Further Archaeological Investigations at the Waste Management Park, Waterbeach, Cambridge.



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INTRODUCTION

The Cambridge Archaeological Unit (CAU) undertook archaeological excavations between the 2nd and 17th December 2008 on 582.63 square metres of land. The excavation was adjacent to an existing post-medieval drainage ditch, prior to proposed widening as part of the Mechanical Biological Treatment Plant at the Waste Management Centre, Ely Road, Waterbeach. The excavation was commissioned by Donarbon Waste Management Ltd following the specification devised by the CAU (Beadsmoore 2007) and approved by Andy Thomas of Cambridgeshire Archaeology Planning Countryside Advice.

Location and Topography

The proposed area of ditch to be widened and the focus of the current investigations was centred on TL 487 688 and bounded by the Medieval Beach Ditch to the northwest, the A10 to the south-east as well as by the Post-Medieval drainage ditch to the north (Figure 1). In its wider location it is situated on the edge of the fens between the River Great Ouse to the north, the River Cam to the east with the Car Dyke located between the two rivers to the south of the development area. The underlying geology comprises 1st and 2nd Terrace gravels, overlying Kimmeridge Clay and Lower Greensand (British Geological Survey 1978).

Methodology

The topsoil and subsoil of the site was removed under constant archaeological supervision by a tracked 360° machine using a 2.0m wide toothless ditching bucket. All removed deposits were scanned by eye and metal detected. The excavation area measured c. 237m long and maximum of 4.5m wide and totalled 0.06ha. The exposed archaeological features were immediately planned; metal detected, and subsequently sampled in concordance with the requirements of the design specifications (Beadsmoore 2007): A minimum of 50% of each discrete feature was excavated, whilst ditches were sampled in 1m sections, with the sections targeted on junctions and variations in ditch width.

The excavation of all archaeological features was carried out by hand and all finds were retained. The recording followed a CAU modified MoLAS system (Spence 1990); whereby numbers (fill), or [cut] were assigned to individual contexts and feature numbers, F. to stratigraphic events. Sections were drawn at 1:10, base plans at 1:50. The photographic archive comprises black and white slides as well as digital images. A representative range of features were bulk sampled. All work was carried out in strict accordance with statutory Health and Safety legislation and with the recommendations of SCAUM (Allen & Holt 2002). The site code is ERW 08.

Archaeological and Historical Background

The area of the Waste Management Centre has been subject to five previous archaeological investigations by the CAU. The earliest excavations were in the nearby

fields of Graves' and The Undertakers at Gravel Diggers' Farm in 1992 by Wait (1992) and then Oswald (1992). Further work was then undertaken by Masser (2000) and by Cooper & Whittaker (2004) (Figure 2), following a Desk Based Assessment of the archaeology of the surrounding area by Gibson (1999). Archaeological investigations have also been undertaken by the CAU in the wider surrounding area: To the east of the A10 at Bannold Lodge, Chittering (Whittaker 1997), further south along the Cottenham to Landbeach pipeline (Hall 1999) and a watching brief and evaluation along the Waterbeach to Histon Cable (Dickens et al 2003). In 2007 a large open area excavation was carried out on the 2.6 hectares of land immediately northwest of the current area of investigation, prior to the construction of the Mechanical Biological Treatment Plant of the Waste Management Centre (Ranson 2007).



Figure 1. Location map.



Figure 2. Previous Archaeological work at The Waste Management Park and surrounding fields with cropmarks



Figure 3. Site Plan.

Prehistoric

Evidence of prehistoric activity is scattered throughout the fen edge landscape, with the majority of the evidence recovered as surface finds from evaluations and field walking. Scatters of worked and burnt flints as well as stone axes dating to the Mesolithic and Neolithic periods have been identified to the east and south of the development area, at sites such as Stow-Cum-Quy Fen, Chittering, the Bottisham Fen (Appleby et al 2007) and also at Milton (Diez 2005). A Neolithic worked flint scatter was identified alongside a palaeochannel at Gravel Diggers Farm, associated with subsurface features; waterlogged pits containing worked wood, bone and burnt flint (Oswald 1992).

There is slightly more evidence for Bronze Age activity and settlement located on the gravel terraces, the marginally higher ground within the floodplain. Sites like Milton Rowing Lake have yielded a few scattered features including pottery and lithics (Diez 2005). Whilst a Late Neolithic/ Early Bronze Age flint scatter with later Bronze Age pits, hearth and cremation was also excavated at Milton (Connor 1997). A small later Bronze Age Settlement was excavated on the fen edge along the Old West River (Masser 2000). Barrows with a potential ring ditch, have been identified along the western edge of Stow-Cum-Quy Fen (Hall 1996) as well as to the south of Bannold Lodge, Chittering (Whittaker 1997) and at Denny where a low mound is located (Taylor 1998).

The Iron Age is comparatively well represented in the Waterbeach area with evidence of activity on sites continuing into the Roman period. Crop marks and field systems with Iron Age origins were excavated at sites such as the Histon to Waterbeach cable (Dickens et al 2003), the Cottenham to Landbeach pipeline (Hall 1999) and along the River Great Ouse gravel terrace (Masser 2000). An Iron Age settlement and field systems have also been excavated south of the development area at Milton; archaeological activity that was previously identified as undiagnostic sherds of pottery and crop marks (Diez 2005; Connor 1999). A raised area north of Denny has shown a predominance of Iron Age activity (Taylor 1998).

Very few features identified during the 2007 Waste treatment plant excavations were of a prehistoric date: A north-west to south-east aligned linear was interpreted as a potentially 'prehistoric field or boundary marker' (Ranson 2007 p7) along with several otherwise undated discrete features which could have been structural elements of a prehistoric date (*ibid*, p31).

Romano-British

Extensive Roman activity has been recorded within and around the current area of investigation. The A 10 to the south east of the site is thought to follow the course of the Romano-British Akeman Street, utilising the raised gravel ridge. A Romano-British temple was identified on aerial photographs immediately to the north of the development area (Figure 2), but was destroyed by quarrying in 1980 although more than one hundred 4th century AD coins and a votive axe were recovered. Quarrying also largely destroyed cropmarks to the south and west of the temple, but ditches and

waterlogged pits were excavated which contained pottery, metal working debris and a leather shoe (Taylor 1980).

The Car Dyke, a Scheduled Ancient Monument (SAM 224) situated to the south of the development area is thought to be a Roman canal beginning south of Waterbeach at the River Cam, crossing the A10, the probable route of Akeman Street to the north west and joining the River Great Ouse just north west of Cottenham. It was probably constructed in the early 2nd century and used throughout the Roman period for transportation of goods into the Fens (Clark 1947). However, more recent excavations of a section of the Car Dyke in Lincolnshire have concluded it was constructed for drainage purposes only, rather than for transportation (Thorpe & Zeffertt 1989). The Dyke may also have been utilised as a territorial boundary marker on the edge of the fens (Malim 2005). The development area was located adjacent to the possible route of Akeman Street, a Roman road that connected Ermine Street with Cambridge, before extending further north east crossing the Car Dyke canal at Goose Hall Farm towards Ely (Macaulay 1997). The road may have been constructed after the Car Dyke, as a significant routeway into the fens which the A10 still follows. An expansion of settlement patterns in the Romano-British period was related to the development of new road networks and was particularly evident in the fens (Browne 1977).

A large well preserved Romano-British settlement and field system has been excavated along the route of the Car Dyke at Bullocks Haste, Cottenham (*ibid*). Further Romano-British settlement, industrial activity and a cemetery are located between Horningsea and Clayhithe (CBA Report 1978) as well as just north of Cambridge, a Villa is at Arbury and farmsteads and industrial work are at Milton (Connor 1999).

Previous archaeological investigations at the Waste Management site have exposed Romano-British settlement activity, identified from crop marks which included a drove way, post holes, pits, and a possible midden with associated boundary ditches that were potentially related to livestock management (Masser 2000). A potentially late Roman cremation cemetery was excavated adjacent to the site of the destroyed temple (Cooper & Whittaker 2004) with additional boundary ditches and quarry pits. Similar evidence for quarrying was identified at Bannold Lodge, along with a rural Romano-British settlement with one associated skeleton (Whittaker 1997). Rural settlement evidence of enclosures, drove ways and paddocks with one 2nd century cremation has also been identified along the Histon to Waterbeach cable (Dickens et al 2003) and at the Cottenham to Landbeach pipeline (Hall 1999).

The 2007 Waste Management site excavation identified large quantities of Romano-British activity ranging in date from the 2^{nd} to 4^{th} centuries AD (Ranson 2007). The earliest features being the northern side of a rectilinear enclosure with two adjacent north-east south-west aligned droveways, both of which were, along with the rectilinear enclosure, redefined at least once. Later Romano-British activity involved the use one of the droveways as a midden ($3^{rd}-4^{th}$ centuries) as well as extensive quarrying.

Saxon and Medieval

Saxon and medieval activity was mainly focused around the present villages of Waterbeach and Cottenham. This was due to the seasonal flooding of the fens since the end of Roman Britain and the subsequent neglect of Roman drainage systems. Possible Saxon activity has been recorded at Lode and Anglesey Abbey with many artefacts recovered by metal detectorists and dredged from the River Cam (Appleby et al 2007). Early Saxon huts were excavated at the Lodge in Waterbeach, along the Car Dyke (Taylor 1978) and similar huts, pits and artefacts were recovered from Denny Abbey (Mortimer 1996). Denny Abbey, located to the south east of the development area, was founded in the 12th century and was originally built on a fen island. A causeway was constructed in the 14th century, with earlier quarry pits that have been dated to the early medieval period (Whittaker 1997). Anglesey Abbey to the east of Waterbeach was founded in the early 13th century; part of the Abbey was turned into a house in the dissolution in the 16th century (Appleby et al 2007). Beach Ditch, to the north-west and adjacent to the A10 is also medieval in origin, with the earliest reference to its location being of a 12th century date (Ravensdale 1974). Only limited Saxon activities have been identified at Milton; at the Cambridge Rowing Lake, by a sunken feature building, small ditches and pits (Diez 2005).

Post medieval and modern

Agricultural field systems are known from the medieval period around the Waterbeach area but a lot of the land would also have been marshland (Diez 2005). Comprehensive draining of the fens did not occur until the 18th century at which time the development area would have probably been incorporated into an agricultural regime. Consequently, any modern disturbances within the development area, if present, are potentially limited and agricultural in origin.

Place-name etymology:

The current area of excavation lies close to, but not within the village of Waterbeach; OE *Woeter* + *Baec* meaning 'low ridge adjacent to water', in this case the River Cam. This is likely to refer to the raised geological gravel generally followed by the modern A10 and potentially the Roman Akeman Street running adjacent to the development area, which would always have formed an important landscape feature. This is in direct and sharp contrast to Landbeach, situated south-west of the site (OE *Land* + *Baec*) meaning 'low ridge adjacent to dry land', highlighting the patchwork of dryer and wetter areas throughout this part of the fen edge: Denny Abbey, (OE *Denu* + *Eg*) immediately south-east of the PDA, meaning 'well watered land in a dip or shallow valley' further emphasises the importance of the constant flooding and the dryer ridges and gravel islands found throughout this area of the fens.

RESULTS

A total of twenty-three features were identified and excavated during the 2008 investigation, these were attributed dates through the material culture identified within the fills or through association with dated features both within the current excavation area and within the 2007 excavation to the north. The restricted width of the site did not allow more than one slot to be excavated in any linear feature, but the proximity of this excavation area to that of the larger 2007 investigation did allow features that continued from one area to the next to be identified; although a gap between the sites was sufficient for changes in alignments and termini of linear features to be undetected.

The topsoil overlying the features was between 0.3 and 0.45m in thickness, was generally homogenous dark grey, loosely compacted silty clay with frequent small angular and sub-angular gravel inclusions. A thin deposit of mid brown, moderate to firmly compacted clay sand, with a maximum thickness of 0.18m and frequent gravel inclusions formed a sub-soil, varying in depth throughout the site, with a general thickness of 0.05 to 0.1m but being as thick as 0.24m towards the south-eastern limit of the site, in the lee of the gravel rise of the current A10. The results of the 2009 excavation to the immediate north-west of the excavated area indicate that the subsoil exposed during the 2008 ditch widening excavation is potentially a 'buried soil' (Tabor *forthcoming*).

Prehistoric

Three features could be dated to the prehistoric period:

A large sub-circular pit, F211 was located within the south-western end of the limit of excavation, with steeply sloping sides and generally flat base, generally sterile silty fills with occasional charcoal flecking and a single sherd of Late-Bronze Age to Early-Iron Age ceramic from the basal fill indicated a date (Knight, *below*) whilst a residual flint of Late Neolithic or Early Bronze Age date within the same fill demonstrated an earlier presence in the area (Billington *below*). A definite recutting of the pit, following extensive silting was by F212, a smaller, slightly deeper sub-circular pit with steeper sides. The fills of the recut were just as sterile and although no non-intrusive material culture was identified, it is likely to be of a similar date to the original cut.



Figure 4: Pit F211 with Recut F212.

A rounded terminal of a shallow ditch, F215 extending beyond the southern limit of excavation did not appear to respect the alignments of the Romano-British and later ditches throughout the site and although not dated by any material culture was similar in cut and fill morphology to the north-west to south-east aligned prehistoric ditch identified during the 2007 excavation (Ranson 2007). Although F215 was at a slightly different alignment to the 2007 ditch, the absence of a continuation of the previously identified ditch within the current area of excavation suggests the presence of a terminal; potentially creating an entrance associated with a change in orientation of a field boundary.

A second pit F219 was circular and 0.9m in circumference, with straight and slightly undercut sides, 0.58m in depth and was filled with sterile sandy and gravely slumps. The profile and fills of F219 were in stark contrast to those within the large pit F211; suggesting a dryer and faster, possibly deliberate backfilling. No material culture was identified from F219, and as its upper fill was truncated by Romano-British ditch terminal F220, a tenuous prehistoric, possibly Iron Age date could be attributed to its use.

Romano-British

In concordance with the previous excavations in the vicinity, the largest component of datable features identified was of Romano-British provenance. A continuation of the rectilinear enclosure identified within the 2007 excavation and a potential boundary ditch were identified.

Enclosure ditches:

A wide north-east to south-west aligned ditch F223, moderately steeply sided and filled with relatively sterile gravel slumping deposits and accumulative sandy silts. This original ditch was recut by a second north-east to south-west aligned ditch F224, shallower and slightly narrower than the primary cut; it was filled with compacted silty-clays which appeared to be accumulative in deposition and contained moderately large quantities of bone as well as a fragment of thin, potentially Romano-British decorative copper alloy sheet (Appleby below). A second north-east to south-west aligned recut, F225, truncated F224. Again shallower and slightly narrower than the previous two ditches, F225 was filled with sterile homogenous accumulative silty clays and a basal gravely slump. Each of the three ditch cuts conformed on their north-western sides, with the thickest deposits of fills being left exposed on the southeastern side; suggesting the recuts represented a series of major redefinitions of the ditch following near complete silting rather than activity related to constant upkeep. All three ditches were observed to truncate the 'buried soil' deposit whilst a definite slumping of topsoil filled the upper part of final recut F225, demonstrating the change in topsoil thickness that revealed the continuation of the ditch as a visible cropmark in aerial surveys.

Boundaries:

A north-east to south-west aligned linear F226 within the centre of the area of excavation was thought to be Romano British through its alignment, morphology and similarity of fills with the Early Roman droveway boundary identified during the 2007 excavation (F28 in Ranson 2007). The respecting ditch was, however not present within the current excavation area and it potentially terminated between the two areas, suggesting that if the two ditches were contemporary they were probably not part of a droveway, but represented field or land divisions or boundaries instead. The compacted, silty clay accumulative fill of F226 was truncated by Post Roman ditches F 227 and F230 (*below*).

The terminal of a shallow ditch F220 extended towards the 2007 area of excavation, aligned in the same north-east to south-west alignment as the majority of Romano-British features. No material culture was recovered from the silty fills. F220 was not identified within the 2007 excavation although several short undated linear features of very similar morphology and fills were identified and may relate to agricultural use. F220 truncated the upper fills of the otherwise undatable pit F219 and was itself truncated by a potentially post-medieval gully, F221. The presence of the ditch, with its wetter fill attracted the roots of tree-bowl F222 which further distorted the identification of relationships between the features.

Medieval, Post-Medieval and Modern

No archaeology was excavated on site dating specifically to the Saxon or Medieval periods, although several features could be dated as Post-Medieval: The redefinition of Romano-British ditch F226. A deep, steeply sloping north-east to southwest aligned ditch F227, filled with gravely, silty clays and gravel slumps lay adjacent to two closely placed shallow gullies (F229 and F228) to the south-east. These features appear to represent a narrow boundary ditch with two hedge/ fence lines. A shallow, 2.7m wide depression F231 through the 'buried soil'/ subsoil deposit to the north-west of ditch F227 potentially represents a worn trackway adjacent to the boundary, which gradually filled with silty clay containing an intrusive flint (Billington below) before being truncated by the final ditch recut, F230: A steeply sloping north-east to southwest aligned ditch with silty clay fills and two modern (probably 19th century) ceramic drainpipes. A modern, wire drawn nail was associated with the pipe. A deposit of silty clay containing overlay all of the ditch recuts, suggesting that once it was finally backfilled it was again used as a trackway (1018) also contained postmedieval nails (Appleby below). Two potentially agricultural furrows were also identified, F223 and F221. F221 was a narrow, shallow, almost square-cut north-east to south-west aligned gully, truncated a possible Romano-British ditch terminus F220 and the upper fills of a prehistoric pit F219. Clearly truncating the' buried soil' deposit, F221 was filled with dark grey silty clay similar to topsoil and, like F232 was thought to represent the remnants of a deep furrow. An irregular, sub rounded depression of a tree-bowl truncated through F221, possibly very late in the development of the site.

Two parallel gullies F216 and F217 crossed the area of excavation in a north-east to south-west alignment and were 2.1m apart. Cutting the 'buried soil' subsoil and potentially truncating the lower ploughsoil horizon. No material culture was recovered from the sandy, clay fills and no similar features were identified within the 2007 excavation (Ranson 2007). Similarities between F216/ F217 and F229 /F228 forming a Post-Medieval ditch side hedge could not be discounted, although the absence of any associated ditches suggests a lesser boundary.

Undated

Three features could not be firmly dated, either by material culture or by association with otherwise datable features.

A small sub rounded pit or posthole F210 was located adjacent to the easternmost of the two narrow, parallel post-medieval gullies (F216, F217). A maximum of 0.81m in diameter and 0.13m in depth, F210 was filled with a charcoal rich silty clay with a single bone fragment, no indication of in-situ burning was found. No other postholes or similar sized pits were found within the area of excavation.

The north-eastern terminal of a north-east to south-west aligned ditch F213 was identified within the southern limit of excavation; sterile silty clay, accumulatively deposited fills was truncated on the north-western side by a wider ditch, F214 that crossed the excavation area, truncating the 'buried soil' deposit. Similar accumulative deposits were identified within F214 and it seems likely that the later ditch was a

redefinition and extension of first with a similar function. The north-east to southwest orientation of both F213 and F214 could suggest a Romano-British date, but with no material culture and as the ditches lay beyond the eastern limit of the 2007 excavation area any further indication of their extent could not be identified.

DISCUSSION

Prehistoric

Three potentially prehistoric features were identified within the current excavation area: A ditch terminal, seemingly a continuation of a ditch on a different alignment to later ditches identified within the 2007 excavation, suggests the presence of prehistoric field systems across a wider landscape. The absence of material culture and very low quantity of charcoal flecking is suggestive of settlement being some distance away. A large pit of Late-Bronze age to Early Iron Age date, with water-born fills possibly representing a well was the feature identified furthest south-east, nearest the gravel ridge, that was potentially later be utilised as a Romano-British road as well as ultimately becoming the route of the present A10. The gravel ridges of the fen edge have been seen as the focus of prehistoric settlement, often enclosures or field systems are complimented by wells (Yates 2007).

The third prehistoric feature was more difficult to provenance as no material culture was contained within it. The location of F219 corresponded well with the highest concentration of discrete features within the 2007 excavation area, to the south-east of the Romano-British Enclosure, and although there is a possibility that this sterile feature was itself Romano-British, the circular, bell-shaped profile and multiple fills of slumping silts and gravels suggested an Iron Age date. Iron Age activity has been identified along both the Cottenham to Landbeach pipeline (Hall 1999), the Histon to Waterbeach Cable (Dickens et al 2003), and the gravel terrace of the Great Ouse (Masser 2000).

Romano-British

Like the 2007 excavation immediately to the north-east, the predominant archaeology within the current area of investigation was Romano-British, most of the features were continuations of features previously identified. The two most prominent Romano-British features were continuations of the south-eastern side of the large rectilinear enclosure ditch and recuts (F223, F224 and F225), the primary cut, dated during the previous work as being potentially 'open during the 2nd century AD' (Ranson 2007 p9), whilst the first recut was dated to the late 1st to 2nd century and the second recut was dug in the 3rd century AD (*ibid* p9-10). The prominence of silty-clay deposits within the enclosure ditches was also noted during the 2007 excavation as was the probability of constant flooding and a higher water table during the middle to later Romano-British period. This can be seen from drainage ditches of this period elsewhere in the fens (Passmore and Macklin 1993) and it is tempting to associate the build up of water bourn deposits at the Waste Treatment site and the current investigation as indicative of a period of higher amounts of flooding and alluvial deposition (French 2003).

The continuation of the south-eastern side of the 2007 enclosure through the 2008 area of excavation, which demonstrated a very slight curvature to the south, corresponds well with the visible cropmarks crossing the field to the south and west, showing a definite change in alignment (Figure 2) and it may be that the earliest cut or cuts of the enclosure followed a smaller more rectilinear alignment prior to expansion and re-alignment with the later cuts. It is tempting to suggest that the newer alignment of the 2nd or 3rd centuries was in some way associated with the orientation of the Romano-British Temple complex to the north east. The temple itself is unlikely to have been constructed prior to the construction of Akeman Street in the late 2nd century (Taylor 1998, Margary 1955, Appleby *pers comm*.) with the expansion of Romano-British occupation into the Fens and was almost certainly abandoned by the 4th century (Watts 1998).

The second major Romano-British feature, again continuing on an alignment from the 2007 excavation was a single ditch, F226, relating to an early, potentially 2nd century ditch identified as one of several recutting linears forming the north-western side of a possible droveway. The absence of the respecting south-eastern 'droveway' ditch within the current excavation suggests that the north-western ditch was more likely to be a field boundary, although the early-mid Romano British date is unlikely to need revising. A visible cropmark, aligned with the boundary and the current A10 is seen as continuing from beyond the north-east limit of the 2007 excavation, also identified within previous evaluation trenches as a ditch before crossing the 2007 and current areas of excavation and extending south-west beyond the limit of excavation. A marked change in alignment to the south-south-west is shown from the cropmarks continuing into and beyond the next field. The cropmark of the south-eastern side of the enclosure to the north-west also alters alignment at this point, and it is likely that a change in boundary alignment took place at the same time as a change in alignment of the enclosure.

Medieval/ Post Medieval

The north-east to south west alignment of the majority of Romano-British features identified during the 2007 and current investigations was curiously reflected in the definitely post-medieval and modern field system represented by F227, F228, F229, F230 and F231 which truncated the potentially Romano-British boundary ditch F226 whilst following its course. The development of the Post Romano-British boundary was easily identified within the exposed section (Figure) and it seems very unlikely that the alignment was utilised continuously from Romano-British to relatively modern times; there was no evidence in the fills for a collapsed, eroded or decommissioned bank and the likelihood is that the abandoned (and probably forgotten) Romano-British ditch was still effectively draining the surrounding fields up until the medieval or post-medieval period when it was redefined and again became a major boundary ditch, emphasising a broken landscape continuity between the modern or at least post medieval topography and the Romano-British period.

CONCLUSIONS

The archaeology exposed and excavated within the current area of investigation confirmed the presence, if not the dates of, Romano-British occupation identified during previous archaeological evaluations and excavation in and around the Waste Management Park. These phases of investigation demonstrated that the site is part of Romano-British activity evident in cropmarks in the wider landscape to the west and south, and it could be proposed that the earliest Romano-British occupation predates the earliest phase of Akeman Street; possibly instead associated with the first construction of The Car Dyke. The construction of the road, allowing easier and more intense activities on the site significantly altered alignments of boundary/ enclosure ditches. The location of a temple within the later settlement acted as a focus and it is probably not a coincidence that the change in ditch alignments to the south of the 2008 excavated site runs on the same orientation as the temple and Akeman Street.

The limited prehistoric activity identified within the site also corresponds well with features identified during the earlier archaeological work in the area; probable field boundaries and a pit on the higher gravel ridge of the later Roman road complimenting the Bronze Age and Iron Age activities in and around Denny (Taylor 1998).

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BIBLIOGRAPHY

Alexander, J. and Pullinger, J. 1999. Roman Cambridge. Excavations on Castle Hill 1956-1988. Proceedings of the Cambridge Antiquarian Society. Vol. LXXXVIII

Allen, J. L. & Holt, A. 2002. Health and Safety in Field Archaeology, SCAUM

Appleby. G; Evans, C & Vickers, T. 2007. *The National Trust 'Wicken Vision' Area:* An Archaeological Desktop Assessment. CAU Report No. 759

Beadsmoore, E. 2007. Land at Waste Management Park, Waterbeach, Cambridge. Project Specification for Archaeological Excavation and Post Excavation Assessment. Unpublished CAU document

British Geological Survey. 1978. Cambridge Sheet 188, Solid and Drift Edition. Ordnance Survey

Boessneck, J., 1969. Osteological differences between sheep (*Ovis aries*) and goat (*Capra hircus*), in D. Brothwell and E. S. Higgs (eds.), *Science in Archaeology*, 2nd edition: 331-358. London: Thames and Hudson.

Browne, D.M. 1977. Roman Cambridgeshire. Cambridge: The Oleander Press

CBA. 1978. Archaeology in Britain Bulletin. York: Council for British Archaeology

Clark, J.G.D. 1947. Report on Excavations on the Cambridgeshire Car Dyke. *The Antiquities Journal* 29: 145-163.

Cohen, A., and Serjeantson, D., 1996. A manual for the identification of bird bones from archaeological sites, revised edition. London: Archetype Publications Ltd.

Connor, A. 1997. Late Neolithic, Bronze Age and Late Iron Age Occupation at Butt Lane, Milton: A Training Excavation. Archaeological Field Unit, Cambridgeshire County Council Report No. 135

Connor, A. 1999. Iron Age Settlement and Agriculture at Butt Lane, Milton: Training Excavation 1998. Archaeological Field Unit, Cambridgeshire County Council Report No. 157

Cooper, A & Whittaker, P. 2004. Integrated Waste Management Centre, Ely Road, Waterbeach. Archaeological Investigation. CAU Report No. 652

Dickens, A; Patten, R & Swaysland, C. 2003. *Histon to Waterbeach Cable, Cambridgeshire: An Archaeological Watching Brief and Evaluation*. Unpublished CAU Report

Diez, V. 2005. Cambridge Rowing Lake, The Storage Lake, Milton, Landbeach and Waterbeach, Cambridgeshire: Archaeological Evaluation Report. Oxford Archaeology Report, Issue No. 1.

Dobney, K., and Reilly, K., 1988. A method for recording archaeological animal bones: the use of diagnostic zones, *Circaea* **5** (2): 79-96.

French, C 2003 Geoarchaeology in Action; Studies in Micromorphology and Landscape Evolution. Routledge.

Gibson, D. 1999. The proposed integrated Waste Management Centre, Ely Road, Waterbeach, Cambridgeshire. A Desktop Study. CAU Report No. 307

Grant, A., 1982. The use of tooth wear as a guide to the age of domestic animals, in B. Wilson, C. Grigson and S. Payne, (eds.), *Ageing and sexing animal bones from archaeological sites*. Oxford: Brit. Archaeol. Rep. Brit. Ser. 109: 91-108.

Hall, D. 1996. *The Fenland Project, No.10: Cambridgeshire Survey, isle of Ely and Wisbech.* East Anglican Archaeology 79. Cambridge: Cambridgeshire Archaeological Committee with The Fenland Project Committee and The Scole Archaeological Committee.

Hall, C. 1999. Archaeological Investigations of the Anglia Water Cottenham-Landbeach Sewage Pumping Main, Cambridgeshire. CAU Report No. 345 Jackson, R. P & Pottery T. W 1996. Excavations at Stonea, Cambridgeshire 1980-85. London

Halstead, P., Collins, P., &, Isaakidou. V. 2002. Sorting the sheep from the goats: morphological distinctions between the mandibles and mandibular teeth of adult *ovis* and *capra*, *J. Archaeol. Sci.* 29, 545-533.

Macaulay, S. 1997. Akeman Street Roman Road and Romano-British Settlement at Landbeach, Car Dyke Farm. Archaeological Field Unit, Cambridgeshire County Council Report No. 141

Malim, T. 2005. Stonea and the Roman Fens. Stroud, Gloucestershire: Tempus.

Margary, ID 1955. Roman Roads in Britain. Vol 1. Pheonix.

Masser, P. 2000. The Cambridge Centre for Recycling, Ely Road, Waterbeach: Archaeological Evaluation of Gravel's Field, The Undertakers, Webster's Field and The IWM Park. CAU Report No. 403

Oswald, A. 1992. Archaeological Investigations at Gravel Diggers Farm, The Lots, Cottenham. CAU Report No. 49

Passmore, D and Macklin M 1993 Geochemical Analysis of Fine Grained Late Holocene Alluvial Deposits at Barnack Quarry, Cambridgeshire. Cambridgeshire County Council Archaeological Field Unit, unpublished report.

Payne, S, 1985. Morphological distinction between the mandibular teeth of young sheep *Ovis* and goats *Capra, J. Archaeol. Sci.* 12: 139-147.

Ranson, C 2007. The Waste Management Park, Waterbeach, Cambridge: An Archaeological Excavation. CAU Report No. 835

Ravensdale, J.R. 1974. Liable to Floods. Cambridge: Cambridge University Press

Schmid, E., 1972. Atlas of animal bones. Amstrdam: Elsevier.

Silver I. A., 1969. The ageing of domestic animals, in D. Brothwell and E. Higgs E. S. (eds.), *Science in archaeology*, 2nd edition: 283-301. London: Thames and Hudson.

Spence, C. 1990. Archaeological Site Manual. Museum of London Archaeology Service. London

Taylor, A. 1980. Notes. In PCAS 70

Taylor, A 1998. Archaeology of Cambridgeshire. Vol.2: South Cambridgeshire and the Fen Edge. Cambridgeshire County Council.

Timby, J; Brown, R; Biddulph, E; Hardy, A & Powell, A. 2007. A Slice of Rural Essex – Archaeological discoveries from the A120 between Stansted Airport and Braintree. Oxford: Oxford Wessex Archaeology

Thorpe, R & Zeffertt; T. 1989. Excavation of the Lincolnshire Car Dyke, Baston. *Fieldwork and Excavation in the Fens of Eastern England 1988-1989. Fenland Research No. 6.* The Fenland Project: Trust for Lincolnshire Archaeology and Norfolk Archaeological Unit

von den Driesch, A., 1976. A guide to the measurement of animal bones from archaeological sites, *Peabody Museum Bulletin* 1. Cambridge Mass., Harvard University.

Wait, G. 1992. Archaeological Investigations at Gravel Diggers Farm, The Lots, Cottenham. CAU Report No. 64

Wilkes, J.J. & Elrington, C.R. 1978 *The Victoria County History of Cambridgeshire and the Isle of Ely.* Volume 7. Oxford University Press, 44, 67-68

Watts, D 1998 Religion in the Late Roman Britain. London.

Whittaker, P. 1997. *Excavations at Bannold Lodge, Chittering, Cambridgeshire*. CAU Report No. 226

Yates DT 2007. Land Power and Prestige: Bronze Age Field Systems in Southern England. Oxford.

APPENDICES:

Prehistoric Pottery Mark Knight

F.211 - A single small crumb of prehistoric pottery weighing 2g came from context [956]. Its fabric was medium hard with occasional sand and small platelet voids. The voids gave the piece a corky appearance. Although very small the sherd appeared to be part of a base angle belonging to a relatively thin-walled vessel. The combination of fabric and wall thickness suggests that the sherd is later Bronze Age.

Metalwork Graeme Appleby

Four pieces of metalwork, one copper alloy sheet and three nails, were recovered from archaeological features. None of the pieces are diagnostic and one nail is modern.

F224. [994]. Corroded fragment of copper alloy sheet with a brown-green patina. One side may represent a rolled, decorative edge, but insufficient metal survives to confirm this interpretation. Weighing less than 1g, and with a maximum length of 20mm, the thinness of the sheet (less than 0.5mm) suggests this may have been from larger decorative sheet. Recovered from a feature with associated Roman pottery.

F250. [1012]. Bent and corroded iron nail approximately 10cm long. Possessing a round flat head this is of modern manufacture, made from a piece of drawn wire.

[1018], Two bent and corroded iron nails with tapering flat head characteristic of hand-made nails, each weighing 8g and 12g and respectively measuring c. 7cm and 9cm long. Prior to mass-factory production of nails using drawn wire, iron nails were hand-made with the basic form represented by these two examples spanning the later Iron Age to mid 19th century.

Flint *Laurence Billington*

A single unburnt flint was recovered from the excavations. Within Feature No. 211, a pit [956] a broken secondary flake with neat abrupt retouch on the distal end, perhaps to create a scraper edge. Although not strictly diagnostic the fine retouch and regular morphology of the piece suggests a Neolithic or Early Bronze Age date.

Faunal Remains: Krish Seetah

Introduction

This report outlines the results following analysis of the faunal remains from the Ely Road, Waterbeach, Cambridgeshire, excavations undertaken by the Cambridge Archaeological Unit. The assemblage as a whole totalled some 18 assessable fragments; the majority of the assemblage was identifiable to element and species group (11 fragments or 61%) and nine (50%) further identified to species.

Method

The zooarchaeological investigation followed the system implemented by Bournemouth University with all identifiable elements recorded (NISP: Number of Identifiable Specimens) and diagnostic zoning (amended from Dobney & Reilly 1988) used to calculate MNE (Minimum Number of Elements) from which MNI (Minimum Number of Individuals) was derived. Aging of the assemblage employed a combination of Grant's (1982) tooth wear stages and fusion of proximal and distal epiphyses (Silver 1969). Metrical analysis followed von den Driesch (1976). Elements from sheep and goats were distinguished, where possible, based on criteria established for the post-cranial skeleton by Boessneck (1969) and teeth by Payne (1985) and Halstead *et al* (2002). Identification of the assemblage was undertaken with the aid of Schmid (1972), Serjeantsen & Cohen (1996) and reference material from the Cambridge Archaeological Unit, the Grahame Clark Zooarchaeology Lab, Dept. of Archaeology, Cambridge and the Zoology Museum, Cambridge. Taphonomic criteria including indications of butchery, pathology, gnawing activity and surface modifications as a result of weathering were also recorded when evident.

Results

Condition of the assemblage: preservation & fragmentation

The assemblage was hand collected and overall exhibited moderate to good preservation. Of seven separate contexts studied for this site three where 'Poor' indicating that extensive weathering, bone surface exfoliation and other erosive damage had occurred to the bone. In contrast, four contexts showed 'Moderate' to 'Good' levels of preservation. The actual overall state of preservation is best illustrated when we observe the specific numbers of fragments that these figures correspond to: just three bones (16%) showed a level of preservation that was poor, compared to 15 (84%) bones that were moderate to good. Erosion, concretions and weathering, combined with post-depostional fragmentation, affected 61% of the bone (11 elements).

Species representation

Only domestic species were represented on this site (refer to Table I). In terms of fragment counts cattle and horse were the most abundant species with each accounting for 44% (four bones) of the overall identifiable component of this assemblage. Ovicaprids were also present, albeit in very small numbers, comprising 11 % (one bone) of the identified bone. The MNI (Minimum Number of Individuals)

for these species is arguably more representative with each species registering a count of one individual animal only.

	ERW08		
SPECIES	NISP	%NISP	MNI
Cow	4	44	1
Ovicaprid	1	11	1
Horse	4	44	1
ULM	2	$18(\Sigma = 11)$	-
UUM	7	39 (Σ=18)	-

Table I: NISP and MNI counts for all sites and all species

Key: UMM & ULM = Unid. Medium and Large Mammal / UUM = Unid. Fragment. NB: Species percentages are out of 9. These differ from the unidentified counts as these are calculated on the basis of element identification (for UMM & ULM) and total fragments (for UUM) (corresponding to Σ in brackets).

Discussion

Little can be inferred from an assemblage of this size. An interesting feature is that only forelimb elements were recorded for cattle, and only hind limb for horse. Unfortunately, one cannot rule out sample size bias for this occurrence and it is therefore unnecessary to over-interpret these findings.

Also of interest is the only ovicaprid elements recovered: a tibia. This bone was probably from a goat rather than a sheep. It would seem that the site was not suitable for sheep husbandry, favouring cattle instead. Again, we must *caveat* the sample size when making these inferences.

Future work should resolve the aging and kill profile for a more complete picture of animal exploitation on the site. Furthermore, a dataset of measured elements would also be beneficial, particularly as a mechanism for differentiating more accurately between sheep and goat.

Feature Descriptions

F210, Small Pit. Cut [**951**], sub-circular; 0.81m E-W, 0.47m N-S. Moderately steeply sloping sides to a slightly concaved base, maximum 0.13m in depth. Fill [**950**] dark grey-brown moderately compacted sandy silt with frequent charcoal mottling and occasional burned flint/ stones (maximum 30mm) and small quantity disarticulated animal bone. High concentration of bioturbidity associated with nearby rabbit burrows, Unknown date.

F211, Large Pit. Cut [**953**] Sub circular, 2.3m E-W, 2m N-S. Moderate to steep, slightly concaved sides leading to gradually concaved base, maximum depth of 0.64m. Slumping basal fills [**956**], [**957**]; mid to light grey-brown moderately compacted silty sand with high concentrations loose angular and sub-angular gravels. Small fragments pottery and bone. Secondary fill [**955**] mid to light grey-brown, moderately compacted silty, sandy clay with occasional charcoal flecking and occasional water rolled gravel inclusions. Upper fill [**954**]; light grey-brown, moderately compacted silty, sandy clay, Infrequent darker brown mottling and very occasional charcoal flecking indicative of accumulative, water borne deposits. Late Bronze Age- Early Iron Age.

F212, Recut of F211; Large Pit. Cut [**958**], circular, 1.4m diameter. Steeply sloping, generally straight sides leading to narrow, concaved base, maximum 0.76m in depth. Basal fill [**959**] mid grey brown, moderately compacted silty clay, occasional rounded and sub-rounded gravels with very infrequent charcoal flecking. Secondary fill [**960**] mid grey-brown, moderately compacted silty clay containing infrequent angular and sub-angular gravels, infrequent charcoal and orangey-brown clay mottling throughout, indicative of accumulative deposition. Upper fill [**961**], light brown-grey, firmly compacted sandy clay. Occasional gravels and orange mottling throughout. Single fragment potentially RB ceramic, possibly intrusive.

F213, Ditch Terminal. Alignment SW-NE. Cut [962] Linear, 0.65m width, rounded terminal. Steep, almost vertical sides leading to almost flat, slightly concaved base. Terminal steeply sloping, slightly concaved sides. Basal fill [963] mid to light grey, moderately compacted silty clay with frequent angular and sub-angular gravels and occasional charcoal flecking. Secondary fill [964]; mid to light grey-brown firmly compacted sandy clay. Infrequent charcoal flecking and occasional light orangey-brown clay mottling indicative of accumulative deposition. Upper fill, [965] mid to light grey-brown, firmly compacted sandy clay with very infrequent charcoal flecking. Single fragment animal bone. Unknown date

F214, Ditch. Alignment SW-NE, truncates/ recuts F213. Cut [**962**], 1.98m in width, moderately steep sides leading to generally flat, slightly concaved base; maximum depth 0.38m. Basal fill [**967**], mid to light grey, moderately to loosely compacted silty clay with high concentrations angular and sub-angular gravels and very occasional charcoal flecking. Secondary fill [**968**] mid grey-brown, firmly compacted sandy clay. Infrequent charcoal flecking with frequent orangey-brown clay mottling suggestive of accumulative deposition. Upper fill [**969**], mid to light grey, firmly compacted silty clay containing moderate to high concentrations angular and sub-angular gravels. Unknown date.

F215, Ditch Terminal. Alignment NW-SE. Cut [**972**] rounded in plan, moderately steeply sloping slightly concaved sides, maximum 1.02m wide to flat base maximum 0.22m depth. Fill [**971**] light grey moderate to firmly compacted silty clay. Prehistoric.

F216: Gully. Alignment N-S. Truncated subsoil. Cut [**973**] narrow linear with steeply sloping slightly concaved sides, maximum 0.53m in width leading to concaved base maximum depth of 0.25m. Fill [**972**] light grey compacted sandy silt with frequent orangey clay mottling and iron pan flecks. Associated with F217. Post Medieval date.

F217, Gully. Alignment N-S. Truncated subsoil. Cut [**975**] narrow linear with steeply sloping, generally straight sides, maximum 0.41m width leading to concaved base, 0.2m depth. Fill [**974**], light grey compacted sandy silt with infrequent charcoal and calcinous flecking. Associated with F216, Post Medieval date.

F218, Posthole. Cut [**997**] circular in plan, steeply sloping, generally straight sides, maximum 0.4m diameter, leading to concave base maximum 0.13m in depth. Fill [**976**] light grey moderately compacted sandy silty clay, with occasional orangey clay mottling and charcoal flecking. Associated with Gullies F216 and F217, Post Medieval date.

F219, Pit. Truncated by ditch F220, gully F221 and treethrow F222. Cut [**978**] circular in plan, 0.9m diameter, straight, almost vertical sides with slight undercutting towards base. Flat base maximum of 0.58m in depth. Basal fill [**979**] mid to light grey, loosely compacted silty sand with high quantities angular and sub angular gravels. Secondary fill [**980**], mid to light orangey brown moderately compacted sandy silt containing frequent gravely lenses with occasional charcoal. Third fill [**981**] mid brown firmly compacted sandy clay with occasional gravely tip lines. Upper fill [**982**] mid to dark brown-grey moderately compacted silty-sandy-clay largely disturbed from treethrow above. Prehistoric.

F220, Ditch Terminal, alignment N-S. Truncated by Gully F221 and treethrow F222. Cut **[983]** rounded terminus with moderately steeply sloping, generally straight sides, maximum 0.6m in width leading to flat base maximum 0.26m in depth. Basal fill **[984]** mid grey brown, loosely compacted silty-clay with occasional angular and sub angular gravels and charcoal flecking throughout. Upper fill **[985]** mid to light grey, firmly compacted, silty clay containing infrequent charcoal flecking and occasional gravels. Possibly Romano-British.

F221, Gully, alignment N-S. Truncated by treethrow F222. Cut [**987**] Steep to vertical sides, maximum of 0.44m width leading to generally flat, irregular base 0.36m in depth. Fill [**987**] dark grey brown, moderately compacted silty clay with infrequent gravels and occasional charcoal flecking. Modern..

F222. Treethrow. Irregular sub-circular depression, truncating Pit F219, Ditch terminus F983 and Gully F221. Maximum diameter 2.3m, maximum depth 0.46m. No material culture. Potentially Modern.

F223, Ditch, alignment N-S, slight curvature to east, cut by recuts F224 and F225. Cut **[988]** moderately steeply sloping straight sides maximum 3.9m width leading to generally flat slightly concaved base maximum 1.1m in depth. Basal fill **[989]** mid to light orangey brown, loosely compacted sandy, gravely silt. Secondary fill **[990]**, mid to dark blue-grey firmly compacted silty clay. Moderate quantities of angular and sub-angular stones (max 0.1m) throughout becoming more at base. Romano-British date.

F224, Recut of Ditch F223, alignment N-S, slight curvature to east, truncates F223, truncated by F225. Cut [**992**] moderately steeply sloping straight sides, becoming steeper towards base, maximum width 4.3m, depth 0.95m. Basal deposit [**993**] mid to dark blue grey, compacted silty clay with frequent angular and sub angular gravels throughout, becoming more towards base. Secondary fill [**994**] mid to dark brown, firmly compacted humic silty sand with frequent banding, and light grey clay mottling. Romano British date.

F225, Second recut of Ditch F223, alignment N-S with slight curvature to east. Truncated F223 and F224. Cut [**995**] gradually sloping slightly concaved sides becoming steep towards base, maximum 3.4m in width. Moderately concaved base maximum 0.8m in depth. Basal fill [**996**] Thin lens of loosely compacted mid to light orangey brown angular and sub angular gravels. Secondary fill [**997**] thin lens of dark grey, firmly compacted silty clay with frequent charcoal and occasional angular and sub angular inclusions. Third fill [**998**] mid to light grey, moderately compacted silty clay with occasional charcoal flecking. Fourth fill [**999**] mid grey brown, moderately compacted silty clay. Generally homogenous with frequent orangey brown clay mottling throughout. Upper fill [**1000**] dark orangey grey, moderately compacted sandy clay with orangey clay mottling throughout. Romano-British date.

F226, Ditch, alignment N-S. Truncated by ditches F227 and F230. Cut [1002]

Sides truncated, flat base maximum 0.4m. Fill [1001], dark grey firmly compacted silty-clay with occasional angular and sub angular gravels and charcoal throughout, more frequent to base. Possibly Romano-British.

F227, Gully, alignment N-S. Sealed by subsoil [1018] and cut by boundary ditch F230. Cut [1006] steeply sloping, generally straight sides, maximum 1.01m width to a flat base a maximum depth of depth of 0.5m. Basal fill [1003], mid grey-brown loosely compacted gravely silt with frequent iron panning throughout. Secondary fill [1004] light orangey-brown loosely compacted sandy gravely clay. Upper fill [1005] light grey-brown loosely compacted sandy silt, infrequent angular and sub angular gravels and occasional large angular stones. Medieval/ Post-Medieval field boundary associated with gullies F229 and F228.

F228, Gully, alignment N-S, sealed by subsoil [1018]. Cut [**1008**], gradual sloping slightly concaved sides a maximum 0.63m width leading to concave base 0.2m maximum depth. Fill [**1007**] mid greybrown loosely compacted sandy-silt with infrequent angular and sub-angular gravels, charcoal and iron pan inclusions. Medieval/Post Medieval associated with ditch F227 and gully F229.

F229, Gully, alignment N-S, truncating subsoil, Cut [**1010**] steeply sloping generally straight sides, 0.65m in maximum width leading to narrow, concaved base, maximum 0.44m depth. Fill [**1009**] mid grey brown, moderately compacted sandy, gravely silt with occasional charcoal and iron pan flecking. Medieval/ post medieval field boundary associated with F228 and ditch F227.

F230, Ditch. Alignment N-S, Truncates Trackway F231 and ditches F227 and F226. Cut [**1013**] steeply sloping generally straight sides, width 1.41m, leading to moderately concaved base, maximum depth 0.68m. Thick basal fill [1009] mid grey-brown loosely compacted, sandy, gravely silt. Two ceramic drains marking upper contextual boundary. Upper fill [**1012**] mid grey firmly compacted silty clay. Sealed by subsoil [1017] and [1018]. Post medieval field boundary/ drain.

F231 Linear depression. Alignment N-S. Truncated by F230 and F232. Filled with subsoil [1017]. Cut [**1014**] Gradually sloping sides leading to irregular, possibly rutted base. Represents Medieval/ Post medieval track adjacent to field boundary F227.

F232, Gully. Alignment N-S. Truncates Subsoil [1017]/[1018]. Cut [1016] gradually sloping slightly concaved sides leading to generally flat, slightly concaved base. Fill [1015] dark grey, moderately compacted silty-clay with infrequent angular and sub angular gravels. No material culture. Post-medieval.