Cotswold Archaeology

Land at Recreation Way
Mildenhall
Suffolk

Post-Excavation Assessment and Updated Project Design
Vol II: Specialist Assessments

for

Henry Riley LLP

on behalf of

J Sainsbury Ltd

CA Project: 9100
CA Report: 12114

June 2012

LAND AT RECREATION WAY
MILDENHALL
SUFFOLK

Post-Excavation Assessment Vol II
Appendices

CA Project: 9100
CA Report: 12114

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Issue: 01	Date: 7 June 2012

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ARTEFACTS

APPENDIX 1: THE WORKED AND BURNT FLINT BY E.R. MCSLOY

Worked flint amounting to 294 pieces (2691g) was recovered from 162 contexts. Distribution across the excavation areas is shown in Table 1; the largest groups from Areas 20 and 3. A significant proportion of the assemblage (67 pieces) was retrieved following processing of bulk soil samples. In addition to the humanly-worked assemblage a total of 432 (1245g), unworked, burnt flint was collected.

The worked flint has been recorded directly onto a Microsoft Access database by broad artefact/debitage type and for pieces with secondary working according to established morphological descriptions (Butler 2005). Information relating to condition has been recorded including, burning, breakage, edge-damage and the degree of cortication. Unworked fire-affected flint has been quantified by count and weight.

The majority of the worked flint, material from Periods 2–7 can be considered re-deposited. A small Late-Bronze Age-phased group associated with Area 20 pit feature 20238 (18 pieces) may include 'stratified' material. It includes sharp, irregular removals consistent with late-era flintworking (below).

Condition and raw material
The lithic assemblage was in variable condition. Degree of patination/cortication would seem to relate to area and probably also to chronology (below). Patination was most 'advanced' among material from the southernmost Area 3, primarily as a deep, white discolouration. In this area 49 pieces from a total 77 (63.6%) exhibited patination to varying degrees. This compares to a figure of 15.4% for the largest area group from Area 20 and 36.4% for the assemblage overall. In general the assemblage exhibits relatively high levels of breakage and edge damage, consistent with its being a mainly re-deposited group.

Raw material comprises flint of good quality with few pieces exhibiting internal flaws. Where unpatinated the flint is consistently dark grey brown. The cortex is unabraded suggesting the use of primary chalk flint obtained locally or from the surrounding area.

Range and dating
The composition of the assemblage is shown overall in Table 1. Only 11 pieces (3.7%), re-deposited in Period 2 or later phased deposits, feature any secondary working and a minority among these are dateable by form. Most common are scrapers, all on flake removals with abrupt retouch restricted to the distal. These, together with a flake with scraper-like abrupt retouch to one edge, are of indeterminate date.

There is a single microlith from Area 3 which is broken but which is probably a geometric form characteristic of the Late Mesolithic. A blade truncated at its distal end from the evaluation is also likely to be of this date. A broken leaf-shaped arrowhead from Area 3, is representative of a class dateable to the Early Neolithic. It is of attenuated form, matching Green's Type 4a (Green 1980). Two crudely-formed core tools (from Areas 3 and 20) are of roughly conical form, the point strengthened by retouch. The crudeness of these tools may be an indication of a late (mid or late Bronze Age) flintworking tradition, though may merely be a result of expedient use.

The unequal incidence in patination described above is matched by spatial tendencies relating to morphology. Most striking is the (relative) abundance of blade or bladelets and also of blade/bladelet cores from the southern Areas 2-4; all of which is consistent with a Mesolithic date. A proportion of the blade and patinated flake debitage from the southern areas of the site might date to the Early Neolithic; with some evidence for activity of this date present as the leaf arrowhead already described.

The large majority of the recovered flint, particularly among the largest Area 20 group is made up of flakes or chips, defined here as small flakes under 10mm. Of the (194) flakes, 85% are tertiary or secondary removals, indicating that primary core reduction was undertaken elsewhere. Most reduction appears to be mainly by means of hard hammer percussion. Removals are typically of squat proportions and there is rarely evidence for platform preparation. As already noted, a small lithic group is associated with Late-Bronze Age-dated activity and this exhibits characteristics consistent with flintworking of this period. Further material of this date is doubtless present and may form the bulk of the re-deposited assemblage. This is further hinted at by the small number and limited character of the retouched forms. The characteristics of late flintworking traditions are however insufficiently diagnostic for such material of this date to be distinguishable with certainty. In broad terms the flake debitage and cores fit with flintworking traditions beginning in the late part of the Neolithic and onwards.

The unworked heat-affected flint is variable in terms of degree of burning, however only a minority comprises the fully calcined material, sometimes associated with Late Prehistoric sites. Its ubiquitous nature, in terms both of spatial and temporal distribution (Table 1) suggests that it relates to a range of activities, which may be domestic or industrial in nature.

Statement of potential and recommendations for further analysis

The lithics group, though not insubstantial, is largely re-deposited and of limited significance. As such it presents restricted potential for further analysis. The most notable aspects of the group are the Mesolithic elements from the southern part of the site and a small Late Bronze Age group, seemingly stratified from Area 20. Both elements are of regional significance and merit mention in any published account of the site. A version of this report utilising recording undertaken as part of assessment, and final site phasing might be adapted for publication. In addition a small number of flint tools (to a maximum of six) should be drawn, to include the microlith and blade/bladelet cores, arrowhead and the crude core tools/piercers.

Summary

Report amendment/production (1000 words/2 tables)	2 days (FO)
Illustration (six items)	1 day (SI)

Table 1: worked and burnt flint. Totals by morphological type shown by excavated area

	Quantities (count) by Excavation area												**Totals**	
CATEGORY	**2**	**3**	**4**	**12**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**<>**	**Ct.**	**Wt**
arrowhead		1											**1**	**1**
microlith		1											**1**	**1**
truncated blade												1	**1**	**1**
misc retouched		1											**1**	**3**
core tool/piercer		1									1		**2**	**100**
scraper	1	2								1	1		**5**	**49**
blade	5	14	1				1					1	**22**	**83**
blade (utilised)											1		**1**	**21**
bladelet	1	3						1					**5**	**5**
blade core	1	2				1					1		**5**	**146**
bladelet core		2											**2**	**35**
chip	2	4				6		5			29		**46**	**27**
flake	11	45	5	2	1	8	7	2		3	104	6	**194**	**1736**
flake core		1				1					5		**7**	**460**
flake utilised	1												**1**	**23**
Totals (worked	*22*	*77*	*6*	*2*	*1*	*16*	*8*	*8*		*4*	*142*	*8*	***294***	***2691***
burnt	30	16	2			3	3	21	3	2	352		**432**	**1245**

APPENDIX 2: THE LATER PREHISTORIC POTTERY BY MATT BRUDENELL

Introduction

The excavations yielded 1759 sherds of hand recovered Later Prehistoric pottery (26854g), with a further 380 sherds deriving from soil samples (484g). The two major components of the assemblage were handmade Middle Iron Age-type wares (*c.* 300-50 BC/AD 50), which dominate the group, and Late Bronze Age Post-Deverel Rimbury Plainwares (*c.* 1100-800 BC). Also present were a few Early Iron Age sherds (*c.* 600-350/300 BC) and a small group of both hand and wheel-made Late Iron Age-type ceramics; most probably dating from the early to mid first century AD (Table 2).

This report provides a quantified characterisation of the pottery by period. Unless otherwise specified, all quantification relates to the hand recovered assemblage, not that from the soil samples. This highly fragmented pottery is summarised in table form toward the rear of the report, immediately prior to the discussion.

Methodology

The pottery was fully recorded following the recommendations laid out by the Prehistoric Ceramic Research Group (2009). After a full inspection of the assemblage, fabric groups were devised on the basis of dominant inclusion types, their density and modal size. Sherds from all contexts were counted, weighed and assigned to a fabric group (sherds broken in excavation were refitted and counted as single entities). Sherd type was recorded, along with technology (wheel-made or handmade), evidence for surface treatment, decoration, and the presence of soot and/or residue. Rim and base forms were described using a codified system recorded in the catalogue, and were assigned vessel numbers. Where possible, rim and base diameters were measured, and surviving percentages noted. In cases where a sherd or groups of refitting sherds retained portions of the rim and shoulder, the vessel was also categorised by form. The Late Bronze Age and Early Iron Age vessels were assigned to class, following the system outlined by John Barrett (1980), whilst Middle Iron Age-type forms were codified using the series developed by J D Hill (Hill and Horne 2003, 174; Hill and Braddock 2006, 155-156). All pottery was subject to sherd size analysis. A programme of refitting was also conducted, and sherd joins were noted within and between contexts. The quantified data is presented on an Excel data sheet held in the site archive.

Condition

In general, the hand recovered assemblage was in good condition. The mean sherd weight was relatively high at 15.3g, and only 53% of sherd were classified as small (<4cm), 43% medium, (4–8cms), 4% large (>8cms). Thoroughly abraded fragments were scarce, and few of the shell and calcareous inclusions had leached from sherd surfaces. Residues also survived intact on many fragments, with a total of 117 sherds (2673g; 7% by sherd count) retaining traces of soot and/or carbonised food crusts – many capable of being sampled for radiocarbon dating (those noted 'Carb' in the data sheet).

The Mildenhall fabrics

Most of the clays and tempering agents used in pottery could have been obtained from the immediate local landscape. Flint and chalk was readily available from the site's own sub-soils, whilst sands and suitable potting clays could have been extracted from terrace gravels and alluvial deposits flanking the River Lark. The origin of the shelly fabrics is harder to pin down, though some presumably derived from foissiliferous Jurassic clays whose nearest outcrops lay *c.* 12-14km west of Mildenhall, around the eastern fen-edge. This region may also provide the source for two sherds with limestone inclusions (fabric QL1, possibly from the Wicken area) and the single sherd with glauconitic pellets (fabric GL1, possibly from the Cambridgeshire Greensand belt). The other distinctive and potentially non-local fabric is Q6, which is remarkably similar to a series of Early-Middle Iron Age fabrics recorded around Ipswich at the Whitehouse Industrial Estate (Suffolk HER: IPS247), and Moreland Road (Brudenell 2011; Suffolk HER: IPS617).

Fabric Series (Table 3)

Quartz sand fabrics

Q1: Moderate to common sub-angular quartz sand. Fabric is hard, compact, and abrasive to touch when un-burnished. Matrix may contain rare to sparse fragments of crushed and partially burnt flint (up to 3mm in diameter); rare flecks of mica; rare voids from burnt-out vegetable matter; very rare calcareous grits (up to 2mm in size) and/or very rare sub-rounded quartz grains (up to 2mm in size).

Q2: Sparse to common fine quartz sand. Fabric is hard, compact and better-sorted than Q1. Texture is less abrasive, and the matrix tends not to contain other inclusions, ecept rare to very mica.

Q3: Sparse to common fine quartz sand and sparse to common mica. Fabric is hard, compact and well-sorted; sparkling slightly when turned in the light.

Q4: Moderate to common sub-angular quartz sand and sparse linear voids from burnt-out vegetable matter clearly visible on sherds surfaces. Fabric is hard and often abrasive to touch when un-burnished. Matrix may contain a range of other rare or very rare inclusion similar to Q1.
Q5: Sparse to common quartz and sparse fine to medium voids (up to 1.5mm), possibly from dissolved calcareous inclusions. Fabric may be related to QCH1 or QCH2.
Q6: Sparse to moderate quartz sand, and moderate sub-rounded quartz grains (up to 2.5mm in diameter)
Q: Generic category for sherd with quartz sand too small to assign to type.

Quartz sand and organic tempered fabrics
QVE1: Sparse to moderate quartz sand, and sparse to moderate linear voids from burnt-out vegetable matter visible throughout the clay matrix. Related to Q4, the fabric is often hard and abrasive to touch when un-burnished.
QVE2: Sparse to moderate quartz sand, and moderate to common linear voids from burnt-out vegetable matter visible throughout the clay matrix.
QVE3: Sparse to moderate quartz sand, moderate linear voids from burnt-out vegetable matter, and moderate mica. Surface sparkles slightly when turned in the light.
QVE4: Rare to sparse fine quartz sand, and moderate linear voids from burnt-out vegetable matter. Fabric has a soft silky texture, though no grog is visible.

Quartz sand and calcareous inclusion fabrics
QCH1: Moderate to common quartz sand, and sparse to moderate calcareous flecking (mainly under 1mm in size). Fabric is generally hard and compact.
QCH2: Sparse to common quartz sand, and sparse fine to medium chalk inclusions (mainly 1-2mm in size with occasional larger fragments).
QL1: Moderate quartz sand, and sparse to common fine or medium limestone inclusions (up to 2mm in size).

Glauconitic fabrics
GL1: Common to abundant sand-sized glauconite (?) pellets.

Crushed burnt flint and quartz sand fabrics
FQ1: Moderate to common, medium to very coarse burnt flint (2-4mm), in a sandy clay matrix. Fabric is hard and abrasive to touch.
FQ2: Moderate to common, medium to coarse burnt flint (2-3mm in size), in a dense sandy clay matrix. Fabric is hard and abrasive to touch
FQ3: Sparse to common, fine to medium burnt flint (1-2mm in size), in a dense sandy clay matrix.
FQ4: Sparse to moderate, fine burnt flint (mainly <1mm in size), in a dense sandy clay matrix.

Crushed burnt flint fabrics
F1: Sparse to common, medium to very coarse burnt flint (2-4mm). Matrix contains very rare to sparse quartz sand.
F2: Moderate to common, medium to coarse burnt flint (2-3mm). Matrix contains very rare to sparse quartz sand.
F3: Sparse to common, fine to medium burnt flint (1-2mm). Matrix contains very rare to sparse quartz sand.
F4: Sparse to common, fine burnt flint (mainly <1mm). Matrix contains very rare to sparse quartz sparse sand.
F: Generic category for sherds with flint inclusions too small to assign to a numbered fabric group.

Quartzite fabrics
QI1: Sparse to common, fine to medium angular quartzite (up to 2mm), in a sandy clay matrix. Some sherds may contain rare to sparse flecks of mica.

Shell fabrics
S1: Common medium to very coarse shell (1-5mm in size). A compact fabric, poorly sorted.
S2: Moderate to common, medium to coarse shell (1-3mm in size), poorly sorted.
S3: Abundant medium shell (1-2mm in size), poorly sorted.
S4: Sparse to common, fine shell or shell flecking (mainly <1mm, with rare larger inclusions). Matrix occasionally contains a background of quartz sand.
S5: Rare to sparse medium shell (1-2mm) and rare to moderate calcareous flecks (mainly <1mm). Matrix occasionally contains a background of quartz sand.
S: Generic category for sherds with shell inclusions too small to assign to a numbered fabric group.

Grog fabrics
G1: Sparse to moderate medium grog (mainly 1-2mm with rare larger inclusions) in a sandy clay matrix. Fabric sometimes has calcareous flecks or voids (up to 2mm) possibly from dissolves calcareous inclusions.
G2: Sparse to moderate fine grog (mainly <1mm in size). Fabric is compact with a silky texture.
G3: Moderate to common quartz sand and fine grog (mainly <1mm in size). The fabric is generally hard, compact and well-sorted. Matrix occasionally contains flecks of mica.

The Late Bronze Age pottery
An assemblage comprising 377 sherds (4093g) of Late Bronze Age Plainware pottery was recovered from the excavations, displaying a mean sherd weight (MSW) of 10.9g (68% small sherds; 28% medium; 3% large). The pottery was recovered from a total of 38 contexts relating to pits, ditches, gullies, graves, silting and levelling layers and a single posthole. The only large assemblages derived from pit 20238 (335 sherds, 3655g). None of the other features yielded more than ten sherds, with most containing just one or two fragments.

Fabrics and Forms
Fifteen Late Bronze Age fabrics types were distinguished in the assemblage, each assignable to one of seven principle groups (Table 4). By weight, 99% of the pottery was tempered with burnt flint, or a combination of flint and sand; prominent amongst which were fabric types F1 and F2, accounting for 69% of the assemblage alone. The dominance of burnt flint fabrics is typical of Late Bronze Age Post-Deverel Rimbury (PDR) assemblages in Suffolk and parts of Eastern England; the grade and density of the inclusions varying along the spectrum of coarse to fine, and sparse to common, linked largely to the quality of the ware and vessel size. In general, fabrics F1-2 and FQ1-2 can be classified as 'coarse' fabrics (85% of the assemblage by weight); F3 and FQ3 as 'intermediate' (9%), and F4 and FQ4 as 'fine' (4%). The remaining 1% of pottery in the assemblage was shared amongst minor fabric groups containing sand, shell, sand-and-calcareous inclusions, quartzite and galauconite.

Based on the total number of different rims and bases identified, the assemblage represents a minimum of 43 vessels with an Estimated Vessel Equivalent (EVE) of 3.3. This figure includes 28 separate rims (five of which were measurable), 14 bases (five with pinched-out foots; four with heavy gritting on the underside) and one complete vessel profile. Jars, bowls and cups were all identified, though in total only eight vessels were sufficiently intact to allow ascription to form (27 sherds, 428g). Following Barrett's (1980) classification, four of these may be described as Class I coarseware jars: a weakly-shouldered jar with fingertip decoration around the girth; a high-shouldered jar with in-sloped neck and short upright rim; a barrel-shaped jar with short upright rim (diameter 20cm), and a neck-less jar with convex walls (diameter 21cm). The bowls included a burnished Class IV vessel with a round shoulder and short upright neck (diameter 14cm), and the complete profile of a deep Class III coarseware bowl of bipartite profile (11.5cm tall; rim diameter 15cm; base diameter 8cm). In both form and size, the latter, recovered from fill 20335 of pit 20238 is very similar to the bowl published from Beeston Regis, Norfolk which contained a hoard of Ewart Park-type socketted axes (Lawson 1980, 218, Fig. 1). The two Class V cup forms in the assemblage included a round bodied vessel with an everted tapered rim (diameter 8cm), and a cup with slightly convex walls.

Surface treatment and decoration
Burnishing was relatively common with 65 sherds treated (459g), representing 17% of the assemblage by count (11.2% by weight). Although sherds in a variety of fabrics were burnished, only the fine and intermediate flint-gritted wares were regularly treated, i.e. fabric types F3 and F4. Decoration was absent from the burnished finewares, but was found on a total of eight un-burnished sherds (105g) from a maximum of five vessels. Forms of application were confined to finger-tipping and scoring. Fingertip-impressions were present on fragments of two separate neck-cordons (5 sherds, 57g), a single rim-top (1 sherd, 12g), and the shoulder of a coarseware jar (1 sherd, 33g, discussed above). Scoring was identified on one body sherd (3g).

Summary
To date, this is one of only a small but growing number of Late Bronze Age ceramic assemblages recovered from excavations in Suffolk, and is therefore of some significance. The assemblage belongs to the Plainware phase of the Post-Deverel Rimbury ceramic tradition (Barrett 1980), conventionally dated *c.* 1100-800 BC. Typologically, however, a range between *c.* 1000-800 BC seems more likely for this group. The most important feature assemblage was recovered from pit 20238. In total, 89% of sherds derive from pit 20238, which contained mixed dumps of ceramics in varying states of fragmentation and abrasion – a minimum of 38 separate vessels being represented. The character of this assemblage generally suggests the deposits were drawn from one or more surface refuse heaps or middens, where an assortment of spent materials accumulated (Brudenell and Cooper 2008). However, the constituent elements of the assemblage from fill 20335 may have been assembled with more care. This fill included the complete profile of a coarseware bowl and the shoulder, lower walls and base of a second coarseware vessel.

Feature assemblages from pit 20238 and in particular fill 20335 are worthy of publication, and would benefit from radiocarbon dating. More than any other county in Eastern England, Suffolk requires radiocarbon dates for its later prehistoric pottery assemblages. At present there is only one published date in association with a Late Bronze Age pottery group from Suffolk at Barham (Martin 1993, 38). This was obtained from a bulk sample of un-specified charcoal from combined contexts, and has yielded a date with a wide error margin. This is of little use in creating a refined chronology, and the continued lack of certainty about the date of Late Bronze Age in assemblages in Suffolk remains a serious impediment to the interpretation of the settlement record.

The Early Iron Age pottery

Only eight sherds (219g) of probable Early Iron Age pottery were identified in the assemblage; most or all of which may be residual. The pottery was in sand (5% by weight), flint (12%), and flint and sand-tempered fabrics (84%), similar to those in the Late Bronze Age assemblage (Table 5). There is therefore some ambiguity in dating, though the flint in the pottery assigned to Early Iron Age tended to be crushed to a more uniform size, and didn't regularly penetrate the sherd surfaces. Of key importance, however, were a series of diagnostic sherds, the most significant of which was a pedestal base recovered from pit 20513. These base forms were modelled on continental prototypes of the sixth century BC and later (Hodson 1962, 142; Barrett 1978, 286-287), and are a type-fossil of the Early Iron Age in this region. Other diagnostic sherds included an angular shoulder sherd from silting layer 3147, and a shoulder sherd with linear stab marks from pit 18015.

The Middle Iron Age-type pottery

The excavations yielded 1308 sherds (21690g) of handmade Middle Iron Age-type pottery displaying a high MSW of 16.6g (49% small sherds; 47% medium; 4% large). Based on the total number of different rims and bases identified, this represents a minimum of 243 vessels with an EVE of 22.5 (151 different rims; 88 different bases; 4 complete vessel profiles). The pottery was recovered from a total of 262 contexts relating to pits, ditches, gullies, postholes, graves, tree-throws, a well, a stakehole and various silting and levelling layers. Major feature assemblages weighing over 500g were recovered from seven pits (15234, 16063, 19119, 19215, 20153, 21005 and 21275). Collectively, these yielded around a quarter of the pottery in the Middle Iron Age assemblage (22% by sherd count, 26% by weight).

Fabrics and Forms

The assemblage was characterised by sherds in dense sandy fabrics, with only a small percentage of shelly wares and sherds with other distinctive inclusions (quartzite and other calcareous inclusions). Although twenty Middle Iron Age fabrics types were ultimately distinguished, by weight, 87% of the pottery had quartz sand as the principle 'ingredient', with a further 9% containing a mix of sand and burnt-out vegetable matter (Table 6). The variety and relative frequency of these fabrics is typical of Middle Iron Age-type assemblages in Suffolk and other parts of East Anglia. The same can also be said of the range of vessel forms identified. In general, these comprised a variety of ovoid and globular jars and bowls; most displaying weakly pronounced shoulders and short necks terminating in either rounded, flat-topped, everted, beaded or externally thickened rims. In total, just over a third of the vessels (93) in the assemblage could be assigned to form, including 184 sherds, weighing 48616g (Table 7).

Shouldered vessels of Form A, B, D and E dominated the group; notably the slack shouldered jars of Form A which made up a quarter of the classified vessels. These tended to have ovoid bodies and were found in a range of fabrics and rim sizes. Two of these jars retained complete profiles, including a burnished pin-dot decorated vessel from pit 20868 (13.5cm tall; rim diameter 15cm; base diameter 8cm), and a plain burnished vessel from pit 15271(*c.* 12.5cm tall; rim diameter 13cm; base diameter 7cm). Globular and ovoid vessels of Forms K and L were the second most common, and were generally small pots with mouth diameters under 15cm. The Form K varieties had no distinct neck-zone. These comprised squat tub-shaped vessels, convex-walled jars, and even the occasional cup. By contrast, most of the Form L pots displayed rounded bodies with distinct but stunted rims. Some resemble the globular bowls of Form M/N, which have bulbous or 'fish-bowl'-shaped profiles. A few of these pots also share affinities with the group of S-shaped globular jars and bowls of Form F/G in the assemblage. Amongst the latter was a complete profile of a deep burnished bowl from pit 17218, whose body was decorated with two rows of grooved concentric ovals with single impressed dots and their centre. These were framed by a row of impressed dots along the neck and foot of the vessel (13.5cm tall; rim diameter 15cm; base diameter 7cm).

Surface treatment and decoration

A total of 704 sherds (11770g) were burnished or polished, representing 54% of the assemblage by sherd count or weight. This figure is high for Middle Iron Age pottery groups, but is matched in a nearby assemblage at Chippenham, Cambridgeshire (Brudenell forthcoming), suggesting a local preference for pots with a lustrous surface finish. Decoration was also prolific with 109 sherds (1949g) bearing different forms of ornamentation. The un-burnished sherds were mainly scored (29 sherds, 544g) or had fingertip/nail impressions on the rims (9 sherds, 248g; 9 different vessel rims). Three of the scored

sherds (58g) were in shell tempered fabrics typical of pots belonging to the East Midland Scored Ware tradition (Eldon 1992). These are almost certainly non-local vessels, and may have been acquired through exchange networks with communities around the southern and western fen-basin.

More extraordinary, however, is the wide array of tooled decoration displayed on the burnished sherds. Leaving aside the rim of a Form P ornamented vessel with fingertip impressions and stab marks (possibly executed with a bone; two sherds 40g), there were 68 burnished sherds (1009g) with grooved, incised and/or dot-impressed decoration on their surfaces; many forming parts of complex curvilinear and geometric patterns (some of the dot-decorated sherds having white inlay). Although the size of the fragments makes motifs hard to reconstruct in full, they all belong to a 'late Tène-style' decorative tradition which seems to emerge in the second or first century BC in Eastern England. The collection of these sherds from Mildenhall is one of the largest recovered from a single site in East Anglia, and is very important. Typically, large assemblages yield just one or two of these sherds, begging the question of why they are so prolific in this context.

What is clear at this stage, however, is that a variety of different motifs were employed on the pots; some being more formal in design than others. This sense of diversity fits well with broader patterns emerging from the region. On the whole, late La Tène-style ornamented pots from southern Cambridgeshire, Suffolk and Norfolk seem to display a wide range of motifs with only passing affinities to the better-known decorative traditions in parts of Northamptonshire, Lincolnshire, southeast Essex, or even the Glastonbury wares from southwest Britain (for an overview and other discussions see Brown 1991; Elsdon 1975; Hill and Horne 2003, 180; Knight 2002, 131-133). Some of the East Anglian examples are no doubt imports from these areas, but most were probably locally made. Given the various design grammars shown by published pots from Addenbrooke's (Cra'ster 1969; Webley and Anderson 2008, 68, Fig. 2.8, no. 1), West Stow (West 1989, 65 Fig. 48) and Wardy Hill (Hill and Horne 2003, 155, fig. 80), it is perhaps hard to argue that a singular 'East Anglian-style' ever existed. Instead potters seem to have imitated and adapted a variety of patterns and techniques common to other regions, creating a multiplicity of different local traditions.

Summary
The assemblage of Middle Iron Age-type pottery from Mildenhall is dominated by a range of slack-shouldered jars, globular bowls, and a series of tub-shaped vessels; most made in dense sandy fabrics. This conservative handmade potting tradition has a long currency in parts of Suffolk and northern East Anglia (Hill 2002), persisting alongside the introduction of 'Belgicized' wheel-made forms, fabrics and manufacturing techniques – some of which had little impact on domestic potting practices prior to the first or second quarter of the first century AD. Pinning down the date of Middle Iron Age-type assemblages can therefore be difficult, and is made all the more problematic because of our terminology. However, given the repertoire of vessel forms at Mildenhall, coupled with the presence of late La Tène-style decorated sherds, a date centred upon the second and first century BC seems appropriate for this group (with the only proviso being that some of the material might be slightly later, overlapping in currency with the Late Iron Age-type wares described below). This requires conformation from radiocarbon dating. However, it would accord well with the date assigned to the published Phase II Iron Age assemblage from West Stow (*c.* 12km southwest of Mildenhall), which is typologically very similar (Martin 1989, 68).

The Late Iron Age-type pottery
Only 66 sherds (852g) of Late Iron Age-type pottery were identified in the assemblage displaying a MSW of 12.9g (Table 8; 58% small sherds; 39% medium; 3% large). The pottery included both handmade and wheel-made sherds (41% by count) in a range of grog (29% by weight), sand (60%) and shell tempered fabrics (12%). Pottery was recovered from 31 contexts relating to pits, ditches, gullies, a posthole and various silting and levelling layers. None of the contexts yielded more than three Late Iron Age-type sherds apiece.

Pottery was primarily assigned to this period where sherds were identified as being wheel-made/wheel-finished; grog tempered, combed and/or decorated with wide grooved lines (imitating cordons) or burnished lattices. A few other sherds were distinguished for displaying beaded or everted rounded rim forms typical of 'Belgicized' Late Iron Age wares. Overall, the handmade pottery in this group may date anywhere between the late first century BC and mid first century AD - potentially overlapping in currency with some of the Middle Iron Age-type wares discussed above. By contrast, the wheel-made sherds probably date from the early to mid first century AD. These tend to have hard-fired, well-refined fabrics; some of which may even resemble proto-grey wares.

Pottery from soil samples
380 sherds derived from soil samples (484g). The pottery was recovered from 41 contexts, and largely consisted of small sherds and crumbs. Where possible, spot-dates for this material are given in Table 9.

Discussion and recommendations
The prehistoric pottery from Mildenhall constitutes a relatively large multi-period assemblage with important Late Bronze Age and Middle Iron Age components. Compared to Cambridgeshire and Essex, few Late Bronze Age assemblages have been recovered from Suffolk, and this group represents a small but significant addition to the county corpus. The key feature assemblage is from pit 20238; material which finds local parallel with the larger published assemblage from Game Farm, Brandon (Last 2004). Radiocarbon dates are needed to refine prehistoric ceramic chronologies in Suffolk, and this group would benefit from a programme of absolute dating. As a minimum for publication, all the partial vessel profiles from these contexts should be illustrated (six in total) along with a selection of other diagnostic sherds (probably 1 page in total at 1:3 scale).

The Middle Iron Age assemblage is perhaps of greater significance owing to the number and variety of fineware 'late La Tène-style' decorated sherds, and the large number partial vessel profiles recovered. In particular, it is the decorated component which makes this assemblage of regional importance. At least 15 of these fineware decorated sherds should be illustrated, along with a selection of around 20-25 form assigned vessels (probably three pages at 1:3 scale, with priority given to drawing material from context selected for radiocarbon dating). Radiocarbon dating will be crucial in pining down the ceramic chronology, and should target at least one of the large feature assemblages with over 500g of pottery (preferably pit 20153 or 19119). The typological dating of small finds and metalwork (particularly brooches) may also improve the ceramic chronology, and help address the question of how late the Middle Iron Age-type potting tradition continued in this context. Integrating this information with the pottery dating will therefore be critical. It will also be important to know whether other Late Iron Age wares were recovered from the site, and whether these were found in the same contexts as Middle Iron Age-type ceramics.

In the meantime, further analysis is required to resolve the issue of residuality. This must occur before embarking on a detailed description of the spatial distribution of pottery, or any other discussion of depositional practices – themes not touched on in this report. Several cross-context refits are noted in the pottery catalogue, and these connections need to be explored. Further attention is also needed on the topic of vessel use in this context. In particular, patterning in the relationship between vessel size (based on rim diameter) and residues requires investigation. To fully explore the significance of the quantity of fineware decorated pottery, it would also be worthwhile submitting a selection of these sherds for thin-section analysis (perhaps 5-10 different sherds). This might help establish whether or not they derived from the same source, or whether we are seeing different pots, made in different places, brought to the site.

In addition fabric comparisons will be made with the ceramic copper-alloy casting crucible fragments.

Further work
0.5 days to update the pottery catalogue
0.5 days to prepare new tables and graphs
0.5 days crucible fabric comparison
1.5 days to write about residuality, deposition and amend discussion (in light of C14 evidence)
Total: 3 days
Pottery selection for illustration (51 sherds/vessels), and a list of captions (if requested) – 1 day
Overall total: 4 days
Pottery drawings (51 sherds) – 8.5 days (SI)
Thin-section analysis (up to 10 sherds): = FEE

Table 2: Prehistoric pottery frequencies. MNV = minimum number of vessels calculated as the total number of different rims and bases identified. EVE = estimated vessel equivalent

Period	Date range	No./wt. (g) sherds	% by wt. (g)	MNV	EVE
Late Bronze Age	*c.* 1100-800 BC	377/4093	15.2	43	3.3
Early Iron Age	*c.* 600-350/300 BC	8/219	0.8	2	0.8
Middle Iron Age	*c.* 300-50 BC/50 AD	1308/21690	80.8	243	22.5
Late Iron Age	*c.* 50 BC-50 AD	66/852	3.2	11	0.7

Table 3: Quantification of prehistoric pottery fabrics

Fabric Type	Fabric Group	No.	Wt. (g)	% of assemblage by wt.
F	Flint	35	60	0.2
F1	Flint	147	1708	6.4
F2	Flint	85	1140	4.2
F3	Flint	21	244	0.9

F4	Flint	41	140	0.5
FQ1	Flint and sand	2	46	0.2
FQ2	Flint and sand	24	682	2.5
FQ3	Flint and sand	15	215	0.8
FQ4	Flint and sand	4	17	0.1
G1	Grog	6	150	0.6
G2	Grog	3	10	<0.1
G3	Grog	8	84	0.3
GL1	Glauconite	1	5	<0.1
Q	Sand	4	5	<0.1
Q1	Sand	787	13020	48.5
Q2	Sand	133	1626	6.1
Q3	Sand	140	1864	6.9
Q4	Sand	128	2688	10.0
Q5	Sand	11	153	0.6
Q6	Sand	2	31	0.1
QCH1	Sand and calcareous	11	203	0.8
QCH2	Sand and calcareous	17	235	0.9
QL1	Sand and calcareous	2	31	0.1
QI1	Quartzite	5	33	0.1
QVE1	Sand and vegetable matter	46	1065	4.0
QVE2	Sand and vegetable matter	26	479	1.8
QVE3	Sand and vegetable matter	7	152	0.6
QVE4	Sand and vegetable matter	4	168	0.6
S1	Shell	7	230	0.9
S2	Shell	18	151	0.6
S3	Shell	2	34	0.1
S4	Shell	13	149	0.6
S5	Shell	4	36	0.1
TOTAL		1759	26854	100.1

Table 4: Late Bronze Age fabric frequencies and the relationship to burnishing and vessel counts. MNV = minimum number of vessels, calculated as the total number of different rims and bases.

Fabric Type	**Fabric Group**	**No./(wt.) sherds**	**% (by wt.)**	**No./wt. sherds burnished**	**% of fabric burnished (by wt.)**	**MNV**	**MNV burnished**
F	Flint	35/60	1.5	-	-	2	
F1	Flint	147/1708	41.7	6/44	2.6	15	1
F2	Flint	83/1114	27.2	7/49	4.4	11	1
F3	Flint	21/244	6	10/205	84.0		5
F4	Flint	41/140	3.4	36/119	85.0	7	-
FQ1	Flint and sand	2/46	1.1	-	-	-	-
FQ2	Flint and sand	23/596	14.6	-	-	3	-
FQ3	Flint and sand	13/123	3.0	-	-	2	-
FQ4	Flint and sand	2/12	0.3	2/12	100.0	1	1
GL1	Glauconite	1/5	0.1	1/5	100.0	-	-
Q3	Sand	1/3	0.1	1/3	100.0	-	-
QCH2	Sand and calc.	2/6	0.1	-	-	-	-
QI1	Quartzite	4/17	0.4	1/7	41.2	1	-
S2	Shell	1/15	0.4	1/15	100	1	1
S4	Shell	1/4	0.1	-	-	-	-
TOTAL		377/4093	100.0	65/459	11.2	43	9

Table 5: Early Iron Age fabric frequencies and the relationship to burnishing and vessel counts. MNV = minimum number of vessels, calculated as the total number of different rims and bases.

Fabric Type	Fabric Group	No./(wt.) sherds	% (by wt.)	No./wt. sherds burnished	% of fabric burnished (by wt.)	MNV	MNV burnished
F2	Flint	2/26	11.9	1/16	61.5	-	-
FQ2	Flint and sand	1/86	39.3	1/86	100.0	1	1
FQ3	Flint and sand	2/92	42.0	2/92	100.0	1	1
FQ4	Flint and sand	2/5	2.3	-	-	-	-
Q1	Sand	1/10	4.6			-	-
TOTAL		8/219	100.1	4//194	88.6	2	2

Table 6: Middle Iron Age fabric frequencies and the relationship to burnishing and vessel counts. MNV = minimum number of vessels, calculated as the total number of different rims and bases.

Fabric Type	Fabric Group	No./(wt.) sherds	% (by wt.)	No./wt. sherds burnished	% of fabric burnished (by wt.)	MNV	MNV burnished
Q	Sand	4/5	<0.1	-	-	1	-
Q1	Sand	757/12635	58.3	345/6285	49.7	133	53
Q2	Sand	120/1550	7.1	98/1265	81.6	23	21
Q3	Sand	134/1805	8.3	111/1424	78.9	23	19
Q4	Sand	128/2688	12.4	63/1131	42.1	27	10
Q5	Sand	11/153	0.7	8/128	83.7	4	4
Q6	Sand	2/31	0.1	-	-	-	-
QCH1	Sand and calc.	11/203	0.9	6/167	82.3	2	1
QCH2	Sand and calc.	15/229	1.1	12/200	87.3	4	2
QL1	Sand and calc.	2/31	0.1	-	-	-	-
QI1	Quartzite	1/16	0.1	1/16	100.0	-	-
QVE1	Sand and veg.	46/1065	4.9	27/642	60.3	5	4
QVE2	Sand and veg.	26/479	2.2	9/190	39.7	8	3
QVE3	Sand and veg.	7/152	0.7	-	-	1	-
QVE4	Sand and veg.	4/168	0.8	3/154	91.7	1	1
S1	Shell	6/152	0.7	3/72	47.4	1	-
S2	Shell	17/136	0.6	4/53	39.0	5	2
S3	Shell	2/34	0.2	3/29	85.3	1	-
S4	Shell	11/122	0.6	-	-	2	1
S5	Shell	4/36	0.2	2/14	38.9	2	1
TOTAL		1308/21690	100.0	704/11770	54.3	243	122

Table 7: Quantification of Middle Iron Age vessel forms. The lettered form series relate to that developed by J D Hill which is widely employed in East Anglia. The descriptions are a simplified version of those fully published by Hill and Horne (2003, 174) and Hill and Braddock (2006, 155-156). MNV = minimum number of vessels.
Included are 67 sherds (924g) recovered from the evaluation and four sherds retrieved from bulk soil samples.

Form	Description	MNV	MNV burnished	No./wt. (g) sherds	Rim diameter range
A	Slack shouldered vessels with short upright necks	25	15	63/1170	9-20cm
B	Jars with pronounced rounded shoulders and short off-set upright necks. Constricted mouth.	3	3	9/348	12-16cm
D	Slack shouldered vessels with out-turned necks	10	5	18/706	14-22cm
E	Vessels with a high rounded shoulder and upright neck	4	1	4/202	14-22cm
F/G	Bowls or globular jars with an S-shaped profile	10	9	25/875	13-22cm
K	Ovoid or globular vessels with no distinct neck zone	11	3	23/493	10-14cm
L	Ovoid or globular bowls and squat jars with no distinct neck zone, but a clearly defined rim	21	15	25/561	11-20cm
M/N	Globular 'fish-bowl'-shaped vessels with slightly beaded or everted rims	7	5	14/409	8-14cm
P	Flared walled vessels with no distinct shoulder	1	1	2/80	21cm
Misc.	Shouldered cup with in-turned neck	1	1	1/17	
TOTAL		93	58	184/4861	8-22cm

Table 8: Late Iron Age fabric frequencies and the relationship to burnishing, ceramic technology and vessel counts. MNV = minimum number of vessels, calculated as the total number of different rims and bases.

Fabric Type	Fabric Group	No./(wt.) sherds	% of fabric (by wt.)	No./wt. Burnished	% of fabric burnished (by wt.)	No./wt. Wheel-made	MNV	MNV burnished
G1	Grog	6/150	17.6	1/10	6.7	-	-	-
G2	Grog	3/10	1.2	1/4	40.0	3/10	1	-
G3	Grog	8/84	9.9	5/55	65.5	2/30	2	-
Q1	Sand	29/375	44	11/140	37.3	10/95	6	3
Q2	Sand	13/76	8.9	7/46	60.5	8/49	1	1
Q3	Sand	5/56	6.6	5/56	100	3/12	1	1
S1	Shell	1/78	9.2	-	-		-	-
S4	Shell	1/23	2.7	-	-	1/23	-	-
TOTAL		66/852	100.1	30/311	36.5	27/219	11	5

Table 9: Spot dates for prehistoric pottery from soil samples

Cut no.	Context/<sample no>.	Feature type	No. sherds	Wt. (g)	Spot date
	2026 <2001>	Dump deposit	5	1	?
	2115 <2045>	Peat layer	1	2	MIA?
NA	3977 <3053>	Buried soil	3	2	MIA
17028	17026 <17033>	Corn Drier	102	78	?

17048	17070 <17022>	Corn Drier	5	16	?
17048	17071 <17031>	Corn Drier	2	1	?
15568	15579 <15024>	Ditch	4	6	MIA
17260 (Ditch 1)	17699 <17043>	Ditch	2	<1	LBA & MIA
21305	21306 <20043>	Grave	25	29	LBA, MIA & ?
21305	21306 <20044>	Grave	133	66	LBA, MIA & ?
21922	21920 <20056>	Grave	2	<1	?
20044	20619 <20018>	Kiln	1	2	MIA
15129	15145 <3068>	Pit	1	12	MIA
15215	15214 <15019>	Pit	2	17	MIA
15234	15281 <15001>	Pit	2	17	MIA
15271	15270 <15000>	Pit	4	11	MIA
16005	16006 <16002>	Pit	3	13	MIA
16063	16064 <16003>	Pit	12	20	MIA & ?
16101	16100 <16001>	Pit	3	16	MIA
19093	19092 <1900>	Pit	3	3	MIA & ?
19215	19214 <19004>	Pit	12	41	MIA
20078	20080 <20036>	Pit	4	<1	?
20153	20587 <20009>	Pit	2	6	MIA
20153	20588 <20010>	Pit	4	7	MIA & ?
20153	20589 <20011>	Pit	1	2	MIA
20153	20590 <20012>	Pit	4	7	?
20184	20185 <20051>	Pit	3	3	LBA
20238	20325 <20048>	Pit	5	14	LBA
20238	20326 <20049>	Pit	3	11	LBA
20238	20336 <20052>	Pit	4	22	LBA
20370	20368 <20027>	Pit	2	4	MIA?
20513	20515 <20016>	Pit	2	6	MIA
21060	21062 <20030>	Pit	2	2	LBA
21123	21124 <20033>	Pit	1	2	MIA
21193	21303 <20042>	Pit	1	<1	?
21398	21390 <20047>	Pit	2	2	LBA & ?
15245	15244 <15004>	Posthole	2	5	?
17041	17043 <17002>	Posthole	3	3	LBA & ?
NA	5205 <3048>	Silting layer	1	<1	?
NA	3989 <3047>	Spread	4	25	MIA
20238	21320 <20053>	Pit	3	10	LBA & ?

APPENDIX 3: ROMAN POTTERY BY E. R. MCSLOY

Introduction
Roman pottery amounting to 1647 sherds weighing 23.2kg was recovered from 425 separate contexts. In
The Roman pottery has been sorted into fabrics (macroscopically) and quantified according to sherd count, weight and rim EVEs (estimated vessel Equivalents). A record of vessel form, typically from vessel rim sherds has also been made together with evidence for use as carbonised and other residues. The common Roman traded wares present in the assemblage were recorded with reference to the National Roman reference collection codes (Tomber and Dore 1998). Local ware types have been coded more generically.

Provenance
The relative distribution of the Roman group across the excavation areas is shown in Table 10. Largest quantities are from the dense area of enclosures and other ditches in Area 3 and the intense activity in Area 20. Approximately half of the total 289 sherd from Area 17, relates to drying oven feature 17028. The bulk of material (from the excavation) was derived from the fills of 'negative' features; primarily from ditches (557 sherds or 34.4%) and pits/postholes (425 sherds or 26.2%). A total of 359 sherds (22.1%) came from layers. A further 137 sherds (8.5%) related to the back-filling of drying oven 17028 and 21 sherds (1.3%) from a selection of features including graves, 'kiln' feature 20044 and wells. The remainder (8%) represents material from natural deposits or animal burrows or was unstratified.

Sherd count per deposit is overall low, averaging under four sherds and with only two deposits (17084: fill of drying oven and 20792: silting layer) producing in excess of 50 sherds. A significant proportion of the Roman group is demonstrably residual, with 367 sherds (22.6%) from deposits containing later-dated ceramics.

Condition
Surface preservation and preservation of calcareous/other inclusions is good; and surface treatments such as burnishing survive well. Carbonised and limey residues also survive although incidence is low overall (129 sherds or 8%). A small proportion of the group (64 sherds or 2.9%) was recorded as abraded. A sizeable re-deposited component to the group is not reflected in the mean sherd weight, which is moderately high for a Roman group at 14g.

Assemblage range and variety
Assemblage composition is shown in Tables 11-12. The large majority (65% by count) comprises reduced coarsewares, most of which are likely to derive from local sources. A significant proportion are highly micaceous (types GWfm; GWm), a feature of coarsewares from the region including those known to be produced at Wattisfield, approximately 30km to the east of Mildenhall (Tomber and Dore 1998, 184) and also West Stow (West 1990). Other 'generic' reduced coarseware types (GWc; GWf; BSc) doubtless include material from a number of mostly local sources. The small quantities identified as of Horningsea greywares (HOR RE), a site located approximately 30km to the west, comprised only those vessels of distinctive form or decoration (large storage jars with bifid rims) and is probably an underestimate of the true total.

Roman shell-tempered wares are moderately common and this group may represent material from a number of sources. A coarser type occurring as thick-walled sherds from large storage vessels resembles material common from the area of Peterborough and described as 'local' from Orton Hall farm (Perrin 1996). A finer, typically darker-firing type may be from the major production site at Harrold, north Bedfordshire (Brown 1994). Channel-rimmed forms, including from ditch fills 4030 (fill of 4028, Ditch 1) and pit fill 2043 (fill of 2046) resemble the early Roman products from this source; the majority are necked jars with rilled bodies and overhanging rims which are representative of late Roman (4th century) production.

Finewares are predominantly regional imports and of Late Roman origin. Exceptions are Colchester colour-coated wares, including large, joining sherds from a bag-shaped, cornice-rim beaker from ditch fill 3768 (fill of 3679, Ditch 19). Generic codings for colour-coated wares, a white-slipped flagon fabric and a mica-dusted ware may encompass types known to be made at Pakenham, Suffolk, approximately 25km to the south-east of Mildenhall.

Regional imports are primarily the major later Roman types (below), among which the Lower Nene Valley (100 sherds or 6.2%) and Much Hadham (92 sherds or 5.7%) are most abundant. Lower Nene

products are mainly colour-coated wares with fewer 'self-coloured' wares including mortaria and occasional greyware sherds. Forms among Lower Nene colour-coated wares include few beakers and are mainly the 'coarseware' vessel classes (jars, conical flanged bowls and plain-rim dishes), which typify late assemblages. The Hadham component comprises the burnished orange-firing wares typical of late (4th century) output. Forms are mainly necked 'bowl-jars', vessels imitating samian form 36 bowls (as Symonds 1999, nos. 111-15) and one face flagon (as Symonds 1999, nos. 155/6).

Continental imports are sparse, consisting of Gaulish samian and occasional sherds of Cologne colour-coated ware, Baetican (southern Spanish) amphora and an unidentified amphora type. The samian amounts to 33 sherds or 2% of the total and includes examples from each of the production regions (South, Central and East Gaul). Unusually South Gaulish products outnumber those of Central Gaul, a possible indication of reduced activity by the middle or later 2nd century AD. Included are decorated forms (probably Drag 37), together with plain cup, dish and bowl forms. One partially legible makers stamp ([-MAN]) occurs to the base of a form 31 dish from ditch fill 3782 (fill of 3996, Ditch 7). A cup (form 33) from layer 4024 features a scratched ownership mark in the form of a cross close to the base angle.

Dating

Indications of dating are derived largely from non-local finewares or 'specialist' wares, as well as from selected vessel forms among the coarsewares. Two main periods of Roman activity can be identified: an early Roman phase, probably centring on the period *c*. AD 70 to *c*. AD 150 and a Late Roman phase which is probably largely confined to the 4th century AD.

There is surprisingly little evidence for significant activity in the Late Iron Age/early Roman transitional period (the early to middle 1st century AD). Most indications for this period are from Area 20 in the form of grogged or black-firing types (types BSc and GWfbs) in 'Belgic-derived' vessel forms. Some material of this date is re-deposited in later deposits.

Increased activity in the later 1st and first half of the 2nd century is in evidence across the site (Areas 3, 5, 15, 17 and 20), although the number of well-dated context groups is still relatively small. Evidence for activity of this date comes from the samian, which includes comparatively large South Gaulish (La Grafesenque) component which can be expected to date before *c.* AD 110. Form 37 decorated bowls in this fabric suggests that some material at least is Flavian or Trajanic. 'Poppy-head' or ovoid beakers in fine micaceous greywares (probably Wattisfield products) and with barbotine dot panel decoration are identifiable from a number of deposits mainly from Area 20 (17126, 20719, 20721, 20724, 20725 and 21574). These are likely date to the first half of the 2nd century. A date *c*. AD 120–170 is probable for a substantially complete bag-shaped beaker from ditch fill 3768 (fill of 3769).

Activity *c*. AD 150 to 250/70 would seem to be limited across the site. The scarcity of Central or East Gaulish samian is significant in this respect as is an absence of Lower Nene valley beaker forms characteristic of the period.

For the second, Late Roman, phase of activity indications are of Late Roman dating after *c*. AD 250/70 are based on occurrences of regional imports, principally late vessel forms in Lower Nene colour-coated ware (LNV CC) and Hadham oxidised wares (HAD OX), with a small quantity of Oxford red-slipped wares (OXF RS). Activity in this period would seem to be distributed across the site, although is concentrated in Area 3. The Lower Nene group is dominated by late 'coarseware' vessel forms in colour-coated ware and includes late style hammerhead and reeded-rim mortaria. The range of forms (utilitarian jars, bowls and dishes, and 'castor boxes') is consistent with dating after *c*. 270/300 AD. There are indications that activity continues after *c*. AD 350 from some vessel forms presenting specific dating including; a late wide platter form in LNV CC (Howe *et al*. 1980, no. 88), from evaluation Trench 11, a sherd in the same fabric with 'Romano-Saxon' style stamped boss decoration from layer 3987 and, from pit fill 3839 (fill of 3841), a face flagon fragment in Hadham oxidised ware. Two vessels among the small Oxford red slipped ware including a flanged bowl (Young 1977: from C52) from ditch fill 3886 (fill of 3887, Enclosure A) and a cylindrical beaker (Young 1977: form C38) from evaluation quarry pit fill 606 also date to this period.

Statement of potential and Recommendations for further analysis

Previous archaeological work in the vicinity of Mildenhall has revealed no substantive evidence for Roman activity. This is despite the finding of the exceptional Mildenhall hoard north-west of the town which suggests that a major Roman estate or higher-status settlement may exist in the vicinity. Although relatively modest in its size and with a proportion certainly re-deposited, the Roman pottery assemblage is of some significance as evidence for long-running activity which extends into the later 4th century, the likely period for the deposition of the hoard. This aside, there are relatively few published assemblages from Roman 'consumption sites' in this area and the publication of this group will contribute towards a greater understanding of pottery supply patterns locally. It is therefore recommended that brief reporting be undertaken for publication, characterising the Roman assemblage and examining aspects of

chronology and pottery supply. Recording undertaken in advance of this assessment is sufficient for the purposes of the archive/reporting and, together with the site stratigraphy can be utilised to refine internal site chronological sequence.

Some limited (microscopic) re-examination pottery coarsewares and comparison with samples from known production sites in the area may help to confirm the source of 'generic coarseware types'. It is also recommended that the decorated samian be examined by a recognised specialist in order to characterise and confirm dating.

A selection of Roman pottery, concentrating on larger, stratified groups should be illustrated for publication, to a maximum of 30 vessels.

Further work:

1) Re-examination of selected material	1 day (FO)
2) Library research	1 day (FO)
3) Analysis/preparation of publication report.	4 days (FO)
4) Pottery drawings (up to 25 vessels)	5 days (SI)
5) Samian: identification of decorated vessels	(fee)

Table 10: Roman pottery distribution

Exc Area	Count	Weight(g)
Us/Evals	106	1656
2	56	598
3	466	9084
4	138	1787
8	1	11
12	7	218
13	2	12
15	19	345
16	6	45
17	289	3238
18	21	350
19	34	561
20	501	5935
Total	1647	23840

Table 11: Roman pottery summary by type

Source	Fabric	Description	Count	Weight	EVEs total
Local/	Bsb	Dark-firing; sandy; highly burnished	35	397	.76
uncertain	Bsc	Black sandy; coarse	108	1122	1.36
	Buff f	fine, buff flagon fabric	23	198	1.12
	Buff g	Buff gritty fabric; grey core	71	1786	.08
	Buff ls	Buff gritty fabric; grey core (limestone inclusions)	1	37	0
	FFws	Flagon fabric, white-slipped	2	13	0
	Grog	Wheelthrown grog-tempered (Belgic-style)	17	226	.13
	Grogbuff	Hard pinkish grog-tempered	3	103	0
	Grogcls	Coarse grog-tempered, limestone inclusions	1	301	.12
	Gw fm	fine greyware, micaceous pale grey throughout	149	1466	1.09
	GWc	Coarse sandy greyware	348	5132	3.38
	GWc ls	Coarse sandy greyware with sparse limestone	17	378	0
	GWf	Greyware, fine, hard; iron grey throughout	78	1088	1.89
	GWf f	Greyware, fine with flint incs	90	620	.74
	GWfbs	Greyware, fine, black surfaces	102	973	.70
	GWg	Greyware with grog	1	30	0
	Gwhi	Hard, paler core; - Hadham?	5	44	.24
	GWm	Dark grey micaceous	138	1366	1.83
	MicaD	Mica-dusted ware (Pakenham?)	1	10	0
	Msc CC	Unsourced colour-coated wares	21	285	0
	Msc CCm	Unsourced colour-coated wares (mortaria)	1	10	0
	Oxid	Unsourced oxidised wares	6	93	0
	Oxidc	Unsourced oxidised wares (coarse)	7	163	.17

	Oxidf	Unsourced oxidised wares (fine)	10	55	.20
	Oxidfl	Unsourced oxidised wares (flint inclusions)	1	7	0
	Oxidrs	Unsourced oxidised wares with red slip	1	3	0
	Silt	Silty ware (Gallo-Belgic imitations)	2	21	0
	Siltrs	As above with red slip	1	2	0
	Wh	Unsourced whitewares (Godmanchester?)	4	40	0
	Whf	Unsourced whitewares (finer)	7	71	0
Regional*	COL CC	Colchester colour-coated ware	8	55	.35
	COL BB2	?Colchester Black-Burnished (Category 2)	4	44	0
	HOR RE	Horningsea reduced ware	6	284	0.15
	DOR BB1	Dorset Black-Burnished ware	3	55	0
	HAD OX	Hadham oxidised	92	839	1.37
	HAD OXm	Hadham oxidised (mortarium)	1	21	0
	LNV CC	Lower Nene Valley Colour-Coated	84	1446	2.25
	LNV CW	Lower Nene Valley self-coloured (creamwares)	7	66	0
	LNV CWm	Lower Nene Valley mortaria	7	251	.30
	LNV GW	Lower Nene self coloured (mortaria)	2	44	.03
	OXF RS	Oxford Red-slipped ware	8	104	.15
	OXF RSm	Oxford Red-slipped ware (mortaria)	1	42	0
	OXF WHm	Oxford whiteware (mortaria)	1	41	.08
	OXF WSm	Oxford white-slipped (mortaria)	1	27	0
	ROB SH	Shell-tempered	133	3919	2.91
Continental*	KOL CC	Cologne colour-coated ware	1	7	0
	LGF SA	South Gaulish (La Graufesenque) samian	20	68	.05
	LEZ SA2	Central gaulish (Lezoux) samian	12	157	.09
	EG SA	East Gaulish samian	1	5	0
	amph	Unsourced amphoras	1	132	0
	BAT AM	Baetican amphoras	2	193	0
Total			1646	23840	21.54

*National Roman Fabric Reference Collection Codes (Tomber and Dore 1998)

Table 12: Roman pottery summary by type/area

Fabric	<>	2	3	4	8	12	13	15	16	17	18	19	20
Bsb	**1**	**1**	**3**	**2**				**2**		**11**	**1**	**1**	**13**
Bsc	**7**	**2**	**11**	**10**				**6**	**1**	**18**	**1**	**3**	**48**
Buff f	**5**	**1**	**10**	**3**						**2**		**1**	**1**
Buff g	**1**	**4**	**12**	**25**				**7**	**1**	**6**		**1**	**17**
Buff ls			**1**										
FFws										**1**			**1**
GROG	**2**		**1**										**13**
GROGbuff				**1**		**1**							**1**
GROGcls			**1**										
GW fm	**29**	**2**	**34**	**13**						**8**			**62**
GWc	**21**	**10**	**85**	**36**		**3**	**1**	**1**	**1**	**61**	**5**	**5**	**115**
GWc ls		**1**	**7**	**1**									**6**
GWf	**4**	**1**	**33**	**13**						**7**		**2**	**18**
GWf f	**1**	**1**	**4**	**2**				**1**		**75**			**6**
GWfbs			**8**	**2**						**18**	**1**	**5**	**61**
GWfs	**1**												
GWg	**1**												
Gwhi			**3**							**2**			
GWm	**3**	**3**	**25**	**8**			**1**	**1**	**1**	**41**	**4**	**7**	**41**
MicaD			**1**										
Msc CC	**1**	**1**	**7**	**1**						**5**	**1**		**5**
Msc CCm			**1**										
Oxidf			**1**										
Oxid			**3**	**1**									**2**
Oxidc			**2**						**1**				
Oxidf	**1**	**6**	**2**										
Oxidfl													**1**
Oxidrs			**1**										
Silt													**2**
Siltrs													**1**

Wh		**1**	**1**	**1**									**1**
Whf			**5**							**1**		**1**	
HAD OX	**8**	**6**	**45**	**6**	**1**					**4**	**2**	**3**	**16**
HAD Oxm			**1**										
LNV CC	**7**	**4**	**52**	**3**		**1**		**1**		**2**		**2**	**12**
LNV CW		**1**	**1**			**1**				**1**			**3**
LNV CWm	**1**		**2**							**3**		**1**	
LNV GW			**1**										**1**
ROB SH	**8**	**7**	**61**	**6**					**1**	**22**	**5**	**2**	**19**
COL CC			**8**										
DOR BB1													**3**
COL BB2			**1**	**2**									**1**
HOR RE			**1**	**3**									**2**
OXF RS	**2**	**1**	**3**							**1**			**1**
OXF RSm			**1**										
OXF WH													**1**
OXF WSm			**1**										
KOL CC			**1**										
LGF SA	**2**		**18**										
LEZ SA2	**1**	**3**	**5**	**2**									**1**
EG SA													**1**
amph			**1**										
BAT AM						**1**					**1**		

APPENDIX 4: THE POST-ROMAN POTTERY BY SUE ANDERSON

Introduction

A total of 1630 post-Roman sherds of pottery weighing 23,570g was collected from 327 contexts. The assemblage was generally in good condition with only minor abrasion of some residual material.

Methodology

Quantification was carried out using sherd count, weight and estimated vessel equivalent (Eve). The minimum number of vessels (MNV) within each context was also recorded, but cross-fitting was not attempted unless particularly distinctive vessels were observed in more than one context. A full quantification by fabric, context and feature is available in archive. All fabric codes were assigned from the author's post-Roman fabric series, which includes East Anglian and Midlands fabrics, as well as imported wares; full descriptions will be provided in the final report. Form terminology for medieval pottery is based on MPRG (1998). Recording uses a system of letters for fabric codes together with number codes for ease of sorting in database format. The results were input directly onto an Access database.

Summary of pottery by period

Table 13 shows the quantification by fabric; a summary catalogue by context is included as Appendix 1.

Table 13. Pottery quantification by fabric.

Description	**Fabric**	**Code**	**No**	**Wt/g**	**Eve**	**MNV**
Early Saxon grass-tempered	ESO1	2.01	10	78		9
Early Saxon grass and sand-tempered	ESO2	2.02	2	35	0.08	2
Early Saxon coarse quartz	ESCQ	2.03	1	8		1
Early Saxon fine sand	ESFS	2.04	6	170	0.10	6
Early Saxon grog	ESGS	2.05	1	3		1
Early Saxon fine sand and mica	ESSM	2.08	1	2		1
Early Saxon granitic	ESCF	2.10	2	6	0.06	2
Early Saxon sparse chalk	ESSC	2.141	3	52		3
Early Saxon medium sandy	ESMS	2.22	8	85	0.21	7
Total Early Saxon			*34*	*439*	*0.45*	*32*
Gritty Ipswich Ware	GIPS	2.31	18	454	0.50	17
Sandy Ipswich Ware	SIPS	2.32	62	1706	1.00	36
Total Middle Saxon			*80*	*2160*	*1.5*	*53*
Thetford-type ware	THET	2.50	363	5264	3.01	277

Thetford Ware (Grimston)	THETG	2.57	70	1840	0.61	41
Early medieval' sandwich wares	EMSW	2.58	7	53		6
Stamford Ware Fabric A	STAMA	2.61	7	89	0.14	7
St. Neot's Ware	STNE	2.70	63	634	1.27	58
Saxo-Norman Wares (general)	SXNO	2.80	2	21		2
Total Late Saxon			*512*	*7901*	*5.03*	*391*
Early medieval ware	EMW	3.10	240	1823	1.38	185
S Cambs/Essex sandy EMW	EMW1	3.101	61	817	0.40	36
Early medieval ware gritty	EMWG	3.11	6	50		5
Early medieval ware chalky	EMWC	3.12	4	28		4
Early medieval ware shelly	EMWS	3.14	7	46		3
Early medieval ware micaceous	EMWM	3.16	11	176		11
Yarmouth-type ware	YAR	3.17	12	88	0.07	10
Yarmouth-type non-calcareous	YARN	3.171	5	40		4
Early medieval sparse shelly ware	EMWSS	3.19	4	46	0.03	4
Early medieval sparse shell & coarse quartz	EMWSG	3.191	6	215	0.15	2
Stamford Ware Fabric B	STAMB	3.71	4	31		4
St. Neot's Ware Developed	STND	3.73	6	26		4
Total early medieval			*366*	*3386*	*2.03*	*272*
Medieval coarseware 1	MCW1	3.201	163	3220	1.72	94
Medieval coarseware 2	MCW2	3.202	97	1252	0.73	55
Medieval coarseware 3	MCW3	3.203	10	167		6
Medieval coarseware 4	MCW4	3.204	6	40		5
Medieval coarseware 5	MCW5	3.205	29	513	0.51	13
Medieval coarseware gritty	MCWG	3.21	5	94	0.15	4
Grimston coarseware	GRCW	3.22	9	286	0.05	5
Local medieval unglazed	LMU	3.23	2	23		2
Medieval coarseware micaceous	MCWM	3.24	6	55		6
Bury sandy fine ware	BSFW	3.31	16	172	0.23	14
Bury coarse sandy ware	BCSW	3.32	32	407	0.40	27
Bury medieval coarseware	BMCW	3.33	52	1065	0.83	40
Bury medieval coarseware gritty	BMCWG	3.34	1	26		1
Hedingham coarseware	HCW	3.43	2	43	0.10	2
Bury medieval shelly ware	BMSW	3.53	5	139	0.35	4
Ely coarseware	ELCW	3.61	42	592	0.70	31
Mildenhall-type coarseware	MILW	3.62	10	89	0.22	9
Hunts calcareous medieval coarseware	HFSW	3.63	3	110	0.08	2
Lyveden-Stanion Coarseware	LSCW	3.81	3	7	0.05	1
Unprovenanced glazed	UPG	4.00	4	55		3
Grimston-type ware	GRIM	4.10	3	19		3
Mill Green Ware	MGW	4.22	1	2		1
Hedingham Ware	HFW1	4.23	19	197		18
Essex sandy orange wares	ESOW	4.24	3	101	0.22	2
Ely Glazed Ware	ELYG	4.81	16	148		10
Total medieval			*539*	*8822*	*6.34*	*358*
Late medieval and transitional	LMT	5.10	7	129	0.05	5
Late Grimston-type ware	GRIL	5.30	1	2	0.11	1
LMT Cambridgeshire sparse calcareous type	LMTC	5.71	3	5		3
Glazed red earthenware	GRE	6.12	13	138	0.16	13
West Norfolk Bichrome	WNBC	6.14	1	3		1
Speckle-glazed Ware	SPEC	6.15	2	10		1
Non-local post-medieval earthenwares	NLPM	6.17	1	22		1
Post-medieval slipwares	PMSW	6.40	3	31		2
Westerwald Stoneware	GSW5	7.15	1	2		1
Total late medieval and post-medieval			*32*	*342*	*0.32*	*28*
Late post-medieval unglazed earthenwares	LPME	8.01	4	28	0.06	2
Industrial Slipware	INDS	8.02	1	39		1
Refined white earthenwares	REFW	8.03	16	101	0.17	15
English Stoneware	ESW	8.20	6	235		2
Porcelain	PORC	8.30	2	4	0.21	2
Staffordshire white salt-glazed stonewares	SWSW	8.41	1	9		1
Late slipped redware	LSRW	8.51	4	46	0.10	3

Total modern			*34*	*462*	*0.54*	*26*
Unidentified	UNID	0.001	33	58		9
Total			**1630**	**23570**	**16.21**	**1169**

Early Saxon
Thirty-four sherds of handmade pottery were probably or certainly of Early Saxon date. The range of fabrics in this small group is comparable with other Early Saxon groups in the area, including grass-tempered, sandy, calcareous and granitic tempered sherds. Seven rimsherds were present, representing six jars and a small bowl. Several vessels had signs of surface treatment in the form of smoothing or burnishing, and two sherds had incised line decoration.

Although the quantity is low, single or groups of sherds were found in seventeen features which produced no later pottery, suggesting that some at least of these pits and post-holes may relate to Early Saxon occupation. Some of the handmade wares may be related to the Middle Saxon activity represented by Ipswich Ware, although the two types only occurred together as residual material in medieval features.

Middle Saxon
Eighty sherds of Ipswich Ware were identified, including eleven jar rims and several base fragments. All sherds were in the two main fabrics ('sandy' and 'gritty') and vessels were also typical products of this industry. No Buttermarket-type bottles or other decorated vessels were present. Seventeen contexts contained Ipswich Ware with no later pottery.

Late Saxon
The relatively large Late Saxon assemblage was dominated by Thetford-type ware. Much of this group was in fabrics which are typical of Thetford itself, although a few sherds were in fabrics which probably represent local rural production sites. These included Grimston-type Thetford wares and 'early medieval' sandwich wares. Small quantities of other regional Late Saxon wares were also present: St Neot's Ware formed the larger part of this group and only a few Stamford Ware sherds were found.

Fifty-three rims were present in the Late Saxon group, representing medium and large jar forms with early, intermediate and late rim types (Anderson 2004), large handled jars, spouted pitchers, bowls and a costrel. The identifiable Stamford Ware forms were more unusual vessels, comprising a crucible and a yellow-glazed costrel. Decoration included rouletting, applied thumbed strips, girth-grooving (rare in this group) and one example of a jar with a flanged rim and incised wavy line decoration (cf Dallas 1984, no.415).
Although fifty-nine contexts produced Late Saxon wares with no later pottery, the majority of sherds were residual in medieval and later features and many showed some signs of abrasion.

Early medieval and medieval
A large proportion of this assemblage comprised pottery of later 11th to 14th-century date. This includes both the handmade wares (some of which had wheel-finished rims) classified as 'early medieval' and the wheel-made greywares classified as 'medieval'. In this part of Suffolk, as elsewhere in rural East Anglia, the two methods of manufacture appear to have overlapped during the 12th–13th centuries.

The range of coarseware fabrics present during the early and high medieval periods is broad and many of them are currently unprovenanced. It was possible to identify some wares which were probably made in or around Bury St Edmunds, at Hedingham in Essex, at Ely in Cambridgeshire and in the Huntingdon area. A few sherds are similar to a group identified as 'Mildenhall ware' (Hall 1996), which was thought to contain some wasters. Studies of other rural sites in the region have shown that most pottery was sourced from production sites within a 25-mile radius (Anderson 2006) and this site appears to follow the pattern, although small quantities seem to have come from further afield.

The early medieval wares were dominated by the fine to medium sandy fabric which is typically found in Norfolk and north Suffolk. Most sherds were thin-walled and probably from jars with simple everted rims – sixteen such rims were present, making them the most common form in this group. A few more developed rims were also present, particularly in fabric EMW1.

The range of forms present in the high medieval group comprised jars, bowls and jugs. The rim forms indicated that the assemblage continued into the 14th century, although the majority of dateable types belonged to the 12th and 13th centuries. Rims of Essex and Cambridgeshire types are present as well as Suffolk examples. The Essex forms are relatively closely dateable due to work at Rivenhall (Drury 1993).

Glazed wares formed *c.* 8.5% of the high medieval group (based on sherd count). This is an average proportion for a rural site. The majority of glazed wares in this group were from Hedingham and Ely, with only a few from Grimston. The latter seems to have taken over from Hedingham Ware during the 13th century in Bury St Edmunds, and the small quantities of it at this site may reflect a decline prior to the 14th century, which is also suggested by the coarseware rim forms. All identifiable forms were jugs.

No imported wares of this period were identified.

Late and post-medieval
Most pottery in this group comprised local and regional redwares. There was clearly a decline in pottery use on this site from the 14th century onwards, and whilst some of the late medieval wares could be contemporary with the very latest occupation on the site (their earliest production date would be in the later 14th century) it is likely that much of this small group arrived at the site during manuring activity. The range of identifiable vessels included a jug, two jars, a bowl/pancheon and a mug. At least some of the sherds have parallels amongst the post-medieval wares produced in Ely (Cessford *et al*. 2006).

Modern
The small quantity of modern pottery included sherds of slipped redware bowls, pieces of plantpot, fragments of refined whiteware table wares, stoneware storage vessels and some fragments of decorated porcelain. Like the earlier post-medieval material, this small group was probably dispersed across the field as a component of 'night soil'.

Unidentified
Thirty-two sherds were unidentified, of which 26 were recovered from bulk soil sample sieving and were very small and abraded. The others were generally small, burnt or otherwise undiagnostic.

Provenance
The site is well stratified and much of the material is derived from sealed contexts. A summary of the pottery by context is provided in Appendix 1.

Table 14. Pottery distribution (sherd count) by pot period and preliminary site Period.

Period	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Un
ESax	1		6	13	13		1	
MSax				41	36	1	2	
LSax		1	5	42	419	7	26	12
EMed		2		7	338	5	13	1
Med		3		3	480	11	26	15
LMed					8	2		1
PMed		4			1	5	7	3
Mod		1	1		4	4	19	6
Unident				3	29	1		

Currently there are several sherds in the pre-Saxon Periods 1–3 which have been dated to the Early Saxon period or later. The single handmade sherd in Period 1 is an Early Saxon granitic tempered ware; this inclusion indicates that the sherd cannot be of prehistoric date. Sherds from Periods 2–3 include glazed post-medieval and modern sherds, whilst there are some shelly and sandy wares in Period 3 which are currently identified as Late Saxon but could potentially be Roman. The other sherds may be intrusive, or the features may be later than preliminary phasing suggests. Period 4 (Saxon) contains some post-Saxon pottery which again could be intrusive, or possibly misidentified. Period 5 (medieval) includes the transitional period between the Late Saxon and early medieval Periods and consequently there is probably little residual or intrusive material within this broad Period. Periods 6–7 (post-medieval to modern), however, contain largely residual sherds in relatively small quantities.

Table 15. Pottery distribution by context type

Context type	No	Wt/g	MNV
Pit	691	8746	534
Ditch/gully	453	7885	295
Well	88	849	58
Post-hole	82	1637	62
Grave	29	40	6
Quarry pit	16	116	16
Corn-drier/kiln/hearth	10	80	10
Other feature	14	111	14
Spread/layer/deposit	180	3123	124
Natural features/deposits	6	162	6
Topsoil, subsoil and U/S finds	51	676	36

Evaluation	10	140	8

The majority of the assemblage was recovered from pits and linear features, with smaller quantities being derived from post-holes and other negative features. Layers of silting, alluvium and make-up deposits also produced a relatively large quantity of pottery. The largest single groups of pottery were recovered from pit 20569 (135 sherds), pit 20429 (51 sherds) and pit 2046 (49 sherds); all other contexts produced less than 40 sherds each. The majority of contexts (total 283) contained less than ten sherds each.

No grouping information is available at the time of writing, but it will be useful to consider the pottery recovered from the medieval structures and other feature groups at the analysis stage.

Table 16. Distribution of pottery by area from north to south (MNV).

Exc Area	ESax	MSax	LSax	EMed	Med	LMed	PMed	Mod	Un
17			54	32	21	6	1	1	1
12/13/15/16/18	5	2	82	62	85		3	1	2
20	12	25	148	97	120		4	1	3
4 & 19	4	3	59	51	49		3	10	1
2	3	12	12	9	33	1	2	2	1
3 & 8	7	11	28	8	39		3	11	1

This appears to suggest a concentration of Early and Middle Saxon activity to the east and south of the site (Areas 20, 2 and 3), whilst Late Saxon, early and high medieval pottery is slightly more frequent in the northern half of the site. There is no particular pattern with the later material as only small quantities were recovered.

Assessment of potential

This assemblage is one of several recently excavated rural medieval groups in Suffolk. Such a large assemblage has very high potential to further our knowledge of medieval pottery of this period in the region. It is the first large assemblage of medieval pottery to have been excavated in Mildenhall, and one of the few west of Bury St Edmunds (within Suffolk). Two aspects are of particular significance: firstly the lack of so-called 'Mildenhall ware', suggesting that the few sherds collected during the Fenland Survey (SMR) may have been made elsewhere; secondly the presence of wares which had previously only been found in Bury St Edmunds and which do not occur on rural sites to the north, south and east of the town.

Further stratigraphic analysis will produce a narrower phasing structure for the site, which will be of value to study the distribution of the main medieval wares and their association with earlier and later fabrics in relation to their stratigraphic positions. This may enable a tightening of date ranges for the forms and/or fabrics which will be of value for the study of future Suffolk assemblages. Comparison of the well-dated Essex wares with the Suffolk rim form distributions may also be possible. However it is acknowledged that there are very few intercutting features of broadly contemporary date on the site, except perhaps in Area 20.

Comparison of the assemblage with large groups recently excavated at Cedar's Field, Stowmarket (Anderson forthcoming), and with unpublished groups from other Suffolk rural sites, as well as sites in neighbouring counties, will help to place the group in context.

Spatial distribution of the pottery will almost certainly be of value in determining the growth and decline of areas within the site, and use of pottery associated with any structures, ovens and wells.

In summary, the potential of this assemblage is to provide evidence for dating and phasing of the site; pottery use, consumption and possibly manufacture; trade links both within and outside East Anglia; and status of the occupants.

Recommendations and estimate for analysis

The assemblage has been recorded in full and no further cataloguing is required. The pottery needs to be put into context with relation to site phasing and spatial distribution, and a more detailed publication report produced.

Spatial and temporal analysis	2 days
Comparison with other local groups	1 day
Completion of report	3 days
Total	6 days

Additional work

Fifteen vessels have been extracted for illustration	3 days (SI)

Pottery summary

Rim forms: 1–7 – Thetford ware types (after Anderson 2004); A-J – Ipswich ware types (after West 1963); BD – beaded; CAV – cavetto; EV – everted; EVBD – everted beaded; FLAN – flanged; FLAR – flaring; FTBD – flat-topped bead; FTEV – flat-topped everted; HH – hammerhead; INT – inturned; LSEV – lid-seated everted; PL – plain; SEV – simple everted; SQBD – square bead; SQEV – everted square beaded; TAP – tapered; THEV – thickened everted; UPBD – upright beaded; UPEV – upright everted; UPFT – upright flat-topped; UPPL – upright plain; UPSQ – upright squared; UPTH – upright thickened; WEDG – wedged everted.

Pottery for illustration
(please note, the numbering may have to be changed in the final report)

1 EMW1 bowl, square beaded rim, pierced below rim. Pit fill 15188.
2 MCW5 bowl, beaded rim, flaring-sided bowl, handmade, wheel-finished? Peat 3052.
3 MCW5 bowl, upright flat-topped rim, horizontal cordon. Silting 3028.
4 BCSW jar, tapered rim, applied thumbed strips. Pit fill 15188
5 BMSW jar, squared everted rim, body possibly handmade. Very little shell, could be accidental. Pit fill 4085.
6 BMCW jar, everted beaded rim, shallow girth grooving. Ditch fill 20419.
7 MCW1 jar, upright flat-topped rim, possibly very sparse shell-dusting. Pit fill 15177.
8 MCW1 jar, square beaded rim, applied thumbed strip. Levelling 3195.
9 MCW1 jar, squared everted rim, applied thumbed strip and finger-tip impressions. Gully fill 20573 (also in 20871).
10 MCW2 jar, upright beaded rim. Pit fill 15177.
11 MCW5 jar, lid-seated everted rim, thumbed edge, surfaces pale grey, form similar to some Grimston coarsewares, but fabric different. Alluvium 2113
12 BMCW jar, upright everted rim. Pit fill 20474.
13 HFSW jar, flat-topped everted rim, combed wavy line on rim, combed horizontal line on body. Clay dump 3080.
14 BCSW jug, square beaded rim. Pit fill 20198.
15 MCW1 jug, thickened everted rim with thumbing. Ditch fill 20419.

APPENDIX 5: THE ARCHAEOMETALLURGICAL RESIDUES BY DR T. P. YOUNG

Summary
The assemblage comprises archaeometallurgical residues occurring at a low density from a large number of deposits (107) across the site and across a broad stratigraphic age range.

Activity from the Iron Age (Period 2) includes evidence for the casting of copper alloy objects, with a small number of crucible and mould fragments. The restricted occurrence of these materials might indicate an occasional activity rather than a persistent one. There is also a low level of occurrence of microresidues from iron-working (although these might be intrusive from the better documented later iron-working activity). Romano-British (Period 3) metalworking evidence indicates iron-working (smithing), with at least some undertaken with coal as fuel. The early medieval evidence (Period 4) also indicates iron-working. The evidence was somewhat more substantial than for the Roman period. The presence of some materials suggesting the use of coal as fuel, may indicate that at least some of this material may be residual material of Roman age.

The medieval period (Period 5) produced a large number of contexts containing iron-working residues. Coal-fuelled smithing is represented among some of the possibly later material. Post-medieval residues (Periods 6 and 7) are likely to include some residual material, together with contemporary use of coal, not necessarily for metallurgical purposes.

The assemblage as a whole is therefore suggestive of a persistent low level of blacksmithing activity in the area from the Iron Age to late Medieval period. A small amount of copper alloy casting was undertaken in the Iron Age.

Methodology
All materials were examined visually with a low-powered binocular microscope where required. As an assessment, the materials were not subjected to any high-magnification optical inspection, not to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional. The summary catalogue of examined material is given in Table 17.

Results: Description of residue classes
Iron-working (smithing)
Identifiable macroscopic iron-working residues were mainly complete or broken examples of smithing hearth cakes (SHCs). These items are listed in Table 18. The weights of the cakes, where determinable, are all within the typical range of cakes produced during the end-user working of iron (blacksmithing) during their respective periods.

Most of the small fragments of indeterminate iron slag are probably also fragments of SHCs (although too small to be identifiable as such).

The micro-residues from iron working are widely distributed (geographically and temporally) in the magnetic residues, but are never present in sufficient quantities to provide compelling evidence for proximity of loci of working. Micro-residues include flake hammerscale (FHS), spheroidal hammerscale (SHS) and slag flats (typically representing materials lost outside the forge hearth), together with various slag and clinker droplets (probably mostly particles formed within the hearth).

Most of the residues seen here probably represent activities undertaken with a charcoal fuel; the presence of clinker particles indicates the use of coal as fuel at times as well. This seems particularly to be in material of Roman age and also of 13th-century age or younger.

Casting of copper-alloys
Evidence for the handling and casting of copper alloy was present in the fills of Middle Iron Age pits 15129 and, to a lesser extent, feature 21786. The principal artefacts from pit 15129 were a failed crucible from deposit 15132, further crucible fragments from the same deposit and mould fragments from each of fills 15131 and 15132.

The mould fragment from deposit 15131 was from the flared pouring gate of a mould in hard sandy fabric. The example from fill 15132 shows the partial impression of the curved components, the central one forming part of a disc *c.* 16mm in diameter and 4mm thick. Whether the three impressions are part of a single complex object, or three small ones, is not known, although a complex object seems more likely.

The crucible fragments derive from examples of moderately large (>60mm tall) examples of 'triangular' or 'pyramidal' crucibles. The fabric is mostly fine grained, with scattered quartz grains and an abundant organic temper. Such a fabric is typical of prehistoric crucibles, where the emphasis is on the insulating, rather than the refractory, properties of the ceramic. Much of the crucible material seems lightly used, if at all. Three pieces together form much of one side and one angle of an example that shows intense heating, and failure, on one side – possibly having been placed immediately in front of the air blast. This example showed copper oxide droplets (representing corroded metal droplets) on both inner and outer surfaces.

At Danebury the 'triangular' crucibles replaced the handled forms in ceramic phase 4/5 and survived until at least ceramic phase 7 (Cunliffe 1984, p441) – so are essentially Middle Iron Age. Similar forms of crucible in the latest Iron Age and later tend to be in much more refractory fabric.

A planar sheet of ceramic from pit fill 21794 resembles the crucible material in many ways. This sheet may have functioned as a 'heating tray' or just possibly a crucible lid – but is too incomplete to interpret fully.

A curiously lilac-pink fragment of hearth lining from medieval deposit 21590 might just possibly indicate an episode of much later non-ferrous metalworking, but this is not certain on the basis of the colour alone.

Other materials
The assemblage includes a variety of less diagnostic materials, mainly lining slags (slags derived from the melting of the hearth/furnace wall) and fuel ash slags (FAS). The lining slags will be from metallurgical hearths or furnaces, but are not in this instance, diagnostic of process or material. The fuel ash slags are not necessarily metallurgical in origin, and may originate in suitable conditions, in structures such as corn-driers.

A few concretions formed around corroding iron are present, but none is significant enough for X-radiography.

Distribution of the residues
The stratigraphic distribution of the activities suggested by the residues is presented in Table 19.

Interpretation
The general impression of this site is one in metalworking was undertaken persistently, if not necessarily on a large-scale, over a long period of time. Most of that activity was iron-working – the repair and fabrication of tools and implements being an occupation within most significant settlements from the Iron Age until the 20th century. The local casting of copper alloy fitments and horse-gear is also a common feature of Iron Age settlements – perhaps facilitated by travelling craftsmen. In neither case is the level of activity likely to indicate processes undertaken on an industrial scale.

The low volumes of residue recovered suggest that the activities, or at least the main locations for waste disposal, were outside the excavated areas.

Evaluation of potential
The iron-working residues on the site are so sparse that they do not merit further investigation, or even detailed description in a final report, though their occurrence should be noted. Their significance for further investigation is greatly reduced by the lack of evidence for metallurgical activity actually within the excavated area, and there are no certain metallurgical features.

The Iron Age copper-alloy casting is worthy of description in the final report, although there is little useful additional analysis that could be contemplated. The crucible fragments are worth illustrating and a review of the fabrics by the Iron Age pottery specialist will be undertaken to establish any links with other ceramic materials.

Further investigation should be pursued to attempt to identify the artefact represented by the Iron Age mould fragment.

Summary

Report amendment/production (1200 words)	Specialist (FEE)
Illustration (crucible fragments)	2 days (SI)

Table 17: Summary catalogue of materials. Assm – assemblage of sieved residues, FAS – fuel ash slag, FHS – flake hammerscale, SHS – spheroidal hammerscale, BOM – burnt organic matter

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
2009	2033			stone, moderate amount of slag including black glass (including spheroids), maroon spheres and other lining slags	Layer	alluvium		12th-14th c.	5
2009	2033 slag	44	assm	highly weathered slags - mainly blebs of FAS-like material, but some appear more texturally like iron slag, although most show at least a partial white colour, one small 'prill' may actually be iron.	Layer	alluvium		12th-14th c.	5
2010	slag	76	bag		Layer	alluvium			5
		40	1	spherical concretion on iron					
		32	3	concretions containing FAS/lining slag - not clear if that is what they are cored on, or simply a clast					
2010	2034 slag	88	assm	collection of fragments of vitrified lining, FAS-like blebs, droplets of black vesicular glass - possibly a smithing hearth assemblage? Contains at least two concretions (6 and 10g) on iron	Layer	alluvium			5
2011	slag	130	1	highly concreted piece - but resembles half of a biconvex small SHC	Layer	slumping			5
2020	2000		assm	stone, fired clay	Fill	fill of pit	2028		3
2020	2007		assm	fired clay (some reduced)	Fill	fill of pit	2028		3
2020	2002		assm	fired clay, stone	Fill	fill of pit	2028		3
2025	2003		assm	stone, dark blistery slags, vesicular lining slag	Fill	fill of pit	2024	8th-9th c.	4
2025	slag	362	bag wt		Fill	fill of pit	2024	8th-9th c.	4
		80	8	ashy and charcoal-rich sandy concretions - some certainly contain slag - some may be cored on slag; only slag well seen is lining slag, which may just be the concretion material vitrified					
		56	1	dense pale grey curved weathered slag - possibly burr from a SHC (small)					

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
		68	1	dense rounded concretion, slightly exploding so probably with iron core					
		16	1	gravelly concretion on slag fragment					
		112	3	variably concreted - three pieces of SHC crust					
2025	2003 slag	18	many	disintegrated piece of bleached vitrified hearth lining?	Fill	fill of pit	2024	8th-9th c.	4
		<1	1	lining slag prill? Really rust-cemented sand - might be natural					
		12	1	rounded slag lump in concretion					
2026	2001		assm	stone, variably reduced-fired clay fragments	Layer	redeposited natural			3
2026	2004 slag	6	4	highly decomposed slag blebs	Layer	redeposited natural			3
2027	2005		assm	fired clay	Fill	fill of pit	2028		3
2034	2008		assm	large amount of fired clay	Fill	fill of pit	2028		3
2039	2022		assm	FAS?	Layer	alluvium		9th-11th c.	4
2039	slag	6	3	broken piece of vitrified lining - lining itself is bright red but vitrified material is dominated by white crystals	Layer	alluvium		9th-11th c.	4
2043	2018		assm	fired clay, stone, BOM, probable slag	Fill	fill of pit	2046	12th-13th c.	5
2043		5	1	pale grey vesicular material similar to that from 20406/20906	Fill	fill of pit	2046	12th-13th c.	5
2044	2019		assm	stone, 1 slag fragment	Fill	fill of pit	2046	12th-13th c.	5
2049	2038		assm	stone	Layer	peat			5
2050	slag	360	bg wt		Layer	peat			5
		192	1	large complex accreted block - probably relates to failed hearth wall around the burr region of an SHC, but could simply be a deformed SHC					
		42	4	bloated, and vitrified hearth wall - clear glaze on sand-rich lining. Bleached white					
		24	2	concretions probably cored on slag					

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
		72	3	concretions cored on iron					
		22	1	rounded lump of vitrified ceramic and FAS					
2050	2053	16	9	lining or fuel ash slag blebs	Layer	peat			5
		256	1	large concretion containing iron (not clear if it bears slag containing iron or simply iron)					
2057	clinker	12.3	7	coke	Layer	dumping			7
2070	2010		assm	stone, slag fragment, lining slag fragment	Fill	fill of pit	2074		5
2083	2012		assm	stone	Fill	fill of pit	2085		5
2084	2013		assm	stone	Fill	fill of pit	2085		5
2086	2028		assm	stone, fired clay	Layer	alluvium		C3-C4+	3
2086	2031		assm	stone	Layer	alluvium		C3-C4+	3
2086	slag	392	bag wt		Layer	alluvium		C3-C4+	3
		378	2	broken highly weathered SHC 115mm x 80mm x 40mm (20mm bowl) still slight colour difference between bowl and top but very degraded, slightly biconvex, appears conventional. Small fragment missing, but >95% present.					
2089	2015		assm	large amount of fired clay with rare slag	Cut	pit			U
2096	2023		assm	stone, 1 irregular FHS/blister	Layer	alluvium		8th-9th c.	4
2100	2029		assm	stone	Fill	fill of gully	2098		
2122	2046		assm	stone	Layer	dumping			6
3002	slag	122	1	small dense SHC, folded, base has pendent prills, top probably smoothish but obscure, 50mm x 70mm x 30mm - no clear evidence for nature of fuel	Layer	Made ground		L.18th-19th c.	6
3008	3000		assm	stone, BOM	Layer	Dumped deposit		12th-14th c.	5

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
3053	vitrified clay	10.95	1	rotted, charcoal-bearing, slag	Layer	Peat			4
3080	3029		assm	probable BOM	Layer	Clay dump		13th c.	5
3081	3030		assm	stone	Layer	Peat	3082	12th-13th c.	5
3083	3028		assm	stone	Layer	Silting		LC3-C4	3
3111	clinker	3.7	2	irregular fragments of blackened fired clay - might just be coal shale as has organics on one side of one piece - but not conclusive	Fill	Single fill of pit/treethrow	3112	C3-C4	3
3158	slag	5	2	rotted fragments of iron slag	Layer	Levelling			4
3608	3033		assm	stone	Layer	Dumped deposit			3
3613	3037		assm	stone	Fill	Fill of Paleochannel	3617		0
3946	3045		assm	stone, slag droplet	Fill	Single fill of ditch	3945	RB	5
3949	3052		assm	stone	Fill	Fill of pit	3948		3
3949	slag	94	2	broken highly rotted dimpled iron slag sheet c 15mm thick	Fill	Fill of pit	3948		3
4056	3038		assm	stone	Fill	Fill of ditch	4047		3
4112	slag	122	1	part of a small thin SHC - fairly conventional , base slightly prilly, very dense, top rusted, 70x50x20mm fragment	Fill	Fill of pit	4111	12th-13th c.	5
5128	slag	4	2	dimples of highly altered vesicular slag, probably a lining slag, turned white in areas	Layer	Silty clay deposit			4
5118	3058		assm	fired clay, stone ,BOM	Layer	Clay deposit			5
5131	3061		assm	stone rust	Layer	Silty clay deposit		LC3-C4	4

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
5131	slag	166	bag wt		Layer	Silty clay deposit		LC3-C4	4
		160	4	broken fragments of perhaps half of a small SHC, appears to have been slightly glassy, is vesicular and contains charcoal clasts					
5135	slag	8	1	angular fragment of grey iron slag, vesicular, with clasts of charcoal	Fill	Fill of ditch	5136		3
5203	3059		assm	stone	Layer	Dumped deposit			4
5204	3049		assm	stone	Layer	Silting			0
5205	3048		assm	stone	Layer	Same as 3867			0
5206	3050		assm	stone	Layer	Same as 3867			3
5213	3054		assm	burnt bone, stone	Fill	Fill of pit	5211		4
5224	slag	712	bag wt		Fill	Fill of pit	5223	8th-9th c.	4
		702	1	110mm x 100mm x 45mm SHC, top dominated by 90mm diameter horizontal smooth surface with only minor dimpling, base obscured by gravelly concretion					
5233	3062		assm	stone	Layer	Re-deposited natural			3
5235	3064		assm	stone	Layer	Silting			0
5236	3065		assm	stone BOM	Layer	Silting			0
12060	glass production waste	32	1	strongly marginally devitrified clear green glass, glass appears folded - could be collapsed artefact	Fill	fill of pit	12061	13th-14th c.	5
15032	3066		assm	stone	Fill	fill of pit	15031		2
15131	3067		assm	stone, some FHS, fired clay	Fill	fill of pit	15129	MIA	2

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
15131	mould fragment	12.32	1	lip of mould, very hard sandy fabric, void is elongate and probably narrow, blackened in thin layer on red fabric	Fill	fill of pit	15129	MIA	2
15132	slag cu	18	1	45mm high sherd from side of crucible; wall 15mm thick at base and 10mm at rounded rim; outside with dark dimpled slag locally; inside similar but smaller dimples and with abundant corroded Cu alloy droplets (only one on outside), raised areas just show clear reddish glaze. Clear glaze extends onto one lateral surface to 40mm below rim. Rim line appear as deformed and possibly twisted. Probably conjoins (across failure) 41.1g piece below	Fill	fill of pit	15129	MIA	2
15132	crucible	72	bag		Fill	fill of pit	15129	MIA	2
		13.1	1	mould fragment in hard sandy fabric, shows 3 impressions, outer two are curved, central one more like the edge of a disc; 9mm separates one pair, 13mm the other; central object is 4mm thick and has an arc of radius c6-8mm					
		41.1	2	two conjoining sherds of crucible with prominent spout, probably c60mm tall, one side has failed and fallen outwards accompanied by much Cu oxide staining of glass					
		15.1	2	two non-conjoining sherds of spouts of similar crucibles, the fabric is similar to the organic-tempered material from other contexts- these sherds may not have had much/any use. Like the planar pieces these shows wiped surfaces, slightly buff fired on surface, dark grey within.					
15145	industrial related clay	86	bag wt	(note lime coating on many pieces)	Fill	fill of pit	15129		2
		26	10	reduced fired ceramic , 6-10mm thick, many freshly broken with debris, much organic temper as well as small gritty ?chert and sand (well rounded, medium to coarse grade)					
		30	1	irregular piece of mainly oxidised fired (gradational through piece) gritty clay 50x25x25mm, with organic temper too					
		26	1	oxidised fired material, not too dissimilar to reduced material above, in hand-made vessel, slightly angular, c35mm average radius, wall c12mm, but finely smoothed exterior largely spalled-off, outside probably more angular than inside, 35x40mm.					

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
15186	vitrified clay	2.02	1	same vesicular grey material as from 20406/20906/2043	Fill	fill of pit	15185	12th c.?	5
15203	15005		assm	stone, rust, piece of FHS	Fill	fill of posthole	15204		U
15214	15019		assm	stone, slag, rare FHS	Fill	fill of pit	15215	11th c.	5
15240	15009		assm	stone, small amount of BOM (bone?)	Fill	fill of posthole	15241		U
15244	15004		assm	stone, fired clay ,slag droplets	Fill	fill of posthole	15245		5
15258	15008		assm	burnt, coked, organic matter	Fill	fill of posthole	15259		U
15258	15008		assm	stone, rust, bone, fired clay, BOM	Fill	fill of posthole	15259		U
15260	15006		assm	fired clay ,stone, BOM, possible slag	Fill	fill of posthole	15261		U
15260	15006	11.9	assm	burnt bone and BOM, 2-3 pieces of sandstone, 1 green-glazed slag droplet	Fill	fill of posthole	15261		U
15264	15003		assm	fired clay, slag fragments, slag blebs, FHS, rare SHS	Fill	fill of posthole	15265	11th-12th c.	5
15270	15000		assm	stone	Fill	fill of pit	15271	MIA	2
15281	15001		assm	stone	Fill	fill of pit	15234	MIA	5
15305	15002		assm	stone, some minor slag and FHS	Fill	fill of posthole	15295		U
15416	15020		assm	stone ,possible fired clay, possible slag, bone	Fill	fill of ditch	15415	12th c.	5
15419		22	1	same vesicular grey material as from 20406/20906/2043	Fill	fill of ditch	15415	13th-14th c.	5
15429	15013		assm	stone, slag fragments, droplets and single FHS	Fill	fill of posthole	15430		U
15429	15013	0.67	c40	six pieces coal, 1 piece bone, rest mainly BOM	Fill	fill of posthole	15430		U
15434	15012		assm	stone, sparse slag and FHS	Fill	fill of posthole	15433		U
15440	15011		assm	stone, moderate FHS, some slag	Fill	fill of posthole	15439		U
15476	15009		assm	stone, slag droplets and blebs	Fill	fill of posthole	15477	10th-11th c.	4

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
15486	15010		assm	slag fragments, dense droplets, stone	Fill	fill of posthole	15487	11th c.	5
15489	15016		assm	stone, moderate slag fragments and droplets	Fill	fill of posthole	15488	10th-11th c.	4
15490	15015		assm	stone	Fill	fill of posthole	15488		4
15492	15018		assm	stone, BOM, rare slag	Fill	fill of posthole	15491		U
15492	15018	bag 2	assm	fossils, burnt material and some grains of probable coal	Fill	fill of posthole	15491		U
15493	15017		assm	stone, fired clay, BOM ,sparse slag	Fill	fill of posthole	15491		U
15579	15024		assm	stone	Fill	fill of ditch	15568		2
15692	15023		assm	stone	Fill	fill of ditch	15625		2
16004=16098	16004		assm	stone, abundant slag including angular black glass and maroon droplets	Fill	fill of pit	16003	12th-13th c.	5
16004=16095	16004 hs	<	3	2 blebs of possible clinker	Fill	fill of pit	16003	12th-13th c.	5
16004=16098	16004	0.67	17	burnt bone. 1 piece coal?	Fill	fill of pit	16003	12th-13th c.	5
16006	16002		assm	stone, 1 grain of FAS?	Fill	fill of pit	16005	MIA	2
16064	16003		assm	stone, probable slag fragments, rare FHS, burnt bone	Fill	fill of pit	16063	MIA	2
16070	16000		assm	stone ,slag sheets, FHS, slag droplets	Fill	fill of pit	16069	10th-11th c.	4
16100	16001		assm	stone	Fill	fill of pit	16101	MIA	2
16100	16001	0.11	16	BOM	Fill	fill of pit	16101	MIA	2
17017	17289		assm	stone , slag droplet, some poor FHS, single good SHS	Cut	gully			U
17020	17034		assm	stone, BOM, rare slag, rare FHS	Fill	fill of pit	17022	MC1-C2	3
17026	17033		assm	stone ,reduced fired clay?, probable slag, rust	Fill	fill of corn drier	17028		3
17026	17033	0.05	8	BOM	Fill	fill of corn drier	17028		3
17034	17000		assm	stone	Fill	fill of posthole	17019	LC3-	3

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	C4;EMSAX? Pottery spot	Period
17043	17002		assm	stone	Fill	fill of posthole	17041	C10-C11	3
17048	17243		assm	stone, rare probable FHS and SHS	Cut	corn drier			3
17050	17024		assm	fired clay	Fill	fill of corn drier	17048		3
17056	17001		assm	stone	Fill	fill of pit	17051		3
17069	17003		assm	stone ,slag flat, pottery	Fill	fill of corn drier	17048	Rom	3
17070	17022		assm	stone, fired clay, blistery slags	Fill	fill corn drier	17048	Rom	3
17071	17031	0.44	3	black material, some sandy so possibly Mn-pan, others may be burnt clay	Structure	ceramic lining in corn drier	17048		3
17075	17005		assm	fired clay, stone	Fill	fill of corn drier	17048	RB	3
17075	17023		assm	fired clay, stone, some slag	Fill	fill of corn drier	17048	RB	3
17075	17023	<1	2	red-surfaced black glass - probably clinker	Fill	fill of corn drier	17048	RB	3
17075	17023 vitrfied clay	0.55	8	BOM - posibly bone	Fill	fill of corn drier	17048	RB	3
17076	17032		assm	stone, minor slag, single FHS and single blister	Fill	fill of corn drier	17048		3
17077	17029		assm	stone	Fill	fill of corn drier	17048	C2+	3
17077	17006		assm	fired clay, stone	Fill	fill of corn drier	17048	C2+	3
17085	17007		assm	stone	Fill	fill of corn drier	17048	RB	3
17085	17026		assm	stone, fired clay, BOM, rust	Fill	fill of corn drier	17048	RB	3
17089	17008		assm	fired clay	Fill	fill of corn drier	17048	RB; C2-C4	3
17100	17009		assm	stone	Fill	fill of corn drier	17048		3
17110	17014		assm	stone, fired clay?	Fill	fill of ditch	17111	RB	2

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
17129	17010		assm	stone	Fill	fill of pit	17133	RB	3
17138	vitrified mat	0.61	1	coke	Fill	fill of pit	17137	13th-14th c.	5
17144	17012		assm	stone	Fill	fill of ditch	17145	11th-12th c.	5
17157	17011		assm	stone, possible slag flats	Fill	fill of well	17156	12th c.	5
17200	17030		assm	stone	Deposit	burnt natural chalk beneath corn drier 17048			0
17221	17040		assm	stone, rare slag fragment, one FHS, one lining slag droplet (double)	Fill	fill of corn drier	17182	11th-12th c.?	5
17242	17047		assm	stone and a few very varied slag fragments (maroon sheet, black glass, dark grey finely crystalline)	Fill	fill of posthole	17244	Rom	3
17270	17020		assm	stone, rust, BOM rare slag	Fill	fill of ditch	17145	10th-11th c.	5
17270	vitrified stone	7.74	3	2 pieces are a broken fragment of crystalline probable iron slag, one is a bleb of sandy, partially-melted material with a black glass - probably a lining slag	Fill	fill of ditch	17145	10th-11th c.	5
17272	17013		assm	stone	Fill	fill of ditch	17164		2
17283	17016		assm	stone, fired clay, slag films (FHS?)	Fill	fill of ditch	17295	11th c.	5
17291	17015		assm	fired clay, stone, BOM	Fill	fill of ditch	17295	11th-12th c.	5
17308	17019		assm	stone, 1 piece FHS	Layer	sand			0
17343	17025		assm	stone, fired clay, maroon glassy slag droplet	Fill	fill of corndrier	17048		3
17344	17027		assm	stone	Fill	fill of corndrier	17067		3
17349	17028		assm	stone, probable dark slag fragments	Fill	fill of corndrier	17067	RB?	3

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
17356	17044		assm	stone	Fill	fill of pit	17359	15th-16th c. (modern intrusive?)	5
17381	17039		assm	stone	Fill	fill of ditch	17384		2
17383	17038		assm	stone	Fill	fill of ditch	17384		2
17412	17041		assm	stone, slag blebs	Fill	fill of posthole	17411		U
17436	17046		assm	stone, fired clay, abundant slag droplets (possibly SHS?) but no FHS	Fill	fill of posthole	17434	C3-C4	3
17520	industrial waste	12.9	1	slab of slag with central cavity, laminated inclusions suggest this is clinker, but it might be an odd lining slag, 12mm thick, 35x35mm	Fill	fill of gully	17521		7
17635	burnt stone	5.58	1	natural stone	Fill	fill of posthole	17636	11th-12th c.	5
17637	slag	0.66	1	chip of rusty concretion (similar to the coatings on some slag pieces)	Fill	fill of pit	17638	LC3-C4+	3
17699	17043		assm	stone	Cut	posthole			7
18041	18001		assm	stone, sparse slag fragments and FHS	Fill	fill of tree throw	18040		U
18073	18002		assm	stones, moderate amount of fragments of black vesicular slag and some slag films	Fill	fill of posthole	18074	12th-13th c.	5
18073	18002	0.05	6	BOM	Fill	fill of posthole	18074	12th-13th c.	5
18078	18003		assm	stone, fired clay, slag, BOM, some FHS	Fill	fill of posthole	18080	12th-13th c.	5
18104	18000		assm	stone, rare FHS, clinker-like droplet	Fill	fill of posthole	18103		U
18104	18000 vit mat	0.36	15	BOM	Fill	fill of posthole	18103		U
18104	18000	<	1	slag droplet	Fill	fill of posthole	18103		U

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
19000	vitrified clay	4.28	1	maroon-surfaced black glassy slag - clinker	Fill	fill of tree throw	19060	RB	5
19028	slag	8	2	gravelly vesicular very dark slag, verging on a purple tint to the black slag. Contains various gravelly clasts and a sandy material that could be decomposed sandstone or sandy hearth wall	Fill	fill of pit	19027	12th c.?	5
19028	slag	14	2	broken lump of clinkery material, contains both sandstone and shale clasts, purplish smooth surfaces and purple tint to dark crystalline parts, some accreted sand on outside, probably true clinker	Fill	fill of pit	19027	12th c.?	5
19042	charoal	16.12	assm	coal shale - broken single lump probably - has been burnt and has clinker coating	Fill	Fill of posthole	19040		7
19092	19000		assm	stone	Fill	Fill of pit	19093	MIA	2
19102	19004A		assm	stone	Fill	Fill of pit	19088		2
19116	industrial residue	4.59	assm	fragmented rounded used coke particles up to 20mm	Fill	Fill of posthole	19115		7
19120	19002		assm	stone	fill	Fill of pit	19119		U
19211	19003		assm	stone	Fill	Fill of Pit	19215	MIA	2
19214	19004		assm	stone	Fill	Fill of pit	19215	MIA	2
19232	19005		assm	stone	Fill	fill of pit	19088		2
20014	slag	66	3	broken section from centre of a small SHC , slightly green top passing through dense slag into prilly base surrounding charcoal clasts	Fill	fill of ditch	20013	C1	2
20045	20004		assm	stone, vesicular clinkery slag fragments	Fill	fill of kiln	20044	RB; MC1-C2	5
20045	slag	52	2	gravelly clinkery slag, larger piece is cored on large slab of shale with hints of fossils	Fill	fill of kiln	20044	RB; MC1-C2	5
20047	20000		assm	stone, bone, rare slag, one slag droplet	Fill	Fill of kiln	20044	10th-11th c.	5

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
20124	20002		assm	stone	Fill	fill of pit	20119	MIA	2
20125	20001		assm	stone, rust	Fill	fill of pit	20119	MIA	2
20185	20051		assm	stone	Fill	fill of pit	20184		U
20198	slag	288	6	6 major pieces plus bits, apparently from a single well-preserved SHC. Pale grey colour, lower crust dense with tubular vesicles connecting to tabular ones above, uppermost part seen is granular but not well seen. Proportion of original cake uncertain, slag mainly with fine equant grains	Fill	fill of pit	20153 + 20794	13th c.	5
20219	20028		assm	stone, rare slag fragments	Fill	Fill of kiln	20044		5
20220	20021		assm	stone, single SHS	Fill	Fill of Kiln	20044	12th c.	5
20220	20025		assm	stone, possible fired clay	Fill	Fill of Kiln	20044	12th c.	5
20294		31	1	small fragment from 25mm thick SHC with very smooth top and charcoal rich base, with very slightly prilly margin	Fill	fill of ditch	20293	MIA	4
20325	20048		assm	stone	Cut	Gully		LBA	U
20326	20049		assm	stone	Fill	fill of gulley	20235		U
20336	20052		assm	stone	Fill	Fill of pit	20238	LBA	1
20368	20027		assm	<1 stone	Fill	Fill of Pit	20370	12th-14th c.	2
20391	vitrfied clay	9.71	1	maroon-surfaced black glassy slag - clinker	Fill	fill of posthole	20390	RB	3
		0.29	1	coke					
20406		1	1	pale grey vesicular slag - possibly a highly bloated ceramic - identical to piece from 20906 but do not appear to join	Fill	Fill of pit	20405	8th-9th c.	4
20906	slag	2	1	pale grey vesicular slag - possibly a highly bloated ceramic (should this be 20406?)	Fill	fill of post hole	20907		U
20430		18	1	protrusion of lining slag and glazed material from surface of highly vitrified sandy lining	Fill	fill of pit	20392		3

20435	20003		assm	stone, fired clay, blebby slags, FHS	Fill	Fill of pit	2153		5
20485	20005		assm	stone	Void				VOID
20515	industrial waste	2.65	1	coke	Fill	fill of pit	20513	17th c.	2
20561	20006		assm	stone, possible burnt clay, glassy slag fragments	Fill	fill of kiln	20044		5
20585	20007		assm	stone, BOM	Fill	fill of Kiln	20044		5
20586	20008		assm	stone	Fill	fill of Kiln	20044		5
20588	20010		assm	stone	Fill	fill of pit	20153	MIA	2
20589	20011		assm	stone	Fill	fill of pit	20153		2
20590	20012		assm	fired clay (probably some reduced)	Fill	fill of pit	20153	MIA	2
20609	slag	162	1	heavily encrusted slag piece - probably around 75% of small SHC. Starting to explode, so contained metallic iron	Fill	fill of pit	20569	12th-13th c.	5
20618	20017		assm	stone, rust?, single FHS	Fill	fill of kiln	20044		5
20619	20018		assm	stone, some slag and FHS	Fill	fill of kiln	20044		5
20620	20019		assm	stone	Fill	fill of kiln	20044		5
20624	vitrfied clay	1.69	1	clinkery slag on high vitrified siltstone chip	Fill	fill of ditch	20554		4
Context	**Sample**	**Wt.**	**No.**	**Description**	**Type**	**Description**	**Fill of**	**Pottery spot**	**Period**
20756	20020		assm	stone, fired clay, one SHS, one slag droplet	Fill	Fill of hearth	20755	12th-14th c.	5
20792	slag	42	1	natural Mn pan	Layer	Silting Deposit		C1	4
20805	20023		assm	stone	Fill	Fill for kiln	20044		5
20807	20024		assm	stone - rich in natural Fe-oxide granules, but also some SHC and FHS in minor amounts	Fill	Fill of grave cut	20809	12th-13th c.	5
20807	20024	1	1	small fragment of greenish, highly porous glassy FAS / lining	Fill	Fill of grave	20809	12th-13th c.	5

	slag			slag		cut			
		<1	1	4mm bleb of brown clinkery appearing FAS					
20811	20026		assm	stone	Fill	Fill of grave cut	20813	Rom	3
21015	20031		assm	stone	Fill	fill of kiln	20044		5
21016	20029		assm	stone	Fill	fill of kiln	20044		5
21035	20031		assm	stone	Cut	Gully			4
21041	vitrified materials	104	13	small SHC fragment - dense, large olivine crystals, fresh,	Fill	fill of pit	21039	10th-11th c.	4
		2	1	large slag flat					
		6	1	gravelly lining slag					
21062	20030		assm	stone	Fill	Fill of pit	21060		6
21062	20030		assm	abundant grey porous material (same vesicular grey material as from 20406/20906/2043 in macro), some droplets, at least one thin shelled and hollow	Fill	Fill of pit	21060		6
21080	20037 slag	4	1	burnt bone	Skeleton	Skeleton		MIA	4
sk 20080	20036		assm	stone, possible slag, single FHS [*sk 21080 assumed correct number*]	Skeleton	Skeleton		MIA	4
sk 21080	20039		assm	stone, two small slag or clinker blebby pieces	Skeleton	Skeleton		MIA	4
sk 21080	20035		assm	stone, single FHS	Skeleton	Skeleton		MIA	4
sk 21080	20038		assm	stone, poor slag piece	Skeleton	Skeleton		MIA	4
sk 21080	20037		assm	stone, 1 vesicular glassy slag chip	Skeleton	Skeleton		MIA	4
sk 20080	20036	0.25	8	2 pieces bone, 6 pieces of stone	Skeleton	Skeleton		MIA	4
21124	20033		assm	fired clay (half of which is reduced)	Fill	Fill of pit	21123		4
21303	20042		assm	stone	Fill	Fill of Pit	21193	MIA	2
21304	20041		assm	stone	cut	Grave cut			2

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
21306	20043		assm	stone	Fill	fill of grave	21305	MIA	2
21306	20044		assm	stone	Fill	fill of grave	21305	MIA	2
21320	20053		assm	stone, 1 possible FHS	Fill	Fill of pit	20238	LBA	1
21332	pottery	2.98	1	apparently complicated fired clay strips surrounded by black residue, 17x28x6mm, 2 overlapping strips, very odd - could it be some sort of packing from ,for instance inside a cauldron rim, shows slightly out-turned rim, raised line 6mm below on inside, and outer strip finishes 12mm below rim, leaving step of c2mm	Layer	natural silting layer			2
21681	slag	20	1	maroon surfaced black glassy slag in complex shape - clinker	Fill	fill of pit	21672	5th-7th c.	4
21384	20055		assm	<1mm large bag of fired clay,	Fill	fill of pit	21377		2
21390	20047		assm	large collection of stone dominated by highly polished Fe-oxides	Fill	fill of pit	21398	MIA	2
21620	20054		assm	stone	Fill	fill of ditch	21197+21116		2
21794	pottery crucible	15.64	1	sheet of ceramic c5mm thick, curved edge, one face shows increased vitrfication and reddening to the outside, the other face is less vitrified, has a smoothed, lightly striated surface, but has a layer of black glass and sand adhering to the surface	Fill	Fill of pit	21786		2
21920	20056		assm	stone	Fill	Fill of Grave cut	21922		6
21933	20057		assm	stone, a few slag fragments, one SHS/droplet	Fill	fill of ditch	21915		2
21950	slag	108	assm	bag of sandy material, mixed with lens of charcoal and with partially fused patches, some bands have taken on pink-violet colour that might hint at Pb-Zn contamination possibly	Fill	fill of ditch	21944	13th-14th c.	5
22017	20058		assm	stone fired clay, blebby slags, slag droplets, FHS	Deposit	Remains of superstructure			2

Context	Sample	Wt.	No.	Description	Type	Description	Fill of	Pottery spot	Period
22017	20058	0.19	9	1 stone, 8 BOM	Deposit	Remains of superstructure			2
22019	20060		assm	large quantity of fired clay, a few slag fragments including flats	Deposit	possible base of hearth			2
22019	20060	<	1	slag droplet	Deposit	possible base of hearth			2
22021	20063		assm	fired clay, a few FHS, some probable SHS, slag droplets - one rather clinkery-looking, some slag fragments - all sparse	Deposit	Remains of hearth			2
22021	20074	0.47	c22	mainly BOM, 2 stones	Deposit	Remains of hearth			2
22021	20053	<	1	slag droplet	Deposit	Remains of hearth			2

Table 18: Summary interpretation of assemblage by context

Context	Type	Description	Fill of	Pottery spot	Phase		Summary interpretation
17308	Layer	sand			0		trace evidence for iron-working
21320	Fill	Fill of pit	20238	LBA	1		possible trace evidence for iron-working
15131	Fill	fill of pit	15129	MIA	2		evidence for copper alloy casting, trace evidence for iron-working
15132	Fill	fill of pit	15129	MIA	2		evidence for copper alloy casting
15145	Fill	fill of pit	15129		2		possible evidence for copper alloy casting
16064	Fill	fill of pit	16063	MIA	2		trace evidence for iron-working
20014	Fill	fill of ditch	20013	C1	2		evidence for iron-working
20515	Fill	fill of pit	20513	17th c.	2		evidence for coal use - supports late date
21332	Layer	natural silting layer			2		possible metalworking residue
21794	Fill	Fill of pit	21786		2		evidence for copper alloy casting
21933	Fill	fill of ditch	21915		2		possible trace evidence for iron-working
22017	Deposit	Remains of superstructure			2		trace evidence for iron-working
22019	Deposit	possible base of hearth			2		trace evidence for iron-working
20021	Deposit	Remains of hearth			2		trace evidence for iron-working
22038	Deposit	layer			2		trace evidence for iron-working
22039	Deposit	hearth layer			2		evidence for metalworking
2026	Layer	redeposited natural			3		evidence for metalworking
2086	Layer	alluvium		C3-C4+	3		evidence for iron-working
3111	Fill	Single fill of pit/tree-throw	3112	C3-C4	3		possible evidence for coal use
3949	Fill	Fill of pit	3948		3		evidence for iron-working
5135	Fill	Fill of ditch	5136		3		evidence for iron-working using charcoal
17020	Fill	fill of pit	17022	MC1-C2	3		trace evidence for iron-working
17026	Fill	fill of corn drier	17028		3		possible trace evidence for metalworking
17048	Cut	corn drier			3		trace evidence for iron-working
17069	Fill	fill of corn drier	17048	Roman	3		trace evidence for iron-working
17070	Fill	fill corn drier	17048	Roman	3		trace evidence for iron-working
17075	Fill	fill of corn drier	17048	Roman	3		possible trace evidence for iron-working using coal
17076	Fill	fill of corn drier	17048		3		trace evidence for iron-working
17242	Fill	fill of posthole	17244	Roman	3		possible trace evidence for iron-working using coal
17343	Fill	fill of corndrier	17048		3		possible trace evidence for iron-working using coal
17349	Fill	fill of corndrier	17067	Roman?	3		trace evidence for iron-working

17436	Fill	fill of posthole	17434	C3-C4	3		evidence for iron-working
Context	**Type**	**Description**	**Fill of**	**Pottery spot**	**Phase**		**Summary interpretation**
20391	Fill	fill of posthole	20390	Roman	3		evidence for using coal
20430	Fill	fill of pit	20392		3		evidence for metalworking
2025	Fill	fill of pit	2024	8th-9th c.	4		evidence for iron-working
2039	Layer	alluvium		9th-11th c.	4		evidence for metalworking
2096	Layer	alluvium		8th-9th c.	4		trace evidence for iron-working
3053	Layer	Peat			4		evidence for metalworking
3158	Layer	Levelling			4		evidence for iron-working
5128	Layer	Silty clay deposit			4		evidence for metalworking
5131	Layer	Silty clay deposit		LC3-C4	4		evidence for iron-working
5224	Fill	Fill of pit	5223	8th-9th c.	4		evidence for iron-working
15476	Fill	fill of posthole	15477	10th-11th c.	4		trace evidence for iron-working
15489	Fill	fill of posthole	15488	10th-11th c.	4		trace evidence for iron-working
16070	Fill	fill of pit	16069	10th-11th c.	4		trace evidence for iron-working
20294	Fill	fill of ditch	20293	MIA	4		evidence for iron-working
20406	Fill	Fill of pit	20405	8th-9th c.	4		evidence for metalworking
20624	Fill	fill of ditch	20554		4		evidence for metalworking
21041	Fill	fill of pit	21039	10th-11th c.	4		evidence for iron-working
sk 21080	Skeleton	Skeleton		MIA	4		trace evidence for iron-working and possibly coal use
21681	Fill	fill of pit	21672	5th-7th c.	4		evidence for using coal
2009	Layer	alluvium		12th-14th c.	5		trace evidence for iron-working (possibly with coal)
2010	Layer	alluvium			5		trace evidence for iron-working
2011	Layer	slumping			5		evidence for iron-working
2043	Fill	fill of pit	2046	12th-13th c.	5		trace evidence for metalworking
2044	Fill	fill of pit	2046	12th-13th c.	5		trace evidence for metalworking
2050	Layer	peat			5		evidence for iron-working
2070	Fill	fill of pit	2074		5		trace evidence for metalworking
3946	Fill	Single fill of ditch	3945	Roman	5		trace evidence for metalworking
4112	Fill	Fill of pit	4111	12th-13th c.	5		evidence for metalworking
12060	Fill	fill of pit	12061	13th-14th c.	5		uncertain significance
15186	Fill	fill of pit	15185	12th c.?	5		possible trace evidence for metalworking
15214	Fill	fill of pit	15215	11th c.	5		trace evidence for iron-working
15264	Fill	fill of posthole	15265	11th-12th c.	5		trace evidence for iron-working
15416	Fill	fill of ditch	15415	12th c.	5		possible trace evidence for metalworking

15419	Fill	fill of ditch	15415	13th-14th c.	5		possible trace evidence for metalworking
15486	Fill	fill of posthole	15487	11th c.	5		trace evidence for iron-working
Context	**Type**	**Description**	**Fill of**	**Pottery spot**	**Phase**		**Summary interpretation**
16004=16098	Fill	fill of pit	16003	12th-13th c.	5		trace evidence for metalworking (probably using coal)
17157	Fill	fill of well	17156	12th c.	5		trace evidence for iron-working
17221	Fill	fill of corn drier	17182	11th-12th c.?	5		trace evidence for iron-working
17270	Fill	fill of ditch	17145	10th-11th c.	5		evidence for iron-working
17283	Fill	fill of ditch	17295	11th c.	5		trace evidence for iron-working
18073	Fill	fill of posthole	18074	12th-13th c.	5		trace evidence for metalworking
18078	Fill	fill of posthole	18080	12th-13th c.	5		trace evidence for iron-working
19000	Fill	fill of tree throw	19060	Roman	5		evidence for coal use
19028	Fill	fill of pit	19027	12th c.?	5		evidence for metalworking (possibly using coal)
20045	Fill	fill of kiln	20044	Roman; MC1-C2	5		evidence for metalworking (possibly using coal)
20047	Fill	Fill of kiln	20044	10th-11th c.	5		trace evidence for metalworking
20198	Fill	fill of pit	20153 + 20794	13th c.	5		evidence for iron-working
20219	Fill	Fill of kiln	20044		5		trace evidence for metalworking
20220	Fill	Fill of Kiln	20044	12th c.	5		trace evidence for iron-working
20435	Fill	Fill of pit	2153		5		trace evidence for iron-working
20561	Fill	fill of kiln	20044		5		trace evidence for metalworking
20609	Fill	fill of pit	20569	12th-13th c.	5		evidence for iron-working
20618	Fill	fill of kiln	20044		5		trace evidence for iron-working
20619	Fill	fill of kiln	20044		5		trace evidence for iron-working
20756	Fill	Fill of hearth	20755	12th-14th c.	5		trace evidence for iron-working
20807	Fill	Fill of grave cut	20809	12th-13th c.	5		trace evidence for iron-working
21950	Fill	fill of ditch	21944	13th-14th c.	5		evidence for metalworking (possibly non-ferrous)
3002	Layer	Made ground		L.18th-19th c.	6		evidence for iron-working
21062	Fill	Fill of pit	21060		6		possible trace evidence for metalworking
2057	Layer	dumping			7		evidence for coal use
17520	Fill	fill of gully	17521		7		probable evidence for coal use
19042	Fill	Fill of posthole	19040		7		evidence for coal use
19116	Fill	Fill of posthole	19115		7		evidence for coal use

2089	Cut	pit			U		possible trace evidence for metalworking
15203	Fill	fill of posthole	15204		U		trace evidence for iron-working
15260	Fill	fill of posthole	15261		U		possible trace evidence for metalworking
15305	Fill	fill of posthole	15295		U		trace evidence for iron-working
15429	Fill	fill of posthole	15430		U		trace evidence for iron-working and coal use
15434	Fill	fill of posthole	15433		U		trace evidence for iron-working
Context	**Type**	**Description**	**Fill of**	**Pottery spot**	**Phase**		**Summary interpretation**
15440	Fill	fill of posthole	15439		U		trace evidence for iron-working
15492	Fill	fill of posthole	15491		U		evidence for coal use and possible trace evidence for metalworking
15493	Fill	fill of posthole	15491		U		trace evidence for iron-working
17017	Cut	gully			U		trace evidence for iron-working
17412	Fill	fill of posthole	17411		U		trace evidence for iron-working
18041	Fill	fill of tree throw	18040		U		trace evidence for iron-working
18104	Fill	fill of posthole	18103		U		trace evidence for iron-working
20906	Fill	fill of post hole	20907		U		possible trace evidence for metalworking

Table 19: list of identifiable SHC fragments, ordered by phase and context

Piece weight	Piece note	Slag note	Original weight	Context	Phase
66g	fragment			20014	2
378g	>95%		400g	2086	3
112g	3 pieces crust			2025	4
160g	c. 50%	charcoal	320g	5131	4
702g	100%		702g	5224	4 (8-9)
31g	fragment	charcoal, smooth top		20294	4
104g	broken fragment	coarse dense		21041	4 (10-11)
130g	c. 50%?		260g	2011	5
192g	block (burr?)			2050	5
122g	fragment			4112	5
288g	6 pieces			20198	5 (13)
162g	c. 75%	exploding	220g	20609	5 (12-13)
122g	100%		122g	3002	6

APPENDIX 6: THE FIRED CLAY AND CLAY TOBACCO PIPE BY ANGUS CRAWFORD

Clay tobacco pipe

The clay tobacco pipe assemblage consisted of six unmarked stem fragments weighing 14g. None of the material was of archaeological significance and is not discussed further.

Fired clay

A total of 4337 fragments of fired clay weighing 75.4kg were recorded from 219 deposits. The majority of the material comprises amorphous fragments from which little information or function could be ascertained, and is not discussed further. Fragments of daub and other structural-like material were identified, as were clay objects, and are discussed below. While a small quantity of fired-clay was retrieved from Bronze Age dated pit (20238), the majority of the assemblage could be dated to the Iron Age, Roman and Late Medieval phases.

Daub was identified from a number of deposits, with the majority of the material being of limited interpretive value. A large quantity of daub-like material, which was distinctive with its pale colouring and highly fired appearance, was also recorded. These large fragments were readily identified from deposits 2090, 2091, 19022, 20191 and 21933 with similar material of smaller size and count recorded from other deposits. The material was unusual due to the ceramic-like quality of the material, indicating prolonged exposure to a consistently high heat. The structural nature of the material was evident with the majority of the fragments exhibiting large stake impressions with limited evidence for interwoven wattle. As mentioned, these fragments were of some size with, for example, the majority of the material from deposit 2091 having an average weight of 100g per piece. Although highly fired, none of the material was vitrified and had not been exposed to an intense heat as would be expected with material from a furnace structure.

Fired clay objects

A complete triangular weight with perforations across all three corners was retrieved from deposit 16065. Further incomplete or fragmentary weights were recovered from deposits 16064, 19113 and 20948 and appeared to be of similar type. Tri-perforated clay weights of this type are common finds from Iron Age sites and are typically interpreted as for use with vertical, warp weighted looms. Good parallels can be found from the major Iron Age sites at Danebury in Hampshire and Winnall Down in Winchester (Poole 1984; Bates and Winham 1985).

Statement of potential and recommendations for further analysis

While the majority of the fired clay was of limited archaeological interest, the highly fired material discussed above warrants further attention. This should include a descriptive analysis of the fabric and closer examination of the material in an attempt to identify any details that could identify the structural origin of the material. The loomweights should be described fully and illustrated as part of the final publication.

Summary

Catalogue descriptions and report	3 days (AFO)
Illustration	0.5 days (SI)

APPENDIX 7: THE CERAMIC BUILDING MATERIAL BY ANGUS CRAWFORD

The ceramic building material assemblage amounted to 215 fragments weighing 11.5kg. The material was examined, counted and weighed. The material was also recorded by period, with variations in the Roman fabrics recorded (see below). The condition of the material was generally good with a range of recognisable forms present. All of the ceramic building material could be dated to the Roman period onwards.

Roman
The Roman ceramic building material consisted of 26 fragments weighing 2.5kg. Of these 19 were identified as pieces of roof tile with 12 fragments of *tegula* and three of *imbrex*. Three fragments were identified as box-flue tile with two exhibiting distinct combed "keying". A limited range of fabric types were identified within the Roman ceramic building material (see below). Little information was present beyond identification to type, the material representative of Romanised building technology, including heating systems. While there was no archaeological information to support the presence of a Romanised building on site, the material recovered does suggest that such a structure may have stood in the near vicinity. The limited range of fabric types within the material may also indicate that the material originated from a single structure.

Medieval
Fragments of brick and roof tile were recovered from several deposits with the majority of the roof tile being flat, with a few fragments retaining partial peg-holes. The roof tile fragments were predominantly of a deep red sandy fabric, though occasionally, unusual white to buff coloured fragments were also noted.

The medieval brick assemblage was of small size and fragments were generally identified on thickness or based on the pottery phasing. Where present, thicknesses of the medieval bricks tended to be around 1 $^{1}/_{2}$″ to 1 $^{3}/_{4}$".

Post-medieval/modern
The post-medieval and modern brick assemblage consisted of 13 fragments. Post-medieval bricks were defined by the thicknesses, generally in the range of 2" to 2 $^{3}/_{4}$", and usually with reddish colouring and hard fired. Modern bricks were of sizes that ranged from 3" or slightly more, the larger size in part a result of the change in brick taxation during the late 18th century. Bricks of more modern manufacture were also identifiable from technological developments such as production that allowed indented 'frogs' and the use of stamps (such as LBC for the London Brick Company).

Statement of potential and recommendation for further analysis
All of the ceramic building material was of limited archaeological significance. The Roman assemblage was small, fragmented and dispersed. While possibly indicating the presence of a Romanised building in the area, the material presents limited potential for further analysis and requires no further work. Analysis of the medieval material would also provide little further information and no further work is required with the post-medieval and later ceramic building material. The Roman and medieval material should be described within a paragraph in the final publication. The assessment report here would provide an adequate level of recording for the remaining material to be deposited with the archive.

Summary

Catalogue descriptions and report .5 days (FO)

Table20: Roman ceramic building material fabric descriptions

Fabric code	Fabric description
T1	Reddish orange (occasionally with a reduced core), hard fabric with common sand
T2	Reddish brown (appears burnt), hard and fine fabric with sparse sand
T3	Reddish orange, hard fabric with common sand with rare chert and/or sandstone-like inclusions
T4	Reddish orange, hard fabric with common sand and large angular flint-like inclusions
T5	Reduced, hard fabric with common sand
T6	Reddish orange, hard fabric with common sand and occasional small limestone inclusions
T7	Orange sandy fabric with coarse texture, frequent/common limestone inclusions

APPENDIX 8: THE COINS BY ANGUS CRAWFORD

Four coins were identified with provisional identifications in Table 21. Identification was difficult in two instances due to soil or corrosion products obscuring the surface detail. The coins were dated from the Iron Age, Roman and modern period, with the Roman coins x-rayed to assist in identification (X-Ray plate XRK11/89). All of the coins are discussed in detail below.

A single cast-bronze Iron Age issue, attributed to the Cantii tribe of Kent, was recovered from deposit 22039. While dating of these types of coins is problematic, Hobbs (1996, 17) suggest an mid to late first century BC date range, while Van Arsdell proposes a more specific issue period of 50-45 BC (Van Arsdell 1989, 88 Fig 135-1).

Two copper-alloy Roman coins were identified, though both require cleaning to permit full identification. A nummus recovered from deposit 3755 was a 4th-century issue of the house of Constantine, and a probable nummus of Diocletian (AD 284-305) was recovered as an unstratified find from Trench 12.
A three pence piece of George VI dated 1938 was also recovered as an unstratified find, from Trench 12, and was of no archaeological interest and is not discussed further.

Statement of potential and recommendation for further analysis
Two of the coins were of some archaeological significance as chronological markers. The presence of the Iron Age coin within deposit 22039 would suggest a 1st century BC *terminus post quem* date for that deposit. The Nummus from deposit 3755 requires further cleaning and research to secure a full identification and date for the coin. The possible Diocletian issue, recovered as an unstratified find, was of limited archaeological significance beyond indicating Roman activity on site during the late 3rd to early 4th century.

Both of the Roman coins should be cleaned to confirm their identifications. The Iron Age and Roman coins should be catalogued and described in a paragraph, using appropriate classifications, as part of the final report.

Summary

Report/coin list	0.5 day (AFO)
Conservation	fee (external specialist)

Table 21: Provisional coin list

Context	Fill of	Ra. No.	Classification	Date	Comment
3755	3754	3002	Unidentified Roman Nummus, possibly house of Constantine	C4	Requires cleaning
Tr. 12	U/S		Nummus of? Diocletian: Obverse unclear with partial legend **IOC** and Laureate head right. Reverse: GENIOPOPVLIROMANI Exe: B/?/TR - Genius standing left, holding patera and cornucopia. (Treveri).	*C*284-305	Requires cleaning
Tr. 12	U/S		Three pence: George VI	1938	Good condition
22039	layer		Bronze Potin: Cantii tribe, Van Arsdell type 135-1, BM types 715-720	C1BC	Good condition

APPENDIX 9: THE METAL FINDS BY ANGUS CRAWFORD

A total of 125 objects of metal were recovered from 83 separate deposits. A large majority comprise items of iron (106), with small groups of objects of copper alloy (15) and lead alloys (4) were recorded. The ironwork and the copper alloy finds were X-rayed (X-ray plates XRK1186–91) as part of a conditional assessment undertaken by Karen Barker (artefacts conservator). Overall, the condition of the metalwork was typical for an assemblage of its date and burial environment; the iron finds are corroded and the copper alloy objects exhibit various levels of green-coloured corrosion. Similarly the objects of lead feature some light, powdery corrosion, though the forms of the objects are clear. The metalwork has been temporarily stabilised through appropriate packaging.

The metalwork is set out in Table 22. Selected items which are individually dateable or otherwise of interest are described below according to material type and period.

Iron

Objects of Iron consisted of personal objects, tools, structural fittings (including nails), household and agricultural items. A number of objects will require specialist cleaning to remove corrosion products and allow further identification.

Iron Age

The Iron Age assemblage was of limited size and included knife fragments and an iron implement. Both blades were fragmentary with the one from deposit 21839 (Ra 20024) appearing to have a partially curved tang with a fragment of attached blade. The tang is a continuation of the back of the knife which would have had a slim blade with a single edge, and appear similar to Manning's types 11 and 18b (1985, 117). The fragment from deposit 19210 was also a part blade and tang and from a larger knife. The tang was lower than the back of the knife and similar to Manning's type 15 (ibid.,109). A tanged iron implement, from deposit 19089, resembled an object recorded from Danebury which was identified as a tanged chisel for wood or bone working (Sellwood 1984a, 351-2, Fig 7.11; no. 2.48).

Other Period 2 iron objects included an iron sheet fragment from deposit 15130 and a possible edging strip from deposit 21340 (Ra 2002). A nail-shaft fragment was recorded from deposit 20014 and a quantity of unidentifiable iron fragments were recovered from deposit 20588 (Ra 20010).

Roman

The Roman iron assemblage consisted predominantly of nails or nail fragments; deposits 1106, 2026, 3534, 5135, 5168,17011,17129,17242 (Ra17047) and 20811(Ra2007). All of the nails were forged types with flat disc like heads and shafts with a square or slightly rectangular cross section and similar to Manning's type 1b (1985, 133–4). A small quantity of hob-nails was identified by X-ray analysis from late medieval phased deposit 12062, all were likely residual Roman artefacts.

Two joining fragments from a knife blade were recovered from deposit 3092. The blade was heavily encrusted, though had a single edge and a straight spine that falls towards the tip. The tang appeared to be either in line with the back of the blade or slightly offset from it. X-ray analysis indicated that there may also be a groove down the length of the blade. An exact parallel was not identified though the blade is similar to Manning's type 18b (1985, 116-17).

Further Roman period ironwork included a fragment of curved strip from deposit 5202 (Ra 3007), and a strip with a square rivet hole from deposit 17050 (Ra 17047). Neither object could be identified further.

Anglo-Saxon

Nails

A number of nails or nail fragments were recorded from deposits 3066, 5131, 5251, 18039, 20792, and 21081. The nails varied in size but were all forged with flat disc-like heads. Seven nails of this form were recovered from burial 21080 (Ra's 20014 to 20020). There was slight variation in length, *c.* 50 to 65mm, though they exhibit a consistent weight range of 12-15g each. This suggested that the nails were manufactured from regular sized, or weighted, cuts of iron bar and manufactured simultaneously, or acquired selectively, to construct the burial casket.

Knife blades

Knife blade fragments were recovered from deposits 2096, 3167 and 17074 (Ra 3018). All of the blades were in corroded condition with attached soil and corrosion products making full identification problematic. The fragment from deposit 2096 appears to be a slim length of blade only and no further diagnostic information could be recorded. The blade fragment from deposit 3167 was of small size and appeared to consist of a small section of whittle tang and partial single-edged blade. The fragment from deposit 17074 (Ra 3018) consists of a section of blade with tang and was similar to Evison's early

medieval type 1 knives, which feature a concave shoulder with curved backs and curved cutting edges (1987, 113).

The spring end from a set of hand shears was recorded from deposit 2025. The 'omega-styled' spring appeared to be from a small sized set, probably for domestic rather than agricultural use. Shears of this type are long-lived, with published Roman and medieval examples not differing significantly in design (Manning 1985, Ottaway and Rogers 2002).

Medieval

Nails

Nails were recovered from deposits 3024 3025 3034 15177 15188 15419, 16004 (Ra 3011), 17404, 19000, 20152, 20435 (Ra 2003), 20609, 20807(Ra 20024) and 21003. The majority feature disc shaped heads and square sectioned shafts similar to Goodall's type 1 nails (1980, 106-7).

Knives

Blade fragments were recovered from deposits 15212 (Ra 3009), 17291 (Ra17015) and 20991. All were of small size with the fragments from deposits 15212 (Ra 3009) and 20991, probably from narrow bladed knives with a straight back and single edge. The blade from deposit 20991 has a whittle tang in line with the blade, while that from deposit 15212 has a whittle tang that appeared to be in line with the blade edge. This may be the result of extensive re-sharpening, or the blade losing the edge due to corrosion. The blade fragment from deposit 17291 (Ra17015) was also from a fine narrow blade. It featured a rounded shoulder curving towards a central whittle tang (see Cowgill *et al* 2000, 85; Fig 58, no. 61).

Buckle

A buckle from a belt or strap was recorded from deposit 12062. It was of simple type with a looped rectangular frame and attached pin. Buckles of this type are not particularly common from medieval sites, though they were utilized throughout the period (Goodall 1980, 172). A hooked object with an offset looped terminal from deposit 5137 may have originated from a buckle or other fastener. It bears some resemblance to snaffle bits of medieval type (Clarke 1995, 47-9).

Tools

A short length of squared iron bar with tapered and sharply pointed ends appeared to be an awl or a punch and was recovered from deposit 19028. Although of simple design comparable implements of medieval date are known (Goodall 1980, 60-1).

Hooks

A suspension hook with closed terminal loop was recorded from deposit 20067 (Ra20010). Similar objects were used with hanging chains during the medieval period (Goodall 1980, 169). A tool like object with a 'V' shaped hooked end was retrieved from deposit 21003. A parallel is yet to be identified though a medieval date was likely.

Horseshoes

A near complete horseshoe was recorded from deposit 17386. It was similar to Clark's type 3 classification and was probably of 13th or 14th-century date (Clarke 1995, 86-8).

Other objects

Two similar objects from deposits 2043 and 15417 (Ra 15003) consisted of thin iron strips bent into rectangular shapes. Both appeared to be for carpentry or structural use, with the former having a pointed terminal end similar to a staple point. The later retained a rounded and flattened terminal and appeared to have been used as a collar or clamp. Goodall list a number of similar objects as structural ironwork (Goodall 1980, 102-3; fig 67 H56-71 and Fig 68 H98-106).

A length of bar recovered from deposit 4109 (Ra 4000) may be part of a hinge or a lever.

Post-medieval

The post-medieval iron assemblage was of small size and consisted of ten nails and nail-fragments from deposit 21920. None were of archaeological interest and are not discussed further.

Modern

The modern assemblage consisted of a door hinge from deposit 19082, an intact nail from deposit 17556 and a small sheet fragment, possibly tinned, from deposit 4106. None of the material was of archaeological significance.

Undated material

Iron objects that were recovered from undated contexts included a fragment of horseshoe from deposit 2088 and pieces of knife blade from deposits 4082 and 13017. Unstratified finds included a large iron spike (similar to a modern railway spike), a fragment of knife blade (Ra 2009) and an iron ring, possibly from an agricultural harness.

Lead Alloy

Roman

A distorted strip of lead alloy was recovered deposit 1104. It appears to be the thickened lip from a flagon or similar vessel. Only a small fragment of the body of the vessel remains attached to the lip. The general appearance of the object is of a vessel that has been cut/torn up or scrapped for re-use.

Medieval

A lead weight was record from deposit 12062. The weight was roughly rounded with a flattened top and base, giving the item a barrel-like appearance. The weight would have been suspended through the large hole that passes longitudinally through the centre.

Post-medieval

A weight from deposit 15036 was rolled from a strip of lead into a conical shape with a central hole.

Copper Alloy

Iron Age

An annular shaped object with bifurcated section and 14mm diameter, was recorded from deposit 19210 (Ra 19001). The surface was irregular and possibly with raised decoration, though this was largely obscured by soil and corrosion products adhering to the surface. No close parallel for this object has been identified though a decorative use is likely.

A small fragment of copper alloy sheet, bent to form a U-shaped section, was recorded from Iron Age deposit 21032 (Ra 20011). It may be part of an edging strip.

Roman

Four fragments from a copper alloy chain were recovered from deposit 15131(Ra 15001). The chain was constructed from fine oval wire loops, folded in half and through each other in alternating planes. The loop-in-loop double weave pattern created a four-sided chain that was probably used for personal ornament (Johns 1996, 96). While deposit 15131 was phased as an Iron Age deposit the chain was a Roman artefact.

Two Roman brooches of Colchester type were recorded from deposits 20994 (Ra 20022) and 20867. Both were incomplete with the pins absent and corroded. That from deposit 20867 was also missing its catch-plate. The brooch from deposit 20994 featured a catch-plate with perforated, or fretted, decoration. Both brooches date to *c*. mid 1st century but were redeposited in late medieval phased deposits 20994 and 20867 (see Mackreth 2011, 36-38; Plate 22.626).

A cylindrical fragment, from deposit 3537 (Ra 3000), was encrusted with soil and corrosion products. It is probably a detached wing from a Colchester-derived brooch.

Anglo-Saxon

A cast copper-alloy ring was recorded from deposit 5229 (Ra 3008). It featured a horizontal recess on the inner surface which was probably a strap locator. An exact parallel for this object was not found though use as a belt or harness fitting was most likely (Egan and Pritchard 1991, 219-221; Fig 138).

A fragment of folded copper alloy sheet was recovered from early medieval phased deposit 2039. X-ray analysis indicated that the object has extra detail or decoration that is not visible due to the soil and corrosion products on the surface.

Medieval

An unusual one-piece cast object, from deposit 15276, consisted of a ring with a bifurcated section. It featured a rectangular framed opening to the outside and offset circular loop, located internally and directly below. Use as an equestrian fitting seems most likely though no close parallel can as yet be identified.

Statement of potential and recommendations for further analysis

The metal finds assemblage generally suffers from soil and corrosion accretion, which in a number of cases, obscures surface detail and hinders identification. While the majority of artefacts require no further conservation work, some objects require specialist cleaning to clarify form/construction, identification and date. Table 22 contain a list of the metalwork finds in context order, and includes the recommended work to be undertaken by a specialist conservator. Further research will, therefore, be required on objects recommended for cleaning.

As part of further analysis the catalogue entries for all Iron Age, Roman, early and late medieval metalwork objects above should be enhanced, with relevant typologies consulted, and discussed with relevance to the local and wider setting. Comparisons should be drawn from assemblages from other Iron Age, Roman and post-Roman sites in the region. Selected items of intrinsic interest or contribute to the chronological or functional understanding of the site, should be drawn and a full catalogue description prepared for publication (see Table 22). The potential of the post-medieval/modern and undated material is limited and no further work is required. The catalogue entries of several of the more interesting pieces may be enhanced if required, and a short summary report compiled.

Summary

Catalogue descriptions and report	4 days (FO)
Research	1 day (FO)
Illustration	3.5 days (SI)
Conservation	fee (external specialist)

Table 22: ***List of metal work assemblage by context and treatment recommendations***

Context	Ra	X-ray	Material	Description	Comment	Proposed treatment
1106		K11/90	Iron	Nail		None required
2025		K11/90	Iron	tongs	tips missing	None required
2026		K11/87	Iron	Nail head		None required
2039		K11/89	Copper alloy	Fragment in 2 pieces	X-ray suggests may have hidden detail of interest	Clean
2043		K11/87	Iron	Rectangular iron strip, pointed terminal	Construction staple	None required
2088		K11/86	Iron	Horseshoe fragment		None required
2096		K11/90	Iron	Single edged iron blade	Encrusted and unclear form	Clean , draw, describe
3024		K11/87	Iron	Nail		None required
3025		K11/87	Iron	Nail		None required
3034		K11/87	Iron	Nail shaft		None required
3066		K11/88	Iron	Nail shaft	In 2 joining pieces	None required
3092		K11/86	Iron	Knife	In 2 joining pieces. Single edged blade, possibly with groove.	Clean , draw, describe
3167		K11/88	Iron	Knife	Small portion of tang and single edged blade.	Clean , draw, describe
3534		K11/87	Iron	Nail	In 2 joining pieces	None required
3537	3000	K11/88	Copper alloy	Brooch fragment?	Appears to be Roman brooch wing	Clean , draw, describe
3788	3003	K11/89	Copper alloy	copper sheet - chamfered corners and possibly two sets of nail holes,	The object may be a strap end	Clean , draw, describe
3908 u/s context	3004	K11/86	Iron	Ferrule?	Socketed object	Clean
4082		K11/91	Iron	5 fragments possibly knife blade	Undated context	None required
4106		K11/89	Iron	Sheet, possible grey metal tin?		None required
4109		K11/89	Iron	Lever/hinge?		Clean
5131		K11/87	Iron	3 nails		None required
5135		K11/87	Iron	Nail head		None required
5137		K11/86	Iron	Hook at one	May be a snaffle bit	None required

				end with curled attachment loop		
5168		K11/88	Iron	Nail shaft		None required
5202	3007	K11/88	Iron	Thin strip in 5 fragments, poor condition	Cleaning unlikely to reveal additional information	None required
5229	3008	K11/88	Copper alloy	Cast loop with internal recess	Appears to be a belt mount or similar object	Clean , draw, describe
5251		K11/88	Iron	Nail / tack		None required
12062		K11/88	Iron	Hob-nails	In 3 lots	None required
12062		K11/89	Iron	Buckle	Rectangular type	None required
13017		K11/89	Iron	Possible fragment of knife blade	Undated context	Clean to aid identification
15131		K11/89	Copper alloy	Chain	Roman loop-in-loop with double weave	May require consolidation, draw, describe
15177		K11/88	Iron	Nail		None required
15188		K11/87	Iron	Nail		None required
15212		K11/89	Copper alloy	fitting		Clean , draw, describe
15212	3009	K11/90	Iron	Single edged iron blade with central whittle tang	Blade appears excessively worn and form needs to be clarified	Clean to aid identification
15417	15003	K11/87	Iron	Rectangular iron strip, rounded terminal	Construction collar or clamp	Clean to aid identification
15419		K11/87	Iron	Nail shaft		None required
16004	3011	K11/87	Iron	Nail shaft		None required
16070	16000	K11/91	Iron	2 small sheet fragments	Limited information	None required
17001		K11/88	Iron	Nail		None required
17050	17024	K11/91	Iron	Small iron strip with1nail hole	Limited information	None required
17074	3018	K11/88	Iron	Knife fragment, single edged blade with partial tang	Some unclear detail	Clean , draw, describe
17129		K11/88	Iron	point possible nail shaft	No diagnostic features	None required
17242	17047	K11/91	Iron	Nail and nail head		None required
17291	17015	K11/90	Iron	Knife	Single edged iron blade fragment with central whittle tang	None required
17386		K11/86	Iron	Horseshoe	Good detail on x-ray	None required
17404		K11/88	Iron	Nail		None required
17556		K11/87	Iron	Nail	bent	None required
18039		K11/88	Iron	Nail		None required
19000		K11/87	Iron	Staple	In 2 joining fragments	None required
19028		K11/88	Iron	awl	minimal corrosion	None required
19082		K11/88	Iron	Door hinge fragment		None required
19089		K11/87	Iron	Tool - chisel or router		Clean to aid identification
19210		K11/89	Iron	Knife fragment,	Single edged blade with tang below the back	None required

19210	19001	K11/89	Copper alloy	Annular shaped object		Investigative cleaning, draw, descrbe
20014		K11/87	Iron	point possible nail shaft	No diagnostic features	None required
20152		K11/86	Iron	Nail	Head missing	None required
20435	20003	K11/90	Iron	Nail shaft		None required
20588	20010	K11/91	Iron	7 small fragments	Cleaning unlikely to reveal additional information	None required
20607	20010	K11/87	Iron	Hook		None required
20609		K11/87	Iron	Nail shaft		None required
20681		K11/89	Copper alloy	Washer, object	Modern deposit	None required
20792		K11/88	Iron	Nail	In 3 joining fragments	None required
20807	20024	K11/91	Iron	Nail shaft		None required
20811	2007	K11/87	Iron	Nail		None required
20867		K11/89	Copper alloy	Brooch	Clean to aid identification	clean / consolidate as required, draw, describe
20991		K11/90	Iron	Single edged iron blade, tang in-line with back	confirm identification	Clean , draw, describe
20994	20022	K11/89	Copper alloy	Brooch – Colchester type with perforated decoration	Clean to aid identification	clean / consolidate as required
21003		K11/86	Iron	Nail		None required
21003		K11/87	Iron	A length of bar with a spatulate leaf shaped head and another with a broad hooked end	May be from the same object. Cleaning unlikely to reveal additional information	None required
21003		K11/89	Copper alloy	Folded sheet fragment	Undiagnostic triangular fragment, probably off-cut or scrap	None required
21003		K11/90	Iron	Sheet fragment.	Clean object	None required
21032	20011	K11/89	Copper alloy	Half cylinder of copper alloy sheet	The object may have been a fragment of protective or decorative edging from a wooden object.	Clean , draw, describe.
21080	20014	K11/90	Iron	Nail		None required
21080	20015	K11/90	Iron	Nail		None required
21080	20016	K11/90	Iron	Nail	In 2 joining fragments	None required
21080	20017	K11/90	Iron	Nail	In 2 joining fragments	None required
21080	20018	K11/90	Iron	Nail		None required
21080	20019	K11/90	Iron	Nail		None required
21080	20020	K11/88	Iron	Nail		None required
21081		K11/90	Iron	Nail shaft		None required
21340	20023	K11/87	Iron	Edging strip all edges appear damaged	2 rivet holes visible on x-ray, pitted.	Clean
21359	20288	K11/89	Copper alloy	Binding strip fragment	Cleaning unlikely to reveal additional information	None required
21839	20024	K11/88	Iron	Knife blade,	Curved tang, single	None required

				with	edged. Similar to Manning's type 11 and 18b	
21920	20056	K11/90	Iron	2 iron nails one in two joining fragments		None required
21920		K11/91	Iron	8 nails or nail fragments	some with mineralised wood	None required
u/s		K11/86	Iron	Nail	Large, flat headed	None required
u/s		K11/88	Iron	loop	In 2 joining pieces.	None required
u/s	20009	K11/89	Iron	Possible fragment of knife blade		None required

APPENDIX 10: THE WORKED BONE AND ANTLER BY ANGUS CRAWFORD

Twenty four worked bone or antler artefacts were identified within the assemblage. The material was retrieved from 22 deposits or as unstratified finds. The majority of items date to the Iron Age and early medieval periods. The objects include personal items as well as implements used in the manufacture or working of textiles. All of the objects are described below.

Iron Age

Weaving comb

A highly decorated Iron Age weaving comb was recorded from deposit 19214 (RA19003). For descriptive purposes, Iron Age weaving combs comprise three separate sections encompassing the teeth, the shaft or handle, and the butt (Sellwood 1984b, 371). Whether intentional or not the corresponding zones on the Mildenhall comb resemble a stylized forearm with extended fingers, the butt forming the elbow region. The shaft is curved in section to the natural shape of the bone which is probably from a horse. The comb was further decorated with incised lines and bands of ring and dot motifs across the 'hand and elbow' regions. The condition of the object was very good and the comb retains six of its seven teeth. They had been cut to the same length and feature some use polish to the shafts and tips, though they do not appear to be extensively worn. Good parallels for this object are those from the Danbury excavations and a middle Iron Age date is likely (Sellwood 1984b, 371-378).

Needles and pins

A highly polished needle with a broken head was recovered from Middle Iron Age phased deposit 20159 (RA20001). Of similar date was a likely pin or needle from deposit 20367. While the object was could have been utilised as a pin or needle, having a pointed tip and spatulate head, the overall finish was rough suggesting it was an unfinished object.

Toggles

An intact toggle manufactured from a hollow section of bone, probably the long bone of a cow, was recorded from Period 2 deposit 21032 (RA20012). It featured a single perforation through the centre of one wall and the ends are accentuated with two incised parallel grooves. The body is circumscribed with double ring and dot decoration. A large collection of toggles, including similarly decorated examples, have been published from Danebury, where the evidence supported the interpretation that these types of objects were used as fasteners (Sellwood 1984b, 378-380).

A toggle made of red deer antler was recovered as an unstratified find from Trench 16 (Ra 3013). The cylindrical toggle had an elongated perforation towards the centre and was of a type previously recorded from known Iron Age sites (Britnell 2000, 202; Fig 97 nos. 13 and 14,).

An object made from a juvenile sheep metacarpal was recovered from Middle to Late Iron Age deposit 19206. It was apparently unfinished, featuring a centrally-bored hole, penetrating halfway through the shaft. Similar objects with centrally bored transverse holes have been interpreted as toggles, bobbins or toys (MacGregor 1985, 102-103).

Handle

A tapered and slightly curved object was cut from a section of red deer antler tine and recorded from Period 2 deposit 19089. The body had been roughly shaped with a knife, and both ends have been rounded off slightly. There was also a circular hole cut into the centre of the narrowest end. The object was probably intended to be a tool or knife handle but appeared to be unused.

Other objects

A complete canine tooth with a transverse perforation was recovered as an unstratified find (RA2004). There are abundant Iron Age parallels for this form of object and it is possible that the object was either used as a toggle-like fastener (see Clark 2005), a pendant or for other decorative or talismanic purpose.

Three rectangular shaped objects, of similar form, were recorded that had been cut from sections of cattle-size rib bone. Two of the recovered objects were partial examples and were retrieved from deposits 19160 and 20086, which were phased Iron Age and medieval respectively. A complete example was recorded from Roman phased deposit 20792. All featured single holes bored close to each terminal end. The fragmentary objects had broken lengthways through the holes, which would have been the weakest fracture point. The fragment from deposit 20086 was the only decorated item, with one face featuring grooved lines at both ends which were linked by diagonal lines forming a cross through the middle of the piece.

While only one was recovered from an Iron Age phased deposit, the remaining two were recovered from later deposits containing, sometimes substantial, quantities of residual Iron Age pottery. This, and the similarity of the three objects, suggests that they may all be of Iron Age date. A function has yet to be

determined for these objects and exact parallels are yet to be identified though possibly similar objects were recorded from Danebury (Sellwood 1985b, 393-5). A possible indication of function is exhibited by the complete object (20792),which features thread-like wear notches on one exterior edge directly below one of the holes. This may be evidence for the artefact being used for thread or textile working.

A fragment of cow ulna from deposit 20393 featured three carved ring and dot motifs and, though the surface was poor, it retained some polish to the surface. The overall appearance was of an unfinished object and the slightly irregularly placement of the motifs may indicate that it was a practice piece or was discarded or lost before finishing. While deposit 20393 was phased to the Roman period the bone object appears to be a residual Iron Age artefact.

The broken proximal end of a horse's right radius was recovered from Iron Age deposit 21629, and featured two carved ring and dot motifs to one surface.
A halved section of bone from a probable cow metacarpal was recorded form Iron Age deposit 21406. No further information could be ascertained from the object though it may be representative of waste from on-site bone working.

Roman
A possible broken pin or unfinished needle was recovered from deposit 20407. Only the un-pierced spatulate head with partial shaft was present.

Anglo-Saxon
Comb
A decorated bone hair comb was recovered from late medieval deposit 19000 (RA19000). Although damaged, the comb was a single sided composite type with plano-convex connecting plates section and straight end plates. The comb would have been of large size at around 16cm long. While these types of combs have been previously dated from the 9th to 12th century, Ashby classifies this as a type 7 comb with parallels in the 10th and 11th century (Ashby 2007) .

The comb retained a three quarter section and a one quarter section of the side (or connecting) plates. One wing remains present with most of the teeth intact and a further short central plate of teeth also remain. The side plates were fastened with six small iron rivets originally, with two and a half still in place. Both side plates also featured simple incised parallel lines towards the terminals ends.

Needle
A large and well made needle with heavy polish was recovered from deposit 3941 (RA 3006). It was of a size that would probably been used in the stitching of heavy or coarse material. While deposit 3941 was a late medieval phased deposit large well-made needles of this type have close parallels in the early medieval period (Bircher 2003, 68)

Toggles
A sheep metacarpal was recorded from deposit 21092. It featured a slight hollow to the centre of one side that appeared to be a deliberate mark for or from unfinished drilling. The uses of drilled sheep metacarpals are discussed above and it would appear that this was an unfinished object.

Later medieval
Needle
A thick fragment of bone from late medieval deposit 20871 (RA 20008) featured a well polished and pointed end suggesting it may be from a large clothing pin or pin-beater.

Toggles
A sheep metacarpal with a transverse perforation through the centre of the shaft was recovered from deposit 15276 (RA 15004). While use as a toggle was likely other possible uses, for similar objects, have been discussed under earlier periods above. The occurrence of this type of artefact in deposits dated from the Iron Age to the medieval period is not unusual (MacGregor 1985, 102-103). The simple design of this type of artefact would explain their continued use, either as fasteners, toys or bobbins over a number of cultural periods.

A broken right metatarsal from a mature sheep with a hole bored into the proximal end was recovered from deposit 2100.

A miscellaneous small fragment of bone with 5 fine parallel grooves was recovered from undated deposit 17136 (RA3019). The groves may be decorative or the object may be a fragment from pin-beater of Iron Age date or later date (Sellwood 1984b, 389-91; MacGregor 1985, 171).

Modern
A bone tongue depressor or spatula was recovered as an unstratified find. A trademark stamp was partially legible, as were the words 'CHIFNEY CHEMIST'.

Statement of potential and recommendation for further analysis
The worked bone/antler includes some significant items indicative of crafts activities and useful as chronological markers. Those objects (15) of greatest intrinsic or archaeological significance should be fully described, catalogued and illustrated as part of the final publication.

Summary

Catalogue descriptions and report	3 days (FO)
Illustration	4 days (SI)

APPENDIX 11: THE WORKED STONE BY FIONA ROE

Introduction
Seventy one pieces of stone were examined, using a x10 hand lens where necessary to determine the different lithic materials. The majority of the finds consist of Niedermendig lava from the Rhineland, which was recorded from 49 contexts and used both for rotary querns and millstones. Much of the lava is fragmentary, and some is likely to be redeposited, but the extensive use of this grinding material over time remains clear. Further quern/millstone materials comprise six pieces of Millstone Grit and two of greensand which is most likely to be Spilsby Sandstone, while other materials were utilised in small quantities. Kimmeridge shale from Dorset was imported, and possibly also small quantities of grey or black slate, although this may have been found in glacial deposits. Locally available stone consisted of chalk, clunch, quartzite, quartzitic sandstone and fine-grained sandstone. There are 63 objects, which have been summarised in Table x (file = Mildenhall.stonetable). In addition there is one block of building stone, while four pieces of burnt stone were recorded, although most of the items in this category were not examined for this assessment. Two further items were considered to be unworked. All the above have been listed and described in a catalogue (Excel file = Mildenhall stone catalogue). All periods are represented, but only two of the dated finds are complete, a spindlewhorl and a loomweight, both of which belong in the middle Iron Age.

Quantification
Period 2: Iron Age
The four Iron Age objects are somewhat above average for finds of this nature. A complete spindlewhorl, a well preserved example made from fine-grained sandstone, came from Middle Iron Age pit 19215/19088, while a more crudely made but nonetheless complete chalk loomweight came from middle Iron Age pit 16101. The single small fragment of quern found in pit 15129 was made from Spilsby sandstone. It is not possible to judge whether it came from a saddle or rotary quern but it is known that numerous beehive querns were made from this variety of greensand (Ingle 1993–4, 30). The fourth item is a small and discoloured fragment from a bracelet of Kimmeridge shale which was retrieved from Iron Age ditch 21105. Such bracelets are common on Roman sites but were also widely distributed during the Iron Age, so that this material from Dorset would not be out of place in Suffolk. However most known Iron Age finds of shale bracelets are from southern England and this example is further from the source area than might be expected, although small fragments such as this must often have missed inclusion in the record.

Period 3: Roman
The eight pieces of stone from Roman contexts also include points of interest. Niedermendig lava was first imported to Mildenhall in Roman times and there are two probable millstone fragments, identified in this case by thicknesses of 106 mm and 84 mm and found on Areas 2 and 3, so not too far from the river Lark. It is known that a mill existed in Mildenhall at the time of the Domesday Survey and a Mill Street is still to be found there today, so that a Roman watermill on the river seems altogether a possibility. Lava millstones are known from other Roman sites, not all of which have made their way into the literature, but one such millstone approximately 250 mm in diameter was recorded at Westhawk Farm, Ashford, Kent (Roe 2008, 188). The eight small fragments of lava from pit 17598 + 17602 are more typical, since lava disintegrates readily with time, and so tends to be recorded in the form of grey crumbs. Another grinding material widely used for Roman millstones is Millstone Grit (Roe, *op cit*., 192). Five pieces were found at Mildenhall, in three cases from Area 3 on the floodplain and so near the river. All were too fragmentary for identification as to type of artefact but they could include both rotary querns and millstones.

Period 4: Anglo-Saxon
The period 4 worked stone consists entirely of lava fragments, which came from thirteen contexts. Nearly all of it is in the familiar form of small fragments, with nine such sets of finds from pits and ditches on Area 20. However there are three larger pieces from alluvium contexts on Area 2, all dated from the 9th to 11th centuries, with a further bag of small fragments from Area 3. The three larger pieces are all worn thin; one (2309) is now only 17– 20 mm in remaining thickness. It has not been possible to tell which of these fragments might originally have belonged to millstones, but the presence of a mill here in 1086 suggests that lava millstones might well have been in use as well as rotary querns. It can be suggested that the lava might have been delivered by sea to King's Lynn, as from here there should have been a relatively easy boat journey along the river Ouse and then the river Lark to Mildenhall.

Period 5: Medieval
The medieval stone objects are more varied in character, although there is also the largest collection of lava from this period, including one possible millstone fragment, which was found in 11th to 12th-century peat on floodplain Area 2. Small groups of lava fragments came from 26 contexts, mainly on sites less close to the river (Areas 4, 15, 16 and 20), while there is also a bag of lava fragments from floodplain Area 3. One quern fragment is different, being a worked piece of Spilsby Sandstone from a 10th to 11th century ditch. This is not necessarily redeposited from an earlier period, since querns from Lincoln demonstrated that Spilsby Sandstone apparently continued in use through the Saxon and Medieval periods and possibly later (Roe 1996). One object from a medieval context is presently of unknown purpose. A thin rod (4038) made from black slate has eight narrow facetted sides and was found in pit 4083, which has an 11th to 12th-century date range. An unworked fragment of dark grey slate from a medieval pit of later date (18020) might have been intended for a similar purpose.

Periods 6, 7 and U: Post Medieval, Modern and Undated
The later periods produced seven further collections of small lava fragments, some of which are likely to be redeposited, especially in cases where earlier pottery has been recorded, as for example in dumped deposit 3022 and (15014) in a post-medieval pit. There are two undated objects. A nearly complete chalk gaming piece decorated with grooved concentric rings (SF 2006) can be compared with finds from the Coppergate at York and may be Anglo-Saxon or medieval (Mainman & Rogers 2000, 2566 and figs 1261, 1263). A final object consists of an unstratified cobble of quartzitic sandstone which is smoothly hollowed on both main surfaces, probably from use as a mortar and an Iron Age date seems most likely for this piece. The only piece of building stone is a small block of clunch ((21062) SF 20013) from a post Medieval pit.

Potential and task list
This assemblage is of assistance in demonstrating the significance of imported Niedermendig lava; it can be seen that it first arrived in Mildenhall in Roman times, with further quantities being brought in during Early Medieval and Medieval times and perhaps later, a pattern that is repeated all over East Anglia and indeed further afield. It would have been the relative ease of transportation by boat that led to such extensive use of this particular grinding material. Millstone Grit also seems to have arrived in East Anglia in some quantity, though probably mainly during the Roman period and this could have come most of the way by boat, using available rivers and quite possibly an East coast sea route via the river Humber.

The Middle Iron Age spindlewhorl ((16100) SF 3016) will be illustrated as a complete example of the type. Two further objects of interest are the enigmatic facetted rod (4083), which could be medieval and the near complete gaming piece, which is possibly Anglo-Saxon or medieval (SF 2006), which unfortunately was unstratified. There is potential for the use and date of these objects to be investigated through comparative material, and both of these will be illustrated.

Specialist report: 2 days
Illustration: 1.25 days.

Table 23: Summary of stone objects

period		chalk	sandstone	Spilsby sandstone	Kimmeridge shale	Millstone Grit	Niedermendig lava	slate, grey/black	quartzitic sandstone	**totals**
2	*IRON AGE*									
"	loomweight	1								

"	spindlewhorl		1							**4**
"	quern			1						
"	bracelet				1					
3	*ROMAN*									
"	quern, rotary					5				**8**
"	quern, rotary						1			
"	millstone						2			
4	*ANGLO SAXON*									
"	quern, rotary						13			**13**
5	*MEDIEVAL*									
"	quern, rotary			1						**29**
"	quern, rotary						26			
"	quern or millstone					1				
"	rod							1		
6	*POST MEDIEVAL*									
"	quern, rotary						4			**4**
7	*MODERN*									
"	quern, rotary						2			**2**
U	*UNDATED*									
"	gaming piece	1								**3**
"	quern, rotary						1			
"	mortar								1	
	totals	**2**	**1**	**2**	**1**	**6**	**49**	**1**	**1**	**63**

APPENDIX 12: THE GLASS BY ANGUS CRAWFORD

The glass assemblage consisted of 34 fragments (407g) recovered from site and from processed soil samples. The majority of the material was from modern bottles or windows and were of no archaeological significance and are not discussed. Most of the glass recovered from soil samples was too small to identify in any detail and are also not mentioned further. Two recovered glass beads and a piece of medieval window glass were of some archaeological significance and are described below.

Iron Age
An annular bead with a diameter of 20mm was recorded from Iron Age deposit 16006. The surface is decayed and has developed a white surface patina that obscures the original detail. Therefore it is not possible to determine the original colouring of the bead and whether any decoration was originally present. The proportions and size were comparable with Iron Age forms described by Guido (1978).

Medieval
A small undecorated piece of medieval window glass was recorded from deposit 15212. The window glass was in decayed condition and had turned black in colour and a small glass bead with an approximate 4mm diameter, was retrieved from medieval deposit 18073. The glass bead was of considerably small size and weighed less than a gram. It was disc shaped with a rough surface of mixed brown, yellow and green colouring that may be the result of decay processes rather than intentional decoration.

Statement of potential and recommendation for further analysis
The glass beads should be described fully and illustrated, or photographed, with a descriptive paragraph for the final publication. The remaining glass assemblage was of limited archaeological interest and no further work is required.

Summary

Catalogue descriptions and report	0.5 days (FO)
Illustration	0.25 days (SI)

APPENDIX 13 DOCUMENTARY ASSESSMENT BY ANTHONY M. BREEN

Methodology

This assessment reviews the quality and quantity of the published works, manuscripts and maps relating to Mildenhall, and in particular the area of the excavated site. The significance of the material was examined with reference to the potential of various sources to trace the land history of the site. Research included consultation of a large collection of earlier manuscript sources for the manor of Mildenhall held at the Suffolk Record Office, as these can be utilised to research the land history of some areas of the parish back to the medieval period. The research as also included a search for documents relating to adjoining properties, as the property descriptions as they appear in deeds often name the owners and previous owners of the adjoining lands. In addition all earlier copies of the OS maps and other historic maps were examined, as well as a series of published sources. The research as presented in this report is a retrogression of the site's history as it appears from documentary sources. A full list of the sources examined appears at the end of this report. References to some documents have been gathered through the National Archives Access to Archives indexes. The references to other manuscript sources have been gathered from the card indexes and paper catalogues currently available at the Suffolk Record Office. This report augments and re-assesses the research undertaken for the Desk-Based Assessment (CA 2009). The site of a kiln was discovered during the excavation of this site and this report includes a discussion of documents containing references to kiln sites in Mildenhall. The research for this report has been carried out at the Suffolk Record Office in Bury St Edmunds, all references to original documents, unless otherwise stated, are to documents held at that office.

Historic Background

Mildenhall was the largest of Suffolk's historic parishes with a total area of over 15,990 acres, however over 8450 acres were until the 18th century uninhabitable fens and marshland, and another 1250 acres on the eastern side of the parish were open warren. The lands forming the remaining area of the parish were subdivided between the four hamlets of Holywell, Beck Row, West Row and High Town. High Town, a name still used on road signs, included the site of the parish church and market and this site is within this area. In everyday usage 'High Town' is simply referred to as the village or town of Mildenhall. A significant change in the landscape of the parish occurred at the start of the 19th century when large areas of former common and open fields were enclosed as a result of an act of parliament passed in 1807. Documents produced for the enclosure of the parish contain information relevant to the history of this site and are discussed under the description of the enclosure maps.

Copies of the historic maps of Mildenhall were included in the Desk-Based Assessment of this site. Though the owners, occupiers, state of cultivation and tenure were not noted in the assessment, these additional details are essential in order to successfully trace the earlier land history of the site. The initial purpose of this report is an attempt to gather these additional details.

The Suffolk Record Office hold a large collection of earlier manuscript sources for the manor of Mildenhall and these can be utilised to research the land history of some areas of the parish back to the medieval period. The manor of Mildenhall was until the dissolution of the abbey of Bury St Edmunds in 1539 part of the abbey's vast estates in West Suffolk and its revenues were allocated to the office of cellarer. The income of the manor is described in the medieval account or 'compotus rolls' submitted by the bailiffs of the manor to the cellarers. The rolls for 1390-92 and 1400-01 are held at the Suffolk Record Office in Bury St Edmunds and 25 additional rolls covering years in the period 1381-1467 are held at the British Library Manuscript Room (ref. British Library BL Add. Ch. 43061 and Add. Ch. 53116-53140).

A translation of the 1501 rental of Mildenhall has been published (Breen 2008). The book includes indexes of the names of the tenants, the minor place names within the parish and the occupation of the tenants where this was recorded in the text of the document. The value of the manorial records can be determined through a comparison of the surnames given in the 1381 Poll Tax returns for Mildenhall (Powell 1896) with those given in the 1501 rental. Of the names 104 tradesmen and women listed in Mildenhall Poll Tax returns; 58 men and 46 women, the surnames of 31 tax payers can be found in the 1501 rental, of the 82 labourers listed in the Poll Tax returns; 43 men and 39 women, the surnames of 29 tax payers can be found in the 1501 rental. Most of the women listed in the 1381 returns were wives. The only class that appears in the 1381 returns that is significantly under-represented in the 1501 rental is the landless servants. 36 servants are listed in 1381: 18 men and 18 women. Unlike the other classes listed most of female servants were single women. By 1501 a number of new families not present in 1381 would have moved into the parish. Also though most families in Suffolk were using a hereditary surname by the late 14th century, a few families especially those involved in trade were known by their occupations rather than their surnames. In a number of instances the occupational name was eventually adopted as a hereditary surname but this is not true in all instances.

Following the Dissolution, the manor first passed to the crown. The crown appears to have leased the manor to a succession of different tenants until the manor was granted to Sir Henry North in 1614. Following the death of a second Sir Henry North in 1695 the manor passed to his sister the wife of William Hanmer. At the death of Sir Thomas Hanmer in 1746 the manor and estates passed to his nephew William Bunbury (Copinger 1909). The lords of the manor were also the lay rectors of the parish and entitled to the revenue drawn from the great tithes whilst the parish's vicars enjoyed the revenues of the small tithes. The tithe was an entitlement to a tenth part of the agricultural produce of the parish and was formerly paid to the church.

The bond tenants of a manor held their lands at copyhold, a type of tenure finally abolished in 1922. Before a tenant could acquire manorial copyhold land, the land had to be first surrendered back to the lord of the manor before it could be granted to the new tenant. The details of these transactions are recorded the manorial court books and earlier court rolls. The significance and higher social status of freehold tenants of a manor disappeared at the end of the medieval period and the post medieval records do not record the full details of the lands held by these tenants. In the case of the manor of Mildenhall these tenants continued to pay a relief on entry to their properties but though the manorial records do record such payments the full descriptions of the properties are omitted from the post medieval records. The demesne lands held by the lords of the manor themselves could also be tenanted either through a short term lease of the use of the land or by tenants at will who occupied the lands without a formal written agreement. Records relating to such demesne tenants form the records of the estate rather than those of the manor.

Measurements

The measurements given in this report are as they appear in the original records. The Ordnance Survey maps used measurement of area expressed in acres and areas smaller than an acre are expressed as a decimal fraction. In written descriptions of lands shown on an Ordnance Survey map or maps based on the contemporary Ordnance Survey maps the sub divisions of an acre are sometimes expressed in roods and perches. There were four roods to an acre and 40 perches to a rood. The tithe maps and apportionments, estate maps and enclosure maps and awards also used acres, roods and perches. Earlier measurements given in property deeds including manorial records are expressed in acres and roods and occasionally in perches however these are normally 'by estimation'. In a number of cases local measurements of acreage were in use also the descriptions of the property were copied from earlier documents written before these measurements were standardised.

Maps

A copy of the 1:2500 Ordnance Survey map has been reproduced as figure 6 in the Desk-Based Assessment report and labelled 'Extract from 1882 and 1904 Ordnance Survey Maps'. The original sheet number for the northern half of the site was XXI.9 and for the southern half of the site XXI.13. The acreages of each plot were omitted from the first edition of these maps published in 1882. The acreages were printed on the second edition published in 1904 and figure 6 is a combination of the two editions with the northern half of the site being copied from the 1882 edition and the southern half from the 1904 edition.

In the Desk-Based Assessment the boundaries of the site have been superimposed over the images of the historic maps. The boundaries of the site as shown have not been fully adjusted to take into account the changes in the datum line and the site boundaries do not appear to respect any of the earlier historic boundaries. On advice from Cotswold Archaeology, the northwest corner of the site rests at the junction of St Andrew Street and Recreation Way.

The maps show the land forming this site subdivided into a series of small fields and meadows. On 1882 and 1904 editions of the Ordnance Survey maps as shown in figure 6 in the Desk-Based Assessment, the western boundary of the site rests on a track labelled with the parcel number 2464 and its area is given as 0.235 acres. At the point where this track meets the river it turns eastward and crosses the site. This eastern extension of the track way is numbered 2626 on the maps and its area is given as 0.396 acres on the 1904 edition. There were three fields to the west and north of the track way. At the north the field is numbered 2461 and its area is given as 2.483 acres on the 1904 edition. To the south the two smaller fields that were numbered 2463 on the west and 2462 on the east on the 1882 edition are shown as one field on the 1904 edition of the map, numbered 2462 and its area is given as 3.563 acres.

The track way 2626 is bounded on both sides by ditches. A field bounded by ditches and adjoining the river on the southwest was numbered 2627 on the Ordnance Survey map and measured at 2.249 acres on the 1904 edition. To the west only the northern part of a second field numbered 2628 and measured at 1.854 acres on the 1904 edition is now part of this site and only the north-western corner of the field numbered 2629 and measured at 2.181 acres on the 1904 edition is within this site. To the north east of these three fields and beyond the track way a small area of the field numbered 2630, measured at 1.921 acres on the 1904 edition is within this site.

Though the River Lark was made navigable under the terms of an act of Parliament passed in 1698 the towing path in this part of Mildenhall is shown on the southern bank of the river only. In a bundle of documents relating to the mill at Mildenhall, there are extracts from the original act together with 'objections to a scheme for raising the water level 1700' (ref. E18/760/2/3) these documents have not been examined for this report. The river at this point also formed the parish boundary between Mildenhall and the neighbouring parish of Barton Mills.

With the exception of the field 2461 the remaining lands forming this study area were formerly part of the Bunbury estates that were offered for sale at an auction held in July 1933. The lands shaded in blue are shown on the sale plan and were numbered lot 35 (ref. HD1180/57). The sale plan uses the Ordnance survey parcels numbers. The lot was described as 'An Accommodation Holding comprising Farm Premises and Pasture Land in all 12 acres 1 rood 27 perches'. The farm buildings, but not the farm house, were located to the west of the field 2461 at the southeast corner of the junction of St Andrew's Street and King Street, numbered 2460 on the Ordnance Survey map. The lands included the parcels 2462, 2627, 2628, 2629 and 2630 all described as 'Old Pasture' and part of the track way 2626. These lands had been let to a Mr H Parish at a yearly rent of £20 and the buildings to Mr F Sheldrick at a yearly rent of £7 10s.

The Tithe Map 1859

Tithe maps were produced under the terms of the Tithe Commutation Acts that converted the customary payments of tithes, a tenth of agricultural produce, into a fixed rent charge. All maps produced for the conversion of the payment of tithes to a fixed rent charge are tithe maps. Those maps produced following the 1836 Tithe Commutation Act and its Amendments that were submitted to the Tithe Commission and date stamped by the Tithe Commission are normally referred to as the Tithe map for a parish and were used for the purposes of the act and its amendments. Only those maps sealed by the Tithe Commission and referred to as First Class maps could be used as legal evidence in other matters the maps being deemed full cadastral maps. Parishes produced two copies of their maps, one copy was retained by the Tithe Commission and these copies are now held at the National Archives under the class IR 30. The second copy was passed to the diocesan authorities or the archdeaconries within each diocese. Though for most if its history Mildenhall has been with the diocese of Norwich and since 1914 the diocese of St Edmundsbury, for the period 1837 to 1914 Mildenhall and other parishes within the reduced area of the archdeaconry of Sudbury were in the diocese of Ely (Martin 1989). Additional copies of the tithe maps were also made for the use of the parishes and those that have survived are within each parish collection. In some areas additional copies were produced for local landowners but as these did not receive the commission's stamp they are not strictly tithe maps. Subsequent amendment to the rent charges were also depicted on maps or plans often copied from the later Ordnance Survey maps, these too are Tithe maps as they now form part of the Tithe Commission's archives. In the case of Mildenhall there is a map of the eastern half of Mildenhall Parish by David Haylock dated 1851 (ref. EF 505/1/83). The map was stamped by the tithe commission but it is unclear how it was used in relation to the commutation of the tithes as the original schedule that would have accompanied this map appears not to have survived. This map is no longer available for research and is awaiting conservation.

The fields forming this site are not shown in detail on the copy of Mildenhall tithe map of 1859 reproduced as figure 5 in the Desk-Based Assessment. The copy was probably made from the photocopy of the map in the archdeaconry collection (ref. T97/2). Only the fields to the east of this site numbered 165 and 166 are shown on the map. These are described in the separate apportionment as in the ownership and occupation of Philip Fuller (ref. T97/1). Both pieces were 'Old Inclosures' in 'East Fen Pasture', 165 was measured at 2 acres 3 perches and 166 at 5 aces 2 roods and 35 perches. The reason for the omission of other lands from this map including those forming this site is that the payment of tithes for a large part of the parish had been settled at the time of the enclosure of the parish following the 1807 act. Some 11,756 acres of land are described in the apportionment including some 309 acres 2 perches of old enclosures whose tithes had not been settled at the time of the enclosure award. The Mildenhall Tithe map is also unusual as it was produced some 23 years after the date of the original act showing a significant delay in the final resolution of payment of tithes.

Earlier Maps

The earlier manuscript maps of Mildenhall are in two main collections; the Mildenhall District Council collection (ref. EF 505) and in the County Quarter Session collection (ref. Q/I). The quarter sessions were the administrative body for the county before the establishment of the West and East Suffolk County Councils in 1888. Additional material, including a schedule to William Young's 1834 map of Mildenhall has been drawn from the collection of records deposited by the Mildenhall firm of solicitors 'formerly Read, Carter and Jessup' (ref. 1374). This firm formerly acted as agents to the Bunbury estate. This estate was the principal land owners in Mildenhall and the head of the family held the title to the lordship. Apart from the 1834 schedule, the solicitors' collection includes draft manorial court books for the manor of Mildenhall dating 1644-1946 and two copies of an index to these records dated 1758. The main collection of manorial records is in the Bunbury Collection (ref. E18). As has been stated at the introduction of this report all these collections are held at the Suffolk Record Office in Bury St Edmunds.

William Young's Map of Mildenhall Parish 1834
An extract of William Young's 1834 map of Mildenhall Parish is numbered figure 4 in the Desk-Based Assessment. The original reference for this map is EF 505/1/82. A separate schedule of this map is in the solicitors' collection (ref. 1374/27). On the map the main area of this site is numbered 68 and described in the schedule as 'Home Close'. Though no field boundaries are shown on the map the field was then in the several occupations of Edward Curling who held 2 acres 1 rood 6 perches, George Wilde who held 2 acres 3 roods and 16 perches and William Doughty who held 3 aces 1 rood 17 perches. They were the tenants of Sir Henry E Bunbury. The total acreage was 8 acres 1 rood and 39 perches a much larger acreage than the combined total of 6.046 acres for the fields 2461 and 2462 as given on the Ordnance Survey map. The reason for the difference in the acreage is the field in 1834 extended further to the north and included those plots numbered 2459 and 2458 on the later Ordnance survey maps. The tenure of this property is not given in the reference book but as the owner was Sir Henry E Bunbury and the land was part of the estate until 1933 it should be assumed that the lands was then part of the demesne and held by his tenants. The meadows to the south adjoining the river are not individually number on this map.

Enclosure Maps
The word Enclosure was formerly spelt 'Inclosure'. There are various copies of the Mildenhall enclosure act, maps and award. In the Bunbury collection there is a hand-written copy of the act and related papers (ref. E18/410/1). The related papers are a valuation of the tithes. There is a copy of the 1812 award in this collection (ref. E18/410/2). There is a copy of the map and award bound in a single volume in the Mildenhall District Council collection. There are difficulties in using this copy of the map. The map was drawn on parchment and then folded to fit into the end of the award book (ref. EF 505/1/81). The folds are now so rigid it is very difficult to get this map to lie flat. A further copy of the map can be found in the quarter session records (ref. Q/RI 30B) and this map is rolled. In the quarter session records there is a separate map showing those areas of the parish that were to be the subject of the enclosure (ref. Q/RI 30A). An extract from this pre-enclosure map appears in the Desk-Based Assessment as figure 3.

The enclosure maps do not show the entire parish and instead depict the lands that were then enclosed together with all the areas of old enclosure outside of the fen lands. These old enclosures were edged in green on the enclosure map (ref. Q/RI 30B). In the borders of the enclosure map there is a schedule that lists the allotment of lands. This schedule is arranged in an alphabetical sequence according to the name of the owner. The lists are further subdivided according to the owners' entitlement to the allotment of lands. As an example Sir Thomas Charles Bunbury received allotments in lieu of his rights to the tithes as lay rector, the right of soil as lord of the manor and for his right of common also a manorial privilege. Others were allotted lands in proportion to their copyhold or freehold interests. A schedule of 'old inclosures, warrens and other lands within the said Parish not discharged from tithes' was written down in the 1812 award (ref. Q/RI 24 page 221).

There is no complete list of all the owners and occupiers of the old enclosures. Their names and full details of their landholdings are not given in surviving schedules of lands shown on the enclosure map and there is no schedule at all of the lands shown on the pre-enclosure map (ref. Q/RI 30A).

The quarter session copy of the award is in a separate volume (ref. Q/RI 24). This volume includes enclosure awards for other parishes and the section relating to Mildenhall is set out between pages 107-233. Marginal glosses written against the text act a guide to the relevant sections of the award. The enclosure act was passed in 1807 and copies of the act can be found in printed sources and apart from its short title, the reference to the act is 47 Geo III c. 139.

On the enclosure map the northern area of this site is shown as an old enclosure and numbered 51 on the map. The southern area of this site is also shown as an old enclosure and number 50. These numbers do not appear in the schedule entered in the edges of the map nor do they appear in the schedule of lands entered in the award. As these parcels are not depicted on the 1859 tithe map, it suggests that the payment of tithes in relation to these lands was settled at the time of the enclosure of the parish or possibly at an earlier date. Outside the immediate area of this study, another old enclosure to the north east of this site is labelled on the enclosure map as 'Lime Kiln Yard'. The curve of the southern boundary of Lime Kiln Yard is shown on figure 3 in the Desk-Based Assessment but this piece is not labelled on the pre-enclosure map (ref. Q/RI 30A). On the map the area to the east of this site to the south of the road, now known as Kingsway but then known as the Bury Road, is not marked as old enclosures and was subject to the enclosure of the parish. The pieces number 81 and 82 are described in the schedule written in the edges of the map as allotments to Charles Dyson of lands in 'East Fen Field' as freehold. In the schedule in the award the executors of Charles Dyson are listed as the owners of the pieces numbered 53 and 54 corresponding to the fields 165 and 166 on the 1859 tithe map. These too are described as in East Fen. The piece numbered 84 was also an allotment in East Fen Field, in this instance to Sir Thomas Bunbury in exchange for an old 'inclosure'.

The pre-enclosure map filed in the quarter sessions records (ref. Q/RI 30A) is listed in the collection catalogue as an enclosure map. This is a draft map prepared at the initial stages of enclosure of the parish. It shows the pre-enclosure landscape and is extremely important map as it depicts the lines of former roadways and paths and names them. The map also shows the orientation of individual strips within certain fields. The orientation of the strips changed with the enclosure in order that the field boundaries would meet the roads at a right angle. Various fields are numbered on this map but no corresponding schedule has been found.

Amongst the various provisions of the act (47 Geo III c. 139) there are sections relating to the allotment of lands in exchange for the payment of tithes, sections entitling the commissioners appointed under the act to 'turn or abate and stop up or cause or order to be turned or abated and stopped up any Ancient Carriage Road or Way Roads, Way or any Ancient footway or Path Footways or Paths ... within Mildenhall'. The act also dealt with extinguishing communal rights such as the right to 'dig or take away any sods turf or soil or cut any brakes in or from any part of the said commons or waste lands'. These rights that had been enjoyed by the commoners of the parish and they received small allotments in exchange.

Before completing the award the commissioners appointed under the act first completed their own survey of the lands that were to be enclosed. They also collected information relating to the tithes, tenure and communal right of the tenants and compensated each interest in the final allotment of lands. The full process that included a process of consolidation of the individual landholdings is not described in the award and apart from the valuation of the tithes in the Bunbury Collection other subsidiary documents have not been identified in the Suffolk Record Office's catalogues.

The field names given on the enclosure map were combined with further details of the earlier landscape as shown on the pre-enclosure map in order to produce maps for the Suffolk Archaeological Service's Fenland Survey. This survey has not been published however the Suffolk Archaeological Service gave their permission for a copy of the map to be used as an illustration in the 'Mildenhall Rentals of 1501' (Breen 2008).

Manorial Records

The owners of all those plots of lands that surrounded this site appear to have held their lands as freehold, though some also held copyhold lands the manorial records cannot be used to trace the property history in this part of Mildenhall. There is one deed dated 13 December 1825 in the Bunbury collection relating to the Lime Kiln Close but this post dates the enclosure of the parish (ref. E 18/772/1/1).

Earlier manorial records are more useful. In the manorial rental for Mildenhall taken in 1501 there is a reference to Kelle Meadow. Kelle is an alternative form of the word kiln, just as melle and melne and milne are alternative forms for mill. In 1501 Nicholas Bagot held 'one parcel of meadow late Thomas Harras called Kelle Medew lying between the meadow of the said Nicholas Bagot on the south and the common of Mildenhall on the north, the east head abuts on Tymworth Medew And pays for the same yearly xiiid'. His other meadow is described as 'one meadow lying next to Boreslane and next to the common pasture on the south and the meadow of the same Nicholas Bagot on the north. The east head abuts on Tymworth Medew and the other head on Boreslane'. Bagot lived in a house called the 'Hert' opposite the church of Mildenhall. His other lands were scattered in other areas of the parish and included an acre in East Fen Croft and various parcels in 'East Fennes'. The spelling of both place and surnames is very inconsistent in this rental and elsewhere the surname Bagot appears as Bakot or Bakehote (ref. Breen 2008).

The meadow is again mentioned in a series of deeds dated 1584. In a lease in the form of an indenture dated 13 September 1584 (26 Eliz I), Thomas Backhott described as a yeoman from Mildenhall and his wife Bridget leased 'two meadows lyeinge together in Mildenhall aforesaid whereof one is called Kelle meadowe and th'other is called Hard meadowe and lie next the common river' together with other lands including lands in East Fenne to Thomas Archdale 'citizen and draper' of London for a term of 21 years (ref. E18/452/14/16). Another deed dated 31 October 1584 is endorsed as a 'counterpart of the feoffment from Thomas Backott and Bridgett his wife of Kell Meadowe and Hard Meadowe in Mildenhall and 14 acres of land ibm to Thomas Archdall'. The abbreviation 'ibm' is the Latin word ibidem meaning there. The deed is written in Latin and further describes 'Kellemedowe' as containing by estimation five acres more or less the other called Hardemedowe containing by estimation five acres more or less and they lie between the common river there on the south and the common pasture called Le Herse on the north the east head abuts on the meadow called Tymowrth Medowe and the common pasture and the west head abuts on Borislane'. The land in East Fen is described as 'another five acres of land lying in a field called Eastfenfeild in Mildenhall aforesaid between the lands now or late Thomas Backehotte senior on the part of the east and the land of the same Thomas on the part of the west one head of which abuts on the common path leading from Mildenhall aforesaid toward the village of Barton Milles

towards the north and the other head of which abuts on the Processional Way towards the south'. In this deed the lands were sold to Thomas Archedale for a sum of £100 (ref. E18/452/14/17).

The original deed of feoffment also dated 31 October 1584 is in a separate bundle (ref. E18/452/13/9). Again the text is written in Latin and the meadows are described in the same terms. Though the handwriting of the deed of feoffment and its counterpart are different they were written on the same piece of parchment and the indentation matches perfectly. The sale of this land was registered at the courts at Westminster through the then usage of a fine. The final concord is dated 2 March 1584/85 (ref. E18/452/13/10). There is one other deed relating to this land dated 26 October 1584 and is an assignment of the lease granted to Thomas Archdale on 13 September to his 'natural' daughter Margaret Archdale (ref. E18/452/76/6).

By 1611 Thomas Backott's lands had reverted to the lordship and are mentioned in 'A Terrier of all Sir Henry North his lands both free & coppy as also such lands as he holdeth by lease as well of the Kings Magestie as of Trinitye Colledg in Cambridge made & taken the 4th of March in the 9th year of the Raigne of our Sovereigne Lord King James annoq dom 1611' (ref. E18/454/14). On the first page of the terrier, a form of survey, there are references under a sub heading 'In Est Fenns' to 1 acre 1 rood 'Free late Baggotts' and 2 acres 'Free sometimes Baggotts: the lands of the lord on both sides' and on page 17 there are the further references to 2 roods 'of pasture next that free late Baggotts' and 7 acres 'of pasture now going downe to the river late Baggotts free'.

Tymworth Meadow is mentioned in the 1501 rental as the property of the infirmarer of Bury St Edmunds 'lying next to the common on the east and the meadow of Nicholas Bagot on the west'. In the later survey contained in the field books of 1574 under a sub heading of 'South at Preisthill' there are the references to 'Timworth Meadowe 12 ac lease and then Thomas Baghott 1 Close at Bores lane 7 ac free' then Bores lane (ref. E18/454/5-7). This 1574 survey is set out in a geographic sequence. Unfortunately a large number of minor place names were not recorded on the later maps and the positions of these parcels is unknown. The books do record that a large number of houses in High Town had been recently destroyed or damaged in a major fire. According to White's 1874 'Directory of Suffolk', the fire that is stated to have occurred in 1507 destroyed some 37 houses and numerous outbuildings and it is strange that the properties were still described as burnt in the 1574 field books.

There is a reference to the 'Lymekell' as at the east end of the village of Mildenhall in a separate document dated 12 April 1582 (ref. E18/452/20A/8). In this deed in the form of a bond is written in Latin, Rose Costen of Mildenhall 'widow and late relict of Robert Costen late whilst he lived of the same Lymeburner' granted her right of dower or a third of the property called the Lymekell to Roger North knight Lord North and Baron 'Kertelinge'. There is a second deed relating to this property in another bundle of documents endorsed 'A deede of state from Jasper Sharpe to Mr Thomas Pooley of a medow called Lymekells alias Ancills and a cottage in Mildenhall' date 16 April 1573 (15 Eliz) with a further endorsement 'part of the estate purchased with Aspalls of Mr Poley (ref. E18/452/14/14). Again this deed in the form of a bargain and sale is written in Latin, Jasper Sharpe, a mercer of Bury St Edmunds sold to Thomas Poley of Mildenhall esquire 'all that parcel of meadow anciently called and known by the name of Auncells now called the Lyme Kelles and also one cottage built on the same with its appurtenances and the aforesaid parcel of meadow lies between the copyhold land formerly belonging to the late dissolved monastery of Bury now of our lady the Queen on the parts of the east and west and abuts towards the south on the land of the said lady the Queen late of the said dissolved monastery and towards the north on the common way called Bury Way alias Neates Way'. Robert Costen 'late of Mildenhall lyme burner' had conditionally sold this meadow to Jaspar Sharpe by another deed of bargain and sale in 1570. The text of this deed suggests that this was a form of mortgage or loan and that Robert Costen had defaulted on the payment of a sum of £10.

There is a further deed relating to this lime kiln in a large bundle of documents relating to the manor of Aspals. Thomas Pooley of Mildenhall in a deed dated 1 June 1577 (19 Eliz) sold to Sir Roger North of 'Kyrtlynge' 'all that the mannor of Aspalls ... as alsoe all that the capital messuage or tenement nowe newely erected & buylded in Myldenhall aforesaid wherein the said Thomas Pooley nowe inhabitith ... And alsoe ... all his lyme kylne in Myldenhall' (ref. E 18/452/110). Though the reference to the lime kiln appears in the deeds relating to the sale of the manor of Aspalls to Sir Roger North, it was a separate property and not necessarily part or parcel of the manor of Aspalls. This bundle includes a rental of the manor dated 1480-81, an extent or survey dated 1580-81 a further terrier dated 1651 and other deeds.

On page 14 of the 1611 survey under a heading 'Containing all Sir H: N: messuages & cottages both coppy & free' there is a reference to '13 Free a cottage in Limekill yard Hen: Coates'. In the 1574 field book (ref. E18/454/5) on folio 27v, there is a reference under the heading 'Este at Este Fen Feilde' to 'Mr Pooly one parcel of land with a Lime Kilne 0 3r free'. There are no references to a lime kiln at Priesthill in the same book. The Lime Kiln Yard is not mentioned in the 1501 rental and the occupation of lime burner does not appear in the text. Though members of the Costen family are mentioned in 1501

the rentals does not contain any reference to Mr Pooly. References to the Auncell family appear in documents relating to Mildenhall from as early as 1327.

Amongst the tradesmen named in the Poll Tax returns of 1381 (Powell 1896), there was a 'Johannes Calcher' possibly a lime burner. Neither the occupation of tiler nor the surnames Tiler or Tyler appears in records relating to Mildenhall.

Conclusion
In the schedule to Young's 1834 map of Mildenhall and in the 1933 sale particulars for the sale of the Bunbury Estate the then heads of the Bunbury family are identified as the owners of this site, though at both dates the property was tenanted. These were not manorial copyhold tenants and the history of the property cannot be traced through the contemporary manorial records. The owner of the land cannot be identified in the schedules that accompanied the 1812 map and award. This omission may possibly imply that the land was the property of Sir Thomas Bunbury and part of the demesne lands. The position of Lime Kiln Close to the north east of this site is clearly marked on the 1812 enclosure map. When the position of the Lime Kiln Yard as shown on the 1812 map is compared with the position of the kiln as shown on the site location plan the distance that separates the two, approximately 60 metres, appears to be too great for them to be part of the same holding or associated features, though it should be noted that the 1573 deed refers to the Lime Kiln Yard in the plural form 'lyme kelles' and not to the singular 'lime kilne' of 1574 or 'limekill' of 1611.

In 1501 a Nicholas Bagot owned a property called 'Kelle Meadow' lying next to another meadow in his ownership both pieces were between Bores Lane and Tymworth Meadow. The area to the east of this site beyond the old enclosures has been shown to be part of East Fen Field. Nicholas Bagot also owned meadowland in East Fen Field. These meadows and other land in East Fen Field are again mentioned in deeds of 1584 when the lands were sold to Thomas Archedale. Before 1611 these lands had reverted to Sir Henry North the then lord of the manor of Mildenhall, though Kelle Meadow is not mentioned by that name in the 1611 survey. As the eastern boundary of Kelle Meadow rested on Tymworth Meadow and not on East Fen Field it is the case that this reference to Kelle Meadow must relate to another site in Mildenhall.

The property descriptions given in the 1501 rental are much fuller than in the 1574 field books and much of the areas of both High Town and East Fen Meadow as they appear in these documents can be reconstructed from the abutments of the properties. It might then be possible to locate the properties on the pre-enclosure and enclosure maps and reconstruct the geographic layout of late medieval Mildenhall.

According to the trade directories Mildenhall suffered the loss of 37 houses and numerous outbuildings in a fire of 1507. Though it is strange that these properties are still recorded as 'burnt' in the 1574 field books and the date of the fire should be confirmed from a more contemporary source, it should be possible to identify the areas destroyed by this fire.

The cellarers of the abbey of Bury St Edmunds owned a vast estate and building materials produced on one manor were sold to another. In an unpublished account of fifteen tile kilns at Chevington based on research of the account rolls of that manor, it was discovered that Chevington supplied roofing materials to Mildenhall and elsewhere. It is possible that the account rolls for Mildenhall also contain further references to kiln sites in Mildenhall.

Statement of Potential
Option One: Primary research
It has not been possible to trace the history of this site through a process of retrogression using maps and their schedules and then once the owners have been identified, through searching either manorial records or property deeds relating to this site. The kiln site does not appear to be either of the two sites mentioned in 16th-century records.

Documents relating to the Navigation have not been examined for this report and the bundle of deeds and other documents relating to the mill at Mildenhall that includes 'objections to a scheme for raising the water level' (ref. E18/760/2/3) should be examined. These documents might offer an explanation as to why the River Lark is embanked in this area of Mildenhall and a date for the embankment of the river.

In addition an attempt should be made to combine the references to the properties in High Town that adjoined the river as they appear in the 1501 rental as it may well be possible to identify the owners of this site through a reconstruction of the arrangement of the tenements at that date. As the source material has been published and fully indexed this would take an additional day's research.

For a published report it may be deemed sufficient to complete the research of the documents relating to the (River Lark) Navigation and to present a summary of this research. If the additional research into the

1501 rental is attempted the results of this can be presented in the form of a diagram and the methodology explained in the published report. The published report must include a good copy of the 1812 enclosure map (Q/RI 30B) with the sites' boundaries and position of the excavated kiln shown in their correct positions. The site of the Lime Kiln Yard shown on the 1812 map should be highlighted. The research can be summarised in a maximum of 1500 words.

Option Two: Additonal research
The late medieval manorial records for the manor of Mildenhall offer the greatest potential for further research. It should be possible to place this site in its full geographic context by reconstructing the layout of High Town through the use of the property descriptions as they appear in the 1501 rental. As a full translation of this rental has been published, it is much easier to identify the references to the properties than trying to use the original record. The 1574 field books that are set out in a geographic sequence can be used to further define the historic geography. These field books can also be used to identify the positions of the houses burnt in the 1507 fire. Both the rental and field books can be combined with contemporary manorial records, probate material and other records to recreate a very full picture of the commercial and industrial activity in this part of Mildenhall in the late 15th and early 16th centuries.
The results of this additional research could be presented in an expanded summary of approximately 2500 words in total. The report should include a copy of the 1812 enclosure map and at least one diagram showing the results of the recreation of the geography of the late medieval town.

Work Required
For the completion of the research as set out in Option One and the preparation of a summary for a published report would take two days. An additional day should be allowed for an attempt to recreate the geography of this area of late medieval Mildenhall through the use of the published rental of 1501. The report should include a copy of the enclosure map of 1812 and if the recreation of the late medieval geography of this area has been commissioned and has been successful the results of this should be presented as a diagram and possibly a table that identifies each reference to a property.

For the completion of the additional research as set out in Option Two. The value of this additional research for the interpretation of this site is dependent on the successful recreation of the late medieval geography of the area. Though the study of these additional sources have an interest in their own right the purpose of this additional research should be to aid the interpretation of the excavated site and should not stray into a general discussion of Mildenhall's medieval economy. However the attempt to re-create the late medieval geography is likely to be successful and the additional sources are all at Bury St Edmunds and research into these records can be completed with two to three days research. All the records are at Bury St Edmunds

	Days	**Word Count**	**Figures**
Option One	2 days	1500	1
Plus 1501 Rental	1 day	as above	2
Option Two	3 Days	1000	2
Total	5 days	2500	5

A photographic copy and permission to publish a copy of this map should be obtained from the Suffolk Record Office in Bury St Edmunds. The cost of reproducing an image of this map is not included in the estimate for this work.

ENVIRONMENTAL EVIDENCE

APPENDIX 13: THE HUMAN BONE ASSEMBLAGE BY JONNY GEBER

A total of eleven human skeletons and 141 disarticulated bones from 16 contexts were discovered during the archaeological excavations at Mildenhall (Table 24). It is anticipated that an additional minor quantity of human bone will be recovered from the animal bone material once it is undergoing full analysis.

The human remains displayed an exceptionally good level of preservation, and inhibit great osteological and palaeopathological potential. The remains were both recovered from formal burials and potential charnel features. No dates for these burials had been obtained at the time of the assessment. Evidence of Iron Age, Roman and medieval activity was however identified on the site.

Even though the dates for these remains are yet to be determined, the exceptionally good degree of preservation of the material warrant a full and comprehensive osteological and palaeopathological

analysis. The remains will be analysed following national and international standard praxis (Buikstra and Ubelaker 1994), as agreed by the Institute of Field Archaeologists (IFA) and British Association of Biological Anthropology and Osteoarchaeology (BABAO) (Brickley and McKinley 2004).

Table 24. Quantification of human bones from the Mildenhall excavations.

Context	Category	Description	Preservation
2018	Disarticulated	Infant and adult elements	Excellent
2019	Skeleton	Adolescent skeleton, complete	Excellent
18039	Disarticulated	Adult elements	Excellent
20039	Disarticulated	Adult elements	Excellent
20086	Disarticulated	Adult elements	Excellent
20338	Skeleton	Adult male skeleton, incomplete (skull + upper limb)	Excellent
20400	Disarticulated	Adult elements	Excellent
20747	Disarticulated	Adult elements	Excellent
20789	Disarticulated	Adult elements	Excellent
20792	Disarticulated	Infant and adult elements	Excellent
20807	Disarticulated	Adult elements	Excellent
20808	Skeleton	Neonatal skeleton, complete	Excellent
20810	Disarticulated	Adult elements	Excellent
20811	Disarticulated	Infant elements	Excellent
20812	Skeleton	Older child skeleton, complete	Excellent
20840	Disarticulated	Adult elements	Excellent
20979	Skeleton	Neonate elements	Excellent
21003a	Skeleton	One adult male skeleton, disarticulated, complete	Excellent
21003b	Skeleton	Adolescent male skeleton, disarticulated, complete	Excellent
21080	Skeleton	Adult male skeleton, complete	Excellent
21091	Disarticulated	Adult elements	Excellent
21237	Disarticulated	Young child elements	Excellent
21386	Skeleton	Adult male skull + atlas, axis	Excellent
21921	Skeleton	Adult skeleton, disarticulated, partly complete	Excellent
22030	Skeleton	Neonatal skeleton, complete	Excellent
4109	Disarticulated	Adult elements	Excellent

Estimated time budget required

Bone analysis	-	3 ½ days
Research	-	1 days
Report writing	-	2 days
Photography	-	½ day
TOTAL		7 days

APPENDIX 14: THE ANIMAL BONE ASSEMBLAGE BY JONNY GEBER

Introduction

The excavation at produced a substantial amount of animal bones (311kg). The bones were in general very well preserved, owing to the beneficial soil conditions of the site. Bones were recovered from contexts dating from the Late Bronze Age to the modern period, with the bulk of the material being of either Iron Age or Roman date (Table 25). The majority of the material was hand-collected on site, and include primarily mammal bones. Bones from birds, rodents, fish and amphibians were also identified, however at minor quantities.

Animal bones are usually the most abundant ecofact from archaeological excavations. Other than differentiating between species and revealing faunal diversity, the osteological analysis will have the potential to identify economic practices through assessing the relative quantity and the age-at-death pattern of the main domesticates, breeding practices and diversity through metrical assessment, and general meat production and import or export of meat products through analysis of skeletal element distribution. Furthermore, the presence of pathologies will yield insights into animal health, as well as the relationship between man and animal (see Davis 1987; Reitz and Wing 2008).

Mildenhall is located in the north-west part of Suffolk. Relatively few analyses large sized animal bone assemblages have been published from Suffolk, with a few notable exceptions such as Ipswich (Jones and Serjeantson 1983) and West Stow (Crabtree 1989). The Mildenhall animal bone assemblage is therefore important in furthering our understanding of local husbandry practices and economies throughout time in Suffolk, and the east of England in general.

The aim and objective of this report is to quantify the osteological assemblage, present a brief summary of preliminary osteological findings, give recommendations and suggestions for future work, as well as assessing the scientific potential and significance of the bone material (EH 2002; Payne 1991). Given the size of the assemblage, and its good state of preservation, it was felt that a more detailed examination of a proportion of the assemblage would be a useful exercise in testing the potential of the bone assemblage, and would assist in formulating the updated aims and objectives for full analysis. A sample was chosen from the contexts, taking the preliminary phasing scheme, and comprised 23% of the entire assemblage (by crude weight).

Full stratigraphic analysis of the site sequence, augmented with further analysis of artefacts and scientific dating, will refine the phasing framework of the site and allow the bone assemblage to be more securely dated. The results below must be viewed as preliminary and partial, but give an accurate indication of the potential that the bone assemblage holds for full analysis.

Osteological methodology

Bones were identified to species and skeletal elements with the help of a bone reference collection and osteological reference literature (Cohen and Serjeantson 1996; Ellenberger and Baum 1912, Iregren (ed.) 2002; Prummel 1988; Schmid 1972; Wolsan 1982). Attempts were made to distinguish between sheep and goat in the caprovine remains, following the descriptions by Boessneck *et al.* (1964), Halstead *et al.* (2002) and Prummel and Frisch (1986). For the purpose of aiding quantification, the zonation recording system devised by Serjeantson (1996) was adopted.

Age-at-death/slaughter was estimated from skeletal maturity, epiphyseal bone fusion and dental attrition (Grant 1982; Habermehl 1975; Payne 1973; 1987; Silver 1970). Sex was determined from the presence/morphology of canine teeth in horses and pigs (Schmid 1972), from humerus morphology and baculum bones in dogs (Ruscillo 2006), and from pelvic features in cattle and caprovines (Greenfield 2002).

The bones were quantified by refitted fragment counts (NISP = Number of identified specimens) and weights were taken on a digital weight scale with 0.01g accuracy (QHAUS Scout Pro). Bone measurements were taken using a digital calliper with 0.01mm accuracy (BILTEMA Electronic Digital Caliper) following the descriptions given by von den Driesch (1976). Living shoulder heights were estimated following the methods by Fock (1966), Harcourt (1974), Matolsci (1971), May (1985), and Teichert (1969; 1975).

Material

The analysed proportion for this assessment of the bone assemblage comprised 3,676 fragments (70,041g). In total, 76% of all fragments (N = 872) and 92% of the total weight (5,473g) could be identified to species and skeletal element, which is relatively a very high proportion. This increases the scientific potential in the material considerably. Likewise, the often minor degree of fragmentation of the

remains allowed for a high proportion of the bone material to be made subject to detailed metric analysis.

Seven chronological periods were identified during the archaeological excavation, and animal bones dating to all are present in the assemblage (Table 25). By weight, the majority of the material dates to the Middle/Late Iron Age (26.23%) and Medieval (22.16%) periods. Lesser quantities were present in Bronze Age (1.02%) and post-medieval/modern contexts (1.24%). Additionally, a proportion (13.47%) of the material was recovered from broadly dated contexts. It is anticipated that a radiocarbon dating programme will enable a more defined date for many of the animal-rich contexts amongst these.

Table 25. The quantity of animal bones by chronological period, and the analysed proportion for this assessment, from the Mildenhall excavation.

Period	**Total bone quantity (g)**	**Quantity analysed (g)**	**%Analysed**
Bronze Age (Period 1)	3,156	370	11.72
Middle/Late Iron Age (Period 2)	81,456	22,751	27.93
Roman (Period 3)	40,219	6,267	15.58
Early medieval (Period 4)	49,385	7,628	15.45
Medieval (Period 5)	68,801	21,204	30.82
Post-medieval (Period 6)	1,835	36	1.96
Modern (Period 7)	2,030	168	8.28
Broadly dated contexts			
Bronze Age – Roman (Period 1–3)	6,704	1,571	23.43
Bronze Age – Early medieval (Period 1–4)	203	0	0.00
Bronze Age – medieval (Period 1–5)	519	505	97.30
Bronze Age – modern (Period 1–7)	1	0	0.00
Middle/Late Iron Age – Roman (Period 2–3)	1,251	0	0.00
Middle/Late Iron Age – Early medieval (Period 2–4)	203	0	0.00
Middle/Late Iron Age – medieval (Period 2–5)	933	0	0.00
Middle/Late Iron Age – post-medieval (Period 2–6)	344	49	14.24
Middle/Late Iron Age – modern (Period 2–7)	9	0	0.00
Roman – Early medieval (Period 3–4)	8,767	2,067	23.58
Roman – medieval (Period 3–5)	8,607	861	10.00
Roman – post-medieval (Period 3–6)	46	45	97.83
Roman – modern (Period 3–7)	5	0	0.00
Anglo-Saxon – medieval (Period 4–5)	3,508	539	15.36
Anglo-Saxon – Post-medieval (Period 4–6)	387	21	5.43
Anglo-Saxon – Modern (Period 4–7)	454	0	0.00
Medieval – Post-medieval (Period 5–6)	3,575	587	16.42
Medieval – Modern (Period 5–7)	5,723	149	2.60
Post-medieval – Modern (Period 6–7)	573	55	9.60
Other			
Undated	21,247	5,167	24.32
Unstratified	571	0	0.00
Total:	**310,512**	**70,041**	**22.56**

The preservation of each fragment was assessed following a six category recording scale, based on the weathering stages described by Behrensmeyer (1978) and modified by the author. The vast majority of the assemblage (76.20%), based on fragment count, displayed a very good degree of preservation, with most of the remaining quantity being of good preservation. Only a very small proportion of the bones (3.57%) were in moderate or poor state of preservation. No bone fragments were classified as being of very poor preservation.

The fragmentation of the sample was assessed for cattle, caprovine and pigs, by counting the prevalence rate of the number of identified anatomical zones of the long bones (humeri, radii, femora and tibiae) and metapodials (metacarpals and metatarsals), based on the eight regions defined by Serjeantson (1996, table 27a). With pigs, the metapodials were however excluded as these are smaller bones and therefore less likely to fragment than long bones, and the ulnae and fibulae were included instead, as these are substantial long bones in the pig skeleton.
Amongst cattle, 80% of all fragments comprised of four zones or less, amongst caprovines 73% and pigs 76%. This all indicates a similar degree of relative fragmentation of all three species, which is more likely to be due to the slaughter/butchery process rather than post-depositional factors. The greatest proportion of complete bones was present amongst the cattle remains, followed by caprovines and pigs (Fig. 1).

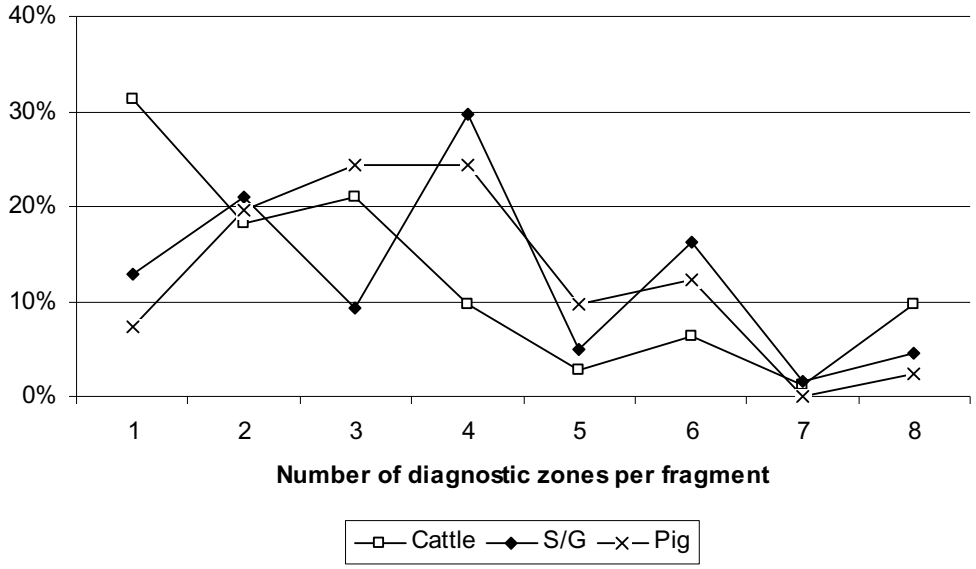

Fig. A14.1. The fragmentation of the Mildenhall cattle, caprovine (S/G) and pig bone sample.

Preliminary results

A total of 27% of the entire material was made subject to full osteological analysis (see above), and considering that the phasing is preliminary, and that several contexts at this stage are only assigned broadly dated chronological periods (see Table 25), only bones from the most securely dated contexts are discussed below. These are initial findings, based on a proportion of the animal bone material. Further analysis will be able to test these preliminary findings. In addition to the tables presented below, additional tables and graphs showing identified mammal species and elements, the relative distribution of identified skeletal elements in cattle, caprovine and pig remains, and the age estimation of cattle, caprovine and pig remains are available in the archive

Species representation

A total of twelve species were identified in the analysed proportion (Table 26). Cattle was present in all periods, caprovine bones were present in all except for post-medieval contexts, and pig bones were present in Late/Middle Iron Age to medieval and modern contexts. Horse and dog were also present throughout most periods, and cats from the Roman to the medieval period. Of the wild fauna, roe deer bones were present in Bronze Age contexts, red deer in Late/Middle Iron Age and Roman contexts, possibly fox in Roman/*Anglo-Saxon* and medieval contexts, and hare and possibly rabbit in medieval and medieval/post-medieval/modern contexts. A single frog bone was present in a Roman context (17126). The greatest diversity of species was noted in the Roman and medieval periods.

Table 26. Representation of species by presence (x) and chronological period. Period abbreviations: see Table 25; UD = Undated.

	Period																		
Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1–3**	**1–5**	**2–6**	**3–4**	**3–5**	**3–6**	**4–5**	**4–6**	**5–6**	**5–7**	**6–7**	**UD**
Cattle *(Bos taurus)*	x	x	x	x	x	x	x	x	x		x	x		x	x	x	x		x
Caprovine (S/G)	x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x
Sheep (Ovis aries)	*x*	*x*	*x*	*x*	*x*		*x*	*x*			*x*	*x*		*x*		*x*			*x*
Goat (Capra hircus)		*x*			*x*														
Pig *(Sus sp.)*		x	x	x	x		x	x			x	x		x					x
Horse *(Equus caballus)*	x	x	x	x	x			x			x			x			x	x	x
Dog *(Canis familiaris)*		x	x	x	x	x		x	x		x						x		x
Cat *(Felis catus)*			x	x	x														
Red deer *(Cervus elaphus)*		x	x								x								
Roe deer *(Capreolus capreolus)*	x																		
?Fox *(Vulpes vulpes)*					x						x								
Hare *(Lepus timidus)*																	x		
Hare/Rabbit *(Leporidae sp.)*					x														
Frog *(Rana temporaria)*			x																x
Bird *(Aves sp.)*		x	x	x	x						x						x		
Fish *(Pisces sp.)*		x	x	x	x		x	x			x			x		x			x

Bird bones were not made subject to analysis in this assessment other than as a fragment count. Considering the very good preservation of the mammal bones, there is a noteworthy lack of bones from birds (n = 35).These were present in contexts dating from Middle/Late Iron Age to medieval periods.

The relative proportion of bones from cattle, caprovine and pig is presented in Figure A14.2. Cattle dominated during the Late Bronze Age and Roman period, while there is seemingly a generally more even distribution between cattle and caprovines in the other periods. Caprovines dominated in the Late/Middle Iron Age, and they constituted the majority of the bones from modern period contexts. Pigs do not appear to have constituted a substantial part of the domestic livestock in any of the periods.

The Late/Middle Iron Age material differs in species representation compared to the later periods. Caprovines decrease in numbers after the Roman occupation of the site, and relative distribution of cattle, caprovine and pigs remains virtually the same throughout the medieval period. This would suggest that a shift took place in regards to the husbandry regime and economy, which is further indicated by the age profile of cattle and caprovines (see below).

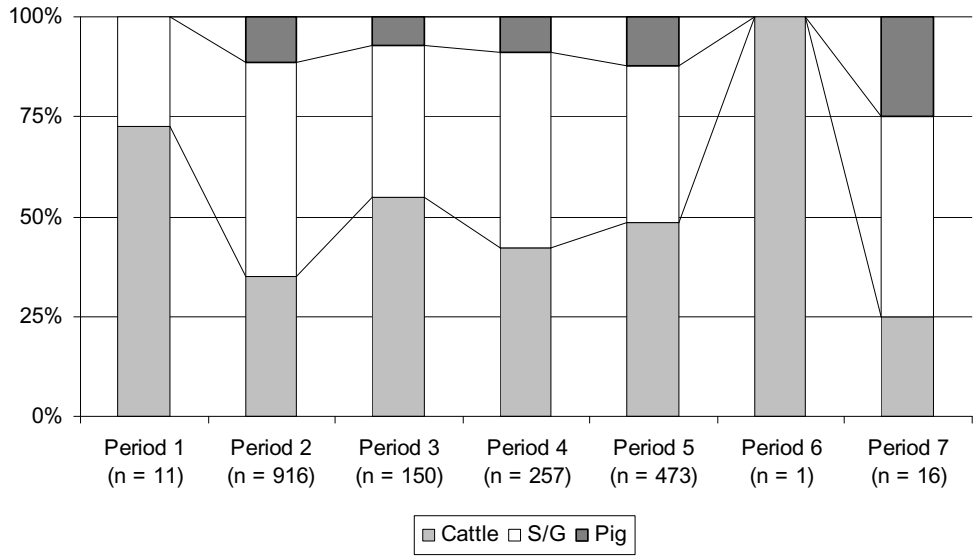

Fig. A14.2. The relative distribution of the main meat-producing domesticates by fragment count (NISP) and period. Period abbreviations = see Table 25.

The assemblage by provisional period

Period 1: Late Bronze Age

The earliest dated animal bones derive from Late Bronze Age contexts in Area 20, and amounted to a total of 1,359g. Just over a quarter of this material were made subject to full analysis for the purpose of this assessment. These remains comprised 19 fragments, of which eight were identified as cattle, three as caprovine, one as horse, and one metatarsal bone was identified as roe deer. The roe deer is an indigenous specie to Britain (Perry 1978), and in this analysed proportion of the animal bone assemblage from Mildenhall, it was only present in a Late Bronze Age context. It does suggest that hunting of game animals took place, although no cut marks were identified on the bone fragment in question. It is anticipated that the full analysis of the remainder of the material will provide more solid foundation for the osteological interpretation of the remains.

During the Early Bronze Age, communities throughout Britain had started to exploit bi-products such as milk and wool, and by the Late Bronze Age this practice had become was well established (Davis 1987, 179–80). It is therefore anticipated that the animal bones will be able to shed light upon Late Bronze Age economy at Mildenhall and the surrounding area.

Suitable comparative contemporary animal bone assemblages for the Bronze Age material include Games Farm in Suffolk (Baxter 2004), Grimes Graves in Norfolk (Legge 1981), the Marlborough Downs in Wiltshire (Maltby 1992), Potterne in Wiltshire (Locker 2000), the Upper and Middle Thames Valley (Lambrick and Robinson 2009), and Whitecross Farm in Oxfordshire (Powell and Clark 2006).

Period 2: Middle/Late Iron Age

The Iron Age animal bone material was dominated by caprovine bones, followed by cattle and pig. Other species identified include horse, dog and red deer. A dominance of caprovine is a general trait which is often observed in Iron Age animal bone assemblages (Cunliffe 2005, 415-416), and the Mildenhall site appears to conform to this. It is clear in general that meat contributed greatly to the diet of Iron Age people in Britain, and this has also been confirmed from isotopic analyses of human remains dating to this period. These results have indicated a protein-rich diet from terrestrial sources with very little inclusion of fish (Jay and Richards 2007).

Amongst the main domesticates, there was a relatively large proportion of meat-rich elements present in the material, and this would suggest that the remains predominately consist of food waste rather than primary butchery waste. In total, 68% of all identifiable bones from the meat-producing domesticates derived from meat-rich elements. These were relatively evenly distributed amongst different types of contexts, and it indicates that there was no particular preference as to where slaughter and primary butchery waste and kitchen waste were disposed (Table 27).

Table 27. The distribution of fragments of meat-rich (humerus, ulna, radius, scapula, coxae, sacrum, femur, patella, tibia, malleolus, atlas, axis, and the sternum) and meat-poor (cranium, metacarpal, carpal bones, metatarsal, tarsal bones, phalanges and sesamoid bones) elements of the meat producing domesticates (cattle, caprovine and pig) by context in Middle/Late Iron Age deposits at Mildenhall. Definition of meat-rich and meat-poor elements according to Wigh (2001, table 12).

	Meat-rich		**Meat-poor**		
Context	**n =**	**%**	**n =**	**%**	**N =**
Ditches	59	72.84	22	27.16	81
Pits	525	67.83	249	32.17	774
Layers	12	63.16	7	36.84	19
Grave fills	9	100.00	0	0.00	9
Tree throw	21	63.64	12	36.36	33
All:	**626**	**68.34**	**290**	**31.66**	**916**

An interesting anomaly however are nine animal bones recovered from the only grave context (21306) amongst the analysed proportion. These were all meat-rich elements, comprising a fragment of a cattle radius, and an atlas, axis, thoracic vertebra, four rib fragments and a humerus of caprovine. The caprovine bones in particular may represent food offerings, although this was not evidently noticeable during the archaeological excavation. This observation is significant as it may indicate status and religious belief in the area during the Iron Age, and deserves further research attention (see Parker Pearson 1999).

The Iron Age material contained the highest proportion of calves, and indicates that cattle were probably bred and herded on location. It may also indicate a higher utilization of cows' milk during this time. It is however believed that the primitive breed of cattle required the presence of the calf for the cow to be able to give milk (McCormick 1992). The high proportion of calves may simply represent natural deaths or an intentional slaughter of young animals for the purpose of meat consumption only.

The age-at-death profile of the caprovine remains indicate that most animals were slaughtered between the second and third year, and that most animals were killed before the fourth year. This relative low proportion of young and old animals would suggest that sheep/goat were primarily herded for meat, although milk and wool is also likely to have been utilized.

The identified red deer elements comprised of two antler fragments and a frontal bone. All three fragments displayed evidence antler crafting; the antler having been cut off with a cleaver near the burr on the frontal bone (15130) and cut through the beam and tines of the antler specimens (15130; 15267). Further evidence of industrial activity at Mildenhall during the Middle/Late Iron Age is represented by a worked half-fabricate made from a metacarpal of a juvenile sheep (19206)

Another noticeable find was a semi-complete dog skeleton identified in the fill (19104) of pit 19103. Whether this is a pet burial, or the merely a dog carcass that had been disposed of, is unclear. This skeleton displayed marginal osteophytosis on the anterior surface of the body on one of the lumbar vertebrae, and indicate spinal degenerative joint disease which suggest relatively old age for this animal. The living shoulder height was estimated to 30-34cm. Sex could not be determined.

Suggested comparative contemporary animal bone assemblages include Warren Hill in Suffolk (Powell *et al.* 2004), Combe Down South in Somerset (ibid.), Groundwell West in Wiltshire (Hambleton 2001), Winnall Down in Winchester (Maltby 1985), Baldock in Hertfordshire (Chaplin and McCormick 1986) and Conderton Camp in Worcestershire (Iles and Clark 2005).

Period 3: Roman

The Roman animal bone material was dominated with remains of cattle, followed by caprovine and pig. Other identified species include horse, dog, cat, red deer and common frog. The identified skeletal elements of the main domesticates display a relatively even distribution of both meat-rich and meat-poor elements, and would suggest that there is no dominating type of waste present in this assemblage.

Based on the epiphyseal bone data, the majority of cattle were slaughtered between the first and fourth year, with most being aged around three years (Fig. 3). This age profile is very much different from the preceding Iron Age periods, where the majority of cattle were slaughtered after the fourth year.. This difference indicates that cattle were exploited more for their milk than in the preceding period.

The age profile of caprovines did also indicate a slight change in the husbandry economy, as a larger proportion of older animals were present in the Roman material. This would indicate that wool-production became more important during the Roman period. No infant animals were present, and sheep/goat milk may therefore have been of limited importance.

The zooarchaeological evidence from Essex has suggested that a significant change in livestock occurred during the Late Iron Age/Roman transition and Roman periods (Albarella *et al.* 2008), and the difference in cattle age-at-slaughter between the Iron Age and Roman periods at Mildenhall appears to conform to this observation.

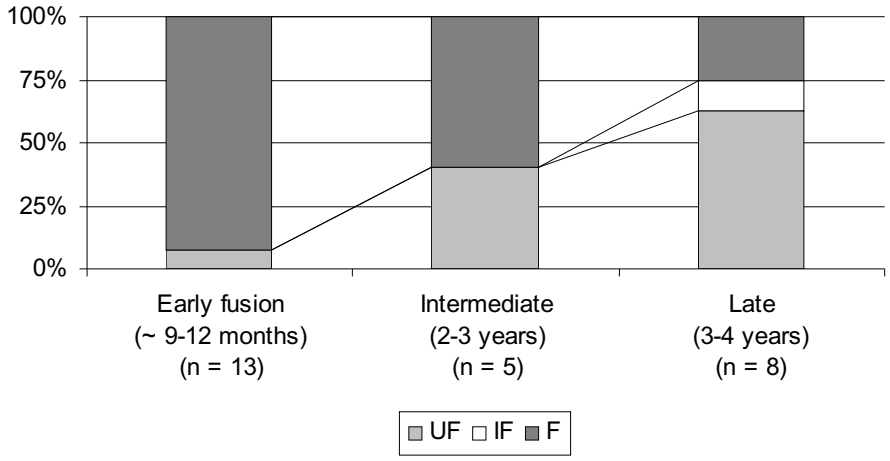

Fig. A14.3. Roman cattle age distribution from Mildenhall, based on epiphyseal bones. UF = Unfused; IF = In fusion; F = Fused.

Suitable comparative assemblages from the Roman period animal bone data include Eaton Socon in Cambridgeshire (Sykes 2008), Colchester (Luff 1993), Chisenbury Warren in Wiltshire (Powell *et al.* 2004), Combe Down South in Somerset (*ibid.*), Winnall Down in Winchester (Maltby 1985), and Baldock in Hertfordshire (Chaplin and McCormick 1986).

Period 4: Anglo-Saxon

The early medieval assemblage comprised a relatively equal proportion of caprovine and cattle bones, followed by pig, horse, dog and cat. Both meat-rich and meat-poor elements are present amongst the skeletal remains of the main domesticates.

As in the Roman period, the majority of cattle were slaughtered before the third and fourth year, and there does not appear as if a significant change took place in husbandry practices during the early medieval period. It is however clear that cattle milk production was clearly established, and that a large proportion of the calves were therefore slaughtered during this period.

The age profile of the caprovine bones does not reveal any clear trend towards milk, meat or wool production. A relatively large proportion of the early medieval remains included lambs, which would have been slaughtered for the purpose of enabling milk exploitation. About half of all animals were herded for meat, while the remaining livestock was utilized for wool.

A large proportion of the pig bones comprised fragments of scapulae. This was a clear difference from the preceding and following periods, and indicate a dominance of neck end and prime collar meat cuts in this material (see Davis 1987, fig. 1.3). This may indicate that a proportion of the pig bones derive

from animals slaughtered elsewhere, and that some import of particular meat cuts took place. Further analysis based primarily on minimum number of elements (MNE) quantification (see Lyman 1994) should be able to confirm this indication.

Evidence of degenerative joint disease was noted in cattle and horse bones. An eburnated patch (13 x 8mm) was noted on the lateral surface of the trochlea of a cattle astragalus (5180), as well as on the proximal articular surface (7 x 1mm) of a metatarsal (3989). The affected horse bone was a right metatarsal (2039) which displayed an eburnated facet (3 x 9mm) on the anterior margin of the proximal articular surface. Eburnation occurs due to continuous wear-and-tear of the synovial joints, and impaired and decreasing joint cartilage will eventually result in contact between the articular bones surfaces which results in a polished surface (Rogers *et al.* 1987). This condition would be painful, and is an indication of that the animal most likely was used for labour and traction.

Suggested comparative assemblages include the Anglo-Saxon settlement Abbots Worthy in Hampshire (Coy 1991) and Yarnton in Oxfordshire (Mulville and Ayres 2005), Conderton Camp in Worcestershire (Iles and Clark 2005).

Period 5: Medieval
The medieval animal bone material consisted of mainly cattle bones, followed by caprovines, pig, horse, dog, and two bones of cat and one bone each of a fox and a leporid (hare/rabbit). The cattle bones comprised a relatively large proportion of meat-poor elements from the skull and metapodials, and may indicate a dominance of primary butchery waste in this material. A similar pattern was also noted in the caprovine remains, although these also contained frequent examples of forelimb and tibiae bones, which are all from meat-rich segments of the animal.

The medieval cattle bone assemblage contained a relatively high proportion of mandible fragments compared with the preceding periods.. This was the greatest anomaly in terms of relative distribution of fragments when each period was contrasted against each other, and would possibly suggest that this material constitute a larger proportion of slaughter and butchery waste. In general, there were lesser quantities of meat-rich elements amongst the cattle bones dating to this period, compared with the Late/Middle Iron Age to early medieval periods.

Suitable comparative assemblages of adequate size include West Cotton, Raunds in Northamptonshire (Albarella and Davis 2010), Causeway Lane in Leicester (Gidney 1999) and Deansway in Worcester (Nicholson and Scott 2004).

Phase 6: Post-medieval
Only a small proportion of the analysed assemblage comprised bones from post-medieval contexts (11 fragments; 36.45g). These were present in Areas 3, 15 and 16. The only elements identified were a cattle radius and a carnassial tooth of a dog. The radius displayed a transverse chop mark across the distal portion, while the diaphysis was broken in an oblique pattern.

Phase 7: Modern
This analysed proportion comprised of 22 fragments (167.99g) of bone present in contexts in Areas 15, 17 and 19. The identified specimens in the assemblage comprised four fragments of cattle bones, eight caprovine bones of which two were identified as sheep, and four pig bones. All the bones derived from mature animals. A cattle thoracic vertebra displayed a diagonally transverse chop mark through the caudal portion.

Other
One noteworthy find from the osteological analysis of the bones from the broadly dated contexts include a healed fracture of the ectoorbitale of the left eye socket of a dog cranium in 3016. This find is interesting, as it does reveal aspects of the relationship between dog and man as the fracture may have been caused by directed violence. Both cranial and post-cranial fractures are not uncommon observations in archaeological dog skeletons, and it may indicate that dogs were regarded more as working animals in the past rather than as pets. To place this find within its socio-cultural context, it is suggested that it is made subject to radiocarbon dating.

Metrical analysis
Considering the well preserved nature of the animal bones, and the relatively low degree of post-depositional fragmentation, there is great potential in metrical analyses of the remains. The value of these is however dependent on sample size, which would enable valuable statistical tests.

Animal size
The mean shoulder height of cattle at Mildenhall was 116cm. There appears to have been an increase in size throughout time, from a mean height of 114cm in the Late/Middle Iron Age to about 118cm in the medieval period. In total, 17 bones were available for shoulder height estimations in the cattle remains in

the analysed proportion (Table 28), and it is anticipated that a full analysis of the total material will enable a more detailed statistical analysis of the result, to confirm or reject the possibility of animal size fluctuation throughout time.

Table 28. Estimated living shoulder heights (cm) of cattle bones. For period abbreviations, see Table 25; U = undated.

Period	mean	min	max	SD	N:
2	113.55	105.60	122.40	6.90	7
4	118.58	-	-	-	1
5	117.97	112.96	124.76	4.63	7
3-4	124.76	-	-	-	1
U	109.59	-	-	-	1
All:	**116.09**	**105.60**	**124.76**	**6.16**	**17**

The size of caprovines does not appear to have changed considerably throughout the periods at Mildenhall, however full analysis of the remaining animal bone material is required to conclude this. The largest animals, by mean value, were present in the Middle/Late Iron Age, but the medieval caprovine population included both the smallest and largest animals in the assemblage (Table 29).

Table 29. Estimated living shoulder heights (cm) of caprovine bones. For period abbreviations, see Table 25; U = undated.

Period	mean	min	max	SD	N:
2	57.50	54.38	59.74	1.97	5
3	54.61	-	-	-	1
5	55.99	50.58	58.39	3.50	5
3-4	54.60	-	-	-	1
U	54.72	54.04	55.39	0.95	2
All:	**56.15**	**50.58**	**59.74**	**2.54**	**14**

Only four pig bones were available for shoulder height estimations, which make any interpretation of the result difficult. Based on three bones, the mean shoulder height was 74cm in the Middle/Late Iron Age. One bone from a modern context indicated a slightly smaller animal size during this period (Table 30).

Table 30. Estimated living shoulder heights (cm) of pig bones. For period abbreviations, see Table 25.

Period	mean	min	max	SD	N:
2	74.14	72.18	77.63	3.03	3
7	71.45	-	-	-	1
All:	**73.47**	**71.45**	**77.63**	**2.82**	**4**

Shoulder height could be estimated from five horse bones. The smallest animal amongst these is present in the Middle/Late Iron Age context which is a pony size. Both ponies and horses were present in the medieval period (Table 31).

Table 31. Estimated living shoulder heights (cm) of horse bones. For period abbreviations, see Table 25; U = undated.

Period	mean	min	max	SD	N:
2	124.77	-	-	-	1
5	149.91	137.00	155.91	11.19	3
U	134.20	-	-	-	1
All:	**141.74**	**124.77**	**155.91**	**14.10**	**5**

Shoulder heights estimations of dog bones were possible to conduct in two partial skeletons. The partial skeleton of a dog in a Late/Middle Iron Age context (19104) revealed an estimated living shoulder height of 30-34cm (see above). Additionally, a partial dog skeleton found in a peat layer (3016) of a more general date gave a height of 53-55cm (Table 32).

Table 32. Estimated living shoulder heights (cm) of dog bones. For period abbreviations, see Table 25.

Period	mean	min	max	SD	N:
2[1]	32.34	29.91	33.84	2.12	3
1-5[2]	53.92	53.18	54.74	0.73	5
All:	**45.83**	**29.91**	**54.74**	**11.24**	**8**

[1] Incomplete skeleton (19104)
[2] Incomplete skeleton (3016)

Sex determination

There are many methods available for determining sex from animal bones based on metrical assessment. In cattle, these often conducted from various metrical ratios in metapodials, and an example is given in Fig. A14.4. Detailed sex estimations, based on both morphological and metrical traits, will enable to discuss the husbandry practices and economic regimes, where for instance a dominance of cows would indicate a milk producing economy.

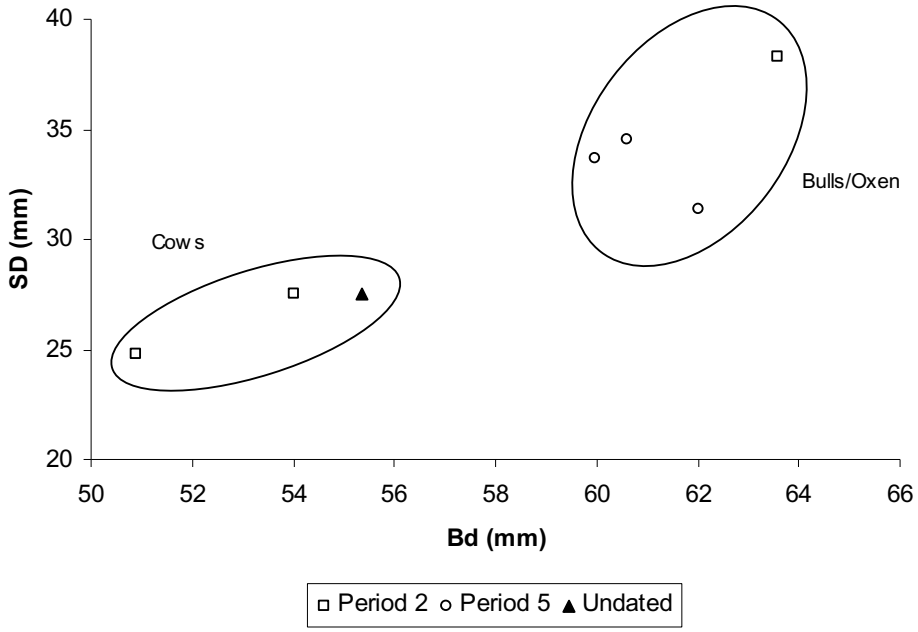

Fig. A14.4. Bivariate plot diagram of the cattle metapodial distribution of the distal breadth (Bd) against the smallest diaphyseal breadth (SD).

Likewise, caprovine skeletons are suitable for determining sex based on metrical methods. The medial thickness of the acetabular wall, for instance, is a useful feature. In the Mildenhall assemblage, there is a clear dominance of female animals noted when using this sexing method (Fig.. A14.5). Only caprovine coxae derived from male animals, which dated to the Roman and early medieval period. A high proportion of rams is expected in a wool producing economy, as these provide the best quality fleeces. Based on the preliminary analysis, the sex distribution of the caprovines appears to indicate that milk production was of greater importance than wool production.

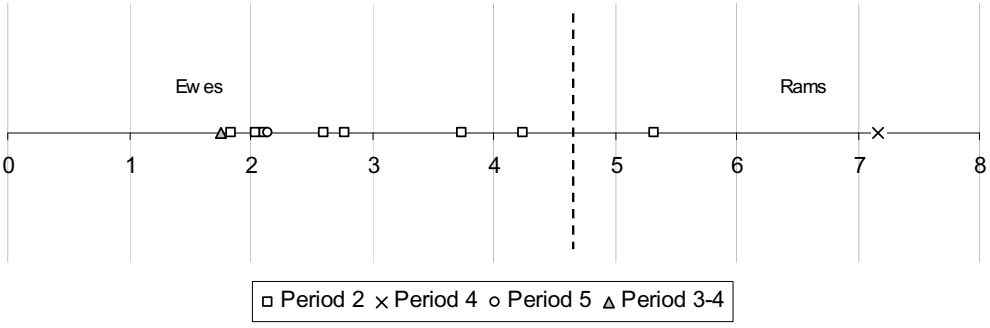

Fig. A14.5. Distribution of the thickness (mm) of the medial wall of the acetabuli in caprovine *coxae.*

Morphometrical variation

Principal component analysis (PCA) is a suitable method for comparing and contrasting physical variations in bones between and within populations, which may give insights into different types of breeds as well as a function as a sex discriminatory analysis. As an example, PCA was conducted on two elements from the analysed proportion of the animal bones from Mildenhall: caprovine scapulae and

cattle astragali, which are both robust elements and therefore usually well preserved, which make them suitable for metrical assessment.

The measurements used on the scapulae were the smallest length of the neck (SLC), the greatest length of the articular process (GLP), the length (LG) and the breadth (BG) of the glenoid cavity. On the astragali, the greatest lateral length (GLl), the greatest medial length (GLm), the lateral depth (Dl), the medial depth (Dm) and the distal breadth (Bd) were used (von den Driesch 1976). For the purpose of general comparison to highlight the potential in this method, the results were contrasted against the metrical data from Tulsk, a multi-period rural settlement in Co. Roscommon, Ireland, which was also an assemblage of substantial quantity (Geber 2010).

The cattle astragali in these two materials did not differ significantly, although there does appear to be a greater variance in cattle morphology at Tulsk than at Mildenhall. At Mildenhall, there are two, or possibly three, clusters observed, and this may indicate differences in breeds (Fig. 14.6). Relatively few cattle astragali were however available for principal component analysis from Mildenhall, and an analysis of the total assemblage is required to be able to confirm this possibility.

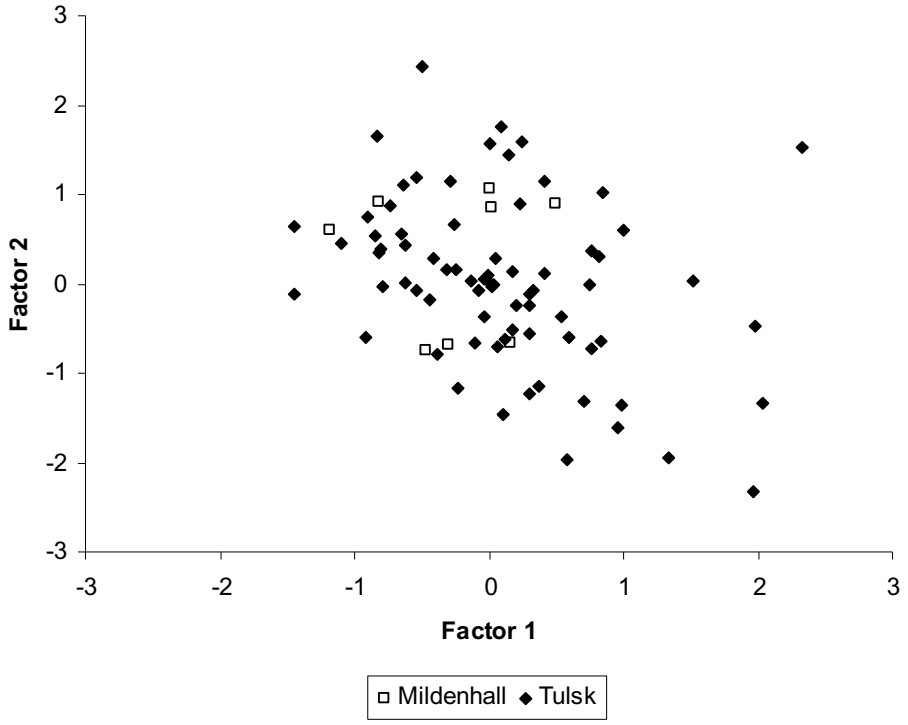

Fig. A14.6. Principle component analysis of cattle astragali metrics from the Mildenhall and Tulsk animal bone assemblages.

There was a distinct difference in scapulae shape between the Mildenhall and Tulsk caprovine populations, and this would indicate that these two populations were of different breeds (Fig. A14.7). The result is a clear example of the great potential in a metric analysis of the Mildenhall animal bones, and its value for comparative studies with other animal bone assemblages.

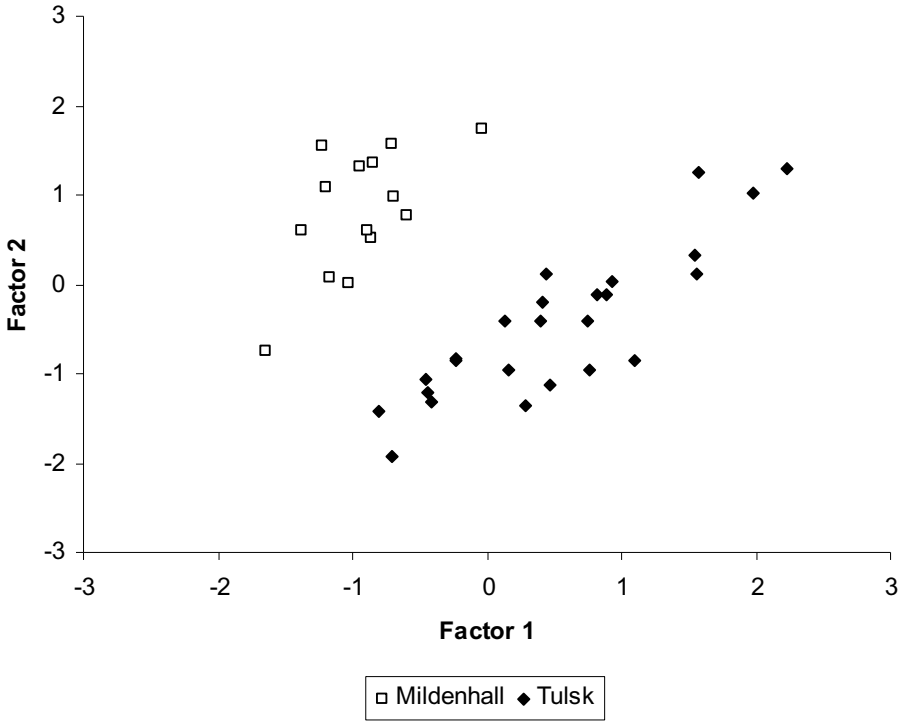

Fig. A14.7. Principle component analysis of caprovine scapulae metrics from the Mildenhall and Tulsk animal bone assemblages.

Summary

The animal bones from Mildenhall constitute a large sample of very good preservation, and have as such a great potential for a detailed scientific analysis. Due to the relatively minor degree of fragmentation, a very large proportion of the material can be identified to species and skeletal elements, which is a rare occurrence in zooarchaeological analyses.

On the basis of this preliminary analysis, the animal bones indicate that the Bronze Age economy was depending on cattle and caprovine, with some inclusion of wild game. During the Iron Age, there a clear breeding and herding economy in place which appears to focus on meat production. This dominance decreased with the Roman establishment, which saw a greater focus on bi-products such as cows' milk and wool.

In the early medieval period, there does not appear to have been any intentional husbandry economy in place; cattle and caprovine were bred for meat, milk and wool. The medieval, post-medieval and modern contexts contained lesser quantities of bone, why it is difficult to assess these at this preliminary stage. A relatively higher proportion of meat-poor elements in medieval contexts may indicate an export of meat products from the site, but this notion can only be confirmed through further analysis.

Statement of potential

This assessment report is based on the full analysis of a proportion of the total material. This has enabled to assess which methodological approaches which are likely to be most beneficial when designing the research agenda and objective for an analysis and research of the total assemblage. The bones are well preserved, and provide great potential in terms of morphological identification and analysis. The low degree of post-depositional fragmentation enables detailed metric analyses, for the purpose of species differentiation, size variation and morphometrical variance between and within the different livestock populations, as well as a comparative measure for analogies with contemporary animal bone materials. The greatest potential is likely to be yielded from cattle and caprovine metapodials, as these were the most frequent bones of measurable quality.

Recommendations

The Bronze Age material is of minor quantity, but is nevertheless important due to its prehistoric date. It is therefore recommended that the bones are made subject to full analysis, but that the results are only summaries in one to three paragraphs and a table which presents identified species and skeletal elements.

The Middle/Late Iron Age to medieval animal bone materials is of great potential for osteological analysis and research, and considering the fact that these materials of similar quantities they are perfectly suited for intra-site analogies. This will enable insights into the economic uses, and possible social shifts, at the Mildenhall site throughout the centuries.

Considering the small size of the post-medieval and modern animal bone material, it is recommended that bones from these periods are not made subject to further study.

Methodology

It is recommended that the remaining proportion of the bone assemblage is subjected to the same detailed and thorough analysis as employed during this assessment. Other than a very high potential in positive identification to species and skeletal elements, the bones offer an opportunity to conduct a rewarding study on economy and husbandry practice based on the age and sex profile of the domestic mammals, as the empiric data for these are available in great quantities. Due to the good preservation, and the fact that many bones were found to be complete, it is suggested that statistical methods are employed to further identify male and female sex in the animal remains based on morphometric data. Suggested methods include metrical dimensions on cattle horncores (Benecke 1988; Müller 1959; O'Connor 1982) and metacarpals (Chaplin 1971; Ekman 1973; Mennerich 1968).

Radiocarbon dating

The quantity of an animal bone sample will greatly influence the outcome of any osteological analysis. The chronological range in the date of the deposits is also crucial, as broadly dated materials cannot give any particular insight into husbandry regimes and economies as these are likely to have fluctuated and changed throughout the centuries on a multiperiod site such as Mildenhall. It is recognised that further stratigraphic analysis combined with further analysis of the intrinsically dateable artefacts will aim to refine the dating of the site sequence, and this process may be assisted by radiocarbon dating of appropriate context. Currently, a total of 64kg of the animal bone assemblage from Mildenhall derive from broadly dated contexts; the most suitable bone-rich contexts for radiocarbon dating, that are valuable from a zooarchaeological point of view, are presented in Table 33.

Table 33. Suitable contexts for radiocarbon dating. Including broadly dated samples containing more than 500g of animal bone and particulars noted during the assessment of the remains.

Context	Period	Weight (g)	Comment
1908	U	634	
2090	U	1414	
2100	U	1376	Worked bone
3016	1–5	448	Dog skull fracture
3033	1–5	66	Caprovine metatarsal fracture
3042	5–7	4984	
3524	4–5	589	
3624	3–5	928	
3625	3–5	782	
3629	U	526	
3663	1–3	736	
3833	1–3	1652	
3867	1–3	576	
5210	1–3	695	
5221	3–4	743	Fox?
15043	U	2669	
15272	U	1242	
15726	U	872	
19105	U	612	
19121	U	1871	
20086	5–6	3330	
20292	U	528	
20792	3–4	2615	
20906	U	2814	
21092	3–4	3715	Worked bone?, Red deer
21916	3–5	1660	
21948	3–5	717	
21950	3–5	4059	

Animal bone metrical archive

Considering the large size of the animal bone material from Mildenhall, the overall very good preservation of the material and the great potential for metrical analyses, it is recommended that the metrical data is submitted to the Animal Bone Metrical Archive Project (ABMAP) (http://archaeologydataservice.ac.uk/archives/view/ abmap/). This will enable the material to be used in other scientific analysis and studies of archaeological animal bone, and the Mildenhall data will therefore contribute to further research on past fauna and economies in Britain and beyond.

Estimated budget requirements

It is estimated that the osteological analysis, research and report writing of the animal bone material from Mildenhall will take a total of 78.5 days (Table 34).

Table 34. Estimated budget required from full analysis, research and report writing on the animal bone assemblage from Mildenhall.

Task	**Time (days)**
Set-up	1
Mammal bone analysis	40
Micromammal/Amphibian bone analysis	2
Bird bone analysis	3
Statistical data analysis	5
Comparative data collection	1
Research	5
Visiting library/reference collections/x ray	2
Report writing	10
Photography	1
Photo editing	1
Report editing	2
Preparing metrical archive for digital deposition	0.5
Total:	**73.5**

Final publication

Estimated word count: 9,000

Estimated number of tables: 10 (in text)

Estimated number of figures: 10

APPENDIX 15: FISH BONE BY PHILIP L. ARMITAGE

Introduction

Examination of 310 fish bones from sieved samples from the Land Recreation Way site, Mildenhall, has resulted in the identification of 172 (55.5%/total) specimens representing the remains of 6 species (Tables 35 and 36). Identifications were made using the author's modern comparative osteological collections. Reference was also made to Libois & Hallet-Libois (1988), Libois *et al* 1987, Newdick (1979), Radu (2005) and Wouters *et al* (2007). Complete data sets of recorded anatomies for each species represented in the sieved samples from each context and period were prepared for the site archive.

Analysis

Although a few specimens were well-preserved, the overall majority were in a fragmented state owing to post-depositional attritional damage. Despite this damage it proved possible to obtain measurements (in mm) on the pelves of two 3-spined sticklebacks (*Gasterosteus aculeatus*) using Draper dial calipers (graduated 0.02 mm) following the system of Prenda *et al* (2002: fig. 2, 21) and also on a freshwater eel (*Anguilla anguilla*) articular, following the system of Libois *et al* (1987: fig. 2, 4). From these data, the size (TL, total length) of each fish could be calculated based on regression formulae:

Context	***Species***	***Element***	***Measurement (mm)***	***est. TL (cm)***
2009	stickleback	pelvis	BL = 3.44	2.4
2100	stickleback	pelvis	BL = 5.20	3.7
2100	eel	articular	D = 1.76	31.1

Whilst the larger of the two sticklebacks was of a size close to the adult average of 4 to 5cm (see Newdick 1979: 82), the smaller individual probably was an immature fish. The eel represented by the articular was slightly below the average of 40 cm for mature individuals (Ibid: 88). It was notable that only a few of the cyprinid fish represented in the samples were of large, or even of moderate size; with most of the bones examined apparently derived from very small individuals. This was also the pattern in the pike (*Esox lucius*) bones submitted for analysis.

Preliminary interpretations and recommendations for further analysis/reporting

The sieved fish bone assemblage merits further consideration in the light of a more detailed understanding of the nature and origin of the various dated deposits/contexts at this site. For example, the presence of the stickleback bones in the ditches and gullies may indicate these fish had once formed part of the natural aquatic fauna in these features. Where their bones occurred in pit fills in association with domestic/household food debris it is possible however that the sticklebacks had been the prey of predatory fish such as pike. In preparation for cooking/consuming of the pike by the local inhabitants, these fish would have been gutted and the stomach contents (including the sticklebacks) discarded along with other kitchen waste. Pike will also eat small cyprinids, which would provide one explanation (in the same manner as the sticklebacks) for their presence at the site. The bones of the larger cyprinids however may well represent remains of fish consumed by the inhabitants, whilst the preponderance of eel suggests this fish - probably sourced locally from the river Lark - was an important component in the local human diet.

Comparison should be made with fish bone assemblages from other contemporaneous sites to discover whether the remarkable dominance of riverine/freshwater species and notable paucity of marine fish is of wider occurrence or unique to this particular site.

It is suggested that the further, detailed analysis and preparation of the final summary report for publication would take 1 day. This final descriptive report of the sieved fish bone assemblage, with 2 to 3 summary data tables, would form an appendix, with the conclusions of the analysis best incorporated into the main text of the site report dealing with all the animal bone evidence.

Table 35 Seived fish bone samples

Numbers of identified specimens present (NISP)		
Taxon	**Common name**	**NISP**
Anguilla anguilla	freshwater eel	108
Cyprinidae	cyprinids (carp family)	24
Esox lucius	pike	10
Gasterosteidae	sticklebacks	15
Clupea harengus	herring	14
cf.Platichthys flesus	cf.flounder	1
	unidentified	138
	TOTAL	310

Table 36: Summary counts of identified fish bone specimens (NISP) from each period

Common name (*Taxon*)	**Period:**	**2**	**3**	**4**	**5**	**6**	**U**	**Totals**
freshwater eel *(Anguilla anguilla)*		1	41	11	49	1	5	108
carp family *(Cyprinidae)*		1	3	4	15		1	24
pike *(Esox lucius)*			1	5	3		1	10
sticklebacks *(Gasterosteidae)*			3	1	9	2		15
herring *(Clupea harengus)*		1	2	4	1	1	5	14
cf.flounder *(cf.Platichthys flesus)*							1	1
unidentified			20	9	100		9	138
	Totals:	3	70	34	177	4	22	310

APPENDIX 16: THE PLANT MACROFOSSILS AND CHARCOAL REMAINS BY SARAH COBAIN

Introduction

A total of 245 bulk soil samples were retrieved for plant macrofossil and charcoal assessment taken during excavation. Ten of these were taken from geological deposits (palaeochannel), 5 from Period 1 Late Bronze Age activity, 47 from Period 2 middle and late Iron Age features, 48 from Period 3 Roman features, 32 from Period 4 Anglo-Saxon features, 79 from Period 5 Anglo-Saxon/medieval features, 5 from Period 6 post-medieval features, 2 from Period 7 modern features and 18 from features that are currently undated.

The aim of this assessment is to determine the type, preservation and quantity of plant macrofossil and charcoal remains recovered and use this to assess the potential of these remains to provide evidence of socio-economic activities being undertaken on the site (crop husbandry, diet, living conditions of communities, exploitation of woodlands for fuel, woodland management), and to infer the composition of the local flora and woodlands.

Methodology

Following flotation (CA Technical Manual No 2), the residue was dried and sorted by eye, the floated material scanned and seeds identified using a low power BSM stereo-microscope at magnifications of x10 to x40. Identifications were carried out with reference to images and descriptions by Bekker *et al.* (2006), Berggren (1981) and Anderberg (1994). Nomenclature follows Stace (1997).

A selection of charcoal fragments were fractured by hand to reveal the wood anatomy on radial, tangential and transverse planes. The pieces were then identified under an epi-illuminating microscope (Brunel SP400) at magnifications from x40 to x400. Identifications were carried out with reference to images and descriptions by Cutler and Gale (2000) and Heller *et al.* (2004) and Baas *et al.* (1989). Nomenclature of species follows Stace (1997).

Results

The results are presented in tabular form (Tables 37-55 and 56-72) and are discussed below. SS refers to the Soil Sample number.

Geological (Palaeochannel)

Area 3

Three samples were taken from fills 3593, 3612 and 3613 in palaeochannel 3617, (Area 3). The material from the palaeochannel deposits was waterlogged and consisted dominantly of well-preserved sedge (*Carex* spp), elder (*Sambucus nigra*), rushes (*Juncus* spp) and celery-leaved buttercup (*Ranunculus sceleratus*) seeds, and are species that commonly establish on the banks of a river. Material identified in these deposits is sufficient to characterise the local environment, but does not inform on human occupation of the site, therefore no further work is recommended. The charcoal from these features was too small to identify, therefore no further work is recommended.

Period 1: Late Bronze Age/Early Iron Age (c. 1000 - 800 BC) (5 samples)

Area 20

There were five samples recovered from fills within the late Bronze Age pit 20238. The abundant, well-preserved plant macrofossils from these samples consisted of carbonised cereal remains dominated by spelt and emmer/spelt wheat and barley (*Hordeum vulgare*) grains and cereal chaff. There were also arable weed seeds and weeds which establish in arable areas/areas of disturbance (field boundaries, paths). All of the layers within this pit would be suitable for further analysis, however since the widest variety and highest abundance plant remains were found in fills 20325, 20337 and 20336, these have been prioritised for further analysis.

The abundant well-preserved charcoal identified from the fills of this pit consists of alder/hazel (*Alnus glutinosa*/*Corylus avellana*), oak (*Quercus* spp), ash, hawthorn/rowan/ crab apple (*Crataegus monogyna*/*Sorbus* spp/*Malus sylvestris*), cherry spp (*Prunus* spp) and willow/poplar (*Salix* spp/*Populus* spp) fragments. Although there is no direct evidence for *in-situ* burning, the waste is indicative of burnt crop-processing waste, therefore further charcoal analysis is recommended. All fills would be suitable, however fill 20336 (SS 20052) exhibited the widest selection of species therefore it is recommended this sample is prioritised.

Period 2: Middle to Late Iron Age (c. 400 BC- AD 43) (46 samples)

Area 3

The four sampled silting deposits 5204, 5235 and 5236 contained little plant macrofossil material. Deposit 5234 was dominated by well-preserved carbonised spelt (*Triticum spelta*) glume bases and emmer/spelt (*Triticum dicoccum*/*Triticum spelta*) cereal grains, together with smaller numbers of waterlogged rushes and elder seeds. These deposits have been interpreted as water lain deposits and are currently undated. (Table 37). However, the presence of spelt glume bases and emmer/spelt wheat grains suggests a possible Iron Age or Roman origin for the material as these cereals were dominant during these periods. It is recommended that further analysis is undertaken on deposit 5234 if the date of this deposit can be verified. The charcoal from all four deposits was recovered in small quantities, and with the exception of three fragments of ash (*Fraxinus excelsior*) was mostly unidentifiable. The paucity of this material means no further work is recommended.

Area 15

There were seven samples retrieved from Iron Age ditches and pits in Area 15. The samples from ditches 15625 and 15479 contained no plant macrofossil or charcoal material. The plant macrofossils sampled from ditch 15568 were well-preserved and consisted of indeterminate cereal grains and cereal chaff together with weeds indicative of arable and disturbed environments. These remains are indicative of burnt cereal processing waste, and it is recommended that further analysis is carried out. The charcoal from ditch 15568 is well-preserved and abundant and is dominated by hawthorn/rowan/crab apple with smaller amounts of oak and possible cherry spp. As there is no evidence for the source of this charred material, broad characterisation analysis of the charcoal is recommended.

Pits 15031, 15129 (SS 3067 and SS 3068) and 15271 contained small amounts of oat (*Avena* spp), barley and wheat cereal grains and a dock spp (*Rumex* spp) seed. As sample 3067 from pit 15129 contained the best preserved and wider variety of plant macrofossils of all these samples, further

analysis is recommended. Small amounts of charcoal were also recovered consisting of oak, ash and cherry spp fragments, but in too small quantitiy to recommend further work.

Area 16

There were three samples retrieved from Iron Age pits in Area 16. Pits 16101, 16005 and 16063 contained a small number of poorly-preserved plant macrofossils consisting of chess seeds and possible wheat and indeterminate cereal grains. The charcoal was recovered in low abundance and was largely unidentifiable with the exception of a fragment of oak and cherry spp in pit 16005. The paucity and poor quality of plant macrofossil and charcoal remains means no further work is recommended.

Area 17

Five samples were taken from Iron Age ditches in Area 17. The two samples recovered from ditch 17260 (SS 17042, SS 17044) contained no plant macrofossils and ditch 17384 contained a single indeterminate cereal grain. The charcoal from these ditches was found in small quantities and was largely unidentifiable. The paucity and poor preservation of the charcoal and plant macrofossils from these samples means no further analysis is recommended.

Ditch 17111 contained small numbers of possible barley, emmer/spelt/free-threshing wheat (*Triticum aestivum*/*turgidum*/*durum*) and spelt wheat indicative of burnt crop processing waste and two fragments of charcoal identified as alder/hazel and oak. Due to the variety of plant macrofossils identified, further analysis is recommended, however the paucity of the charcoal precludes further analysis.

Area 19

There were five samples retrieved from Iron Age pits in Area 19. Pit 19215 contained a well-preserved carbonised plant macrofossil assemblage dominated by spelt and emmer/spelt wheat grains and glume bases as well as smaller amounts of oats and barley. This material appears to represent discarded burnt cereal-processing waste. Charcoal from this pit consisted of alder/hazel, oak, ash, hawthorn/rowan/crab apple and cherry spp fragments. Further analysis of this plant macrofossil and charcoal is recommended to ascertain crops being processed and fuel utilised for these activities during this period.

Samples taken from fills 19214, 19102 and 19232 of pit 19088 contained small numbers of moderately-preserved emmer/spelt and barley cereal grains, hazelnut shell, and weed species indicative of arable/disturbed environments. As it contained a larger number and wider variety of plant macrofossils, further analysis is recommended on fill 19214. The charcoal from this pit was moderately well-preserved and abundant consisting dominantly of oak and ash with smaller amounts of alder/hazel, dogwood, hawthorn/rowan/crab apple and cherry spp. As there is no evidence of *in-situ* burning within this feature, broad characterisation charcoal analysis on sample 19005 is recommended.

Pit 19119 contained a small assemblage of poorly-preserved chess, indeterminate cereal grain and an indeterminate fragment of a nut shell/pip. The paucity of this material means no further work is recommended. The charcoal from this pit was moderately preserved, consisting of alder/hazel, oak and cherry spp fragments. The good preservation and abundance of charcoal means broad characterisation charcoal analysis of this sample is recommended.

Area 20

There were 27 samples retrieved from a series of Iron Age pits, grave fills, ditches, hearths, a corn drier, the remains of a superstructure and a layer in Area 20. Pits 20119 (SS 20001, SS 20002), 20153 (SS 20009, SS 20011, SS 20012), 20513, 20370, 20160, 21193 (SS 20041, SS 20042) and 21398 were scattered across the area. They contained small to moderate plant macrofossil assemblages, mostly dominated by emmer/spelt and spelt cereal grains, spelt glume bases and smaller amounts of oat (with the exception of pit 20153), chaff and weed species indicative of arable or disturbed areas. It is recommended that with additional soil processed further plant macrofossils work is undertaken from pit 20513, fills 20587 and 20589 within pit 20153, fill 20125 in pit 20119, fills 21303 and 21304 in pit 21193, and pit 21398.

The well-preserved and abundant charcoal recovered from these pits consisted dominantly of oak with smaller amounts of alder/hazel, birch (*Betula* spp), ash, hawthorn/rowan/crab apple, cherry spp and willow/poplar fragments. Although this material can not be linked to any specific *in-situ* burning activities, there was evidence of hearths in the area (hearths 22019 and 22021). Broad characterisation charcoal analysis is recommended on samples from pits 20160, 20370 and 20513.

Grave fill 21305 (SS 20043, SS 20044) contained an abundant, well-preserved plant macrofossil assemblage consisting dominantly of carbonised spelt and emmer/spelt cereal grains and spelt glume bases with smaller amounts of barley and oat grains and other cereal chaff. There are also abundant chess seed and smaller numbers of fat hen/goosefoot spp, common fumitory and field gromwell seeds which are arable weeds. This material is typical of burnt cereal-processing waste. Typically grave fills are not recommended for further analysis as the origin of the plant macrofossil material can not be ascertained, however since this burial was placed within a ditch sealed by other Iron Age deposits, further analysis of sample 20044 is recommended. There was a large amount of charcoal from this grave fill consisting of ash, alder/hazel and cherry spp. As the charcoal within sample 20044 is most likely associated with the burnt cereal processing waste, further analysis is recommended. Sample 20045 taken from skeleton 21386 contained no plant macrofossil material, therefore no further work is recommended. The charcoal was recovered in small quantities consisting of alder/hazel, hawthorn/rowan/crab apple and cherry spp fragments. The paucity of this material means no further analysis is recommended.

Samples from 21197/21116 (Ditch 5) contained no plant macrofossil or charcoal material. The sample from cut 21915 of Ditch 6 contained oat, wheat spp and barley cereal grains. The charcoal from this ditch was well-preserved and abundant and consisted of oak fragments. The samples from cut 21979 of Ditch 6 contained no plant macrofossil or charcoal material. Further analysis on the sample from ditch cut 21915 is recommended, however the paucity and poor preservation of plant macrofossil material in all the remaining ditch samples means no further work is recommended. As there is no evidence for *in-situ* burning, no charcoal analysis is recommended, however broad characterisation analysis is suggested on ditch cut 21915.

The sample taken from corn drier 21830 contained wheat, spelt and oat cereal grains together with a large number of indeterminate grains. It is recommended that further soil from this sample is processed in order to obtain additional cereal grains and retrieve any cereal chaff which will enable further

identification of currently indeterminate cereal grains. There was no identifiable charcoal retrieved from this sample.

The plant remains identified from the base of hearth 22019 and the remains of hearth 22021 were recovered in relatively abundant numbers. However with the exception of a small number of identifiable barley, rye (*Secale cereale*) and wheat spp grains, the remainder were unidentifiable. The poor preservation of these grains could be the result of repeated burning of crop-processing waste on the hearth, however as so few grains are identifiable little more information regarding the use of the hearths can be deduced. There were no plant macrofossils recovered from hearths 22039 and 22058. As there is no additional material from these samples, no further work is recommended. There were two fragments of willow/poplar charcoal recovered from remains of hearth 22021; the remaining charcoal from the other hearths was unidentifiable. The paucity of this material means no further work is recommended.

Context 22017, the possible remains of the super structure of the hearth 22021 and layer 22038 both contained occasional plant macrofossil inclusions consisting of carbonised indeterminate cereal grains, emmer/spelt wheat grains and barley. These are most likely residual, from activities nearby on site, therefore no further work is recommended. There was no identifiable charcoal recovered from either of these features.

Period 3 – Roman (1st – 4th century AD) (48 samples)

Area 2

There were six samples retrieved from a grave fill, deposit and alluvium deposit in Area 2. A small number of plant macrofossils including carbonised oat and barley grains were hand collected from the fill of grave 2018, however since they were recovered in small numbers no further work is recommended. Deposit 2026 contained no plant macrofossil and a small amount of poorly-preserved alder/hazel charcoal. The paucity of this material means no further work is recommended.

The four samples taken from alluvial deposit 2086 contained a wide plant macrofossil assemblage, dominated by species that establish within pools of water (river, ditches) such as water plantain (*Alisma* spp), yellow iris (*Iris pseudocorus*), celery-leaved buttercup, Gypsywort (*Lycopus europaeus*) and pondweed spp (*Potamogeton* spp) as well as those which are found in marginal wetland areas (river banks, ditch edges, damp ground) such as elder, persicaria spp, sedge spp and dock spp. Some waterlogged flax (*Linum usitatissium*) seeds and pods were recovered which may indicate flax processing in the area. Some carbonised oat, barley, free-threshing wheat, spelt wheat grains and cereal chaff were also recovered. This deposit appears to represent an accumulation of discarded carbonised cereal-processing waste, flax-processing waste and species indicative of the local vegetation. It is recommended that further analysis is undertaken on sample 2042. There was a small amount of charcoal identified from deposit 2086 consisting of alder/hazel and ash; broad characterisation charcoal analysis is recommended on sample 2028.

Area 3

There were 15 samples taken from a series of silting and dump deposits, pits, ditches, a buried soil layer and a layer of redeposited natural within Area 3. The plant macrofossil material identified from silting deposits 3083 (SS 3028, SS 3032), 3147, 3867=5205, 3867=5206, 5210, dump deposit 3608,

redeposited natural 5233, buried soil 3977, pits 3948, 3847, 3146, 3221 and ditches 3718 and 4056 consisted of a mixture of both carbonised and waterlogged seeds. The carbonised material was dominated by barley cereal grains and spelt glume bases. Other cereals present in smaller amounts included oat, spelt wheat, wheat spp, free threshing wheat and cereal chaff including glume bases and straw. Chess which is an arable weed was also identified. It is possible that enclosures within this area were being used for processing cereal crops and the waste burnt and discarded. One other interesting find was a possible carbonised coriander (*Coriandrum sativum*) seed in pit 3146 which may indicate the use or cultivation of herbs.

The waterlogged material recovered from these samples consisted of species which establish in damp/wetland areas such as elder, sedge, horned pondweed (*Zannichellia palustris*) and rushes and those which established in disturbed environments such as fat hen, common chickweed. This provides evidence for the stratigraphic interpretations, which suggest this area was subject to period of flooding/waterlogging and later reclamation. Of these samples it is recommended that further analysis is undertaken on silting deposit 3083 (SS 3028 and 3032), pits 3146 and 3948 and ditch 3718. The charcoal from this area was generally recovered in small quantities and overall consisted of alder/hazel, oak, ash, hawthorn/rowan/crab apple and willow/poplar fragments. Most of the charcoal was recovered in low volumes and there was no evidence of *in-situ* burning, however it is recommended that broad characterisation analysis is carried out on dumped deposit 3608 and pits 3146, 3844 and 3948.

Area 17

There were 26 samples taken from a series of corn driers, pits and postholes within Area 17. Corn drier 17048 had 17 samples taken from fills 17050, 17069, 17070, 17071, 17075, 17076, 17077, 17085, 17089, 17100, 17291, 17343, 17344 and was dominated by emmer/spelt and spelt cereal grains with smaller amounts of barley, oats, rye and spelt glume bases. In addition to this there are a few seeds from plants that establish in disturbed environments for example fat hen and dock. The presence of vetch/vetchlings (*Vicia* spp/*Lathyrus* spp) is interesting as, whilst they are indicative of arable, disturbed and grassland environments, they were also known to be cultivated for fodder and to improve the fertility of the soil. As only small quantities of soil were recovered from each deposit, further analysis on layers 17050, 17070, 17075, 17077 and 17085 would be valuable to increase our understanding of dominant crops cultivated and crop-processing techniques during this period. Where two samples have been taken from one fill (for example fill 17075), these will be combined and considered as a single sample. Since there is little evidence of wood fuel from samples taken from the corn dryer (see below) it will be worthwhile determining if cereal processing waste was being used as fuel. Identifiable charcoal from corn drier 17048 was recovered in very small quantities from fills 17070, 17075 and 17291. The well-preserved fragments consisted of oak, elm, ash and willow/poplar. It is recommended that broad characterisation analysis is carried out on layer 17070; there is not sufficient material for further analysis from this, or the other samples.

Fill 17026 and 17349 within corn drier 17028=17067 contained small quantities of moderately to poorly-preserved oat, barley, wheat spp cereal grains. The paucity of this material and means no further work is recommended. There was no identifiable charcoal recovered from this feature.

Pits 17022 and 17133 contained carbonised wheat spp, spelt and emmer/spelt cereal grains and 17051 contained a single indeterminate cereal grain. Further analysis is recommended on pit 17022. There was no identifiable charcoal from any of these pits.

Postholes 17434 and 17041 and fills 17242 and 17243 within posthole 17244 contained small amounts of moderate to poorly-preserved plant macrofossils including barley, emmer/spelt and indeterminate cereal grains. The paucity of this material means no further analysis is recommended. Posthole 17434 contained no identifiable charcoal and fills 17242 and 17243 within posthole 17244 and posthole 17041 contained low concentrations of charcoal consisting of oak, cherry spp and willow/poplar. The paucity of this material means no further analysis is recommended.

Area 20

There was single sample taken from fill 20811 of grave 20813 containing skeleton 20813. There was a small amount of poorly-preserved carbonised barley, spelt and indeterminate cereal grains. No identifiable charcoal was recovered from this sample. The paucity of this material means no further plant macrofossil or charcoal work is recommended.

Period 4 –Anglo-Saxon (5th-11th century AD) (32 samples)

Area 2

There were 12 samples taken from pits and alluvial deposits in Area 2. Fills 2020, 2027 and 2034 taken from pit 2028 contained a large plant macrofossil assemblage consisting dominantly of carbonised oat, barley and free-threshing wheat (including a positive identification for hexaploid wheat/bread wheat). This feature has been placed within Period 3 owing to a fragment of Roman pottery which was found within grave 2021 which cut the top of the pit. However, the plant macrofossil assemblage identified is typical of early medieval/medieval assemblages, and has therefore been placed in this later period until further radiocarbon dating can be undertaken. The assemblage within this pit is consistent with that of burnt waste material from crop processing. Whilst all three samples would be suitable for further analysis, it is recommended that further analysis is carried out on fills 2027 and 2034 as these have the widest plant macrofossil assemblage. A moderately large assemblage of charcoal was retrieved from this pit consisting of alder/hazel, oak and hawthorn/rowan/crab apple fragments. Although there is no evidence for in-situ burning, the large cereal assemblage is indicative of burnt cereal-processing waste, therefore it is recommended that further analysis is carried out on fill 2034 as it contained the widest range of species.

Pit 2023 contained a small number of moderately-preserved carbonised cereal remains consisting of free-threshing wheat and barley. The paucity of this material means no further work is recommended. The charcoal from this pit was well-preserved and consisted of oak. There was no evidence for in-situ burning or activities resulting in this waste, however broad characterisation analysis is recommended. Pit 2024 contained a large, well-preserved plant macrofossil assemblage consisting of dominantly of free-threshing wheat, oat and barley. There were also a large number of vetch seeds. Further analysis of this sample is recommended. The charcoal from this pit was abundant and moderately well-preserved and consisted of alder/hazel, oak and ash. Although there is no evidence for in-situ burning, the large cereal assemblage is indicative of burnt cereal-processing waste, therefore it is recommended that further analysis is carried out on this sample.

The plant macrofossil within alluvial deposits 2039 (SS 2020, SS 2021, SS 2022) and 2096 were dominantly waterlogged and included species that would represent flora established within a wetlands areas. This included species such as elder and sedges, as well as species from disturbed environments such as fat hen and common chickweed. This supports an assertion that the area was waterlogged in nature and then backfilled with waste material to reclaim the land. As these deposits were dominated by taxa found within waterlogged and disturbed environments, which will not provide any addition information regarding economy on the site, no further work is recommended. Charcoal from deposits 2039 and 2096 was abundant and moderately well-preserved and consisted of alder/hazel, oak and hawthorn/rowan/crab apple fragments. However, as alluvial deposits, there is a high risk of residual material therefore no further charcoal work is recommended.

Area 3

There were eight samples taken from deposits, spreads, dump deposits, a pit and a posthole within Area 3. The plant macrofossils from silting deposits 3130, 5128 and 5131 contained a small number of carbonised oat, barley, free-threshing what and spelt wheat cereal grains. The small numbers of these together with the risk of residual material within silting deposits means no further work is recommended. The charcoal from these deposits consists of willow/poplar, alder/hazel, oak and ash recovered in small amounts and no further work is recommended.

Dumped deposit 5128 and spreads 3987 and 3989 contained evidence for oat, barley and free-threshing wheat together with a culm node and possible common corncockle fragment. This material represents burnt cereal-processing waste and it is recommended that spreads 3987 and 3989 are analysed further. The charcoal from the dump deposit and spreads consisted of alder/hazel, oak, ash, gorse/broom (*Ulex* spp/*Cytisus* spp) and willow/poplar. As there is no evidence of *in-situ* burning, broad characterisation analysis is recommended on spreads 3987 and 3989.

Pit 5211 contained an abundant plant macrofossil assemblage dominated by carbonised barley with smaller amounts of oat, and wheat spp. Cereal chaff including culm nodes, paleas and rachis are present. Arable weeds such as corncockle (*Agrostemma githago*) and wild radish (*Raphanus raphanistrum*) were also identified. Further analysis of this sample is recommended. The charcoal from this pit was abundant and well-preserved containing alder/hazel and oak fragments. Although there is no evidence of in-situ burning, this firing debris is most likely associated with the crop processing waste within the pit therefore further analysis is recommended.

Posthole 3851 contained a small number of oat and barley cereal grains together with species indicative of disturbed environments. The paucity of this sample means no further analysis is recommended. The charcoal identified consisted of alder/hazel, oak and ash fragments and broad characterisation analysis is recommended.

Area 15

There were three samples taken from two postholes in Area 15. Posthole 15477 and fills 15489 and 15490 within posthole 15488. The plant macrofossil remains from each of these postholes were recovered in small quantities and were poorly-preserved and consisted of carbonised barley and indeterminate cereal grains in posthole 15477, and wheat spp, indeterminate cereal grains and a

vetch/vetchlings seed in posthole 15488. The paucity of these remains means no further plant macrofossil analysis is recommended. No identifiable charcoal was retrieved from these postholes.

Area 16

A single sample retrieved from pit 16069 contained a possible wheat cereal grain and indeterminate cereal grains. The poor preservation and small number of seeds in this sample means no further work is recommended. No identifiable charcoal was recovered from this pit.

Area 17

A single sample taken from posthole 17019 contained a small number of moderately-preserved cleaver seeds and oat, barley and indeterminate cereal grains. The small number of remains in this sample means no further work is recommended. The charcoal retrieved from this sample was abundant, well-preserved, and consisted of oak fragments. As there was no evidence of burning, it is unlikely this post was burnt *in-situ,* and no further work is recommended.

Area 20

There were seven samples taken from a pit and grave in Area 20. Pit 21123 contained a small number of poorly-preserved wheat and indeterminate cereal grains and unidentifiable charcoal. No further plant macrofossil or charcoal work is recommended. There were six samples taken from material surrounding SK 21080 (SS 20034 – SS 20039) which was buried in ditch 20496 (ditch 5). The material recovered consisted of small numbers of poorly-preserved cereal remains including barley, wheat and indeterminate grains. A single fragment of cherry spp charcoal was also identified. The paucity of the plant macrofossil and charcoal material means no further work is recommended.

Period 5 – Medieval (1066 AD – 1539 AD)

The flood plain – Area 2

There were 20 samples taken from a series of peat deposits, alluvium deposits, flood deposits, pits and a gully. Peat deposits 2008, 2050, 2051, 2052, 2055, flood deposit 2006 and alluvium deposits 2009 and 2010 contained some waterlogged plant material indicative of a wetland environment, although with the exception of elder, most of the species were found in small numbers such as creeping marshwort (*Apium repens*), cowbane (*Cicuta virosa*), spikerushes (*Eleocharis* spp) and celery-leaved buttercup. The remaining species were indicative of disturbed environments such as fat hen, common chickweed, dock spp that had become waterlogged, most likely through periodic flooding or a high water table. The waterlogged material was poorly-preserved with only seeds with robust outer coatings surviving which suggests the area was periodically flooded/had fluctuations in the height of the water table. Deposit 2051 (SS 2040) contained some flax seeds and pods, which may indicate flax processing waste.

The deposits were also rich in carbonised material with deposits 2050, 2051 and 2055 dominated by barley grains and rachis with smaller quantities of oat. This material supports the assertion that areas of the flood plain were being reclaimed, indicated by the mix of charcoal-rich dumps, waterlogged material and weed species indicative of disturbed areas. It is recommended that further plant macrofossil analysis is carried out on deposit 2051 (SS 2040), 2050 (SS 2026) and 2055 (SS 2025). Abundant, well-preserved charcoal was retrieved from all these samples with the exception of deposit 2008 and 2051 where no identifiable charcoal was recorded. The charcoal from the remaining deposits was dominated

by alder/hazel with smaller quantities of dogwood (*Cornus* spp), oak, ash, hawthorn/rowan/crab apple, cherry spp and willow/poplar fragments. As there is no direct evidence for in-situ burning, it is recommended that broad characterisation analysis is carried out on flood deposit 2006, alluvium 2009, peat, 2051 and 2055.

Pits 2065, fills 2070 and 2071 within pit 2074 and fills 2083 and 2084 within pit 2085 contained abundant, well-preserved carbonised plant material consisting dominantly of barley and oat with small amounts of cereal chaff with the exception of pit 2046 which contained only a single oat grain and an indeterminate nut fragment. It is recommended that further plant macrofossil analysis is carried out on samples from pits 2065, 2074 and 2085. The abundant charcoal from these pits is dominated by alder/hazel with smaller quantities of oak, ash and hawthorn/rowan/crab apple fragments present. Fills 2043 and 2044 within pit 2046 contained low concentrations of charcoal with a single fragment of alder/hazel and willow/poplar identified. Although no direct evidence of *in-situ* burning can be established, the plant macrofossil assemblage is indicative of burnt material from cereal processing, therefore further charcoal analysis is proposed on pit 2065 and fill 2070 within pit 2074 and broad characterisation charcoal analysis on fill 2084 within pit 2085.

Area 3

There were 22 samples taken from peat deposits, dump deposits and ditches from Area 3. This included a bulk sample and 12 column samples taken from deposit 3016 at 0.05m intervals (SS 3002 and SS 3005-3016) to compliment monolith samples 3003 and 3004. Upon initial assessment of material from the top and the base of the context, it was found that the plant macrofossil material was very poorly preserved, with only the most robust seeds surviving. As a result it was decided to focus on one bulk sample and 6 out of the 12 column samples taken (encompassing SS 3002, SS 3006, SS 3008, SS 3010, SS 3012, SS 3014 and SS 3016) to compliment the insect assessment. The waterlogged plant macrofossil material identified consisted of small numbers of species associated with wetland areas and river banks. There are too few species present to make any assessment of changes throughout the sequence. There was no charcoal recovered from any of these samples. No further plant macrofossil or charcoal work is recommended.

Peat deposit 3081 (SS 3027 and SS 3030) contained some indeterminate carbonised cereal grains together with waterlogged plant remains consisting of elder together with smaller amounts of fat hen/goosefoot, sedges and rushes. The paucity of material within this deposit means no further work is recommended. The charcoal was well-preserved, abundant and consisted of alder/hazel, oak, ash and willow/poplar fragments, however since most of these fragments were too small to identify, no further work is recommended.

Clay dump deposit 3080 (SS 3026 and SS 3029) contained low concentrations of plant macrofossil material. These included carbonised mustard/cabbage/charlock and indeterminate cereal grains. Clay deposit 5118 contained no plant macrofossil material. The paucity of this material means no further work is recommended. Deposits 3008 and 3009 contained waterlogged plant remains of which some were species indicative of wetland areas, and areas adjacent to river banks, such as elder, creeping marshwort/wild celery and gypsywort, and some indicative of disturbed environments for example fool's parsley, fat hen and thistle spp. As these samples did not contain any material that will aid reconstruction of economic activities on site, no further work is recommended. Charcoal consisting of

alder/hazel, oak and ash fragments was recovered in very low numbers from all these deposits. The paucity of this material means no further analysis is recommended.

Ditches 3944 and 3945 contained carbonised plant macrofossils dominated by indeterminate cereal grains together with large amounts of cereal chaff, spelt wheat and seeds indicative of disturbed and arable environments, including vetch/vetchlings, mustard/cabbage/charlock and wild radish seeds. Flax is also present in ditch 3945. Further investigation of the cereal chaff may allow identifications of currently unidentifiable cereals present, and the abundance of seeds indicative of arable and disturbed environments will allow an assessment of crop husbandry techniques, therefore further analysis of both samples is recommended. The charcoal from both samples was abundant and well-preserved consisting of alder/hazel, gorse/broom, oak, ash, hawthorn/rowan/crab apple and willow/poplar fragments. The large assemblages of charcoal from both these samples are recommended for broad characterisation analysis.

Area 15

There were seven samples taken from postholes and a pit in Area 15. Postholes 15265, 15245, 15487 and 15447 contained occasional poorly-preserved carbonised cereal grains, which with the exception of a possible emmer/spelt grain in posthole 15487, were unidentifiable. No further plant macrofossil work is recommended. Pit 15315 and ditch 15415 contained broadly similar assemblages dominated by carbonised free-threshing wheat and small amounts of barley. It is recommended that further plant macrofossil analysis is undertaken on both these samples. None of these features contained charcoal which was large enough to identify, therefore no further work is recommended.

Pit 15234 contained carbonised spelt and emmer/spelt cereal grains and spelt glume bases. This assemblage composition is typical of Iron Age or Roman deposits, and it is suggested a radiocarbon date is obtained to confirm the phasing of this feature. If dating evidence can be obtained, further plant macrofossil analysis on this pit would be recommended. The small assemblage of charcoal from this pit was moderately-preserved and consisted of alder/hazel and hawthorn/rowan/crab apple spp. If additional soil is processed, broad characterisation analysis is recommended.

Area 16

One sample was retrieved from pit 16095 in Area 16. This pit contained some modern elder seeds and an indeterminate cereal grain. No further plant macrofossil work is recommended. No identifiable charcoal was recovered from this pit.

Area 17

There were nine samples taken from ditches, a well and a corn drier in Area 17. Fills 17144, 17277 and 17270 from ditch 17145 and fills 17283, 17289 and 17294 from ditch 17295 contained broadly similar plant macrofossil assemblages with poor to moderately well-preserved carbonised free-threshing wheat, oat, barley and rye. It is recommended that further plant macrofossil analysis is undertaken on fills 17144 and 17270 in ditch 17145. The charcoal from ditches 17145 and 17295 was retrieved in small amounts and consisted of alder/hazel, gorse/broom, oak, ash, hawthorn/rowan/crab apple and cherry spp fragments.

Well 17156 contained very well-preserved plant macrofossils including wheat, rye and oat together with arable weeds including stinking chamomile (*Anthemis cotula*), field gromwell, and common corncockle. It is recommended that further plant macrofossil analysis is carried out on this sample. The charcoal retrieved from this well was moderately well-preserved and consisted of ash and hawthorn/rowan/crab apple fragments. This would be suitable for broad characterisation charcoal analysis.

Two samples were taken from cereal drier 17182. The material identified from fill 17442 was poorly-preserved and consisted of a single indeterminate cereal grain. The material from fill 17221 contained a moderately well-preserved assemblage of carbonised oat and free-threshing wheat cereal grains. It is recommended that further plant macrofossil analysis is carried out on this sample. There was no identifiable charcoal within this feature.

Area 18

Two samples were taken from postholes 18074 and 18080 in Area 18. The material within these samples was poorly-preserved and included a small number of free-threshing wheat grains together with larger quantities of indeterminate cereal grains. The poor preservation of these samples means no further analysis is recommended. No identifiable charcoal was recovered from these samples.

Area 19

Pit 19093 contained a small number of moderately well-preserved plant macrofossils consisting of free threshing wheat and oat grains and fat hen/goosefoot and vetch/vetchlings seeds. No further plant macrofossil work is recommended on this sample. The charcoal from this pit was well-preserved and abundant, consisting of oak and ash fragments. Broad characterisation charcoal analysis of this sample is recommended.

Area 20

There were 17 samples recovered from a hearth, pit, grave and kiln in Area 20. Hearth 20755 contained a large and well-preserved assemblage of seeds dominated by oat, barley and free threshing wheat grains with smaller quantities of rye. There are also some arable weed species present including cleavers and chess, and some dock seeds and possible remains of bracken. This sample is recommended for further plant macrofossil analysis. None of the charcoal recovered from this hearth was identifiable. Pit 20153 contained a single free threshing wheat grain and a cleavers seed. The paucity of this material means no further work is recommended. No identifiable charcoal was recovered from this pit.

Fill 20807 was retrieved from the cut of neonatal burial 20809. The fill contained a relatively large well-preserved assemblage of plant macrofossils consisting dominantly of free threshing wheat with smaller numbers of oat and barley grains. The fill also contained mustard/cabbage/charlock and a possible vetch/vetchlings seed. The small amount of poorly-preserved charcoal was identified as oak and possible hawthorn/rowan/crab apple fragments. As the grave would have been backfilled with material that could originate from any phase of activity on the site, no further plant macrofossil or work is recommended.

The remaining 14 samples were taken from fills 20047, 20045, 20561, 20585, 20586, 20618, 20619, 20620, 20220 , 20805, 20219 and 21015 within kiln 20044 with the intention of deducing a possible

function for the feature. There was a small number of moderately to poorly-preserved barley, free threshing wheat, oat and indeterminate cereal grains scattered throughout these contexts, however these are most likely residual and are not present in sufficient quantities to provide a conclusion about function. No further plant macrofossil work is recommended from any of these samples. The charcoal 7from this kiln was however abundant and well-preserved consisting dominantly of hawthorn/rowan/crab apple with smaller quantities of alder/hazel, gorse/broom, oak, ash, cherry spp and willow/poplar. It is recommended that further analysis is undertaken on fill 20585.

Period 6 – Post-medieval (1540 AD – 1800 AD) (5 samples)

The flood plain – Area 2

There were two samples taken from peat deposit 2115 and dump deposit 2122. These deposits were both dominated by carbonised cereal remains identified as free threshing wheat (one positive identification for bread wheat – hexaploid wheat) and barley. Dump deposit 2122 also contained arable weeds including common corn cockle and cleavers. This material is indicative of burnt cereal processing waste and further analysis would be recommended on both samples. There was no charcoal recovered from deposit 2115, however charcoal from dump deposit 2122 was abundant and since it is part of an assemblage containing burnt cereal processing waste, further analysis is recommended.

The flood plain – Area 3

One sample was taken from deposit 3870 and contained plant macrofossils indicative of a wet environment including elder, bog bean (*Menyanthes trifoliata*), small balsam (*Impatiens parviflora*), sedges and spikerushes. This material was poorly-preserved with only the most robust seeds (bog bean, elder, sedges) surviving. A monolith was taken from this deposit during the evaluation phase of the project and a large hemp (*Cannabis sativa*) pollen signature was recorded. Unfortunately there was no plant macrofossil evidence for hemp within the sample taken, however some stems were recovered from the sample which are possibly hemp, however this will need to be confirmed at the analysis stage. Since the process of hemp retting involved placing the plant, when mature and flowering into retting pools, a large amount of pollen becomes incorporated into the lower deposits of the pool (Bunting *et al.* 2005, 318). It is also possible that seeds could accumulate, however since hemp seeds are often removed and used for extracting hemp seed oil they may have been removed before the plant was placed in pool for retting. It would be worth wet sieving the remaining material from this sample to retrieve any further possible hemp stems for further identification and see if any hemp seeds are present. There was no charcoal recovered from this deposit, so no further work is recommended.

Area 20

Two samples were retrieved from fill 21062 within pit 21060 and grave fill 21920. The remains from both samples were poorly-preserved and consisted of indeterminate cereal grains and a single possible wheat grain and a field gromwell seed in pit 21060. The charcoal from pit 21060 was poorly-preserved and consisted of two hawthorn/rowan/crab apple fragments. The charcoal from grave fill 21920 was well-preserved and identified as oak, however was recovered in small quantities. The paucity of plant macrofossil and charcoal remains from these samples means no further work is recommended.

Period 7 – Modern (19th – 20th century AD) (2 samples)

Area 2

There were two samples retrieved from alluvium deposit 2113 and from fill 2103 within pit 2104. Alluvium deposit 2113 was dominated by poorly-preserved free threshing wheat and barley cereal grains, with smaller numbers of arable weeds including field gromwell, and cleavers. There were also some waterlogged elder and bog bean seeds indicative of a wetland area nearby. The poor preservation of the plant macrofossils from this sample means no further work is recommended. Alluvium deposit 2113 contained no charcoal therefore no further work is recommended. Pit 2104 contained a large number of waterlogged elder seeds suggesting the proximity of an elder tree shedding its berries or the by-product of processing. There were also small numbers of poorly-preserved oat, barley and indeterminate cereal grains and small number of waterlogged fool's parsley and sedge seeds. This pit contained occasional well-preserved charcoal fragments identified as alder/hazel and willow/poplar. The paucity of material from this feature means no other plant macrofossil or charcoal work is recommended.

Undated Features (17 samples)

Area 2

There were three samples taken from Area 2 which are currently undated. Pit 2089 and fills 2091 and 2092 within pit 2095 contained a wide assemblage of well-preserved plant macrofossils consisting dominantly of free-threshing wheat and barley grains with smaller quantities of oat and rye grains. Other plant macrofossils include arable weeds such as a possible corncockle, vetches and chess seeds as well as seeds indicative of a disturbed environment such as fat hen, common chickweed and dock spp. These plant macrofossils are typical of an early medieval or medieval assemblage and if the dating can be confirmed are all recommended for further analysis. These pits contained moderate amounts of well-preserved charcoal identified as alder/hazel, oak and ash fragments. Since this material appears to represent dumps of carbonised cereal processing remains, (if dating information can be made available), further charcoal analysis is recommended on fill 2092 within pit 2095 and broad characterisation analysis on pit 2089.

Area 15

There were 10 samples taken from undated postholes in Area 15. Posthole 15204, 15241, 15259, 15261, 15295, 15430, 15433, 15439 and fills 15492 and 15492 within posthole 15491 contained only very small quantities of plant macrofossil material including some hazelnut shells, possible oat and emmer/spelt wheat grains and indeterminate cereal grains. The paucity of these samples means no further analysis is recommended. No identifiable charcoal was recovered from these samples.

Area 17

One sample of undated period was recovered from Area 17. Ditch 17650 contained no plant macrofossil or charcoal, therefore no further work is recommended.

Area 18

Two features were retrieved from Area 18, which are currently undated. Posthole 18040 and tree throw 18103 contained a small number of carbonised wheat and indeterminate cereal grains and no identifiable charcoal. The paucity of this plant macrofossil and charcoal material means no further work is recommended.

Area 20

One sample was retrieved from Area 20 which is currently undated. The plant macrofossil material from Pit 20184 was dominated by indeterminate cereal grains, as a result no further plant macrofossil work is recommended. The pit contained a well-preserved assemblage of alder/hazel, oak, ash, hawthorn/rowan/crab apple and willow/poplar fragments. If dating information can be made available for this feature, broad characterisation charcoal analysis is recommended.

Discussion

The majority of the processed samples contained carbonised plant macrofossils in varying quantities; and were generally in moderately to well-preserved condition. However the stone component within many of the sampled contexts had caused some of the cereals to become abraded and unidentifiable. The charcoal was recovered in small to large quantities, and where pieces were large enough to identify, was very well preserved.

In total 65 plant macrofossil and 38 charcoal samples have been proposed for further analysis. Modern plant macrofossils were identified in samples across all areas, but were found in very low abundance, and were most likely incorporated into the features by bioturbation. It is not thought that they represent a significant risk of contamination. Further analysis will focus on comparing the plant macrofossil and charcoal assemblages spatially and chronologically on the site well as researching examples from other excavated sites in Suffolk, and, where appropriate, further afield in Britain.

It is proposed that further identification and count of species will be carried out on all selected plant macrofossil samples. For the selected charcoal samples two approaches will be taken. The first is further analysis which proposes that 100 fragments are identified with equal proportions from sieve sizes >4mm and >2mm. This will focus on features where the source of the charcoal is understood (hearths, corn driers, kilns and selected waste pits). The second is broad characterisation analysis where 20 fragments from selected samples are fully identified. The aim of this is to incorporate features which contain moderate to large charcoal assemblages, but where the source of the charcoal could not be directly ascertained (pits, ditches, post holes, deposits) and to provide a broad understanding of fuel use and woodland characterisation from the different periods. From the selected samples it is hoped to be able to answer the following research proposals:

Period 1: Late Bronze Age

The plant macrofossils from the late Bronze Age pit 20238 were found in abundance and consisted of a large assemblage of spelt and emmer/spelt wheat and barley together with smaller number of oat grains. Arable weed seeds are also present. Arable agriculture in the Neolithic and early Bronze Age centred around the cultivation of emmer wheat and barley. However, from the middle Bronze Age onwards, spelt wheat has been positively identified on sites in southern England (Campbell and Straker 2003, 15, 21) and started to become a dominant crop towards the end of the period (Brown and Murphy 1997, 18). This appears to be the case at Mildenhall and has been recorded in Essex at Springfield Lyons, Chelmsford and Lofts Farm, Heybridge (Brown and Murphy 1997, 18). One of the research aims identified by Brown and Murphy (2000, 9) outlines the need for more information regarding the adoption of spelt during the Bronze Age period and information regarding processing techniques. Further analysis of the selected samples is recommended (Table 38) to recover any further evidence of cereal grains,

and in particular cereal chaff and weed species, in order to reveal additional information regarding crop selection and husbandry.

Woodland in the Bronze Age was typified by lime-hazel-oak primary communities (Peglar 1993, 16). In pit 20238 evidence for the use of oak is limited and hawthorn/rowan/crab apple and alder/hazel dominate the charcoal assemblages. One of the research aims outlined by Brown and Murphy (2000, 10) is the need to define our understanding of when large scale woodland clearance began. The sample selected for further analysis (Table 51) will help to reconstruct local fuel use and allow some inferences about local woodland composition and management to be made. This data will also be available to use in future research work where it can be compared to pollen records and other examples of late Bronze Age pits in the area.

Period 2: Middle to late Iron Age

The assemblage from Iron-Age features contained a moderately large assemblage of plant macrofossils consisting dominantly of spelt and emmer/spelt wheat grains and cereal chaff with smaller numbers of oat, barley and rye. Taken together this assemblage is suggestive of cereal processing activities taking place in the area with material carbonised either through accidental charring during processing or deliberate burning of crop processing waste. These cereal remains recovered from Mildenhall are typical of those from other Iron Age assemblages in Suffolk, for example sites at Wendens Ambo (site on the M11) and excavations in Thetford 1980–1982 (Halstead *et al.* 1982 and Murphy 1992 cited in Murphy 1997a, 30). In the east of England it has been observed that there is a gradual decrease in the use of emmer wheat and a more widespread use of spelt wheat during the Iron Age (Murphy 1997a, 30-31). Research aims for the east of England have suggested further analysis on new plant macrofossil assemblages would be valuable to try and establish when this change in crop use was occurring within the Iron Age, as well as providing information for changes in crop husbandry in arable agriculture (Byrant 2000, 14, 16). It is hoped that the assemblage for Mildenhall (Table 39—41) will be able to provide some information regarding crop cultivation changes in the Iron Age together with an interpretation of the composition of the local flora.

The assessment results for the Iron Age samples indicate a dominance of oak and ash in the identified charcoal , with smaller numbers of scrub species such as alder, hazel, dogwood, hawthorn/rowan/crab apple, cherry spp and willow/poplar fragments. Currently woodland clearance during the Iron Age is characterised by palynological data, however a continuing research aim in the east of England is to obtain charcoal assemblages and fully analyse them to allow comparisons to be made between charcoal and palynological data. As palynological data can incorporate species from long distances away, it is hoped that charcoal data can pinpoint which species were growing in the local area (Murphy 1997a, 30; Brown and Murphy 2000, 10). As only three samples were suitable for further analysis (Table 39-41), there is limited potential with the Mildenhall assemblage for comparisons between palynological data and charcoal, however the charcoal analyses that are undertaken will provide information regarding fuel selection, woodland composition and management in the area.

Period 3: Roman

The plant macrofossil identification from the Roman periods are dominated by emmer/spelt wheat and barley with smaller quantities of oat, spelt wheat and rye together with cereal chaff which provide evidence to suggest arable agriculture was being carried out in this area. This is typical of Roman

assemblages from the region such as Pakenham, Suffolk (Murphy and Wiltshire, 1989 cited in Murphy 1997b, 42). Whilst much work has been undertaken characterising typical crops cultivated in the Roman period, further work is needed to refine our understanding of how crops are cleaned, malted and stored. By undertaking further analysis on the selected samples (Tables 40-45), it may be possible to ascertain crop harvesting and processing techniques. Analysis will also focus on identifying signs of malting within the assemblages. It is also hoped that information gleaned will allow some understanding of the scale of crop production (local or large scale for trade). Further examples of herbaceous taxa will hopefully be identified to ascertain the use of these plants as foodstuffs or whether they are part of the background vegetation of the site. In particular, vetches, whilst known to be used as fodder, were also grown to improve soil fertility; it will be interesting to see if further seeds are found that may indicate use of this species in this way. There is also a small amount of flax recovered from Area 2 – further analysis will hopefully provide some more information as to whether this represents background flora, or whether flax processing was taking place. Identification of species in Areas 2 and 3 may support evidence for deposits associated with reclamation and flooding.

Pollen analysis from a core taken from Diss Mere, South Norfolk, suggest that by the Roman period, most areas of forest had been cleared and replaced by areas of pasture and crop fields (Peglar 1993, 37-38). Although this diagram outlines the catchment surrounding Diss Mere, it can be assumed that Mildenhall in North Suffolk had a similar landscape composition. As a result woodland management would have been important to preserve the resource, although as in the Iron Age, little research has been done on this topic. It is hoped that further analysis on selected samples (Tables 40-46) will provide some evidence for woodland management as well as information on local woodland composition and fuel usage and contribute to wider research agendas in eastern England.

Period 4: Anglo-Saxon

The cereal assemblage identified from the early medieval/Anglo-Saxon period at Mildenhall consisted of large amounts of oat, barley and free-threshing wheat together with smaller amounts of rye, spelt and emmer/spelt wheat. This is similar to that found from Springfield Lyons, Essex (Murphy 1990, cited in Murphy 1997c, 54). Spelt wheat continued to be the dominant crop up until the early medieval/Anglo-Saxon period, but was gradually overtaken by free-threshing wheat species (Hagan 2006, 32). The time scale for this change is still ambiguous so it is hoped that the dating of the samples selected (Tables 46-47) will be refined through full stratigraphic analysis of the site sequence, augmented by conventional and scientific dating. This will allow an examination of continuity of arable farming from the Roman into early medieval period, as well as the types of grain cultivated (Murphy 2000, 25).

It is also hope that by analysing the cereal assemblages together with evidence for arable weeds, information regarding crop preferences and husbandry throughout the period can be ascertained. An aim of the East Anglian research framework is to ascertain if the cereals are being cultivated for subsistence use, or trade. It is hoped that the assemblage from Mildenhall may provide some evidence for either of these two uses, and to contribute to future syntheses. As in the Roman period, analysis of vetches may provide information regarding the use of these species as fodder and/or for regenerating depleted soils. Evidence of other herbaceous taxa will be used to reconstruct the local flora and indicate those that may have had uses as foodstuff plants. Species identified in Areas 2 and 3 will also be added to that from the Roman period and provide further confirmation of areas of land reclamation and flooding.

The changes brought in at the end of the Roman period meant areas of farmland were left unoccupied and woodland regeneration took place, however regional pollen assemblages contradict this, although evidence from charcoal and timbers is still being collated (Murphy 1997c, 54). The selected samples from Mildenhall (Tables 45-46) will be analysed to ascertain whether there was an increase in scrub woodland species, indicating woodland regeneration. The samples will also look for indicators of woodland management and species selection for fuel.

Period 5 Medieval and Period 5-6: Medieval/Post-medieval

Cereal assemblages recovered from rural medieval sites have seen a variety of combinations of crops cultivated (Stone 2006, 12) which suggests specialisation dependant on soil type and environment. The crops identified from medieval features at Mildenhall consisted dominantly of oats, free-threshing wheat and barley with smaller quantities of rye and emmer/spelt wheat, similar to that found at Round Wood, Stansted (Murphy 1990 cited in Murphy 1997c, 54). Cereal chaff including rachis internodes, culm nodes and glume bases were also prevalent. It is hoped that further analysis of cereal chaff from selected samples (Tables 48-51) will determine whether the free-threshing wheat obtained is hexaploid (bread wheat – *Triticum aestivum*) or tetraploid (durum wheat – *Triticum turgidum*/*durum*).

In the initial stages of assessment there is evidence of dredge (oats and barley) within pits in Area 2. A full cereal count of selected samples may determine if any other known crop mixtures were being cultivated. This will also provide evidence for farming specialisation and give an indication of settlement status which is part of one of the research aims in the east of England research framework (Wage 2000, 25). The identification of vetches indicates use of this crop for fodder/as a nitrogen fixing agent to improve the quality of the soil. Weeds indicative of arable, pasture and disturbed areas will allow an interpretation of crop husbandry techniques as well as a reconstruction of local flora and possible food stuff plants. The identification of flax in Areas 2 and 3 will be investigated, together with evidence from monoliths and insects to determine if flax processing was taking place on site.

Pollen analysis of a core taken from Diss Mere, North Norfolk (see above) exemplifies the continuation of a decline in woodland species during the medieval period (Peglar 1993, 16). It is likely that any woodland close to Mildenhall would have existed as scrub areas in hedgerows, common land and abandoned fields. Analysis of the selected charcoal samples (Tables 47-50) may provide evidence for the use of wood as a fuel, the type of species growing locally to Mildenhall as well as an indication of types of fuel wood brought in by trade.

The cultivation of hemp increased vastly from the Anglo-Saxon period and reached a peak in the early 16th century (Bunting *et al*. 2005, 317) it was used to make rope and linen. The monolith that was taken through deposits in Area 3 gave a high pollen signature for hemp. Unfortunately no plant macrofossil evidence for hemp was recovered in the sample (SS 3043, context 3870), however some stems that have tentatively been identified as hemp will be formally identified at the publication stage of this project. The remaining soil from this sample will also be washed in an attempt to recover any evidence of hemp.

Period 7: Modern

No samples from this period have been recommended for further analysis.

Radiocarbon Dating

Any of the carbonised cereal remains and fragments of identifiable charcoal (with the exception of oak) would be suitable for radiocarbon dating.

Recommendations for further work:

Charcoal Analysis Identifications

11 samples for full analysis – 5 days – EO

27 samples for broad characterisation – 1.5 days - EO

Plant macrofossils Identifications

61 (65 total samples) samples for full analysis – 18 days – EO

Checking of fine residues – 3 days

Hemp stem i.d. – Julie Jones 0.5 days

Analysis Reporting

Charcoal and Plant macrofossil tabulation, research and reporting – 25 days – EO

Estimated word count – 9,000

Tables –

Plant macrofossils – 6 x tables

Charcoal – 3 x tables

Additional Soil Processing 54 samples; 1120 litres (112 tubs)

Any additional soil material from samples required for plant macrofossil and charcoal analysis is to be processed. All of this is for flotation with the exception of sample <2042>, <3028> and <3032> where 2L of each sample is to be wet sieved. The remaining soil from samples <3028> and <3032> is also to be floated.

Wet sieving – 1 day – FA

Flotation – 14 days – FA

Residue Sorting – 20 days – FA

Admin/Flot bagging/data entry – 5 days - FA

Table 37: Plant macrofossil identifications from Period 0 – Area 3

Area				3	3	3	3	3	3	3
Context number				3593	3612	3613	5204	5234	5235	5236
Feature number				3617	3617	3617	-	-	-	-
Sample number				3035	3036	3037	3049	3063	3064	3065
Flot volume (ml)				37	145	43	1	24	9	11
Sample volume (l)				5	8	6	7	6	6	8
Soil remaining (l)				30	30	30	0	10	0	0
Plant macrofossil preservation				Good	Good	Good	Poor	Good	Poor	Poor
Recommendations for full analysis				No	No	No	No	Yes	No	No
Habitat code	**Family**	**Species**	**Common Name**							
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder *	++	++	+++		+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp *	+	+	+				
WL/D		*Carex* spp	Sedge *	++++	+++	+++				
WL		*Eleocharis* spp	Spikerushes *		++					
WL	Juncaceae	*Juncus* spp	Rushes *	+	++			++		
E	Poaceae	*Hordeum vulgare*	Hulled barley					+		
E		*Triticum spelta*	Spelt							
E		*Triticum spelta*	Spelt glume bases					+++		
E		*Triticum dicoccum/spelta*	Emmer/spelt					++		
E		*Poaceae*	Indeterminate cereal grain				+		+	+
E		*Poaceae*	Glume base					++		+
WL	Ranunculaceae	*Ranunculus sceleratus*	Celery-leaved buttercup *	+	++	+				
D/P	Rosaceae	*Potentilla* spp	Cinquefoil spp *		+					
Flot Inclusions										
Charcoal				+ (s)		+ (s)	+ (s)	+ (s)	+++ (s)	+++ (s)
Bone								+	+	+
Burnt bone							+			
Insects				+						
Molluscs				+++	++	++	++	++++	++++	++++

Table 38: Plant macrofossil identifications from Period 1 – Area 20

Area				20	20	20	20	20
Context number				20325	20326	20336	20337	21320
Feature number				20238	20238	20238	20238	20238
Sample number				20048	20049	20052	20050	20053
Flot volume (ml)				28	11	25	91	20
Sample volume (l)				8	8	10	8	10
Soil remaining (l)				0	30	30	30	0
Plant macrofossil preservation				Good	Moderate	Good	Good	Good
Recommendations for full analysis				Yes	No	Yes	Yes	No
Habitat Code	**Family**	**Species**	**Common Name**					
D/C/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp	++			++	+
A	Boraginaceae	*Lithospermum arvense*	Field gromwell	+		+	++	++
A/D	Caryophyllaceae	*Spergula arvensis*	Corn spurrey				+	
A/D		*Spergula arvensis*	Corn spurrey perianth				+++	
WL/D	Cyperaceae	*Carex* spp	Sedge				++	+
A/D	Papaveraceae	*Papaver* spp	Poppy spp perianth				cf +	
D/P	Plantaginaceae	*Plantago lanceolata*	Ribwort plantain	++			+	
E	Poaceae	*Avena* spp	Oat	+				
E/A		*Avena spp*/*Bromus* spp	Oat/chess		cf +			
A		*Bromus* spp	Chess	++	+		+++	
E		*Hordeum vulgare*	Hulled barley	+++	+	+++		+
E		*Hordeum vulgare*	Sprouting barley				+	
E		*Triticum* spp	Wheat			++		++
E		*Triticum spelta*	Spelt	++		+	cf ++	+
E		*Triticum dicoccum*	Emmer		cf +		+	
E		*Triticum spelta*	Spelt glume bases	+			+++	
E		*Triticum dicoccum*/*spelta*	Emmer/spelt	++++	++	+	+++	cf +
E		*Poaceae*	Indeterminate cereal grain	++++	++++	+++	++++	++++
E		*Poaceae*	Culm node				+	
E		*Poaceae*	Glume base	+			+++	
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed	++		+	++++	

A/D/WL		*Persicaria lapathifolia*	Pale persicaria				+	
A/D	Rubiaceae	*Galium aparine*	Cleavers	+				
Flot Inclusions								
Charcoal				++++	++++ (s)	++++	++++	++++ (s)
Bone				++	+	++	++	++++
Molluscs				+++	++	++++	+++	+++

Table 39: Plant macrofossil identifications from Period 2 – Areas 15, 16 and 17

Area				15	15	15	15	15	15	15	16	16	16
Context number				15032	15131	15145	15270	15579	15692	15714	16006	16064	16100
Feature number				15031	15129	15129	15271	15568	15625	15479	16005	16063	16101
Sample number				3066	3067	3068	15000	15024	15023	15025	16002	16003	16001
Flot volume (ml)				2	5	24	15	149	5	1	40	9	27
Sample volume (l)				8	7	8	8	8	5	2	8	8	7
Soil remaining (l)				30	30	30	30	0	0	0	30	30	30
Plant macrofossil preservation				Poor	Moderate	Poor	Moderate	Good	N/A	N/A	Moderate	Poor	Moder
Recommendations for full analysis				No	Yes	No	No	Yes	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder (mod)								+	+	
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp					+++					
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp (mod)										+++
HSW	Betulaceae	*Corylus avellana*	Hazelnut					+					
A/D	Caryophyllaceae	*Stellaria media*	Common chickweed					+					
WL/D	Cyperaceae	*Carex* spp	Sedge					+					
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings	+									
A/D	Papaveraceae	*Fumaria* spp *cf officinalis*	Fumitory spp cf common fumitory					++					
E	Poaceae	*Avena* spp	Oat		+	+							
A		*Bromus* spp	Chess					+					+
E		*Hordeum vulgare*	Hulled barley			+							

E		*Triticum* spp	Wheat		+						cf +		cf +
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat									cf +	
E		*Triticum spelta*	Spelt										
E		*Poaceae*	Indeterminate cereal grain	+	+			+			+	++	+
E		*Poaceae*	Culm node					+					
E		*Poaceae*	cf grass spp					+					
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed					+					
A/D		*Persicaria* spp	Persicaria spp					+					
A/D/HSW		*Rumex* spp	Dock spp				+						
Flot Inclusions													
Charcoal				+ (s)	+++ (s)	+++ (s)	++ (s)	++++	+ (s)	+ (s)	+ (s)	++ (s)	+ (s)
Coal													+
Bone							++++	++			+	+++	
Burnt bone								+					
Molluscs				+	+++	+	+++	++	+++	+++	+++	++++	
Vitrified clay													

Table 40: Plant macrofossil identifications from Period 2 – Areas 19 and 20

Area				19	19	19	19	20	20	20	20	20	20
Context number				19102	19211	19214	19232	20124	20125	20161	20368	20515	2058
Feature number				19088	19215	19088	19088	20119	20119	20160	20370	20513	2015
Sample number				19004a	19003	19004	19005	20002	20001	20029	20027	20016	2000
Flot volume (ml)				50	44	50	29	9	16	4	87	46	2
Sample volume (l)				8	5	8	3	9	8	8	5	8	9
Soil remaining (l)				10	0	10	0	20	10	30	0	10	30
Plant macrofossil preservation				Moderate	Good	Moderate	Moderate	Poor	Moderate	Poor	Moderate	Good	Goo
Recommendations for full analysis				No	Yes	Yes	No	No	Yes	No	No	Yes	Yes
Habitat Code	**Family**	**Species**	**Common Name**										
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp						++				
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp (mod)	+					++				

D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp									+	
HSW	Betulaceae	*Corylus avellana*	Hazelnut	+								+	
A	Boraginaceae	*Lithospermum arvense*	Field gromwell						+				
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock			+							
A/D	Caryophyllaceae	*Stellaria media*	Common chickweed			+			+				
A/D		*Stellaria media*	Common chickweed (mod)		+								
WL/D	Cyperaceae	*Carex* spp	Sedge						+			+	
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings										
A/D	Lamiaceae	*Galeopsis* spp	Hemp-nettle spp			+	+						
A/D	Papaveraceae	*Fumaria* spp *cf officinalis*	Fumitory spp cf common fumitory				++		+				
E	Poaceae	*Avena* spp	Oat		+							++++	
E/A		*Avena spp*/*Bromus* spp	Oat/chess										
A		*Bromus* spp	Chess		+				+		+	+	+
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass			+							
E		*Hordeum vulgare*	Hulled barley		+	+		+				+	+
E		*Triticum* spp	Wheat								cf +		
E		*Triticum spelta*	Spelt		++			cf +					
E		*Triticum spelta*	Spelt glume bases		++							+	
E		*Triticum dicoccum*/*spelta*	Emmer/spelt	cf +	+	cf +						+	cf++
E		*Poaceae*	Indeterminate cereal grain		++				+	+	+	+	+++
E		*Poaceae*	Culm node						+			+	
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed				+						
A/D/HSW		*Rumex* spp	Dock spp						+			+	
A/D	Rubiaceae	*Galium aparine*	Cleavers								+		
A/D	Solanaceae	*Solanum* spp	Nightshade spp						+				
Flot Inclusions													
Charcoal				++++	++++	+++ (s)	++++	++++ (s)	+++ (s)	+++ (s)	++++	++++ (s)	+++
Coal													
Bone				+	++		+		+	+	++++	++++	++
Burnt bone					+		+		+				++
Molluscs				++	+++	++	++	++++	++++	++		+	++
Vitrified clay												+	

Table 41: Plant macrofossil identifications from Period 2 – Area 20

Area				20	20	20	20	20	20	20	20	20	20
Context number				21306	21306	SK 21386	21390	21620	21834	21933	22017	22019	22
Feature number				21305	21305	-	21398	21197 + 21116	21830	21915	-	-	-
Sample number				20043	20044	20045	20047	20054	20055	20057	20058	20060	20
Flot volume (ml)				47	78	N/A	55	1.5	24	21	15	7	28
Sample volume (l)				23	72	1	10	8	10	10	10	10	6
Soil remaining (l)				0	0	0	30	30	30	20	30	0	0
Plant macrofossil preservation				Good	Good	N/A	Good	N/A	Good	Moderate	Poor	Moderate	Mo
Recommendations for full analysis				No	Yes	No	Yes	No	Yes	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**										
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp		++								
A	Boraginaceae	*Lithospermum arvense*	Field gromwell		+								
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock										
A/D/P	Caryophyllaceae	*Scleranthus annuus*	Annual knawel				++						
A/D		*Spergula arvensis*	Corn spurrey				+						
A/D		*Stellaria media*	Common chickweed				++						
WL/D	Cyperaceae	*Carex* spp	Sedge		+								
D/P	Fabaceae	*Medicago* spp	Medick spp				cf +						
A/D	Papaveraceae	*Fumaria* spp *cf officinalis*	Fumitory spp cf common fumitory	+	+								
A/D		*Papaver* spp	Poppy spp		+								
E	Poaceae	*Avena* spp	Oat	+	+++				+	+			
E/A		*Avena spp*/*Bromus* spp	Oat/chess							+			
A		*Bromus* spp	Chess	++++	++++		++		+				
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass		cf +								
E		*Hordeum vulgare*	Hulled barley	+	+++		+		+		+	+	cf
E		*Secale cereale*	Rye									cf +	
E		*Triticum* spp	Wheat				+		++	+		+	cf
E		*Triticum spelta*	Spelt		++		cf +		+	cf +			
E		*Triticum spelta*	Spelt glume bases	+++	++++		++						
E		*Triticum dicoccum*/*spelta*	Emmer/spelt	++	cf ++				+	+			
E		*Poaceae*	Indeterminate cereal grain	++++	++++		++		++++	++	++	++++	++

E		*Poaceae*	Culm node		+								
E		*Poaceae*	Glume base		++++		++						
E		*Poaceae*	cf grass spp		+								
E		*Poaceae*	Rachis										+
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed				+						
A/D/HSW		*Rumex* spp	Dock spp	+	+		+						
HSW	Rosaceae	*Prunus* spp	Cherry spp pip										
Flot Inclusions													
Charcoal				++++ (s)	++++		++++		++ (s)	++++	++ (s)	+ (s)	++
Bone				+	++		++		+	+			+
Burnt bone					++								
Molluscs				+++	+++		++	++	++++	++++	++++	++++	++
Vitrified clay													

Table 42: Plant macrofossil identifications from Period 3 – Areas 2 and 3

Area				2	2	2	2	2	2	3	3
Context number				2018	2026	2086	2086	2086	2086	3083	3083
Feature number					-	-	-			-	-
Sample number				SK 2019 in 2021	2004	2028	2031	2041	2042	3028	3032
Flot volume (ml)				N/A	5	90	71	92	106	18	72
Sample volume (l)				0.5	8	7	6	8	7	8	8
Soil remaining (l)				0	30	0	30	0	30	30	30
Plant macrofossil preservation				Moderate	N/A	Moderate	Good	Good	Good	Moderate	Mode
Recommendations for full analysis				No	No	No	No	No	Yes	Yes	Yes
Habitat Code	**Family**	**Species**	**Common Name**								
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder			+	+				
HSW/WL		*Sambucus nigra*	Elder *			++	++	++++	++	++++	
WL	Alismataceae	*Alisma* spp	Water plantain *			++	++	++	+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp								+

DC/A		*Chenopodium* spp	Fat hen/goosefoot spp *			++	++++	++++	+		
D/A	Apiaceae	*Aethusa cynapium*	Fool's parsley *						+		
WL		*Cicuta virosa*	Cowbane *			++++	++++	++	++		
WL/D		*Conium maculatum*	Hemlock *			++	+	+			
E		*Coriandrum sativum*	Coriander								
D		*Foeniculum vulgare*	Fennel *			++	+	+			
A/D	Asteraceae	*Anthemis arvensis*	Corn chamomile *				+				
D/P		*Cirsium*/*Carduus* spp	Thistle spp								
D/P		*Cirsium*/*Carduus* spp	Thistle spp *			++++	+++	++	++		
A/D		*Tripleurospermum inodorum*	Scentless mayweed *			+	+	+	+		
D/WL	Balsaminaceae	*Impatiens parviflora*	Small balsam *				++				
HSW	Betulaceae	*Betula* spp	Birch *			+					
HSW		*Corylus avellana*	Hazelnut							+	
HSW		*Corylus avellana*	Hazelnut *					++			
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock					+	+		
A/D		*Raphanus raphanistrum*	Wild radish perianth *					+	+		
A/D	Caryophyllaceae	*Spergula arvensis*	Corn spurrey								
A/D	Caryophyllaceae	*Spergula arvensis*	Corn spurrey *						+		
A/D		*Stellaria media*	Common chickweed								
A/D		*Stellaria media*	Common chickweed *				+++	++++	++		++++
WL/D	Cyperaceae	*Carex* spp	Sedge								
WL/D		*Carex* spp	Sedge *			++++	++++	++++	++++		
WL/D		*Carex* spp	Sedge perianth *			++++	+++		+		
WL		*Eleocharis* spp	Spikerushes *				+		+		
D/P	Fabaceae	*Medicago* spp	Medick spp			+					
WL	Iridaceae	*Iris pseudocorus*	Yellow iris *			++	+		+		
WL	Juncaceae	*Juncus* spp	Rushes *			++	+				

Area	2	2	2	2	2	2	3	3
Context number	2018	2026	2086	2086	2086	2086	3083	3083
Feature number		-	-	-			-	-

Sample number				SK 2019 in 2021	2004	2028	2031	2041	2042	3028	3032
Flot volume (ml)				N/A	5	90	71	92	106	18	72
Sample volume (l)				0.5	8	7	6	8	7	8	8
Soil remaining (l)				0	30	0	30	0	30	30	30
Plant macrofossil preservation				Moderate	N/A	Moderate	Good	Good	Good	Moderate	Mode
Recommendations for full analysis				No	No	No	No	No	Yes	Yes	Yes
Habitat Code	**Family**	**Species**	**Common Name**								
A/D	Lamiaceae	*Galeopsis* spp	Hemp-nettle spp				++				
A/D		*Lamium* spp	Dead nettle *					+			
D		*Lycopus europaeus*	Gypsywort			++++	++++				
E	Linaceae	*Linum usitatissimum*	Flax (crushed) *				+		+		
E		*Linum usitatissimum*	Flax perianith pod *						+		
D		*Malva* spp	Mallow *			+	+	+	+		
WL	Menyanthaceae	*Menyanthes trifoliata*	Bogbean *			+			+		
WL	Nymphaceae	*Nuphar lutea*	Yellow Water-lily			+		+	+		
A/D	Papaveraceae	*Fumaria* spp	Fumitory *								
E	Poaceae	*Avena* spp	Oat	+							+
A		*Bromus* spp	Chess			+					+
E		*Hordeum vulgare*	Hulled barley	+		+	+	+	+	+	+
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat			+		+	+		
E		*Triticum spelta*	Spelt			cf +	+				
E		*Triticum spelta*	Spelt glume bases				+			+++	++
E		*Triticum dicoccum/spelta*	Emmer/spelt							cf +	cf +
E		*Poaceae*	Indeterminate cereal grain	+		++	+	+			++
E		*Poaceae*	Culm node			cf +					
E		*Poaceae*	Glume base								++
E		*Poaceae*	Straw								+
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed *						+		
A/D		*Persicaria* spp	Persicaria spp *					+++	++		
A/D/WL		*Persicaria amphiba*	Amphibious bistort						+		

WL		*Persicaria hydropiper*	Water-pepper *				+	+	+		
A/D/HSW		*Rumex* spp	Dock spp								
A/D/HSW		*Rumex* spp	Dock spp *			++	+++	++++	++		
WL	Potamogetonaceae	*Potamogeton* spp	Pondweed *			+++	+	++	++		
P/D/A	Ranunculaceae	*Ranunculus* spp	Buttercup *			+		++			
WL		*Ranunculus sceleratus*	Celery-leaved buttercup *			++++	++++	++	++++		
D/P	Rosaceae	*Potentilla* spp	Cinquefoil spp *				+		+		
HSW/D		*Rubus* spp	Bramble spp *				+	+			
A/D	Rubiaceae	*Galium aparine*	Cleavers								
WL	Zannichelliaceae	*Zannichellia palustris*	Horned pondweed *			+	+	++	++++		
Flot Inclusions											
Charcoal					++ (s)	+++ (s)	+ (s)		++	+++ (s)	++ (s)
Bone								+		++	+
Insects						+	++++	++	+++		
Molluscs					+++	+++	+++	++	++	++++	++++

Table 43: Plant macrofossil identifications from Period 3 – Areas 3 and 17

Area				3	3	3	3	3	3	3	3	17	17
Context number				3847	3867 = 5205	3867 = 5206	3949	3977	4056	5210	5233	17020	170
Feature number				3844	-	-	3948	-	4047	-	-	17022	170 170
Sample number				3041	3048	3050	3052	3053	3038	3051	3062	17034	170
Flot volume (ml)				13	2	1.5	14	10	3	14	4	46	9
Sample volume (l)				7	8	7	8	7	8	9	6	7	8
Soil remaining (l)				10	0	0	30	30	0	0	0	10	0
Plant macrofossil preservation				Moderate	Moderate	Moderate	Good	Good	Good	Good	Good	Poor	Mod
Recommendations for full analysis				No	No	No	Yes	No	No	No	No	Yes	No
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder *	+			++++			+			

DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp *	+			++					
HSW	Betulaceae	*Corylus avellana*	Hazelnut					+				
A/D	Caryophyllaceae	*Stellaria media*	Common chickweed				+					
A/D		*Stellaria media*	Common chickweed *	+			+			+		
WL/D	Cyperaceae	*Carex* spp	Sedge (mod)							+++		
WL/D		*Carex* spp	Sedge *	+								
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings			+						+
E	Poaceae	*Avena* spp	Oat									+
A		*Bromus* spp	Chess				+					
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass				+					
E		*Hordeum vulgare*	Hulled barley	+		cf +	++	+	+	+	+	+
E		*Secale cereale*	Rye									
E		*Triticum* spp	Wheat	+						+	++	++
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat		cf +							
E		*Triticum spelta*	Spelt								+	cf +
E		*Triticum spelta*	Spelt glume bases							+		
E		*Triticum dicoccum/spelta*	Emmer/spelt								+++	
E		*Poaceae*	Indeterminate cereal grain			+	++	++			++++	
E		*Poaceae*	Glume base									
WL	Zannichelliaceae	*Zannichellia palustris*	Horned pondweed *					+				
Flot Inclusions												
Charcoal				+++ (s)	+ (s)	++ (s)	+++ (s)	++ (s)	+ (s)	++ (s)	+ (s)	+ (s)	+ (s
Bone				++++			+			+	++	++	++
Molluscs				++++	+++	+++	+++	++++	+++	++++	++++	++++	+++
Vitrified clay													+

Table 44: Plant macrofossil identifications from Period 3 – Area 17

Area	17	17	17	17	17	17	17	17	17	17
Context number	17070	17070	17071	17075	17075	17076	17077	17077	17085	17085
Feature number	17048	17048	17048	17048	17048	17048	17048	17048	17048	17048
Sample number	17004	17022	17031	17005	17023	17032	17006	17029	17007	17026

Flot volume (ml)				14	11	2	15	8	9	15	26	17	15
Sample volume (l)				8	8	7	7	7	5	7	8	8	10
Soil remaining (l)				0	0	20	0	10	0	0	0	20	0
Plant macrofossil preservation				Good	Moderate	N/A	Good	Moderate	Moderate	Good	Moderate	Good	Moderate
Recommendations for full analysis				Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder								+		
HSW/WL		*Sambucus nigra*	Elder (mod)	+									
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp				+						
HSW		*Corylus avellana*	Hazelnut	+								+	
A	Boraginaceae	*Lithospermum arvense*	Field gromwell									+	+
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)				+						
A/D		*Spergula arvensis*	Corn spurrey										
A/D		*Stellaria media*	Common chickweed (mod)	+									
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings						+				
E	Poaceae	*Avena* spp	Oat	+					+	+	+	+	+
E		*Hordeum vulgare*	Hulled barley	+++	cf ++		++			+	++	+	cf +
E		*Secale cereale*	Rye	+	+		+	+	+	+	+	+	+
E		*Triticum* spp	Wheat	+	+				+	++			
E		*Triticum spelta*	Spelt	+	++				cf +	+			
E		*Triticum spelta*	Spelt glume bases		+					++	+		
E		*Triticum dicoccum*/*spelta*	Emmer/spelt		++		cf +	++		++	cf ++	+	++
E		*Poaceae*	Indeterminate cereal grain	++++	++		++	++		++	++++	++	++
E		*Poaceae*	Glume base				+			+			
A/D/HSW		*Rumex* spp	Dock spp									+	
A/D/HSW		*Rumex* spp	Dock spp (mod)						+				
P/D/A	Ranunculaceae	*Ranunculus* spp	Buttercup								+		
Flot Inclusions													
Charcoal				+++ (s)	+++ (s)	+ (s)	++ (s)	+ (s)	++ (s)	+ (s)	+ (s)	+ (s)	++
Bone				++	++		++	++	+	+	++	++	++
Burnt bone													+

Metal residue (hammerscale)						+				
Molluscs	++++	++++	+	++++	+++	++	++++	++++	++++	++++
Vitrified clay		+			++					

Table 45: Plant macrofossil identifications from Period 3 – Areas 17 and 20

Area				17	17	17	17	17	17	20
Context number				17243	17291	17343	17344	17349	17436	20811
Feature number				17244	17048	17048	17048	17067=17028	17434	20813
Sample number				17048	17015	17025	17027	17028	17046	20026
Flot volume (ml)				7	16	13	9	2	10	6.5
Sample volume (l)				8	10	5	10	10	8	6
Soil remaining (l)				10	30	0	20	20	0	0
Plant macrofossil preservation				Poor	Good	Good	Poor	Poor	Poor	Poor
Recommendations for full analysis				No	No	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**							
HSW	Betulaceae	*Corylus avellana*	Hazelnut				+			
WL/D	Cyperaceae	*Carex* spp	Sedge			+		+		
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings		+			+		
E	Poaceae	*Avena* spp	Oat		+					
E		*Hordeum vulgare*	Hulled barley		++	+	cf +			+
E		*Secale cereale*	Rye		+	+	cf +			
E		*Triticum* spp	Wheat			++	+	cf +		
E		*Triticum aestivum*/*turgidum*/*durum*	Free threshing wheat		+					
E		*Triticum spelta*	Spelt							cf +
E		*Triticum spelta*	Spelt glume bases			+				
E		*Triticum dicoccum*/*spelta*	Emmer/spelt		cf +				cf +	
E		*Poaceae*	Indeterminate cereal grain	+++	++++	++	++++	+++	+++	++
E		*Poaceae*	Glume base			+				
A/D	Solanaceae	*Solanum nigrum*	Black nightshade (mod)		+					
Flot Inclusions										

Charcoal	++ (s)	+++ (s)	+ (s)	+ (s)	+ (s)	++ (s)	+ (s)
Bone		+	+++	++	++	+	
Molluscs	+++	++++	++++	++++	+++	++++	++++
Vitrified clay						+	

Table 46: Plant macrofossil identifications from Period 4 – Areas 2 and 3

Area				2	2	2	2	2	2	2	2	2	3
Context number				2020	2022	2025	2027	2034	2039	2039	2039	2096	3
Feature number				2028	2023	2024	2028	2028	-	-	-	-	-
Sample number				2007	2014	2003	2005	2008	2020	2021	2022	2023	3
Flot volume (ml)				18	1569	35	627	93	43	76	2	32	2
Sample volume (l)				8	6	8	7	8	8	8	8	8	8
Soil remaining (l)				30	30	30	30	30	30	30	30	30	3
Plant macrofossil preservation				Good	Moderate	Good	Good	Good	Good	Good	Good	Good	M
Recommendations for full analysis				No	No	Yes	Yes	Yes	No	No	No	No	N
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder							++++			
HSW/WL		*Sambucus nigra*	Elder *			+++			++		+	+	
HSW/WL		*Sambucus nigra*	Elder (semi-charred)						+				
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp			+	+	+++					
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp *						++	+++	++	+	
D/A	Apiaceae	*Aethusa cynapium*	Fool's parsley *							+			
D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp			+	++	+					
D/P		*Cirsium*/*Carduus* spp	Thistle spp *							+			
D/WL	Balsaminaceae	*Impatiens parviflora*	Small balsam *							+			
HSW	Betulaceae	*Corylus avellana*	Hazelnut		+				+			+	
HSW		*Corylus avellana*	Hazelnut *						++	+			
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock				+			+			
A/D		*Raphanus raphanistrum*	Wild radish perianth				+						
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)					+					

A		*Agrostemma githago*	Common corncockle (fragment)										
A/D		*Spergula arvensis*	Corn spurrey							+	cf +		
A/D		*Stellaria media*	Common chickweed										
A/D		*Stellaria media*	Common chickweed *						++++	++++	++++	++	-
WL/D	Cyperaceae	*Carex* spp	Sedge	+			+	+					
WL/D		*Carex* spp	Sedge *						++++	++++			-
E	Fabaceae	*Pisum* spp	Pea spp				cf +						
A/P/D		*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings				+++	+					
A/D	Lamiaceae	*Lamium* spp	Dead nettle *						+	++			
D	Malvaceae	*Malva* spp	Mallow *							++			
A/D	Papaveraceae	*Fumaria* spp	Fumitory *						+				
E	Poaceae	*Avena* spp	Oat	++		++	++++	++++	+			++	-
E		*Avena fatua*	Wild oat					+					
E		*Avena sativa*	Cultivated oat				+	+					
A		*Bromus* spp	Chess				+	+					
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass			+							
E		*Hordeum vulgare*	Hulled barley	++	+	++++	++++	++++	++		+	++	-
E		*Hordeum vulgare*	Hulled barley *						cf +				
E		*Hordeum vulgare*	Sprouting barley					+					

Area				2	2	2	2	2	2	2	2	2
Context number				2020	2020	2020	2020	2022	2025	2027	2034	2039
Feature number				2028	2028	2028	2028	2023	2024	2028	2028	-
Sample number				2000	2001	2002	2007	2014	2003	2005	2008	2020
Flot volume (ml)				12	8	11	18	1569	35	627	93	43
Sample volume (l)				5	6	6	8	6	8	7	8	8
Soil remaining (l)				0	0	0	30	30	30	30	30	30
Plant macrofossil preservation				Moderate	Poor	Moderate	Good	Moderate	Good	Good	Good	Goo
Recommendations for full analysis				No	No	No	No	No	Yes	Yes	Yes	No
Habitat Code	**Family**	**Species**	**Common Name**									

E		*Hordeum vulgare*	Barley rachis internodes							++++		
E		*Secale cereale*	Rye				+				++	
E		*Triticum* spp	Wheat rachis internode						cf +			
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat				+	+	++++	++++	++++	+
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat - rachis internode							++		
E		*Triticum aestivum*	Bread wheat - rachis internode (hexaploid wheat)							+		
E		*Triticum spelta*	Spelt									
E		*Triticum spelta*	Spelt glume bases									
E		*Triticum dicoccum/spelta*	Emmer/spelt	++			+					
E		*Poaceae*	Indeterminate cereal grain	++	++	++	+++	+	++	++++	++++	+
E		*Poaceae*	Culm node						+	++	+	
E		*Poaceae*	Rachis									+
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed								+	
A/D/HSW		*Fallopia convolvulus*	Black-bindweed *									
A/D		*Persicaria* spp	Persicaria spp									
A/D/WL		*Persicaria amphiba*	Amphibious bistort						++			
A/D/WL		*Persicaria lapathifolia*	Pale persicaria *									
A/D/HSW		*Rumex* spp	Dock spp				+			+	+	
A/D/HSW		*Rumex* spp	Dock spp *									
P/D/A	Ranunculaceae	*Ranunculus* spp	Buttercup								+	
P/D/A		*Ranunculus* spp	Buttercup *									
WL		*Ranunculus sceleratus*	Celery-leaved buttercup *									
HSW	Rosaceae	*Crateagus monogyna*	Hawthorn *									
D/P		*Potentilla* spp	Cinquefoil spp *									
A/D	Rubiaceae	*Galium aparine*	Cleavers									
A/D	Solanaceae	*Solanum* spp	Nightshade spp *									
D	Urticaceae	*Urtica urens*	Annual nettle *									
WL	Zannichelliaceae	*Zannichellia palustris*	Horned pondweed *									
			cf Nut fragment	+								
Flot Inclusions												
Charcoal				++ (s)	++ (s)	++ (s)		++++	++++	+++	+++	+++

Bone	+				+++	++	+		+
Burnt twine						+ (1 frag)			
Insects									
Molluscs	+++	++	++		++	+++	+		++

Table 47: Plant macrofossil identifications from Period 4 – Areas 3, 15, 16, 17 and 20

Area				3	3	3	3	15	15	15	16	17
Context number				5128	5131	5203	5213	15476	15489	15490	16070	17034
Feature number				-	-	-	5211	15477	15488	15488	16069	17019
Sample number				3060	3061	3059	3054	15009	15016	15015	16000	17000
Flot volume (ml)				16	10	41	129	11	22	9	15	44
Sample volume (l)				7	6	7	7	9	7	5	8	7
Soil remaining (l)				20	10	0	10	10	0	0	30	8
Plant macrofossil preservation				Moderate	Good	Moderate	Good	Poor	Poor	Poor	Poor	Moderate
Recommendations for full analysis				No	No	No	Yes	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**									
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder (waterlogged)		+		+++		+	+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp *				+					
HSW	Betulaceae	*Corylus avellana*	Hazelnut	cf +		+			+			
A/D	Brassicaceae	*Raphanus raphanistrum*	Wild radish perianth				+					
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)				++					
A		*Agrostemma githago*	Common corncockle (fragment)				+					
A/D		*Stellaria media*	Common chickweed *		+		++					
WL/D	Cyperaceae	*Carex* spp	Sedge *				+					
D/HSW	Dennstaedtiaceae	*Pteridium* spp	Bracken				+					
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings							+		
E	Poaceae	*Avena* spp	Oat	+			++					+

E		*Hordeum vulgare*	Hulled barley	+	+	+	++++	+				+
E		*Hordeum vulgare*	Barley rachis internodes				++					
E		*Triticum* spp	Wheat				++		+		cf +	
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat	+		+				+		
E		*Triticum spelta*	Spelt glume bases				+					
E		*Poaceae*	Indeterminate cereal grain	+				+++	++	+++	++	+
E		*Poaceae*	Culm node				+++					
E		*Poaceae*	Palea				+					
E		*Poaceae*	Rachis				+					
A/D/HSW	Polygonaceae	*Rumex* spp	Dock spp				+					
A/D	Rubiaceae	*Galium aparine*	Cleavers									+
Flot Inclusions												
Charcoal				+++ (s)	+++ (s)	++ (s)	++++	++ (s)	+ (s)	+ (s)	+ (s)	++++
Bone				+++	+	++	++	+	+	+	+	++++
Molluscs				++++	++++	++	++	++++	++++	++++	++++	++++
Vitrified clay									++	+		

Table 48: Plant macrofossil identifications from Period 5 – Area 2

Area				2	2	2	2	2	2	2	2	2
Context number				2006	2008	2009	2010	2043	2044	2050	2050	205
Feature number				-	-	-	-	2046	2046	-	-	-
Sample number				2037	2032	2033	2034	2018	2019	2026	2035	203
Flot volume (ml)				76	115	74	319	10	5	100	126	31
Sample volume (l)				10	5	7	7	9	8	8	7	10
Soil remaining (l)				30	0	30	30	0	0	10	30	30
Plant macrofossil preservation				Moderate	Poor	Moderate	Moderate	Poor	Moderate	Moderate	Moderate	Mo
Recommendations for full analysis				No	No	No	No	No	No	Yes	No	No
Habitat Code	**Family**	**Species**	**Common Name**									
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder									+
HSW/WL		*Sambucus nigra*	Elder *				+			++	+	++

WL	Alismataceae	*Alisma* spp	Water plantain *								+	
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp									
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp *		+					+++	++++	++
WL	Apiaceae	*Apium repens*/*graveolens*	Creeping marshwort/wild celery *									
WL		*Cicuta virosa*	Cowbane *									
D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp							+		
D/P		*Cirsium*/*Carduus* spp	Thistle spp *									
A/D		*Tripleurospermum inodorum*	Scentless mayweed *								+	
D/WL	Balsaminaceae	*Impatiens parviflora*	Small balsam *									
HSW	Betulaceae	*Corylus avellana*	Hazelnut	+		+					+	
HSW		*Corylus avellana*	Hazelnut *									
A	Boraginaceae	*Lithospermum arvense*	Field gromwell	+	+							
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock									
A/D		*Raphanus raphanistrum*	Wild radish perianth *									
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)	+								
A		*Agrostemma githago*	Common corncockle (fragment)	+								
A/D		*Spergula arvensis*	Corn spurrey									
A/D		*Spergula arvensis*	Corn spurrey *									
A/D		*Stellaria media*	Common chickweed	+						++		
A/D		*Stellaria media*	Common chickweed *		+					+	++++	++
WL/D	Cyperaceae	*Carex* spp	Sedge	+								
WL/D		*Carex* spp	Sedge *							+++	++	++
WL/D		*Carex* spp	Sedge perianith *									
WL		*Eleocharis* spp	Spikerushes *									
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings				+					
WL	Juncaceae	*Juncus* spp	Rushes *								++	+
A/D	Lamiaceae	*Lamium* spp	Dead nettle *									
E	Linaceae	*Linum usitatissimum*	Flax									
E		*Linum usitatissimum*	Flax perianith pod (waterlogged)									
WL	Menyanthaceae	*Menyanthes trifoliata*	Bogbean (waterlogged)	+								+
WL	Nymphaceae	*Nuphar lutea*	Yellow Water-lily									
E	Poaceae	*Avena* spp	Oat	++					+	+		+

Area				2	2	2	2	2	2	2	2	2
Context number				2006	2008	2009	2010	2043	2044	2050	2050	205
Feature number				-	-	-	-	2046	2046	-	-	-
Sample number				2037	2032	2033	2034	2018	2019	2026	2035	203
Flot volume (ml)				76	115	74	319	10	5	100	126	31
Sample volume (l)				10	5	7	7	9	8	8	7	10
Soil remaining (l)				30	0	30	30	0	0	10	30	30
Plant macrofossil preservation				Moderate	Poor	Moderate	Moderate	Poor	Moderate	Moderate	Moderate	Mo
Recommendations for full analysis				No	No	No	No	No	No	Yes	No	No
Habitat Code	**Family**	**Species**	**Common Name**									
E		*Avena sativa*	Cultivated oat									
A		*Bromus* spp	Chess									
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass									
E		*Hordeum vulgare*	Hulled barley	++	+	++	++			+++	+++	++
E		*Hordeum vulgare*	Barley rachis internodes									+
E		*Secale cereale*	Rye				cf +				+	
E		*Triticum* spp	Wheat rachis internode							++		
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat	++++	+	+	+	+	+	+++		++
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat - rachis internode									
E		*Triticum spelta*	Spelt glume bases								+	
E		*Poaceae*	Indeterminate cereal grain	++++	+	+	++	+++	+++	+++	+	+
E		*Poaceae*	Culm node	+						+	+	+
E		*Poaceae*	Culm node *									
E		*Poaceae*	Glume base								+	
E		*Poaceae*	Palea									
E		*Poaceae*	Rachis	+							+	
E		*Poaceae*	Straw									
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed									

A/D/HSW		*Fallopia convolvulus*	Black-bindweed *									
A/D		*Persicaria* spp	Persicaria spp *									+
A/D/WL		*Persicaria amphiba*	Amphibious bistort									
WL		*Persicaria hydropiper*	Water-pepper *									
A/D/WL		*Persicaria lapathifolia*	Pale persicaria									
A/D/WL		*Persicaria lapathifolia*	Pale persicaria *								++	
A/D/HSW		*Rumex* spp	Dock spp	+								
A/D/HSW		*Rumex* spp	Dock spp *								+	
WL	Potamogetonaceae	*Potamogeton* spp	Pondweed *									
WL	Ranunculaceae	*Ranunculus sceleratus*	Celery-leaved buttercup *									++
D/P	Rosaceae	*Potentilla* spp	Cinquefoil spp *								++	++
HSW/D		*Rubus* spp	Bramble spp *	+								
A/D	Rubiaceae	*Galium aparine*	Cleavers									
			cf Nut fragment						+			
Flot Inclusions												
Charcoal				++++	+ (s)	++++	++++	++	+ (s)	++++	++++	++
Bone				++	++		++			++++	+	+
Insects											++	
Metal residue (hammerscale)											++++	
Molluscs				+++	+		+	++++	++++	++++	++	+

Table 49: Plant macrofossil identifications from Period 5 – Areas 2 and 3

Area				2	2	2	2	2	3	3	3	3
Context number				2070	2071	2083	2084	2100	3008	3009	3016	3016
Feature number				2074	2074	2085	2085	2098	-			
Sample number				2010	2011	2012	2013	2024	3000	3001	3002	3005
Flot volume (ml)				89	81	28	93	MISSING	19	945	755	N/A
Sample volume (l)				8	8	7	7	8	7	1	1	1
Soil remaining (l)				30	30	10	10	30	30	39	29	9
Plant macrofossil preservation				Good	Good	Good	Good		Good	Poor	Poor	N/A
Recommendations for full analysis				Yes	Yes	Yes	Yes	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**									
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder *	++	+++				++	+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp	+								
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp *		+++					+		
WL	Apiaceae	*Apium repens*/*graveolens*	Creeping marshwort/wild celery *							+		
D/A		*Aethusa cynapium*	Fool's parsley *							+++		
WL		*Cicuta virosa*	Cowbane *								+	
D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp			+	+					
D/P		*Cirsium*/*Carduus* spp	Thistle spp *							++		
A	Boraginaceae	*Lithospermum arvense*	Field gromwell				+					
A/D	Brassicaceae	*Raphanus raphanistrum*	Wild radish perianth				+					
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)			+	+					
A/D		*Stellaria media*	Common chickweed				+					
A/D		*Stellaria media*	Common chickweed *		+++							
WL/D	Cyperaceae	*Carex* spp	Sedge				++		+			
WL/D		*Carex* spp	Sedge *						+	++	++	
WL/D		*Carex* spp	Sedge perianth *									
WL		*Eleocharis* spp	Spikerushes *							+		
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings		+	+	+					
D	Lamiaceae	*Lycopus europaeus*	Gypsywort							++++		
P		*Prunella vulgaris*	Self heal	+								

Area				2	2	2	2	2	3	3	3	3
Context number				2070	2071	2083	2084	2100	3008	3009	3016	3016
Feature number				2074	2074	2085	2085	2098	-			
Sample number				2010	2011	2012	2013	2024	3000	3001	3002	3005
Flot volume (ml)				89	81	28	93	MISSING	19	945	755	N/A
Sample volume (l)				8	8	7	7	8	7	1	1	1
Soil remaining (l)				30	30	10	10	30	30	39	29	9
Plant macrofossil preservation				Good	Good	Good	Good		Good		Poor	N/A
Recommendations for full analysis				Yes	Yes	Yes	Yes	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**									
WL	Menyanthaceae	*Menyanthes trifoliata*	Bogbean (waterlogged)						cf +	+++	+++	
A/D	Papaveraceae	*Fumaria* spp	Fumitory (waterlogged)						++			
E	Poaceae	*Avena* spp	Oat	++	++	+++	++++					
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass				+					
E		*Hordeum vulgare*	Hulled barley	+++	+++	+++	++++					
E		*Hordeum vulgare*	Barley rachis internodes	+	+	+	+					
E		*Secale cereale*	Rye		+	+	+					
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat	+++	++++	++++	++++					
E		*Triticum aestivum*	Bread wheat - rachis internode (hexaploid wheat)				+					
E		*Triticum spelta*	Spelt	+								
E		*Triticum spelta*	Spelt glume bases		+							
E		*Triticum dicoccum/spelta*	Emmer/spelt		cf +							
E		*Poaceae*	Indeterminate cereal grain	++++	++++	++++	++++		+			
E		*Poaceae*	Culm node		+	+	+					
E		*Poaceae*	Palea				++					
E		*Poaceae*	Rachis		+	+	++++					
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed			+						
A/D		*Persicaria* spp	Persicaria spp *									
A/D/WL		*Persicaria amphiba*	Amphibious bistort									

A/D/WL		*Persicaria lapathifolia*	Pale persicaria *							+		
A/D/HSW		*Rumex* spp	Dock spp	+	+	+	+			+		
A/D/HSW		*Rumex* spp	Dock spp *									
A/D/HSW		*Rumex* spp	Dock perianth spp *							+		
			cf Nut fragment			+						
Flot Inclusions												
Charcoal				++++	++++	++	++++		++ (s)		+	
Bone				++	+	+	++				+	
Insects											+++	
Molluscs				++	++	++			++			

Table 50: Plant macrofossil identifications from Period 5 – Areas 3 and 15

Area				3	3	3	3	3	3	3	3	3	3
Context number				3016	3016	3016	3016	3080	3080	3081	3081	3943	3
Feature number								-	-	-	-	3944	3
Sample number				3013	3014	3015	3016	3026	3029	3027	3030	3044	3
Flot volume (ml)				N/A	448	N/A	523	13	30	81	148	731	1
Sample volume (l)				1	1	1	1	7	8	8	8	9	8
Soil remaining (l)				9	9	9	9	30	30	0	30	30	2
Plant macrofossil preservation				N/A	Poor	N/A	Poor	Moderate	Moderate	Moderate	Moderate	Good	G
Recommendations for full analysis				No	No	No	No	No	No	No	Yes	Yes	Y
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder								+	+	
HSW/WL		*Sambucus nigra*	Elder *						+	++++	++++		
D/C/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp									+	+
D/C/A		*Chenopodium* spp	Fat hen/goosefoot spp *								+		
D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp									+	
HSW	Betulaceae	*Corylus avellana*	Hazelnut							+	+		
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock						+			+++	+
A/D		*Raphanus raphanistrum*	Wild radish perianth									+	+

A/D		*Raphanus raphanistrum*	Wild radish perianth *				cf +++						
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)									++	+
A		*Agrostemma githago*	Common corncockle (fragment)				cf +					+	
WL/D	Cyperaceae	*Carex* spp	Sedge									+	
WL/D		*Carex* spp	Sedge *								+		
WL/D		*Carex* spp	Sedge perianth *		+		+						
D/HSW	Dennstaedtiaceae	*Pteridium* spp	Bracken									+	
D/HSW		*cf Pteridium* spp	Bracken (curved leaf like bracken)									cf ++	
E	Fabaceae	*Pisum* spp	Pea spp								cf +		
E		*Vicia faba*	Broad bean									cf +	
A/P/D		*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings							+		++	+
WL	Iridaceae	*Iris pseudocorus*	Yellow iris *										
WL	Juncaceae	*Juncus* spp	Rushes *								+++		+
D	Lamiaceae	*Lycopus europaeus*	Gypsywort		+		+						
E	Linaceae	*Linum usitatissimum*	Flax										+
E		*Linum usitatissimum*	Flax perianth pod (waterlogged)				+						

Area	3	3	3	3	3	3	3	3	3	3
Context number	3016	3016	3016	3016	3080	3080	3081	3081	3943	3
Feature number					-	-	-	-	3944	3
Sample number	3013	3014	3015	3016	3026	3029	3027	3030	3044	3
Flot volume (ml)	N/A	448	N/A	523	13	30	81	148	731	1
Sample volume (l)	1	1	1	1	7	8	8	8	9	8
Soil remaining (l)	9	9	9	9	30	30	0	30	30	2
Plant macrofossil preservation	N/A	Poor	N/A	Poor	Moderate	Moderate	Moderate	Moderate	Good	G
Recommendations for full analysis	No	No	No	No	No	No	No	Yes	Yes	Y

Habitat Code	**Family**	**Species**	**Common Name**									
E	Poaceae	*Avena* spp	Oat								++	++++	
E		*Avena sativa*	Cultivated oat									+	

A		*Bromus* spp	Chess									+	+
E		*Hordeum vulgare*	Hulled barley							+	++	++++	+
E		*Hordeum vulgare*	Barley rachis internodes									+++	+
E		*Secale cereale*	Rye rachis									cf +	
E		*Triticum* spp	Wheat										
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat					+	+		++	++++	+
E		*Triticum spelta*	Spelt									+	
E		*Triticum spelta*	Spelt glume bases								+		+
E		*Triticum dicoccum/spelta*	Emmer/spelt										+
E		*Poaceae*	Indeterminate cereal grain					+	+	+++	+++	+++	+
E		*Poaceae*	Culm node									++	+
E		*Poaceae*	cf grass spp								+		
E		*Poaceae*	Rachis								+	++++	
E		*Poaceae*	Straw (with culm node) *				+						
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed									+	
A/D		*Persicaria* spp	Persicaria spp *				+						
A/D/HSW		*Rumex* spp	Dock spp *				+						
WL	Potamogetonaceae	*Potamogeton* spp	Pondweed *				+						
P/D/A	Ranunculaceae	*Ranunculus* spp	Buttercup										+
WL		*Ranunculus sceleratus*	Celery-leaved buttercup *				+						
A/D	Rubiaceae	*Galium aparine*	Cleavers									+	
Flot Inclusions													
Charcoal								++ (s)	++ (s)	++ (s)	+++ (s)	++++	+
Bone								+	+	+++	+++	++++	+
Insects					+		+				+		
Metal residue (hammerscale)													+
Molluscs								++++	+	+	+++	+++	+

Table 51: Plant macrofossil identifications from Period 5 – Areas 15, 16, 17, 18 and 19

Area				15	15	16	17	17	17	17	17
Context number				15446	15486	16098	17144	17157	17221	17270	17277
Feature number				15447	15487	16095	17145	17156	17182	17145	17145
Sample number				15014	15010	16004	17012	17011	17040	17020	17013
Flot volume (ml)				23	14	31	31	12	50	7	10
Sample volume (l)				8	8	9	9	10	7	7	9
Soil remaining (l)				0	10	30	30	30	10	10	30
Plant macrofossil preservation				Poor	Poor	Poor	Moderate	Good	Moderate	Moderate	Poor
Recommendations for full analysis				No	No	No	Yes	Yes	Yes	Yes	No
Habitat Code	**Family**	**Species**	**Common Name**								
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder (mod)		+	++	+				
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp								
A/D	Asteraceae	*Anthemis cotula*	Stinking chamomile					+			
A	Boraginaceae	*Lithospermum arvense*	Field gromwell					+			
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock					+			
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)					+			
D/HSW	Dennstaedtiaceae	*cf Pteridium* spp	Bracken (curved leaf like bracken)							cf +	
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings								
E	Poaceae	*Avena* spp	Oat	+				+	+		+
A		*Bromus* spp	Chess					+			
E		*Hordeum vulgare*	Hulled barley		+		+				
E		*Secale cereale*	Rye					+		+	
E		*Triticum* spp	Wheat		+			+			
E		*Triticum aestivum*/*turgidum*/*durum*	Free threshing wheat	+			++		++	+	+
E		*Triticum dicoccum*/*spelta*	Emmer/spelt		+						
E		*Poaceae*	Indeterminate cereal grain	++++		+	+	++	+++	++	++
E		*Poaceae*	Glume base					+		+	
E		*Poaceae*	Palea					+			
HSW/D	Rosaceae	*Rubus fruticosus*	Blackberry (mod)								

Flot Inclusions								
Charcoal	+ (s)	+ (s)	++++	+++ (s)	++	++ (s)	+++ (s)	+++ (s)
Bone	+	+	+	+	+++	+		+
Burnt bone								
Metal residue (hammerscale)					+			
Molluscs	++++	+++	++++	+++	++	++++	++++	+++
Slag	+		+					

Table 52 Plant macrofossil identifications from Period 5 – Area 20

Area				20	20	20	20	20	20	20	20	20	20
Context number				20045	20047	20047	20219	20220	20220	20435	20561	20585	2058
Feature number				20044	20044	20044	20044	20044	20044	20153	20044	20044	2004
Sample number				20004	20000	20005	20028	20021	20025	20003	20006	20007	2000
Flot volume (ml)				259	18	305	3	14	11	18	2	2	2
Sample volume (l)				5	7	8	7	7	8	8	9	9	8
Soil remaining (l)				0	10	0	30	30	30	20	30	30	30
Plant macrofossil preservation				N/A	Moderate	Moderate	Poor	Poor	Moderate	Moderate	Poor	Poor	Poor
Recommendations for full analysis				No	No	No	No	No	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**										
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder			+							
HSW/WL		*Sambucus nigra*	Elder (mod)										
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp			+			+				
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp (mod)										
A	Boraginaceae	*Lithospermum arvense*	Field gromwell										
A/D	Brassicaceae	*Brassica* spp/*Sinapsis* spp	Mustard/cabbage/charlock										
D/HSW	Dennstaedtiaceae	*cf Pteridium* spp	Bracken (curved leaf like bracken)										
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings										+
E	Poaceae	*Avena* spp	Oat		+								
A		*Bromus* spp	Chess								+		

E		*Hordeum vulgare*	Hulled barley			cf +							
E		*Secale cereale*	Rye										
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat		+			cf +	+	+	+		
E		*Poaceae*	Indeterminate cereal grain		+++	++	+	+	+			+	+
A/D/HSW	Polygonaceae	*Rumex* spp	Dock spp										
HSW/D	Rosaceae	*Rubus* spp	Bramble spp (mod)			+							
A/D	Rubiaceae	*Galium aparine*	Cleavers				cf +		+	+			
Flot Inclusions													
Charcoal				++++	++++	++++	++ (s)	+++ (s)	++	++ (s)	++++	++++	+++
Bone					++++	++	+	+	+	+	+	+	++
Burnt bone						+							
Human bone													
Metal residue (hammerscale)													
Molluscs				+	++++	++	++	+++	++	++++	++	+	+++
Vitrified clay						+				++++	+	+	

Table 53 Plant macrofossil identifications from Period 6 – Area 2, 3 and 20

Area				2	2	3	20	20
Context number				2115	2122	3870	21062	21920
Feature number				-	-	-	21060	21922
Sample number				2045	2046	3043	20030	20056
Flot volume (ml)				561	184	172	7	36
Sample volume (l)				4	6	1	9	30
Soil remaining (l)				0	0	9	0	0
Plant macrofossil preservation				Moderate	Moderate	Moderate	Poor	Poor
Recommendations for full analysis				Yes	Yes	Yes	No	No
Habitat Code	**Family**	**Species**	**Common Name**					
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder *			+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp		+			
D/P	Asteraceae	*Cirsium*/*Carduus* spp	Thistle spp *			+		

D/WL	Balsaminaceae	*Impatiens parviflora*	Small balsam *			+		
A	Boraginaceae	*Lithospermum arvense*	Field gromwell				+	
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)		+			
A		*Agrostemma githago*	Common corncockle (fragment)		+			
A/D		*Spergula arvensis*	Corn spurrey *			+		
WL/D	Cyperaceae	*Carex* spp	Sedge *			++		
WL		*Eleocharis* spp	Spikerushes *			+		
D/HSW	Dennstaedtiaceae	*Pteridium* spp	Bracken		cf +			
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings		+			
WL	Menyanthaceae	*Menyanthes trifoliata*	Bogbean *			++		
E	Poaceae	*Avena* spp	Oat		++			
E		*Hordeum vulgare*	Hulled barley	++++	++			
E		*Hordeum vulgare*	Barley rachis internodes	++++				
E		*Secale cereale*	Rye	+				
E		*Triticum* spp	Wheat				cf +	
E		*Triticum aestivum/ turgidum/durum*	Free threshing wheat	++++	++++			
E		*Triticum aestivum*	Bread wheat - rachis internode (hexaploid wheat)	cf +				
E		*Poaceae*	Indeterminate cereal grain		+++		+	+
E		*Poaceae*	Culm node	+++	+			
A/D	Polygonaceae	*Persicaria* spp	Persicaria spp *			++		
A/D/WL		*Persicaria lapathifolia*	Pale persicaria *			+		
P/D/A	Ranunculaceae	*Ranunculus* spp	Buttercup *			++		
D/P		*Potentilla* spp	Cinquefoil spp *			+		
A/D	Rubiaceae	*Galium aparine*	Cleavers		++			
Flot Inclusions								
Charcoal					++++		++ (s)	+ (s)
Bone				+	+		+	+++
Insects						+		
Molluscs							++	++++

Table 54 Plant macrofossil identifications from Period 7 – Area 2

Area				2	2
Context number				2103	2113
Feature number				2104	-
Sample number				2044	2043
Flot volume (ml)				46	36
Sample volume (l)				6	7
Soil remaining (l)				0	0
Plant macrofossil preservation				Poor	Poor
Recommendations for full analysis				No	No
Habitat Code	**Family**	**Species**	**Common Name**		
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder		+
HSW/WL		*Sambucus nigra*	Elder *	++++	+
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp		+
D/A	Apiaceae	*Aethusa cynapium*	Fool's parsley *	+	
A	Boraginaceae	*Lithospermum arvense*	Field gromwell		+
WL/D	Cyperaceae	*Carex* spp	Sedge		+
WL/D		*Carex* spp	Sedge (modern)		+
WL/D		*Carex* spp	Sedge *	++	
D	Lamiaceae	*Lycopus europaeus*	Gypsywort	++	
WL	Menyanthaceae	*Menyanthes trifoliata*	Bogbean *		+
E	Poaceae	*Avena* spp	Oat	+	+
A		*Bromus* spp	Chess	+	
E		*Hordeum vulgare*	Hulled barley	+	+++
E		*Triticum aestivum/turgidum/durum*	Free threshing wheat		+++
E		*Poaceae*	Indeterminate cereal grain	++	
A/D	Rubiaceae	*Galium aparine*	Cleavers		+
Flot Inclusions					
Charcoal				++	
Bone				+	+

Table 55 Plant macrofossil identifications from undated period – Areas 2, 15, 17, 18, 19 and 20

Area				2	2	2	15	15	15	15	15	15	15	15	15
Context number				2088	2091	2092	15203	15240	15258	15260	15305	15429	15434	15440	15492
Feature number				2089	2095	2095	15204	15241	15259	15261	15295	15430	15433	15439	15491
Sample number				2015	2016	2017	15005	15007	15008	15006	15002	15013	15012	15011	15018
Flot volume (ml)				22	113	132	4	3	5	17	10	6	14	18	7
Sample volume (l)				7	8	7	2	2	1	6	4	4	5	5	4
Soil remaining (l)				10	30	0	0	0	0	0	0	0	0	0	0
Plant macrofossil preservation				Moderate	Good	Good	Poor	Poor	Poor	Poor	Poor	Moderate	Moderate	Moderate	Moderate
Recommendations for full analysis				Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Habitat Code	**Family**	**Species**	**Common Name**												
HSW/WL	Adoxaceae	*Sambucus nigra*	Elder	+											
HSW/WL		*Sambucus nigra*	Elder (mod)					+			+		+		
DC/A	Amaranthaceae	*Chenopodium* spp	Fat hen/goosefoot spp		+	++									
DC/A		*Chenopodium* spp	Fat hen/goosefoot spp (mod)				+								
HSW	Betulaceae	*Corylus avellana*	Hazelnut	+					+	+		+		+	+
A/D	Brassicaceae	*Brassica* spp/ *Sinapsis* spp	Mustard/cabbage/ charlock	+											
A	Caryophyllaceae	*Agrostemma githago*	Common corncockle (whole)	cf +											
A/D		*Stellaria media*	Common chickweed			+									
WL/D	Cyperaceae	*Carex* spp	Sedge												
A/P/D	Fabaceae	*Vicia* spp/*Lathyrus* spp	Vetches/vetchlings			++									
A/D	Lamiaceae	*Galeopsis* spp	Hemp-nettle spp												
E	Poaceae	*Avena* spp	Oat	+	++	++									cf +
A		*Bromus* spp	Chess	cf +											
A/D		*Festuca* spp/*Lolium* spp	Festuce/rye grass			+									
E		*Hordeum vulgare*	Hulled barley	++++	++++	++++			cf +				+		
E		*Hordeum vulgare*	Sprouting barley			+									
E		*Hordeum vulgare*	Barley rachis internodes		+++										

E		*Secale cereale*	Rye		++	+									
E		*Triticum* spp	Wheat				+								cf +
E		*Triticum aestivum/ turgidum/durum*	Free threshing wheat	++	++++	++++				+				+	
E		*Triticum dicoccum/ spelta*	Emmer/spelt											cf +	
E		*Poaceae*	Indeterminate cereal grain		++++				++	+	+	++	+	+++	
E		*Poaceae*	Rachis			+									
A/D/HSW	Polygonaceae	*Fallopia convolvulus*	Black-bindweed		+	++									
A/D/HSW		*Rumex* spp	Dock spp			+									
A/D	Solanaceae	*Solanum nigrum*	Black nightshade (mod)												
			cf Nut fragment												
Flot Inclusions															
Charcoal				+++ (s)	+++	++++	++ (s)	+ (s)	+ (s)	++ (s)	++(s)	+ (s)	+ (s)	+ (s)	+ (s)
Bone					+		+			+	+				++
Molluscs				+++	+++	+++	++++	+++	++	++++	++++	++	+++	++++	+++
Vitrified clay									++				+	+	++

Key
All material is carbonised with the exception of that marked with a * or (mod)
* = waterlogged seeds
(mod) = modern

A = arable weed
D = herbaceous taxa that establishes in disturbed environments
DC = herbaceous taxa that establishes in disturbed environments that may also have been gathered for consumption
E = economic plant
HSW = hedgerow/scrub/woodland species
P = taxa indicative of a pasture/grassland environment
WL = taxa which establishes in a wetland environment

Table 56: Charcoal identifications from Period 0 – Areas 3 and 17

Area			3	3	3	3	3	3	3
Context number			3593	3612	3613	5204	5234	5235	5236
Feature number			3617	3617	3617	-	-	-	-
Sample number			3035	3036	3037	3049	3063	3064	3065
Flot volume (ml)			37	145	43	1	24	9	11
Sample volume (l)			5	8	6	7	6	6	8
Soil remaining (l)			30	30	30	0	10	0	0
Charcoal quantity			+ (s)		+ (s)	+ (s)	+ (s)	+++ (s)	+++ (s)
Charcoal preservation			N/A	N/A	N/A	Good	N/A	N/A	Good
Recommended for full analysis			No	No	No	No	No	No	No
Family	**Species**	**Common Name**							
Oleaceae	*Fraxinus excelsior*	Ash				1			2
		Number of Fragments:	0	0	0	1	0	0	2

Table 57: Charcoal identifications from Period 1 – Area 20

Area			20	20	20	20	20
Context number			20325	20326	20336	20337	21320
Feature number			20238	20238	20238	20238	20238
Sample number			20048	20049	20052	20050	20053
Flot volume (ml)			28	11	25	91	20
Sample volume (l)			8	8	10	8	10
Soil remaining (l)			0	30	30	30	0
Charcoal quantity			++++	++++ (s)	++++	++++	++++ (s)
Charcoal preservation			Good	Good	Good	Poor	N/A
Recommended for full analysis			No	No	Yes - FA	No	No
Family	**Species**	**Common Name**					
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel	6	2	6		
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak		2			
Oleaceae	*Fraxinus excelsior*	Ash	1	4	1		
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple	2	1	2	1	
	Prunus spp	Cherry spp	1	1			
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar			1	2	
		Indeterminate				2	
		Number of Fragments:	10	10	10	3	0

Table 58: Charcoal identifications from Period 2 – Areas 3, 15, 16, 17 and 19

Area			3	3	3	15	15	15	15	16	16	16	17	17
Context number			15032	15131	15145	15270	15579	15692	15714	16006	16064	16100	17110	17381
Feature number			15031	15129	15129	15271	15568	15625	15479	16005	16063	16101	17111	17384
Sample number			3066	3067	3068	15000	15024	15023	15025	16002	16003	16001	17014	17039
Flot volume (ml)			2	5	24	15	149	5	1	40	9	27	34	19
Sample volume (l)			8	7	8	8	8	5	2	8	8	7	10	8
Soil remaining (l)			30	30	30	30	0	0	0	30	30	30	30	30
Charcoal quantity			+ (s)	+++ (s)	+++ (s)	++ (s)	++++	+ (s)	+ (s)	+ (s)	++ (s)	+ (s)	+++ (s)	+ (s)
Charcoal preservation			Good	Poor	Moderate	Moderate	Good	N/A	N/A	Poor	Poor	N/A	Moderate	N/A
Recommended for full analysis			No	Yes - BC	No	No	Yes - BC	No	No	No	No	No	No	No
Family	**Species**	**Common Name**												
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel					1						1	
Cornaceae	*Cornus spp*	Dogwood												
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak		2	2	2	2			1			1	
Oleaceae	*Fraxinus excelsior*	Ash	1											
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple					6							
	Prunus spp	Cherry spp			1		cf 1			cf 1				
		Indeterminate	1							4	3		2	
		Number of Fragments:	2	2	3	2	10	0	0	5	3	0	4	0

Table 59: Charcoal identifications from Period 2 – Area 20

Area			20	20	20	20	20	20	20	20	20	20	20	20
Context number			20124	20125	20161	20368	20515	20587	20588	20589	20590	21303	21304	21306
Feature number			20119	20119	20160	20370	20513	20153	20153	20153	20153	21193	21193	21305
Sample number			20002	20001	20029	20027	20016	20009	20010	20011	20012	20042	20041	20043
Flot volume (ml)			9	16	4	87	46	2	23	51	14	6	10	47
Sample volume (l)			9	8	8	5	8	9	8	9	8	3	8	23
Soil remaining (l)			20	10	30	0	7	30	30	30	30	0	30	0
Charcoal quantity			++++ (s)	+++ (s)	+++ (s)	++++	++++ (s)	++++	++++	++++	++++ (s)	+++ (s)	+++ (s)	++++ (s)
Charcoal preservation			Poor	Poor	Good	Moderate	Good	Moderate	Moderate	Moderate	Poor	N/A	Poor	Moderate
Recommended for full analysis			No	No	Yes - BC	Yes - BC	Yes - BC	Yes - FA	No	No	No	No	No	No
Family	**Species**	**Common Name**												
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel					2							
	Betula spp	Birch							cf 1					
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak				10	4	8	8	5	1			
Oleaceae	*Fraxinus excelsior*	Ash	3		9		3			4				2
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple			1		1							
	Prunus spp	Cherry spp						2	1					1
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar								1			2	
		Indeterminate	1	2							2		1	2
		Number of Fragments:	4	2	10	10	10	10	9	10	3	0	3	5

Table 60: Charcoal identifications from Period 2 – Area 20

Area			20	20	20	20	20	20	20	20	20
Context number			21933	22017	22021	22021	22030	22038	22039	22054	22059
Feature number			21915	-	-	-	21979	-	-	21979	22058
Sample number			20057	20058	20063	20074	20059	20061	20062	20064	20073
Flot volume (ml)			21	15	28	32	2	4	5	0.5	1
Sample volume (l)			10	10	6	18	3	10	10	10	5
Soil remaining (l)			20	30	0	18	0	10	0	30	0
Charcoal quantity			++++	++ (s)	++ (s)	++ (s)	+ (s)	+ (s)	+ (s)		+ (s)
Charcoal preservation			Good	N/A	N/A	Moderate	N/A	N/A	N/A	N/A	N/A
Recommended for full analysis			Yes - BC	No	No	No	No	No	No	No	No
Family	**Species**	**Common Name**									
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak	10								
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar				2					
		Number of Fragments:	10	0	0	2	0	0	0	0	0

Table 61: Charcoal identifications from Period 3 – Areas 2 and 3

Area			2	2	2	2	2	2	3	3	3	3	3	3
Context number			2018	2026	2086	2086	2086	2086	3083	3083	3145	3147	3222	3608
Feature number				-	-	-			-	-	3146	-	3221	-
Sample number			SK 2019 in 2021	2004	2028	2031	2041	2042	3028	3032	3020	3019	3021	3033
Flot volume (ml)			N/A	5	90	71	92	106	18	72	17	5	3	39
Sample volume (l)			0.5	8	7	6	8	7	8	8	7	8	8	8
Soil remaining (l)			0	30	0	30	0	30	30	30	31	30	30	30
Charcoal quantity				++ (s)	+++ (s)	+ (s)		++ (s)	+++ (s)	++ (s)	++ (s)	+ (s)	+ (s)	+++
Charcoal preservation			N/A	Poor	Good	Good	N/A	N/A	Moderate	Moderate	Good	Moderate	N/A	Good
Recommendations for full analysis			No	No	Yes - BC	No	No	No	No	No	Yes - BC	No	No	Yes - E
Family	**Species**	**Common Name**												
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel		3	7	1			1		1			3
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak								2		2		1
Oleaceae	*Fraxinus excelsior*	Ash			1									
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris)*	Hawthorn/rowan/ crab apple												1
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar							1		2			5
		Indeterminate		4					1	2	1			
		Number of Fragments:	0	3	8	1			2	2	3	2	0	10

Table 62: Charcoal identifications from Period 3 – Areas 3 and 17

Area			3	3	3	17	17	17	17	17	17	17	17	17
Context number			3977	5210	5233	17020	17026	17043	17050	17056	17069	17070	17070	17071
Feature number			-	-	-	17022	17028	17041	17048	17051	17048	17048	17048	17048
Sample number			3053	3051	3062	17034	17033	17002	17024	17001	17003	17004	17022	17031
Flot volume (ml)			10	14	4	46	9	26	10	<1	10	14	11	2
Sample volume (l)			7	9	6	7	8	7	8	2	9	8	8	7
Soil remaining (l)			30	0	0	10	0	30	0	0	20	0	0	20
Charcoal quantity			++ (s)	++ (s)	+ (s)	+ (s)	+ (s)	++++ (s)	+ (s)	++ (s)	++ (s)	+++ (s)	+++ (s)	+ (s)
Charcoal preservation			N/A	N/A	N/A	N/A	N/A	Poor	N/A	Poor	N/A	Good	Moderate	N/A
Recommendations for full analysis			No	No	No	No	No	No	No	No	No	No	Yes – BC	No
Family	**Species**	**Common Name**												
Fagaceae	*Quercus robur/petraea*	Sessile/pedunculate oak										1	4	
	Quercus robur/petraea hw	Sessile/pedunculate oak h/w						7						
Oleaceae	*Fraxinus excelsior*	Ash											2	
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar											4	
Ulmaceae	*Ulmus glabra*	Elm										1		
		Indeterminate								2				
		Number of Fragments:	0	0	0	0	0	7	0	0	0	2	10	0

Table 63: Charcoal identifications from Period 3 – Areas 17 and 20

Area			17	17	17	17	17	17	17	17	17
Context number			17089	17100	17129	17242	17243	17291	17343	17344	17349
Feature number			17048	17048	17133	17244	17244	17048	17048	17048	17067
Sample number			17008	17009	17010	17047	17048	17015	17025	17027	17028
Flot volume (ml)			1.5	10	4	25	7	16	13	9	2
Sample volume (l)			5	9	10	8	8	10	5	10	10
Soil remaining (l)			0	30	30	10	10	30	0	20	20
Charcoal quantity			++ (s)	+ (s)	+ (s)	++ (s)	++ (s)	+++ (s)	+ (s)	+ (s)	+ (s)
Charcoal preservation			N/A	N/A	N/A	Good	Poor	Moderate	N/A	N/A	N/A
Recommendations for full analysis			No	No	No	No	No	No	No	No	No
Family	**Species**	**Common Name**									
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel					1	1			
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak				5		2			
Rosaceae	*Prunus spp*	Cherry spp				1					
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar				2					
		Indeterminate				1	2				
		Number of Fragments:	0	0	0	8	1	3	0	0	0

Table 64: Charcoal identifications from Period 4 – Area 2

Area			2	2	2	2	2	2	2	2	2	2	2	2
Context number			2020	2020	2020	2020	2022	2025	2027	2034	2039	2039	2039	209
Feature number			2028	2028	2028	2028	2023	2024	2028	2028	-	-	-	-
Sample number			2000	2001	2002	2007	2014	2003	2005	2008	2020	2021	2022	202
Flot volume (ml)			12	8	11	18	1569	35	627	93	43	76	2	32
Sample volume (l)			5	6	6	8	6	8	7	8	8	8	8	8
Soil remaining (l)			0	0	0	30	30	30	30	30	30	30	30	30
Charcoal quantity			++ (s)	++ (s)	++ (s)		++++	++++	+++	+++	++++		+++ (s)	+++
Charcoal preservation			Moderate	N/A	Poor	N/A	Good	Poor	Moderate	Moderate	Good	N/A	Good	Mod
Recommended for full analysis			No	No	No	No	Yes - BC	Yes - FA	No	Yes - FA	No	No	No	No
Family	**Species**	**Common Name**												
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel	1		2			1	9	6	9		4	1
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak					10			1	1		4	2
	Quercus robur/*petraea*	Sessile/pedunculate oak h/w												5
	Quercus robur/*petraea*	Sessile/pedunculate oak s/w						5						
Oleaceae	*Fraxinus excelsior*	Ash						3						1
Rosaceae	*Crateagus monogyna*/ *Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple	1			1			1	3			2	1
		Indeterminate			3	2								
		Number of Fragments:	2	0	2	1	10	9	10	10	10	0	10	10

Table 65: Charcoal identifications from Period 4 – Areas 3, 15, 16, 17 and 20

Area			3	3	3	3	3	3	3	3	15	15	15	16	17	20
Context number			3130	3850	3987	3989	5128	5131	5203	5213	15476	15489	15490	16070	17034	SK 21080
Feature number			-	3851	-	-	-	-	-	5211	15477	15488	15488	16069	17019	20496
Sample number			3031	3042	3046	3047	3060	3061	3059	3054	15009	15016	15015	16000	17000	20034
Flot volume (ml)			29	24	139	105	16	10	41	129	11	22	9	15	44	9
Sample volume (l)			8	8	6	7	7	6	7	7	9	7	5	8	7	3
Soil remaining (l)			30	10	0	30	20	10	0	10	10	0	0	30	8	0
Charcoal quantity			+++ (s)	++++	+++ (s)	+++	+++ (s)	+++ (s)	++ (s)	++++	++ (s)	+ (s)	+ (s)	+ (s)	++++	++ (s)
Charcoal preservation			Poor	Good	Good	Good	Good	Good	Poor	Good	N/A	N/A	N/A	Poor	Good	Poor
Recommendations for full analysis			No	Yes - BC	Yes - BC	Yes - BC	No	No	No	Yes - FA	No	No	No	No	No	No
Family	**Species**	**Common Name**														
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel		4	1	2		1		1						
Fabaceae	*Ulex spp*/*Cytisus* spp	Gorse/Broom			1											
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak		5				4								
	Quercus robur/*petraea hw*	Sessile/pedunculate oak h/w													10	
Oleaceae	*Fraxinus excelsior*	Ash		1		1	1									
Rosaceae	*Prunus* spp	Cherry spp														
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar	3		5	7	5		1	9						
		Indeterminate	5		1				2					3		1
Number of Fragments:			3	10	7	10	6	5	1	10	0	0	0	0	10	0

Table 66: Charcoal identifications from Period 5 – Area 2

Area			2	2	2	2	2	2	2	2	2	2	2	2	2	2
Context number			2006	2008	2009	2010	2043	2044	2050	2050	2050	2051	2051	2051	2052	2055
Feature number			-	-	-	-	2046	2046	-	-	-	-	-		-	-
Sample number			2037	2032	2033	2034	2018	2019	2026	2035	2039	2027	2036	2040	2038	2025
Flot volume (ml)			76	115	74	319	10	5	100	126	31	107	36	167		520
Sample volume (l)			10	5	7	7	9	8	8	7	10	8	8	8	8	8
Soil remaining (l)			30	0	30	30	0	0	10	30	30	30	30	30	10	0
Charcoal quantity			++++	+ (s)	++++	++++	++	+ (s)	++++	++++	++++	++++	++++		+++ (s)	++++
Charcoal preservation			Good	Poor	Good	Good	Good	N/A	Good	Good	Good	Good	Good	N/A	Good	Good
Recommended for full analysis			Yes - BC	No	Yes - BC	No	No	No	Yes - BC	No	No	Yes - BC	No	No	No	Yes -
Family	**Species**	**Common Name**														
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel	3		5	3	1		8	4	5	4	2			2
	Corylus avellana	Hazel							1			2				
Cornaceae	*Cornus spp*	Dogwood	2													
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak			3	4				1	1	3	1		1	
	Quercus robur/*petraea*	Sessile/pedunculate oak h/w				3										
Oleaceae	*Fraxinus excelsior*	Ash								1	4					
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple	1		2					4		1	2			
	Prunus spp	Cherry spp											1			
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar	4				1		1		2		4		1	7
		Indeterminate		2			1								5	
		Number of Fragments:	10	0	10	10	2	0	10	10	12	10	10	0	2	9

Table 67: Charcoal identifications from Period 5 – Area 3

Area			3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Context number			3008	3009	3016	3016	3016	3016	3016	3016	3016	3016	3016	3016	3016	3016	3080	3
Feature number			-														-	-
Sample number			3000	3001	3002	3005	3006	3007	3008	3009	3010	3011	3012	3013	3014	3015	3016	3026	3
Flot volume (ml)			19	945	755	N/A	669	N/A	388	N/A	534	N/A	959	N/A	448	N/A	523	13	3
Sample volume (l)			7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	8
Soil remaining (l)			30	39	29	9	9	9	9	9	9	9	9	9	9	9	9	30	3
Charcoal quantity			++ (s)		+ (s)													++ (s)	+
Charcoal preservation			Moderate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Poor	N
Recommended for full analysis			No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	N
Family	**Species**	**Common Name**																	
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel																2	
Fabaceae	*Ulex spp*/*Cytisus* spp	Gorse/Broom																	
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak																	
	Quercus robur/*petraea*	Sessile/pedunculate oak h/w																	
Oleaceae	*Fraxinus excelsior*	Ash	1																
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple																	
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar																	
		Indeterminate	1															1	
		Number of Fragments:	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0

Table 68: Charcoal identifications from Period 5 – Areas 15, 16, 17 and 18

Area			15	15	15	15	15	15	15	16	17	17	17	17
Context number			15214	15244	15264	15281	15416	15446	15486	16098	17144	17157	17221	17270
Feature number			15315	15245	15265	15234	15415	15447	15487	16095	17145	17156	17182	17145
Sample number			15019	15004	15003	15001	15020	15014	15010	16004	17012	17011	17040	17020
Flot volume (ml)			7	17	10	22	35	23	14	31	31	12 +	50	7
Sample volume (l)			8	9	4	7	8	8	8	9	9	10	7	7
Soil remaining (l)			30	0	0	30	30	0	10	30	30	30	10	10
Charcoal quantity			+ (s)	+ (s)	++ (s)	++ (s)	++ (s)	+ (s)	+ (s)	++++	+++ (s)	++	++ (s)	+++ (s)
Charcoal preservation			N/A	N/A	N/A	Moderate	N/A	N/A	N/A	N/A	Moderate	Moderate	N/A	Good
Recommended for full analysis			No	No	No	Yes - BC	No	No	No	No	Yes - BC	Yes - BC	No	No
Family	**Species**	**Common Name**												
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel				1						1		1
Fabaceae	*Ulex spp*/*Cytisus* spp	Gorse/Broom												
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak									2	2		1
Oleaceae	*Fraxinus excelsior*	Ash										1		
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple				6					2			1
	Prunus spp	Cherry spp												
		Indeterminate									1	3		
		Number of Fragments:	0	0	0	7	0	0	0	0	4	4	0	3

Table 69: Charcoal identifications from Period 5 – Areas 19 and 20

Area			19	20	20	20	20	20	20	20	20	20	20
Context number			19092	20045	20047	20047	20219	20220	20220	20435	20561	20585	20586
Feature number			19093	20044	20044	20044	20044	20044	20044	20153	20044	20044	20044
Sample number			19000	20004	20000	20005	20028	20021	20025	20003	20006	20007	20008
Flot volume (ml)			11	259	18	305	3	14	11	18	2	2	2
Sample volume (l)			6	5	7	8	7	7	8	8	9	9	8
Soil remaining (l)			30	0	10	0	30	30	30	20	30	30	30
Charcoal quantity			++++	++++	++++	++++	++ (s)	+++ (s)	++	++ (s)	++++	++++	+++
Charcoal preservation			Good	Moderate	Moderate	Good	Good	Good	Moderate	N/A	Poor	Good	Poor
Recommended for full analysis			Yes - BC	No	No	No	No	No	No	No	No	Yes - FA	No
Family	**Species**	**Common Name**											
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel		2	3		1	1				2	
Fabaceae	*Ulex spp*/*Cytisus* spp	Gorse/Broom											
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak	5										
Oleaceae	*Fraxinus excelsior*	Ash	5	8		1	5	4				1	2
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple				3	1		7		2	7	
	Prunus spp	Cherry spp											
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar			7	6							
		Indeterminate	1					4			5		4
		Number of Fragments:	10	10	10	10	7	5	7	0	2	10	2

Table 70: Charcoal identifications from Period 6 – Areas 2, 3 and 20

Area			2	2	3	20	20
Context number			2115	2122	3870	21062	21920
Feature number			-	-	-	21060	21922
Sample number			2045	2046	3043	20030	20056
Flot volume (ml)			561	184	172	7	36
Sample volume (l)			4	6	1	9	30
Soil remaining (l)			0	0	9	0	0
Charcoal quantity				++++		++ (s)	+ (s)
Charcoal preservation			N/A	Good	N/A	Poor	Good
Recommended for full analysis			No	Yes	No	No	No
Family	**Species**	**Common Name**					
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel		3			
Fabaceae	*Ulex spp*/*Cytisus* spp	Gorse/Broom		1			
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak					3
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple				2	
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar		6			
		Indeterminate				1	
		Number of Fragments:	0	10	0	2	3

Table 71: Charcoal identifications from Period 7 – Area 2

Area			2	2
Context number			2103	2113
Feature number			2104	-
Sample number			2044	2043
Flot volume (ml)			46	36
Sample volume (l)			6	7
Soil remaining (l)			0	0
Charcoal quantity			++ (s)	
Charcoal preservation			N/A	Good
Recommended for full analysis			No	No
Family	**Species**	**Common Name**		
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel		2
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar		3
		Number of Fragments:	0	5

Table 72: Charcoal identifications from undated period – Areas 2, 15, 17, 18, 19 and 20

Area			2	2	2	15	15	15	15	15	15	15	15	15	15	17
Context number			2088	2091	2092	15203	15240	15258	15260	15305	15429	15434	15440	15492	15493	17699
Feature number			2089	2095	2095	15204	15241	15259	15261	15295	15430	15433	15439	15491	15491	17650
Sample number			2015	2016	2017	15005	15007	15008	15006	15002	15013	15012	15011	15018	15017	17043
Flot volume (ml)			22	113	132	4	3	5	17	10	6	14	18	7	2	2.5
Sample volume (l)			7	8	7	2	2	1	6	4	4	5	5	4	2	8
Soil remaining (l)			10	30	0	0	0	0	0	0	0	0	0	0	0	20
Charcoal quantity			+++ (s)	+++	++++	++ (s)	+ (s)	+ (s)	++ (s)	++(s)	+ (s)	+ (s)	+ (s)	+ (s)	+ (s)	
Charcoal preservation			Moderate	Good	Good	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Recommended for full analysis			Yes – BC	No	Yes – FA	No	No	No	No	No	No	No	No	No	No	No
Family	**Species**	**Common Name**														
Betulaceae	*Alnus glutinosa*/*Corylus avellana*	Alder/hazel	3	5	2											
	Corylus avellana	Hazel			2											
Fagaceae	*Quercus robur*/*petraea*	Sessile/pedunculate oak		2	5											
	Quercus robur/*petraea*	Sessile/pedunculate oak h/w			1											
Oleaceae	*Fraxinus excelsior*	Ash	1	3												
Rosaceae	*Crateagus monogyna*/*Sorbus* spp/*Malus sylvestris*	Hawthorn/rowan/ crab apple														
	Prunus spp	Cherry spp														
Salicaceae	*Salix* spp/*Populus* spp	Willow/poplar														
		Indeterminate	3													
		Number of Fragments:	4	10	10	0	0	0	0	0	0	0	0		0	0

Key
FA = full analysis
BC = broad characterisation analysis
hw = heartwood (older wood)

APPENDIX 17: THE MOLLUSCS BY M. J. ALLEN

Several enclosure ditches, pits and a palaeo-channel were sampled as undisturbed sediment in monoliths and as bulk samples from which snails were recovered. Bulk samples were processed by Cotswold Archaeology and flots supplied as 0.25mm, 0.5mm and 1mm along with any larger shell fragments recovered from the residues. A series of 18 samples were provided, of which seven were presented as waterlogged flots and residues. These flots were re-processed and f retained on 300µm and 0.5mm sieves. They are marked with 'F', on Table 73.

Land Snail Assessment
Assessment of the land snails was undertaken to determine if enough shells were present to make analysis statistically viable, and to determine if any significant palaeo-environmental information, or changes in the sequences, were present to make such analysis archaeologically worthwhile. The assessment would also aid in determining the level of analysis; i.e. analysis of all or of selected samples, or publication of the assessment data in a revised form.

The aims of assessment, therefore, are
determine if shells were present and if suitable numbers survived to facilitate statistically meaningful analysis
indicate if the assemblages can characterise the local environments for the phases sampled
characterise the assemblages and outline the broad landscape character, and in particular the presence of wet floodplain conditions and (seasonal) standing water vs drier conditions
define if any change in the assemblages is present which may reflect changing land-use
indicate if analysis is both possible, and potentially could provide useful palaeo-environmental and land-use information

Land snail Assessment methods
Flots of the processed samples were dried and examined under a ×10 – ×30 stereo-binocular microscope. The species present are listed in numerical significance and approximate total shell numbers are given (Table 74).

Examination of the flots alone indicates whether there are enough shell numbers to make analysis statistically viable, though a larger proportion of the assemblage may reside in the unsorted residues. The flot assemblages also provide the general range of taxa present that aid in determining the presence of changes in palaeo-environment and land-use. The assessed flot assemblages are, however, biased towards species that tend to survive as whole specimens and float, and against larger and more robust species that may be found in the residues as apical fragments. If full palaeo-environmental analysis is required, then full sorting and extraction of the residues is necessary. In colluvial deposits (e.g. tertiary ditch fills) the assemblages are frequently more fragmented and often *c.* 60% of the entire assemblage may be recovered from the residues.

Sampled sequences
The samples were spot samples from individual contexts, and one set of samples of alluvium, possibly a series through an alluvial sequence.

Table 73. List of samples with their feature and phase details

Phase	*Deposit*	*Feature*	*Context*	*Sample*	*Associated monoliths*
Romano-British AD 43-400					
3	Alluvium		2086	2031	
3	Alluvium	-	2086	2031	
3	Alluvium	-	2086	2031F	
3	Alluvium	-	2086	2041	
3	Ditch 20	3718	3717	3039	
Mid and Late Iron Age 400BC – AD 43					
2	Pit	15031	15032	3066	
2	Pit	15129	15145	3068	
2	Pit	16063	16064	16003 F	
2	Pit	16101	16100	16001 F	
2	Pit	20119	20127	20001	
2	Pit	21193	21304	20041	
2	Ditch	21197/2116	21620	20054	
2	Ditch 1	15625	15692	15023 F	
2	Ditch 1	17384	17381	17039	17056-7

2	Ditch 1		17383	17038	17035
2	Ditch 1	17260	17673	17042 F	
Late Bronze Age 1000-800 BC					
1	Pit	20238	21320	20053	
'Natural'					
0	Palaeochannel	3617	3593	3035	3034

Phasing
Period 0 Natural
Period 1 Late Bronze Age 1000-800 BC
Period 2 Middle & Late Iron Age 400 BC – AD 43
Period 3 Romano-British AD 43 – 400
Period 4 Early Medieval (Anglo-Saxon) AD 400 – 1066
Period 5 Medieval AD 1066 – 1540

Assessment: results and implications
Shell numbers in the flots were very variable (Table 74), and residues, when supplied (i.e. for samples supplied as waterlogged) few shell fragments were present. For the majority of samples it is assumed residues have been retained to preferably 0.5mm (see Evans 1972), or at least 1mm. We can, however, assume that further shells will be present in the residues and thus individual samples with over *c.* 75 shells are likely to contain *c.* 100 shells after full sorting of the residues. Samples from sequences with over *c.* 60 shells are potentially useful.

The assemblages contain both terrestrial and fresh-water species. None contain shade-loving species and thus are all generally indicate of open country conditions. Whether the terrestrial elements were long grassland, grazed short-turfed grassland or arable cannot be determined from assessment, but may be possible from detailed analysis.

The principal variation is between samples which contain a range of fresh-water and amphibious species that may indicate flowing water, seasonal bodies or pools of water and the open terrestrial element. In very crude terms the palaeo-channel, not surprisingly, indicates wet and moist conditions, and possibly flowing water.

Assemblages from Late Bronze and Mid and Late Iron Age pits and ditches all contain open country and intermediate species with no fresh-water or aquatic species present. All the Romano-British assemblages from both ditches and alluvium, were taken from the area of the site on the edge of the floodplain of the river, and are dominated by aquatic taxa.

Open country conditions
These assemblages are dominated by *Pupilla, Trochulus, Vallonia* and *Helicella* suggesting very dry open short grassland or arable conditions. The occasional presence of *Pomatias* may suggest bare soils (?arable). Local burning and human activity is noted in pit 20119 where a number of specimens of tow taxa (*Pupilla* and *trochulus*) are burnt. Subtle variation between the assemblages of these features may relate to local chronological or spatial differences and changes in land-use. The few intermediate and shade-loving species (*Nesovitrea* and *Aegopinella*) in pit 15129 and ditch Ditch 1 [17384] hint at slightly more mesic conditions – possibly the feature micro-habits, but also possibly longer episodes or areas of grassland.

Wet moist conditions
The assemblages are dominated by the Planorbids with *Lymnaea* and *Bithynia* and *Succinea*. With the exception of *Bithynia*, all the other taxa contain species that are aquatic. These assemblages could indicate flowing water, temporary pools of water, or reflect seasonal overbank flooding. Most *Pisidium* species (pea shells) prefer fully aquatic conditions, but there are species that tolerate drying-out.

Summary
There are clearly significant changes differences in the assemblages between the Romano-British period and previous periods. through time with wetter conditions and possibly flooding are prevalent indicated in the Romano-British samples, while previous periods are characterised by very dry and open conditions. These differences may relate to spatial location as well as chronological changes.

Potential
A significant number of the assemblages contain sufficient shells to be statistically viable. The significant changes, and subtle variations alluded to, indicate the potential to define more precisely the nature of the local land-use and occupational environments.

The major change from dry to wetter conditions can be defined through analysis.

There is the potential not only to examine these broad environments to define subtle and significant variations within these such as changing conditions of wetness in the Romano-British occupation phase, and of changing land-use, i.e. meadow, pasture, arable or occupied trampled habitats in the Bronze Age to Iron Age phases. These local environments can be examined to a limited extent spatially within each phase of activity, and if enough chronological control is available, *within* each phase too. The changing conditions can be compared with broader regional environmental patterns.

There is, therefore, the potential to examine broad changes and in the landscape, but also the developments of the changing land-use and farming practices from the Late Bronze Age through the Romano-British periods. There are no samples in those supplied to extend this dialogue into the Anglo-Saxon and Medieval periods, but some information about these phases may be extrapolated from the geoarchaeology of the undisturbed sediment samples (monoliths) which cover this period).

Recommendations
A targeted set of analysis is proposed including the selection of samples for full analysis (including microscope extraction/of associated residues) and the more detailed scanning of a few other selected samples. Analysis and interpretation will be enhanced if any phasing for sampled features and contexts within periods Periods 2 and 3 can be provided.

The selected samples are given on Table 74, and listed below

Samples for analysis:
Period 3: 2031; 2031; 2039
Period 2: 16001; 16003; 20001; 15023; 17038; 17039
Period 1: 20053
Period 0: 3035
Samples for rapid scan and more detailed assessment
Period 3: 2031F; 2041

Recommended tasks
1. Provision of, and extraction/sorting of residues for all samples listed
2. Identification of samples listed
3. Scanning and recording of samples for scanning
4. Tabulation of data
5. provision of detailed phasing of selected samples within Periods 2 and 3
6. Interpretation and reporting

Table 74. Assessment of Mollusca from bulk samples from Mildenhall (MNL 622)

Sample	context		Phaase	Summary description	Approx nos	Mollusc assessment	Summary	Analysis
2031	2086	layer	Phase 3	alluvium	30	Planorbids, *Lymnaea, Bithynia, Valvata, Trochulus, Cochlicopa*	Moist - wet	Analyse
3031	2086	layer	Phase 3	alluvium	60	Planorbids, *Vallonia, Pupilla, Cochlicopa, Aegopinella,* Pisidium	Moist - wet	Analyse
2031 F	2086	layer	Phase 3	alluvium	7	*Trochulus, Lymnaea (?stagnatls),* Planorbids, *Aegopinella, Vallonia*	Moist - wet	Scan
2041	2086	layer	Phase 3	alluvium	7	*Lymnaea/Bithynia (*operculum), *Vallonia* cf. *Cochlicopa)*	Moist - wet	Scan
3039	3717	Ditch 20 [3718]	Phase 3	fill	200	Planorbids, *Lymnaea, Succinea, Pupilla, Bithynia*	Moist - wet	Analyse
3066	15032	Pit 15031	Phase 2	fill	40	*Pupilla* (1 burnt), *Trochulus, Vallonia, Cochlicopa, Cecilioides*	Dry open	-
3068	15145	Pit 15129	Phase 2	fill	30	*Pupilla, Trochulus, Aegopinella, Valloina*	Dry open	-
16001 F	16100	Pit 16101	Phase 2	fill	100	*Trochulus,* Introduced Helicellids, *Succinea, Pupilla, Cornu*	Dry open	Analyse
16003 F	16064	Pit 16063	Phase 2	fill	80	*Trochulus, Pupila, Helicella, Ceciolioides*	Dry open	Analyse
20001	20127	Pit 20119	Phase 2	fill	100	*Pupilla* (several burnt), *Trochulus* (Several burnt), *Helicella,Vertigo, Cecilioides*	Dry open	Analyse
20041	21304	Pit 21193	Phase 2	fill	15	*Pupilla, Trochulus, Vallonia, Pomatias, Helicella, Ceclioides*	Dry open	
15023 F	15692	Ditch 1 [15625]	Phase 2	fill	80	*Pupilla, Helicella, Trochulus, Vallonia, Cepaea, Pomatias*	Dry open	Analyse
17038 F	17383	Ditch 1 [17384]	Phase 2	fill	200	*Pupilla,Trochulus, Helicella, Cochlicpa, Cepaea, Vertigo*	Dry open	Analyse
17039 F	17381	Ditch 1 [17384]	Phase 2	fill	250	*Pupilla, Trochulus, Helicella, Cochlicopa, Nesovitrea*	Dry open	Analyse
17042 F	17673	Ditch 1 [17260]	Phase 2	fill	4	*Pupilla, Ceclioides*	Dry open	-
20054	21620	Ditch 21197+21116	Phase 2	fill	15	*Pupilla, Vallonia,Helicella, Cepaea*	Dry open	-
20053	21320	Pit 20238	Phase 1	fill	75	*Pupilla, Trochulus, Helicella, Cochlicopa, Pomatias*	Dry open	Analyse
3035	3593	Palaeochannel 3617	Phase 0	fill	6	*Planorbids, Lymnaea/Bithynia, Trochulus, Pomatias +*	Wet - moist	Analyse/ scan

F denotes samples supplied as waterlogged flots

APPENDIX 18: HAND-COLLECTED LAND AND SEA SHELLS BY SARAH COBAIN

Introduction

Shell was hand-collected from a Period 1 late Bronze Age/early Iron Age pit; Period 2 Iron Age pits, a posthole and ditch; Period 3 Roman ditches, deposits, postholes, corn drier and gully; Period 4 Anglo-Saxon pits, deposits, ditches, gullies and a posthole; Period 5 medieval pits, deposits, ditches, postholes, gullies an animal burial and a kiln; Period 6 post-medieval ditches and pits; Period 7 modern gully, posthole and buried topsoil and a pit and posthole from undated periods. The aim of this assessment is to quantify the material found and ascertain any spatial and temporal trends in the occurrence of shell fish and land snail remains.

Methodology

The hand collected shell was quantified, weighed and identified by eye. Where smaller individuals were present, these were identified using a stereomicroscope with up to x 40 magnification.

Results

Hand–collected material totaled 863 fragments weighing 3390g. Species identified include common oyster (*Ostrea edulis*), mussel (*Mytilus edulis*), freshwater mussels (cf *Unio* spp/*Pseudodonta* spp) and land snails (cf *Helix* spp, cf *Cepaea* spp) (Table 77). In addition to this a small number of land snails, unidentifiable to species, were recovered.

Discussion

The oyster, mussels and freshwater mussel obtained all appear to represent discarded food waste. These were all species commonly harvested and consumed throughout history. As outlined in Tables 75 and 76, it appears that oysters, whilst recovered from Iron Age contexts onwards were recovered in the highest quantities (count and weight) in the Roman period. Mussel shells however were recovered in the highest quantity (count and weight) in the medieval period. This may indicate either preference or simply just availability of species during the time site sites were occupied. The land snails identified consisted dominantly of *Helix* spp with smaller numbers of *Cepaea* spp. Both species are found living in sheltered habitats hidden in long grass/areas of leaf litter or in areas of waste ground (Kerney 1999, 203-206). Helix spp are known to have been consumed in the past, however the small

assemblage recovered means it is not possible to ascertain whether they were eaten or just make up part of the background fauna on the site.

Table 75: Shell species by weight

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Undated
Land snail	1	1	2	2	137	8	0	0
Oyster	0	155	857	660	437	35	107	35
Mussel	0	9	4	9	873	1	5	3
Freshwater mussel	0	0	0	49	0	0	0	0

Table 76: Shell species by count

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Undated
Land snail	1	1	3	2	81	7	0	0
Oyster	0	3	46	28	30	2	6	1
Mussel	0	5	4	6	615	2	2	4
Freshwater mussel	0	0	0	7	0	0	0	0

Recommendations

Overall the sea shell and land snails were recovered in small quantities; therefore there is limited potential for further analysis. The land snail data will be combined with the assemblage present in the samples (Appendix 17). No further work is recommended for the sea shells, A summary of these findings and detailed contextual information in tabular form will be available in the archive to be included in the report as appropriate.

Table 77: Table to show weight and count of hand collected land and sea shells

Context	Feature	Context type	Period	Count	Weight (g)	Comments
Period 1						
20338	20238	Pit	1	1	1	Cepaea spp
Period 2						
15130	15129	Pit	2	1	3	Mussel
18027	18029	Pit	2	1	1	Indeterminate mollusc
20162	20160	Pit	2	2	3	Mussel
20263	20085	Pit	2	1	34	Oyster
20814	20817	Pit	2	1	2	Mussel
21416	21414	Posthole	2	1	1	Mussel
21796	21786	Pit	2	1	3	Oyster
21919	21915	Ditch	2	1	118	Oyster
Period 3						
3245	3244	Ditch	3	1	6	Oyster
3573	3571	Ditch	3	1	34	Oyster
3632	3633	Ditch	3	1	1	cf Cepaea spp
3738	3737	Ditch	3	2	1	Indeterminate species
3768	3769	Ditch	3	1	27	Oyster
3780	3779	Ditch	3	1	78	Oyster
3782	3996	Ditch	3	6	128	Oyster
3995	3996	Ditch	3	1	22	Oyster
4019	-	Silting layer	3	1	20	Oyster
4023	-	Levelling layer	3	5	64	Oyster
4024	-	Silting layer	3	10	179	Oyster
4030	4028	Ditch	3	2	45	Oyster
15009	15010	Ditch	3	3	66	Oyster
17043	17041	Posthole	3	1	1	Oyster
17077	17048	Corn drier	3	2	53	Oyster
17078	17048	Corn drier	3	1	21	Oyster
17084	17048	Corn drier	3	1	22	Oyster
17109	17108	Pit	3	1	3	Mussel
17128	17133	Pit	3	1	14	Oyster
17129	17133	Pit	3	3	1	Mussel
17659	17658	Posthole	3	1	9	Oyster
20721	20723	Pit	3	4	46	Oyster
20722	20723	Pit	3	2	15	Oyster
20724	20726	Gully	3	1	7	Oyster
Period 4						
2013	2015	Pit	4	3	1	Mussel
2025	2024	Pit	4	5	98	Oyster
2039	-	Alluvium	4	1	56	Oyster
3550	3549	Pit	4	2	20	Oyster
5100	-	Levelling layer	4	1	1	Indeterminate mollusc
5131	-	Silty clay deposit	4	1	16	Oyster
5180	5186	Pit	4	1	11	Oyster
15014	15015	Pit	4	2	9	Oyster
20214	20213	Ditch	4	1	2	Mussel

Context	Feature	Context type	Period	Count	Weight (g)	Comments
20244	20243	Ditch	4	1	23	Oyster
20319	20238	Pit	4	1	1	cf Cepaea spp
20406	20405	Pit	4	7	248	Oyster
20582	20405	Pit	4	1	22	Oyster
20622	20405	Pit	4	1	10	Oyster
20792	-	Silting layer	4	3	32	Freshwater mussel
20851	20850	Posthole	4	4	116	Oyster
21036	21035	Gully	4	1	4	Mussel
21036	21035	Gully	4	1	28	Oyster
21092	-	Silting layer	4	1	1	cf Freshwater mussel fragment
21092	-	Silting layer	4	3	16	Freshwater mussel
21092	-	Silting layer	4	1	2	Mussel
21829	21810	Ditch	4	1	3	Oyster
Period 5						
2043	2046	Pit	5	4	6	Mussel
2044	2046	Pit	5	1	11	Oyster
2084	2085	Pit	5	3	30	Oyster
3024	3023	Animal burial	5	3	8	cf Helix spp
3028	-	Silting layer	5	3	1	Mussel
4083	4084	Pit	5	1	39	Oyster
4167	4166	Pit	5	2	7	cf Helix spp
5179	5186	Pit	5	1	0	cf Cepaea spp
12060	12061	Pit	5	4	5	Mussel
12060	12061	Pit	5	1	15	Oyster
15126	15120	Ditch	5	1	2	cf Helix spp
15188	15185	Pit	5	3	3	Mussel
15212	15213	Ditch	5	1	1	cf Helix spp
15212	15213	Ditch	5	1	1	Indeterminate
15212	15213	Ditch	5	14	10	Mussel
15418	15415	Ditch	5	2	3	Mussel
15419	15415	Ditch	5	1	1	Oyster
16004	16003	Pit	5	1	16	Oyster
17138	17137	Pit	5	1	22	Oyster
17143	17145	Ditch	5	2	1	cf Cepaea spp
17143	17145	Ditch	5	13	12	cf Helix spp
17143	17145	Ditch	5	6	3	cf Helix spp
17144	17145	Ditch	5	1	1	cf Cepaea spp
17144	17145	Ditch	5	4	9	cf Helix spp
17202	17145	Ditch	5	3	4	cf Helix spp
17250	17249	Gully	5	1	1	Mussel
17270	17145	Ditch	5	1	2	cf Helix spp
17270	17145	Ditch	5	2	1	Mussel
17303	17302	Gully	5	1	1	Mussel
17352	17355	Pit	5	1	1	Mussel
17352	17355	Pit	5	3	24	Oyster
17356	17359	Pit	5	1	2	Mussel
17356	17359	Pit	5	3	20	Oyster
17430	17429	Ditch	5	1	3	cf Helix spp
17685	17684	Posthole	5	1	1	Mussel

Context	Feature	Context type	Period	Count	Weight (g)	Comments
18067	18068	Pit	5	6	6	Mussel
18093	18091	Ditch	5	1	52	Oyster
19014	19015	Pit	5	12	11	Mussel
19028	19027	Pit	5	11	8	Mussel
19030	19029	Pit	5	8	4	Mussel
19064	19065	Quarry pit	5	3	8	Oyster
19080	19070	Pit	5	4	6	Mussel
19095	19094	Pit	5	1	4	Mussel
19203	19202	Pit	5	1	3	Mussel
19203	19202	Pit	5	2	15	Oyster
20140	20138	Gully	5	1	2	Mussel
20140	20138	Gully	5	1	13	Oyster
20217	20216	Ditch	5	3	1	cf Cepaea spp
20217	20216	Ditch	5	1	1	Indeterminate mollusc
20217	20216	Ditch	5	185	219	Mussel
20220	20044	Kiln	5	2	1	cf Helix spp
20371	20375	Pit	5	1	3	cf Helix spp
20371	20375	Pit	5	10	11	Mussel
20397	20396	Gully	5	10	38	Oyster
20419	20429	Pit	5	1	2	Mussel
20423	20429	Pit	5	84	192	Mussel
20424	20429	Pit	5	16	34	Mussel
20462	20461	Pit	5	2	1	Mussel
20472	20476	Pit	5	1	2	cf Helix spp
20472	20476	Pit	5	2	3	Mussel
20474	20476	Pit	5	3	1	Mussel
20568	20044	Kiln	5	2	3	cf Helix spp
20568	20044	Kiln	5	1	22	Oyster
20609	20569	Pit	5	1	1	cf Cepaea spp
20609	20569	Pit	5	14	30	cf Helix spp
20609	20569	Pit	5	228	325	Mussel
20609	20569	Pit	5	1	34	Oyster
20754	20753	Pit	5	2	2	cf Helix spp
20754	20753	Pit	5	1	3	Mussel
20810	20983	Gully	5	1	2	cf Helix spp
20839	-	Silting layer	5	1	25	Oyster
20859	20858	Gully	5	1	4	cf Helix spp
20873	20868	Pit	5	1	39	Oyster
20994	20995	Ditch	5	1	9	cf Helix spp
21003	21005	Pit	5	1	1	cf Cepaea spp
21003	21005	Pit	5	9	20	cf Helix spp
21003	21005	Pit	5	1	2	Mussel
21003	21005	Pit	5	1	13	Oyster
21194	21193	Pit	5	1	1	Mussel
21307	21309	Posthole	5	1	3	cf Helix spp
Period 6						
12030	12028	Ditch	6	3	1	Indeterminate
12030	12028	Ditch	6	1	12	Oyster
15036	15039	Pit	6	4	7	cf Helix spp
15036	15039	Pit	6	2	1	Mussel

Context	Feature	Context type	Period	Count	Weight (g)	Comments
21048	21049	Pit	6	1	23	Oyster
Period 7						
18014	18013	Gully	7	1	3	Mussel
19042	19040	Posthole	7	6	107	Oyster
20002	-	Buried topsoil	7	1	2	Mussel
Undated period						
15085	15086	Pit	U/D	1	35	Oyster
18104	18103	Posthole	U/D	4	3	Mussel

APPENDIX 19: THE INSECTS BY DAVID SMITH

Introduction

The insect faunas described in this assessment come from a series of samples collected from various sections during the excavations. One sample came from a layer of 2nd to 3rd century AD alluvium in Area 2. The remainder of these faunas come from a series of buried soil horizons and thin peats that either occurred in either Area 2 or covered the south eastern corner of Area 3. It is believed that these deposits are medieval in date. The insects from this material have the potential to help us understand the contemporary landscape and changing water conditions at this site.
An assessment of the insect remains from these samples was undertaken to provide information on the following:

1) Are insects present?
2) Are the insect faunas of interpretative value and warrant further investigation?
3) Do the insects suggest the nature of the environment in which these deposits formed?
4) Do insects suggest the nature of the wider environment that surrounded this site?

Methodology

The samples were processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). The system for 'scanning' faunas as outlined by Kenward *et al.* (1985) was followed in this assessment.

When discussing the faunas recovered, the following considerations should be taken into account:

1) Identifications of the insects present are provisional. In addition, many of the taxa present could be identified down to species level during a full analysis, producing more detailed information.

2) The various proportions of insects suggested are very notional and subjective. As a result, these faunas should be regarded as incomplete and possibly biased.

Results

The insect taxa recovered are listed in Table 78. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles).

The numbers of individuals present for each taxa is estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 5-10 individuals, ++++ = 10-20 individuals, +++++ = 100s of individuals. The nature of the preservation and the potential for archaeological interpretation is outlined in Table 79.

The majority of the insect fauna recovered were Coleoptera (beetles). The faunas examined were all well preserved and produced faunas of moderate to large size.

Discussion

Area 2

A single insect fauna was recovered from the layer of 2nd-3rd century AD alluvium in Area 2. The majority of the insects recovered are indicative of the presence of slow-flowing or still water. This is suggested by the recovery of a range of 'water beetles' such as *Notaris, Hydraena* spp. and *Ochthebius* spp. which are typical of such conditions (Nilsson and Holmen 1995). There also seems to have been a

dense stand of waterside vegetation, such as water reeds, in the area. This is clearly suggested by the recovery of considerable numbers of the 'reed beetles' *Donacia* and *Plateumaris* spp. The nature of the surrounding landscape is suggested by the recovery of a number of *Aphodius* 'dung beetles' and the Geotrupes 'dor beetle' which are all associated with animal dung lying in pasture (Jessop 1986). A number of plant feeding (phytophage) weevils such as *Hypera* spp., *Sitona* spp. and *Apion* spp. which often are associated with grassland and pasture where also recovered.

Three of the insect faunas recovered from Area 2 (samples 2035, 2039 and 2040) were from a buried soil (context 2051) and the thin band of peat that sealed it (context 2050). The faunas recovered contain a range of beetles that are typical of many of the deposits examined at Mildenhall. There is extensive evidence for slow-flowing water and the development of a dense stand of waterside vegetation. This is suggested by the recovery of a range of water beetles, such as *Hydraena* spp. and *Ochthebius* spp., which are typical of shallow, slow-flowing or stagnant waters (Hansen 1987). Waterside vegetation, such as water reed, is indicated by the recovery of significant numbers of the *Donacia* and *Plateumaris* 'reed beetles' along with the weevil *Notaris acridulus* which is associated with reed-sweet grass (*Glyceria maxima*).

There also are some indicators for the nature of the landscape that surrounded this area of peat development. Considerable numbers of *Onthophagus* and *Aphodius* 'dung beetles' suggest that meadow or pastureland was present in the area. A single puparia of the sheep 'ked '(*Melophagus ovinus)* was also recovered from the buried soil (context 2051), suggesting that sheep were present on site.

Area 3
Three locations in Area 3 contained insect remains. All are areas of peats that are probably medieval in date.

Sample 3001 from context 3009 produced a large insect fauna that indicate that an area of slowflowing or standing water was present. This is clearly suggested by the recovery of the *Gyrinus* 'whirligig' beetle and a range of water beetles such as *Ochthebius, Notaris, Coelostoma orbiculare, Laccobius* and *Chaetarthria seminulum,* which are all associated with slow-flowing waters in marshes, ponds and ditches (Hansen 1987; Nilsson and Holmen 1995). There is considerable evidence for dense stands of waterside vegetation. This is indicated by the large numbers of *Donacia* and *Plateumaris* 'reed beetles' recovered. There are limited indications that pasture or grassland was in the area. This is suggested by the recovery of a number of *Aphodius* 'dung beetles' and a range of weevils, such as *Apion, Hypera* and *Sitona*, which are typical in such an environment.

The deeper peat layer 3016 produced seven very well preserved insect faunas (3002, 3006, 3008, 3010, 3012, 3014 and 3016), usually of a large size. All of these faunas again indicate an area of slow flowing or even standing water. This is clearly suggested by the recovery of large numbers of water beetles such as *Noterus, Hydroporus, Agabus, Dytiscus, Ochthebius, Hydraena, Coelostoma orbiculare* and *Chaetarthria seminulum* which are typical of such conditions (Hansen 1987; Nilsson and Holmen 1995). As with the other deposits at Mildenhall these faunas also contain large numbers of *Plateumaris* and *Donacia* 'reed beetles' which suggest a dense stand of waterside vegetation. This also is suggested by the recovery of a number of weevils such as *Notaris acridulus*, *Thyrogenes* and *Limnobaris* spp. that are frequently associated with such stands of vegetation. As has been noted from other deposits are Mildenhall, a range of *Onthophilus* and *Aphodius* ' dung beetles', the 'chaffer' *Phyllopertha horticola* and a number of weevils suggest the presence of grassland or meadows in the area.

The thin peat (Context 3870) produced one insect fauna (3043). This was a moderately sized and well preserved fauna that contained the same range of taxa that were recovered in the other deposits at this site.

RESEARCH QUESTIONS AND RECOMMENDATIONS
In Table 79 below it is suggested that the insect remains from Mildenhall have a 'moderate' potential for further analysis. All the faunas are well preserved and further identification of the taxa present to species level clearly does have the ability to inform us as to the nature of the water conditions and the composition of the reed bed in these areas of the site. These faunas indicate that we are dealing with areas of reed swamp which suggest rising water tables in the medieval period at least.

These faunas also have some potential in terms of reconstructing the nature of the surrounding environment. There are several indicators for the presence of pasture and grassland in the area but, since the number and range of these taxa are relatively restricted, any reconstruction of the wider landscape will be to some extent limited.

The Environmental Archaeology Bibliography (http: //archaeologydataservice .ac.uk/archives/view/eab_eh_2004/) indicates that there are very few insect faunas from archaeological

sites in Suffolk and Norfolk with most work coming from either a range of Pleistocene sites, the Bronze Age trackways at Beccles or a limited amount of work on urban medieval deposits from Ipswich. This probably gives the insect faunas from Mildenhall some degree of regional importance. Certainly, there are actually very few insect faunas of medieval date which are not from urban contexts.

It is recommended, therefore, that the insect faunas from Mildenhall are fully identified, classified into ecological groupings and that a report for inclusion in any site publication is produced.

Estimated word count, number of tables/figures: 800-1000 words, a table and two charts

Table 78. The insect remains recovered from Mildenhall (MNL622) (Taxonomy follows that of Lucht 1987)

Area	Area 2					Area 3								
Context number	2086	2050		2051		3009							3016	3870
Sample number	2042	2035	2039	2036	2040	3001	3002	3006	3008	2010	3012	3014	3016	3043
Sample wight kg	8.5	11	7.8	8	9	8.5	6.6	3.3	3.7	3.3	3.4	3.6	3.6	1.5
Sample volume l	7	10	9	10	10	10	8	4	5	4	4.5	4	4	1.5
COLEOPTERA														
Carabidae														
Notiophilus biguttatus (F.)	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Elaphrus spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Loricera pilicornis (F.)	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Dyschirius spp.	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Bembidion spp.	-	-	+	-	++	+	-	++	-	-	++	-	++	-
Pterostichus spp.	+++	-	+	++	-	+++	++	-	-	-	-	+	+	++
Calathus spp.	-	-	+	-	-	-	-	-	-	+	-	-	-	-
Agonum sp.	-	-	+	-	-	-	-	+	-	-	-	-	-	-
Amara spp.	-	-	++	-	+	-	-	-	-	+	-	-	-	-
Haliplus spp.	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Dytiscidae														
Hygrotus spp,	+	-	-	-	-	-	-	-	-	-	-	-	+	-
Hydroporus spp.	-	+	-	-	-	-	+	+	-	-	-	-	+	-
Colymbetes fuscus L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Noterus spp.	+	-	+++	-	-	+	-	-	++	-	-	+	++	++
Agabus spp	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Dytiscus spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	+
Gyrinidae														
Gyrinus spp.	-	-	-	-	++	++	-	+	++	-	-	-	-	-
Hydraenidae														
Hydraena spp.	++	++	-	++	-	+	-	-	-	-	-	-	++	-

Ochthebius spp.	++++	+++	+++	+++	+++	+++	-	++	+	-	-	+	+++	+
Limnebius spp.	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Helophorus spp.	-	+	+	++	-	-	-	-	-	-	-	-	-	-
Hydrophilidae														
Coelostoma orbiculare (F.)	-	-	-	-	++	+++	+	-	+	-	+++	+	++	++
Cercyon granarius Er.	-	-	-	-	-	+	+	-	-	-	-	-	-	-
Cercyon spp.	-	++	+	+++	+++	+	-	++	-	-	-	-	+	++
Megasternum boletophagum (Marsh.)	++	-	++	++	-	-	-	-	-	+	-	-	-	++
Hydrobius fuscipes (L.)	-	-	-	-	-	+	-	+	-	-	-	-	-	+
Laccobius spp.	-	-	-	-	+	+	+	-	-	-	-	-	+	+
Enochrus spp.	-	-	-	+	+	+	-	-	-	-	-	-	-	+
Chaetarthria seminulum (Hbst.)	-	-	-	-	++	+	++	+	-	-	-	-	-	+
Histeridae														
Hister. spp.	++	-	-	+	-	-	-	-	-	-	-	-	-	-
Silphidae														
Silpha spp.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Staphylinidae														
Omalium spp.	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Olophrum spp.	+	-	-	-	-	-	-	-	-	-	-	+	-	-
Lesteva spp.	+++	+	++	+++	++	++	+	-	-	++	++	+++	++	++
Trogophloeus spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Oxytelus spp.	-	-	-	+	+	-	-	+	-	+	-	-	-	-
Platystethus spp.	+	-	+	-	-	-	-	-	-	+	-	-	-	-
Stenus spp.	-	+++	-	-	+++	++	-	++	++	-	+++	++	+	-
Paederus spp.	-	-	-	+	+	-	+	-	-	+	-	-	-	-
Xantholinus spp.	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Philonthus spp.	-	+	-	-	++	++	-	-	+	-	+	+	-	+
Tachyporus spp.	-	-	+	+	-	+	-	-	++	-	-	-	-	-
Tachinus spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	+
Aleocharinidae Genus &	-	++	-	+	+	-	-	-	-	-	-	-	-	+

spp. Indet.															
Elateridae															
Agriotes spp.	-	-	-	++	+	+	-	-	-	-	-	-	-	-	-
Adelocera murina (L.)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Athous spp.	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Helodidae															
Helodidae Gen. & spp. Indet.	-	-	-	-	-	-	+	++	+	-	-	+	+	-	
Dryopidae															
Dryops spp.	++	-	-	-	++	+++	++	++	-	++	+	-	-	-	
Cucujidae															
Monotoma spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Phalacridae															
Phalacrus spp.	-	-	++	-	+	-	-	+	-	-	-	-	-	-	-
Anobiidae															
Anobium punctatum (Geer)	-	+	++	-	-	-	-	-	-	-	-	-	-	-	+
Anthicidae															
Anthicus spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Scarabaeidae															
Geotrupes spp.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Onthophagus spp.	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+
Oxyomus silvestris (Scop.)	+	-	-	++	+	-	-	-	-	-	-	-	-	-	+
Aphodius spp.	+++	++	+++	+++	++	++	+	+	+	+++	+	++	++	-	
Phyllopertha horticola (L.)	-	+	+	-	+	-	-	+	-	-	-	-	-	-	
Hoplia philanthus (Fuessl.)															

Chyrsomelidae															
Donacia spp.	++++	-	+++	++++	++++	++++	-	+++	++++	-	+	+++	+++	+++
Plateumaris spp.	++++	-	+++	++++	++++	++++	++	+++	++++	+++	++	+++	+++	+++
Chrysomela spp.	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Hydrothassa marginella (L.)	-	-	+	-	-	+	-	-	-	-	-	-	+	-
Prasocuris phellandrii (L.)	-	-	+	-	+	+	-	-	-	-	-	-	-	-
Phyllotreta spp.	+	++	-	-	++	-	-	-	-	-	-	-	-	-
Chaetocnema spp.	-	+	-	+	++	+	-	-	-	-	-	-	-	-
Curculionidae															
Rhynchites spp.	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Apion spp.	++	-	++	++	++	+	-	-	-	-	-	-	+	++
Sitona spp.	-	-	+	-	++	+	-	-	-	-	-	-	-	-
Bagous spp.	-	-	-	-	+	-	-	+	-	-	-	-	-	-
Notaris acridulus (L.)	-	-	++	-	+	+	++	+	-	-	-	++	-	-
Thyrogenes spp.	-	-	-	-	-	++	+	+	-	-	+	-	-	+
Hypera spp.	+	-	-	-	-	+	-	-	-	-	-	-	-	-
Limnobaris pilistriata (Steph.)	-	-	-	-	-	+	-	-	-	++	-	-	-	-
Ceutorhynchus spp.	++	+	++	++	++		++	+					+	
Mecinus pyraster (Hbst.)	-	-	+	+	-	-	-	-	-	-	-	-	-	+
Gymnetron spp.	-	-	+	+	-	-	-	-	-	+	-	-	-	-
Rhynchaenus sp.	+	-	-	-	-	+	-	+	-	-	-	-	-	-
DIPTERA															
Hippoboscidae															
Melophagus ovinus L.	-	-	-	+	-	-	-	-	-	-	-	-	-	-

Table 79: Summary of the nature of the insect faunas from Mildenhall (MNL622)

Sample number	Degree of preservation	Comparative size of faunas	Water conditions	Landscape	Overall potential of sample	Estimate of time needed for full analysis (laying out / ID days)
2042	good	Moderate/ large	*Notaris, Ochthebius and Hydraena* suggest slow-flowing water	*Aphodius* and *Geotrupes* 'dung beetle' suggest grassland and pasture. *Donacia* and *Plateumaris* indicate stands of water side vegetation	Moderate/ good	one third of a day
2053	good	small / moderate	*Hydroporus, Hydraena, Ochthebius, Cercyon* suggest slow-flowing water.	*Aphodius* 'dung beetle' and *Phyllopertha horticola* 'chaffer' suggest grassland and pasture	moderate	one third of a day
2039	good	moderate/ large	*Notaris, Ochthebius, Coelostoma orbiculare* indicate slow-flowing water	*Aphodius* 'dung beetle' and *Phyllopertha horticola* 'chaffer' suggest grassland and pasture. *Donacia* and *Plateumaris* indicate stands of waterside vegetation	moderate	one third of a day
2036	good	moderate/ large	*Hydraena, Ochthebius, Cercyon* suggest slow-flowing water	*Aphodius* 'dung beetle', *Apion, Ceutorhynchus* and *Mecinus pyraster* suggest grassland and pasture. *Donacia* and *Plateumaris* indicate stands of waterside vegetation	moderate	one third of a day
2040	good	large	*Gyrinus, Ochthebius, Coelostoma orbiculare* and *Chaetarthria seminulum* suggest slow-flowing water	*Onthophagus* and *Aphodius* 'dung beetles' *Apion* and *Sitona* suggest grassland and pasture. *Donacia* and *Plateumaris* indicate stands of water side vegetation.	moderate	one third of a day
3001	good	moderate/ large	*Gyrinus, Noterus, Ochthebius, Coelostoma orbiculare* and *Chaetarthria seminulum* suggest slow-flowing water	*Aphodius* 'dung beetle', *Apion, Sitona* suggests pasture or grassland. *Rhynchaenus* suggest trees. *Donacia*, *Plateumaris*, *Limnobaris* and *Thyrogenes* suggest stands of waterside vegetation.	moderate	one third of a day
3002	good	moderate	*Hydroporus* spp., *Coelostoma orbiculare* and *Chaetarthria seminulum* suggest slow-flowing water	*Aphodius* 'dung beetle' suggests grassland and pasture. *Plateumaris, Notaris acridulus* and *Thyrogenes* suggest stands of waterside vegetation	moderate	one third of a day
3006	good	moderate / large	*Hydroporus, Gyrinus, Ochthebius, Limnebius, Cercyon, Chaetarthria seminulum, Dryops* suggest slow-flowing water	*Aphodius* 'dung beetle' and *Phyllopertha horticola* 'chaffer' suggest grassland and pasture. *Donacia*, *Plateumaris* and *Notaris acridulus* indicate stands of waterside vegetation. *Rhynchaenus* suggest trees.	moderate	one third of a day

Sample number	Degree of preservation	Comparative size of faunas	Water conditions	Landscape	Overall potential of sample	Estimate of time needed for full analysis (laying out / ID days)
3008	good	moderate / large	*Notaris* , *Gyrinus*, *Ochthebius*, *Coelostoma orbiculare* suggest slow-flowing water	*Donacia* and *Plateumaris* indicate stands of waterside vegetation	moderate	one third of a day
3010	good	moderate	little information	*Aphodius* 'dung beetle' suggests grassland and pasture. *Plateumaris* suggest stands of waterside vegetation	moderate	one third of a day
3012	moderate	small/ moderate	*Coelostoma orbiculare* suggest slow flowing water	*Donacia* and *Plateumaris* indicate stands of water side vegetation	moderate	one third of a day
3014	good	small/ moderate	*Noterus, Dytiscus* and *Coelostoma orbiculare* suggest slow flowing water	*Aphodius* 'dung beetle' suggests grassland and pasture. *Donacia*, *Plateumaris* and *Notaris acridulus* indicate stands of water side vegetation	moderate	one third of day
3016	good	moderate/ large	*Notaris, Hygrotus, Hydroporus, Ochthebius, Hydraena* spp. suggest slow flowing water	*Aphodius* 'dung beetle', *Apion* and *Ceutorhynchus* suggest pasture and grassland. *Donacia* and *Plateumaris* indicate stands of water side vegetation. Rhynchites 'leaf roller' suggest woodland	moderate	one third of day
3043	good	moderate	*notaris, Colymbetes fuscus, Dytiscus, Coelostoma orbiculare* and *Chaetarthria seminulum* suggest slow flowing water	*Onthophagus, Apion* and *Mecinus pyraster* suggest grassland and pasture. *Donacia* and *Plateumaris* indicate stands of water side vegetation	moderate	one third day

APPENDIX 20: GEOARCHAEOLOGY BY M. J. ALLEN

Several enclosure ditches, pits and a palaeo-channel were sampled as undisturbed sediment in monoliths and as bulk samples, from which snails were recovered. Bulk samples were processed by Cotswold Archaeology and flots supplied as 0.25mm, 0.5mm and 1mm along with any larger shell fragments recovered from the residues. A series of 18 samples mostly of 500mm length were supplied, containing undisturbed sediment from a series of nine sampled sequences. Seven of which were presented as waterlogged flots and residues. These were re-processed and f retained on 300µm and 0.5mm sieves. They are marked with 'F', on Table 80.

Topography, Geology and Soils
The site lies on the northern side of the river Lark. A limited area of level floodplain is present immediately adjacent to the water course, and the land rises clearly but gently northwards, from the peat and valley alluvium onto the Middle Chalk. Pelo-alluvial soils and gleyic alluvial sandy brown earths are mapped in the valley, and typical brown calcareous earths (Swaffham Prior Association) over the Middle Chalk

In the wider landscape we can see the Lark valley traverses Cretaceous Chalk though most of its course above Mildenhall. However, the Lark valley does contain a buried Pleistocene channel, the base of which is –40m OD (Bridgland and Lewis 1991) and is a part of the buried valley system called the 'Lark Valley Complex' and contains a series quartzose gravels. Other Pleistocene sediments include till, glaciofluvial outwash, fluvial sands (e.g. Warren Hill sands, Wymer *et al.* 1991) and gravels, silts and clays solifluction deposits and coversands. These are all significant as they may occur as primary or redeposited sediments in the Lark valley floodplain at Mildenhall.

Geoarchaeology Assessment
Descriptions and geoarchaeological assessment was undertaken to:-

- Assess how the deposits in the ditches had developed, and the potential of possible turf layers within the ditch
- Assess medieval alluvial deposits with a view to the examination of the formation and the possibility of specific deposits being related to retting pools or used for linen production
- Evaluate the potential for pollen analysis (should pollen survive) and soil or sediment micromorphology to contribute to these aims

Assessment methodology
The monoliths for each profile were laid out correct in spatial orientation to each other following the field section drawings. The exposed surfaces were cleaned and the upper surface sediment removed to expose clean, unsmeared and unweathered surfaces. These were described following pedological notation given by Hodgson (1976) and ditch infill sequence terminology outlined by Evans (1972), Limbrey (1975) and Allen (1995).

The sequences were assessed against the section/profile data provided, the specific sample-orientated questions and the aims given above.

Sampled sequences
The monolith samples are listed below by profile and divided into the sampled ditch sequences, and the alluvial and palaeochannel profiles.

Table 80. List of monolith samples with sampled contexts, profile and phase summary

Monolith	***contexts***	***Profile summary – archaeologists descriptions***	Associated samples
Ditch sequences			
15022	15582, 15416, 15581	Ditch 15415: Medieval ditch turf	
17035	17383	Ditch 1 [17384]: M-LIA soils/turf	snails
17036	17383, 17382		snails
17037	17393		snails
200402	20541, 21186, 21272	Ditch 40296: M-LIA bank and soil dump	
Alluvial sequences			
2028	2049, 2010, 2050, 2051	Medieval 'peat' over alluvium sequence base Romano-British	
2029	2051, 2039		

2030	2051, 2039, 2086		
3003	3015, 3016	Medieval 'peat'	
3004	3016		
3022	3080, 3081, 3083	Alluvial sequence Roman to medieval	
3023	3083, 3131, 3250, 3251, 3147		
3024	3080, 3081, 3130, 3083, 3131	Alluvial sequence Roman to medieval	
3025	3130, 3083, 3131, 3249, 3252		
3055	5118, 5203, 5128, 5131	Alluvial sequence (Roman), Saxon to medieval	
3056	5131, 5233, 5234, 5128		
3057	5234, 5235, 5236, 5241		
3034	3593, 3612, 3613	Palaeochannel peat channel 3617	snails

Assessment; profile results
The assessment is presented below by profile addressing context-specific questions, and the detailed geoarchaeological records are provided in the archive. A broader site-based geoarchaeological assessment follows, which addresses the aims given above.

***Ditch fill sequences – the possible presence of turves in the* ditches**
All of the sampled ditch sequences were consistent, in that typical primary, secondary and tertiary infills were not immediately identifiable. In particular the loose chalk rubbles typical of primary fills were largely absent, indicating either that the ditches had been cleaned out after the ditch sides had become stable, or that the chalk is particularly hard, strongly structured, and not prone to as extensive weathering as elsewhere.

A humic soil-material fill or layer was common to all three sampled profiles of both Iron Age and medieval date.

Medieval Ditch 15415: A series of soil-based chalky primary fills occur, of which two of these were sampled and described (15581 and 15582). A distinct context (15416) was considered in the field by the excavators to be a 'turf line deposit'. This certainly comprises calcareous 'topsoil' material derived from humic rendzina soils (A horizon material) of calcareous brown earths (A and B horizon material), but there are no structures indicating *in situ* soil development or banding, and stone-free and stony zones suggesting the presence of stacked turves.

Mid to late Iron Age Ditch 1 17384: The high content of soil matrix in the primary fill (17383) is unusual if this is a chalk-cut ditch at the point sampled. The dense non-matrix supported chalk (17382) that lies above this is unlikely to result from weathering back of the ditch sides and is, as noted in the field, likely to be deliberated deposited and dumped clean chalk. This is probably recently excavated or derived from a chalk bank or mound. The deposit of geoarchaeological enquiry (context 17381) lies unconformably above the chalk dump indicating that it had been deposited on, rather than developed in, the chalk dump. Although clearly soil material, its unsorted nature, lack of any pedological structure, evidence of banding, worm-worked horizons (stone-free and stony lenses) both in the monolith sample and in the depiction in the field drawings suggest that this is not a result of either soil formation, or turves stacked in the ditch. It is, however, derived from soil material, and like examples above, from A horizon material (rendzina) or A and B horizon material from calcareous brown earths. This earthy deposit is sealed, again unconformably, by dumped chalk and calcareous marl. This suggests episodes of deliberate backfill from two discrete and individual (albeit close) sources.

Mid to late Iron Age Ditch 40269: A monolith through a portion of the ditch fills sampled a portion of material (context 20541) thought by the excavators to be 'original soil surface ... slumping into the ... ditch'. Although, according to the section and sample records, the full profile of this context was not included in monolith sample 20040, the full profile of context 20541 was present. The material is an unsorted – soil derived deposit, like the other samples with no structure, earthworm-worked zones, banding or evidence of soil development or weathering of the contact zone below, indicating deposits of soil material.

Pollen is unlikely to survive in these biotically mixed calcareous deposits. Although soil micromorphology may provide additional information, the geoarchaeological record and interpretation is considered sufficient.

Alluvial deposits
A series of three of alluvial sequences with a deposit described as 'peat' were sampled to define the alluvial and sediments deposition character, and in particular the nature of the 'peat' deposits.

Medieval 'peat' 2050 over alluvium (monoliths 2028, 2029, 2030):
a sequence of 1.30m of sediment was sampled and described (full descriptions are available in the archive). The basal deposit sampled (2086) was a compact calcareous gravel; high energy, possibly channel or near channel, deposits. The unsorted deposits above are typical of broadly-banded overbank floodplain alluvium (2039) with a broadly-broadly-banded sandier, slightly humic, possible floodplain alluvium (2051) above. Deposited and formed over this is a black greasy stone-free humic silt (2050) described in the field as peat. It contains no vegetative material even when examined with hand lens and low power stereo-binocular microscope, and is largely minerogenic 'gyttja' (a fine-grained, nutrient-rich organic mud, typical of slow-moving or closed bodies of water). It is possible that this deposit may be related to retting pools.

Cessation of deposition of this gyttja was followed by alluviation (overbank floodplain alluvium) and soil formation (pedogenesis). There is no obvious evidence of continued deposition of the fine-grained nutrient-rich mud (2050), indicating change in land-use and of floodplain environments. The upper deposit sampled (2007) is an overbank floodplain alluvium with evidence of both soil formation and disturbance.

Medieval 'peat' 3016 (monoliths 33003, 3004)
The upper portion of an exposed 'peat' (3016) was sampled in two overlapping monoliths (50cm in monolith 3003 and 25cm in monolith 3004). The basal contact of this deposit was not sampled. This deposit is in excess of 50cm thick and is very dark grey to black dense humic silty peat. It has formed *in situ* by the decay of vegetation in anaerobic, waterlogged conditions, with plant matter and wood preserved in the upper portion at least. The presence of sand, stones and some minerogenic silt indicate some alluvial inwash probably by flooding. The silty peat is capped by a deliberate dump of chalk and chalky marl (3015).

Alluvial sequences sampling medieval 'peat' 3081 (monoliths 3022, 3023, 3024 and 3025)
Two sequences were sampled; that in monoliths 3024 and 3025 and that in 3022 and 3023. In both, context 3081 is present and is described as 'silty peaty clay', but the nature of the full sequence required explanation. The basal deposit (3251) is a sand with some gravel and may relate to higher energy floodplain events, possibly relating to late glacial gravel meltwaters, or early post-glacial fluvial environments. Deposits above this are sands and gravels (3252), or sands, fluvial sorted from deposits below them (3131, 3147). Some possible channel forms are present infilled with silty clay loams (3249) and sandy silts (3131) which mark the onset of a fine-grained alluvial facies which is defined by dark grey sandy silts (3083 and 3130). A very dark greyish brown to very dark greys humic silty clay (3081) is present with both sampled sequences, but is more pronounced at the location sampled by monolith 3022. This is a minerogenic humic silt with some evidence of waterlogging and local highly humifed peat. It is calcareous or shows distinct flushes of calcium carbonate indicating pollen preservation is likely to be poor. This probably formed in wet low-lying floodplain environments with pools of standing water fed by overbank flooding events depositing sand, and fine stones. It is sealed by a humic alluvial soil (3080).

Medieval alluvial sequences (monoliths 3055, 3056, 3057)
Three monoliths sampled 1.30m of profile with relatively complex stratigraphy. Portions of the upper part of the profile, especially context 5118, but also contexts 5128 and 5131 were considered as possible medieval dump horizons, whilst the underlying contexts 5234 and 5236 were considered to have formed 'naturally'. The identification of mass dumping of alluvial soil material can be difficult from a monolith sample alone, and is best achieved via both field inspection and more detailed geoarchaeological examination. The field section drawings, however, indicate fairly large-scale linear and horizontal deposition of all of the contexts sampled. Evidence of features cutting these (ditches or channels 5111 and 5232) are depicted on field section drawings but they, and their accompanying fills were not sampled.

As with other alluvial sequences, the basal deposits sampled were sandier facies (5241). Overlying this were grey, and greyish brown silt loams (5236 and 5234), separated by a thin band of fine sand inwash (5235). These represent overbank alluvial facies separated by a sandy flood deposit, indicating episodic higher energy isolated floodplain inundation events. The finer-grained alluvial facies (5236 and 5234) were compact and calcareous with some evidence of soil formation indicating alluvial soils developing on a floodplain. They become more calcareous over time, and are sealed by a fine (20mm thick) chalk lens. This too may be an alluvial outwash event or could represent the deposition of chalk on the floodplain for liming or to make surfaces in, or across the floodplain. These deposits are cut by channel or ditch 511.

Contexts above this (5131 and 5128) on visual inspection show no evidence of mass deposition by anthropogenic means. They are weakly calcareous, homogenous, silty loams probably largely derived from overbank flooding in the floodplain environments, and development of alluvial (?pasture) soils. Some terrestrial shells are present, but samples have been not been taken or assessed for snails from these deposits. Pollen survival is unlikely due to the biotic mixing and calcareous base-rich nature of the deposits. These deposits are cut by channel or ditch 5232.

A thin horizon (5203) occurs across this alluvial stratigraphy and is recorded as elsewhere overlying a Romano-British or Saxon 'chalk rich layer 5200'. It was recorded at 70mm thick in the monolith sample (3055), but was disturbed and did not survive in the sample as intact undisturbed sediments (Appendix 1). Although possible, it seems unlikely that this is a turf horizon and may represent the inwash or more humic, nutrient-rich muddy deposits as a result of overbank flooding, in which some soil formation occurred and vegetation grew. The upper context (2007) was severely disturbed in the sample, but probably represents an alluvial soil developed in overbank floodplain alluvium.

The presence of thin inwash deposits (e.g. contexts 5235, 5233 and 5203) indicate both seasonal alluvial flood deposit events of slightly higher energy, but the preserved presence indicates their burial by ensuing floodplain alluviation suggesting a relatively dynamic floodplain environment.

Palaeochannel 3617
In contrast to the accumulatory alluvial sequences sampled, one sequence through 'sandy peats' in palaeochannel 3617 was sampled in a 50cm monolith (3034), and the deposits are considered to be 'natural' and predate even the late Bronze Age (Period 1) activity on site. The aim of sampling was to recover dating evidence and information about the formation of the deposits; the upper contact of these 'peat' deposit with the overlying context (3598) was not sampled. Two deposits described as 'peat' (3612 and 3593) overlay a fine sand (3613), probably a well-sorted early channel bed deposit. The deposits above are waterlogged minerogenic sandy humic silts with waterlogged plant matter and wood present particularly in the lower portion of 3593. These represent humic channel infill deposits, accumulating as water flow decreases and vegetation growth within the channel increases. They are, therefore, relating to the last phases of the infilling channel, rather than during its phase of a free-flowing water course.

Much of the plant matter is highly humified but more detailed careful examination may recover suitable short-lived material for radiocarbon dating, and pollen is more likely to survive in these deposits than the later floodplain alluvium with evidence of biotic mixing and calcareous inwashes and inclusions.

Assessment: site-based implications
Overall the sampled ditches all show untypical primary fills, from which we suggest that the chalk here is very hard and slow weathering, or that the ditches have been cleaned out and earlier chalk rubble primary fills removed. The soil material present (e.g. 15416, 17381 and 20541) all indicate the presence of deposited or dumped soil material derived from A or A and B horizons from shallow rendzina soils, or calcareous brown earths respectively.

The majority of the deposits sampled in the alluvial sequences are overbank alluvium. Most are underlain by sands, or sands and gravels thought to have derived from late glacial or early post-glacial outwash rivers. Most of the deposits described as 'peat' or 'peaty' in the field are alluvial minerogenic humic silts rather than peats. These are therefore transported and deposited sediments, rather than evidence of *in situ* peat development. This gradual incremental development of floodplain with alluvial soils, is probably by seasonal flooding. Some occasional higher energy flooding evenst are also indicated. The deposits become more calcareous over time, possibly suggesting the thinning of chalky soils on the slopes within the catchment of the Lark.

In situ peat and minerogenic silty peats were only indentified in one sequence where medieval context 3016 is a peat.

One deposit was a fine-grained nutrient-rich mud or gyttja (context 2050) indicating the presence of still water, possibly a pool and it is possible that this may be related to retting.

Waterlogged plant remains are present in the humic silty loams (contexts 3593 and 3612) of paleochannel 3612, and also in the humified silty peat 3016 in sequences sampled in monolith 3003 and 3004.

Potential
The potential for cost-effective useful further analytical work is limited. Pollen is unlikley to survive in the calcareous biotically reworked humic ditch deposits, nor in the calcareous and hard-water flushed humic alluvium. Where pollen may survive, and analysis of small sequences may be informative is in:-

The medieval gyttja (context 2050 – sampled thickness 9cm)
The medieval humified silty peat (context 3016 - sampled thickness 48cm)
The early palaeochannnel (3612 – sampled thickness 50cm)

Pollen may provide information of the any activities relating to the gyttja (2050), and provide a longer landscape and land-use history for the Lark floodplain and its interfluves, into which the place the archaeological activities.

The preliminary geoarchaeological descriptions provided outline the primary interpretational framework. More detailed examination of one, or two of the key alluvial sequences (eg, monoliths 3022-3, and 3028-30 or 3055-7) the gyttja sequence (monoliths 2028, 2029 and 2030), medieval peat (monoliths 3003-3004) and the humic palaeochannel 3612 fills (monolith 3034), would enhance this interpretation. These proposed enhanced descriptions and those provided here (Appendix 1) then provide the basis for geoarchaeological interpretation and reporting on a feature and site-based level.

Although soil or sediment micromorphology might provide confirmation of the nature of the soil material in the ditch, the sediment geoarchaeology (Appendix 1 and above) answers most of the archaeological questions adequately.

Sediment micromorphology may confirm the depositional environment of the gyttja (context 2050) suggested by the geoarchaeology, but descriptions and additional examination will provide this more rapidly and cost effectively.

Recommendations
1. More detail examination of sequences

Key alluvial sequences - monoliths 3022-3, and 3028-30 or 3055-7

Gyttja sequence – monoliths 2028, 2039 and 2030

Medieval peat – monolith 3004 and 3005

Palaeochannel 3612 – monolith 3034

2. Full geoarchaeological interpretative report

3. That the gyttija (context 2050) is sampled at 1cm band width and 2cm intervals for pollen

4. That samples from the following are considered for pollen assessment / analysis

The medieval gyttja (context 2050 – sampled thickness 9cm - 5 pollen samples)

The medieval humified silty peat (context 3016 - sampled thickness 48cm – 5 pollen samples)

The early palaeochannnel (3612 – sampled thickness 50cm – 6 pollen samples)

Additional recommendations
As no molluscs have been assessed from the medieval alluvium and are present in at least one sequence (monoliths 3055, 3056, 3057) that these are subsampled, processed and analysed for snails.

5. Samples of the six main contexts and especially contexts 5131 and 5233 are taken from the monoliths 3055, 3056 and 3057 after any addional description.

6. Samples are processed by laboratory wash-over flotation (cf. Evans 1972), and where sufficient shells are present, the mollusc sorted, extracted, identified and tabulated.

7. The assemblages are reported upon with those indicated from the mollusc assessment.

Recommended tasks

1. Descriptions and geoarchaeological report
3. Processing and analysis of molluscs and reporting with mollusc report
2. Additional sampling and dispatch of pollen samples for assessment/ analysis

DITCH SEQUENCES

Ditch 15415

***Monolith sequence:* 15417=15022**			***Archaeological question:***	**Is 15416 a turfline?**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-9	15417		Void	
9-35	15416		Dark greyish brown (10YR 4/3) calcareous silty clay loam, many very fine chalk flecks, otherwise essentially stone-free, massive, clear boundary A or B horizon soil material, not turf per se or likely to be staked turfs or a developed soil	
35-44	15582		Compact small and medium chalk pieces in a light brownish grey (10YR 6/2) silty loam, clear boundary Primary fill	
44-50+	15581		Brown (10YR 5/3) calcareous silty loam, some chalk pieces Primary fill	

Ditch 1 [17384]

***Monolith sequence:* 17035, 17036, 17037**			***Archaeological question:***	
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-11	17380		0-6cm void. White (2.5Y 8/1) chalk marl with common small and medium chalk pieces, evidence of other large chalk pieces missing, abrupt boundary Dump – damp derived slump - backfill	
11-38	17381		Dark yellowish brown (10YR 4/4) sandy silt loam, rare chalk pieces, no structure, clear to abrupt boundary B horizon (subsoil) derived material	
38-69	17382		Abundant loose medium and large chalk pieces no matrix, abrupt boundary Chalk dump	
69-143	17305		Dark yellowish brown (10YR 4/6) essentially stone-free sandy silt loam, some chalk inclusions at base Soil derived fill – no chalky primary fill present	

Ditch 20496

***Monolith sequence:* 20040**			***Archaeological question:***	**Infill history and materials**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-13	?		Abundant medium and rare large chalk pieces in a dark brown (10YR 3/3) calcareous silt loam with very many small chalk flecks, sharp boundary. Dump possibly 20542	
13-27	20541		Dark greyish brown to greyish brown (10YR 4/2 – 3//2) calcareous silt to silt loam with rare small and medium chalk pieces, abrupt boundary Material derived from B horizon or A/B horizon – no evidence of *in situ* turf or pedogenesis in small 'window' provided by monolith samples	
27-36	21186		Abundant small and medium chalk pieces in a light brownish grey (10YR 6/2) calcareous silt Chalk primary fill or dump	
36-50+	21186/ 21272		Brown (10YR 5/3) calcareous silt, common small chalk pieces, rare charcoal flecks/pieces	

'ALLUVIAL' SEQUENCES

KEY = subsamples 99cm = sampled
(99cm) = suggested sampling

Medieval 'peat' 2050 over alluvium (Romano-British at base)

***Monolith sequence:* 2028, 2029, 2030**			***Archaeological question:***	
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-9	2007		Dark grey to very dark grey (10YR 4/1 – 5/1) silty loam, unsorted some fine chalk pieces, weak blocky structure, clear boundary Overbank alluvium, some pedogenesis and disturbance	
9-24	2010		Dark grey (10YR 4/1) silty loam as above, but with many fine and very small stones, clear to abrupt boundary	
18-27	2050	(18cm) (20cm) (22cm) (24cm) (26cm)	Black (10YR 2/1) greasy stone-free humic silt (to silty clay) (described as peaty, clear to abrupt boundary Sorted humic silt nutrient-rich mud - gyttja - slow aqueous deposition	
27-35	2051a		Yellowish brown (10YR 5/4) humic fine sandy loam, with a zone of gleying	
35-54	2051b		Very dark greyish brown (10YR 3/2) slightly humic silty clay loam, stone-free, broadly banded, abrupt boundary	
54-86	2039		Brown (10YR 4/3) fine sandy loam , common small stones clear to abrupt boundary	
81-106	2039		Yellowish brown(10YR 5/4) sandy loam, many small chalk flecks, clear boundary	
106-110+	2086		Compact calcareous gravel and calcareous sandy matrix Alluvial – possible channel or near channel deposits	

Medieval 'peat' 3016

***Monolith sequence:* 3003, 3004 (30-55cm)**			***Archaeological question:***	**Nature of the deposits – retting potential**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-0.5	3015		Dark dark greyish brown calcareous silty clay, stone-free, abrupt boundary	
0.5-4.5	3015		White small and medium chalk with no matrix, sharp boundary	
4.5-55+	3016	6cm 18cm 30cm 52cm 54cm	4.5-55cm very dark grey to black (10YR 3/1-2/1) dense humic silty (peat), with fine sand inclusions, rare stones From 4.5 to 17.5cm humified oxidised dark reddish brown peat, finely but weakly laminated or bedded, some roots and vegetative material From 44cm black humified silty peat rare plant matter Humified silty peat	

Alluvial sequences sampling medieval 'peat' 3081

***Monolith sequence:* 3022, 3023**			***Archaeological question:***	**Nature of the deposits – anthropogenic vs natural and retting potential**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-18	3080		Dark grey (10YR 4/1) firm, dense sandy silt, rare small and fine chalk pieces, clear to abrupt boundary Humic alluvium	
18-30	3081		Very dark grey (10YR 3/1) humic silty clay, firm and stiff stone-free, no structure evidence, but some reprecipitated or redeposited calcium carbonate within drying cracks, abrupt boundary. Called peat by archaeologists – but is a fine-grained humic silt settled in fluvial/aqueous conditions	
30-73	3083		Dark grey (10YR 4/1) sandy silt, rare small chalk pieces, many very small chalk flecks, some large at base of context Alluvial facies	
73-77	transition		Transition – weathered interface	
77-81	3131/ 3147		Light yellowish brown (10YR 6/4) silty sand, rare stones Sorted / weathered parent material	
81-84+	3251		Light yellowish brown (10YR 6/4) silty sand, many fine flint gravel Parent material	

Alluvial sequences sampling medieval 'peat' 3081

***Monolith sequence:* 3024, 3025**			***Archaeological question:***	**Nature of the deposits – anthropogenic vs natural and retting potential**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-12	3080		missing	
`12-24	3081		Very dark greyish brown (10YR 3/2) loose weak silty humic loam loose, and weak, clear boundary – not as clearly defined as in 3022, more redeposited calcium carbonate that in 3022 Called peat by archaeologists – but is a fine-grained humic silt settled in fluvial/aqueous conditions	
24-38	3130		Dark grey (10YR 4/1) sandy silt, largely stone-free excepting fine chalk flecks Alluvial facies	
38-46	3183		Dark grey (10YR 4/1) sandy silt, with rare small stones (as above but rare stones)	
46-53	3131		(10YR 3/2) Firm sandy silt, rare stones Sandy silt overbank alluvium	
53-75	3249		Yellowish brown (10YR 5/6) silty clay loam,	
75-84+	3252		Brown (10YR 4/3) coarse sand rare stones slightly humic Weathered/mixed parent material	

Medieval alluvial sequence

***Monolith sequence:* 3055, 3056, 3057**			***Archaeological question:***	**Nature of the deposits and deposition – anthropogenic vs natural and retting potential**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-32			Monolith sample disturbed but descriptions made but no i*n situ* structure recorded	
0-12	5118a		Grey (10YR 5/1) silt with rare small and very rare medium chalk pieces [some compact possibly medium blocky structure possibly present] Overbank alluvium	
12-28	5118b		Dark grey (10YR 3/1) silt with clear moderate, medium blocky structure, rare and small chalk pieces [sediment disturbed] Overbank alluvium	
28-21	?5203		Dark grey (10YR 5/1) humic silt, rare small chalk pieces, possible large crumb structure [very disturbed monolith sample], ?abrupt boundary It is not possible to determine if this is a turf, but no pedogenesis beneath so this is probably an alluvial humic inwash – overbank alluvium	
31-42	5128		Very dark greyish brown to dark greyish brown (10YR 3/2 – 4/2) silty clay loam with rare medium chalk, no structure discernible – fine terrestrial shells present, clear boundary Humic overbank alluvium	
42-63	5131		As above but denser and firmer - Very dark greyish brown to dark greyish brown (10YR 3/2 – 4/2) silty clay loam with rare medium chalk, v rare shells fragments, no structure discernible	
63-65	5233		– at 63cm a fine chalk lens	
63-76	5234a		Dark greyish brown (10YR 4/2) calcareous silt to silt loam with rare medium stones, common chalk flecks, clear boundary Humic overbank alluvium	
76-97	5234b		Grey (10YR 6/1 – 5/1) compact calcareous silt, some weak incipient structure noted, abrupt boundary	
97-101	5235		Brownish yellow (10YR 6/6) fine sand lens with rare small subrounded flints abrupt boundary Sand inwash event	
101-121	5236		Grey (10YR 5/1) stone-free compact sandy silt loam	
121-130+	5241		Grey to dark grey (10YR 5/1 - 4/1) ?humic sandy silt	

'sandy peat' 3612 in palaeochannel

***Monolith sequence:* 3034**			***Archaeological question:***	**Nature of the 'peat 3612' and is formation/deposition**
Depth (cm)	***context***	***Sub samples (pollen)***	***Description and interpretation***	
0-8	3593	4	Very dark greyish brown (10YR 3/2) humic sandy silt loam, rare medium chalk pieces, no structure observed, clear boundary Humic channel alluvium	
8-23	3593	16	Dark brown (10YR 3/3) humic silty loam, stone-free, rare fine, waterlogged wood/plant matter present, clear boundary Humic channel alluvium	
23-34	3612	24 32 40	Dark brown (10YR 3/3) sandy humic silt, rare very small stones. Less waterlogged plant matter present than above, clear to gradual boundary Not peat – but a humic alluvial soil/humic channel fill	
44-50+	3613	48	Pale brown (10YR 6/3) to light brownish grey (10YR 6/2) medium to fine sand with rare very small stones Sandy channel fill	

APPENDIX 21: ARCHAEOMAGNETIC REPORT BY NEIL SUTTIE

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E18/452/13/10 Final Concord Kelle Meadow 2 March 1584/85

E18/452/14/14 Meadow called Auncells now called the Lyme Kelles with a cottage built on it in Neates Way'

E18/452/14/16 Lease Kelle Meadow and other lands 13 September 1584

E18/452/14/17 Counter-part deed of feoffment Kelle Meadow and other lands 31 October 1584

E18/452/20A/8 Dower rights in third part of land called Lymekell 1582

E18/452/110 Deeds relating to the manor of Aspall 1557 - 1683

E18/454/5-7 Field books Manor of Mildenhall 1574

E 18/454/14 A Terrier of all Sir Henry North his lands both free & coppy as also such lands as he holdeth by lease as well of the Kings Magestie as of Trinitye Colledg in Cambridge made & taken the 4th of March in the 9th year of the Raigne of our Sovereigne Lord King James annoq dom 1611

E18/455/12-17 Rentals Manor of Mildenhall 1762-1785

E18/722/1/1 Lease Lime Kiln close and other pieces in Mildenhall 13 December 1825

Solicitors' Collection

1374/7 Draft Court Book Manor of Mildenhall 1759-78

1374/8 Draft Court Book Manor of Mildenhall 1759-78

1374/9 Draft Court Book Manor of Mildenhall 1779-1786

1374/27 Schedule to William Young's Map of Mildenhall 1834

Recreation Way, Mildenhall

Archaeomagnetic Dating Report

Neil Suttie, Geomagnetism Laboratory, University of Liverpool.

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Introduction

Excavations at Recreation Way, Mildenhall, Suffolk were undertaken by Cotswold Archaeology prior to the construction of a supermarket. Towards the final phase of excavation a circular hearth of fired reddish orange clay approximately 2m in diameter was uncovered. Around the perimeter of the hearth was a ring of heat affected stones. These were mainly flints, a few centimetres across, and rounded pebbles of pink quartzite as are commonly found on river beds. Neil Suttie of the Geomagnetism Laboratory at the University of Liverpool was invited to sample the feature for the purpose of archaeomagnetic dating and attended the site on 22nd November 2010.

Archaeomagnetic Sampling

As there was some pressure to finish the excavation quickly, it was decided to sample the feature by by taking oriented monoliths, 10-20cm across, set in plaster. The advantage of this method was that a reasonable amount of material could be quickly removed, however there are fewer independently oriented samples than may be acquired using other methods. In total eight individual monoliths were taken. Plaster of Paris was mixed and poured over a part of the feature and its surface levelled using a sheet of Perspex and a bubble level. Once dry a magnetic compass was used to mark north on the plaster. Owing to the conditions a sunsight could not be used and there is a small chance that the results given here could have been affected by the presence of local field irregularities although there was no indication of these. Five samples were taken from the stony edge of the feature and three were taken from the fired clay in the middle. The location of each of the samples is shown in figure 1. Blocks 3 ,4,5,7 and 8 contained stones set into the fired clay while blocks 1,2 and 6 consisted of fired clay from the central area. In the laboratory, blocks 1, 2 and 6 were cut into 2cm cubes; 4 from block 1, 5 from sample 2 and 3 from block 6. A total of 11 one inch cores were drilled from the stones in the remaining blocks. The flints tended to fracture during drilling and so did not produce well oriented cores, but were subjected to the analysis all the same.

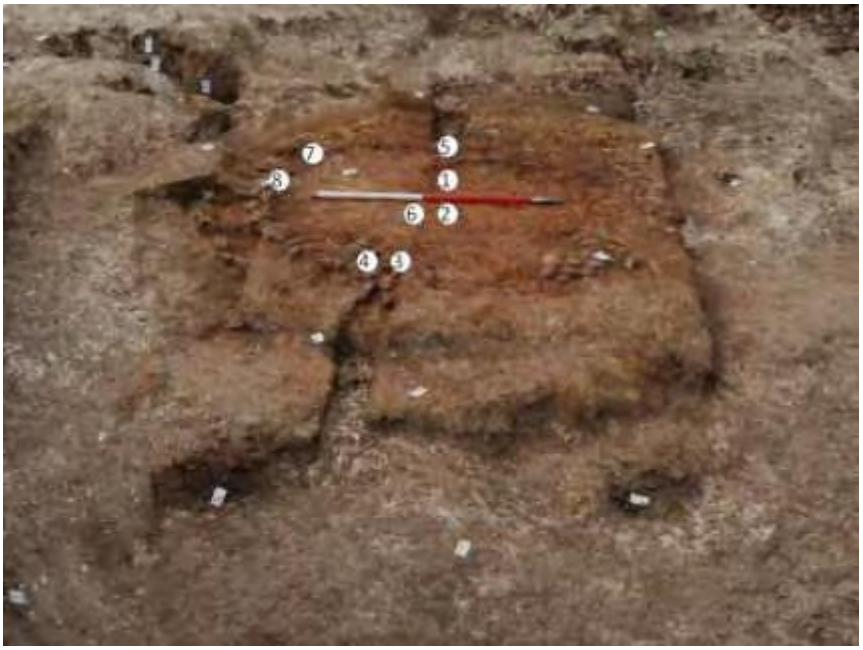

Figure 1. Location of samples taken for analysis. Scale bar is pointing north

Magnetic analyses

The magnetic susceptibilty of all samples was measured using a Bartington MS2 susceptibilty bridge and the natural remanent magnetisation (NRM) was measured using an AGICO JR6 magnetometer. Absolute values of susceptibilty and magnetisation of the clay samples, being set in plaster, are not given but the Koenigsberger ratio (Q) of each sample is reported in table 1. Q is he ratio of remanent magnetisation to that induced in a nominal 50 μT field. Clay taken from the monoliths had a susceptibilty in the region of 10^{-3} SI. The susceptibilities of both the quartzite and the flints were too low to be precisely determined and in some cases were slightly negative because of the diamagnetism of the quartz. For this reason the Koenigsberger ratios and susceptibilities of these samples are not given in table 1, which briefly describes all samples taken.

Table 1. Description of samples taken.

Sample	Description	Susceptibilty (SI)	Q
1A	Orange/red clay	107	4.1
1B	Orange/red clay	83	4.5
1C	Orange/red clay	71	5.4
1D	Orange/red clay	237	3.4
2A	Orange/red clay	4	5.6
2B	Orange/red clay	9	4.1
2C	Orange/red clay	57	0.6
2D	Orange/red	11	2.0

	clay		
2E	Orange/red clay	38	4.9
3A	Dark Flint		
3B	Quartzite		
3C	Quartzite		
4A	Dark Flint (uneven core)		
4B	White flint		
5A	Quartzite		
5B	Quartzite		
6A	Orange/red clay	24	3.4
6B	Orange/red clay	13	5.6
6C	Orange/red clay	10	8.3
7A	Light grey flint		
7B	Quartzite (small core)		
7C	Quartzite (small core)		
8	Quartzite		

A selection of samples (1B,2A,2C,3A,3B,6A,7A,7C,8) were fully thermally demagnetised at temperatures of 100, 170,250,320,380,430,470,510 and 560°C. It became clear from this that many sample , especially the stone from the edge of the feature possessed more than one component of magnetisation and so the remaining samples were also demagnetised, at increments of 90°C up to 450°C followed by 500 and 560°C. Vector endpoint diagrams for all samples are shown in the appendix along with information regarding the selection of the magnetisation vector. The samples judged to have well-defined characteristic remanent magnetisations are given with their directions in table 2. Directions are not variation corrected. The clay samples 2C and 2D showed some variation in direction during demagnetisation. Given their low Q values (table 1), it seems likely that they have a viscous magnetisation overprinting the thermoremanence and they have been excluded from the analysis.

Table 2. Characteristic remanence for each sample

Sample	Declination	Inclination	M.A.D.	Temperature(°C)
1A	20.6	69.6	2.3	180-360
1B	1.5	75.7	Mean direction	Sample broke at 170°C
1C	17.3	72.5	1.3	180-360
1D	18.6	75.3	1.5	180-560
2A	0.3	79	2.9	320-560
2B	349.6	69.9	3.1	360-560
2E	11.2	65.9	1.6	100-560
3A	335.7	67.7	1.0	100-380

3B	341.7	76.1	0.9	250-510
3C	333.4	73.8	1.9	100-450
4A	351	70.9	4.3	100-360
5A	11.4	74.3	2.1	270-450
5B	24	71.9	1.3	100-500
6A	12.6	69.7	3.4	250-560
6B	4.1	72.4	1.5	0-560
6C	0	63.4	1.4	270-500
7A	329.3	14.4	2.4	100-470
8	341.3	76.1	1.1	0-380

Of the data shown in table2, the direction given by sample 7A is a clear outlier. It is likely that this flint was moved after cooling. Of the original 23 samples, the remaining 17 are used to determine the direction of the geomagnetic field when the feature was last fired.

Dating

The International Geomagnetic Reference Field gives the local declination as 1.6°W at the time of sampling. Correcting the values in table 2 by this amount yields a mean direction of 1.6°E with an inclination of 72.8° and an α_{95} of 2.7°, for the 17 selected samples. Figure 2 shows the distribution of the directions in a circular plot.

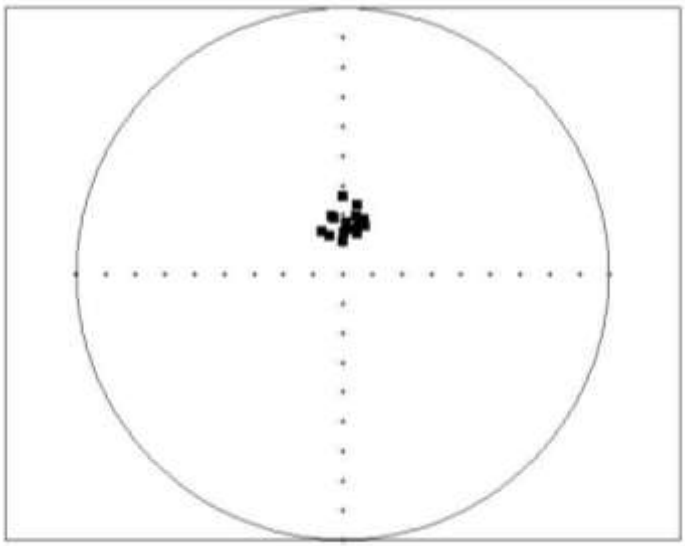

Figure 2. Directions of the 17 samples used in the analysis. One outlier has been removed

To date the firing of the feature the mean direction is compared with a reference curve. At the time of writing the British calibration curve is not very well constrained for the Middle Iron Age and it was decided to relocate the mean direction to Paris and use the French secular variation curve of Gallet et al. (2002). Results are displayed using the software of Pavón-Carrasco (2011) in terms of Bayesian confidence intervals following Lanos (2004) in figure 3.

The estimated 95% confidence interval for the date of firing of the feature is 480-130BC. A Saxon date of between 550 and 840AD is also possible, as well as a post- Medieval date, but these seem less likely on archaeological grounds. It is noted in passing that the main control of the date comes from the inclination and the possibility of some local field disturbance affecting the orientation of

the samples with a magnetic compass, is unlikely to have caused any great error in the date. A more limited 65% confidence interval spans the 4thC BC with a most likely date of 350BC.

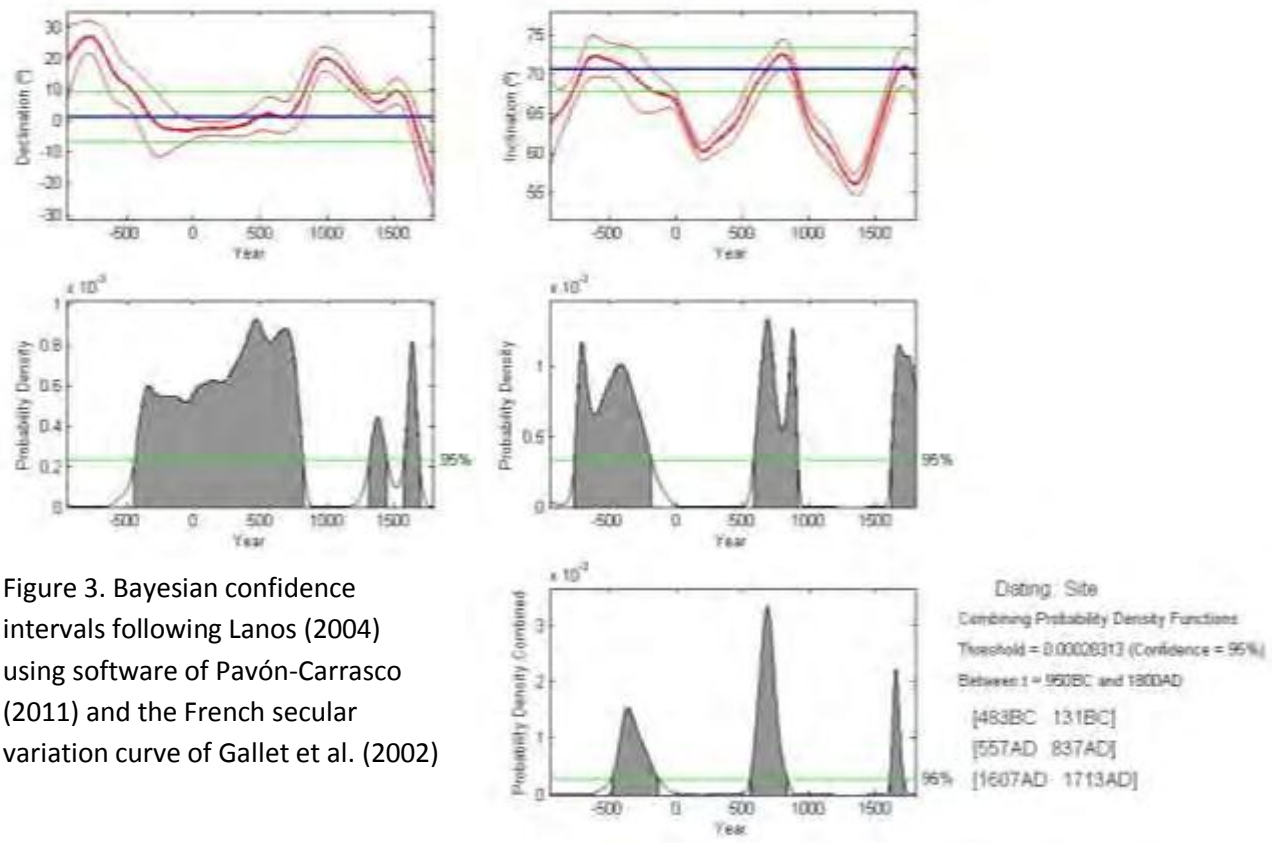

Figure 3. Bayesian confidence intervals following Lanos (2004) using software of Pavón-Carrasco (2011) and the French secular variation curve of Gallet et al. (2002)

Summary

Of the 23 individual samples take form 8 independently orientated blocks, 18 had clear stable components, identified by thermal demagnetisation. Of these, one appeared to be an outlier. The remaining 17 samples gave the following result.

N=17/23

Declination 1.6°	**Inclination 72.8°**	**α_{95} 2.7°**

Date of last firing **480-130 BC (95%)**

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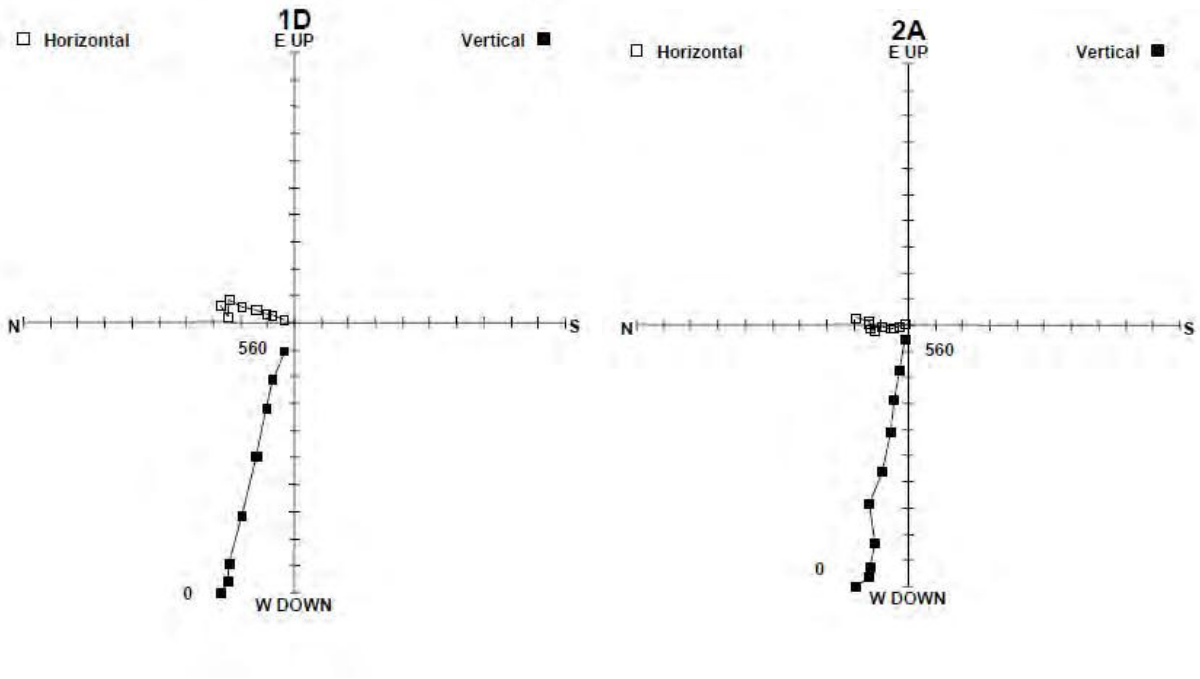
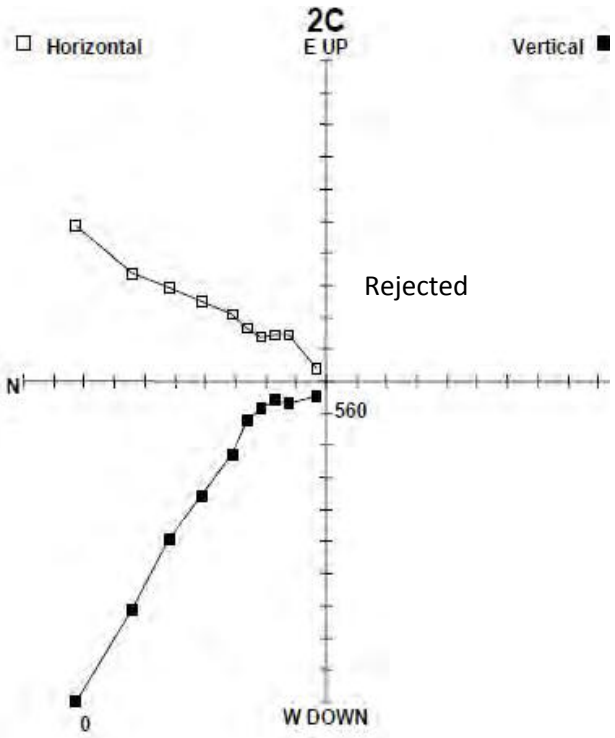
Appendix

Vector endpoint diagrams of the thermal demagnetisation data for selected samples are given below. Maximum temperatures are shown on each plot.





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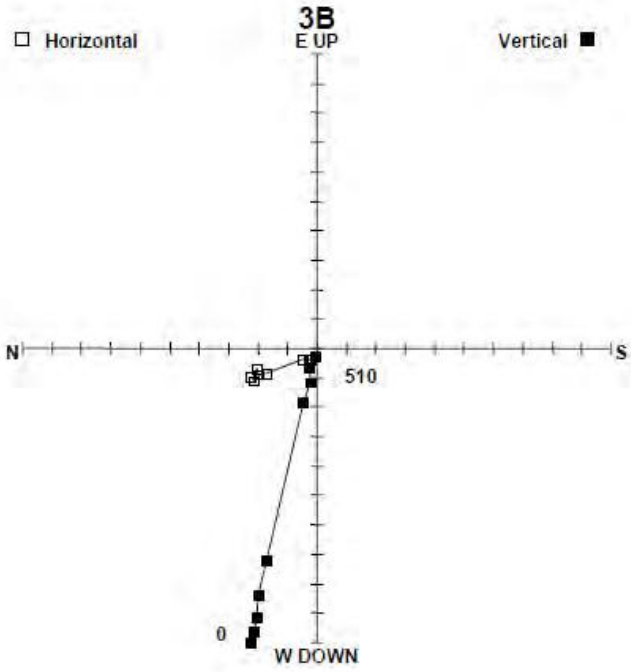
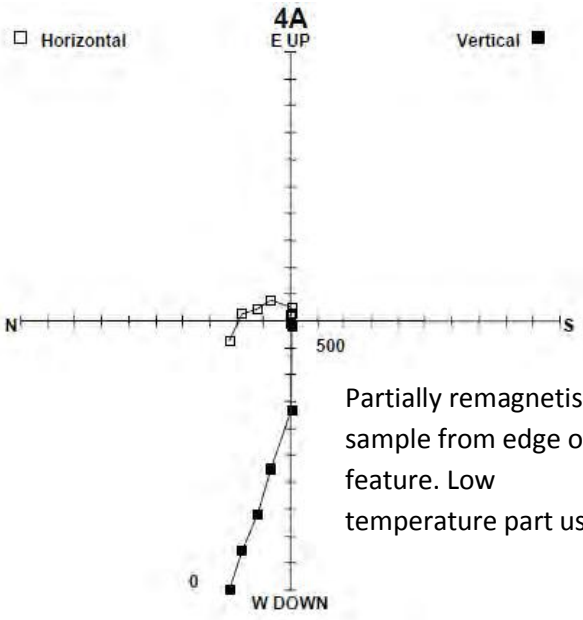
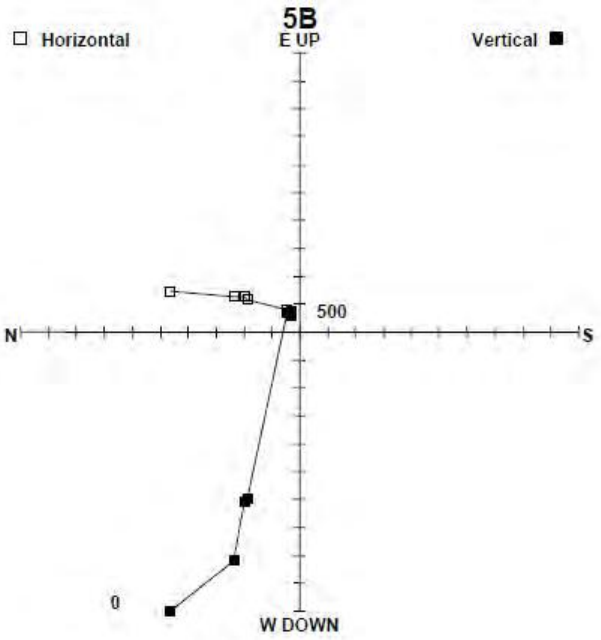
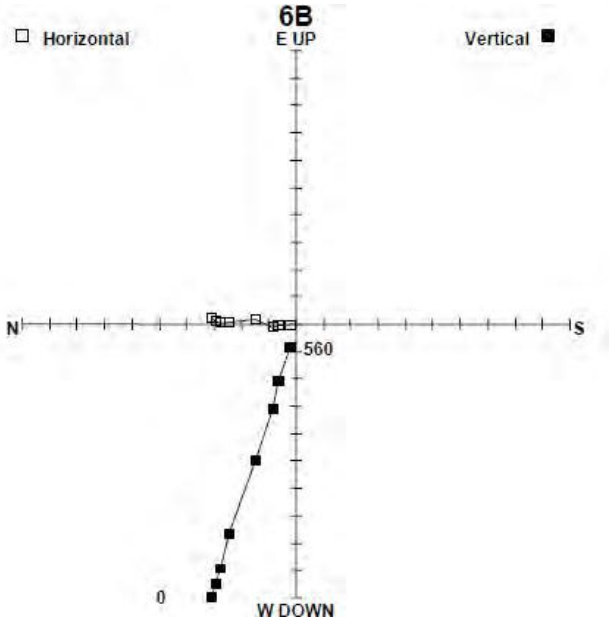
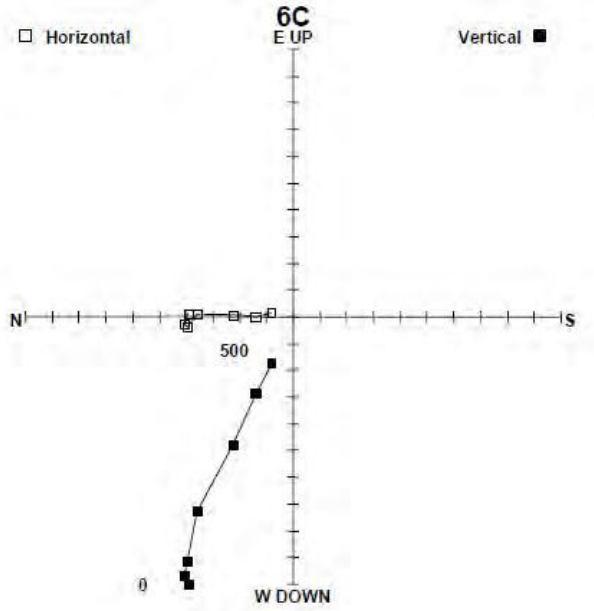


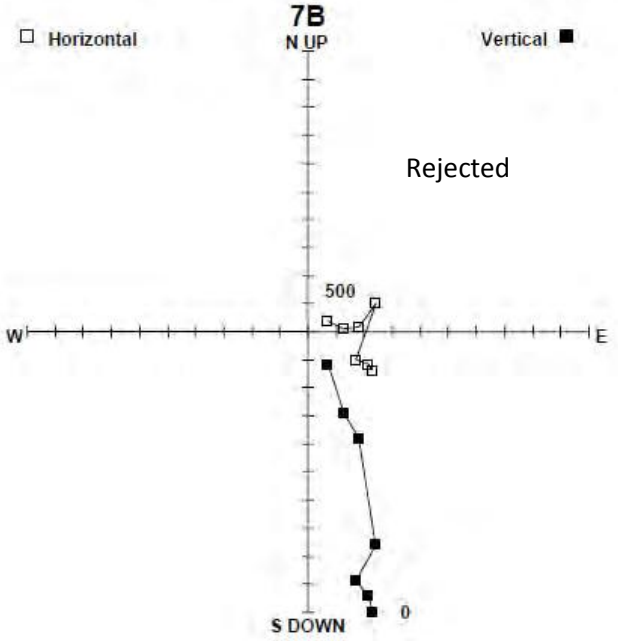


Partially remagnetised sample from edge of feature. Low temperature part used.









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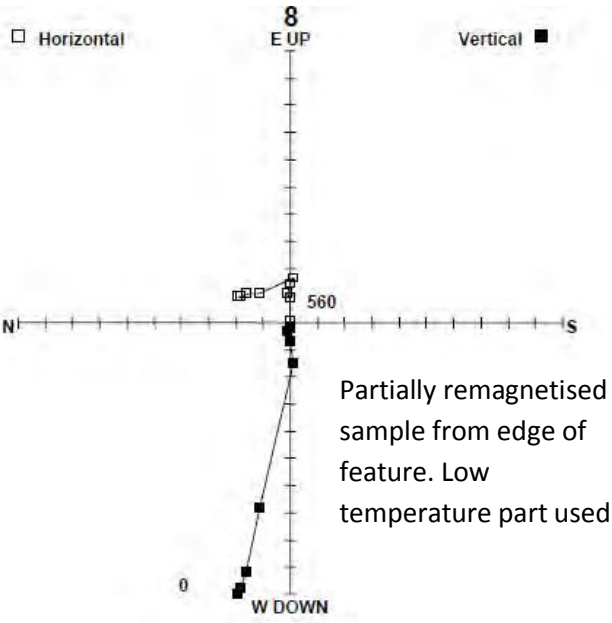

Partially remagnetised sample from edge of feature. Low temperature part used.