376)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [GLORIA ROMANORVM]

29 SF 96 GS N11 Context L3434 (F3385)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [GLORIA ROMANORVM]

30 SF 32 GS P19 Context L1712 (F1711)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

31 SF 61 GS P16 Context L1728 (F1727)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

32 SF 86 GS N10 Context -
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

33 SF 98 GS Q10 Context L3369 (F3368)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

34 SF 93 GS N10 Context L3434 (F3385)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

35 SF 89 GS N10 Context L3434 (F3385)
House of Valentinian AE3 AD 364-78
Obv Illegible
Rev [SECVRITAS REIPVBLICAE]

36 SF 68 GS P16 Context L1859 (F1858)
Gratian AE3 AD 367-75
Obv [DN GRATIANVS AVGG AVG]
Rev [GLORIA NOVI SAECVLI]
RIC 9: 15 Arles

37 SF 87 GS N10 Context -
Gratian AE3 AD 367-75
Obv [DN GRATIANVS AVGG AVG]
Rev [GLORIA NOVI SAECVLI]
RIC 9: 15 Arles mm TCON

38 SF 80 GS M13 Context -
House of Theodosius AE4 AD 388-95
Obv Illegible
Rev [VICTORIA AVGGG]

39 SF 111 GS Q8 Context -
House of Theodosius AE4 AD 388-95
Obv Illegible
Rev [VICTORIA AVGGG]

40 SF 38 GS P18 Context -
House of Theodosius AE4 AD 388-95
Obv Illegible
Rev [VICTORIA AVGGG]

41 SF 72 GS N14 Context L1822 (F1821)
House of Theodosius AE4 AD 388-95
Obv Illegible
Rev [VICTORIA AVGGG]

42 SF 113 GS Q7 Context L3360 (F3358)
House of Theodosius AE4 AD 388-95
Obv Illegible
Rev [VICTORIA AVGGG]

43	SF 95	GS N10	Context -
	Illegible	AE3	AD 330-78
	Obv Illegible		
	Rev Illegible		
44	SF 41	GS R16	Context L3280 (F3279)
	Illegible	AE4	AD 354-95
	Obv Illegible		
	Rev Illegible		
45	SF 85	GS N10	Context L3355
	Illegible	AE4	AD 341-95
	Obv Illegible		
	Rev Illegible		

Post-Roman coin catalogue

46	SF 65	GS P16	Context L1730 (F1729=1760)
	Edward I	Penny	1302-10
	Obv EDWAR ANGL DN[S HYB]		
	Rev [CIVIT]AS DVR[EME]		
	Class X	Durham	

Catalogue references

British Museum Catalogue (BMC) 1966 and 1968; Mattingly *et al.* 1926-1984; Elmer 1941

The coins from the former Smoke House Inn, Beck Row

Forty-six coins were recovered from the former Smoke House Inn, Beck Row, of which 45 are Roman and just one is post-Roman. The Roman coins have generally suffered badly from corrosion and the legibility is not good in most cases. There are very few fully legible examples. The chronological range is from the reign of Trajan (AD 98-117) to the final years of Roman Britain, at the end of the 4th century.

The early issue of Trajan is a *dupondius* of the years AD 104-111. The coin sequence then continues with six silver *denarii* of the 2nd century. Five of these are clustered within the period of the Antonine emperors. A slightly earlier example, which is an issue of Hadrian, is more worn than the others. Such a cluster of silver coins is suggestive of a hoard or purse group, which may have been lost or buried at the time of Lucilla (eldest daughter of Marcus Aurelius), in whose name the latest was struck. There is then a gap in the coin list until the years of the mid-third century.

The assemblage contains a substantial group of later 3rd century coins. These begin with a radiate issue of Gallienus (AD 260-8). There are four *antoniniani* of the Gallic Empire. One of these (SF 44), struck under the emperor Tetricus I, is unusual in having an obverse legend associated with the mint of Trier but combined with a reverse type issued from the mint of Cologne. There are then seven irregular

antoniniani, or 'barbarous radiates'. The 3rd century issues end with three *antoniniani* of Carausius. The coinage of that emperor could vary in quality but these are all attractive issues, with good circular large flans, although they are all corroded. Legends and details are largely missing but all three carry fine portraits.

The remaining 22, representing virtually half of the coins, are all 4th-century issues. Given the chronological range of the assemblage, it is surprising that there are only two coins of the mid-Constantinian period (from AD 330-48), which are normally dominant among 4th-century site finds. There is then a major grouping representing the later 4th century, with eleven large *aes* of the House of Valentinian (AD 364-78). Unfortunately, their poor legibility does not reveal individual emperors or mint marks.

The latest Roman coins present are small bronze issues of the House of Theodosius, struck between AD 388-95. This is a substantial presence of five late bronzes, which are not common site finds.

The Beck Row coins collectively show some very strong features. There is a presence on the site before the mid-3rd century but this is minimal and can be assigned to two interventions, which are a probable (much disturbed) silver hoard of six *denarii* and a single *dupondius*. The main site coin list begins in the years from the mid-third century and 44% of legible (non-hoard) coins date from AD 260-93. Such high percentages of radiate coins can often be recorded on both large and small town sites although this feature is uncommon in both Suffolk and Norfolk. However, the most remarkable feature of the group is the predominance of later 4th century coins. Half of the dateable (non-hoard) coins belong to the years after AD 330 and 44% to the years after 364. It is notable that the overall pattern of coin loss resembles that of the Romano-British small town of Neatham in Hampshire (Merson 1986).

The latest coin in the assemblage is a single (intrusive) post-Roman silver penny of Edward I from the mint of Durham, struck between 1302-10.

5.6 The Struck Flint

Andrew Peachey

Excavations recovered a total of 89 pieces (1429g) of struck flint and 54 fragments (892g) of burnt flint. The technological composition of the assemblage (Table 13) indicates a mixed prehistoric chronology ranging from the Mesolithic to later Neolithic/ early Bronze Age, with implements ranging from heavily patinated long blades to a ground axe, scrapers, multi-platform cores and hammer stones. Almost the entirety of the assemblage was contained as residual material in Romano-British period features or layers, but a single core, two blades and two debitage flakes were contained in Period I (Bronze Age) pits and comprise potentially *in situ* artefacts. The preservation of the assemblage varies, with the bulk in an un-patinated condition but sparse flakes and cores ranging from slightly to heavily patinated, indicating a moderate degree of re-deposition and re-distribution of lithic material.

Implement/ Flake Type	Frequency	Weight (g)
Axe	1	170
Cores	4	328
Hammer Stones	2	246
Rod	1	18
Platform Rejuvenation Flakes	3	119
Scrapers	8	170
Other Retouched Implement	1	12
Blade/ Bladelet	7	34
Debitage	58	332
Burnt Flint	54	892
Total	*139*	*2321*

Table 13: Quantification of struck flint implement and flake types, and burnt flint

Methodology and terminology

The flint was quantified by fragment count and weight (g), with all data entered into a Microsoft Excel spreadsheet that will be deposited as part of the archive. Flake type (see 'Dorsal cortex,' below) or implement type, patination, colour and condition were also recorded as part of this data set, along with free-text comments.

The term 'cortex' refers to the natural weathered exterior surface of a piece of flint, and the term 'patination' to the colouration of a flaked surface exposed by human or natural agency. Dorsal cortex is categorised after Andrefsky (2005, 104, 115) with 'primary flake' referring to those with cortex covering 100% of the dorsal face; 'secondary flake' with 50-99%; 'tertiary' with 1-49% and 'un-corticated' to those with no dorsal cortex. A 'blade' is defined as an elongated flake whose length is at least twice as great as its breadth, often exhibiting parallel dorsal flake scars (a feature that can assist in the identification of broken blades that, by definition, have an indeterminate length/ breadth ratio). Terms used to describe implement and core types follow the system adopted by Healy (1988, 48-9).

Commentary on the lithic technology of the assemblage

<u>Cores and their reduction</u>

The four cores in the assemblage demonstrate the chronological range of the struck flint assemblage. The technologically earliest core, contained in Ditch F1727 (L1728A), comprised an exhausted cube-shaped blade core with at least three striking platforms that is typical of Mesolithic blade production. A second core, contained in Ditch F5067 (L5068) may be associated with later Mesolithic or earlier Neolithic blade production, and exhibits a single striking platform maintained by tablet removal. The remaining two cores are typical of flake cores utilised in the later Neolithic to early Bronze Age, and include a core from Period I Pit F4320 (L4321), with a further example from Gully F4069 (L4070C). Both these cores are approximately cube-shaped with at least four striking platforms, but are noticeably larger than their Mesolithic and Neolithic counterparts and appear in part to have been struck by direct percussion resulting in much more pronounced, conchoidal flake scars.

Related to the technology of the single platform blade core contained in Ditch F5067 are three platform rejuvenation flakes, contained in Ditches F1282 (L1283B), F1424

(L1425B) and Gully F4090 (L4091F). Each had been removed from a blade core, once the angle of the striking platform had become too steep, a process most common in earlier Neolithic assemblages.

Also closely associated with earlier Neolithic, as well as later Mesolithic core reduction is the use of a punch between a hammer stone and core, to diffuse percussive force that could lead to shatter and to enable greater accuracy in striking the platform. These punches may have been of 'soft' materials such as bone or antler, or 'hard' materials such as flint. The flint rod contained in Ditch F1429 (L1431L), appears to have functioned as one such 'hard' punch. It may have been formed from a blade core as the roughly cylindrical/ hexagonal section of the rod appears to have been formed by blade-like removals from all sides. However, it is the percussive wear on both ends of the rod, one of which is narrower than the other, that indicated the function of the rod. A complimentary wear pattern, comprising 2-4 narrow worn circles, on the two spherical hammer stones contained in Pits F1704 (L1739) and F1846 (L1847A) suggest they were used as medium and small sized hammer stones (Whittaker 1994, 87) in association with a rod-like punch.

The sparsely distributed debitage flakes in the assemblage reflect the seemingly diverse range of core reduction technology, with approximately 62% of the debitage flakes comprising blade-like tertiary or un-corticated flakes probably produced by late Mesolithic or earlier Neolithic flint technology. These include further flakes that are possibly platform rejuvenation or maintenance flakes, but are inconclusive. Single un-corticated blade-like debitage flakes were contained in Period I Pits F4322 (L4323) and F4977 (L4978) and comprise potentially in-situ debitage, although the isolated occurrence may suggest they were re-deposited. Approximately 22% of the debitage comprises broad, squat flakes removed by direct percussion, typical of later Neolithic to early Bronze Age technology. The remainder are typically thin with slightly irregular profiles, and include some ovoid core trimming primary flakes.

Implements and tools

The assemblage includes a single ground Neolithic axe, albeit in a poorly-preserved condition. Ditch F1729 (L1730A) contained the small, thick-butted axe, manufactured from a matt, pale grey flint (probably sourced from a glacial erratic or possibly traded from Lincolnshire). The axe exhibits a re-flaked, sharpened edge with further use damage, but much of the original ground surface of the axe has been removed by frost-cracking damage.

The assemblage includes four side scrapers and four end scrapers. Three of the side scrapers, from Pits F1219 (L1220), F4604 (L4605) and Gully F4010 (L4011A), and an end scraper from Layer L4473 were formed on blades, suggesting that they were produced in the earlier Neolithic. The remaining side scraper from Pit F4054 (L4124), and end scrapers from Ditches F1139 (L1140F), F1248 (L1249B) and F3487 (L3488C) were formed on broad, squat flakes including some struck from multi-directional flake cores, indicating they were more likely produced in the later Neolithic to early Bronze Age.

The only other re-touched implement in the assemblage comprised an awl from Ditch F5071 (L5072D). The awl was formed by the application of uni-facial abrupt

retouch to the lateral and bulbar edges of a broad, squat tertiary flake that is likely to have a comparable later Neolithic to early Bronze Age chronology to the similarly shaped side and end scrapers.

The final implement type in the assemblage comprises blades and bladelets. These include a single long blade (length: 90mm) with a heavily patinated finish from Ditch F1429 (L1431L) that is almost certainly of Mesolithic origin, while two bladelets from Gully F4065 (L4066C) and Ditch F5007 (L5008B) are also consistent with Mesolithic core reduction. The remaining blades, typically 40-50mm in length with parallel dorsal scars are typical of those that occur in earlier Neolithic assemblages in the region, although Mesolothic origins cannot be ruled out. Two of these blades were contained in Period I Ditch F4303 (L4531B) and Pit F4320 (L4321), but are unlikely to be of Bronze Age origin and may have been re-deposited within the prehistoric period.

Research potential

The potential for the Breckland and fen-edge landscape to produce flint assemblage is widely recognised (i.e. Austin 1997, 9; Brown and Murphy 1997, 14; Medlycott 2011a, 6, 14). This assemblage is consistent with the range of struck flint found during excavation of the Maltings, which included a limited range of Mesolithic, earlier Neolithic and Bronze Age struck flint cores, implements and debitage, also largely residual in Romano-British period features (Bates 2004, 45). Scatters of residual struck flint including hammer stones (i.e. Wymer 1986, 22) are relatively common on Romano-British sites in the region. However, given the limited quantity, context, and character of this assemblage, there is a very low potential for further analysis or research, and it is recommended that the assessment commentary and archive catalogue comprise the final research archive report on the assemblage.

5.7 The Ceramic Building Materials

Andrew Peachey

Excavations recovered a total of 1563 (198078g) of ceramic building material (CBM). The bulk of the assemblage comprises relatively highly fragmented Roman tile and brick sparse post-medieval to modern brick and tile (Table 14). The Roman CBM is predominantly comprised of tegula and imbrex roof tile that may have formed part of a nearby building, but equally much of this CBM may have been imported as packing material or hardcore. Concentrations in Ditch F1370, Pit F1413 and Layer L3609 may be related to demolition deposits or episodes of clearing associated with construction or maintenance of structures close to or on the site.

CBM type	Fragment count	Weight (g)
Roman brick and tile	1490	174211
Post-medieval to early modern brick and tile	71	15167
Modern brick	2	8700
Total	*1563*	*198078*

Table 14: Quantification of CBM by period of manufacture

The composition of the CBM assemblage with its strong bias towards roof tile is consistent with the small assemblage recovered from the adjacent Roman maltings (Anderson 2004), and suggests that while some of the assemblage may have been

re-used as hardcore, a Roman building of moderate to high status must have existed in the close vicinity.

Methodology

The CBM was quantified by fragment count and weight with fabrics examined at x20 magnification and all data entered into a Microsoft Excel spreadsheet that will be deposited as part of the archive. Roman CBM forms were identified using the conventions defined by Brodribb (1987). No further recording will be required for the research archive report.

The Roman CBM

Distribution

The bulk of the Roman tile and brick was sparsely distributed in the fills of ditch and gully features (Table 15), with the exception of Ditch F1370 (Segs. A and B) that contained a total of 139 fragments (13613g) comprised entirely of tegula and imbrex roof tile.

Feature Type	**Fragment Count**	**Weight (g)**
Ditch	853	85753
Gully	148	15615
Pit	277	36659
Posthole	10	284
Layer/Spread	156	32217
Other/Uncertain	19	1295
Un-stratified	27	2388
Total	*1490*	*174211*

Table 15: Quantification of Roman CBM in feature types

Pit and Layer features typically contained very low quantities of Roman CBM, with the exceptions of Pit F1413 and Layer L3609. Pit F1413 (L1414) contained a total of 140 fragments (21241g) of Roman CBM, accounting for the bulk of the CBM in pot features, and like the CBM from Ditch F1370 is limited to tegula and imbrex roof tile. Layer L3609 contained a total of 99 fragments (25318g) of Roman CBM, with a strong bias to Segs. B and C. The Roman CBM from Layer L3609 includes tegula and imbrex roof tile, bessalis brick and box flue tile, with a single fragment of tegula exhibiting a U-shaped finger signature, the sole such mark in the assemblage.

Fabrics

The Roman CBM occurred almost entirely in a Fabric 1 (Table 16), which exhibits minor variations in firing and was almost certainly produced locally. This fabric occurs in a range of dull oxidised tones that range from orange to dark red-brown (and to very dark grey when burnt) but are typically consistent on individual tiles and bricks, occasionally with reduced mid grey cores. Inclusions comprise common poorly-moderately sorted quartz (0.1-0.5mm), sparse red iron rich grains and flint (0.25-3mm, occasionally larger) and sparse fine mica. The other fabrics include a cream fabric with sand and calcareous inclusions and an oxidised fabric with chalk inclusions that were probably produced elsewhere in Suffolk or on the Fen Edge, as

well as a shell-tempered fabric probably produced at the Harrold kilns, Bedfordshire. All three of these fabrics may have been imported to the site alongside pottery from the region, possibly to facilitate small scale repairs and patching of existing structures.

Form	Fabric 1		Other Fabrics	
	Fragment Count	Weight (g)	Fragment Count	Weight (g)
Tegula	1170	133042	26	2438
Imbrex	156	19468	-	-
Box Flue Tile	3	447	-	-
Bessalis	42	14123	17	3649
Miscellaneous	76	1044	-	-
Total	*1447*	*168124*	*43*	*6087*

Table 16: Quantification of Romano-British CBM form and fabric types (excluding mortar/ plaster)

Form Types

In total, fragments assigned to tegula roof tile account for 80.3% of the Roman brick and tile by fragment count (77.8% by weight) (Table 16). However, this masks the high degree of fragmentation of the tile that results in the bulk of the fragments comprising flat tile only, between 20-30mm thick, with only 204 fragments exhibiting a flange. Therefore it is possible that this total includes a proportion of un-keyed box flue tile, but the absolute paucity of identifiable box flue tile in the assemblage suggests this is unlikely. The size of the tegula roof tile in the assemblage is difficult to assess as only a single tile in the assemblage retained (re-constructible) dimensions beyond just thickness. An example contained in Layer L3609 Seg.C had a width of 310mm, a thickness of 23-27mm, and a length greater than 280mm. The flanges and cutaways on the tegula roof tile exhibited a wide range of profiles and little consistency, which combined with the variations in firing (colour), may represent a relative lack of skill or low quality in the manufacture of the tiles.

Imbrex roof tiles, which complement the tegula in Roman roof construction, account for a further 10.5% of the assemblage by fragment count (11.2% by weight), reinforcing the predominance of roof tile. The imbrex tiles are typically 20mm thick and in addition to their curved profile can often be distinguished by lengthways striations or ribbing from where they were smoothed over a mould. Both the tegula and imbrex roof tile usually exhibit a sanded base from when they were moulded, and sparse examples of both had a clay-like mortar with common organic inclusions/ voids adhering to their bases, presumably used to affix the tiles to roofs, but markedly contrasting with the mortar used for walls (possibly due to weight).

Fragments of Roman brick are sparsely distributed in the assemblage. All are *c.* 40mm thick, and although no other dimensions remain extant, probably comprised Bessalis type bricks. This type of brick may have been used to construct pilae for a hypocaust heating system, but the lack of box flue tile suggests that any buildings in the vicinity did not incorporate a hypocaust; therefore the bessalis were probably used as bonding courses in stone and chalk walls. Box flue tiles were represented by just three fragments exhibiting partial key marks in the assemblage, and it appears that this type of tile was not a significant component of any nearby structures.

The Post-Medieval To Modern CBM

The post-medieval CBM in the assemblage includes a sparse distribution of peg tile, pantile, and brick that probably date between the 17th to 18th centuries, although there is no suggestion that these fragments were associated with any structures or deposited together. Layer L3347 is notable for containing a scatter of post-medieval CBM in at least nine of the sections/test pits through it, while a single brick samples from Wall S4379 probably dates to the late 17th to early 18th century. The post-medieval CBM does not have any potential for further research or analysis.

Two complete modern bricks were recovered as un-stratified material, each with dove-tail joints on either end and stamped with ELECTRICITY DANGER RD.804561. This type of brick was used as a warning marker, to be laid above power cables, and it is hoped they fulfilled all their potential, prior to archaeological investigations truncating live electricity cables.

Research Agenda

The general high fragmentation and sparse distribution of the Roman CBM suggests the assemblage has a low potential for further analysis and research, but the presence of isolated concentrations and the potential of phased groups to emerge associated with enclosures (ditches and gullies) dictates that there are limited avenues to be explored. Previous excavations at the adjacent Roman maltings (Anderson 2004) recovered a total of 260 fragments (22.015kg) of CBM, predominantly Roman tegula and inbrex consistent with this assemblage. This Roman CBM may have been associated as primary or secondary deposits with the aisled building recorded at the maltings of possibly with a further demolished building beyond the southern edge of that excavated area, and this assemblage may have the potential to elaborate or expand this interpretation.

The understanding and characterisation of Roman rural settlement and industry is a research priority in East Anglia (Going 1997, 37-38; Going and Plouviez 2000, 22; Medlycott 2011a, 34 and 40) and the production, use and deposition of CBM at Beck Row has the potential to form a component of this.

Specific research questions that may be addressed by the analysis of this assemblage include:

- When the data is arranged into phased groups is there a bias towards any enclosures or feature groups; and is there a peak of Roman CBM deposition in any particular phase?
- Can the concentrations of Roman CBM in Ditch F1370, Pit F1413 and Layer L3609 be related to a specific episode of deposition or related to particular structures that may have occupied the site?
- How does the composition and distribution of the Roman CBM compare to that from adjacent excavations, especially the Roman maltings (Bales 2004), as well as to other sites in the region?
- Can the Roman CBM comment on the construction and industrial technology in use at Beck Row?

5.8 The Mortar and Plaster

Andrew Peachey

Excavations recovered a total of 130 fragments (5092g) of Roman mortar and plaster, including six fragments (278g) of *opus signinum*. These building materials are generally in a highly fragmented condition and slightly friable, but include sparse larger fragments end extant surfaces. A total of 61 fragments (1028g) exhibit extant surfaces with painted decoration.

The mortar and plaster are undifferentiated as the bulk of fragments are typically comprised of a coarse white mortar tempered with sand and chalk, overlain by a 2-4mm skimming of fine white lime plaster, which may have been painted. Small groups of plaster fragments were contained in Ditches F1424 (=F1888), F1796, F1929 and Pit F1854. The most common decorative scheme evident on these fragments is a plain red painted background, although green painted surfaces are also evident. Slightly more complex decorative schemes include parallel stripes, either red-white, red-green, black-white-red, or red-black-red, while there is also one instance of relatively crude red dots. Unfortunately the plaster and mortar fragments were too small to allow any decorative scheme to be defined, although simple painted surfaces, panels and lines were common decorative elements in Roman houses of moderate to high status.

The *opus signinum* comprises mortar that has been heavily tempered with abundant crushed red tile, which would have been hammered-down to form a floor. The low quantity of *opus signinum* was limited to fragments contained in Ditch F2491 and Gully F3188.

Research Potential

The limited quantity and fragmentary condition of the mortar, plaster and opus signinum dictate that the research potential of this building material is low; however a limited amount of further analysis will contribute to an enhanced research archive report (Resources: 1 day addition to general CBM report). Specific questions which should be addressed include:

- Do any specific sub-phases or feature groups include concentrations or larger groups of mortar and plaster? And can any such concentrations be associated with a structure within an enclosure, possibly a building, wall or pavement?
- How does the distribution of plaster and mortar compare to that of the Roman CBM, and does this suggest an association with a structure or that the material was imported as hardcore?
- How do the painted decorative schemes on the plaster compare to those in adjacent assemblages, and other buildings in the region?

5.9 The Slag

Andrew A. S. Newton

Introduction

The assemblage of slag recovered from this site comprises in excess of 125 pieces of slag, weighing a total of 10368g (Table 17). The majority of the material was recovered from Roman (Period II) contexts.

Phase	Fragment Count	Weight (g)
Phase II Sub-Phase 1	10	43
Phase II Sub-Phase 2	24	2214
Phase II Sub-Phase 3	20	2904
Phase II Sub-Phase 4	*c.* 31	946
Phase II Sub-Phase 5	9	478
Phase II Sub-Phase 6	22	3211
Phase II Sub-Phase 7	1	181
Phase III	8	430
Total	*125*	*10368*

Table 17: Fragment count and weight of slag by phase

Composition of the assemblage

An initial scan indicates that the majority of the slag in the assemblage derives from Fe smelting and smithing processes. However, it would appear that there is a small proportion of what may be iron-rich geology incorporated into the assemblage; geological conditions in the vicinity of the site are favourable for the formation of ironstone.

Research potential

Given the intensity of archaeological activity that has been recorded at the site, the quantity of slag is not large. As no structures or features that may relate to smelting furnaces or smithing hearths have been identified, it may be suggested that this assemblage is not representative of ironworking at this location. This material may represent an accumulation of material brought to the site as waste material or for use as hardcore over a prolonged period. It does, however, suggest the presence of Roman ironworking in the area surrounding the current site and can give some indication as to the kinds of ironworking practices that were being carried out.

To fully understand the assemblage, the material will be examined, described, identified to type of slag and process of origin (where possible) and catalogued. Patterns revealed by this will be noted and interpreted and notable patterns of distribution examined. This is likely to contribute to an understanding of manufacturing and the organisation of industry in the Eastern England in the Roman period (Medlycott 2011a, 48)

5.10 The Animal Bone

Dr Julia E. M. Cussans and Julie Curl

Introduction

A large quantity of animal bone was recovered from excavated deposits from the site, totalling over 450kg in weight, from 1127 contexts and context segments, spread between 1452 bone bags, or 108 boxes (23 x 18 x 46cm). The animal bone discussed in the bulk of this report was hand collected; no systematic sieving for animal bone was carried out, however some bone was recovered from the residues of flotation samples. Bulk samples for flotation were taken from all sealed, datable contexts, with the primary aim of recovering plant macrofossils; the bones recovered from these are discussed later in the report. Feature types were principally ditches and gullies with a large number of pits and grave pits and a smaller number of layers and other features. The vast majority of animal bones came from Roman deposits but features ranged in date from Bronze Age through to post medieval and the assemblage is characterised by a large number of animal burials apparently from throughout the use of the site. This report details the methods used during the bone scan and the results of that analysis followed by a statement of potential of the bone assemblage and a proposed methodology for future analysis; finally a publication synopsis is given.

Methods

The entire animal bone assemblage was scanned one bag at a time and the results recorded on a bone scan pro-forma. The pro-forma took into account observations on bone condition including general preservation, colour, abrasion, fresh breaks and gnawing. Mammal bones were quantified by species where possible or by size category where large indicates cattle or horse sized, medium is sheep/ goat, pig or large dog sized and small mammal is cat or hare sized. The presence of bird, fish and other small fauna could also be noted. For the identified mammal species the dominance of particular body parts was noted as was the presence of butchery, ageable mandibles and teeth, unfused epiphyses, measurable bones and those displaying pathologies. The presence of such features was noted in a semi-quantitative manner (none, few, some, many). Further to this, notes were made on any particular points of interest.

Once recorded the data from the scan was entered into an MS Excel spreadsheet along with context descriptions and spot dates to assist with data processing and analysis. As noted in the introduction some contexts and context segments were spread between more than one bag and these had been randomly distributed throughout the bone boxes. As a result the majority of quantifications described throughout this report are on a per-bag rather than per-context basis. Although a repatriation of contexts on paper would have been possible this would have proved rather time consuming and is thought unlikely to have greatly enhanced the analysis at this stage; final recording will be undertaken on a context by context basis with the assistance of a box and bag inventory created through the course of the bone scan.

As yet the full site phasing is not available, so in order to give some time depth to the bone scan analysis bone bags were divided up according to spot date into seven

groups as displayed in Table 18. This allows for some indication of change over time but has the potential to change significantly once the official site phasing is applied. This is due to large numbers of contexts being assigned broadly as 'Roman' that may have their dating refined following stratigraphic analysis and phasing. Likewise there are currently a large number of undated contexts which may be assigned to specific phases following stratigraphic analysis. As can be seen from Table 18 the vast majority of bone belongs to Roman deposits with very few assigned as prehistoric, medieval or post medieval. Obviously these proportions may change somewhat with any reassignment of the undated contexts.

Date division	Spot dates included	Number of bags
Prehistoric	Bronze Age Late Bronze Age/ early Iron Age Early Iron Age Iron Age	13
Early Roman	Any spot date including mid or late 1st C AD	120
Later Roman	All other spot dates including 2nd, 3rd and 4th C AD	350
Roman	Roman	543
Medieval	Medieval 12th-13th C AD 13th-14th C AD	8
Post Medieval	Post-Medieval 17th-18th C AD	55
Undated	No spot date available	363

Table 18: Broad phasing used for animal bone assessment, based on spot dates only

Bone Scan Results

Preservation

Bone preservation ranged from poor through to excellent with, for most periods, over 85% of bags being rated as either good or excellent. Preservation may have been slightly poorer for prehistoric contexts where only 77% were rated as good or excellent. Bone abrasion was rated as very low although for some contexts root etching was common. Canid gnawing was also fairly common being present in 24% (undated) to 46% (prehistoric) of bone bags, with the exception of the medieval period where no canid gnawing was noted. It was also noted that canid gnawing frequently affected the ends of bones with epiphyses often having been entirely chewed away; this has implications for age assessments and the recognition of bone modifications such as butchery marks. Fresh breaks were common throughout the assemblage but other than this the bone was not noted as being particularly fragmented.

Quantification

In terms of species presence and abundance the assemblage was vastly dominated by the remains of domestic mammals. Species quantifications are given in Table 19. Nearly 18000 fragments of bone were recorded in total with well over half of these being recorded as large (LTM) or medium (MTM) terrestrial mammal, the vast majority of which are made up of counts of ribs and vertebrae. Of the identified domestic mammal taxa, based on basic fragment counts alone, cattle are by far the most abundant, followed by pig, then sheep/ goat, horse and dog; cats are present in

very small numbers. However, as can be seen from Table 19, many of the species numbers are heavily skewed by the presence of a number of animal burials or animal bone groups (ABGs). This skewing is particularly noticeable for pig where in some phases over 75-90% of the NISP is accounted for by ABGs. The numbers for dog are also heavily affected, as to some extent are cattle, whereas horse and sheep/goat are less affected. The LTM and MTM numbers will also be somewhat affected as currently these include all ribs and vertebrae, including those found as part of whole animal burials; this will be corrected in final recording. ABGs are described in more detail below. Therefore in terms of ordinary rubbish disposal the importance of pig is significantly downgraded and their frequency in ordinary midden deposits is much less than either sheep/ goat or horse.

	Prehistoric	Early Roman	Later Roman	Roman	Medieval	Post-Medieval	Undated	Total
Cattle	27*	263	903	976**	109****	208***	736**	**3222**
Sheep/ goat	2	101	312**	288*	2	52	85	**842**
Pig	4	8	234****	254****	1	206*****	331*****	**1038**
Horse	3	81	203	338**	1	24	88	**738**
Dog	-	82****	43*	177***	2	9	159****	**472**
Cat	-	-	1	5	-	-	1	**7**
Red deer	1	8 (6)	13 (5)	57 (45)	-	3	5 (3)	**87 (59)**
Roe deer	-	4	-	3	-	-	3 (2)	**10 (2)**
Badger	-	-	1	2	-	1	-	**4**
Fox	-	-	1	-	-	-	-	**1**
Hare/ rabbit	-	-	-	2	-	2	-	**4**
Human	-	1	8	15	-	-	8*****	**32**
LTM	66	612	2279	2994	214	392	2037	**8594**
MTM	5	84	729	776	-	208	783	**2585**
STM	-	1	-	-	-	-	-	**1**
Bird	-	3	8	18	-	-	206*****	**235**
Total	**108**	**1240**	**4722**	**5848**	**329**	**1104**	**4434**	**17774**

*Table 19: NISP by date range based on spot dates. Numbers in parentheses indicate antler numbers included in total NISP; Asterisks indicate quantity of NISP accounted for by ABGs *=>10%, **=>25%, ***=>50%, ****=>75%, *****=>90%*

Wild mammals are represented by much lower numbers and include red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), badger (*Meles meles*), hare or rabbit (*Lepus/ Oryctolagus*) and fox (*Vulpes vulpes*). Deer are represented by both antler fragments (many of which are shed) and post-cranial elements demonstrating that both antler collection and deer hunting took place. A small quantity of human bone was also present and will be described further below. A number of bird species were present and although firm identifications could not currently be made due to the availability of reference material the following taxa have been tentatively identified: chicken (*Gallus* sp.), duck (*Anas* sp.), goose (*Anser/ Branta*), crane (*Grus grus*) and medium/ large corvid (*Corvus* sp.). A small number of other bird bones did not fit any of these taxa and likely belong to other species.

In the main the bones of sheep and goat were not distinguished at this stage of the analysis and are hence referred to as sheep/ goat. Where suitable fragments of skull or horncore were present species identification were made. In the majority of cases throughout the phases these were identified as sheep. On a couple of

occasions, where fragments were small, species could not be determined and in the Roman phase three goats were identified compared to five sheep; no other goats were positively identified at this stage.

As the data stand there appears to be little variation in species proportions over time. If one removes the influence of the ABGs then the order of abundance changes to cattle, sheep/ goat, horse and then pig and dog are present in very small numbers. Dogs and cats were possibly only introduced to the site during the Roman period. Red deer appear to be present throughout the life of the site and are only missing from the very small medieval sample. Exploitation of roe deer appears less consistent.

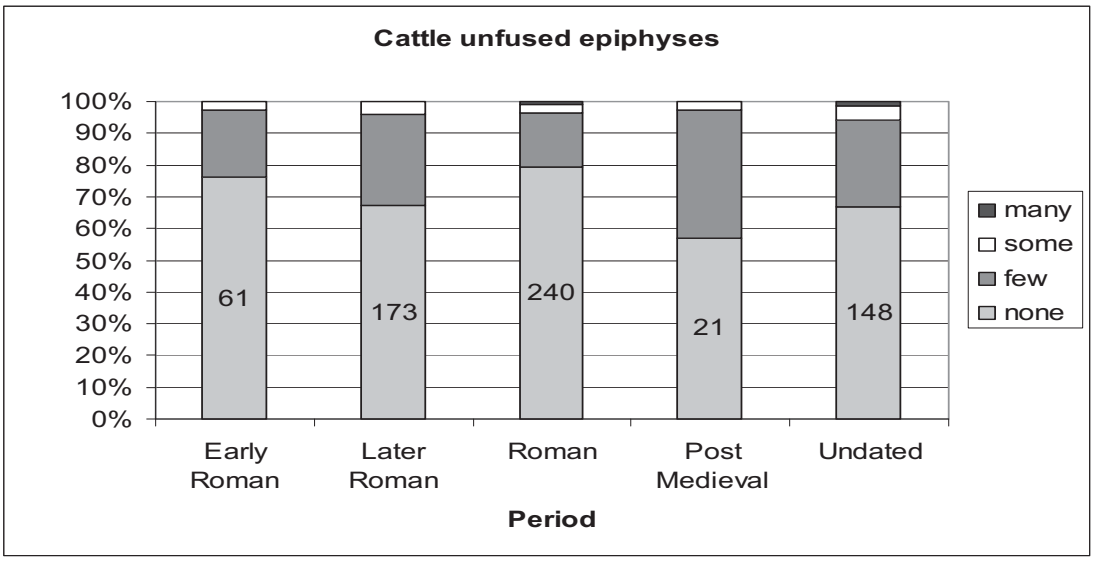
Animal age

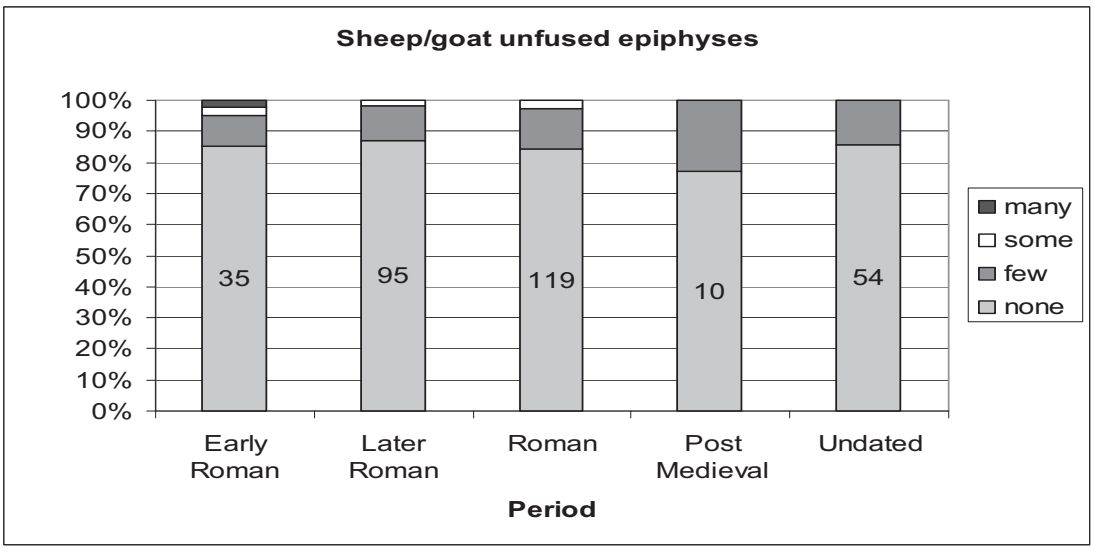
A number of ageable jaws and teeth were available for the five main domestic taxa (Table 20); these will be helpful in determining the nature of animal husbandry at the site. Some age assessment of horse and dog may also be possible from teeth and jaws. The majority of ageable jaws came from the Roman material with only a few coming from earlier or later deposits. There is good potential however for looking at changes in husbandry over the course of the Roman occupation, particularly for cattle and sheep/ goat, which have the largest numbers of ageable jaws.

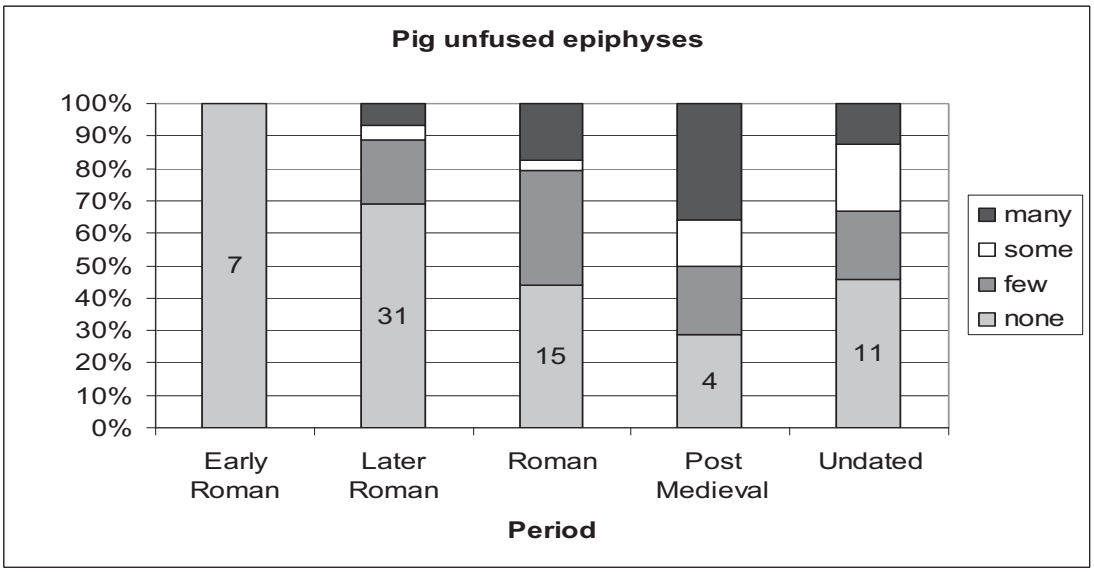
	Cattle	**Sheep/ goat**	**Pig**	**Horse**	**Dog**	**Total**
Prehistoric	1	1	1	0	0	3
Early Roman	10	9	1	1	4	25
Later Roman	36	11	3	4	4	58
Roman	31	23	5	6	8	73
Medieval	1	0	0	0	0	1
Post Medieval	10	2	3	0	1	16
Undated	17	3	5	0	4	29
Total	106	49	18	11	21	205

Table 20: Number of bags containing at least one ageable mandible or tooth by species and spot date group

At this stage a little more information could be gained on animal age from the occurrence of unfused epiphyses. These have been roughly quantified for each species by bag and are displayed in Chart 1.


Cattle unfused epiphyses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
61
173
240
21
148
many
some
few
none
Early Roman
Later Roman
Roman
Post Medieval
Undated
Period


Sheep/goat unfused epiphyses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
35
95
119
10
54
many
some
few
none
Early Roman
Later Roman
Roman
Post Medieval
Undated
Period


Pig unfused epiphyses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
7
31
15
4
11
many
some
few
none
Early Roman
Later Roman
Roman
Post Medieval
Undated
Period

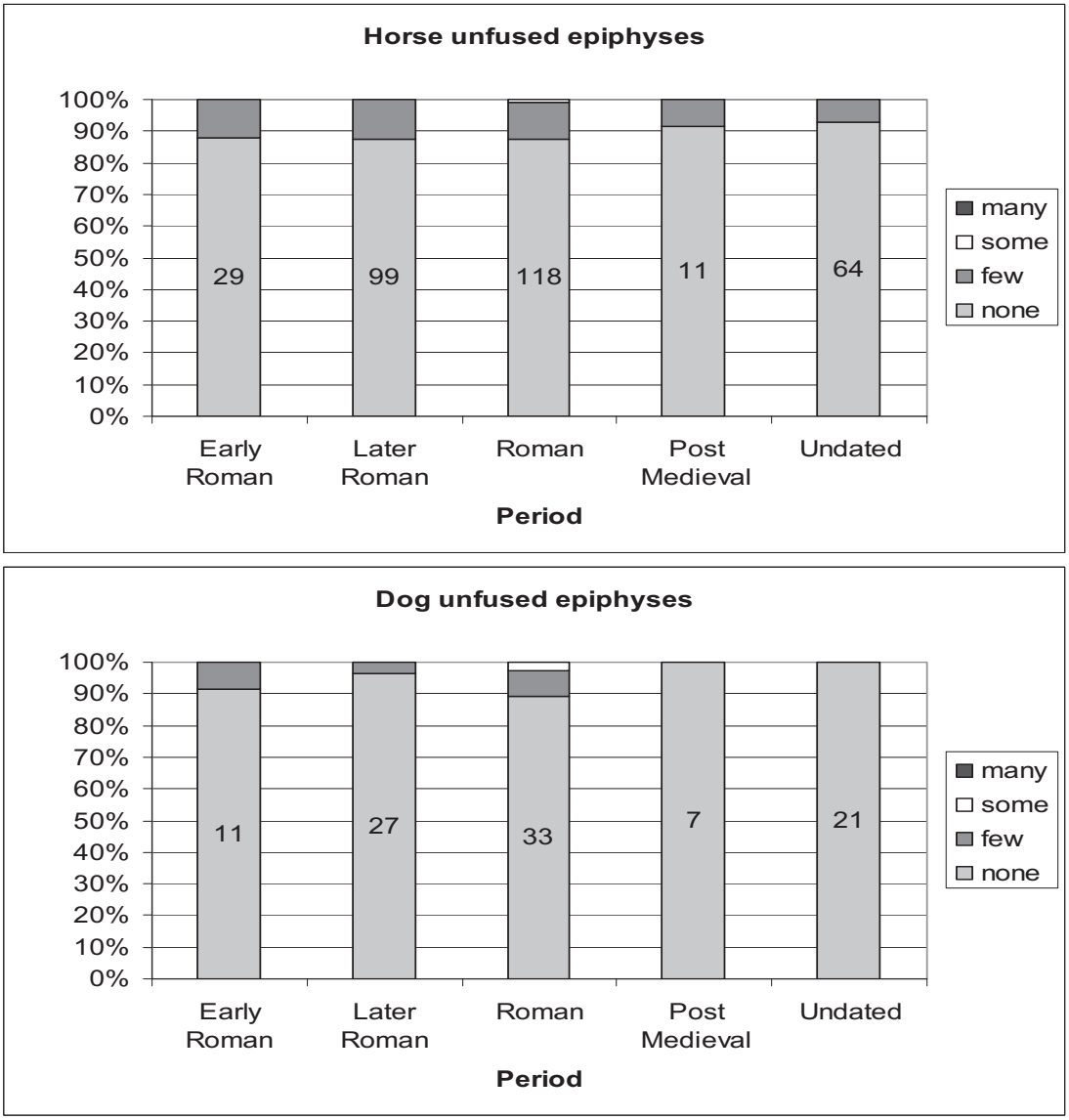


Chart 1: Percentage of bone bags containing unfused epiphyses. Numbers on bars indicate number of bags containing no unfused epiphyses

Chart 1 shows some very clear variation between the ages of the different taxa. The low number of unfused bones present for horse and dog indicate that the majority of these animals survived into adulthood. Conversely the data for pig shows a very high number of young animals being slaughtered; this is particularly interesting when one considers that the majority of these bones come from individual animal burials. It is also interesting to note that younger pigs and pig burials are not present in the 'Early Roman' deposits. Sheep/ goat have low numbers of unfused epiphyses, but not as low as for horse and dog, indicating that a proportion of the animals were slaughtered before reaching maturity. Cattle have slightly higher numbers of unfused epiphyses indicating that a reasonable proportion of the assemblage may have been killed at prime meat age.

Butchery and body part

The presence of butchery marks was also noted and their occurrence is presented in Chart 2. Butchery marks appear to be more common for prehistoric deposits than

Roman and later ones. Red deer, although only represented by a small number of bones show a high percentage of butchery. Pigs show very low percentage of butchery presumably associated with the majority of their bones coming from whole animal burials. Horses and dogs show a surprisingly high frequency of butchery often higher than that for sheep/ goat. Of the domestic mammals, cattle always have the highest occurrence of butchery marks. The majority of butchery marks were small knife cuts. Large blade chops were not common except on cattle skulls where the removal of horncores seemed fairly common practice across the phases. Large blade butchery tends to be more common on Roman urban and military sites where distinctive butchery patterns tend to be present; these are much less common on rural sites (Maltby 2002) and this seems to be the case here. Two possibly hook marked cattle scapulae were noted from the entire assemblage but little else in the way of typical Roman butchery deposits (as observed on many urban sites, Maltby 2007) was observed.

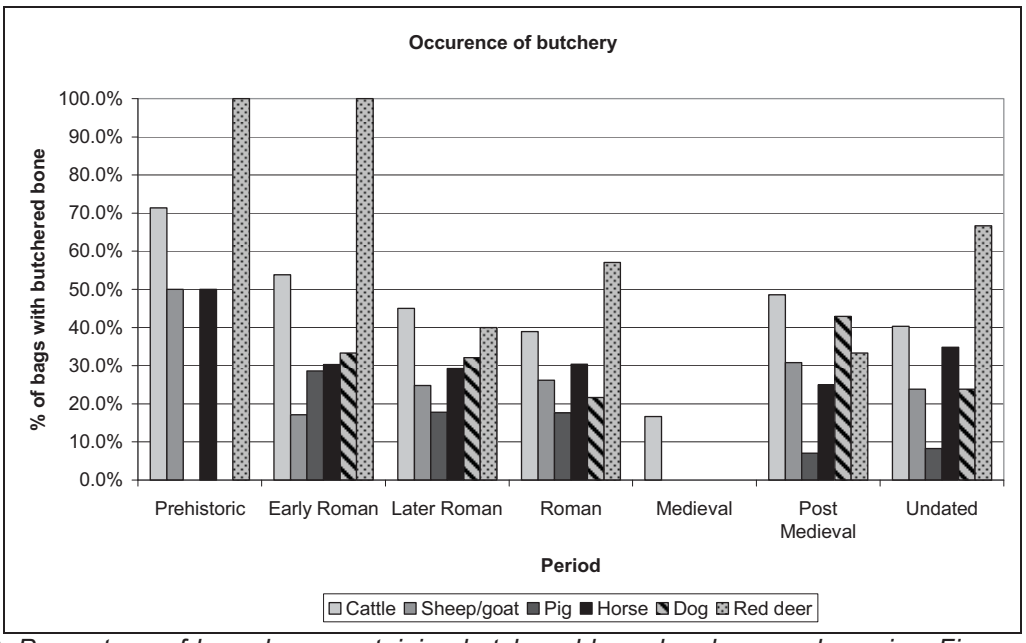


Chart 2: Percentage of bone bags containing butchered bone by phase and species. Figures for red deer do not include antler

Body parts represented were noted during the scan (head, vertebrae, limbs, feet, mixed) and show some interesting patterns. Cattle, sheep/ goat, horse and pig all appear to have a good mix of elements indicating that whole animals were brought to or reared on the site. For dogs, there appears to be a lack of foot bones indicating that these may have been disposed of elsewhere, possibly as a result of the removal and use of dog skins; a more detailed examination of dog butchery marks and body part will help to determine the likelihood of such practices. The red deer assemblage is dominated by antler and limb bones; the majority of the antler appears to have derived from shed specimens. The dominance of limb bones over other, less meaty, parts may indicate the butchery of deer taking place at the kill site rather than whole carcasses being transported back to the settlement; roe deer remains are also dominated by limb bones.

Biometry

The presence of measurable elements (here defined as complete, fused bones) was also noted during the scan. Due to the large number of unfused elements pigs had very few measurable bones; teeth were also in relatively short supply. Dogs had the highest proportion of measurable bones with 45% of bags containing dog bones having measurable elements. This figure was lower for cattle, horse and sheep/ goat, being around 20% for each. The availability of measurable bones is important in examining changes in livestock stature over time and in determining proportions of males and females. Whilst in the past biometrical work has indicated a general size increase of livestock in association with the Roman invasion (e.g. Maltby 1981), Albarella *et al*. (2008) have shown size increases to be a complex matter, depending very much on the nature and location of the sites in question. The data from Beck Row have the potential to add to this debate in terms of what may be happening at Roman rural sites and how this may differ from urban or military sites. Size and shape variations in dogs and horses (or more correctly equids), were noted during the scan and may be useful in determining the types of animals kept or used at the site and how these compared to other Romano-British sites. Of additional interest is variation in cattle type or breed. In the main, cattle horn cores were of the short horn type but one example, from a currently undated context, was a twisted type of horn indicating some genetic variability in the cattle population.

Pathologies and non-metric traits

Pathologies were noted for all of the five main domestic taxa and were spread throughout the phases. A variety of ailments were noted and should be investigated more fully, but several are worthy of mention here. For cattle, dental calculus was fairly common throughout the phases as was fairly low levels of eburnation on joint surfaces in particular on the femur head and acetabulum. Sheep/ goat also occasionally suffered from dental calculus, a number of other tooth and jaw related abnormalities were also noted, including possible infections and deformity of tooth roots. One sheep/ goat tibia was extremely deformed and had a great deal of additional bone growth; it is postulated this may be a healed break. Pig abnormalities included a twisted or rotated fourth premolar and an odd, unfused tibia that had a hole in the proximal fusion surface of the diaphyses and a corresponding spike on the fusion surface of the epiphysis. Horse bones had few pathologies but those that were present were mostly found on the metapodials and phalanges. The most distinctive pathology noted for dog was the presence of two femora, from two different animals based on the size difference, which were quite severely bent at the distal end. Neither appeared to have broken and healed but rather had grown that way, the possibility of rickets or other bone deforming diseases should be investigated.

In addition to the pathologies noted above the occurrence of two non-metric traits were noted for cattle. These were the reduction or absence of the hypoconulid (third cusp) on the lower third molar and the malformation of the mental foramen on the mandible. Quantification of such traits and changes in their occurrence over time may help to answer questions on genetic variation in the Beck Row cattle population.

Animal bone groups (ABGs)

At this stage a total of 33 ABGs have been identified and these are summarised in table 21. One of these (SK8) is strictly not an ABG as it is a human burial. However although this deposit was recognised as a grave pit during excavation the human nature of the contents was not; this is likely due to the small, fragile and incomplete nature of these immature remains. A small number of other human bones were found during the animal bone scan (Table 19) and all of these will be discussed together below.

A total of 11 cattle ABGS have been identified, these include both fairly complete skeletons and deposits of near complete skulls. The age of the animals range from neonate to adult and several show evidence of horn removal, usually via large chops through the rear portion of the frontal bone; this practice does not appear to be date specific and no other butchery was observed.

A total of eight pig ABGs have been recognised from a variety of dates. All appear to be almost complete skeletons and a few have additional bone elements, for example SK5 contains an extra left radius. None of these are adult animals, all having high quantities of unfused elements.

Dog ABGs are a little more mixed; of the seven identified only two are almost complete individuals. The others are either partial skeletons or a mix of individuals. They are also quite commonly found with the remains of other animals. The majority of the dogs are mature animals.

There are four examples of sheep/ goat ABGs and as for the dogs these are quite variable in nature. Only one contains a complete animal which is a foetal sheep plus a semi-complete adult sheep. The others are a single hind limb, three complete skulls and finally a large selection of foot bones, possibly representing tanners waste.

Only a single equid ABG was identified this was SK15 and was almost complete. The bones of this animal were very small but all fused, hence this may be the remains of a pony or other small equid; biometrical analysis should be able to establish this.

The final ABG was a large collection of probable chicken bones representing at least six individuals; all were large fully mature animals.

Date Bracket for Assessment	Final Phase	Feature	Layer	Sk	Feature Type	Species	MNI (NISP)	Completeness Notes	Pathology	Butchery	Age
Prehistoric (Iron Age)	Period I	4570	4571	\	Pit	Cattle	1 (3)	Skull - almost complete plus few other bits, dog gnawing on occipitals	no	poss butchery around bottom of horncores	adult
Early Roman	R2	4090	4091 K	\	Gully	Cattle	2 (3)	Pair of cattle jaws, plus one extra. Also fragmented horse skull from L4091 J and pair of neonate cattle jaws from L4091 L	no	no	adult
Later Roman (?)	R3	1265	1247 B	\	Modern Boundary (?)	Cattle	1 (25)	Skull - almost complete but fragmented	no	no	adult
Roman	R6	2344	2346	Sk 3		Cattle	1 (107)	Fairly complete	few	horncores chopped off	All fully fused - including vertebrae - Adult
Roman	R6	4212	4213	\	Pit	Cattle	1 (137)	Fairly complete	no	no	neonate
??Roman	R6	1374	1375 C	\	Ditch	Cattle	1 (17)	Skull - almost complete but fragmented. L1375 A and B spot date to Roman	no	no	adult
Medieval	Period III	4188	4189	Sk 10	Grave pit	Cattle	1 (95)	Complete neonate calf skeleton	no	no	neonate
Post Medieval	Period III	4455	4456	Sk 12	Grave pit	Cattle	2 (105)	One pretty much complete skeleton , plus extra cattle M3 (with missing hypoconulid) also few bit of sheep/ goat,	few	Diagonal chops through frontal - removal of horns?	dp4s heavily worn and roots mostly reabsorbed

								horse and dog present			
No Date	R6	2399	2400	Sk 2	Pit	Cattle	1 (86)	Fairly complete	few	Chops into frontal bone - removal of horncores	Quite a few unfused epiphyses - juvenile
No Date	Period III	4457	4458	Sk 13	Grave pit	Cattle	2 (130)	One almost compete juvenile and parts of an older animal including all four feet and both mandibles. Odd bits of sheep/ goat and horse present	no	Chops through skull - horncore removal?	One juvenile, one older
No Date	R6	4546	4547	\	Pit	Cattle	1 (85)	Almost complete single animal, plus few bits of sheep/ goat and dog	no	no	lots of unfused epiphyses
Later Roman	Period III	2440	2441	Sk 5	Pit	Pig	2 (179)	One pretty much complete skeleton plus extra left radius	few	few	lots of unfused epiphyses
Roman	R6	2407	2408	\	Pit	Pig	1 (116)	Fairly complete, plus few bits of cattle and sheep/ goat	no	no	lots of unfused epiphyses, vertebral centra also unfused
Roman	R6	4540	4541	\	Pit	Pig	1 (95)	Fairly complete - male	some	no	lots of unfused epiphyses
Post Medieval	Period III	1125	1126	\	Pit	Pig	1 (70)	Fairly complete	few	few	lots of unfused epiphyses
Post Medieval	Period III	2458	2459	Sk 7	Pit	Pig	2 (131)	Almost complete skeleton plus few extra limb	few	no	lots of unfused epiphyses, M3 slight wear

								bones			
No Date	R6	1175	1176	\	Pit	Pig	1 (135)	Fairly complete	no	no	all bones unfused, M1 just in wear
No Date	R6	2452	2453	\	Pit	Pig	1 (102)	Fairly complete	no	no	lots of unfused epiphyses, vertebral centra also unfused
No Date	Period III	4577	4578	Sk 14	Pit	Pig	2 (80)	One almost complete juvenile, plus skull and mandible of foetal animal	no	no	one juvenile, one foetal
Early Roman	R6	1729	1730 B	\	Ditch	Dog	1 (17)	Partial skeleton, plus mixed cattle and sheep/ goat	few	no	quite old - teeth well worn
Early Roman	R2	1758	1759	\	Post hole	Dog	3 (53)	Mostly limbs and feet, also includes mix of cattle, sheep/ goat and horse.	no	few - dismemberment	very few unfused bones
Later Roman	R3	4104	4105 A	\	Ditch	Dog	1 (7)	All from front end of muzzle	no	no	adult
Roman	R6	1704	1739	\	Pit	Dog	4 (110)	All, body parts represented, but not necessarily 4 complete individuals. Also included cattle, sheep/ goat and horse.	no	no	All mature except single jaw
No Date	R3	1532	1563	\	Pit	Dog	1 (30)	Almost complete remains of single small dog	no	no	No unfused epiphyses - adult

No Date	R1	4036	4037 B	\	Ditch	Dog	1 (11)	Partial skeleton - limbs, ribs vert	no	no	No unfused epiphyses - adult
No Date	R3	4196	4197	\	Pit	Dog	1 (90)	Most of a single individual	no	no	No unfused epiphyses - adult
Later Roman	R6	1219	1220	\	Pit	Sheep	2 (100)	One almost complete foetal animal and one fully mature including skull, hind limbs, ribs and vertebrae	few	few - only on tarsals	One foetal, one adult
Later Roman	R5	1139	1141 B	\	Ditch	Sheep/ goat	1 (13)	Single hind limb	no	no	all fused
Roman	R5	1139	1140 J	\	Ditch	Goat and sheep	3 (3)	Three almost complete skulls, 2 x goat (1 v young, 1 adult), 1 x sheep (v young). Other segments of L1140 include an adult sheep skull and large frags of cattle skull, overall L1140 is large mixed ditch fill made up mostly of cattle and sheep/ goat	no	no	various - see completeness notes
Roman	Unphased	4062	4064 B	\	Pit	Sheep/ goat	5 (48)	All foot bones - metapodials, phalanges and navicular cuboid	no	some - only around tops of metapodials	some unfused epiphyses
Roman	R6	5045	5046	Sk 15	Ditch	Horse	1 (95)	Fairly complete, v small animal but not juvenile	few	no	No unfused epiphyses - adult

No Date	R6	1167	1168	\	Pit	Chicken?	6 (195)	Most body parts represented. Slight size variation but all large - cockerels? Tarso-metatarsus looks like has spur scar.	few	no	All fully mature

Table 21: Summary of Animal Bone Groups sorted by species and period, the final stratigraphic phase has also been added for reference

Sieved Samples

A small quantity of animal bone was available from flotation residues. A very brief scan of this material showed that it contained no fish bone and a very few bird and amphibian bones. Other than these small creatures only the bones of the larger mammals found in the hand collected assemblage were present indicating that the dominance of such species as found in the hand collected remains is likely an accurate representation of the species present at the site in life. The main difference in the appearance of the sieved remains and the hand collected remains was the greater fragmentation and higher incidence of burnt fragments in the sieved remains over the hand collected bone.

Summary of results

A large part of the assemblage is made up of animal bone groups and is in the main very well preserved. It is likely that dog gnawing may affect the availability of ageable epiphyses outside of the ABGs; however there is a good quantity of ageable jaws and teeth, particularly for cattle and sheep/ goat. There is a great emphasis on the exploitation of domestic mammals but also limited exploitation of wild mammals and birds. Variations in age at death for the main species are clearly present with pigs being most likely to be killed young and dogs and horses most likely to survive into adulthood. Butchery marks are fairly common throughout the species and phases and are principally in the form of small knife cuts. Biometry and non-metric traits will shed light on changes in livestock populations over time and pathologies may give some indication of animal treatment and general condition. A small number of human bones were present, mostly from very young individuals.

Phasing Update

Since this report was first written the stratigraphic phasing has been finalised. It was not felt practical or necessary to reassess the bone scan data in light of the new phasing at this stage as this would prove time consuming and costly without necessarily adding significant value to this report. The only additions that have been made are to the table of ABGs (Table 21) to clarify which phase each ABG now belongs to. To give an idea of the availability of bone data for each phase Table 22 lists the number of bone bags assigned to each phase. This shows that the majority of the material derives from Period II (Roman) with a fairly even spread of data between Roman 2 and Roman 6; slightly fewer bone bags are assigned to Roman 1 and Roman 7. A small quantity of material is available from prehistoric deposits (Period I) and a larger quantity from medieval and post medieval deposits in Period III. A small quantity of the bone derived from unphased or unstratified deposits which will not be included in the final analysis.

Phase		Time period	Number of bone bags
Period I		Prehistoric/ pre-Roman	13
Period II	Roman Sub-Phase 1	Late 1st – early 2nd century	80
	Roman Sub-Phase 2	Early – mid/late 2nd century	240
	Roman Sub-Phase 3	Late 2nd – early 3rd century	195
	Roman Sub-Phase 4	Early – mid-3rd century	183
	Roman Sub-Phase 5	Mid-3rd – early 4th century	206
	Roman Sub-Phase 6	Early – mid/late 4th century	362
	Roman Sub-Phase 7	Mid – late 4th century+	35
Period III		Medieval/ post medieval	99
Unphased		-	20
Unstratified		-	16

Table 22: Number of bone bags per stratigraphic phase

Statement of potential

The animal bone assemblage from this site has the potential to inform at all levels of Roman animal husbandry, economy and society. More specific themes are presented below.

Site specific

For the site itself the assemblage will be able to inform on the nature of animal husbandry and its contribution to site economy and society as well as variations between species and time periods in the treatment and disposal of animal remains. The spatial distribution of animal remains may also inform on specific activity areas on the site.

Local

It will be interesting to see how the animal bone assemblage from this site fits with the neighbouring Maltings site (Willett 2004), as they must have formed a single coherent settlement at the time of occupation. The Maltings bone assemblage (*ibid*.) is much smaller than the one under consideration here and the phasing for the Roman period is much less detailed than that used for the current site. However some comparisons may be made. The range of species present is very similar and the nature of the butchery also appears similar. The site appears to show little change between the Iron Age and Roman periods in terms of its economy or the animals exploited. It will be interesting to see if these patterns hold true for the much larger assemblage under examination here. Similarities or differences between the assemblages may inform on the use of different areas of the settlement.

Regional and national

On a regional and national level the assemblage has the potential to add to current knowledge on the development of animal husbandry and economy over the course of Roman settlement in England. In particular in its role as a rural settlement and how this affects changes in livestock and economy over time. The Roman incursion had varying effects on the economy and society and the manner of any changes occurring at Beck Row will help inform on how the Roman incursion influenced rural sites, particularly in the east of England. This may include changes in livestock over time, any introductions or improvements that may have been made and any changes

in the nature of animal husbandry occurring at the site. How this fits with national picture of changes in livestock and animal husbandry during the Roman period will be of particular importance.

On a national level this unusual assemblage has the potential to add to current knowledge on Roman and medieval ABGs.

Research aims/ questions

With the above research potential in mind the following research aims and questions have been developed:

- What were the principal economic foci and animal husbandry strategies?
  - What were the main domestic species used for?
  - Did this change over time?

- What differences were there in the disposal of animal remains?
  - Were different species disposed of in different ways or in different parts of the site?
    - Burials v midden deposits
    - Spatial distribution/ identification of activity areas
      - Location of specific deposits i.e. primary butchery waste or domestic/food waste etc.

- How does the site fit with the regional and national picture of Romano-British sites?
  - Is there any change in livestock size or conformation over time?
  - How does this fit with the complex pattern observed by Albarella *et al*. (2008)?
    - Are the changes gradual or swift?
    - Early or late?
    - How does this fit with other rural sites and with urban and possibly military sites?
    - Is there other evidence for genetic change in the livestock – horn core conformation, variation in the presence of non-metric traits e.g. reduced hypoconulid or congenitally absent 2nd premolar?
  - How do the butchery patterns fit with those from other Roman sites?
    - No specialised butchery patterns appear to be present – is the nature of the butchery typical for a Roman rural site?
    - Is there any evidence from body part representation or age profiles that suggests that animals or carcass parts were being sent elsewhere? Is this a producer site or a self-contained settlement?
  - What is the site's relationship with surrounding settlements and urban centres?
  - How does the site advance our knowledge of Roman rural settlements?

Objectives

In order to achieve these aims the following objectives must be met:

- Record animal bone assemblage taking into account species, body part, butchery, age at death, biometry, pathology and non-metric traits.
- Assess the data on a phase by phase basis to detect changes in slaughter patterns, animal size and shape, and genetic variations based on distribution of non-metric traits.
- Examine butchery evidence for differences between species alongside detailed examination of ABGs and the precise nature of their makeup.
- Examine the gathered data in light of regional and national understanding of Roman rural settlements and agricultural practices and other sites with ABGs

Method Statement

All bone will be identified to species wherever possible using in-house and external comparative bone reference collections and a variety of reference manuals as required. Where bones cannot be identified to a species, but to a group, then they will be recorded as a group, for example: 'duck sp.' or 'fowl'. Where the group cannot be determined then bone will be separated into 'bird' (distinguishing with size where possible) or 'mammal' and the 'mammal' bone further divided where possible and counted to 'large mammal' (cattle/ equid size), 'small-med mammal' (ovicaprid/ porcine/ large canid) and 'small mammal' (small canids/ feline/ lagomorphs/ mustelids) or 'rodent'. Where possible, sheep and goat will be distinguished using the methods of Boessneck (1969) and Payne (1985).

The mammal bones will be recorded using a modified version described in Davis (1992). Measurements shall be taken where appropriate, generally following von den Dreisch (1976). Humerus BT and HTC and metapodial "a" and "b" will be recorded as suggested by Davis (1992) and withers heights will be estimated using multiplication factors recommended by von den Driesch and Boessneck (1974). Horncores will be recorded when present by species (and sex where possible) and the following measurements taken: greater length, maximum base width and minimum base width. The horncores will only be measured when at least one of the complete measurements can be taken. Tooth eruption and wear will be recorded following Grant (1982). For equids, teeth will be recorded where appropriate and age estimated following Levine (1982).

Any butchering will also be recorded, noting the type of butchering, such as cut, chopped, smashed or sawn bone and locations of butchering. A record will be made of any burning or other taphonomic effects. Determination of damage by invertebrates, molluscs or isopods will be made where possible. Gnawing will be recorded as fully as possible, determining canid/ feline/ mustelid gnawing and rodent gnawing, providing where possible the size of the individual producing the gnawing, for example, 'large canid', 'small canid/ feline' or 'small rodent'. Data will be retrieved on pathologies, including non-metric traits.

Species will be quantified by number of bone pieces for each individual species present (NISP) and minimum number of individuals (MNI). Animal Bone Groups

(ABGs) will be recorded with the whole assemblage and assigned individual identifiers during recording so that all the bones from a particular group can be extracted for more detailed examination in isolation.

All information will be recorded directly into a Microsoft database for analysis. A complete catalogue with individual ABG, measurements and tooth records will be provided for the digital archive. Keys will be provided for codes used. Photographs, using standard centimetre or millimetre scales as appropriate, will be taken of bones of interest (such as less common butchering and pathologies) throughout the recording stage and these will be available for publication suggestions or for the archive.

Publication Synopsis

- Introduction
- Methods
- Results
  - Taphonomy and variation between deposit types
  - Species quantification and change over time
  - Age at death and animal husbandry
  - Biometry
  - Butchery and body part representation
  - Pathology and non-metric variation
  - Animal Bone Groups
- Discussion
  - Site economy
  - Variations in deposition of animal remains
  - Beck Row animal bone in its regional/national context

    Potential sites for comparison
    - Beck Row, Maltings site (Willet 2004)
    - Kilverstone, Norfolk (Garrow *et al*. 2006)
    - Scole, Norfolk (Baker 1998)
    - Elms Farm, Essex (Johnstone and Albarella 2002; Albarella *et al.* 2008)
    - Rayne, Essex (Smoothy 1989)
    - Marsh Leys Farm, Bedfordshire (Luke and Preece 2011)
    - Love's Farm, Cambridgeshire (Hinman forthcoming)
    - Colchester, Essex (Luff 1993)
    - Great Chesterford Temple (Medlycott 2011b)
    - James Morris' work on ABGs and sites therein (Morris 2011)
    - Exeter, Devon (Maltby 1979)
- Conclusions

5.11 The Human Remains

Julie Curl

Introduction

A single skeleton of a human baby was recovered and miscellaneous pieces of human skeletal remains, along with an unstratified urned cremation and a cremation from a 4th century ceramic jar from a Roman Sub-Phase 6 pit.

Methodology

The human remains were recorded following modified guidelines produced by English Heritage (Mays 2004) and the IfA (Brickley and McKinley 2004). All of the bones were quantified by skeleton number or context and an estimate of the minimum number of individuals was recorded based on counts of the most frequent elements recorded and ages of those present. All elements were examined for any pathologies, genetic traits and modifications which were recorded, noting the location on the body. Bone fusion and tooth wear were noted when possible to allow estimation of ages following Brothwell (1981). Full recording was made on skeleton record sheets and data input into an Excel spreadsheet; summary tables of these data are included below (Appendix 1 and 2) and a full catalogue is available as an Excel file (along with the faunal catalogue) in the digital site archive.

A neonatal burial

The fill of Roman Sub-Phase 6 Pit F1600 (L1601) contained the remains of an infant burial (SK1) dating to the early to mid/ late 4th century AD. The bones recovered amount to 115 pieces, weighing a total of 68g. The elements found include the skull, atlas vertebrae, clavicle and scapula fragments, ribs, vertebrae, arm bones and leg bones. The remains are fragile, but in good condition, although there is some erosion of the ends of the bones and many are fragmented; fragility is expected with bones of very young individuals. The size of the bones from this baby would suggest a full-term neonate (following Bass 1995; Schaefer *et al*. 2009). The possibility of a still-birth or trauma at birth is very likely as the individual is very young. There is no obvious cause of death visible on the remains.

There has clearly been an element of ceremony and grieving with this child. The cut of Pit F1600 seemed unnecessarily large for such a young (*c.* 0.60 x 0.30 x 0.50m), perhaps suggesting that the pit also included 'bedding' such a sheepskin or blanket.

The isolated unburnt remains

Five vertebrae, four pieces of skull and miscellaneous fragments were produced by Fill L3503 (Seg.B) of Roman Sub-Phase 3 Ditch F3502. The vertebrae comprise the atlas, axis and three cervical elements (C4, C5 and C6). The three cervical vertebrae and the axis all show signs of osteoarthritis, with marginal lipping and some osteophytes. Causes for osteoarthritis can be initiated by trauma or as a result of age, genetic predisposition or mechanical stress.

Skeleton (SK) 8 from Grave F2731 (L2732) comprised a total of 92 bone fragments, weighing 29g. The remains comprise erupted and unerupted teeth and skull fragments and several unidentifiable pieces; a single small terrestrial mammal (cat/ hare-sized) limb fragment was also present. The human remains are from a young juvenile, the range of teeth suggesting a child of approximately six to seven years old.

SK9 from Roman Sub-Phase 3 Grave F3289 (L3290) comprises highly fragmented and eroded remains, with few diagnostic elements. Complete (but some broken) hand bones (3rd metacarpal, 5th proximal phalanx and intermediate phalanx) are present, along with a fragment of a femur head and skull fragments. The bone from this grave is in poor condition with eroded surfaces. The fragments are all incomplete, preventing any estimation of stature, sex or age, bar that these are the remains of an adult.

A further seven contexts produced isolated neonatal bones and two other contexts produced adult elements.

The cremated material

Cremation 1

Cremation 1 was recovered from a shouldered jar in Roman Sub-Phase 6 Pit F1068 (L1071). This pit was only tentatively assigned to the early to mid/ late 4th century AD (Mustchin *pers. comm.*). A total of 399g of bone, consisting of 427 pieces was recovered from this vessel deposit. The material comprises burnt and unburnt remains of skull, upper and lower limbs, pelvis and scapula, with the pieces containing few articular fragments. The bones are those of an adult, but no diagnostic pieces were present that could allow a more accurate determination of age or sex.

Unstratified cremation

Two bags of cremated bone were recovered from a large, unstratified bowl jar dating to between the 2nd and 4th centuries AD. The remains comprise over 1200 pieces weighing 1355g. The numerous larger pieces present include identifiable fragments of skull, vertebrae, mandible, upper and lower limb bones, foot bones, hand bones and pelvis. Also included are a large number of smaller fragments and powder. The remains are clearly those of an adult, although it is impossible to provide a more precise estimation of age or sex. No recognisable faunal remains are present from this cremation.

A single pathology was noted on the cremated bone, with some lipping on a vertebra as a result of osteoarthritis, suggesting that this was probably an older individual.

Size of cremations

Cremation 1 comprises 427 pieces of bone (399g). The remains from Cremation 2 comprise over 1200 pieces of bone weighing 1355g.

The size of a cremation depends on the individual (age, sex, body mass, bone density), the extent of bone recovery from the pyre site and during excavation, as well as on the state of bone preservation (McKinley 1993).

Cremation 1 is at the lower end of the range in terms of weight. Given that not all of the bone is fully cremated, and that vessel cremations are usually well preserved, we might have expected the recovery of a greater weight of bone, possibly suggesting that Cremation 1 represents an incomplete individual. It is possible that the cremation process was ineffective due to poor weather conditions and that there were problems with collection of the remains from the pyre site.

The weight of Cremation 2 is in the middle of the weight range compared with other archaeological cremations (57g to 3kg) (McKinley 2000), but similar to a modern cremation (1 to 3.6kg) (*ibid.*). Cremations in containers are normally larger than cremations in pits and finely crushed cremations tend to be smaller due to poor preservation. The size of this cremation may be due to a range of factors including loss of the volatile portion of bone before burial as well as post-depositional bone decay and incomplete retrieval of the cremated bone from the pyre.

Colour

The colour of cremated bone depends on a range of factors including the maximum temperature reached, the length of the cremation process, the type and amount of fuel, oxygen levels, the amount of body fat and the degree of uniformity of exposure to the heat across the body. A correlation has been found between the temperature attained and colour changes. Cremated bone can exhibit a large range of heat-induced colour variation from normal coloured (brown/ unburnt), to black (charred; *c.* 300°C), through hues of blue and grey (incompletely incinerated; up to *c.* 600°C) to fully oxidised white (> *c.* 600°C) (McKinley 2004).

The majority of bone forming Cremation 2 is fully oxidised, i.e. exposed to a temperature in excess of *c.* 600°C. A few fragments retain the typical brown colour of unburnt bone, which might suggest these fragments were to the edge of the cremation, mixed with other material or residual remains in the soil. In contrast, only *c.* 50% of the bone from Cremation 1 is fully oxidised (white), with approximately 30% of the remains showing only slight charring or no burning.

Surface changes

Surface changes such as warping, cracking and fissuring were noted throughout Cremation 2 (on fragments of 10mm or larger) and on approximately 40% of the bone from Cremation 1. These are characteristics of cremated bone and are the result of dehydration through exposure to heat. The pattern of heat-induced changes in the colour and texture of bone can be used to infer the technological aspects of the cremation process, the condition of the body at the time of cremation and the nature of post-depositional disturbance (Shipman *et al.* 1984).

Fragmentation

The fragmentation of bone resulting from the cremation process may be increased by funerary practices such as raking and tending of the pyre, collection of bone at the pyre site and deliberate crushing prior to burial, as well as resulting from post-depositional processes, excavation practice and processing (McKinley 1989).

Overall, Cremations 1 and 2 have undergone a low to average degree of fragmentation. The degree of bone fragmentation is less than is generally seen in archaeological cremations where an average of 50% of bone fragments are over 10mm in size (McKinley 1994). This is expected with urned cremations where the vessel affords a degree of protection to the burnt fragments. Many fragments in Cremations 1 and 2 measure over 30mm, with numerous fragments in excess of 50mm, which might suggest little maintenance of the pyre and perhaps incomplete burning.

Discussion, comparisons and conclusions

The human remains consist of a neonatal burial, a child and adult burial, one stratified adult cremation and the isolated remains of other adults and neonates. The animal bone assemblage from the Romano-British settlement at Hacheston, Suffolk (King 2004) and from Sawston, Cambridgeshire (Curl 2011) produced neonatal human bones with animal waste. Many other Roman sites have yielded similar finds and it would appear that it was a relatively common and possibly acceptable practice to dispose of neonates without the ritual and ceremony afforded to older individuals (Scott 1990).

Infant burials are not uncommon from Roman sites, often seemingly deposited with the remains of food waste or other rubbish. The infant burial from the current site (SK1) is from an isolated, small pit, presumably prepared for the child. The number of infant burials on excavations would suggest that infanticide was commonly practiced in Britain (Allason-Jones 1989) but figures may be deceptive. Infanticide or even abandonment was a method of dealing with unwanted pregnancies for prostitutes (Knapp 2011), as abortions, although sometimes carried out, were considered dangerous by medical writers. Miscarriages and still births may have been common in the Romano-British period due to infections, lifestyles and perhaps poor diet; infections could affect the mother and baby from a range of sources, from water and milk to poorly cooked meat as well as physical strains possibly contributing to spontaneous miscarriages. Romans did not always bury their infants in cemeteries with adults and older children, but within settlement areas in pits and ditches, under floors or eaves, in enclosures or sometimes in special infant cemeteries (Gurney 1998). It is assumed that the mother survived the birth, otherwise the baby might have been interred with her, as was seen at Sawston, Cambridgeshire (Curl 2011) where an adult female was buried cradling a neonate.

Urned cremations are common throughout the Roman period – with remains found interred in a variety of ceramic vessels – and burial areas of this period can include a mix of cremations and inhumation burials. The size of Cremation 2 appears a little below average compared to both archaeological and modern material, while the fully oxidised colour of the bone indicates burning at a high temperature. The remains

are clearly those of an adult but there is insufficient information to determine sex or a more precise age. There is some lipping apparent on one vertebra, which may suggest an older individual. Cremation 1 is also of low weight compared to both archaeological and modern material, despite being interred in an urn. The low weight of Cremation 1, combined with the relatively low number of fully oxidised bone fragments might suggest a less than successful cremation process, perhaps due to adverse weather conditions, with pyre maintenance or wet weather affecting the burning and subsequent collection of bone.

Recommendations for further work

Due to the high level of fragmentation and very few fragments with diagnostic zones, there is little more information that can be obtained from this assemblage and therefore, no further work is required.

5.12 The Environmental Samples

Dr John Summers

Introduction

During excavations at the site of the former Smoke House Inn, Beck Row, Mildenhall, a total of 387 bulk samples were taken for the recovery of archaeobotanical remains. In total, 8925 litres of sediment were processed by water-aided flotation.

The majority of the features sampled date to the Romano-British period (1st-4th century AD) and are represented by a range of feature types (pits, ditches, postholes, gullies, cremations and a kiln (F3605)). In addition, a small number of features with Bronze Age, Iron Age, medieval and post-medieval spot dates were sampled. These account for just 5.7% of the samples from dated features (Table 23).

Phase		**Number of samples**	**Volume (litres)**
Period I – pre-Roman		5	110
Period II - Roman	Roman Sub-Phase 1	22	580
	Roman Sub-Phase 2	64	1675
	Roman Sub-Phase 3	33	930
	Roman Sub-Phase 4	24	720
	Roman Sub-Phase 5	55	1490
	Roman Sub-Phase 6	80	1690
	Roman Sub-Phase 7	10	280
Period III – post-Roman		8	270
Un-phased		86	1180
Total		**387**	**8925**

Table 23: Distribution of samples taken for charred plant macrofossils by phase

This report presents the results from the assessment of the bulk sample light fractions. The purpose of the assessment is to characterise the assemblages of carbonised plant macrofossils recovered from the bulk samples and present data detailing the taxa and types of material present. Further to this, the report considers the potential of the assemblage for further analysis in relation to sample composition and the research questions that can be addressed using the material.

Methodology

Samples were processed at Archaeological Solutions Ltd offices in Bury St. Edmunds using a Siraf style flotation tank. The light fractions were washed onto a mesh of 250µm (microns), while the heavy fractions were sieved to 500µm.

Once dry, the light fractions were rapidly scanned under a low power stereo microscope (x10-x30 magnification). Remains encountered were identified and recorded using a semi-quantitative scale (X = present; XX = common; XXX = abundant). Where the number of remains was low, the important materials (cereal grains, chaff and seeds of wild plant taxa) were fully quantified so that the results may be of use in further research.

A small sub-sample of larger charcoal fragments (>2mm) encountered were fractured in order to produce a transverse section for the assessment of variation in the assemblage (ring-porous, diffuse-porous and *Quercus* sp.). Reference literature (Cappers *et al.* 2006; Jacomet 2006) and a reference collection of modern seeds was consulted where necessary. Potential contaminants, such as modern roots, seeds and invertebrate fauna were also recorded in order to gain an insight into possible disturbance of the deposits.

Classification of potential

Samples were classified on a scale from A to D for both the charred plant macrofossils and charcoal. A reflects the highest potential and D the lowest. These classifications are used to determine which assemblages would be valuable for further analysis and full quantification. For plant macrofossils, the classifications can be summarised as follows:

- **Class A** samples are those very rich in carbonised material with a wide range of taxa that would be of significant value for addressing important research questions.
- **Class B** samples are those which are relatively rich and diverse which also have high potential for further analysis. In some cases, class B samples were fully sorted and the only necessary work is the further identification and quantification of remains.
- **Class C** samples contain some diagnostic specimens but in low densities. Low concentrations enable quantification of important material during assessment. Largely the assessment data can be used from these samples in final report writing and are unlikely to require further sorting.
- **Class D** denotes samples that have no potential for further analysis, either having no diagnostic plant remains or too few to be of value in further analysis.

Results

The material identified within the bulk sample light fractions is detailed in Appendix 3.

Carbonised plant macrofossils

The bulk of the plant remains within the Beck Row assemblages were preserved by carbonisation. Such material results from the processing and use of plants in association with fire. Cereal drying accidents and wastage during food preparation are common mechanisms for the carbonisation of economic plants. However, charred plant assemblages can have complex taphonomic histories.

Cereals

The dominant class of charred plant macrofossils from the assemblages was in the form of carbonised cereal grains. A range of taxa were noted, including glume wheat (*Triticum dicoccum/ spelta*), free-threshing type wheat (*T. aestivum* type), hulled barley (*Hordeum vulgare*), oat (*Avena* sp.) and a small number of possible rye grains (cf. *Secale cereale*). Diagnostic chaff elements indicate that spelt (*T. spelta*) was the dominant glume wheat type, with a limited presence of emmer (*T. dicoccum*).

In addition to cereal grains, chaff elements, predominantly in the form of wheat glume bases, were common in selected assemblages. These elements are removed in the later stages of crop processing (Hillman 1984) when the wheat crop is parched and pounded to free the grains. The preservation bias against chaff elements (Boardman and Jones 1990) means that where they are present, particularly in higher concentrations, it is likely that crop processing activities are represented.

Other cultivars

Of the other plant macrofossils encountered, pulse crops were also represented in samples from Period II. These were identified as whole seeds and single cotyledons tentatively identified as pea (cf. *Pisum* sp.). Further careful comparison with modern reference material is necessary but their size and shape is indicative of common pea (*Pisum sativum*). A number of medium and intermediate (medium/ large) legumes (Fabaceae) were also noted. Further identification of these is necessary to determine whether they are pea (*Pisum sativum*) or vetch/wild pea (*Vicia/Lathyrus* sp.).

Wild taxa

The seeds of non-cereal taxa were generally less numerous than cereal grains. However, a range of taxa were noted. A number of potential arable weeds were recorded, such as fumitory (*Fumaria* sp.), goosefoot (*Chenopodium* sp.), common chickweed (*Stellaria media*), black bindweed (*Fallopia convolvulus*), knotgrass (*Polygonum aviculare*), dock (*Rumex* sp.), bedstraw (*Galium* sp.), chess (*Bromus secalinus* type) and annual meadow grass (*Poa* cf. *annua*).

In addition, plants of heath and wetland, such as blinks (*Montia fontana*), sedges (*Carex* sp.) and heath grass (*Danthonia decumbens*) were also present. These could have grown in wetter and more marginal areas of cultivated land or may have originated in other heath and wetland habitats.

Stems of various plants were noted, the most recognisable of which being heather (*Calluna vulgaris*). This adds emphasis to the presence of heathland taxa in the assemblage, which may indicate the exploitation of nearby heathland habitats.

A number of small tubers were present in some samples, being common or abundant in a few examples (e.g. L1322B, 1734B, 3757, 4588A). This also included fills L3751 and L3754 of kiln F3605 (Roman Sub-Phase 6). Further examination of these is necessary in order to attempt an identification. However, preliminary observations suggest that some may be tubers from leguminous plants (Fabaceae), which could have grown among cereal crops. This may be of particular interest in samples with high concentrations of cereals and may correspond to legume seeds within cereal assemblages. The occurrence of tubers could also imply that harvesting was by the uprooting of the crop.

Relatively large, sub-spherical tubers, most likely of pignut (*Conopodium* sp.), were present in Roman Sub-Phase 6 pit fill L3997. These are considered to have been utilised in prehistory (e.g. Moffett 1991), although consumption in the Roman period is not recorded.

Charcoal

Charcoal was present in many of the samples assessed but generally only in small concentrations. However, a small number of samples contain analytically viable assemblages of charcoal. In particular, charcoal from specific features, such as cremations (F1068) and kilns (F3605) can be very valuable for identifying the potential selection of fuel woods for specific purposes.

Molluscs

Conditions at Beck Row were favourable towards the preservation of mollusc shells and large numbers were recovered from a range of features. Although no targeted sampling for mollusca was undertaken, the density of remains from the bulk sample light fractions indicates some potential for further analysis.

Contaminants

A range of modern organisms were present in the bulk samples from Beck Row. The most commonly occurring were modern rootlets, modern seeds (mostly *Chenopodium* sp. and *Sambucus nigra*) and modern gastropods, including the burrowing mollusc *Cecilioides acicula*. In addition, some modern insects and earthworm egg capsules were noted. Where large numbers of burrowing molluscs and earthworm capsules are present, there is the potential for movement of small items, such as charred grains and seeds, within the stratigraphic profile (e.g. Armour-Chelu and Andrews 1994). These organisms were not common in all samples and their presence should be considered on a contextual basis during final analysis.

Discussion

Preliminary observations based on the assessed carbonised plant remains are detailed below. It is apparent that the greatest number of samples are from the Roman period (Period II) and that these represent the richest archaeobotanical assemblage with the greatest potential for further analysis.

Period I

Five samples were present from Period I, containing generally low densities of carbonised plant remains. Only a small amount of cereal was in evidence, in the form of oat (*Avena* sp.) and wheat/ barley (*Triticum/ Hordeum* sp.) awns and indeterminate cereal grains. A small number of arable weeds were present in L4531B, including goosefoot (*Chenopodium* sp.), plantain (*Plantago* sp.) and chess (*Bromus secalinus* type). None of the samples have potential for further analysis.

Period II

The majority of dated samples are from Period II, which spans a large proportion of the Romano-British period. In these samples, a range of cereal taxa were represented. The dominant cereal taxon was wheat, mostly in the form of glume wheat (*T. dicoccum/ spelta*) grains. The majority of diagnostic chaff elements (glume bases and spikelet forks) were of spelt (*T. spelta*), although a small number of emmer (*T. dicoccum*) spikelet forks were also recognised. Further attention will be paid to the identification of these during full analysis. Spelt is the dominant cereal at many Roman sites in Britain (e.g. Campbell 2008; van der Veen 1992). In addition, a small number of free-threshing type wheat grains (*T. aestivum* type) were also present but only appear to represent a minor component of the assemblages.

Also present in relatively high concentrations were hulled barley grains (*H. vulgare*). The presence of some asymmetric grains indicates a six-row variety (*H. vulgare* var. *vulgare*) was cultivated, although whether this was exclusively the case must await further quantification. In general, barley grains were less abundant than wheat grains. Hulled barley is a common accompaniment to spelt wheat at Roman sites (e.g. Campbell 2008; van der Veen 1992).

A small number of oat (*Avena* sp.) and probable rye (cf. *Secale cereale*) were recognised. These could represent small-scale crops, potentially used as high quality fodder, or may have grown as weeds amongst other cereal crops. No diagnostic chaff elements were recognised to further enhance interpretations.

Germinated cereal grains were present in some of the Roman assemblages. Most were barley grains, but sprouted wheat and oat grains were also noted. The number recognised during the assessment was limited with no concentrated deposits that one might expect to result from deliberate malting activities. In storage deposits from Great Holts Farm, Essex, a proportion of spoiled grain was also noted (Murphy *et al.* 2000). Further examination of the number and distribution of germinated cereal grains from Beck Row will be carried out to examine issues of cereal storage conditions and grain spoilage.

Possible pea seeds (cf. *Pisum* sp.) were present in a number of samples with a Roman spot-date. Further identification of these remains is necessary in order to separate common pea (*Pisum sativum*) from other pulses, such as vetches (*Vicia* sp.) and wild peas (*Lathyrus* sp.). These may grow as arable weeds, although they can potentially also form part of maslin crops with common pea (Jones and Halstead 1995).

The fills of kiln F3605 (Roman Sub-Phase 6) contained high densities of cereal remains. Glume wheat was dominant, accompanied by hulled barley and small numbers of free-threshing type wheat and oat. Chaff remains were very limited, indicating the presence of a clean grain crop. A small number of other plant taxa were also present in the form of dock (Rumex sp.), bedstraw (Galium sp.) and heath grass (*Danthonia* decumbens). At present, a likely interpretation is that this feature functioned as a corn drying kiln. Such features are common on Romano-British sites (e.g. van der Veen 1989).

A high concentration of large legumes were also encountered in fill L3751 of kiln F3605. It is possible that the kiln was also used for drying pulse crops and further investigation will help determine the role of the kiln and the composition of the crops dried in it. The kiln deposits will be of particular value in understanding the composition of the arable crops in a relatively pure state, less affected by the complex taphonomic processes acting upon most macrofossil assemblages. Comparisons can be drawn to other discrete deposits of crops, such as the Roman storage deposits at Great Holts Farm, Essex (Murphy *et al.* 2000).

A number of other cereal rich deposits were noted, such as L1777, L3377B, L3600A and L4346. A number of these may also represent corn-drying accidents. The spatial distribution of these deposits will help shed light on the distribution of such activities across the site.

As noted in the results section, a number of likely arable weeds were present in the assemblages. Some, such as goosefoot (Chenopodium sp.) and dock (*Rumex* sp.) can be indicative of higher levels of soil fertility, such as would result from manuring practices.

Heath and wetland taxa, such as blinks (*Montia fontana*), sedge (Carex sp.) and heath grass (*Danthonia decumbens*) may reflect the use of wetter, more marginal land for cultivation during this period. However, other sources are also possible and could be connected to the exploitation of heathland habitats. This is also suggested by the presence of heather (*Calluna vulgaris*) stems in a number of assemblages. Heather can have a range of useful roles, including basketry and bedding (e.g. Dickson and Dickson 2000, 260-2), and even thatch (Letts 2000, 16-17).

A total of 80 from Period II were assigned class A or B for their potential for further macrofossil analysis and it is intended that these shall be fully sorted and quantified. Further analysis and quantification will allow a comparison of remains from the seven Roman Sub-Phases, allowing the investigation of changing economic practices at the site over time.

Period III

Only eight samples have been phased to Period III. Many of these contained only small numbers of carbonised remains. The cereals present were hulled barley, glume wheat and possible rye, with non-cereal taxa including goosefoot (*Chenopodium* sp.), black bindweed (*Fallopia convolvulus*) and sedges (*Carex* sp.). The density of material in samples 323 ad 324 (L4055 and L4124 from F4054) is sufficient to merit further quantification. The results from this will allow some general comparisons to be drawn between the Roman and post-Roman remains.

Undated features

Although some undated contexts produced reasonable quantities of charred plant remains, it is not intended that any of these are examined in greater detail as the results will have little meaningful input to the overall discussion.

Potential and further work

Charred plant macrofossils

Following assessment of the bulk sample light fractions it is recommended that all phased samples rated as A or B for carbonised plant remains are fully analysed and reported. This provides a total of 82 samples for full analysis, 80 from Period II (Roman) and two from Period III (post-Roman).

In addition, class C and D samples, which have been fully quantified during the assessment due to their low densities of charred plant macrofossils, will be included in ubiquity calculations. This will enable a broad understanding of the frequency with which cereals were being carbonised in different periods. Such information allows a general assessment of intensity of cereal use and processing during the various site phases.

Research questions

The assemblage of charred plant macrofossils from Beck Row is predominantly focused on the Roman period. It will be possible to incorporate a large number of samples from this period into the final report, which will enable a detailed investigation of any spatial patterning in the data. This will aid the identification of areas with more intensive occupation, as well as areas which served as foci for cereal processing and use.

The kiln deposits (F3605) represent a fruitful line of investigation into crop husbandry and processing at Beck Row. Other rich assemblages may also represent the remnants of similar activities. Comparisons will be drawn to other drying structures (e.g. van der Veen 1989) and storage deposits, such as those from Great Holts Farm, Essex (Murphy *et al.* 2000).

The assemblage as a whole will be compared with other Roman sites in the region, as well as making reference to national trends in arable economies during the Romano-British period.

Although no imported or exotic taxa were noted during the assessment, it is possible that such plants may be present in some of the larger assemblages, as is the case at other Romano-British sites (van der Veen *et al.* 2008; Murphy *et al.* 2000). Care will be taken during identification not to overlook such taxa since presence in carbonised assemblages is often limited (e.g. Campbell 2008, 67).

Charcoal

Large assemblages of charcoal >2mm were not common in the samples from Beck Row. Most do not represent analytically viable concentrations of material for further work. However, there are some specific contexts (seven samples – see Table 24) which produced high densities of charcoal that can be used to provide very useful insights into past activities at Beck Row.

Sample number	Context	Feature	Feature type	Phase
115	1990	1988	Pit	Roman Sub-Phase 4
68	1435C	1423	Ditch	Roman Sub-Phase 5
363	4658	4657	Pit	Roman Sub-Phase 5
8	1071	1068	Cremation vessel fill	Roman Sub-Phase 6
256	3606	3605	Kiln	Roman Sub-Phase 6
276	3751			Roman Sub-Phase 6
335	4346	4345	Ditch	Roman Sub-Phase 6

Table 24: Samples recommended for charcoal analysis

Kiln F3605

Analysis of charcoal from deposits within kiln F3605 would be fruitful in order to examine whether there was any special selection of fuel wood for these practices. At Fullerton, Hampshire, it was found that a wide range of woods were exploited to fuel the corn drying kiln (Campbell 2008, 71). In addition, crop processing waste made up a significant proportion of the charred plant remains and may also represent fuel residue (*ibid.*).

Cremations

The contexts identified as being related to Roman cremations (L2557, L2559, L2560 and L2562) contained no large charcoal fragments that would be identifiable. A further cremation (F1068) dated to Roman Sub-Phase 6 produced abundant charcoal from the cremation vessel contents (L1071) which would represent an analytically viable assemblage.

At other sites in England, it has been found that a quite specific range of wood fuel was selected for cremations (Campbell *et al.* 2011, 20). This could have been for their specific qualities as fuel or for religious purposes associated with the cremation rite. For this reason it would be important to analyse charcoal from this deposit in order to gain a more detailed insight into funerary practices at Beck Row.

Pit and ditch deposits

These deposits are likely to have received waste from a number of processes. These may include rake-out from corn driers and domestic refuse, including hearth ash. They provide the potential to examine more generally the types of wood exploited around the site and the identification of any management of woodland resources. In addition, these charcoal assemblages will be able to provide some details about local woodland resources available to the inhabitants of Beck Row.

Molluscs

Molluscs were common in the majority of the bulk sample light fractions. It is considered that interesting evidence regarding past vegetation conditions could be gained by targeting layers and buried soil deposits, which may contain shells (see section 4.13).

5.13 The Terrestrial Molluscs

Dr John Summers

Introduction

The archaeological sediments at Beck Row were favourable to the preservation of molluscan remains. Large numbers of shells were frequently present within the bulk sample light fractions. Although no specific sampling was carried out for the recovery of snail shells, it is still considered that the identification of shells from targeted contexts could provide information about local vegetation conditions on the site and how they changed over time.

There are two key research areas which will be addressed by the terrestrial mollusc assemblage.

- What were the local vegetation conditions bordering the sampled features and, by inference, land use of the areas bordering the ditches?
    - Is there any recognisable change in habitats over time?
- What were conditions like within the ditches themselves?
    - Is there evidence of standing water?

Method statement

Terrestrial molluscs will be identified from bulk sample light fractions which have already been processed and dried. Sample selection will be based on records of mollusc shell abundance from the environmental archaeological assessment data in combination with stratigraphic information. Ditch fills will be targeted due to the likelihood that they remained open for a prolonged period, allowing a more detailed capture of local snail taxa. An attempt to identify sequences of deposits will be made (e.g. inter-cutting ditches or chronologically sequential ditch fills within a defined area) to produce an assemblage covering a significant portion of the site's occupation in a restricted area. It is proposed that two areas from opposite sides of the excavated area will be targeted in order to get a general impression of differing conditions across the site.

Identification of the shells will be carried out using low power microscopy (x10-x30 magnification) using reference literature (Kerney 1999; Kerney and Cameron 1979). Quantification of the identified taxa will enable the characterisation of the dominant habitat types represented.

Proposed Bibliography

Davies 2008; Evans and Vaughan 1985; Kerney 1999; Kerney and Cameron 1979

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APPENDIX 1 SUMMARY CATALOGUE OF THE HUMAN BURIALS AND ISOLATED HUMAN REMAINS RECORDED BY INDIVIDUAL BAGS

A full catalogue, with additional counts, is available in the digital archive.

Context	Feature	Type	Sub-Phase	Other NO	Male/ Female	Age	Condition	Comp	Side	Count	Wt (g)	Comments
1283	1282	Ditch	Roman 2	A		N/P	good	inc	r	1	5	right pelvic bone - neo/pre
1601	1600	Pit	Roman 6			N/P	good	inc	legs	4	12	2 femurs, 2 tibias
1601	1600	Pit	Roman 6			N/P	good	inc	loose bone	16	6	
1601	1600	Pit	Roman 6			N/P	good	inc	arms + scaps	11	14	
1601	1600	Pit	Roman 6			N/P	good	inc	ribs + vert	41	14	
1601	1600	Pit	Roman 6			N/P	good	inc	skull	47	34	
1941			Roman 4	G		N/P	good	comp	l	1	5	Left pelvic bone - neo/pre
2175	2174	Ditch	Roman 5	D	M	A	good	inc	c	1	22	right mandible frag, teeth missing
2732	2731	Oval grave	Roman 2	SK8		J	good	inc	c	16	9	unerupted teeth and skull fragments
2732	2731	Oval grave	Roman 2	SK8		J/A	fragmented	inc	mixed	76	20	inc small mammal tibia fragment
2953	2952	Gully	Roman 4	B		A	good	inc	r	1	30	tibia shaft fragment
3155	3154	Gully	Roman 4	E		N/P	good	comp	r	1	8	neo/prenatal humerus
3290	3289	Grave	Roman 3	SK9		A	poor	inc	u	1	2	from sieved material
3290	3289	Grave	Roman 3	SK9		A	eroded/poor	inc	l, u	39	28	femur frags x 2, other small frags, labelled 'legs'
3290	3289	Grave	Roman 3	SK9		A	eroded/poor	inc	c	62	79	mostly small frags of skull, labelled 'head'

3290	3289	Grave	Roman 3	SK9		A	eroded/poor	inc	c, l	82	105	hand bones, femur head
3503	3502	Ditch	Roman 3	B		A	good	inc	c	13	81	atlas, axis and three cervical vertebrae with osteoarthritis
3598	3597	Gully	Roman 2			N/P	good	inc	r	1	3	neo/prenatal proximal femur
3602	3601	Ditch	Roman 2	C		N/P	good	inc	l, c, r	4	7	whole right tibia, proximal left tibia, pelvic bone
4103	4102	Ditch	Roman 3			N/P	good	inc	l	1	4	proximal femur from neo/prenatal
4390	4389	Ditch	Roman 2	B		N/P	good	inc	c	3	6	parietal fragments
4486	4485	Pit	Roman 6			N/P	good	inc	l	1	4	left tibia, distal end missing

Key:
Age – N/P = neonatal/prenatal, A = adult, j = juvenile
Comp - completeness. Comp = complete, inc = incomplete
Side – side of body. L = left, r = right, c = central column, u = uncertain

APPENDIX 2 SUMMARY CATALOGUE OF THE CREMATED HUMAN REMAINS

Cremation No.	Context	Total Wt	>50mm	>10mm	5-9mm	2-4mm	<1mm	Level	Warp	Crack	Species	Total Count	Adult	Juv	MNI	Element range	Comments
1	1071	399	93	104	146	79	5	u, w, b-g	*	*	hsr	427	1		1	Limb, skull, pelvis, scapula	some powdered bone included in weight.
2	U/S	349		20	55	15	10	w, g	*	*	hsr/mam	349				Limb, vert, skull	many small fragments and powder. Adult.
	U/S	1006	35	40	15	5	5	w,g,b	*	*	hsr/mam	1006	1			Limb, skull, mandible, feet, hands, pelvis	some frags 60mm+, arthritis on vert.

Key:
Level – Level of burning: w = white (fully oxidised), g = grey, blk = blackened, b = brown (unburnt)

APPENDIX 3 TABULATED RESULTS FROM THE ASSESSMENT OF ENVIRONMENTAL BULK SAMPLES

Site code	Sample	Context	Feature	Feature type	Phase	Volume (litres)	Cereals				Non-cereal taxa			Charcoal		Contaminants					Other remains	Potential CPR	Potential charcoal
							Cereal grains	Cereal chaff	Notes	Grain preservation	Seeds	Notes	Hazelnut shell	Charcoal>2mm	Notes	Roots	Molluscs	Modern seeds	Insects	Earthworm capsules			
MNL638	1	1051	1050	Ditch	Period III	40	-	-		-	-		-	-		XX	XX	X			cf. carb. fern	D	D
MNL638	2	1045	1044	Pit	R1	40	-	-		-	-		-	-		XX	XX		X		cf. carb. fern	D	D
MNL638	3	1063	1062	Pit	R1	40	-	-		-	-		-	-		XX	X	X	X			D	D
MNL638	4	1102	1101	Posthole	R6	10	-	-		-	-		-	-		X		X			Poss. waterlogged remains (*Sambucus nigra*, Rosaceae)	D	D
	4	1102	1101		R6	10																	
MNL638	5	1098C	1097	Ditch	R5	40	-	-		-	-		-	-		XXX	XX	X				D	D
MNL638	6	1072	1068	Crem Pit	R6	40	-	-		-	-		-	X	Diffuse porous (X)	XX	XX					D	D
MNL638	7	1069	1068	Crem Pit	R6	10	-	-		-	-		-	X	Diffuse porous (X)	XX	X	X				D	D
MNL638	8	1071	1068	Crem Vessel contents	R6	10	-	-		-	-		-	XXX	Diffuse porous (XX)	XX					Burnt bone	D	A/B
MNL638	9	1039	1038	Gully	R1	40	X	X	Trit (2), NFI (1). Spelt glume base (1)	5	X	cf. *Ajuga reptans* (1), *Carex* sp. (3), *Danthonia decumbens* (1), indet. (1)	-	XX	Diffuse porous (X), ring porous (X)	X	X				cf. thorn, tuber (XX), mammal bone	C	C
MNL638	10	1042	1041	Posthole	UP	20	XX	-	Hord (X), Trit (X), NFI (XX)	5/6	X	*Urtica urens* (1), *Silene* sp. (1)	-	X	Ring porous (X)	XX	XX	X				B	D
MNL638	11	1077	1074	Ditch	UP	40	X	-	NFI (2)	6	X	*Silene* sp. (1)	-	-		XXX	XX	X	X			C	D
MNL638	12	1092	1091	Ditch	R5	40	X	-	Hord (1), Trit (1), NFI (2)	5/6	X	*Carex* sp. (1), small Poaceae (1), large Poaceae (1)	1	X	Diffuse porous (X)	XXX		XX	X	X		C	D

MNL638	13	1140F	1139	Ditch	R5	40	X	-	Trit (1), NFI (1)	5	XX	*Rhinanthus* sp. (1), *Plantago* sp. (1), *Plantago lanceolata* (1), small Fabaceae (1), *Carex* sp. (3), *Lolium* sp. type (1), small Poaceae (1), large Poaceae (1)	-	-		X		X				C	D
MNL638	14	1141E	1139	Ditch	R5	40	X	-	HB (1), Trit (1), Rye (1)	5	X	Large Poaceae (1)	-	-			X	X				C	D
MNL638	15	1164	1163	Pit	Period III	40	X	X	HB (1), E/S (1), NFI (1). Culm (1)	5/6	X	Small Fabaceae (2)	-	-			XX		X		Bone	C	D
MNL638	16	1156	1152	Ditch	R4	40	X	-	NFI (1)	6	-		-	X	Diffuse porous (X)	X	X					D	D
MNL638	17	1158	1157	Ditch	Period III	40	-	-		-	X	*Papaver* sp. (1), med/large Fabaceae (1)	-	-		X	XXX		X		Partially charred wood, mammal bone	D	D
MNL638	18	1112C	1111	Ditch	R5	40	X	X	Trit (1), BW (1). Spelt glume base (1)	5	X	*Danthonia decumbens* (1), large Poaceae (1)	-	X	Not of identifiable size	X	XX	X	X			C	D
MNL638	19	1162E	1161	Ditch	R2	40	XXX	-	HB (X), E/S (XX), BW (X), Trit (X), Oat (X)	5	X	Med. Fabaceae (X), small Poaceae (X)	-	X	Diffuse porous (X), ring porous (X)		XXX			X	1x oat grain germinated, grass culm, burnt dung	B	C
MNL638	20	1168	1167	Pit	R6	10	-	-		-	-		-	-		X		XX			Bird bone (XXX)	D	D
MNL638	21	1104B	1103	Ditch	R6	20	X	-	NFI (2)	6	X	*Galium* sp. (1), *Urtica* sp. (1), *Chenopodium* sp. (1)	-	x	Diffuse porous (X)	XX	X	X			Amphibian bone	C	D
MNL638	22	1110B	1109	Ditch	R3	20	XX	-	HTB (X), HB (XX), E/S (X), Trit (X), NFI (X)	5/6	X	Med. Poaceae (X)	-	-		X	XX	XX	X		Tuber	B	D

MNL638	23	1140G	1139	Ditch	R5	40	XX	X	HTB (X), HB (X), E/S (X). Spelt glume base (X)	5	XX	*Polygonum aviculare* (X), *Rumex* sp. (X), *Plantago lanceolata* (X), *Carex* sp. (X), small Poaceae (X)	-	-		X	X	X			Small mammal bone	B	D
MNL638	24	1176	1175	Burial Pit	R6	40	X	-	Hord (2)	5	-		-	X	Not of identifiable size	X		X	X	X	Small mammal bone, numerous cf. nematode capsules (XXX)	C	D
MNL638	27	1231	1181	Ditch	R6	10	X	-	NFI (1)	6	X	Indet. (2)	-	-		X	X				Tuber	D	D
MNL638	28	1220	1219	Pit	R6	20	X	X	Hord (1), E/S (1). Spelt glume base (1)	5/6	X	*Rumex* sp. (1)	-	X	Ring porous (X)		X	X			Tuber, bone	C	D
MNL638	29	1214A	1213	Gully	R1	20	X	-	Trit (1), NFI (2)	5/6	-		-	X	Not of identifiable size		X					C	D
MNL638	30	1141I	1139	Ditch	R5	40	XX	-	HB (X), BW (X), NFI (XX)	5/6	XX	*Cerastium* sp. (X), *Rumex* sp. (X), *Carex* sp. (X), Caryophyllaceae (X), small Poaceae (X)	-	-		X	X	X	X	X		B	D
MNL638	31	1228B	1227	Ditch	R5	40	XX	-	Hord (1), Trit (1), NFI (1), Frags (XX)	5/6	X	*Carex* sp. (1)	-	-			XX	X			Bone	C	D
MNL638	32	1132F	1131	Ditch	R5	40	XX	-	HB (X), BW (X), NFI (XX)	5/6	XX	*Cerastium* sp. (X), *Rumex* sp. (X), *Carex* sp. (X), Caryophyllaceae (X), small Poaceae (X)	-	-		X	X	X	X	X		B	D
MNL638	34	1138B	1137	Ditch	R5	20	X	X	E/S (2), NFI (1). E/S glume base (1)	5/6	X	*Carex* sp. (1)	-	X	Not of identifiable size	X	X	X				C	D
MNL638	35	1138A	1137	Ditch	R5	20	XX	X	Hord (X), E/S (X), NFI (X). E/S glume	5/6	X	*Carex* sp. (X)	-	X	Not of identifiable size		X		X			B	D

									base (X)														
MNL638	36	1132B	1131	Ditch	R5	40	XX	-	E/S (XX), Trit (XX), NFI (XX)	5/6	X	Chenopodiaceae (X), small Poaceae (X)	-	-			X	X	X	X	Tuber, small mammal bone	B	D
MNL638	37	1136A	1135	Ditch	R5	10	-	-		-	X	Indet. (1)	-	-		X	XX					D	D
MNL638	38	1114A	1113	Ditch	R5	20	X	-	Trit (1)	5	X	*Chenopodium* sp. (1)	-	-		X	X				Tuber, heather	C	D
MNL638	39	1247B	1265	Modern Boundary	R3	30	-	-		-	-		-	-		XX	X					D	D
MNL638	40	1140J	1139	Ditch	R5	40	X	-	Hord (1)	6	X	*Montia fontana* (1), *Carex* sp. (2), small Poaceae (2)	-	-		XX						C	D
MNL638	41	1309	1308	Ditch	R1	30	X	-	E/S (1), Trit (1), NFI (1), Frags (X)	5/6	-		-	-		XXX	X					C	D
MNL638	42	1290	1289	Stakehole	R1	10	-	-		-	-		-	-		X		X				D	D
MNL638	43	1292	1291	Stakehole	R1	10	-	-		-	-		-	-		X						D	D
MNL638	44	1294	1293	Stakehole	R1	10	-	-		-	-		-	-		X						D	D
MNL638	45	1303	1302	Ditch	R2	40	-	-		-	-		-	-		X						D	D
MNL638	46	1323	1322	Ditch	R1	40	XX	-	HB (X), E/S (X), BW (XX)	5/6	-		-	-		XXX	XXX				Indet. carb organic, modern wood.	B	D
MNL638	48	1332A	1331	Ditch	R2	40	XX	-	HTB (X), HB (X), NFI (XX)	5/6	X	Small Fabaceae (X), large Poaceae (X)	-	X	Not of identifiable size	XXX	X		X		Bone, tuber	B	D
MNL638	49	1340	1339	Posthole	UP	10	-	-		-	-		-	-		XX	X	X	X			D	D
MNL638	50	1332B	1331	Ditch	R2	40	XX	-	HB (X), Trit (X), Oat (X), NFI (XX)	5/6	XX	*Fallopia convolvulus* (X), *Galium* sp. (X), *Carex* sp. (X), *Luzula* sp. (X), small Poaceae (X)	-	X	Diffuse porous (X)	XXX	XX	X			Tuber (XX), grass culm	B	D
MNL638	51	1354	1353	Posthole	R2	20	X	-	Trit (1), NFI (2)	5/6	X	*Plantago* sp. (1)	-	X	Diffuse porous (X)	XX	XX	X				C	D
MNL638	52	1342A	1341	Ditch	R2	40	-	-		-	-		-	-		XX	X	X			Modern wood	D	D
MNL638	53	1300	1299	Pit	R2	40	X	-	E/S (1), NFI (1)	5/6	-		-	-		XX		X			Bone. Modern wood	C	D

MNL638	54	1351	1299	Pit	R6	40	-	-		-	-		-	X	Ring porous (X)	XX	X				Tuber. Small mammal/amphibian bone	D	D
MNL638	56	1422B	1421	Gully	R6	40	X	X	Hord (1), Trit (1). Spelt glume base (1)	5	X	*Poa* cf. *annua* (2), Cyperaceae (1), indet. (1)	-	-		XX		X	X	X		C	D
MNL638	57	1375B	1374	Ditch	R6	20	X	-	BW (1), Trit (1), NFI (2), Frags (X)	5/6	-		-	-		X	X		X			C	D
MNL638	58	1369A	1368	Ditch	R3	40	X	-	Frag (X)	6	-		-	-		X						D	D
MNL638	59	1371A	1370	Ditch	R4	40	X	XX	Trit (X), NFI (X). Emmer glume base (X), E/S glume base (XX)	5/6	X	cf. *Pisum* sp. (X), Chenopodiaceae (X), *Carex* sp. (X), small Poaceae (X)	-	X	Not of identifiable size	X	X	X		X	Half sorted	B	D
MNL638	60	1373A	1372	Ditch	R3	20	X	-	HB (1), Trit (1), NFI (1)	5/6	-		-	-				X				C	D
MNL638	61	1375A	1374	Ditch	R6	20	XX	-	HB (XX)	5	X	*Carex* sp. (X)	-	-		XX					Tuber. Half sorted	B	D
MNL638	62	1377A	1376	Ditch	R1	20	XX	-	HB (2), Frags (XX)	5/6	X	Polygonaceae kernal (1), *Carex* sp. (1)	-	-		X		X				C	D
MNL638	63	1373B	1372	Ditch	R3	20	X	-	Frag (X)	6	-		-	-		X				X		D	D
MNL638	64	1377B	1376	Ditch	R1	20	-	-		-	-		-	-				X			Grass culm, indet. carb organic	D	D
MNL638	65	1406A	1404	Ditch	R6	40	XX	-	HB (XX), E/S (XX), BW (X)	5	X	Chenopodiaceae (X), Cyperaceae (X), *Montia fontana* (X), large Poaceae (X)	-	-		X	X					B	D
MNL638	66	1425c	1424	Ditch	R4	40	XX	-	Hord (X), Trit (XX), NFI (X)	5/6	X	*Brassica/Sinapis* sp. (X), small Poaceae (X), large Poaceae (X)	-	-		X	XXX	X				B	D
MNL638	67	1432C	1429	Ditch	R5	40	XX	-	HTB (X), HB (X), Hord (X), E/S (X), Trit (X)	5/6	-		-	X	Ring porous (X)	X	XX				Tuber, amphibian bone	B	D

MNL638	68	1435c	1423	Ditch	R3	40	XX	X	Hord (X), E/S (X), Oat (X), NFI (X). Spelt glume base (X)	4-6	-		-	XX	Diffuse porous (X), ring porous (X)		XXX	X			Dicot. stem. Half sorted	B	B
MNL638	69	1410c	1381	Gully	R3	40	XX	-	Hord (X), E/S (X), NFI (X)	5/6	-		-	X	Not of identifiable size			X			Amphibian bone	B	D
MNL638	70	1367C	1366	Ditch	R2	40	XX	-	HTB (1), E/S (1), NFI (4)	5/6	X	Polygonaceae kernal (1), *Carex* sp. (2)	-	-		XX		X			Tuber, bone	C	D
MNL638	71	1396A	1395	Gully	R2	30	XX	-	HB (X), Trit (X), cf. Oat (X), NFI (XX)	5/6	XX	*Montia fontana* (X), Polygonaceae kernal (X), *Plantago lanceolata* (X), small Poaceae (X)	-	X	Not of identifiable size	XX		X			Tuber	B	D
MNL638	73	1414	1413	Pit	R6	40	X	X	E/S (X). Emmer spikelet fork (X), E/S glume base (X)	5	XX	*Montia fontana* (X), *Chenopodium* sp. (X), *Polygonum aviculare* (X), *Plantago* sp. (X)	-	-		X	X					B	D
MNL638	74	1445	1444	Posthole	R6	10	X	-	Frag (X)	6	X	cf. *Luzula* sp. (1)	-	-						X		D	D
MNL638	75	1458A	1457	Ditch	R2	40	X	-	E/S (1), Trit (1), Frags (X)	5/6	X	*Carex* sp. (1)	-	-			XX		X		Dicot. stem, bone	C	D
MNL638	76	1435	1423	Ditch	R2	40	X	-	BW (1), NFI (1), Frag (X)	5/6	-		-	-			XX			X		C	D
MNL638	77	1433	1446	Gully	R6	10	X	-	Hord (1), Trit (1), Frag (X)	5/6	X	cf. *Trifolium* sp. (1), *Lolium* sp. type (1), small Poaceae (1)	-	-		XXX	XX				Tuber (XX)	C	D
MNL638	78	1425	1424	Ditch	R3	40	X	-	NFI (1), Frag (X)	5/6	X	*Plantago* sp. (1)	-	X	Diffuse porous (X), ring porous (X)	X	XX	X		X	1x NFI grain germinated, heather charcoal	C	D
MNL638	80	1450A	1449	Ditch	R2	40	X	-	HB (1), BW (1), NFI (4), Frag (X)	5/6	X	Indet (1)	-	-		XXX		X			Indet. carb organic	C	D
MNL638	81	1523	1522	Posthole	R1	10	-	-		-	-		-	-		X						D	D

MNL638	82	1469B	1468	Gully	R1	20	XX	X	Hord (X), E/S (X), NFI (X). Spelt glume base (X)	5/6	-		-	-			XX					B	D
MNL638	83	1471B	1470	Ditch	R2	20	X	-	NFI (1), Frag (X)	6	-		-	X	Not of identifiable size		XXX					D	D
MNL638	84	1546	1545	Pit	UP	10	X	-	Trit (1)	5	-		-	-			X	X				D	D
MNL638	85	1548	1547	Pit	R2	40	XX	-	HB (X), E/S (X), Trit (X), Oat (X)	5/6	-		-	X	Diffuse porous (X)	XX					Indet. carb organic, bone	B	D
MNL638	86	1551A	1550	Gully	R2	40	XX	-	Hord (X), Trit (X), NFI (X)	5/6	X	*Bromus* sp. (X)	-	-			X					B	D
MNL638	87	1607	1606	Large Vessel contents	UP	10	X	-	NFI (1)	6	-		-	-		X	X	X			Bone	D	D
MNL638	88	1609	1608	Flat Based Vessel contents	UP	10	-	-		-	-		-	-								D	D
MNL638	89	1640	1639	Posthole	R2	10	X	-	BW (2), NFI (2), Frag (X)	5/6	-		-	-		X	XX	X				C	D
MNL638	90	1614	1613	Early feature?	R2	10	X	-	Trit (1)	5	-		-	-			X					D	D
MNL638	91	1458B	1457	Ditch	R2	40	X	-	E/S (1), Trit (2), NFI (1), Frag (X)	5/6	-		-	-		XXX	X					C	D
MNL638	92	1463B	1460	Ditch	R3	40	X	-	NFI (1)	5	-		-	-			X				*Helix* sp. - edible/garden snail (2)	D	D
MNL638	93	1656	1655	Posthole	R6	10	-	-		-	-		-	-		XXX	X	X		X	Tuber, heather	D	D
MNL638	94	1601	1600	Pit	R6	30	X	-	Hord (1)	5	-		-	-			X				Dicot. stem	D	D
MNL638	95	1638C	1637	Posthole	R2	5	X	-	E/S (1)	5	-		-	-		X	X	X				D	D
MNL638	96	1642	1641	Posthole	R2	10	-	-		-	-		-	-		X		X				D	D
MNL638	97	1644C	1643	Posthole	R2	10	-	-		-	-		-	-			XX			X		D	D
MNL638	98	1646C	1645	Posthole	R2	10	-	-		-	-		-	-		X	XX					D	D
MNL638	99	1648C	1647	Posthole	R2	10	-	-		-	-		-	-		X						D	D
MNL638	100	1685C	1684	Posthole	R2	10	-	-		-	-		-	-		X	X					D	D
MNL638	101	1700H	1699	Ditch	R2	40	XX	X	E/S (X), Trit (X), NFI (X). Spelt glume	5/6	-		-	-			XXX				Half sorted. Silt lumps - refloat	B	D

									base (X)														
MNL638	102	1622D	1621	Posthole	R2	10	-	-		-	-		-	-		XX	X					D	D
MNL638	103	1624D	1623	Posthole	R2	10	-	-		-	-		-	-		XX	X			X		D	D
MNL638	105	1751	1750	Ditch	R3	40	X	-	Hord (1)	5	-		-	-		X	XXX	X			Mammal bone, bird bone	D	D
MNL638	108	1762A	1761	Ditch	R6	20	X	-	Hord (1), E/S (1), NFI (1), Frag (X)	5/6	-		-	-		XX	X	X	X			C	D
MNL638	109	1459F	1457	Ditch	R2	40	X	-	E/S (2), Trit (2), NFI (1), Frag (X)	5/6	X	*Rumex* sp. (2)	-	-		X	XX	X	X		1x Trit grain germinated. Tuber	C	D
MNL638	110	1766A	1765	Ditch	R4	20	X	-	Frag (X)	6	-		-	-		XX	X	X				D	D
MNL638	111	1836	1835	Posthole	R2	10	X	-	Frag (X)	7	-		-	-		XX	X		X			D	D
MNL638	112	1856B	1854	Pit	R5	30	XX	-	HB (XX), E/S (X), NFI (X), Frag (XX)	5/6	-		-	-			XX	X	X			B	D
MNL638	114	2048E	2047	Gully	R2	20	X	-	Trit (1)	5	X	*Bromus* sp. (1), med. Poaceae (1)	-	-		X	X					C	D
MNL638	115	1990	1988	Pit	R4	40	-	-		-	-		-	XX	Diffuse porous (X), ring porous (X)	X	XX	X	X		Indet. carb organic	D	B
MNL638	116	2066	2062	Pit	R1	10	X	-	Trit (1)	5	-		-	-		XX	X		X	X		D	D
MNL638	117	1777	1776	Pit	R1	40	XXX	X	HB (X), E/S (XX), Trit (XX), Oat (X). Spelt glume base (X), cf. emmer glume base (X), culm (X)	5/6	XX	*Galium* sp. (X), *Centaurea* sp. (X), *Bromus secalinus* type (X)	-	X	Not of identifiable size	X	X	X	X		Mammal bone	A	D
MNL638	118	1874A	1873	Pit	R2	40	X	-	HB (2), NFI (2),	5/6	-		-	-		XX	XX	X				C	D

									Frag (X)														
MNL638	119	1985b	1929	Ditch	R4	40	XX	-	HTB (X), E/S (X), NFI (X)	5/6	XX	*Carex* sp. (X), *Danthonia decumbens* (X), med. Poaceae (X)	-	X	Diffuse porous (X)	X	XX		X		Grass culm, heather, bird bone. Fully sorted - ID needed.	B	D
MNL638	120	2072E	2071	Ditch	UP	40	X	-	Hord (2), NFI (1)	5/6	-		-	-		XX	X	X		XX	Small mammal bone	C	D
MNL638	121	2075A	1671	Ditch	R1	40	XX	-	Hord (X), E/S (X), NFI (X)	5/6	X	Med./large Fabaceae (X)	-	-		X	X	XX				B	D
MNL638	122	1926B	1925	Ditch	R7	40	XX	-	Hord (XX), E/S (X), NFI (X)	5/6	X	*Ranunculus* sp. (X)	-	-		XXX	XX	X			Tuber	B	D
MNL638	123	1926G	1925	Ditch	R7	40	X	-	E/S (3), Trit (1), Frag (X)	5/6	-		-	-		XX	XXX	X				C	D
MNL638	124	2238	2237	Gully	R3	20	XX	-	Frags (XX)	6	-		-	X	Not of identifiable size	XX	X	X			Tuber, indet. carb organic (XX)	D	D
MNL638	125	2175B	2174	Ditch	R5	40	X	-	HB (1), Hord (1), Frag (X)	5/6	X	cf. *Pisum* sp. (X), *Rumex* sp. (X), *Carex* sp. (X), *Danthonia decumbens* (X)	-	-		XXX					Tuber, indet. carb organic. Fully sorted - ID needed	B	D
MNL638	126	1741	1704	Pit	R6	40	XXX	-	E/S (XX), Frag (X)	4/5	X	*Chenopodium* sp. (X), small Poaceae (X), med. Poaceae (X)	-	X	Ring porous (X)	X	XXX	X			Ampphibian bone. Half sorted	B	D
MNL638	127	2224	2223	Pit	R2	30	-	-		-	-		-	-		XXX	X					D	D
MNL638	128	2233	2232	Pit	R1	10	X	-	E/S (1), Frag (X)	5	-		-	-		XX	XX	X	X	X		C	D
MNL638	129	2258A	2257	Gully	UP	20	-	-		-	X	Large Poaceae (1)	-	-		XX	X	X	X			D	D
MNL638	130	2262	2261	Posthole	UP	10	-	-		-	-		-	-		X	X					D	D
MNL638	131	2156	-	Layer	R2	40	XX	-	Hord (X), E/S (X), NFI (X)	5/6	X	*Chenopodium* sp. (X), *Fallopia convolvulus* (X), *Bromus* sp. (X)	-	X	Ring porous (X), roundwood (X)	XXX	XX			X		B	C
MNL638	132	2276	2275	Postpipe void	UP		-	-		-	X	Indet. (1)	-	-		X	X			X		D	D
MNL638	133	2252	2251	Gully	R5	20	X	-	Trit (1),	5/6	X	Indet. (1)	-	-		XX	X	X				C	D

									NFI (1)														
MNL638	134	2256	2255	Ditch	R6	40	X	-	HB (2), E/S (1), BW (1), NFI (1)	5/6	-		-	-		XXX	XX	X		X	Wood	C	D
MNL638	135	2316	2314	Ditch	R6	40	XX	-	HB (X), E/S (XX)	5/6	-		-	-		XXX	XX	XX		X	Wood. Fully sorted - ID needed	B	D
MNL638	136	2321C	-	Layer	R2	40	XXX	-	HB (X), E/S (XX), BW (XX)	5/6	X	cf. *Pisum* sp. (X), med./large Fabaceae (X)	-	X	Not of identifiable size	XXX	XX	X	X		Tuber	B	D
MNL638	137	2329A	2328	Ditch	R5	40	X	-	Frag (X)	6	-		-	-		XX	X	X				D	D
MNL638	138	2333	2332	Posthole	UP	10	X	-	E/S (1)	5	-		-	-		X	X					D	D
MNL638	139	2337	2336	Postpipe void	UP	10	-	-		-	-		-	-		X						D	D
MNL638	140	2339	2338	Posthole	UP	10	X	-	E/S (1)	4	X	cf. *Pisum* sp. (1)	-	-		X	X					C	D
MNL638	141	2341	2340	Posthole	UP	10	X	-	HB (1), Frag (X)	5/6	-		-	-		XX						C	D
MNL638	142	2343	2342	Posthole	UP	10	-	-		-	-		-	-		X	X					D	D
MNL638	143	2363	2362	Posthole	UP	10	X	-	HB (3), Hord (1), NFI (1), Frag (X)	5/6	X	Med./large Fabaceae (1)	-	-		XX	X		X		Tuber	C	D
MNL638	144	2365	2364	Posthole	UP	10	X	-	E/S (2)	5	X	cf. *Trifolium* sp.	-	-		XX						C	D
MNL638	145	2367	2366	Posthole	UP	10	-	-		-	X	*Montia fontana* (1), *Carex*sp. (1)	-	-		X						D	D
MNL638	146	2369	2368	Posthole	UP	10	-	-		-	X	*Plantago lanceolata* (1)	-	-		XX	X	X	X			D	D
MNL638	147	2396A	2314	Ditch	R6	40	X	-	E/S (1), NFI (1)	5/6	-		-	-		XX	X	X	X			D	D
MNL638	148	2346	2344	Cow burial	R6	40	X	-	E/S (2), Trit (1)	5	-		-	-		X	XX				Amphibian bone	C	D
MNL638	149	2134B	2133	Ditch	R5	10	X	-	NFI (1)	6	X	Indet. (1)	-	-		X	XX	XXX			Abundant elder seeds (XXX)	D	D
MNL638	150	2356A	2355	Linear	R2	40	XX	-	HTB (X), BW (X), NFI (X), Frag (X)	5/6	XX	cf. *Pisum* sp. (X), *Montia fontana* (X), cf. *Trifolium* sp. (X), *Plantago lanceolata* (X), *Carex* sp. (X), *Lolium* sp. type (X)	-	X	Ring porous (X)	X	X	XX	X	X	Heather	B	D
MNL638	151	2146B	2145	Ditch	R3	10	X	-	NFI (2), Frag (X)	5	X	*Ranunculus* sp. (1), cf. *Trifolium* sp. (2)	-	-		X	XXX	X			Tuber	C	D

MNL638	152	2150B	2149	Gully	R3	10	X	-	Hord (1), E/S (1), Trit (1), NFI (1), Frags (X)	5/6	X	*Montia fontana* (1), large Poaceae (1)	-	-		X	XXX	XX			Moss	C	D
MNL638	153	2145B	2147	Gully	R3	10	X	-	E/S (2), Trit (1)	5	X	*Potentilla* sp. (1)	-	X	Diffuse porous (X)	X	XXX	XXX			Tuber. Modern elder seeds (XXX)	C	D
MNL638	154	2215A	2214	Ditch	R1	40	X	-	NFI (2)	5/6	-		-	-			X	XX		X		D	D
MNL638	155	2180A	2179	Ditch	R3	40	X	-	Hord (2), Trit (1), NFI (1), Frag (X)	5/6	X	Indet. (1)	-	-				X		X	Tuber, heather	C	D
MNL638	156	2400	2399	Grave	R6	40	-	-		-	-		-	-			X	X				D	D
MNL638	157	2250	2249	Pit	R6	40	X	-	Hord (2)	5	XX	*Chenopodium* sp. (XX), *Polygonum aviculare* (X)	-	-		XX		X			Odd preservation - wild taxa only appear semi-charred. Add 3 Chenopodium to total (very fragile). Fully sorted - ID needed	B	D
MNL638	159	2408	2407	Pit	R6	40	XX	-	HB (X), E/S (X), Trit (X), NFI (X)	5/6	XX	*Chenopodium* sp. (X), small Fabaceae (X), med./large Fabaceae (X), *Montia fontana* (X)	-	-		XXX		X			Tuber, bone	B	D
MNL638	160	2472	2471	Posthole	UD	10	XX	-	HB (X), E/S (X)	5/6	X	*Chenopodium* sp. (X), Asteraceae (X)	-	-		XX	XXX	X	X	X	Tuber. Fully sorted - ID needed	B	D
MNL638	161	1734B	1733		R5	30	XX	-	E/S (XX), Trit (X), NFI (X)	5/6	X	Med./large Fabaceae (X)	-	X	Not of identifiable size	XXX	XX				Tuber (XX)	B	D
MNL638	162	2492A	2491	Ditch	R2	40	X	-	NFI (1)	6	X	*Ranunculus* sp. (1), *Carex* sp. (2), indet. (1)	-	-		XXX	XX	X				C	D
MNL638	163	2533A	2532	Pit	R5	20	-	-		-	-		-	-		XXX	XX					D	D
MNL638	164	2504A	2503	Ditch	R3	40	X	X	Trit (1). E/S glume base (1)	5	-		-	-		XXX	X	XX	X		Tuber. Modern wood	C	D
MNL638	166	2557	2555	Cremation 2	R4	20	X	-	HB (2)	5	X	*Fallopia convolvulus* (1)	-	-		X	XXX				Tuber	C	D
MNL638	167	2559	2558	Cremation 2 Vessel	R4	10	-	-		-	-		-	-		X	X	X				D	D

MNL638	168	2560	2556	Cremation 3	R4	10	X	-	NFI (1)	5	-		-	-		X	XX				Bone	D	D
MNL638	169	2562	2561	Cremation 3 vessel	R4	10	X	-	NFI (1)	5	-		-	-		X	X					D	D
MNL638	170	2574A	2573	Ditch	R4	40	X	-	HB (3), Hord (1), E/S (1), Trit (1), NFI (1), Frag (X)	5/6	-		-	-		X	XXX	X	X			C	D
MNL638	171	2576A	2575	Ditch	R4	40	X	-	E/S (1), NFI (1)	5	-		-	-			XXX					C	D
MNL638	172	2613	2612	Modern	UP	100	-	-		-	-		-	XX	Diffuse porous (X)	XXX	XX	X	X	X	Plastic, wood	D	D
MNL638	173	2613	2549	Gully	UP	20	-	-		-	-		-	-		X	X					D	D
MNL638	174	2588	2586	Pit	Period III	40	-	-		-	-		-	-		XXX	XX					D	D
MNL638	175	2678	2676	Pit	R4	60	X	-	HB (X)	5	XX	*Fallopia convolvulus* (X), *Galium* sp. (X), large Poaceae (X)	-	-		X	XX				Heather	B	D
MNL638	176	2680	2679	Pit	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	177	2682	2681	Posthole	UP	10	X	-	HB (1)	5	-		-	-		X	X					D	D
MNL638	178	2684	2683	Posthole	UP	10	-	-		-	-		-	-		XX	XX					D	D
MNL638	179	2686	2685	Posthole	UP	10	-	X	E/S glume base (1)	-	-		-	-		X	X	X				D	D
MNL638	180	2688	2687	Posthole	UP	10	-	-		-	-		-	-		X	X	X				D	D
MNL638	181	2690	2689	Posthole	UP	10	-	-		-	-		-	-		X	XX	X				D	D
MNL638	182	2692	2691	Posthole	UP	10	-	-		-	-		-	-			X					D	D
MNL638	183	2694	2693	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	184	2576D	2575	Ditch	R4	40	X	-	Frag (X)	6	-		-	-		X	XXX					D	D
MNL638	185	2675	2672	Posthole	Period III	10	-	-		-	-		-	-		X	XX	X				D	D
MNL638	187	2726	2725	Pit	R2	40	X	-	HB (1), E/S (1), Trit (1), NFI (1)	5/6	X	Cyperaceae (2)	-	-		XX	XX	XX			Grass culm, tuber	C	D
MNL638	189	2734	2733	Posthole	UP	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	190	2736	2735	Posthole	UP	10	-	-		-	-		-	-		XX	X					D	D
MNL638	191	2738	2737	Posthole	UP	10	-	-		-	-		-	-		XX	XX	XX				D	D
MNL638	192	2740	2739	Posthole	UP	10	X	-	Frag (X)	6	-		-	-		X	XX	X				D	D
MNL638	193	2742	2741	Posthole	UP	10	-	-		-	-		-	-		X	X					D	D
MNL638	194	2732	2731	SK8	R2	60	-	-		-	-		-	-		X	X					D	D

MNL638	195	2697	2695	Pit	R5	40	X	-	Trit (1), Frag (X)	5/6	X	*Chenopodium* sp. (3)	-	-		X	XXX	XX	X			C	D
MNL638	196	2696	2695	Pit	R5	40	-	-		-	-		-	-			XX				Mammal bone	D	D
MNL638	197	2574E	2573	Ditch	R4	40	X	-	NFI (1), frag (X)	6	-		-	-		X	XXX		X		Grass culm	D	D
MNL638	198	2930	2929	Posthole	Period III	10	-	-		-	-		-	-		XX	XX	XX	XX			D	D
MNL638	199	2898	2897	Posthole	UP	40	-	-		-	-		-	-		X	X					D	D
MNL638	200	2896	2895	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	202	2969	2968	Pit	UP	10	X	-	E/S (1), Trit (1), frag (X)	5/6	-		-	-		XXX	X	X				C	D
MNL638	203	2971	2970	Pit	UP	10	X	-	BW (1)	5	X	*Fallopia convolvulus* (1), small Fabaceae (1), Caryophyllaceae (1), *Carex* sp. (1)	-	-		XX	XX	X	X	X		C	D
MNL638	204	2951B	2950	Gully	R4	20	X	-	E/S (1), frag (X)	5	X	*Ranunculus* sp. (1), Asteraceae (1), indet. (1)	-	-		XX	XX	X				C	D
MNL638	205	3056	3055	Posthole	UP	10	-	-		-	-		-	-		XXX						D	D
MNL638	206	3058	3057	Posthole	UP	10	-	-		-	-		-	-		XXX	X					D	D
MNL638	207	3060	3059	Posthole	UP	10	-	-		-	-		-	-		XXX	XX					D	D
MNL638	208	2617	2616	Posthole	UP	10	-	-		-	-		-	-		X	XXX	X				D	D
MNL638	209	2808	2807	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	210	2834	2833	Posthole	UP	10	X	-	NFI (1)	6	X	*Stellaria meedia*(1)	-	-		X	XXX	X				C	D
MNL638	211	2820	2819	Posthole	UP	10	-	-		-	-		-	-		XX	X					D	D
MNL638	212	2830	2829	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	213	2826	2825	Posthole	UP	10	-	-		-	-		-	-		X	XXX	X				D	D
MNL638	214	2842	2841	Posthole	UP	10	X	-	BW (1)	5	-		-	-		X	XX	X		X		D	D
MNL638	215	2858	2857	Posthole	UP	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	216	2850	2849	Posthole	UP	10	-	-		-	-		-	-		XX	XX	XX				D	D
MNL638	217	1471M	1470	Ditch	R2	40	XX	X	HB (X), E/S (X), Oat (X). Spelt glume base (X)	5/6	X	*Polygonum aviculare* (X), *Carex* sp. (X), Poaceae (X)	-	-		X	XXX			X	Heather, grass culm, amphibian bone. Half sorted	B	D
MNL638	218	3062B	1470	Ditch	R2	40	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	219	1708H	1707	Ditch	R3	40	X	-	HB (1), Trit (1), NFI (1)	5/6	-		-	-		XX	XX	X	X	X		C	D
MNL638	220	2774	2773	Posthole	UP	30	-	-		-	-		-	-		XX	XX					D	D

MNL638	221	2778	2777	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	222	2772	2771	Posthole	R2	10	-	-		-	-		-	-		XX	X	X				D	D
MNL638	223	3104	3103	Posthole	UP	10	-	-		-	X	Small Poaceae (1)	-	-		XXX	XX					D	D
MNL638	236	3239D	3238	Gully	R3	40	X	X	E/S (1), frag (X). E/S glume base (1)	5/6	X	*Ranunculus acrsi/bulbosus* (1)	-	-		X	XXX	X			Heather	C	D
MNL638	237	2914g	2913	Ditch	R3	10	XX	-	HB (X), E/S (X)	5/6	XX	*Chenopodium* sp. (X), *Potentilla* sp. (X), med. Fabaceae (X), *Carex* sp. (X)	-	-		XX	XX				Tubers (XX), heather bud	B	D
MNL638	238	3129	3128	Pit	R2	40	XX	-	HB (X), E/S (XX)	4-6	XX	*Chenopodium* sp. (X), *Polygonum aviculare* (X), Med. Fabaceae (X), *Tripleurospermum* sp. (X)	-	-		X	XX	X		X	Tuber, amphibian bone	B	D
MNL638	239	3290	3289	Grave	R3	40	-	-		-	-		-	-		X	XX	X				D	D
MNL638	241	3395	3394	Ditch	R6	40	X	-	E/S (1), Trit (1), frag (X)	5	X	*Montia fontana* (1), *Carex* sp. (1), small Poaceae (1), indet. (1)	-	-		XXX	XX			X		C	D
MNL638	242	3355D	-	Layer	R7	20	XX	XX	HB (X), E/S (X). Hord rachis (X), spelt glume base + spikelet fork (X)	5	X	*Chenopodium* sp. (X), *Poa* cf. *annua* (X)	-	-		XXX	XX	XX			Fully sorted - ID needed	B	D
MNL638	243	3354D	-	Layer	R7	20	XX	-	HTB (X), HB (XX), E/S (X), cf. Rye (X)	5	X	Caryophyllaceae (X), *Carex* (X), large Poaceae (X)	-	-		XX	XX	XX		XX	Mammal bone. Fully sorted - ID needed	B	D
MNL638	244	3377B	3376	Ditch	R4	20	XX	X	HB (X), E/S (XX). Spelt glume base (X), Trit rachis	5	X	*Montia fontana* (X), *Chenopodium* sp. (X), *Carex* sp, (X), *Bromus* sp. (X)	-	-		XXX	X	XX			Amphibian bone	A	D

									(X), culm (X)														
MNL638	245	3403A	3402	Ditch	R5	20	XX	-	HB (X), E/S (X), Trit (X)	5	XX	*Chenopodium* sp. (X), *Carex* sp. (X)	-	-		XX					Grass culm. Fully sorted - ID needed	B	D
MNL638	246	3377A	3376	Ditch	R4	40	-	-		-	-		-	-			X						D	D
MNL638	247	3354G	-	Layer	R7	20	-	-		-	-		-	-		X	X	X					D	D
MNL638	248	3354I	-	Layer	R7	20	X	-	Trit (1)	5	X	Med. Fabaceae (1)	-	-		XX	X	XX	X	XX			C	D
MNL638	249	3354H	-	Layer	R7	20	XX	-	HTB (X), HB (X), E/S (X)	5/6	X	*Ranunculus* sp. (X)	-	-		XX	X	XX			Tuber, heather, dicot. stem, grass culm		B	D
MNL638	250	3355H	-	Layer	R7	20	-	-		-	-		-	-		XX	XXX						D	D
MNL638	251	3382	3381	Ditch	R5	40	-	-		-	-		-	-		X	X						D	D
MNL638	252	3384H	3383	Ditch	R3	40	XX	X	E/S (XX), Trit (X). E/S glume base (X)	5	X	*Danthonia decumbens* (X), small Fabaceae (X)	-	-		X	XX	X			Tuber, heather		B	D
MNL638	253	3470H	3469	Ditch	R2	40	X	-	Frag (X)	6	-		-	-		X		X					D	D
MNL638	254	3519A	3543	Ditch	R6	20	X	-	Hord (1), E/S (2), NFI (1), Frag (X)	5	X	*Linum* sp. (1), small Fabaceae (1), *Carex* sp. (3)	-	-		X	XX				Tuber, heather		C	D
MNL638	255	3520C	3487	Ditch	R3	40	-	-		-	-		-	-			XX						D	D
MNL638	256	3606	3605		R6	20	XXX	-	HB (XX), E/S (XX)	5/6	X	cf. *Pisum* sp. (XX), *Carex* sp. (X)	-	XXX	Ring porous (XX)	XXX	X	X			Tuber		A	A/B
MNL638	257	3447E	3446	Ditch	R3	20	-	-		-	-		-	-		X	X						D	D
MNL638	258	3354K	-	Layer	R7	40	X	-	Frag (X)	6	-		-	-		XX	XX	X		X			D	D
MNL638	259	3546C	3545	Ditch	R6	20	-	-		-	-		-	-		XXX	X	XX					D	D
MNL638	260	3596	3595	Gully	R2	10	X	-	NFI (1)	5	X	Med Fabaceae (1)	-	X	Not of identifiable size	XXX	X	X					D	D
MNL638	261	3600A	3599	Pit	R6	40	XXX	X	HB (XX), E/S (XX), BW (X), Trit (X). Trit rachis (X)	5	X	*Rumex* sp. (X), med. Fabaceae (X), Asteraceae (X), *Carex* sp. (X), small Poaceae (X)	-	-		XXX	XX			X	Tubers (XX) - poss. leguminous (e.g. *Lathyrus linifolius*)		A	D

MNL638	262	3600C	3599	Pit	R6	40	XX	-	HB (XX), E/S (X), Trit (XX)	5	X	Med./large Fabaceae (X), *Galium* sp. (X)	-	X	Ring porous (X)	XX	XX				Tubers (XX), modern wood	B	D
MNL638	263	3602A	3601	Ditch	R2	40	XX	-	HB (X), Hord (X), E/S (X), Trit (X)	5	X	Med Poaceae (X)	-	-		XXX	X	X			Tuber	B	D
MNL638	264	3235F	3234	Ditch	R4	30	X	-	E/S (1), Trit (1), NFI (1)	5/6	-		-	-		XXX	XX				Plastic	C	D
MNL638	265	3611	-	Natural Hollow	R2	40	XX	X	HB (X), E/S (X), Trit (X). Emmer glume base (X)	5/6	-		-	-		XXX	XX					B	D
MNL638	266	3689	3688	Pit	R2	20	X	-	NFI (1), frag (X)	5/6	-		-	X	Not of identifiable size	XXX	XX		X			D	D
MNL638	267	3689	3688	Pit	R2	10	XX	-	HB (X), E/S (X)	5/6	X	*Carex* sp. (X)	-	-		XX	XX				Fully sorted - ID needed	B	D
MNL638	268	3681A	3676	Pit	R2	10	XX	X	HB (XX), E/S (XX). Culm (X)	5	-		-	-		XX	XX					B	D
MNL638	269	3684A	3676	Pit	R2	10	X	X	HB (2), NFI (2), frag (X). Spelt glume base (1), E/S spikelet fork (1)	5/6	-		-	-		X	XX					C	D
MNL638	270	3740	3605	Kiln	R6	10	X	-	HB (1), E/S (1), NFI (1), frag (X)	5/6	X	cf. *Pisum* sp. (1)	-	-		XX	XX	XX			Tuber	C	D
MNL638	271	3741	3605	Kiln	R6	100	XXX	-	HTB (X), HB (XX), E/S (X), cf. Oat (X)	5/6	X	Fabaceae (X)	-	-		XX	X	X			Tubers (XXX), heather, mammal bone, modern wood	A	D
MNL638	272	3726	3725	Pit	R2	40	-	-		-	-		-	-		XXX	XX					D	D
MNL638	273	3728	3727	Pit	R1	40	-	-		-	-		-	-		XX	XX					D	D

MNL638	275	3755	3605	Kiln	R6	20	XX	-	HTB (X), HB (X), E/S (X)	5	X	*Rumex* sp. (X), med. Fabaceae (X), *Galium* sp. (X), *Danthonia decumbens* (X)	-	-		XXX				X	Tuber, poss. dung, heather. Fully sorted - ID needed	B	D
MNL638	276	3751	3605	Kiln	R6	20	XXX	-	HB (X), E/S (XX), Trit (XX)	5	XX	cf. *Pisum* sp. (XX)	-	XXX	Diffuse porous (XX), Ring porous (X)	XXX	XX	X			Tuber (XX)	A	A
MNL638	277	3754	3605	Kiln	R6	30	XX	-	HB (X), E/S (X), BW (X)	5	-		-	XX	Diffuse porous (X)	XXX	XX	X			Tuber (XX)	B	C
MNL638	278	3768	3766	Pit	R4	40	-	-		-	-		-	X	Indet.	XXX	XX	X				D	D
MNL638	279	3769	3766	Pit	R4	40	-	-		-	-		-	-		XXX	XX	X				D	D
MNL638	280	3850	3849	Posthole	UP	10	-	-		-	-		-	X	Not of identifiable size	XXX	XX	X				D	D
MNL638	281	3852	3851	Posthole	UP	10	-	-		-	-		-	-		XXX						D	D
MNL638	282	3854	3853	Posthole	UP	10	-	-		-	-		-	-		XX	X	X				D	D
MNL638	283	3856	3855	Posthole	UP	10	-	-		-	-		-	-		XX						D	D
MNL638	284	3872	3871	Posthole	UP	10	-	-		-	-		-	-		XXX	XX					D	D
MNL638	285	3884	3883	Ditch	R3	40	X	-	HB (1), NFI (1)	5/6	-		-	-		XX	XX	XX	XX	XX		D	D
MNL638	286	3904	3903	Ditch	R6	20	X	-	HB (1)	5	X	*Carex* sp. (1)	-	-		X	XX	X	X			C	D
MNL638	287	3917	3916	Gully	R6	20	XX	X	HB (XX), E/S (X), Oat (X). E/S glume base (X)	5/6	X	*Rumex* sp. (X), *Bromus* sp. (X)	-	-		X	XX					B	D
MNL638	288	3890B	3889	Ditch	R6	20	X	X	HB (1), BW (1), Trit (1). E/S glume base (1)	5	X	Large Poaceae (1)	-	X	Indet.		XX					C	D
MNL638	289	3925C	3924	Ditch	R5	20	X	-	HB (X), E/S (X)	5/6	X	*Galium* sp. (X), med. Fabaceae (X)	-	X	Not of identifiable size		XX	X		X	Fully sorted - ID needed	B	D
MNL638	290	3947D	-	Layer	R6	10	X	-	Trit (1)	5	-		-	-		X	XX	XX	X			D	D
MNL638	291	3947E	-	Layer	R6	10	X	-	HTB (1)	5	-		-	-			X	X				D	D
MNL638	292	3947F	-	Layer	R6	10	X	-	HB (1), E/S (2), frag (X)	5/6	X	Med. Fabaceae (1), *Carex* sp. (3)	-	-		X	X	X			Tuber, small mammal bone	C	D

MNL638	293	3947H	-	Layer	R6	10	X	-	HB (1)	5	X	Small Brassicaceae (1), indet. (3)	-	X	Ring porous (X)	X	XX	X			Bone, amphibian bone	C	D
MNL638	294	3947I	-	Layer	R6	10	X	-	NFI (1)	6	X	*Carex* sp. (1)	-	-		X		XX			Carbonised insect (1)	D	D
MNL638	295	3947K	-	Layer	R6	10	-	-		-	X	*Stellaria media* (1), small Brassicaceae (1), *Galium* sp. (1), *Carex* sp. (1)	-	-		X	XXX	XX	X			C	D
MNL638	296	3947L	-	Layer	R6	10	-	-		-	-		-	-		XX	X	XX				D	D
MNL638	297	3947M	-	Layer	R6	10	X	-	HB (2), Trit (1), frag (X)	5	-		-	-		X	X	XX				C	D
MNL638	298	3947O	-	Layer	R6	10	X	-	Hord (1), E/S (1)	5	-		-	-		X	XX	XX	X			C	D
MNL638	299	3947P	-	Layer	R6	10	-	-		-	-		-	-			X	XX			Amphibian bone	D	D
MNL638	300	3947T	-	Layer	R6	10	-	-		-	X	*Galium* sp. (1), indet. (3)	-	X	Diffuse porous (X)	X	XX	XX				D	D
MNL638	301	3947U	-	Layer	R6	10	X	-	HB (1)	5	-		-	X	Diffuse porous (X)	X	XX	X			Grass culm	D	D
MNL638	302	3947Y	-	Layer	R6	10	X	-	HB (1)	5	-		-	-		X	XX	XXX			Small mammal bone, abundant elder seeds	D	D
MNL638	303	3947Z	-	Layer	R6	10	-	-		-	-		1	-			X	XX			Small mammal bone	D	D
MNL638	304	3947CC	-	Layer	R6	10	-	-		-	-		-	-				XXX		X	Abundant elder seeds	D	D
MNL638	305	3947DD	-	Layer	R6	10	-	-		-	-		-	-				X				D	D
MNL638	306	3947II	-	Layer	R6	10	-	-		-	-		-	-			XX	XX		X	Bone, small mammal bone	D	D
MNL638	307	3950A	3949	Gully	R2	20	X	-	HB (1), E/S (1), NFI (1), frag (X)	5	X	*Potentilla* sp. (1), small Fabaceae (1), med./large Fabaceae (1)	-	-		X	XX					C	D
MNL638	308	3965	3964	Gully	R3	20	-	-		-	-		-	-		X	XX	X				D	D
MNL638	309	3961A	3960	Gully	R6	20	X	-	HTB (X), Trit (X)	5	XX	Med./large Fabaceae (XX)	-	X	Indet.		XX	X		X	Tuber. Fully sorted - ID needed	B	D
MNL638	310	3991	3974	Pit	UP	10	X	-	Frag (X)	6	-		-	XXX	Diffuse porous (XX)		XX					D	A/B
MNL638	311	3990	3974	Pit	UP	10	-	-		-	-		-	XXX	Diffuse porous (XX)		XX					D	A/B
MNL638	312	3990	3974	Pit	UP	10	-	-		-	-		-	XXX	Diffuse porous		X					D	A/B

														(XX)								
MNL638	313	3989	3974	Pit	UP	10	-	-		-	-		-	-		X	X					D	D
MNL638	314	3997	3996	Pit	R6	40	XX	X	HTB (X), HB (XX), E/S (X), Oat (X). E/S glume base (X)	5	XX	*Fumaria* sp. (X), *Chenopodium* sp. (X), Caryophyllaceae (X), *Montia fontana* (X), *Carex* sp. (X)	-	-			XX	X		X	cf. *Conopodium* sp. tuber	B	D
MNL638	315	3993	3992	Pit	R6	10	XX	X	HB (X), E/S (X). Culm (X)	5	X	*Chenopodium* sp. (X)	-	-			XX	X			Tuber	B	D
MNL638	316	3980A	3979	Ditch	R7	40	XX	X	HB (X), E/S (X), cf. Oat (X). Spelt glume base (X)	5	X	*Rumex* sp. (X)	-	-			X	X			Tuber, amphibian bone, mammal bone	B	D
MNL638	317	4007 A	4006	Gully	R6	10	X	-	E/S (1), NFI (1), Frag (1)	5	X	Small Poaceae (1)	-	-				XX	X			C	D
MNL638	318	4005 C	4004	Ditch	R6	10	X	X	E/S (1). Spelt glume base (1)	5	X	*Plantago* sp. (1)	-	X	Diffuse porous (X)	X	X					C	D
MNL638	319	3904B	3903	Ditch	R6	10	X	X	HB (X), E/S (X), BW (X). Spelt GB (X)	5	XX	Med./large Fabaceae (X), Chenopodiaceae (X), *Polygonum aviculare* (X)	-	-			XX	X		X	Tuber. Fully sorted, ID needed	B	D
MNL638	320	4049	4048	Pit	R6	10	X	-	HB (X), E/S (X)	5	X	Chenopodiaceae (X), *Polygonum aviculare* (X), *Carex* sp. (X)	-	-			XX	X			Dicot. stem/root (XX), monocot culm (X). Fully sorted, ID needed	B	D
MNL638	321	4011 B	4010	Gully	R2	10	-	-		-	X	*Carex* (1)	-	-			XX	X				D	D
MNL638	322	4064 B	4062	Pit	UP	40	X	-	HB (1), E/S (1), NFI (1), Frag (X)	5	X	*Stellaria media* (1), Asteraceae (1), *Carex* sp. (2), indet. (1)	-	-			XX	X	X			C	D
MNL638	323	4055	4054	Pit	Period III	40	XX	-	HB (X), E/S (X)	5	X	*Chenopodium* sp. (X)	-	-			XXX	X			Dicot stem/root, amphibian bone. Half sorted	B	D

MNL638	324	4124	4054	Pit	Period III	40	XX	-	HB (X), E/S (X), cf. Rye (X)	5	X	*Carex* sp. (X)	-	-		X	X	XX			Germinated barley grain, amphibian bone (XX). Half sorted	B	D
MNL638	325	4164	4163	Posthole	UP	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	326	4174	4175	Posthole	UP	10	-	-		-	-		-	-		X	XX	X		X		D	D
MNL638	327	4213	4212	Pit	R6	20	X	-	BW (1), Trit (1), NFI (1), Frag (X)	5/6	X	*Carex* sp. (4)	-	-			XXX	X	X		Mammal bone, amphibian bone	C	D
MNL638	329	4037 B	4036	Ditch	R1	40	X	X	cf. BW (1), Trit (1), NFI (1), Frag (X). Spelt glume base (1)	5/6	-		-	X	Indet.		XX	XX		X	Fuel ash slag	C	D
MNL638	330	4321	4320	Pit	Period I	20	-	-		-	-		-	-		X	XX	X				D	D
MNL638	331	4354	4353	Pit	R6	10	-	-		-	-		-	-			X					D	D
MNL638	332	4372	4369	Pit	R6	10	X	-	NFI (3), Frag (X)	6	X	cf. *Pisum* sp. (1), med. Fabaceae (1), *Carex* sp. (1), indet. (1)	-	-			XX	X			Heather, dicot stem/root, amphibian bone	C	D
MNL638	333	4381 A	4234	Wall Foundation	Period III	10	-	-		-	X	*Chenopodium* sp. (5), *Fallopia convolvulus* (1), small Brassicaceae (1)	-	-			XX	X		X	Fuel ash slag, amphibian bone (XX)	D	D
MNL638	334	4374 B	4373	Gully	R2	10	X	-	NFI (1), frag (X)	5/6	X	cf. *Pisum* sp. (1)	-	X		XX	XX	X			Heather, tuber, amphibian bone	C	D
MNL638	335	4346	4345	Ditch	R6	20	XXX	-	HB (XX), E/S (X)	5	X	Chenopodiaceae (X), *Bromus* sp. (X)	-	XX	Diffuse porous (X), rootwood (X)	X	XX	X			Dicot stem/root, heather	A	B/C
MNL638	336	4404	4403	Pit	UP	10	X	-	E/S (2), Trit (1), NFI (1), Frag (X)	5/6	X	Indet. (X)	-	X	Ring porous (X)	X	XX	X			Tuber, heather, amphibian bone. Fully sorted, ID needed	C	D
MNL638	337	4342B	4341	Ditch	R3	20	XX	-	HB (X), E/S (X)	5	-		-	X	Small diameter roundwood (X)	XXX	XX	XX	X	X		B	D

MNL638	338	4344C	4343	Ditch	R3	20	XX	-	HB (XX), E/S (XX), cf. Oat (X)	5	X	cf. *Pisum* sp. (X)	-	-		XXX	XX	XX	X		Germinated barley grain, modern wood.	A/B	D
MNL638	339	4406	4405	Pit	R3	10	X	-	Trit (X)	5	X	*Chenopodium* sp. (1), *Carex* sp. (1), *Danthonia decumbens* (1)	-	-			X	XX			Heather	C	D
MNL638	340	4415	4414	Pit	UP	20	X	-	E/S (2), frag (X)	5	X	cf. *Pisum* sp. (1)	-	X	Not of identifiable size		X	XXX			Abundant modern elder seeds	C	D
MNL638	341	4091N	4090	Gully	R2	20	XX	-	HB (X), E/S (X)	5	X	Med./large Fabaceae (X), *Carex* sp. (X)	-	-		X	X	XX		X	Dicot stem/root, monocot culm, amphibian bone	B	D
MNL638	342	4091 K	4090	Gully	R2	20	X	-	HTB (1), Frag (X)	5/6	X	*Montia fontana* (1), cf. *Trifolium* sp. (1), *Carex* sp. (1), *Danthonia decumbens* (1), indet. (1)	-	-		X	XX	XX			Dicot. stem/root, amphibian bone	C	D
MNL638	343	4434	4433	Pit	R1	10	X	-	NFI (1), Frag (X)	6	X	*Carex* sp. (1)	-	-		XX	XXX	XX			Amphibian bone	D	D
MNL638	344	4454	3402	Ditch	R5	20	XX	X	E/S (X), Oat (X). Spelt glume base (X), rachis (X)	5	X	Med. Fabaceae (X), *Plantago lanceolata* (X), *Carex* sp. (X)	-	X	Diffuse porous (X), roundwood (X)	XX	XX	X			Heather, amphibian bone	B	D
MNL638	345	4531 B	4303	Ditch	Period I	20	X	X	Frag (X). Oat awn (1), Trit/Hord awn (1)	5/6	X	*Chenopodium* sp. (2), *Plantago* sp. (1), *Bromus secalinus* type (1), large Poaceae (1)	-	X	Ring porous (X), diffuse porous (X)	X	XX	X		X		C	D
MNL638	346	4541	4540	Pit	R6	20	XX	-	HB (X), E/S (X), Trit (X), NFI (X)	5	X	Caryophyllaceae (X)	-	-		X	XX	X	X		Tuber, amphibian bone	B	D
MNL638	347	4539	4538	Posthole	R6	10	-	-		-	-		-	X	Ring porous (X)	X	X	X				D	D
MNL638	348	4571	4570	Pit	Period I	20	-	-		-	-		-	X	Diffuse porous (X)		X	X		XX	Heather	D	D

MNL638	349	4576	4536	Ditch	R4	20	X	-	E/S (2), Frag (X)	5	X	Chenopodiaceae (1), Caryophyllaceae (1), *Galium* sp. (2), large Fabaceae (1)	-	XX	Diffuse porous (X), ring porous (X)		XXX	X			Dicot stem/root, heather, mammal bone	C	C
MNL638	350	4531 B	4303	Ditch	Period I	10	-	-		-	-		-	-		X	X	X		X		D	D
MNL638	351	4588A	4587	Ditch	R2	10	XX	XX	E/S (XX). Spelt glume base (XX), cf. emmer spikelet fork (X)	5	X	*Rumex* sp. (X)	-	-		XXX	XX	X			Tuber (XX), heather	B	D
MNL638	352	4597B	4600	Ditch	R2	10	XX	XX	E/S (XX), Oat (X). Spelt glume base (X)	5	X	*Rumex* sp. (X), *Carex* sp. (X)	-	-		XXX	XX	X				B	D
MNL638	353	4611	4610	Pit	Period I	40	X	-	NFI (1), frag (X)	6	-		-	-		XX	XX	XX	X	XX	Monocot culm	D	D
MNL638	354	4607	4606	Ditch	UP	10	X	-	Frag (X)	6	-		-	-		XXX	XX	XX		XX		D	D
MNL638	355	4636	4635	Pit	R3	10	X	-	E/S (1)	5	-		-	-		XXX	XX	X	X			D	D
MNL638	356	4708	4707	Posthole	UP	10	-	-		-	-		-	-		XX	XX					D	D
MNL638	357	4714	4713	Posthole	UP	10	X	-	E/S (1)	5	-		-	-		XX	XX	X		X		D	D
MNL638	358	4718	4717	Posthole	UP	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	359	4722	4721	Posthole	UP	10	-	-		-	-		-	-		XXX	XX					D	D
MNL638	360	4732	4731	Posthole	UP	10	-	-		-	-		-	-		XX	XX					D	D
MNL638	362	4605	4604	Pit	R4	10	X	-	E/S (1)	5	-		-	-		XXX	XX	X				D	D
MNL638	363	4658	4657	Pit	R5	10	XX	XXX	E/S (XX). Spelt glume base (XXX)	5	X	*Chenopodium* sp. (X)	-	XX	Ring porous (X), *Quercus* sp. (X)	XXX	XX				Fine siliceous ash - nothing diagnostic but could be from burnt chaff (high silica content)	A	B
MNL638	364	4788	4786	Posthole	UP	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	365	4789	4786	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	367	4798			UP	20	-	-		-	-		-	-		XXX	X					D	D
MNL638	368	4799	4798	Posthole	UP	10	-	-		-	-		-	-		XXX	XX					D	D
MNL638	369	4801	4800	Posthole	UP	20	-	-		-	-		-	-		XXX	XX		X			D	D
MNL638	370	4802	4862	Posthole	UP	10	-	-		-	-		-	-		XXX	XX					D	D
MNL638	371	3728 B	3727	Pit	R1	40	X	-	NFI (1), Frag (X)	5/6	X	Med./large Fabaceae (1)	-	-		XXX	XXX					C	D

MNL638	372	4874 A	4873	Gully	R2	10	X	-	HB (1), Frag (X)	5	-		-	-		XX	X					D	D
MNL638	373	4876D	4875	Gully	R3	40	X	-	HB (2), NFI (2), Frag (X)	5/6	X	*Rumex* sp. (1), med./large Fabaceae (1)	-	X	Not of identifiable size	XX	X	X	X		Mammal bone	C	D
MNL638	374	4974A	4973	Ditch	R3	30	XX	X	E/S (X). Emmer spikelet fork (X), rachis (X)	5	X	*Carex* sp. (X), med./large Fabaceae (X)	-	-		XXX	XX	X	X		Heather. Fully sorted, ID needed	B	D
MNL638	375	5021	5020	Ditch	R5	10	X	-	E/S (1), Trit (1), NFI (1), frag (X)	5	-		-	-		XX		XX				C	D
MNL638	376	5024A	5022	Ditch	R6	20	XX	-	E/S (X)	5	X	Med./large Fabaceae (X), small Brassicaceae (X), *Carex* sp. (X)	X	X	Indet.	XX	XX				Tuber. Fully sorted, ID needed	B	D
MNL638	377	5033	5031	Pit	R5	10	X	-	HB (1), Trit (2), NFI (1), Frag (X)	5/6	-		-	-		XX	XX	X				C	D
MNL638	378	5032	5031	Pit	R5	10	XX	-	HB (X), E/S (X)	5	-		-	-		XX	X				Tuber	B	D
MNL638	379	5056	5055	Pit	UP	10	-	-		-	-		-	-		X	XX	X				D	D
MNL638	380	5081 A	5080	Ditch	R5	10	-	-		-	-		-	-		X	X	X				D	D
MNL638	381	5050	5049	Pit	R3	10	X	X	E/S (1). Spelt glume base (1)	5	-		-	-		X	X	X				C	D
MNL638	382	5087	5086	Ditch	R5	40	-	X	Spelt glume base (1)	5	-		-	-		X	X	X		X		D	D
MNL638	383	5046	5045	Pit	R6	40	X	X	Frag (X). E/S glume base (1)	5	X	Small Poaceae (1)	-	-		X	XX	X			Mammal bone (XX)	C	D
MNL638	384	5068 B	5067	Ditch	R6	10	-	-		-	-		-	-		XX	XX	X				D	D
MNL638	385	5101	5100	Pit	R6	10	X	-	Trit (1)	5	-		-	-		X	XX	X				D	D
MNL638	388	5108	5107	Ditch	R5	20	-	-		-	-		-	-		XX	X					D	D
MNL638	389	5116	5115	Posthole	UP	20	X	-	Trit (1), frag (X)	5/6	-		-	-		XXX	XX			X		D	D
MNL638	390	5118 A	5117	Gully	R2	20	-	-		-	-		-	-		XX	XX					D	D
MNL638	391	5120	5119	Posthole	UP	10	-	-		-	-		-	-		X	X	X	X			D	D
MNL638	392	5123	5122	Posthole	UP	10	-	-		-	-		-	-		X	XX					D	D
MNL638	393	5118 C	5117	Gully	R2	40	X	-	Trit (1)	5	-		-	-		XXX	XX	X	X	X		D	D

MNL638	394	5135 B	5134	Gully	R5	20	-	X	Spelt glume base (1)	-	-		-	-		X	XX	XX		X		D	D
MNL638	395	5135 D	5134	Gully	R5	40	X	-	E/S (1), Trit (1), NFI (1), frag (X)	5	-		-	-		X	XX		X	X	Heather	C	D
MNL638	396	5135 F	5134	Gully	R5	40	X	-	Frag (X)	6	-		-	-		XX	XX			X		D	D
MNL638	397	5144	5143	Posthole	R5	40	X	-	Frag (X)	6	-		-	-		X	XX	X	X			D	D
MNL638	398	5142	5141	Posthole	R5	40	X	-	Trit (1), NFI (2), frag (X)	5/6	-		-	X	Diffuse porous (X)	XX	XX	X		X		C	D
MNL638	399	5132 B	5131	Ditch	R3	40	X	-	HB (2), frag (X)	5	X	cf. *Pisum* sp. (1)	-	-		XXX	XX	X				C	D
MNL638	400	5068 C	5067	Ditch	R6	10	-	-		-	X	Indet (1)	-	-		XX	XXX	XX			Amphibian bone (XX)	D	D
MNL638	401	5135 A	5134	Gully	R5	40	X	-	HB (2), frag (X)	5/6	-		-	-		X	XX	X				C	D
MNL638	402	5135 C	5134	Gully	R5	20	X	-	NFI (1)	5	-		-	-		XX	XX	X		X		D	D
MNL638	403	5135 E	5134	Gully	R5	40	X	X	HB (1), NFI (2), frag (X). Spelt glume base (1), E/S glume base (2)	5/6	X	*Carex* sp. (2)	-	-		XX	XXX	X	X	X	Dicot stem/root, heather, mammal bone	C	D
MNL638	404	5135 G	5134	Gully	R5	20	-	-		-	-		-	-		XXX	XX	XXX	XX		Tuber, small mammal bone, small mammal droppings (modern)	D	D
MNL638	405	5158	5157	Posthole	R6	10	-	-		-	-		-	-		X	X	X				D	D
MNL638	406	5108C	5107	Ditch	R5	40	X	XX	NFI (X). Spelt glume base (X), E/S glume base (X), cf. emmer spikelet fork (X)	5	-		-	-		X	X	X				B	D
MNL638	407	5161 B	5160	Gully	R2	10	X	-	Trit (1)	5	-		-	-		X	XX	X				D	D
MNL638	408	5163	5162	Pit	R2	10	X	-	NFI (1)	5	-		-	-		X	X					D	D
MNL638	409	5165	5164	Posthole	R6	20	X	X	NFI (1). E/S glume base (1)	6	-		-	-		XX	XX	X	XX			C	D
MNL638	410	5171 A	5170	Gully	UP	40	-	-		-	-		-	-		X	XX	X				D	D

MNL638	411	5159 A	5155	Gully	R5	10	-	-		-	-		-	-			X	X				D	D
MNL638	412	5156 A	5155	Gully	R5	10	X	-	NFI (1)	5	-		-	-			X				Tuber	D	D
MNL638	413	5159 B	5155	Gully	R5	10	-	-		-	-		-	-		X	XX				Mammal bone	D	D
MNL638	414	5156 B	5155	Gully	R5	10	-	-		-	-		-	-		X	X	X				D	D
MNL638	415	5159 C	5155	Gully	R5	10	X	-	NFI (1)	6	-		-	-			XX	X				D	D
MNL638	416	5156 C	5155	Gully	R5	10	-	-		-	-		-	-			XX		XX			D	D
MNL638	417	5159 D	5155	Gully	R5	10	-	-		-	-		-	-		XX	XX	XX	X			D	D
MNL638	418	5156 D	5155	Gully	R5	10	-	-		-	X	*Chenopodium* sp. (1)	-	-			XX	X				D	D
MNL638	419	5173	5172	Pit	Period III	20	-	-		-	-		-	-		XXX	XXX	X	X			D	D
MNL638	420	5108 E	5107	Ditch	R5	40	-	-		-	-		-	-			XX					D	D

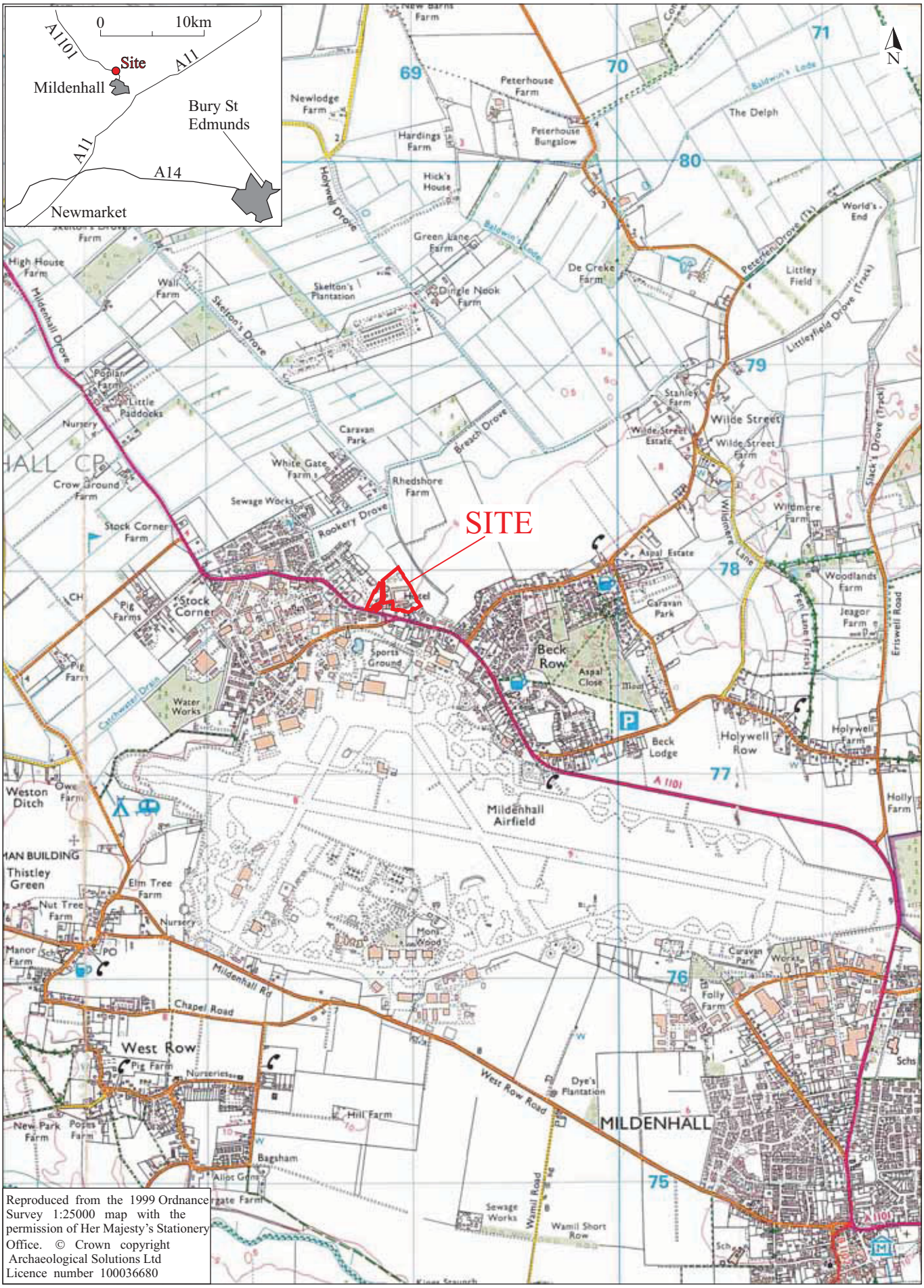

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Fig. 1 Site location plan

Scale 1:25,000 at A4

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Fig. 2 All features plan

Scale 1:800 at A3

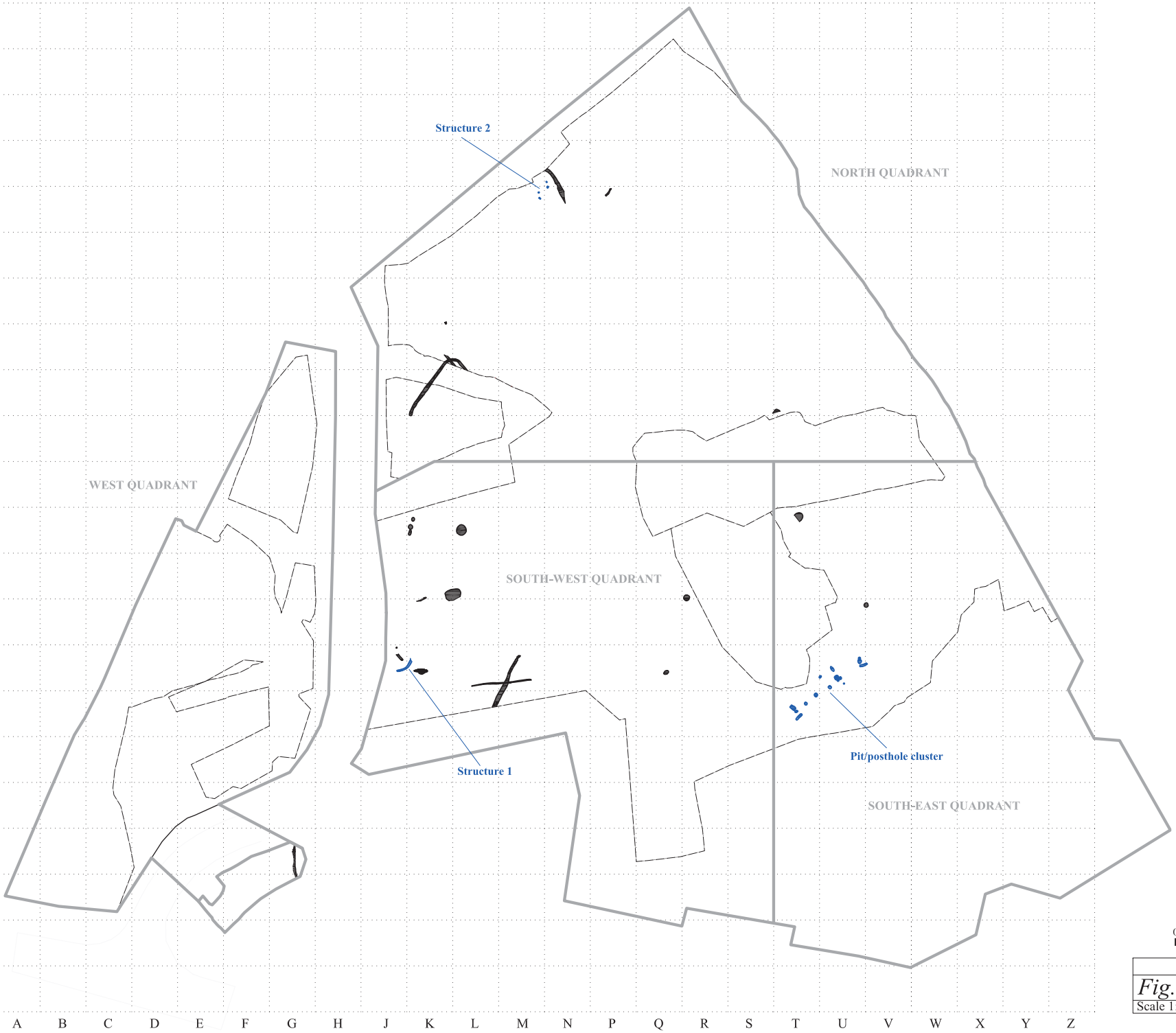

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Fig.3 Period I - Prehistoric

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Fig. 4 Roman Sub-Phase 1

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Fig. 5 Roman Sub-Phase 2

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Fig. 6 Roman Sub-Phase 3

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Fig. 7 Roman Sub-Phase 4

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Fig. 8 Roman Sub-Phase 5

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Fig. 9 Roman Sub-Phase 6

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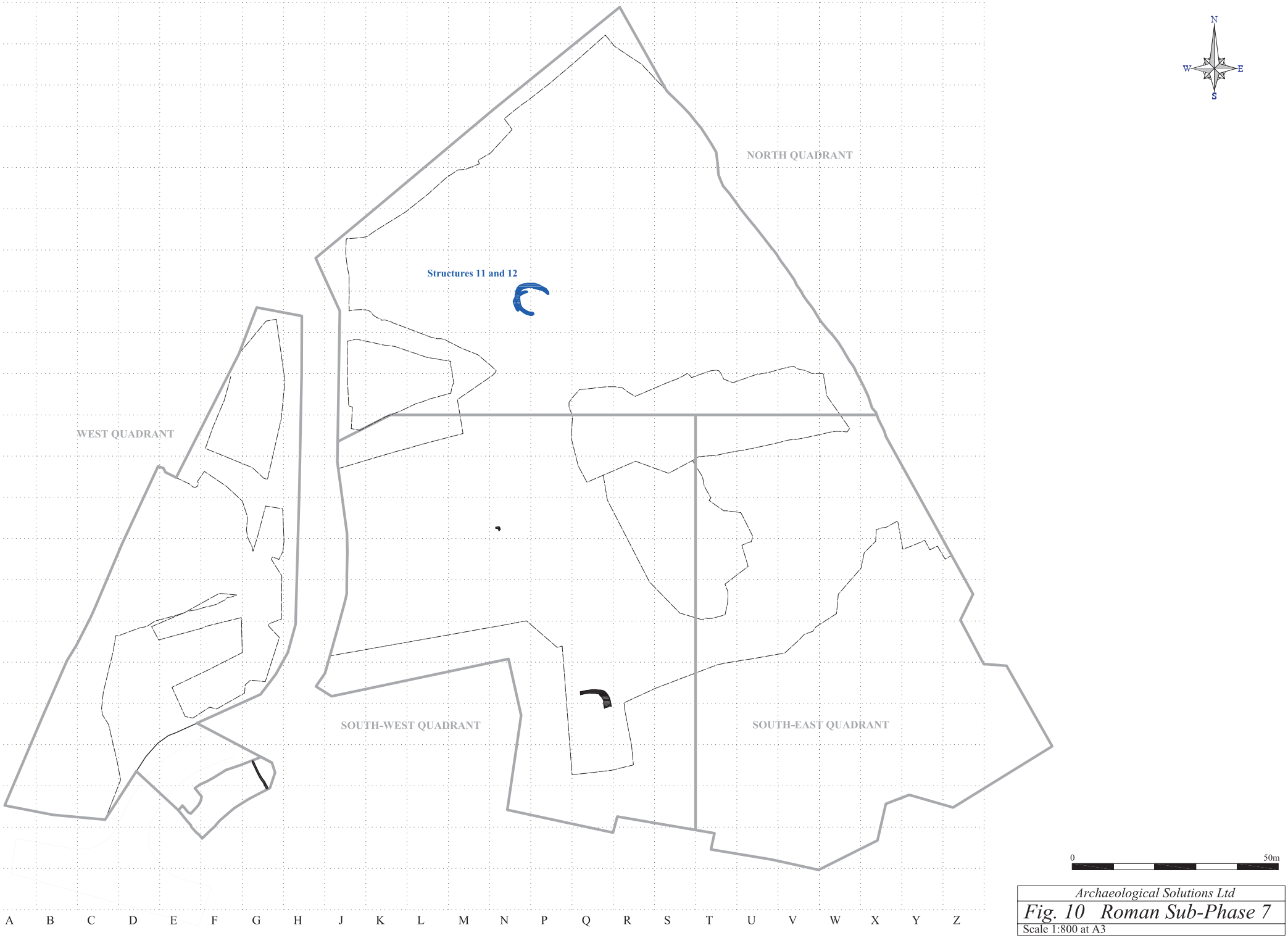

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Fig. 10 Roman Sub-Phase 7

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Fig. 11 Period III

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