EAST ANGLIAN ARCHAEOLOGY

Farmers and Ironsmiths: Prehistoric, Roman and Anglo-Saxon Settlement beside Brandon Road, Thetford, Norfolk

by Rob Atkins and Aileen Connor

with contributions from
Ian L. Baxter, Barry John Bishop, Mark Blackburn, Paul Blinkhorn, Hilary Cool, Steve Critchley, Nina Crummy, Corinne Duhig, Tom Eley, Carole Fletcher, Rachel Fosberry, Val Fryer, Tony Gregory, Alice Lyons, Gerry McDonnell, Paul Middleton, Ian Riddler, Andrew Rogerson, Rebecca Rosenthal, Samantha Rubinson, Alan Vince, Philip Wise and J.J. Wymer

illustrations by
Séverine Bézie, Jon Cane, Sue Holden, Emily Oakes, Jo Richards and Carlos Silva

East Anglian Archaeology
Report No. 134, 2010

Oxford Archaeology East

EAST ANGLIAN ARCHAEOLOGY
REPORT NO.134

Published by
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cambridgeshire CB23 8SQ

in conjunction with
ALGAO East
www.algao.org.uk/cttees/regions

Editor: Brian Ayers
Managing Editor: Jenny Glazebrook

Set in Times New Roman by Sue Anderson using Corel Ventura™
Printed by Henry Ling Ltd, The Dorset Press

ISBN 978 1 907588 00 6

Published with the aid of a grant from Abbey Developments Ltd

East Anglian Archaeology was established in 1975 by the Scole Committee for Archaeology in East Anglia. The scope of the series expanded to include all six eastern counties and responsibility for publication was transferred in 2002 to the Association of Local Government Archaeological Officers, East of England (ALGAO East).

For details of *East Anglian Archaeology*, see last page

Cover illustration
Reconstruction of the site during the Early Saxon period *(by Jon Cane)*

Contents

List of Plates

List of Figures

List of Tables

Abbreviations

CAM ARC	Cambridgeshire County Council's Archaeological Field Unit (now Oxford Archaeology East)
CK	Carson, R.A.G. and Kent, J.P.C. 'Part 2: bronze Roman imperial coinage of the Later Empire AD 346–498' in Carson, Hill and Kent 1972, 41–113
HER	Historic Environment Record
HK	Hill, P.V. and Kent, J.P.C. 'Part 1: the bronze coinage of the House of Constantine AD 324–346' in Carson, Hill and Kent 1972, 4–40
LMMC	Ward Perkins (1940)
Peck	Peck (1970)
RIC	*Roman Imperial Coinage*
SFB	Sunken-featured building

Contributors

Rob Atkins BSocSc DipArch
Project Officer, Oxford Archaeology East

Ian L. Baxter BA MIFA
Freelance animal bone specialist

Séverine Bézie MA
Illustrator, Oxford Archaeology East

Barry John Bishop BA MA
Freelance lithic specialist

Mark Blackburn MA PhD FSA
Keeper of Coins and Medals, Fitzwilliam Museum, Cambridge

Paul Blinkhorn BTech
Freelance Saxon pottery specialist

Jon Cane
Freelance illustrator

Hilary Cool BA PhD
Freelance glass specialist

Aileen Connor BA AIFA
Project Manager, Oxford Archaeology East

Steve Critchley BSc MSc
Freelance geological specialist

Nina Crummy BA
Freelance small finds specialist

Corinne Duhig BA MA PhD MIFA
Anglia Polytechnic University and Wolfson College, Cambridge

Tom Eley BA MSc
Formerly Site Assistant, CAM ARC

Carole Fletcher BA
Finds Supervisor, Oxford Archaeology East

Rachel Fosberry
Environmental Supervisor, Oxford Archaeology East

Val Fryer BA FSA Scot MIFA
Freelance environmental specialist

The late Tony Gregory MA FSA MIFA
Formerly Head of Research, Heritage Projects, Norfolk Archaeological Unit

Sue Holden
Freelance illustrator

Alice Lyons BA MIFA
Project Officer, Oxford Archaeology East

Gerry McDonnell BTech PhD
Senior Lecturer, University of Bradford

Paul Middleton BA PhD
Lecturer in Archaeology, Peterborough Regional College

Emily Oakes
Formerly illustrator CAM ARC

Jo Richards
Freelance illustrator

Ian Riddler BA
Freelance small find specialist

Andrew Rogerson BA PhD FSA MIFA
Norfolk Landscape Archaeology

Rebecca Rosenthal BSc PhD
Researcher, University of Bradford

Samantha Rubinson BSc MSc
Researcher, University of Bradford

Carlos Silva
Formerly illustrator, CAM ARC

The late Alan Vince BA PhD MIFA
Formerly freelance pottery specialist

Philip J Wise MA AMA MIFA FRNS
Heritage Manager, Colchester and Ipswich Museum Service

The late J J Wymer MA DSc FSA FBA MIFA
Formerly Field Officer, Norfolk Archaeological Unit

Acknowledgements

Cambridgeshire County Council's Archaeological Field Unit — CAM ARC (now Oxford Archaeology East) — is grateful to Abbey Developments Ltd for funding the excavations. Gary Clarke (Contracts Manager) and Ian Mortimer (Construction Director) of Abbey Developments were particularly helpful in organising the various stages of work. Helpful advice was given by Andy Hutcheson, who monitored the excavation on behalf of Norfolk Landscape Archaeology. Alice Cattermole of Norfolk HER kindly supplied relevant data. Oxford Archaeology and Andy Mudd gave permission to use Fig. 3 which is based on fig. 2 of the Melford Meadows report (Mudd 2002).

The excavation was managed by Mark Hinman, while Aileen Connor managed the post-excavation phase. Rob Atkins directed the fieldwork with a team consisting of Abby Antrobus, Tony Baker, Glenn Bailey, Celine Beauchamp, Emily Betts, Spencer Cooper, Nick Fitch, Adam Howard, Claire Jacklin, Jeni Keen, Neville Hall, David Leigh, Jane Matthews, Chris Montague, Alison Morgan, Simon Pickstone, Stephen Wadeson and Sam Whitehead. Several people kindly volunteered their time, in particular David Browne and David Whiter (who spent many weeks on site), as well as Sarah Billam, Hede Boland and Keith Matthews. Three metal detectorists made a significant contribution to the understanding of the site through the recovery of a substantial quantity of metal objects and slag. In particular Steve Critchley and Ken Hall were unstinting in their efforts and Brian Fisher assisted on several occasions. The machining was carried out by LOC. Their drivers (Nick Richardson, Dave Hawes and Carl Chapman) showed considerable skill in achieving whatever was asked of them and thereby made subsequent excavation by hand much easier.

Thanks are also due to NAU Archaeology for kindly supplying all the 1990 evaluation data. Particular thanks are extended to Andrew Rogerson at Norfolk Landscape Archaeology who reported on the 1988 Thetford Bypass work and provided supplementary information.

Warm thanks are extended to each of the contributing specialists. Metalwork was conserved by Celia Honeycombe of Cambridgeshire County Council. X-radiographs of metal objects were undertaken by Colchester Museums Conservation Service. Carole Fletcher and Alison Morgan

assisted in the assessment of the artefacts, while Charles Rowland-Jones processed the photographs.

Ian Baxter would like to thank Sheila Hamilton-Dyer for identifying the pike vertebra. Paul Middleton would like thanks to be recorded to Richard Baker and Ruth Davies for their invaluable assistance in analysing the phosphate samples. Dr Corinne Duhig would like to thank Halina Szutowicz of Addenbrookes Hospital who kindly undertook the radiography of the burial.

Finally, the authors would also like to extend their thanks to Elizabeth Shepherd Popescu for in-house editing and pre-publication preparation of this report and to Jenny Glazebrook for guiding it expertly through the publication process.

Summary

Excavation of an area of land (1.4ha) close to Brandon Road at Thetford in Norfolk was conducted between June and September 2002 by CAM ARC (now Oxford Archaeology East). Important evidence for occupation spanning the late 1st century (Early Roman) to the 9th century (Middle Saxon) was found, with traces of earlier land use.

The initial phase of a Roman farmstead consisted of fragmentary evidence for a ditched field system and livestock enclosures, the field layout being altered throughout the Roman period. Stock enclosures, barns, trackways, wells and rubbish dumps were also evident, with shifts in focus over time being suggested by changes in alignment. Environmental and artefactual evidence point to a predominantly pastoral economy. Both pottery and metalwork imply probable continuity of settlement at the site from the Roman to the Anglo-Saxon periods.

Early Saxon activity of the 5th to ?early 6th centuries is attested by seven sunken-featured buildings, a possible hall, ovens, pits and a contracted (or 'crouched') burial. Most of the buildings were deliberately set around a rectangular space, perhaps representing an extended family grouping within a much larger settlement. After a possible hiatus, the site was again used in the Middle Saxon period. The field boundary ditches were replaced by a large enclosure containing a post-hole building and another oven complex. Metalwork and associated debris in the backfill of an earlier sunken-featured building and nearby pit attests to ferrous working, possibly including steel production, and the gathering of scrap metal for recycling. The site evidently formed part of a Middle Saxon settlement such as a large village, engaged in craft activities and perhaps providing a local market: its eventual abandonment was probably a result of the defeat of King Edmund at Thetford in 869 and subsequent changes to the settlement under Danish occupancy.

Résumé

Des fouilles portant sur une superficie de 1,4 ha furent menées en 2002 par l'équipe du CAM ARC (qui porte désormais le nom d'Oxford Archaeology East). A cette occasion, on a découvert les preuves importantes d'une occupation qui s'étendait de la fin du premier siècle (début de la période romaine) jusqu'au neuvième siècle (période saxonne moyenne), avec les traces d'une utilisation antérieure de la terre.

La ferme romaine découverte se composait dans sa phase initiale des traces fragmentaires d'un système de champs entourés de fossés et d'enclos pour le bétail, l'agencement des champs ayant connu des transformations au cours de la période romaine. Les enclos réservés au bétail, les granges, les chaussées, les puits et les amas de déchets étaient également manifestes, des changements de destination étant intervenus au fil du temps comme le suggèrent les modifications dans l'alignement. Les preuves environnementales et artéfactuelles indiquent la présence d'une économie essentiellement pastorale. La poterie ainsi que le travail des métaux impliquent une certaine permanence de l'implantation sur le site depuis la période romaine jusqu'à la période anglo-saxonne.

Les activités du début de la période saxonne comprise entre le cinquième et probablement le commencement du sixième siècle, sont attestées par sept bâtiments à soubassements, un bâtiment qui était sans doute une halle, des fours, des fosses et une sépulture avec un corps déposé en position recroquevillée (ou fœtale). La plupart des bâtiments furent intentionnellement disposés autour d'un espace rectangulaire, qui représentait peut-être un groupement familial au sein d'une implantation beaucoup plus large. Après une possible interruption, le site fut à nouveau utilisé pendant la période saxonne moyenne. Les fosses qui marquaient la limite des champs furent remplacées par une grande enceinte contenant un bâtiment avec des trous de poteaux et un autre ensemble de fours. Le travail des métaux, la présence des débris de même nature dans le remblaiement d'un bâtiment plus ancien ainsi que la fosse voisine attestent l'existence d'un travail du fer qui pourrait inclure la production d'acier et le rassemblement de ferraille destinée au recyclage. Le site s'intégrait de façon évidente à une implantation de la période saxonne moyenne, qui pouvait prendre la forme d'un grand village exerçant des activités artisanales et accueillant un marché local. Son abandon final fut probablement lié à la défaite du roi Edmund à Thetford en 869 et aux modifications consécutives qui touchèrent l'implantation sous l'occupation danoise.

(Traduction: Didier Don)

Zusammenfassung

Im Jahr 2002 führte CAM ARC (nunmehr Oxford Archaeology East) eine Ausgrabung auf einer Fläche von 1,4 Hektar durch. Dabei kamen wichtige Siedlungsbefunde aus der Zeit vom ausgehenden 1. Jahrhundert (frührömisch) bis zum 9. Jahrhundert (Mitte der angelsächsischen Zeit) zutage. Ferner wurden Spuren einer davorliegenden Bodennutzung entdeckt.

Die Anfangsphase einer römischen Hofstelle ist durch Fragmente eines durch Gräben gekennzeichneten Feldsystems und Vieheinhegungen belegt, wobei die Anordnung der Felder während der Römerzeit immer wieder umgestaltet wurde. Ferner fanden sich Hinweise auf Scheunen, Wege, Brunnen und Abfallgruben, wobei Änderungen in deren Ausrichtung auf Schwerpunktverlagerungen im Lauf der Zeit hindeuten. Die Umweltbefunde weisen ebenso wie die Fundgegenstände vornehmlich auf Weidewirtschaft hin. Die gefundenen Ton- und Metallgegenstände lassen auf eine kontinuierliche Besiedlung von der Römerzeit bis in die Zeit der Angelsachsen schließen.

Eine frühe angelsächsische Nutzung im 5. und frühen 6. Jahrhundert ist durch sieben Grubenhäuser, ein mögliches Hallenhaus, Öfen, Gruben und eine Hockerbestattung belegt. Die meisten Gebäude waren um einen viereckigen Platz herum angeordnet – vielleicht ein Hinweis auf eine Großfamilie innerhalb einer größeren Siedlung. Nach einer möglichen Unterbrechung wurde die Stätte in der Mitte der angelsächsischen Zeit erneut genutzt. Die Begrenzungsgräben wurden durch eine große Einhegung ersetzt, in der sich ein Pfostenbau und ein weiterer Ofenkomplex befanden. Metallteile und damit einhergehende Abfälle in der Verfüllung eines älteren Gebäudes und einer nahe gelegenen Grube deuten auf Eisenbearbeitung, möglicherweise im Verbund mit der Produktion von Stahl, und die Sammlung von Metallschrott zur Wiederverarbeitung hin. Die Stätte war in der Mitte der angelsächsischen Zeit offenbar Teil einer Siedlung, etwa eines großen Dorfes, das Handwerkstätigkeiten nachging und vielleicht einen Markt in der Umgebung belieferte. Die Aufgabe der Siedlung stand womöglich mit der Niederlage von König Edmund im Jahr 869 bei Thetford und den darauffolgenden Siedlungsumwälzungen zur Zeit der dänischen Besatzung in Zusammenhang.

(Übersetzung: Gerlinde Krug)

Chapter 1. Introduction

I. General Background

In 2002 Cambridgeshire County Council's CAM ARC (now Oxford Archaeology East) undertook excavations at Brandon Road, Thetford (NGR TL 855 832). The project was carried out as a condition of planning consent (3/98/0083) issued by Breckland District Council and was commissioned by Abbey Developments Ltd in advance of a residential development. The work was conducted in accordance with a Norfolk Landscape Archaeology (NLA) design brief (Gurney 2000) and a CAM ARC specification (Connor 2002). The eastern half of the site was evaluated by the Norfolk Archaeological Unit in 1990 (Longman 1990).

II. Geology and Topography

(Fig. 1)

Thetford lies within Breckland, an area characterised by huge tracts of dry open heathland developed under a semi-continental climate. The word 'breck' was used to describe temporary fields, which were separated from the heath and allowed to revert once the soil was exhausted. Historically this was an open, steppe-like landscape populated by sheep and rabbits. Modern Breckland has an average annual precipitation of only 600mm, with relatively hot summers and cold winters. Frosts can occur at any time of year. Breckland soils are highly variable: the underlying chalk is largely covered with wind-blown sands resulting in mosaics of heather-dominated heathland, acidic grassland and calcareous grassland that are unique. In many places there is a linear or patterned distribution of heath and grassland, arising from fossilised soil patterns that formed under periglacial conditions (Countryside Agency 2007, 69–74).

The excavation was located 2.4km west of Thetford town centre and adjacent to the north side of Brandon Road, between *c.*50m and 100m to the south of the Little Ouse River (Fig. 1). It was roughly rectangular in shape, measuring *c.*190m by *c.*70m (approximately 1.4ha). The south-eastern part of the site lies at approximately 12m OD and the natural geology here consists of soft sands and gravels over chalk. The land falls sharply to the north and west to *c.*9m OD, at which point the site becomes relatively flat although there is a slight slope down towards the river to the north. On the lower ground, the natural subsoil consists of soft brown sands. The area between the site and the river is covered with trees. Local topography has been modified due to a number of modern intrusions and interventions including a golf course and a compound associated with the construction of Thetford Bypass in 1988.

III. Archaeological Background

(Figs 1–2)

Thetford is located on the Icknield Way, a route that may have its origins in prehistory and which was certainly in use during the Roman period and probably much later. The settlement lies at the confluence of the Rivers Thet and Little Ouse which were utilised by prehistoric populations, as is demonstrated by finds of this date. A burnt mound, for example, lies 600m to the north-west (Fig. 2; HER 24846).

During the Neolithic and Bronze Age it is likely that much land near the Little Ouse was still forested, although there is evidence that it was beginning to be cleared. Study of pollen samples at Mill Lane, 1.5km to the east, shows deforestation, with a change from woodland to heathland, and an increase in arable farming dated to *c.*950–850 BC (Wallis 2004, 114; HER 1022). Further away from the river at Fison Way (HER 5853), more than 2km to the north of the site, there is evidence that land was cleared of woodland in the Late Neolithic/Early Bronze Age (Gregory 1991, 190).

Neolithic structures have been found 500m to the south-east (HER 5815) where a chalk platform associated with Neolithic pottery has been interpreted as a demolished building. Contemporary hearths were found more than a kilometre to the north at Brunel Way (Penn and Andrews 2000, 415; HER 25154).

Bronze Age round barrows are known to the north and south of Thetford (HER 5744, HER 5828) and Middle Bronze Age cremations have been found during excavations at Fison Way (Gregory 1991, 188; HER 5853) and to the south of the town (HER 5828).

During the Iron Age, Thetford was the location of a hillfort, religious centre and settlement (HER 5940; HER 5853; HER 30258). The hillfort was built on a chalk rise overlooking and to the north of adjacent fords crossing the Thet and Little Ouse (Davies 1999, 34). The religious centre was located adjacent to the Icknield Way, approximately 2.5km to the north of the hillfort. Adjacent to it was a major Iron Age settlement site. The sites were broadly contemporary; the hillfort is thought to have begun in the 5th century BC and continued into the 2nd century BC, whilst the religious centre appears to have begun between the 4th to 2nd centuries BC and remained in use into the Roman period. The combination of all of these elements has led to the suggestion that Thetford was the location of a major tribal centre during the Iron Age which has been likened to the *oppida* of Essex and Hertfordshire (Davies 1999, 34).

At Kilverstone (Garrow, Lucy and Gibson 2006; HER 34489), 3km to the east, a new farming settlement was established in the 1st century BC, on the site of Neolithic and Bronze Age activity.

Roman remains have been found in archaeological excavations nearby (Fig. 1) including ditches (Wessex Archaeology 1996, HER 31897; Andrews 1995, HER 24822; Brennand 1999, HER 33812b) and 1st-century

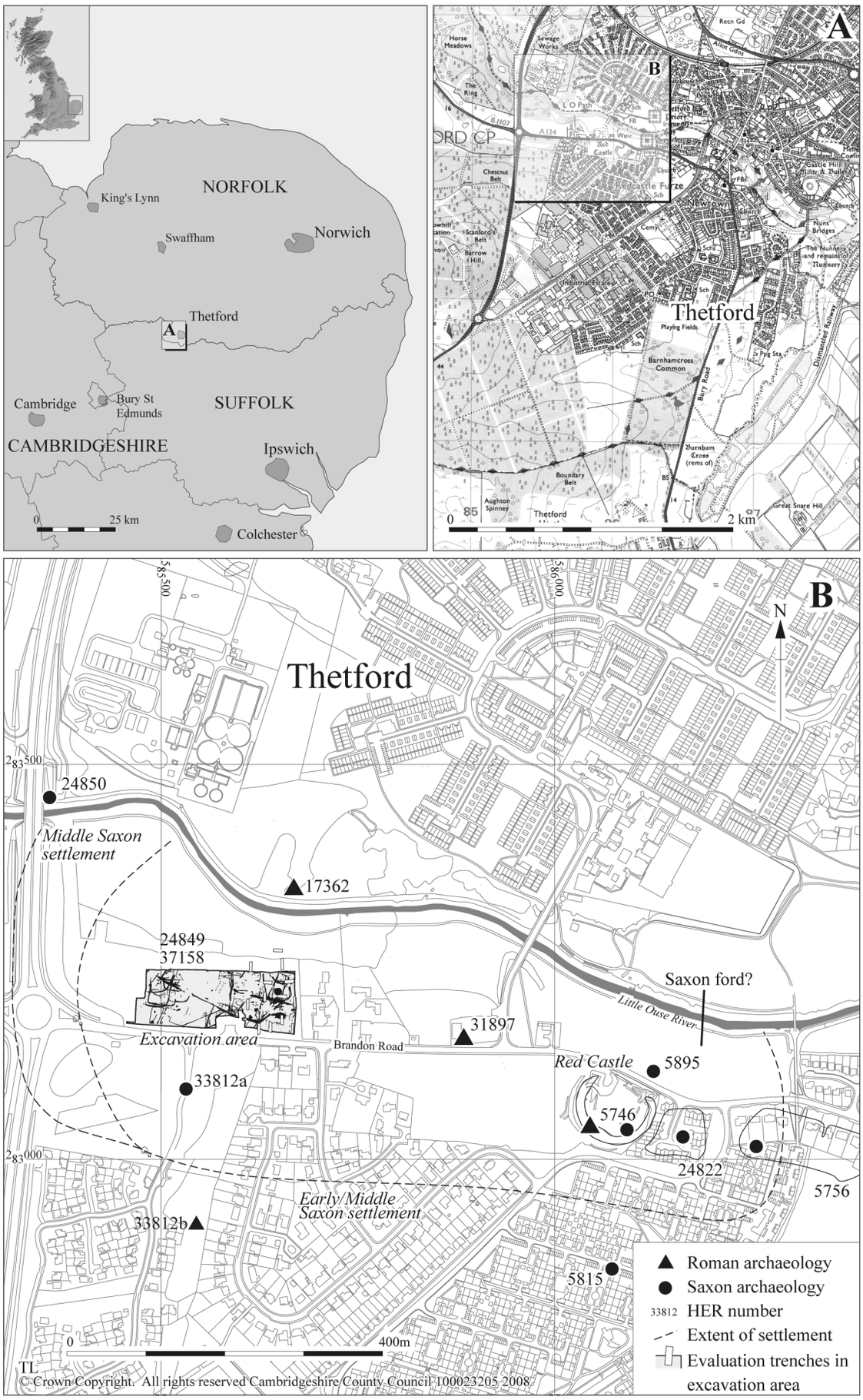


Figure 1 Location of the Brandon Road excavation, showing HER sites in its vicinity

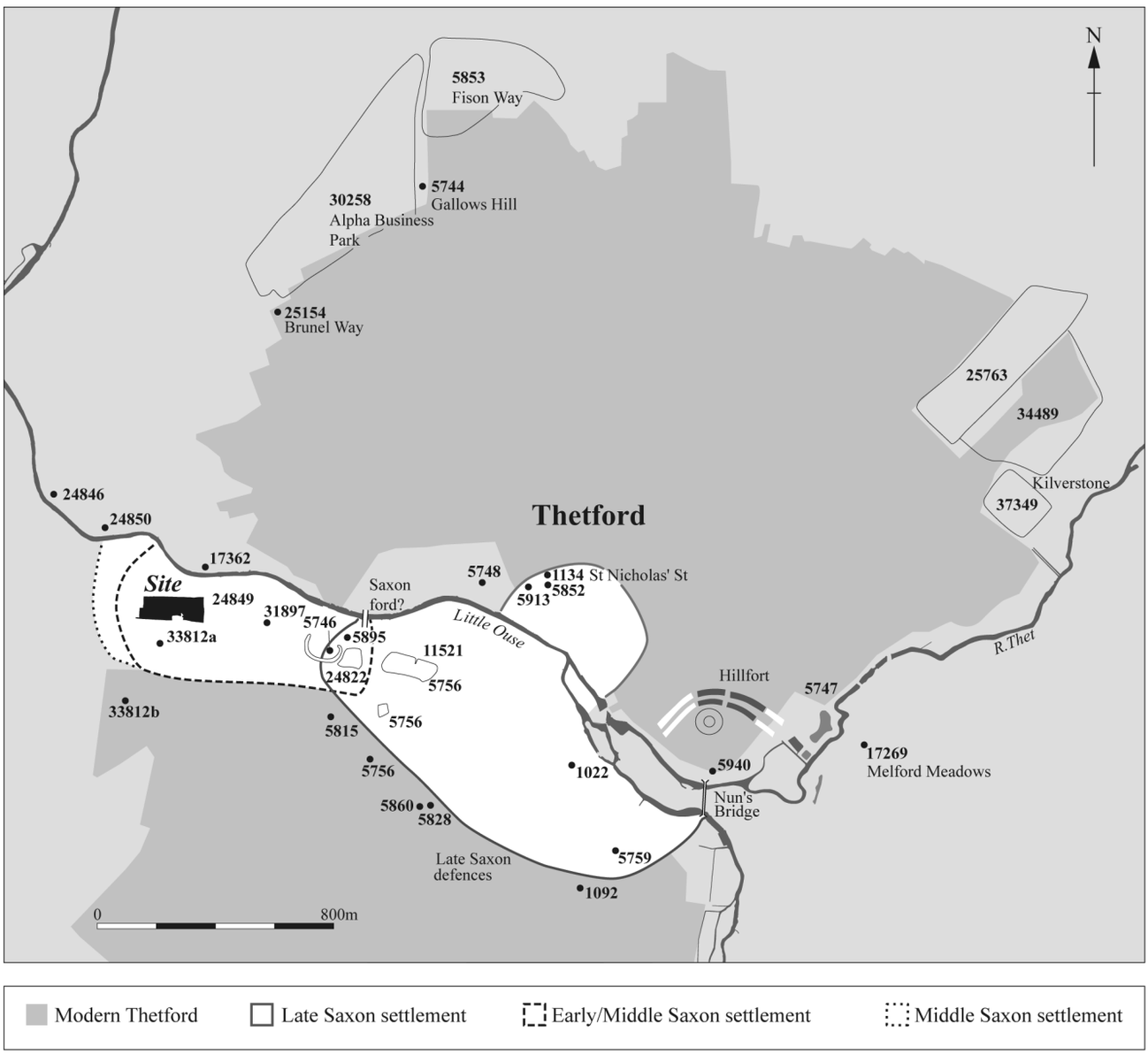


Figure 2 Anglo-Saxon Thetford, showing relevant HER sites and findspots

circular post-built structures at Redcastle Furze (Andrews 1995, HER 24822) and Brandon Road (Dallas 1993; HER 5756). On the north bank of the Little Ouse directly opposite the subject site a group of nine Roman coins, a copper alloy buckle plate and Roman pottery were found in 1981 (HER 17362). Further afield (Fig. 2) more substantial Roman remains have been found at Melford Meadows (Mudd 2002; HER 17269) and St Nicholas' Street (Andrews and Penn 1999; HER 1134).

Early and Middle Saxon remains have been uncovered in four separate excavations in the vicinity of the site (Figs 1 and 2). A fording point, recorded in later medieval documents as *Jusheleford* or *Insshelforthe,* has been postulated crossing the Little Ouse to the north of Red Castle (Andrews 1995, 86, fig. 21), with the anarchy period earthworks at Red Castle presumably guarding it (Dunmore with Carr 1976, 9). A sunken-featured building, pits and post-holes were found *c.*100m to the south-west of the site (Brennand 1999 and 2000; HER 33812a). Remains of Early Saxon settlement including sunken-featured buildings, ditches, pits and ironworking have also been excavated at Redcastle Furze (Andrews 1995; HER 24822) and Davison's Brandon Road site (Dallas 1993; HER 5756). The evidence for Middle Saxon settlement is more ephemeral; two ditches and a spread of Middle Saxon pottery were found at Redcastle Furze and residual artefacts at Red Castle implied that features had been present but destroyed by later activity (Knocker 1967; HER 5746). In addition, metal detecting recovered Middle Saxon metalwork prior to the construction of Thetford Bypass in 1988 (HER 24850, HER 24849; see Rogerson below).

Early Saxon inhumations were discovered in a sewer pipe trench in 1919 and 1961 immediately to the north of Brandon Road opposite Red Castle (HER 5895). Other Early to Middle Saxon burials are known 1km to the south-east (Fig. 2; HER 5828, HER 5860). Here, Early Saxon burials were found in a tumulus in St Margaret's cemetery in 1855, 1869 and 1929 (Dunmore with Carr 1976, 5).

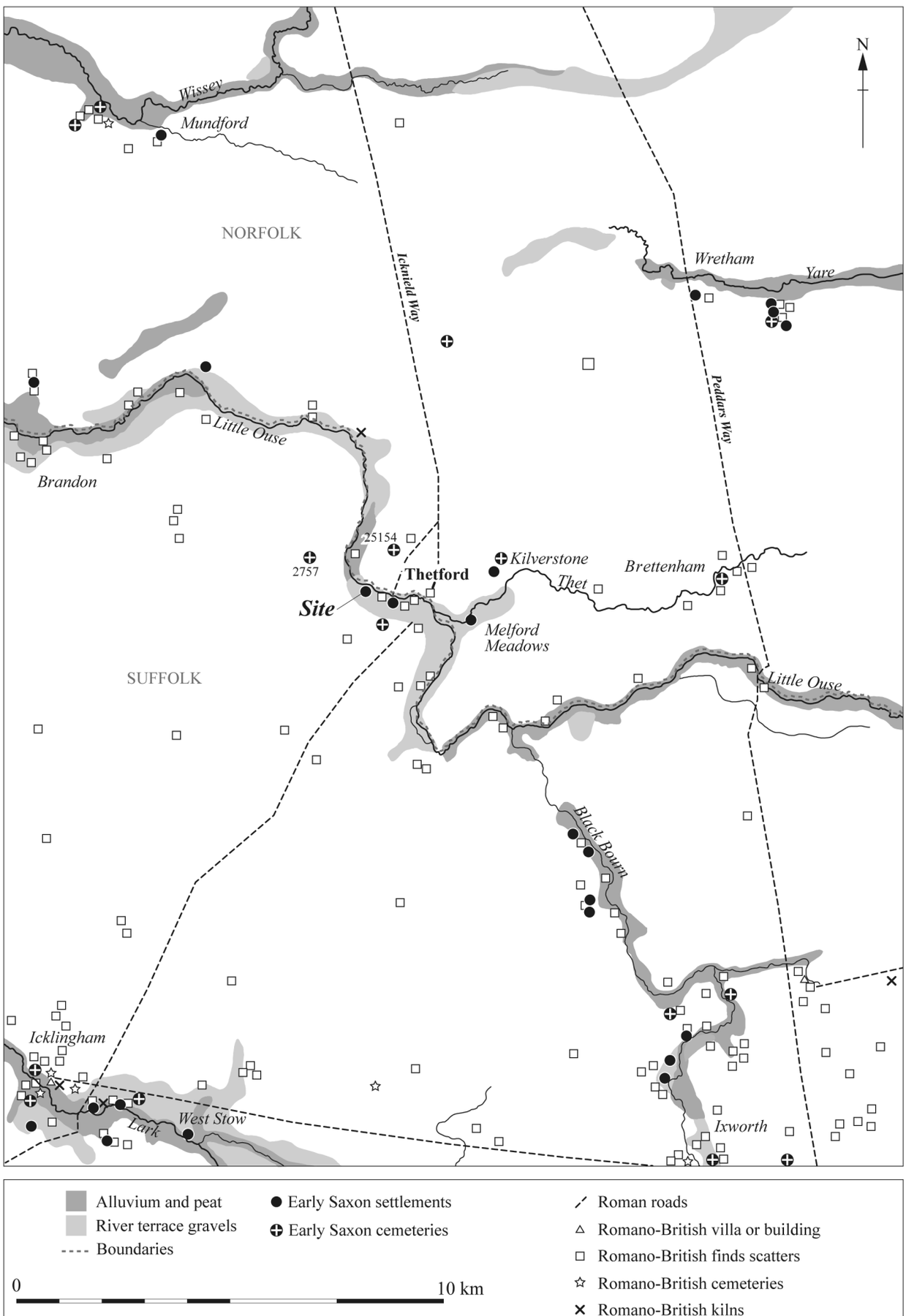


Figure 3 Romano-British and Early Saxon sites in the Thetford area. Information from the Norfolk and Suffolk HERs. Stray finds not included (after Mudd 2002, fig.2)

IV. Previous Archaeological Work

Thetford Bypass
by Andrew Rogerson
(Fig. 3)

In 1988, construction work took place for a new 7km-long north to south road which now runs 100m to the west of the subject site (Fig. 1). A temporary compound covered the western two-thirds of the area, up to the Bypass road corridor. Topsoil stripped from the compound was given temporary storage on the eastern third of the area.

Thetford Bypass was built before the introduction of Planning Policy Guidance 16 (Archaeology) and consequently no archaeological survey of the projected route had taken place before construction began. At the start of work the Norfolk Archaeological Unit made arrangements with the Resident Engineer to permit five members of the Unit and twelve named metal detectorists to have access to the road line. In the event — and after activity by many unauthorised detectorists was observed by the contractors, some in dangerous proximity to heavy machinery — access during the working day was denied to all but the five archaeologists, none of whom were able to spend more than a few hours on site. This change of policy in fact did little to stop illegal metal detecting. On one occasion a coachload of detectorists arrived from the West Midlands. On another a man wearing camouflage dress and holding a blacked-out detector threatened one of the twelve named individuals with grave physical violence.

Finds from the area of the compound/spoil heap and along the Bypass route adjacent to the compound, including the area directly to the south of Brandon Road, were allocated HER 24849. To differentiate those artefacts that were found along the Bypass route, finds to the north of this area were allocated HER 24850 with other numbers given along other parts of the Bypass route. It was soon apparent that the Brandon Road site (HER 24849 and to a lesser extent 24850) was the most 'productive' area on the road line, and information from the authorised searchers made it clear that a substantial amount of material was being removed from the site without record. Two written records held in the Historic Environment Record convey a good impression of the prevailing free-for-all conditions: 'I heard of a few nice finds being made but only saw one, a nice strap-end made of silver and bronze with an animal's head on it'; 'One silver sceat not recorded. Sold the same night'.

Almost all the finds records from Brandon Road were made by six of the authorised detectorists, none by Norfolk Archaeological Unit staff. Lists of the artefacts were recorded under HER 24849 and these have been used to analyse what was found. A number of Anglo-Saxon coins which may have derived from sites HER 24849 and 24850 were published (Andrews 1995, appendix 1) and a few metal objects were highlighted (Andrews 1995, 26). The current volume publishes for the first time objects from HER 24849, with further coins and other metal objects reported on by Crummy (Ch. 3.II and III). Non-metallic material included 101 Late Upper Palaeolithic worked flints (Wymer, Ch. 3.I) and worked stone. Other finds recovered consisted of numerous pottery sherds (one Iron Age, 128 Romano-British, nineteen Middle Saxon, ten Late Saxon, 104 medieval and sixteen post-medieval).

The combination of coins, other metal objects and pottery suggests that there had been fairly intensive, permanent occupation on the site throughout the Roman period. Many Roman settlement sites are now known along this river valley (Fig. 3).

It is not surprising that no Early Saxon objects were reported. Metalwork is never common on 5th to 7th-century settlement sites, and pottery, outside the context of formal excavation, may also occur quite sparsely. Finds of the Middle Saxon period may point towards a settlement of some significance. It seems highly likely that the true number of coins removed from the site was considerably greater than those listed here (*cf.* Andrews 1995, 140 and appendix 1), and that other metal objects have gone unrecorded. If this settlement is a western continuation of that glimpsed beneath the Red Castle (Knocker 1967), it may have stretched for more than 800m along the southern bank of the river (Andrews 1995, 25–7). The relatively large number of Middle Saxon coins and metalwork recovered (as well as those taken without recording) may signify a market area in the location of the compound and areas adjacent to this part of the Bypass. This market would probably have lain adjacent to a major road route.

The Brandon Road site lies well outside the Late Saxon town (Fig. 2). The very small number of Thetford ware sherds suggests that some or all of the listed metal objects including knives may be Middle rather than Late Saxon. The reasonably large amount of medieval finds is not readily explicable. Twenty-one coins, numerous other metal objects, three architectural stone fragments as well as more than a hundred pottery sherds, seem to indicate high status medieval building(s) had stood here, yet there is no positive indication in the documentary record that any such structure existed this far to the west of the town (Davison 1993, 200–1; Andrews 1995, 86). In truth there are few detailed medieval sources covering this part of Thetford, and as a result its topography is not well understood. It may be safer to allow the archaeological evidence to speak for itself and to posit an isolated occupation site of the 13th and 14th centuries.

Evaluation

In 1990 the Norfolk Archaeological Unit evaluated the eastern *c*.0.7ha of the site (Longman 1990). No archaeological work was carried out on the western area since it was believed that archaeological remains here would probably not have survived due to the area having been used as a compound for the Thetford Bypass. In the 1990 evaluation a total of thirteen trenches was excavated, each measuring 10m x 3m (Fig. 4). Archaeological features and deposits were exposed in ten of the trenches, with no archaeological remains found in the three trenches placed on the western side of the evaluation, apparently confirming that severe truncation had taken place.

Limited residual prehistoric material was recovered consisting of a few Neolithic worked flints, a small number of pottery sherds and a copper alloy pin of Iron Age date (SF 34, Fig.18). A moderate assemblage of Roman finds was recovered from layers and features predominantly from the northern evaluation trenches. Evidence for Early Saxon occupation was largely concentrated at the southern end of the site and features identified included a sunken-featured building (SFB), pits, post-holes, ditches and two possible kilns or ovens, though the latter were undated. Middle Saxon evidence

consisted of pottery and metal objects although no features could be attributed to this period. Data from the evaluation is incorporated into this report.

Excavation to the south of Brandon Road
In 1999 an archaeological investigation (evaluation, excavation and watching brief) was undertaken on the south side of Brandon Road on the route of an access road for a residential development (Brennand 1999 and 2000; Birks 2000; HER 33812). Ditches, an Early Saxon sunken-featured building and numerous isolated pits and post-holes were found. Mesolithic or early Neolithic flint was recovered from some of the earliest ditch fills with four sherds of 1st–4th-century Wattisfield pottery from the latest ditch (Lyons 1999, 13). A single sherd of Bronze Age pottery was recovered from one of the pits suggesting an isolated, short-lived episode of occupation (Percival 1999, 13).

A two-post SFB produced a moderately large assemblage of pottery (thirty-six sherds), animal bone, fired clay objects and a fragment of decorated vessel glass (claw-beaker), all believed to date from the 5th–6th century AD. A feature identified by the excavator as a ditch terminus or return may be evidence for a second SFB based on its size and shape in plan although no finds were recovered from it. Two sherds of Ipswich ware were found unstratified implying some Middle Saxon activity.

V. Excavation Strategy and Methodology

The CAM ARC excavation took place in three phases. Initial investigation comprised 300m of 1.6m wide trial trenches placed across the western area as a rapid evaluation. These trenches demonstrated that (contrary to expectations) the western area contained surviving archaeological features. The second phase consisted of an open area excavation of the eastern part of the site (evaluated in 1990), while the third phase comprised an open area excavation to the west; all of these conjoined to form a single large excavation area.

Evidence of disturbance was found across the site. For example eleven rabbit skeletons and a variety of individual rabbit bones were recovered from features otherwise established as prehistoric through to Middle Saxon in date. During excavation fresh mole-hills were observed every day although only one mole bone was found in archaeological features. Evidence for other small burrowing mammals was lacking, which is almost certainly as a result of poor bone survival.

Topsoil was removed from each area in turn under archaeological supervision, using a 360° tracked excavator fitted with a flat-bladed ditching bucket. The exposed subsoil was subjected to a metal detecting survey and then removed to reveal archaeological features and layers. Each area was subsequently cleaned by hand prior to recording and excavation.

All features and deposits were described using CAM ARC's single context *pro forma* recording sheets. Plans were hand drawn at 1:50 then digitised with the aid of AutoCAD as excavation progressed. Sections were drawn at a scale of 1:10 or 1:20 as appropriate. Monochrome, colour slide and colour print photographs were taken of most features. The site and spoil heaps were repeatedly subjected to metal detector sweeps throughout the excavation.

VI. Research Aims

The aims of the excavation laid out in the brief and specification were to provide information on the site's origins, date, development, phasing, spatial organisation, character, function, status and significance, as well as the nature of social, economic and industrial activities.

Subsequent to excavation the research aims were updated and expanded in the Post-Excavation Assessment and Updated Research Design (Atkins and Connor 2003) with particular reference to the regional research framework (Brown and Glazebrook 2000) and can be summarised as follows:

- lithic production, use and deposition
- Roman rural settlement, layout and economy
- transition from Roman to Anglo-Saxon
- Early Saxon settlement
- agricultural production
- craft production
- the impact of colonists
- possible abandonment in the 7th century — the 'Middle Saxon shuffle'

Each of these themes is addressed at appropriate points throughout this report.

VII. Phasing
(Fig. 4)

Archaeological survival ranged from very well preserved to heavily truncated negative features. Parts of the western area of the site had suffered more truncation due to the construction of the Thetford Bypass compound. Despite probable intensive agriculture in the medieval and post-medieval periods there was no evidence of plough damage (*i.e.* plough marks) although the soil conditions and animal disturbance would have made such features difficult to identify. A small quantity of intrusive Anglo-Saxon pottery was found in otherwise secure Romano-British contexts — the loose friable character of the natural sand and the processes of weathering as well as animal activity must account for these sherds. In some places, the nature of the soil and the disturbance by animals resulted in difficulties in distinguishing the stratigraphic sequence.

Evidence for human activity comprised features of prehistoric, Roman and Anglo-Saxon date. The site was used intermittently from the Upper Palaeolithic to Neolithic periods, with occupation beginning in the late 1st to 2nd centuries AD and ending in the 9th century AD. A possible hiatus in occupation occurred between the early 6th to early 8th centuries. Modern features associated with a former golf course and construction of the adjacent Bypass in 1988 were also present but are not reported here.

The site periods and phases are defined as follows:

Period 1: Prehistoric
Phase 1: Upper Palaeolithic to Neolithic
(*c.*30,000–*c.*2,000 BC)

Period 2: Romano-British
Phase 2: Early Romano-British (late 1st to 2nd century)
Phase 3: Middle Romano-British (3rd century)
Phase 4: Late Romano-British (4th to ?early 5th century)

Figure 4 Site plan and contours. Scale 1:750

Period 3: Anglo-Saxon
Phase 5: Early Saxon (5th to ?early 6th century)
Phase 6: Middle Saxon (?early 8th century to *c.*869)

VIII. Storage and Curation

The project archive is currently held at Oxford Archaeology East's headquarters at Bar Hill under the site code 37158THD. The bulk of the material archive will be deposited for long-term storage at the Norfolk Museums and Archaeology Service stores at Gressenhall, Norfolk.

Chapter 2. The Archaeological Sequence

I. Prehistoric Activity (Period 1)

Summary
Two small clusters of activity probably represent short-lived and minor events, neither of which could be closely dated. A random scattering of burnt flint probably represents incidental general 'background' waste from hearth use. Other struck flints were equally scattered and were found residually in topsoil deposits and later features. The diagnostic items span the Mesolithic to Neolithic periods and include a rare transverse arrowhead of probable Late Neolithic date and of a type often associated with ceremonial activities (Bishop, Ch. 3.I). Other flints of probable Upper Palaeolithic origin were recovered from the bypass in 1988 (Wymer, Ch. 3.I).

Upper Palaeolithic to Neolithic (Phase 1, *c.*30,000–*c.*2,000 BC)
(Fig. 5 and Pl. I)

Knapping hollow
At the eastern edge of the site lay a flint scatter in a probable working hollow measuring *c.*3m by *c.*2m and up to 0.3m deep (layer 2314, Fig. 5, Pl. I). The feature was divided into eight 1m square collection units, each of which was systematically dry sieved using 5mm mesh. Flint was found in seven of the collection units. The highest concentrations were in two small areas occurring within a metre of each other. The area had been subject to animal disturbance with small numbers of rabbit and toad bones being found, along with other intrusive finds.

The flint assemblage (358 struck pieces) probably represents the initial preparation of a single nodule, perhaps by more than one flint knapper who only stayed for a short period of time. The working techniques used broadly date to the Upper Palaeolithic until the Early Neolithic, although the lack of diagnostic pieces means that this date cannot be refined further (Bishop, Ch. 3.I).

Burnt flint accumulation
Towards the western edge of the site (*c.*150m to the west of the flintworking hollow) was a shallow depression measuring 2.2m by 1.2m and 0.05m deep (Fig. 5), containing a large assemblage of burnt flint (2066). The feature was half-sectioned and the contents were sieved using a 5mm mesh. More than 5,000 small burnt flint fragments (over 7kg) were recovered, all from the uppermost layer, below which was a thin deposit of greyish brown/black sand with charcoal, but no evidence for *in situ* burning. The assemblage included a small number of struck pieces (including tools) only two of which were burnt and all of which can be dated as later Mesolithic (Bishop, Ch. 3.I).

The quantities and systematic burning suggest that these flints may have originated from specialised industries or activities such as preparation of pottery tempers, communal cooking, saunas and/or food drying areas. Such accumulations of burnt stone, often termed 'burnt mounds', have been identified from the Mesolithic to the Iron Age although typical examples normally date from the Bronze Age. The accumulation at Brandon Road cannot realistically be termed a 'mound'.

II. Romano-British Occupation (Period 2)

Summary
Three main phases of Romano-British activity have been identified, spanning the late 1st to the early 5th centuries.

Plate I Sieving of flint knapping hollow (2314, Phase 1) in progress, viewed from the south-east

Figure 5 Phase 1: Prehistoric. Scale 1:750

The earliest activity (Phase 2) was based on a field system and circular enclosures that may suggest stock control, set alongside possible roundhouses. In some areas of the site at least three sub-phases of activity could be identified (Phases 2a–c). Most of the remains firmly attributable to this phase are likely to date to the 2nd century, although the presence of late 1st- to 2nd-century pottery and a surprisingly large assemblage of 1st-century brooches suggests the possibility of earlier activity.

The focus of activity shifted to a rectangular system of fields during the 2nd century, becoming established on a south-west to north-east alignment. The field system apparently continued in use throughout the 3rd and 4th centuries (Phases 3 and 4) along with the introduction of aisled barns, wells, pits and middens, suggesting that a thriving farmstead occupied the site throughout much of the Roman period. Domestic structures were absent from the excavation area but these may have been located close by, possibly towards the River Little Ouse to the north.

During the 4th century the barns and associated field system were apparently abandoned in favour of enclosures, which continued in use into the 5th century, perhaps indicating a change in the type of agriculture. Many of the enclosures appeared to be open towards the river on their northern sides. Of particular significance is the presence of 5th-century Roman and Anglo-Saxon pottery and metalwork suggesting continuity of occupation.

Early Romano-British (Phase 2, late 1st to 2nd centuries) (Fig. 6)

Phase 2a

Roundhouses and circular/sub-circular enclosures

Arguably the earliest features were two possible roundhouses and fragmentary curving ditches that may represent circular or sub-circular enclosures. On the northern edge of the site a 0.13m deep ring ditch (2288) may represent the gully of a roundhouse approximately 9m in diameter. A second partial ring ditch (2267) was located approximately 45m to the south. It was 5.75m in diameter and 0.10m deep. Both features contained undiagnostic Roman pottery and were cut by 3rd-century ditches.

Three undated curvilinear ditches located in the north-western part of the site (2300, 1922 and 1883) had approximate extrapolated diameters of between 20m and 25m and are likely to be early. Ditch 2300 was 0.63m to 0.90m wide and up to 0.40m deep (Fig. 6, S.2), while ditch 1922 was 0.91m wide and 0.18m deep and ditch 1883 was 0.80m wide and 0.22m deep.

Other enclosures

Fragmentary ditches in the eastern part of the site may represent a roughly rectangular enclosure, measuring approximately 20m north to south by at least 20m east to west. Its south and west arm (2257) was over 22m long, while the putative northern arm (2256) was only 7.40m long and otherwise very truncated. An early to mid 2nd-century ditch (2220, Phase 2c) cut its southern arm, but dating evidence was otherwise absent.

Field boundaries

Fragmentary and scattered ditches on north to south (517, 1481, 1712, 2282) and east to west (2213, 2244, 2307) alignments may indicate the beginnings of a field system with its origins in the late 1st to early 2nd century or earlier. Most of the ditches contained little or no dating evidence although one (1481) yielded sherds of late 1st- to mid 2nd-century pottery. One ditch (517) was later incorporated into a small enclosure (2268, Phase 2b). The most substantial surviving ditch (2282) lay at the centre of the site and was 20.60m long — it was later cut across by a trackway on a different alignment (Phase 2b). A second ditch (1712) lay approximately 10m to the east of 2282 and may hint that the earliest fields were also the narrowest, or may represent an early trackway.

Phase 2b

Stock enclosure or shrine

In the central southern part of the site was a sub-rectangular enclosure with an internal structure. The enclosure (2268) was three-sided, apparently utilising an existing field boundary (517) to the west, and was open to the south, defining an area of *c.*15m by *c.*11m. Its ditches were very shallow (less than 0.14m) and narrow (less than 0.36m). The enclosure was positioned on roughly flat land at or just below 9m OD, at the base of a marked slope rising by up to 3m in height directly to the east. Its position, nestled against a natural slope, may suggest some form of protected livestock corral or shelter.

Within the north-east corner of the enclosure was a *c.*7m sub-square or three-sided structure (2327); a northern side may have been removed by later activity. The structure comprised beam-slots and two shallow post-holes (less than 0.26m deep) one of which contained the charred remains of a post, perhaps indicating that the building had burnt down. The beam-slots (up to 0.54m wide and 0.15m deep) contained burnt daub suggesting that the building may have been constructed with wattle and daub. A few undiagnostic Roman pottery sherds were the only finds. No similar features were present on the site and the purpose of this structure is not clear. An assemblage of largely unstratified or residual 1st-century brooches has led to the suggestion that there may have been a temple or shrine nearby (Crummy, Ch. 3.III) and this structure *may* fall into that category, although a much more prosaic and practical purpose such as a sheep pen, shepherd's hut or similar structure is perhaps more likely.

Trackway

Cutting across elements of the putative early field system were three ditches (1688, 2260, 2269) which ran approximately parallel with each other on a north-east to south-west alignment, roughly following the contours of the land along the base of the slope. These may have defined a trackway perhaps associated with the putative stock enclosure (2268) and sheep pen/?shrine (2327). A well (1810, Phase 2 below) was located between the ditches and was probably backfilled in the mid to late 2nd century. The trackway ditches were both subsequently cut by 3rd-century ditches and one (ditch 2260) contained a few sherds of possibly intrusive mid 2nd- to 3rd-century pottery. This alignment was distinct from both the Phase 2a and 2c field boundaries and was confined to one area, possibly dictated by the local topography.

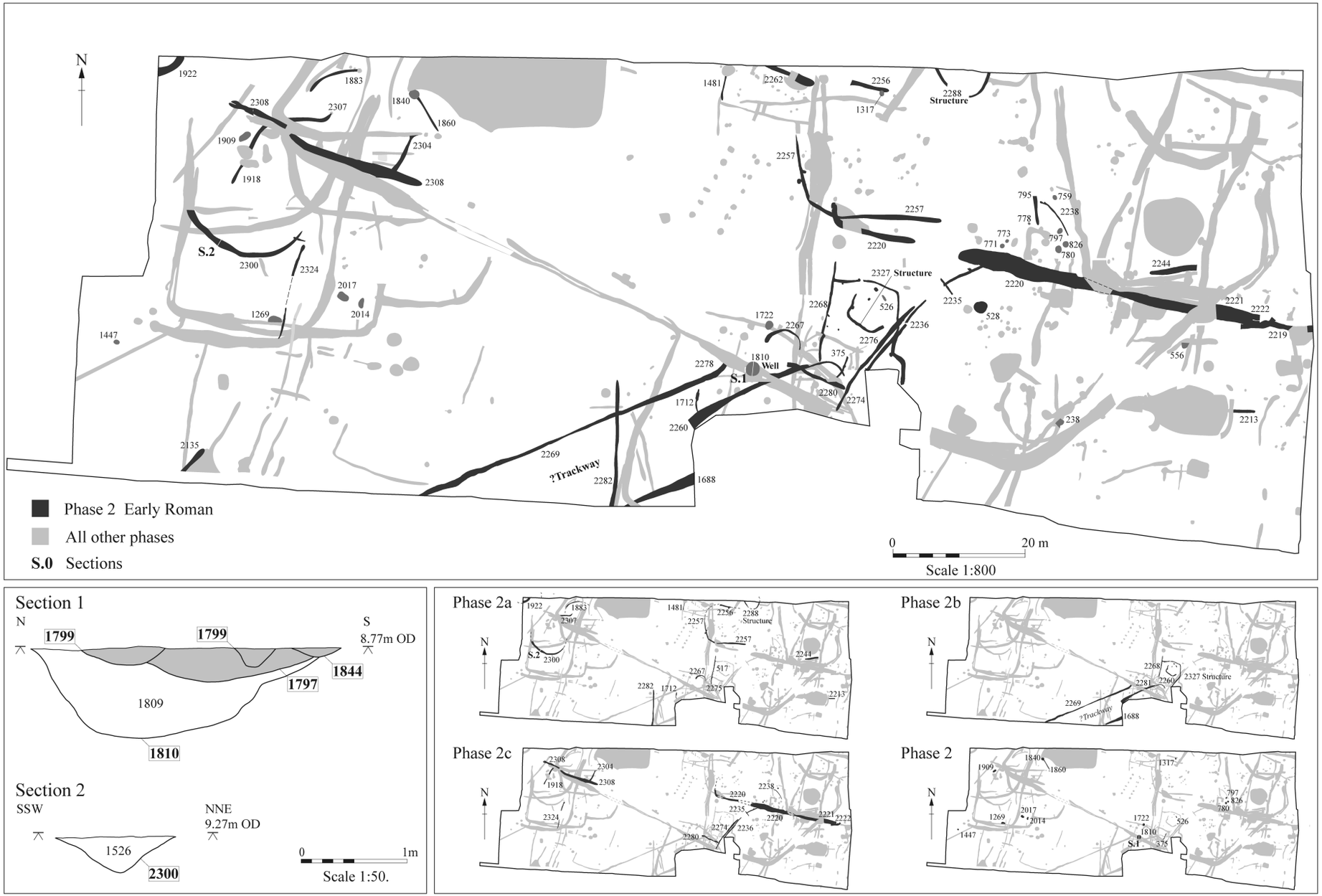


Figure 6 Phase 2: Early Roman (late 1st to 2nd century)

Phase 2c

Field boundaries

Although fragmentary, the surviving ditches were sufficient to suggest that a shift in the alignment of the field boundaries to a WNW to ESE orientation occurred in the early to mid 2nd century. This new alignment was to remain in use into the 3rd century (Phase 3), during which time it was extended and maintained, particularly along one significant boundary. This major ditch (2308), which lay in the north-western part of the site, was just over 32m long on a WNW to ESE orientation. It was up to 2.4m wide and 0.71m deep along its central section becoming progressively narrower and shallower towards the west and east where it terminated. Over half of the total Phase 2 pottery assemblage (240 sherds) was found in this ditch, much of it from its eastern section especially near the terminus. Although backfilled by the middle of the 2nd century the boundary that it marked was apparently later reinstated and extended (Phase 3).

Evidence for the introduction of a new field system took the form of three smaller ditches (1918, 2304 and 2324), all between 0.25m and 0.55m wide and less than 0.13m deep. The few sherds of associated pottery date to the middle 1st century to early to middle 2nd century.

There is some evidence to suggest that the field system continued to the east. Two ditches (2236 and 2274) on a similar NNE to SSW alignment lay close together and were roughly parallel, leading towards a possible enclosure (2220, below). A short section of ditch (2280) was at right angles to 2274 but was otherwise undated. There were further fragmentary ditches directly to the west and to the north-east (including 2238) which may be related. All the ditches survived as narrow, shallow features between 0.30m and 0.65m wide and 0.08 to 0.28m deep with very few finds.

Ditch 2236 curved gently away to the east at its north-eastern end, reflecting the local contours. It was interrupted by a short break approximately 3m wide, but the ditch was so shallow at this point that it was impossible to determine whether this was deliberate or caused by truncation. At the point where the ditch began again it was cut by a short length of ditch (2235) at right angles to it.

A row of five small unequally spaced post-holes on a north-east to south-west alignment (570, 759, 771, 773, 778) suggest that the fields were fenced as well as ditched.

Possible enclosure

Located in the north-east quarter of the site was a substantial ESE to WNW aligned ditch (2220). This was at least 85m long, up to 2.1m wide and 0.91m deep. It was interrupted by a 7.5m wide break that may have served as an entrance. There was good evidence that the ditch had been maintained and redefined (re-cuts 2221 and 2222). At its western end the ditch curved sharply northwards for a short distance suggesting that a western arm had once existed, but had not survived — the northern and eastern arms may have lain outside the excavation area. Despite extensive sampling only thirty-nine sherds of pottery were recovered, most of which were early to middle 2nd century in date; in two areas there was intrusive pottery which may have been introduced by animal activity. Few finds were recovered from the later re-cuts although a small undiagnostic iron knife (SF 271, Ch. 3.III) was found in ditch 2221.

Phase 2 pits and wells

A possible well (1810) and fifteen pits have been assigned to Phase 2 but it is not possible to date them more closely. Most of the pits were scattered and isolated with only two examples less than 10m apart (2014 and 2017). Nearly all of the pits were less than 0.25m deep, and only two were more than 0.45m deep.

Of the pits found to the west, one example (1840) was of interest as it contained thirteen sherds of late 1st- to early/middle 2nd-century pottery and a relatively large quantity of spelt wheat (Sample 88; Fryer, Ch. 4.IV). A short (less than 10m) length of ditch or gully (1860) appeared to lead into the pit suggesting that the two may have been associated. Their location towards the northern edge of the site lends support to the likelihood of domestic occupation being sited nearby.

One pit (780) was noteworthy for the presence of a near complete dolphin brooch probably dating to the mid to late 1st century and possibly deposited as a deliberate offering (SF 282; Crummy, Ch. 3.III). It was located *c.*25m from the possible stock enclosure or shrine (Phase 2b) and contained no other finds.

Further west, pit 1722 and well 1810 both lay in close proximity to a possible roundhouse (2267, Phase 2a) and the putative shrine or stock enclosure (Phase 2b). They both contained material dating to the mid to late 2nd century suggesting that they were backfilled at about the same time and probably not later than the end of the 2nd century. The pit was 0.65m deep and, in addition to pottery and horse bone, contained four iron nails which may suggest that a structure lay nearby. The well was circular, 2.2m in diameter with steep, near vertical sides. It was 0.86m deep with a flattish base and had been truncated by a later ditch (Fig. 6, S.1). It was cut into soft sands and must therefore have either been lined or backfilled soon after it was cut. The range of seeds from a sample from its basal waterlogged deposits (Sample 84; Fryer, Ch. 4.IV) indicates that the feature was situated within an area of damp and slightly unkempt grassland, and may have been at least partially shaded by elderberry scrub.

Middle Romano-British (Phase 3, 3rd century)

(Fig. 7 and Pls II–III)

Boundary ditch and fields

The main boundary that had been established in the 2nd century was re-established and extended in the 3rd century by a substantial ditch more than 100m long (2309). Very roughly parallel and to the north of the ditch was a second rather meandering and more ephemeral ditch (2266; Fig. 7, S.4) possibly defining a droveway which may have acted as a route between fields directly to the south. The few pottery sherds recovered from this latter ditch date to the 3rd century or earlier.

To the south of the boundary and running at right angles to it was a series of fragmentary ditches that probably defined a series of small rectangular fields, somewhat irregular in size (Fields 1–4). At least one example (Field 1) may have been laid out as a single event since its northern, western and southern boundaries snaked in a continuous Z shape (2277). All of the fields were relatively small and irregular in width and length. Field 1 may have been square, measuring *c.*26.5m^2. Field 2 was of similar width, its length being unknown since it extended beyond the excavated area. Fields 3 and 4 were

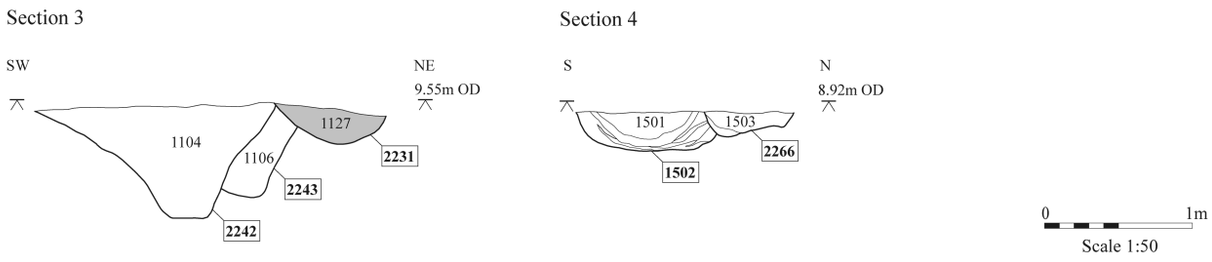


Figure 7 Phase 3: Middle Roman (3rd century)

Plate II Romano-British barn or byre (2265, Phase 3, 3rd century), viewed from the north-east

narrower. The south-western corner of Field 3 and most of its southern boundary ditch survived. The south-western boundary of Field 4 also survived, as well as part of its western boundary. A series of broadly east to west aligned ditches within this field may indicate subdivisions or stock management features.

The single ditch (2309) forming the northern side of all of the fields was clearly maintained since there is evidence of re-cutting along much of its length. In contrast the adjacent field ditches were narrow, shallow and apparently cut only once.

Despite extensive sampling only three sherds of pottery were recovered from the field ditches. By contrast over fifty sherds came from the main boundary ditch (2309), the majority from the segment bounding Field 4, coincidentally in close proximity to the ditch (2308) from which over half of the Phase 2 pottery was retrieved. The majority of the pottery is mid 2nd century and may be residual, while a coin from the same context dated AD 367–75 is probably intrusive.

Agricultural buildings

To the north of the possible droveway lay a group of buildings, fences and pits that may be evidence for an unenclosed farmyard. The two more substantial buildings (2263, 2265) were probably aisled barns or byres. Another less substantial building (2329) on a similar alignment was found some 90m to the east and may indicate another 'farmyard'.

Structure 2265 measured *c.*13.5m by *c.*6m and consisted of six pairs of parallel post-holes, several of which contained packing and post pipes (Pl. II). A second post-hole had been inserted adjacent to each of two post-holes at the north-east corner, possibly for an entrance. Within the rows the post-holes were spaced between 2.5m and 2.7m apart (centre to centre). The post-holes were sub-rounded to sub-rectangular in shape, between 0.5m and 1.2m long and between 0.3m and 0.47m deep. All the post-pipes were oval to circular, measuring between 0.26m and 0.7m in diameter, and could be distinguished by a dark greyish brown stain. The few finds associated with the structure included abraded Roman pottery and a fragment of animal bone.

Located 10m to the north and at right angles to the first building was a second post-hole structure (2263). The plan of this building was incomplete as it continued beyond the excavation area but it appeared to have been smaller (*c.*8.5m long by at least 2m wide). The post-holes were more closely spaced (between 1.3m and 1.5m) than in 2265 and there was evidence that the building had been maintained and perhaps altered since there was a sequence of intercutting post-holes at its south-western corner. The post-holes were also generally smaller; the majority were between 0.45m and 0.62m in diameter with two even smaller. They were also shallow (0.04m to 0.27m) although this was to some extent a result of truncation. Again, few finds were recovered from the post-holes, consisting of seven abraded and undiagnostic sherds. No post-pipes had survived, perhaps implying that the timbers had been removed for use elsewhere rather than being allowed to decay *in situ*.

Phosphate analysis was undertaken on the post-holes of both structures and two samples from the corners each contained enhanced levels; although the results are inconclusive they may suggest the keeping of animals (Middleton, Ch. 4.V). Two pairs of shallow (0.14m to 0.27m deep) post-holes were located equidistant from the western walls of the two buildings and with a 4m gap between them. Their location and proximity to the two buildings may suggest that the gap between the buildings was fenced and gated, perhaps serving as a livestock holding area.

Each building had a circular pit positioned at its south-west corner (1437 and 1590), both of which were approximately 1.5m in diameter. One (1590) was 0.6m deep and the other at least 0.5m. The pits contained few finds, with only seven sherds of 2nd- to 3rd-century pottery coming from pit 1437.

Plate III Romano-British wattle-lined well (1175, Phase 3, 3rd century)

Approximately 6m to the east of building 2265 was a group of post-holes (2330) that enclosed a roughly oval area measuring approximately 11m by 9m. There were at least thirteen post-holes, ten of which contained 3rd-century pottery. The apparent randomness of the post-holes implies that the structure is unlikely to have been roofed but may have been a small fenced enclosure such as would have been used for temporary holding of animals. Other groups of apparently scattered and undated post-holes located nearby could be associated with this phase of activity.

A possible rectangular structure (2329), on the same alignment as surrounding features, was found at the eastern edge of the site and has been very tentatively assigned to this phase. Six post-holes formed a NNW to SSE alignment bowing slightly to the south at its western end. Five of the post-holes were consistently spaced at *c.*2.9m apart (centre to centre), but the most westerly was little more than a metre away. These post-holes may mark the northern wall (approximately 13m long) of a building. Approximately 6m to the south were two closely spaced post-holes that may mark the position of the southern wall, although this suggestion is highly tentative. Three other post-holes were located within this general area. The post-holes were between 0.24m and 0.62m in diameter with a maximum depth of 0.22m. The lack of finds may again suggest an agricultural function.

Enclosures

In the north-eastern area of the site a group of ditches (2243/2242, 2249, 2283 and 2284) formed a roughly rectangular enclosure approximately 35m by 16m in size and on a similar alignment to the barns/byres. The southern and western boundary ditch was between 0.52m and 0.90m wide and 0.18m to 0.49m deep (Fig. 7, S.3). The western segment of the ditch was broken by a 1.2m wide gap, possibly an entrance. The majority of the pottery (70 out of 86 sherds) was recovered from the segment to the north of the entrance. Enclosure ditch 2243 was re-cut (2242) implying longevity of use. The western ditch appears to have continued beyond the edges of the excavation to the north implying that the enclosure may have been larger and that the northern ditch (2249) may have defined an internal division rather than the northern extent of the whole enclosure. This northernmost visible ditch was between 0.35m and 0.77m wide and 0.16m and 0.48m deep. It contained 20 sherds of pottery and a fragment of human bone, possibly from an adult male. There was a hint that a ditch had existed along the eastern boundary of the enclosure since a later ditch (2225; Phase 6) may have followed the line of an earlier feature. The pottery from the enclosure ditches is nearly all 2nd or 3rd century in date except for three possible 3rd- or 4th-century sherds which may have been intrusive. An internal division within the enclosure marked by a ditch (2283) between 0.7m and 0.81m wide and 0.4m to 0.65m deep, formed a sub-rectangular area measuring *c.*12m by *c.*8m. Gaps at the junctions of the ditches forming the internal enclosure may have been utilised to allow access and egress, possibly to control livestock.

Located inside the internal enclosure was a single well (1175), 0.65m square with rounded corners, and 0.64m deep. Impressions of wattle lining had survived below the water table in the lower 0.3m section (Pl. III) and an assemblage of largely unabraded 2nd- to 3rd-century pottery (30 sherds) was found in its backfill along with a cattle bone and two sherds of intrusive Anglo-Saxon pottery.

Two possible enclosures lay in the north-western part of the site and both survived as L-shaped ditches more than 30m in length, 0.8m to 1.5m wide and 0.26m to 0.64m deep. Neither was aligned with the contemporary field system. The more northerly ditch (2305) is likely to be the earlier since it appeared to respect the position of the main boundary ditch (2309). It contained a small quantity of largely residual pottery. The more southerly enclosure (2289) was located to the south of the main boundary and cannot have been in use at the same time as the field system, since it cut directly across it. Only a single pottery sherd was recovered from its fills, dating to late 1st to 3rd centuries alongside an iron nail and a late 4th-century coin (presumably intrusive as a result of animal disturbance, although it is possible that the ditch remained open into the 4th century).

A short section of probably L-shaped ditch (2253) was located at the northern edge of the excavation and may represent the edge of another enclosure.

Pits

Although several pits were assigned to this phase they were largely scattered and — apart from a few exceptions that have already been described — did not appear to be associated with any of the field systems, enclosures or other structures. The pits varied in size up to 1.30m in diameter and were up to 0.58m deep. Most provided only limited dating evidence, although pit 1201 contained much of a large Horningsea ware storage jar. Sherds from the same vessel were noted more than 50m to the south-west in the fills of a pit (1502) and an adjacent ditch (2266). Metalwork consisted of an iron strip (pit 900, SF 305, Ch. 3.III) and a nail (pit 941).

Layers

A possible remnant (up to 0.12m thick) of a former cultivation soil (1238) had survived sporadically across the site. Apart from a small Late Roman iron armlet (SF 414, Ch. 3.III), few finds were recovered from it.

Late Romano-British (Phase 4, 4th to ?early 5th centuries)
(Fig. 8)

North-eastern enclosures

Outer enclosure
A large U-shaped enclosure in the north-eastern part of the site measured approximately 45m by 43m and was aligned roughly north to south with its northern side apparently open towards the river. The enclosure ditch (2240, 2285) was re-cut in its entirety once (2241, 2286) and partially a second time (2287, Fig. 8, S.5). A few metres to the west of the enclosure and running parallel with it was a short length of ditch (2252), perhaps forming a staggered entranceway to the main enclosure. Within this enclosure were a midden (2245, see below) and another smaller sub-circular enclosure (see below).

Pottery from the enclosure ditch and its re-cuts comprised a largely Late Roman assemblage with a few Anglo-Saxon sherds: the earliest ditch (2240) contained only a few fragments (seventeen Roman and eleven Anglo-Saxon) while its re-cut (2241) contained slightly more (fifty-three Roman and eight Anglo-Saxon). This assemblage included Oxford Red Colour Coated ware suggesting that the Roman and Early Saxon pottery may have been contemporary and giving an early 5th-century date. An iron buckle (SF 286, Ch. 3.III), also likely to date to the 5th century, is further evidence of a very Late Roman/Early Saxon date. One coin (SF 339) dated to AD 330–45 was found in the earliest ditch (2240) and another three came from its re-cut (2241): one of these was dated to AD 270–73 (SF 338) and the other two (SF 297, SF 298) AD 330–45 and 330–35 respectively. A few animal bones (including rabbit), seven quernstones, iron nails and a hobnail (the latter from 2286; SF 299, Ch. 3.III) were also recovered.

Inner enclosure
Lying within the enclosure described above was a smaller (18m wide) sub-circular enclosure comprising three conjoined ditches (2247, 2248 and 2251). The initial enclosure was constructed from shallow, narrow ditch segments (2248, 2251) no more than 0.85m wide and 0.23m deep. It was subsequently re-cut and possibly altered slightly by a substantial ditch (2247) up to 2.50m wide and 1.04m deep (Fig. 8, S.7). A clear break in the enclosure on its western side (between 2247 and 2251) created a narrow (1m) entrance into the space that would only have allowed single file livestock access. A much wider break was located on its eastern side, although the full extent of this could not be determined as it was outside the boundary of the excavation area.

Backfilling of the inner enclosure ditches probably took place at about the same time as that of the outer enclosure; finds included late 3rd/4th-century pottery (forty-two sherds) and part of an Early to Middle Saxon vessel, as well as an iron nail, a fragment of *tegula* and a fragment from a wool-comb or a flax heckle (SF 353, 2248, Ch. 3.III).

North-western enclosures
Enclosures and other ditches in the north-western part of the site were re-cut and re-aligned. Enclosure 2291 and its re-cut (2296) were established first (Fig. 8, S.8 and 9), subsequently followed by a new layout (2301, 2298, 2302 and 2303; Fig. 8, S.8). The enclosures may originally have been sub-rectangular in shape but all survived as fragmentary features, roughly U- or L-shaped in appearance and apparently open to the north (river) side.

Enclosure 2291 survived as a much truncated U-shape enclosing an area of approximately 35m by 35m. It was re-cut on its western side (2296; Fig. 8, S9) and subdivided by an east to west ditch (2312) enclosing a smaller area of approximately 18m by 20m.

A second possible enclosure (2272) was constructed adjacent to the east and cutting the eastern ditch of enclosure 2291. Only a short length of the ditch survived making it impossible to determine its full extent or even whether it was in use at the same time as enclosure 2291 or replaced it. Both enclosures contained few finds in their backfills (only five sherds of indeterminate Roman pottery from 2291/2296 and a single sherd from 2272).

Enclosure 2301 (Fig. 8, S.10), was constructed on a similar alignment but further to the north of 2291/2296 which it may have replaced. Diverging from the new ditch was a 13m-long segment of ditch (2303), possibly a remnant of another enclosure, which contained a coin of AD 270–73 (SF 373). Both 2301 and 2303 were subsequently cut by another ditch (2298; Fig. 8, S.11) which ran southwards for approximately 40m before turning westwards for about 25m. This new enclosure (2298/2299/2326) was the latest in the sequence and was constructed in approximately the same position but with its eastern arm shifted approximately 8m to the west. There was no indication of a western arm, although it is possible that ditch 2296 may still have been in use creating a narrower U-shaped enclosure (approximately 23m wide and over 40m long).

As with all of the earlier enclosures in this group, pottery was sparse although in this case did include a little 4th century and Middle Saxon material. Of particular interest, however is an assemblage of smithing slag, which, although small (0.621kg compared with over 3kg from Anglo-Saxon phases) makes up approximately 70% of the slag from Roman contexts. This, coupled with a small quantity of fired clay and the partial vitrification of grains noted in a sample (Sample 105; Fryer, Ch. 4.IV), may suggest small-scale metalworking in the vicinity. Other finds from the enclosure included two lava quern fragments and a single animal bone.

South-eastern enclosure
A small horseshoe-shaped enclosure (2207) in the south-eastern part of the site has been tentatively assigned to this phase and was again open to the north. It was by far the smallest of the enclosures, at only 11m long by 8m wide. The ditch was between 0.51m and 0.72m wide and 0.1m to 0.35m deep and contained a piece of fired clay lining, possibly from a domestic oven or craft/industrial feature.

Other ditches
The fragmentary remains of several other ditches lay across the site, running on various alignments. Although they did not provide coherent evidence for field systems or further enclosures, they suggest the presence of activity outside the main enclosed areas.

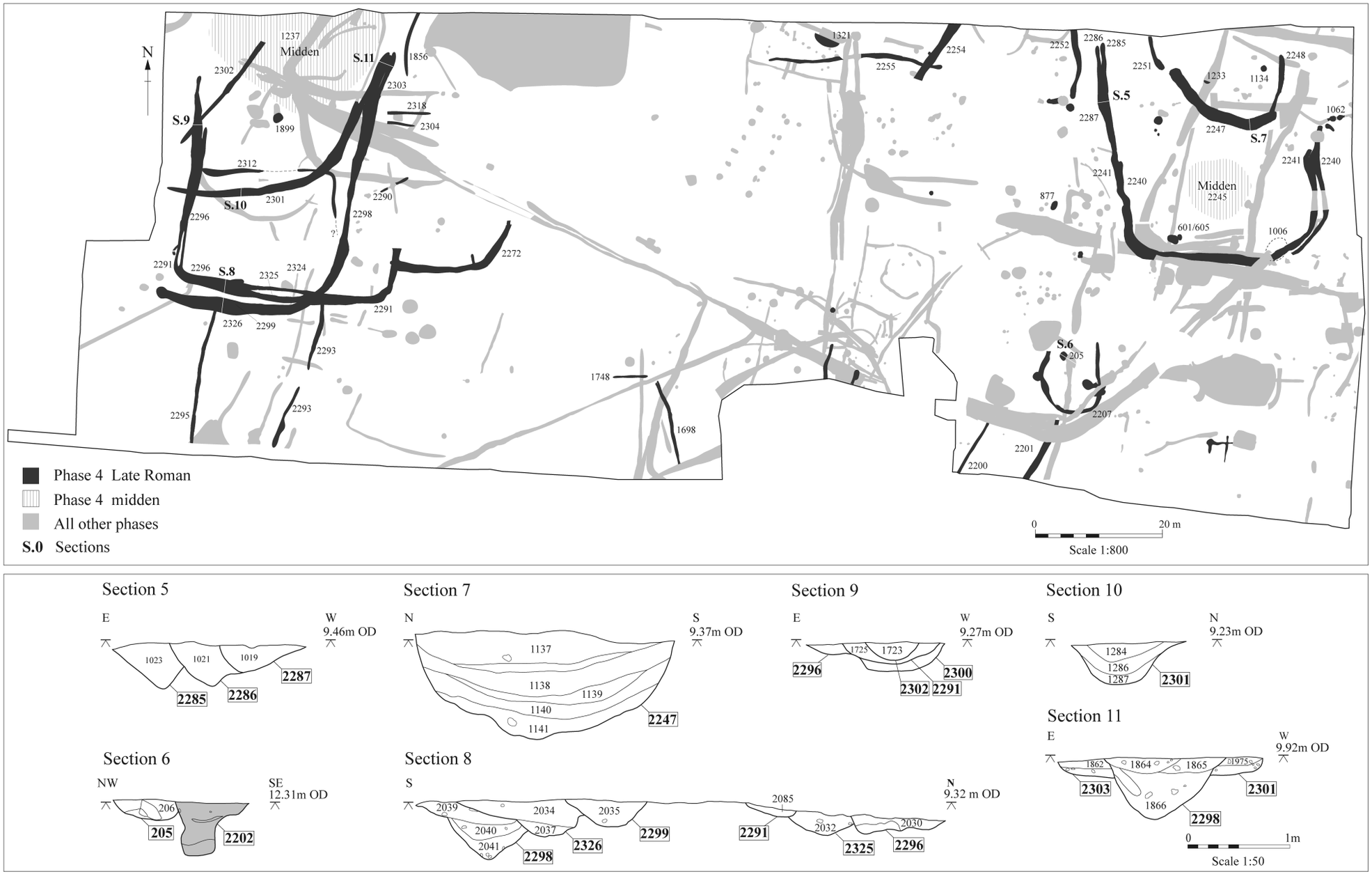


Figure 8 Phase 4: Late Roman (4th to early ?5th century)

Pits

Twenty-six pits were probably Late Roman in date, the majority being located in the eastern half of the site. The increase in the number of pits may reflect a change in land use, although in several cases phasing is not secure. All apart from two were shallow (between 0.05m to 0.37m deep). Eighteen pits were dated by artefacts found in their backfills but the quantities were modest with only one pit containing more than eleven sherds. Nine of the pits contained pottery dating to the late 3rd to 4th century, while two (1899 and 1062) had coins dating to the second quarter of the 4th century (AD 330–35 and 330–45 respectively). Other finds included a copper alloy chain (SF 232, Ch. 3.III) and an iron sheet fragment from pit 576, while a fragment of shale bracelet (SF 410, Ch. 3.VI) came from pit 1321.

Based on their proximity several of the pits may be associated with one or other of the enclosures including enclosure 2301 within which a single shallow pit (1899) was located; this was 0.95m in diameter by 0.19m deep and contained a coin of AD 330–35. Possibly associated with enclosure 2247 were two small pits (1134 and 1233). The former contained 3rd/4th-century pottery (eleven sherds) and an assemblage of mixed cereal grains and possible animal dung from a sample (Sample 40; Fryer, Ch. 4.IV).

Possibly associated with enclosure 2240 were four pits and two possible post-holes, two adjacent pits (601 and 605) being located close to the southern boundary of the enclosure. Six undated pits lay within or just outside enclosure 2207, including pit 205 (Fig. 8, S.6). They were oval or circular in plan, measuring between 0.68m and 1.80m in diameter and 0.19m to 0.60m deep.

Middens and other layers

Possible middens were located within two of the enclosures (2240 and 2301). They both contained comparatively large assemblages of pottery and other finds. The easternmost example (2245) comprised a mid–dark brown silty sand mixed with relatively large quantities of pottery (just over 4kg), but considerably less animal bone (38 fragments) and filled a shallow hollow approximately 9m in diameter and up to 0.46m deep located in the central southern part of enclosure 2240/1. All the pottery was Roman and included a late 4th/early 5th-century component. The faunal remains were sparse by comparison. Other finds included an illegible 3rd-century coin (SF 303), a Colchester derivative brooch (SF 368, Ch. 3.III), a fragment of copper alloy sheeting, an iron nail and a whetstone. A similarly shallow but much smaller hollow (1006) lay in the south-eastern corner of the same enclosure; finds recovered from it included Saxon pottery and slag (Sample 5) which almost certainly derived from the overlying midden layers (Phase 6, 2315).

Midden deposit 1237 was located to the north of enclosure 2301, measured *c.*20m by *c.*15m and was up to 0.3m deep, sealing Phase 3 deposits. The layer was excavated by machine following planning, the hand collection of surface artefacts and metal detecting. Seven coins dating from AD 260–68 to AD 367–75 were found, including a small hoard of five coins found stuck together which may represent a purse group (Crummy, Ch. 3.II). Other finds included two copper alloy hairpins, one dating to the 2nd century (SF 374, Ch. 3.III), the other probably later Roman (SF 362, Ch. 3.III) as well as an iron nail.

A possible Late Roman ground surface (2316) had survived in patches across the site, largely to the south of layer 2319 (below). A reasonably large assemblage of pottery was recovered (301 Roman and six Anglo-Saxon sherds including a rimsherd of a small jar; Ch. 3.IX, No. 30). The small assemblage of faunal remains included a roe deer antler as well as an intrusive mole bone. Other finds consisted of part of a copper-alloy sheet with ring and dot motif on one side, several iron artefacts including two nails (SF 409, Ch. 3.III), a spike (SF 408, Ch. 3.III), and a U-shaped fitting (SF 386, Ch. 3.III), as well as several residual worked flints (Nos 6–8, Ch. 3.I). The small assemblage of brick and tile included a *tegula*.

Layer 2319 had a slightly different composition to 2316 and was not finds-rich although the two may equate: alternatively it may have formed as a result of hillwash. It was up to 0.10m thick and was found only on the lower ground in the north area of the site. Finds included thirty-four Roman sherds and a little intrusive Saxon pottery including a fragment of a pitcher handle (Ch. 3.IX, No. 32), along with an iron joiner's dog and an iron rivet (SFs 205 and 237, Ch. 3.III). The presence of a partial rabbit skeleton demonstrates the problems of animal activity.

III. Anglo-Saxon Settlement (Period 3)

Summary

Buildings and artefacts typical of Early Saxon settlement were introduced to the site in the 5th century and continued into the early 6th century (Phase 5). The majority of the evidence was located to the south-east, overlying part of the Roman field system. Here, domestic features including sunken-featured buildings, a possible hall and ovens sat on an area of raised ground. A child's grave may hint at a nearby cemetery or may have been an isolated grave. Few features of this date were found on the relatively low-lying ground in the western area of the site (at 9m OD), perhaps because this area was given over to agriculture although it is possible that modern truncation had removed evidence here.

The ceramic assemblage indicates a probable hiatus of settlement between the early 6th and early 8th centuries. Activity during the Middle Saxon period can be divided into two subsidiary phases (Phases 6a–b), the earliest of which comprised land division consisting of north to south aligned ditches. The linear system of land division was eventually replaced by a single large enclosure with internal structures including post-hole buildings and an oven. Some of the earlier sunken-featured buildings were backfilled (either deliberately or through natural processes such as slumping), with one ending its life as a repository for waste from ironworking. Similar evidence came from an adjacent pit and, when combined, suggests the presence of a smithy. Finally, activity declined and the western half of the site was probably given over to pasture throughout the period although severe truncation caused by construction of the Thetford Bypass in 1988 may have distorted the evidence.

Figure 9 Phase 5: Early Saxon (5th to ?early 6th century)

Plate IV Early Saxon child burial (sk. 859, Phase 5), viewed from the west

Early Saxon (Phase 5, 5th to ?early 6th century)
(Figs 9–12 and Pls IV–VII)

Burial
The skeleton of a child (sk. 859), probably nine or ten years old at death, was found on the eastern periphery of the site. There was no obvious grave cut and the body was buried in a contracted ('crouched') position with the head to the east and arms together below its jaw (Pl. IV). The upper half of the body survived well with the ribs and backbone *etc*. in place. The lower half of the skeleton was much less well preserved, and appears to have been disturbed since the left tibia and fibula were found nearly 10m to the south-east in a later ditch (Phase 6b, 2203).

The child's teeth exhibited extreme physiological stresses at a very young age indicating dietary deficiency or severe fever (Duhig, Ch. 4.I). While there is evidence to suggest that the child's health had later improved, it still died very young. There were no datable finds with the burial but radiocarbon analysis produced a date of AD 410–600 (95.4% probability) (Wk15958; Ch. 4.II). A few animal bones found with the burial are likely to have been residual since one (a calf bone) returned a date of AD 130 to 380 (95.4% probability Wk15957).

Sunken-featured buildings

Form and dimensions
Seven sunken-featured buildings and a possible hall (2209, see below) were found spaced at fairly regular intervals around a roughly rectangular area measuring approximately 40m east to west and 25m north to south. The buildings were located on the higher ground and, with one exception (2211), were placed on a small sandy knoll at between 10.3m and 11.4m OD. Four of the sunken-featured buildings (2211, 2217, 2229 and 2232) were generally sub-rectangular in shape with a post-hole at each end of the long axis. The buildings were all aligned approximately east to west on their long axis. One postless example (2219) appears to have been rebuilt (2218) again without post-holes (Pl. V, Fig. 10, S.14), or perhaps its floor was partially re-dug. Two (2206 and 2233) were an irregular sub-oval shape probably due to being built into a west-facing slope. Although both were associated with post-holes these were irregularly placed. The lengths of the buildings varied between 2.8m and 5.8m and their depths between 0.3m and 0.7m below the level of the stripped sand (Table 1). Four of the buildings (2211, 2217, 2219 and 2232) were very similar in size (approximately 4m by 3m) whilst the largest two (2229 and 2233) were over 5.5m long.

SFB	*Length (m)*	*Width (m)*	*Depth (m)*
2206	4.48	3.80	0.40-0.60
2211	3.50	2.55	0.48
2217	4.30	2.40	0.40
2218	2.80	1.70	0.50
2219	3.90	3.10	0.40
2229	5.80	3.50	0.70
2232	3.60	2.95	0.51
2233	5.60	4.00	0.72

Table 1 Dimensions of sunken-featured buildings

Internal features
Other than post-holes there were no internal features to aid understanding of the function or construction of these buildings, with the end posts providing the only indication of how the superstructure might have been designed. The post-holes were generally between 0.49m and 0.93m deep (excluding possible animal disturbances in SFB 2232) and may have held load-bearing posts on which a frame was supported. It is worth noting, however, that basal fills of the SFB pits sealed all of the post-holes indicating that the posts must have been removed before these fills were deposited. The implication is that either deposition took place post-demolition (and so cannot be used in any way to indicate use or occupation of the buildings) or that the posts were not integral to the structure of the building and were perhaps used to support temporary scaffolding during their construction.

Finds and dating
The position of the buildings strongly suggests that their construction was contemporary, with only one example of recutting. The probable dates of the disuse of the buildings are discussed by Blinkhorn (Ch. 3.IX) and two main periods of site clearance are suggested by the pottery — the first in the Early Saxon period (SFBs 2206, 2217, 2218 and 2219) and the second during the Middle Saxon period (SFBs 2211, 2229 and 2233). Although the buildings contained finds assemblages of varying date (including diagnostic metalwork) they were probably all Early Saxon in origin with the later finds being introduced through use of the hollows for refuse disposal or incidental deposition during the Middle Saxon period. Most notable amongst

SFB	*Context*	*Item*	*Date*	*Qty*	*Wt (kg)*	*SF/ cat. no.*	*Fig. no.*
2206	upper fill(s): 180=250=252=253=296=369						
	180	Iron textile processing spike		1		SF 166	
	180	Iron padlock bolt	Early Saxon or later	1		SF 161	Fig. 22
	253	Iron ring-headed pin	Early Saxon	1		SF 170	Fig. 22
	180	Iron nails		2			
	180	Iron oxide flakes			<0.001		
	180, 250, 253, 369	Pottery	Roman	11	0.119		
	180, 250, 252, 369	Pottery	Early/Middle Saxon	42	0.721	No. 23	Fig. 33
	252, 296	Brick/tile	Roman	2	0.213		
	250, 252	Fired clay			0.027		
	369	Unfired clay loomweight		1			
	180	Lava quern fragment		1			
	180, 250, 252, 369	Animal bone (cattle, sheep/goat, pig, horse, dog)		69 NISP			
2211	lower fill(s): 190, 194						
	190	Pottery	Early Saxon	2	0.094		
	190	Animal bone (cattle, sheep/goat)		2 NISP			
	upper fill(s): 21=56=189; 0.3m thick mid to dark grey brown silty sand with occasional flints						
	56	Copper alloy ring-headed pin	Iron Age	1		SF 34	Fig. 18
	21	Smithing slag			0.293		
	21	Pottery	Roman	1	0.005		
	21, 189	Pottery	Early Saxon	14	0.196	No. 19	Fig. 32
	21, 189	Pottery	Middle Saxon	5	0.067		
	21, 56, 189	Animal bone (cattle, sheep/goat, pig, horse, dog)		13 NISP			
2217*	lower fill(s): 522						
	522	Pottery	Early Saxon	15	0.424		
	522	Bone needle	Anglo-Saxon	1		SF 218	Fig. 35
	522	Animal bone (cattle, pig, sheep)		13 NISP			
	upper fill(s): 53=470						
	53	Copper alloy girdle-hanger	Early Saxon	1		SF 35	Fig. 20
	53	Tiny fragments of copper alloy sheet		5			
	53, 470	Pottery	Roman	3	0.018		
	53, 470	Pottery	Early/Middle Saxon	20	0.715	No. 10 No. 12 No. 26	Fig. 32 Fig. 32 Fig. 33
	470	Stone spindlewhorl	Early Saxon	2		SF 212 SF 217	 Fig. 27
	53, 470	Animal bone (cattle, sheep/goat, pig, dog)		17 NISP			
	posthole 515, fill 514	Pottery	Early to Middle Saxon	1	0.003		
2218	lower fill(s): 506						
	506	Pottery	Roman	3	0.010		
	506	Pottery	Early Saxon	4	0.196		
	506	Brick/tile	Roman	2			
	506	Animal bone (cattle, sheep/goat, rabbit)		6 NISP			
	upper fill(s): 34=454=507						
	34, 454	Pottery	Roman	8	0.045		
	454, 507	Pottery	Early Saxon	37	0.609	No. 11 No. 13 No. 17 No. 18	Fig. 32 Fig. 31 Fig. 31 Fig. 31
	454	Lava quern fragment		1			
	454	Bone pin-beater	Early Saxon	1		SF 213	Fig. 35

SFB	*Context*	*Item*	*Date*	*Qty*	*Wt (kg)*	*SF/ cat. no.*	*Fig. no.*
	34, 454, 507	Animal bone (cattle, sheep/goat, pig, horse, fowl, rabbit)		38 NISP			
2219	lower fill(s): 468						
	468	Brick/tile	Roman	1			
	upper fill(s): 467						
	467	Pottery	Early Saxon	1	0.082	No. 11	Fig. 32
2229	lower fill(s): 640=684=686=688=690						
	640, 688, 690	Pottery	Roman	25	0.391		
	640, 684, 686, 688, 690	Pottery	Early Saxon	51	1.804		
	640, 690	Pottery	Middle Saxon	6	0.169		
	686	Fired clay			0.044		
	690	Bone pin-beater	Early Saxon			SF 274	Fig. 35
	640, 684, 686, 688, 690	Animal bone (cattle, sheep/goat, pig, horse)		68 NISP			
	upper fill(s): 639=683=685=687=689						
	687	Copper alloy pin (Hamwic Type B)	Middle Saxon			SF 251	Fig. 20
	685	Iron nail					
	639, 685, 689	Pottery	Roman	10	0.197		
	639, 683, 685, 687, 689	Pottery	Early Saxon	15	0.277	No. 14 No. 15	Fig. 32 Fig. 32
	639	Pottery	Middle Saxon	3	0.046	No. 22	Fig. 33
	639, 683, 685, 687, 689	Animal bone (cattle, sheep/goat, pig, horse)		45 NISP			
	posthole fills: 724						
	724	Pottery	Roman	1	0.001		
	724	Animal bone (sheep)		1 NISP			
2232	lower fill(s): 39=590=636=645=677						
	590, 611, 636, 677	Pottery	Roman	48	0.249		
	590, 636, 677	Pottery	Early Saxon	76	1.341	No. 9 No. 12	Fig. 31 Fig. 32
	677	Pottery	Middle Saxon	1	0.019	No. 24	Fig. 33
	677	Pottery	Late Saxon	6	0.017		
	636	Brick/tile	Roman	1			
	636, 645	Unfired clay bun-shaped loomweights	Middle to Late Saxon	20			
	677	Millstone grit quern fragment		1			
	590, 636, 677	Animal bone (cattle, pig, horse)		12 NISP			
	upper fill(s): 596						
	posthole fill(s): 611						
	611	Pottery	Late Saxon	1	0.023		
2233	lower fill(s): 482=479=480=524=538						
	538,	Pottery	Roman	1	0.003		
	538	Pottery	Early Saxon	4	0.062	No. 20	Fig. 31
	538	Pottery	Middle Saxon	1	0.003		
	upper fill(s): 349=421=458=481=523=537						
	349=537	Pottery	Roman	3	0.019		
	349, 523	Pottery	Middle Saxon	7	0.104		
	349=523=537, 538	Fired clay			0.105		
	523	Rabbit bones		2			
	349=523=537	Metalworking slag (Slag Samples 1-3, see Appendix 7)			1.748		
	523	Copper alloy cosmetic pick	Later Migration period or Middle Saxon			SF 214	Fig. 21

SFB	*Context*	*Item*	*Date*	*Qty*	*Wt (kg)*	*SF/ cat. no.*	*Fig. no.*
	523	Copper alloy u-shaped binding				SF 215	
	349	Iron holdfast		1		see Figs	Figs 24–5
	349	Iron holdfast rove		4			Figs 24–5
	349	Iron looped terminal		1			Figs 24–5
	349	Iron sheet rivet		1			Figs 24–5
	349	Iron sheet		1			Figs 24–5
	524, 349=537	Iron strip		11+			Figs 24–5
	524, 349=537	Iron billet/bar/rod fragments		16+			Figs 24–5
	349	Iron blade		1			Figs 24–5
	349	Iron pintle/wallhook		1			Figs 24–5
	349, 537	Misc. iron offcuts/waste		13			Figs 24–5
	524, 349=523,	Iron nails		17+			Fig. 6

* Excludes pottery and other finds from evaluation context 35

Table 2 Finds from sunken featured buildings (Phases 5 and 6, Early and Middle Saxon)

these is SFB 2233, on the western side of the rectangular area, the backfills of which contained evidence for Middle Saxon ironworking. This assemblage is of particular note and is described more fully in Phase 6 below.

Moderate to large quantities of animal bone and pottery were recovered from all of the buildings although some variety in the assemblages was noted. Objects associated with textile manufacture were found in five cases, including an assemblage of unfired clay loom-weights (SFB 2232) that may have dropped from a loom housed in the building. Fragments of querns and charred legumes represent food processing. Metalworking waste was recovered from three of the buildings but in such small quantities that it is not likely to represent an *in situ* activity. Other finds include a few items that could be related to building construction such as fired clay and iron nails, and personal items such as a girdle-hanger (see Table 2).

Description

Each sunken-featured building (SFB) was fully excavated by quadrant or longitudinal section. The buildings are described below in geographical order, running anti-clockwise around the group from the south-east.

SFB 2211 was *c*.3.5m by 2.55m and 0.48m deep with near vertical edges and a flat base (Fig. 10, S.12) — it was partially excavated during the 1990 evaluation (Trench 3). At each end was a circular post-hole (260 and 263) with vertical sides, measuring between 0.3m and 0.37m in diameter and 0.83m and 0.87m deep respectively. Both were filled by orange brown sand overlain by light

Plate V Early Saxon sunken-featured buildings 2218 and 2219 (Phase 5) during excavation, viewed from the east. The buildings were intercutting with the earlier structure (2218) lying in the foreground

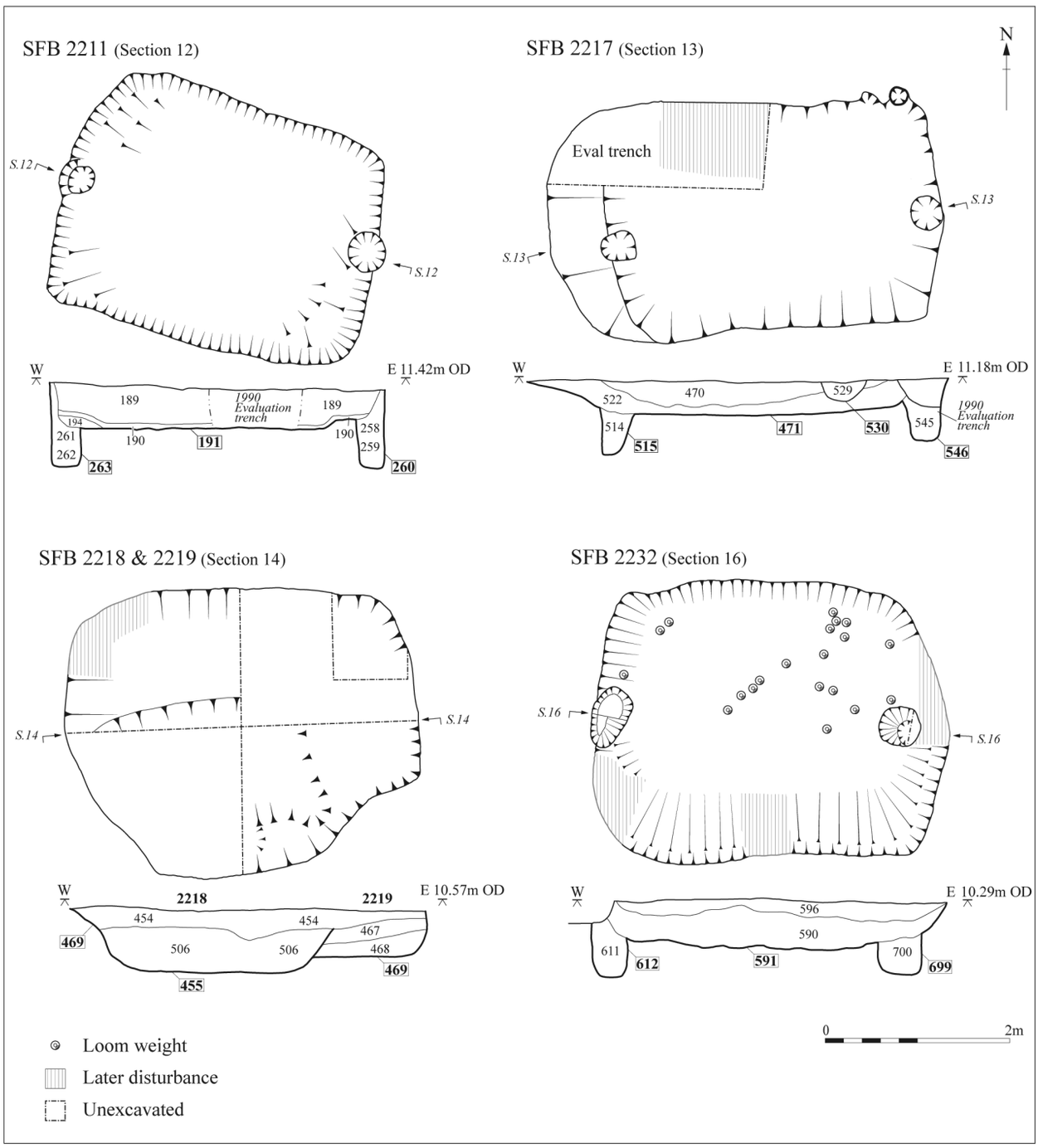


Figure 10 Plans and sections of Early Saxon sunken-featured buildings. Scale 1:60

yellow/orange brown sand. The basal fill of the building in its western corner (194, 0.12m thick) probably resulted from natural weathering. Overlying this was a thin layer (190, 0.06m–0.08m thick) of charcoal-enriched, very dark grey brown silty sand. The upper fill (189) was a mixed mid to dark grey-brown silty sand with occasional flints. Finds included an Iron Age pin (possibly deliberately curated; SF 34, Ch. 3.III), Early Saxon pottery with incised and stamped decoration (Ch. 3.IX, No. 19), and a little Middle Saxon pottery.

SFB 2217 was 4.3m long, 2.4m wide and 0.4m deep with gradually sloping sides and a flat base (Fig. 10, S.13) — it was partially excavated during the 1990 evaluation (Trench 5). The post-holes at each end (515 and 546) had near vertical sides and were sub-oval in shape (0.28m by 0.37m and 0.6m deep). They were filled with a mid grey brown silty sand with occasional natural flints <100mm in length. The building's basal fill (522, 0.15m to 0.17m thick) was a dark brown silty sand with occasional natural flints, overlain by a mixed orange brown silty sand with redeposited natural sand (470, 0.23m to 0.25m thick). The Early Saxon pottery found within the building was largely unabraded and suggests an early backfill date: it included a complete profile of a lugged jar (Ch. 3.IX, No. 10), part of the base of another jar (Ch. 3.IX, No. 12) and a large jar

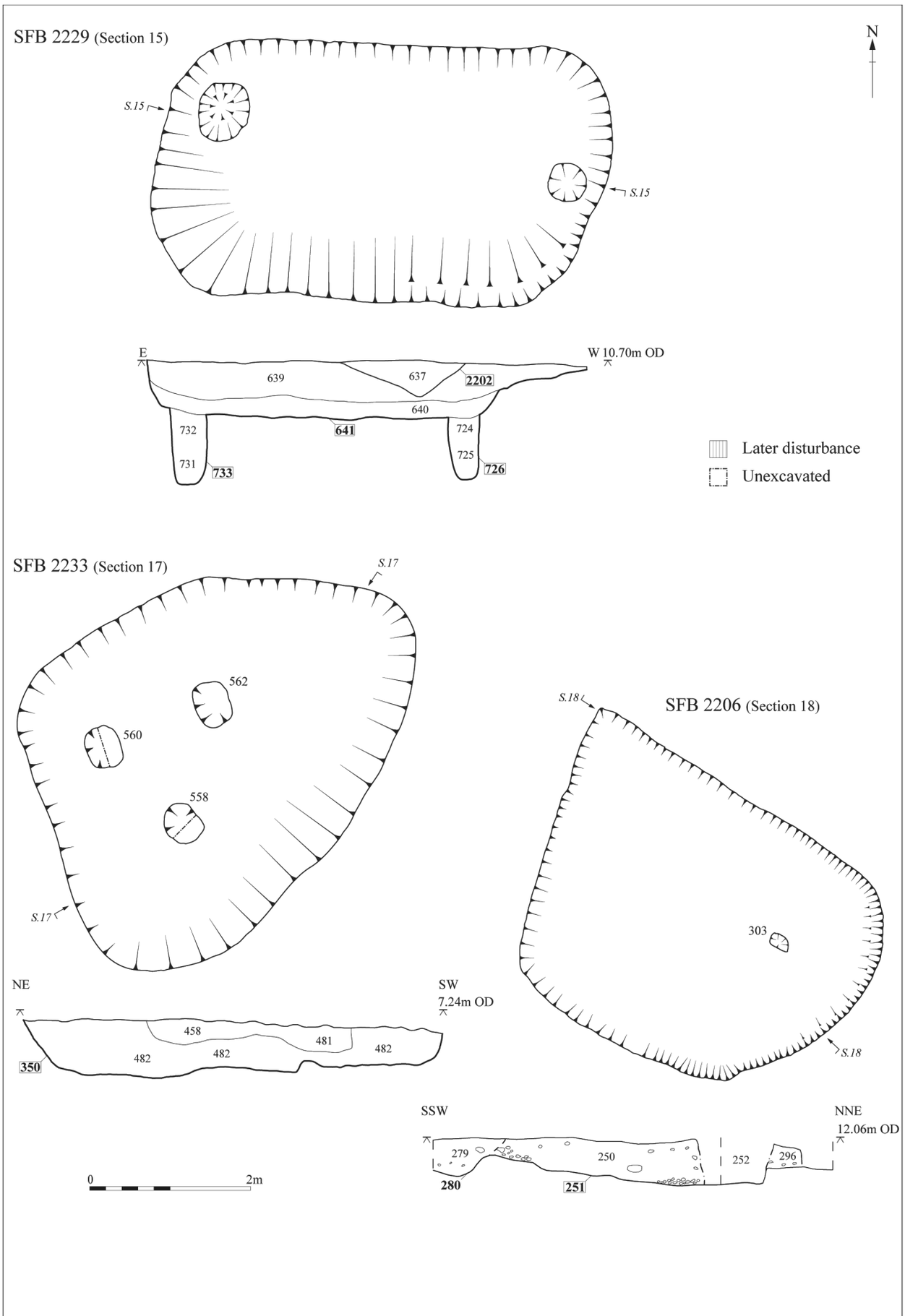


Figure 11 Plans and sections of Early Saxon sunken-featured buildings. Scale 1:60

rim (Ch. 3.IX, No. 26). Adjoining sherds of vessel No. 12 were found in a pit (584) and SFB 2232 more than 30m to the west. They had probably entered these deposits as secondary rubbish.

SFB 2219 was 3.9m long, 3.1m wide and 0.4m deep (Fig. 10, S.14; Pl. V). It had steep, vertical sides and was filled with a mid to dark grey brown sandy silt or silty sand with some charcoal flecks (468 and 467) and was cut by SFB 2218. A fragment of brick or tile was the only find from its basal fill (468) and a single piece of lattice-decorated pottery (the same vessel as that found in SFB 2218; Ch. 3.IX, No. 11) was found in its secondary fill (467).

SFB 2218 was 2.8m long, 1.7m wide and 0.5m deep (Fig. 10, S.14; Pl. V). It was filled with a mid to dark grey brown sandy silt or silty sand with some charcoal flecks (506) overlain by a mottled grey/yellow brown silty sand (34=454=507). The 5th-century pottery assemblage included several fragments with incised decoration (Ch. 3.IX, Nos 11, 13, 17 and 18).

SFB 2229 was 5.8m by 3.5m and 0.7m deep with near vertical sides and a flat base (Fig. 11, S.15). The two structural post-holes (733 and 726) were 0.52m and 0.4m in diameter and 0.93m and 0.73m deep respectively, with steep to near vertical sides. Each was filled by a light grey silty sand overlain by a dark grey brown sandy silt. The lower fill of the building (640=684=686=688=690) consisted of a (0.2m thick) dark brown to black sandy silt with frequent stones including some burnt sandstone, moderate quantities of small charcoal flecks and burnt clay flecks. This was overlain by a (0.5m thick) layer of mixed mid to dark brown silty sand with fewer charcoal flecks and frequent stones including some burnt sandstone and pebbles (639=683=685=687=689). Finds included a large unabraded Early Saxon pottery assemblage (Ch. 3.IX, Nos 14 and 15) and a relatively large Roman pottery assemblage, more than half of which (22 sherds) came from the primary fill on the south side. Several pieces of Middle Saxon pottery were also recovered (*e.g.* Ch. 3.IX, No. 22) throughout. It is possible that the later pottery was intrusive since SFB 2229 was cut by a later ditch (Phase 6; 2202) and was also particularly affected by burrowing animals.

SFB 2232 was 3.6m by 2.95m and 0.51m deep with steep sides except to the south where the slope was more gradual; the building had a flat base (Fig. 10, S.16; Pl. VI). The post-holes located at each end of the long axis (612 and 699) were 0.4m and 0.45m in diameter and 0.7m and 0.49m deep with near vertical sides, filled with a dark mid brown silty sand. Of particular interest was a group of approximately twenty unfired clay loomweights in the primary fill within the north-eastern and part of the north-western quadrant of the building (645 and 636), very near to its base (Crummy, Ch. 3.VI). These may have fallen from a loom since, although scattered, most occurred in an area of about 2m by 1m with a few lying further to the west. Basal fills within the other quadrants were 677 and 590. The lower fills contained a significant quantity of unabraded Early Saxon pottery (*e.g.* Ch. 3.IX, Nos 9 and 12). One sherd (No. 9) was of 'Romano-Saxon' style and probably dates to the early 5th century while parts of the second vessel (No. 12) were also found in an adjacent pit (584) and in SFB 2217 over 30m to the east. The large number of small abraded Roman pottery sherds were almost certainly residual. In addition there were a few intrusive abraded Middle and Late Saxon pottery sherds (*e.g.* Ch. 3.IX, No. 24). The building was later filled by a mid to dark brown silty sand (596) that contained no finds.

SFB 2233 was *c.*5.6m long, 4m wide and up to 0.72m deep (Fig. 11, S.17). It was an irregular sub-oval in shape, possibly due to its having been built into a west-facing natural slope. The sides were concave and the base was slightly uneven. Three very shallow possible post-holes were associated with it but did not conform to any

Plate VI Early Saxon sunken-featured building 2232 (Phase 5)

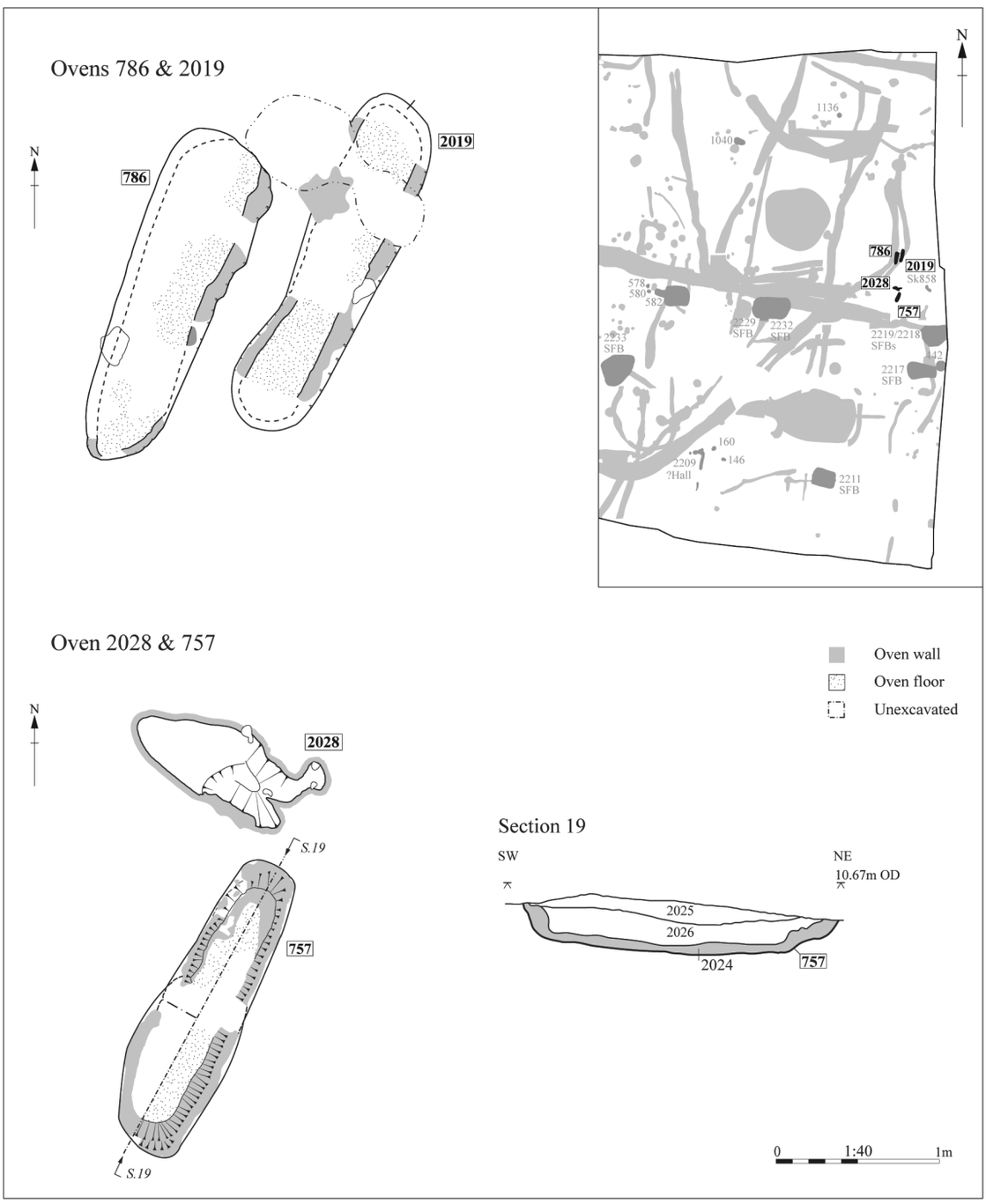


Figure 12 Plans and section of Early Saxon ovens. Scale 1:40

particular pattern. The building contained two deposits; the lower fill (482=479=480=524=538) was a brown silty sand containing a few sherds of Early Saxon and one sherd of Middle Saxon pottery, iron nails (SF 219), an iron strip (SF 220) and a tiny amount (0.021kg) of slag. The upper fills of the building may be of Middle Saxon date and are detailed below (Phase 6).

SFB 2206 was sub-rectangular, 4.48m long, 3.8m wide and between 0.4m and 0.6m deep (Fig. 11, S.18). It was built into a west-facing slope. The sides of the construction cut were steep and it had a fairly flat base slightly sloping to the north. A possible post-hole measuring 0.37m by 0.28m and 0.59m deep lay in the eastern part of the building. The backfill (180=250=252=253=296=369) was essentially homogeneous with no sign of a primary fill. Charred grains of wheat chaff and peas or beans (Sample 3; Fryer, Ch. 4.IV), together with a fragment of quern may indicate that limited culinary preparation had taken place nearby. All of the Anglo-Saxon pottery was early in date and — apart from a complete small, handled jar (minus the handle; Ch. 3.IX, No. 23) — was fragmented which, together with the absence of refits, implies secondary deposition. This may indicate that the eleven Roman sherds were also redeposited and not (as is often suggested) curated. Other finds included a textile processing spike (SF 166), a padlock bolt (SF 161) and a ring-headed pin (SF 170, Ch. 3.III).

Plate VII Early Saxon oven (757, Phase 5), showing clay lining

A slightly irregular 'pit' (254) lay on the north-western side of the building, to which it may have related. This measured 1.8m by 0.65m by 0.2m deep and contained a fairly uniform single fill consisting of a dark grey brown sandy silt.

Hall

Placed on the highest area of raised ground was a probable hall (2209, Fig. 9) which survived in fragmentary condition and consisted of two post-holes and two slots. It was positioned exactly halfway between two sunken-featured buildings (2206 and 2211) and appeared to be on a similar alignment. Although no diagnostic finds were recovered, its position and alignment in relation to the adjacent buildings implies that it was contemporary. The best surviving wall of the building was at least 6.4m long and comprised two possible beam-slots (144 and 196) which were continuous except for a short (1.97m wide) gap that may represent a doorway. The slots were 0.4m wide by 0.12m deep, and 0.2m wide by 0.07m deep respectively. The former was filled with a mid to dark grey brown silty sand containing fragments of lava quern, while the latter was filled with a light grey brown sandy silt. This wall formed a 'T' shape with the possible northern wall of the building which consisted of three post-holes (142, 146 and 165), and another (160) may belong to the same building. The post-holes were 0.39m to 0.45m in diameter and up to 0.12m deep, backfilled with very dark brown silty sand and mid brown silty sand respectively with frequent charcoal flecks throughout. A fragment of lava quern was found within post-hole 146.

Ovens

A group of four or possibly five ovens was located less than 10m to the north-west of SFB 2219 in two clusters. The two northernmost examples cut into the ditch fills of a Late Roman enclosure. The ovens were all sub-rectangular in shape and between 1.9m and 2.15m long and 0.4m to 0.65m wide. They were each lined with burnt orange to light brown clay but none was sufficiently intact and free of disturbance to allow archaeomagnetic dating (Mark Noel, pers. comm.).

The best preserved example (757, Fig. 12, S.19; Pl. VII) was aligned roughly north to south and was oval in plan (1.9m long and 0.65m wide). It was lined with (0.06 to 0.1m thick) clay that had survived to a height of 0.27m and was near vertical on the south-west side but had a more gradual slope on its north-west side. The primary fill (2024) was a 0.15m thick layer of ash, charcoal and burnt clay, overlain by a layer of light greyish brown sand (2026, 0.12m thick). The burnt clay in the primary fill may represent collapsed wall or roofing material.

A second oven (2028) lay adjacent to the north and was aligned east to west but only survived as a single large hard burnt clay layer. The feature was roughly triangular in plan with its clay lining surviving to 1m in length, 0.5m wide and upstanding to a height of 0.1m. It was filled with a single deposit of dark brown silty sand with charcoal flecks and pale grey to pink silty sand, from which two worked flints were recovered.

Four metres further to the north were two adjacent and parallel ovens, both in a fragmentary condition having been disturbed by burrowing animals. They lay on a roughly north to south alignment and are unlikely to have been contemporary given their close proximity. Oven 786 was a slightly irregular oval in plan (2.15m long, 0.65m wide and 0.28m deep) due to truncation on its west side. It was lined with clay (up to 0.2m thick) that was riddled with holes, probably as a result of worm and root action. The oven was filled with a light greyish brown sand, containing occasional flints, stones and burnt clay fragments. A small silver rivet (Fig. 21, SF 435) was found.

The second oven (2019) was also probably originally sub-oval in plan (*c*.2.00m long by 0.50m wide) but was truncated at its southern end. It was lined with a burnt orange to light brown clay that had been burnt black in patches. The lining stood to 0.26m high and partially survived over the floor (to about 0.04m thick) and the sides (to 0.1m thick). The oven was filled by light greyish brown sand mixed with occasional flints, stones and burnt clay fragments. A moderate to high level of disturbance was indicated by the presence of rabbit bones.

Another possible oven lay just to the north (2150, not on plan) and had been severely truncated. Although no datable artefacts were found in any of the ovens, they all cut into a Late Roman layer (2316).

Pits

Ten pits and two possible wells are attributable to the Early Saxon phase. All of the pits contained a single silty sand fill that varied from light grey brown to very dark brown to black with some charcoal flecks — most contained few finds.

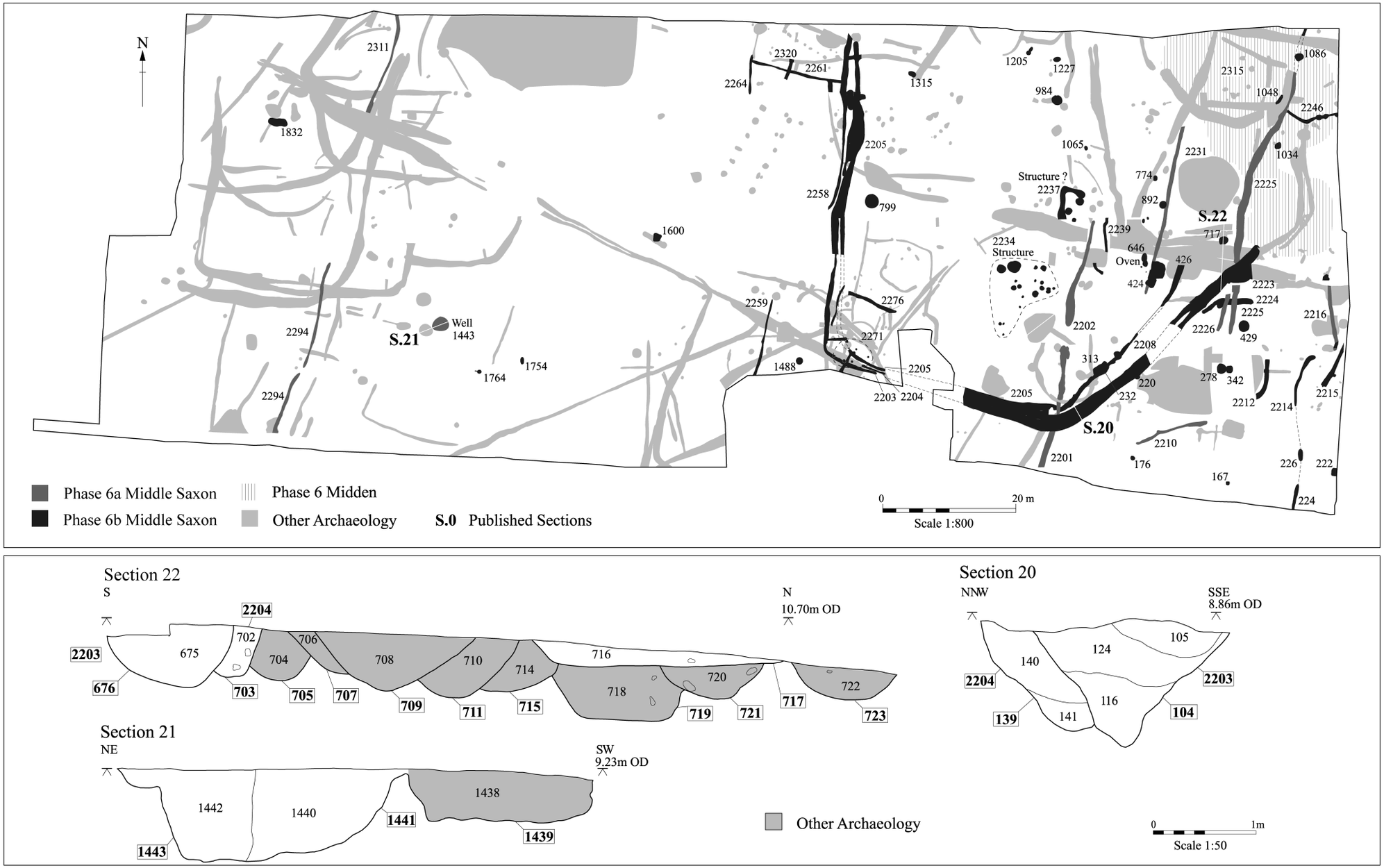


Figure 13 Phase 6: Middle Saxon (?early 8th century to *c.* AD 869)

Amongst the seven pits located in the vicinity of buildings, one (582) cut SFB 2232 and was the only example to contain more than ten sherds of pottery, the majority of which was 3rd- to 4th-century Roman with one fragment of possibly 5th-century Hadham Red ware and three fragments of Early Saxon pottery. Two other small pits or post-holes (578 and 580) less than 0.3m in diameter were also located close to building 2232; two sherds of Early Saxon pottery and a fragment of a shale spindlewhorl (SF 234, Ch. 3.VI) were found in pit 578. Pit 442 was circular (1.5m in diameter and 0.3m deep) and lay adjacent to SFB 2217. To the north of the main occupation area only two pits were found (1040 and 1136). A fragment of lava quern was found in the latter but they were otherwise unremarkable.

Approximately 100m to the west of the main area of occupation a pit and two possible wells were found. Their distance from the settled area, together with a limited finds assemblage and abraded pottery, implies that these features may have been associated with agricultural rather than domestic activity. The pit (1814) was 0.8m in diameter and 0.18m deep, being dated by a few handmade Early/Middle Saxon pottery sherds, and contained a residual flint blade core (Ch. 3.I, No. 3). The putative wells were substantially deeper than any of the contemporary pits (0.8m and 0.69m deep respectively). Both were circular (2.45m and 1.4m in diameter) with near vertical sides and flat bases. The larger example (1280) contained a charcoal-rich primary fill (1279) that yielded a large assemblage of fat hen seeds, which may be evidence of animal feed (Sample 46; Fryer Ch. 4.IV). The second possible well (2129) contained only a single handmade Early/Middle Saxon sherd and a lava quern fragment.

Middle Saxon (Phase 6, ?early 8th century to *c.*869)
(Figs 13–14)

Phase 6a

Field boundaries
The earliest Middle Saxon activity comprised a ditch system on a NNE to SSW and WNW to ESE alignment that may represent field boundaries, in a few cases cutting across Early Saxon buildings. Some regularity in pattern can be seen at the eastern side of the site where four ditches (2201/2202, 2231, 2225, 2216) were located approximately 11m apart, but to the west the ditches became more fragmented and dispersed, possibly due to more severe truncation. The alignment and location of these ditches was strikingly similar to those established in the Roman period (Phase 3) and it is possible that vestiges of the earlier field system remained sufficiently intact (perhaps as hedges or tracks) to influence the later landscape. Ditches may occasionally have been redefined resulting in slightly shifting boundaries (*e.g.* ditch 2226 may have been replaced by 2225). Several other fragmentary ditches may date to this period (*e.g.* 2210 and 2212), although their role in the field system is not understood. Few finds were recovered and consist of twenty-eight Anglo-Saxon sherds (along with forty-eight residual Roman sherds and two intrusive Late Saxon sherds). Only nineteen countable animal bones came from all of the ditches. Other finds included an iron socket or ferrule (Fig. 22, SF 176, ditch 2212), an iron textile-processing spike (SF 326, ditch 2225), an iron bar fragment (SF 157, ditch 2202) and a fragment of riveted iron sheet (SF 247, ditch 2231).

A single possible well (1443) lay in the western part of the site adjacent to similar Early Saxon examples (Fig. 13, S.21). It was originally 2.75m in diameter and 1.1m deep (1441) but was later reduced to 1.3m in diameter and 0.93m in depth and contained only a single piece of Middle Saxon pottery.

Phase 6b

Outer enclosure
The field system was replaced in the eastern area by a large slightly irregular U-shaped enclosure with internal structures. The ditch (2205) was over 130m in length and partially enclosed an area measuring *c.*80m by *c.*70m, open on its northern (river) side. The ditch had a steep V-shaped profile which was maintained by re-cutting (2204, 2203 and possibly 2208 and 2258), although the latest of the re-cuts (2203) was wider and deeper effectively destroying the earlier ditch cuts. The southern arm of the ditch was appreciably wider and deeper than elsewhere (up to 2.2m wide and 1.4m deep). Its shallowest, narrowest points were at the north-eastern (1.5m wide and 0.58m deep) and north-western (0.8m wide and 0.42m deep) ends. A primary fill of weathered natural sand occurred sporadically and indicates that the ditch had remained open along parts of its length. Extensive evidence of re-cutting on the outer edge of the enclosure implies both that it was in need of constant maintenance and that any associated bank was probably internal (Fig. 13, S.20).

Little pottery and few animal bones were recovered from the enclosure ditch, perhaps indicating that refuse was being deposited in surface middens (*e.g.* 2315 below). By contrast metal objects were found in relatively large numbers: these may have been casual losses, although there is evidence that a smithy was located nearby and the iron finds may derive from the scrap associated with it. Two leg bones belonging to an Early Saxon child were found in the ditch approximately 10m from their primary burial site (Phase 5, sk. 859).

Metalwork recovered from the ditch includes a Roman coin (AD 330–45), a complete Roman copper alloy toilet spoon (SF 416, Ch. 3.III), two Anglo-Saxon copper alloy pins (SF 192, SF 311, Ch. 3.III), Anglo-Saxon copper alloy tweezers (SF 231, Ch. 3.III) and a copper alloy stud (SF 272, Ch. 3.III). Iron finds comprised an equipoise balance weight (SF 149, Ch. 3.III), a padlock key (SF 411, Ch. 3.III), a nail or textile processing spike and a nail as well as five iron strip fragments, one with a central hole (SF 210, Ch. 3.III) and one with rivet in place, an awl (SF 249, Ch. 3.III), 0.073kg of smithing slag and 0.019kg of smelting slag.

Internal features
Two possible beam-slots (2237) and two post-holes provide evidence for a possible hall-type building or perhaps an open-sided smithy or working shed for metallurgy (see below) at the centre of the enclosure. The beam-slots perhaps supported north and west walls and the flint-packed post-hole may be evidence of an internal partition. There was no trace of an east wall. The beam-slot on the western side of the building was 5.5m

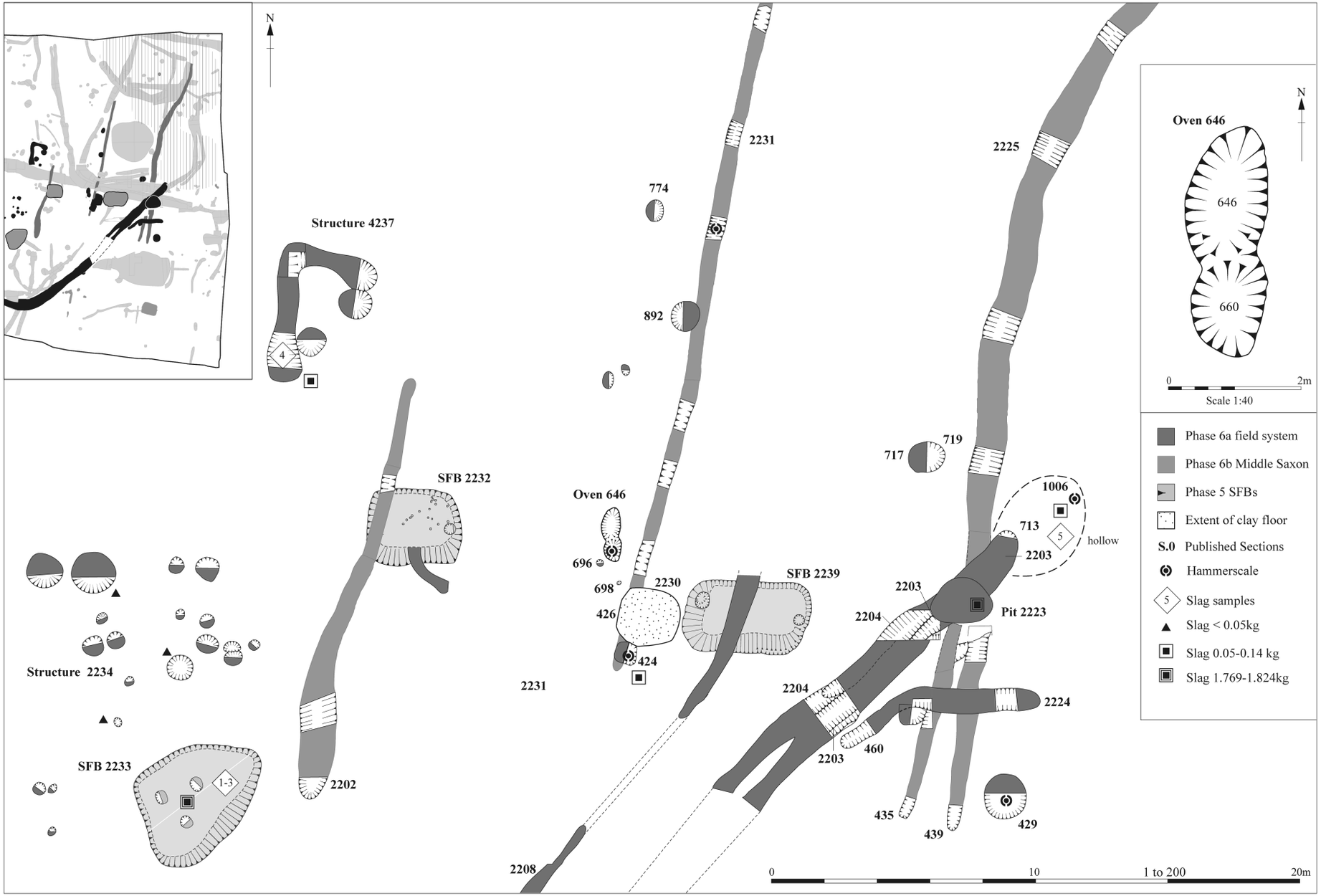


Figure 14 Distribution of Middle Saxon metalworking debris. Scale 1:200

long, whilst that to the north was 4m long. They were both 0.7m to 0.8m wide and 0.15m to 0.37m deep with steep sides and flattish bases. The post-holes were 0.68m in diameter and 0.34m deep with very steep sides and slightly concave bases. One was filled with a compacted mix of flint nodules and silty sand, possibly the remains of a post-pad. Four sherds of Middle Saxon Ipswich ware were recovered from the building together with residual Roman pottery, a small amount of animal bone, a rubbing stone (SF 437), an unfired spindlewhorl and iron slag (0.053kg). Examination of a sample of this slag indicated an unusually high proportion of silica (Slag Sample 4, see Rosenthal *et al.*, Ch. 3.V).

Just to the north-west of a possible entrance to a (Phase 6a) field was a cluster of fourteen post-holes (2234) covering an area of *c.*9m by *c.*6m. These did not form a coherent pattern but may indicate that a structure(s) once stood here. Most of the post-holes were circular or sub-rounded in shape with steep sides (0.3m to 0.9m in diameter and 0.08m to 0.42m deep, averaging 0.61m by 0.21m). Dating is somewhat problematic as four of the post-holes contained only Early Saxon pottery, one contained a sherd of Late Saxon pottery and five contained no pottery at all. The remaining four contained Middle Saxon pottery and it is thought likely that the structure dates to this period. Other finds from the post-holes included an iron object which may be a page clip for a book (SF 182, Ch. 3.III), an iron sheet fragment, two iron nails and 0.056kg of iron slag.

Metalworking evidence

An oven associated with a possible structure, pits and clay floor, was located within the south-east quarter of the enclosure (Fig. 13). Pottery including Ipswich ware was found in most of the features. The oven (646/660, Fig. 14) may have had a domestic use although some hammerscale was found in its fills, and a nearby pit (424) contained both hammerscale and tap slag indicative of smithing. The oven comprised two chambers arranged in a figure of eight on a north to south alignment. The northernmost chamber was oval in plan (1.2m long, 0.95m wide and 1m deep), the southern chamber being circular (0.85m in diameter and 0.9m deep). The sides of both chambers were vertical at the top becoming more gradual towards the base except in one section of the northern chamber where there was an undercutting niche. The base was flat but slightly deeper in the northern chamber. The basal fill of the northern chamber was an 0.8m thick deposit of black silty sand mottled with very dark brown patches containing fragments of mainly fired clay, a single sherd of Middle Saxon Ipswich ware and two sherds of Late Roman pottery. A deposit of burnt red clay was located in the niche at the base of the chamber. The upper fill comprised a 0.2m thick deposit of very dark brown silty sand mixed with frequent small clay lenses (some burnt), some charcoal flecks, occasional flints and an iron flesh-hook, possibly for handling hot food (such as meat joints or bread) straight from the oven (SF 248, Ch. 3.III). The base of the southern chamber was covered with unfired clay above which was a single deposit of very dark brown silty sand mixed with occasional fragments of unfired clay.

Patches of grey ash mixed with occasional fragments of fired clay were located approximately a metre to the east of the oven, and were possibly raked from it. A flat sub-rectangular area (2.7m by 1.95m) of compact unfired yellow clay (approximately 0.1m thick), possibly the remnant of a floor (426), was laid over the ash. A strip of hammered silver was the only object found within the floor (Fig. 21, SF 211). A circular patch (0.25m in diameter) of burnt pinkish orange clay at the centre of the floor may provide evidence for a possible structure/hearth to which two nearby post-holes (containing Saxon pottery and a fragment of lava quern) may relate, possibly forming a roofed shelter or windbreak.

To the south and contiguous with the floor was a small (0.65m in diameter and 0.23m deep) sub-circular pit (424). Finds include Middle Saxon Ipswich ware and residual Roman pottery, an iron nail, a small amount of metalworking waste (hammerscale and 0.112kg of tap slag) and fired clay. The metalworking waste may have derived from the same source as that found in SFB 2233.

Just over 10m to the east of ?floor 426 was a large shallow pit of probable Middle Saxon date (2223; 3.5m by 3m and 0.3m deep) which was dug through the former enclosure boundary (2205) perhaps suggesting a third phase of Middle Saxon activity. It contained a relatively large collection of iron objects and metalworking waste possibly from a smithy. The assemblage included iron bars and sheets, (*e.g.* SFs 276a and 276b, Ch. 3.III), nails (*e.g.* SF 277, Ch. 3.III) and 1.824kg of largely smithing slag. In addition fragments of vitrified clay lining were found that could be related to the production of steel (Ch. 3.IV and V). Again, it is possible that this material derived from the same source as that found in the backfills of SFB 2233 (see below). Other finds in this pit included a coin dated to AD 330–45 and a fragment of glass from a 4th-century yellow glass vessel, probably a jug (Cool, Ch. 3.VII).

Further south and west, an earlier sunken-featured building (SFB 2233, Phase 5) may have been finally backfilled during the Middle Saxon period with metalworking waste and scrap materials associated with ironworking (similar to those from surrounding features, most notably pit 2223 to the north-east). Alternatively it is possible that this SFB was actually built as a workshop during the Middle Saxon phase, although very little metalworking waste was recovered from its initial fills. Sealing these earlier fills was a 0.3m to 0.4m thick layer of very dark grey sandy silt with a large proportion of charcoal flecks (349=421=458=481=523=537) containing a small quantity of Middle Saxon pottery. It also contained numerous iron objects (fifty-seven items, including roves and smiths billets or bars; see Ch. 3.III) and metalworking debris (1.748kg), possibly derived from a smithy (see Eley and Fosberry, Ch. 3.IV, Rosenthal *et al.*, Ch. 3.V and Crummy, Ch. 3.III). In addition, small quantities of fired clay may have come from an oven or similar structure. If this building is accepted as Middle rather than Early Saxon then it is possible that an adjacent group of post-holes perhaps forming a structure (2234) was associated with it.

Middens

A series of indistinct layers, thought to be possible middens (2315) lay directly to the east and north-east of enclosure 2205, patchily covering an area of about 40m by 25m and sealing Phase 5 features. They comprised a 0.2m thick dark yellowish brown to nearly black sandy silt, rich in both Anglo-Saxon and Roman finds. The quantity of

residual Roman material is relatively high (359 sherds), forming approximately six times the amount of Saxon pottery (57 sherds, *e.g.* a handmade jar Ch. 3.IX, No. 26), two coins (AD 322–5 and 337–45), and a Late Roman copper alloy armlet (SF 296, Ch. 3.III). The remains of part of a human foetus/neonate (Duhig, Ch. 4.I) are likely to be redeposited and may be contemporary with the Early Saxon child burial (sk. 859), part of which had been redeposited in a ditch just 3m to the north-west of the foetus. Other finds that could not be closely dated included items associated with: leadworking (a lead offcut, SF 294, Ch. 3.III, and a solidified puddle of lead); food preparation (quernstone fragments and spelt wheat (Sample 47, Fryer, Ch. 4.IV)); textile processing (an iron textile processing spike or needle) and an item associated with leatherworking or pottery production (a red deer antler stamp, Fig. 36). Miscellaneous items (Crummy, Ch. 3.III) included a copper alloy tube (SF 291), two discoidal lead weights (SFs 283 and 292), three iron nails (*e.g.* SF 377), a lead figure-of-eight-shaped object and two iron strips (SF 322). Despite the range of artefacts in this layer little iron slag was found (0.072kg), although a slag sample (Sample 5) from an underlying deposit (Phase 4, 1006), almost certainly derived from the later midden.

Possible structure

Located in the south-west corner of the main enclosure a group of several post-holes may provide evidence for one or more structures of uncertain form (2271). The posts were apparently fairly randomly placed in an area measuring *c.*10m by 4m. Patterns could be discerned within the group, for example four were on an approximately north-west to south-east alignment and four formed a rectangular arrangement measuring *c.*2m by 1.3m. The post-holes were all roughly circular (0.24m to 0.5m in diameter) and very shallow (0.05 to 0.09m deep).

Pits

Twenty-six pits were allocated to Phase 6 although most contained no more than a few sherds of Middle Saxon pottery. The majority were very shallow (less than 0.4m), sub-circular (0.7m to 2.2m in diameter), and filled with a single deposit of light grey brown to dark brown to black silty sand with charcoal inclusions. Two pits contained an unusually large quantity of flint fragments.

Thirteen pits lay within the enclosure (2205) although it is not possible to be certain whether they were therefore associated with it. Three (774, 892 and 1227) contained evidence of burning including charcoal, burnt clay and burnt stones possibly resulting from dumping from nearby ovens or hearths. One (717) contained a fragment of an Ipswich ware lugged pitcher (Ch. 3.IX, No. 31) but was otherwise unremarkable.

Seven of the pits lay outside the enclosure to the east but they differed little in character from those within it. One example (278) contained a small assemblage of seeds including heavily burnt flax, which may be the residue from a light meal (Sample 7, Fryer, Ch. 6.IV). One of the pits (176) may date to the end of the phase as a single Late Saxon sherd was recovered from it and another (167) contained part of the rim of a Middle Saxon jar (Ch. 3.IX, No. 27).

Further pits were located to the west of the enclosure. Two examples (1488 and 1600) were relatively deep (0.47m and 0.54m respectively) circular features (1.34m and 1.3m in diameter). Pit 1488 lay just outside the south-west corner of the enclosure (2205) and was filled with charcoal enriched silty sand mixed with fragments of clay (both burnt and unburnt) perhaps deriving from a kiln or oven, and a little pottery including a fragment from a large Middle Saxon jar (Ch. 3.IX, No. 28).

Cutting into the top of the possible midden deposit (2315) were two shallow (0.17m) broad pits, filled with unburnt flint nodules (varying in size up to 0.15m by 0.1m) within a loose sandy silt. Both pits had steep sides and flat bases (1048 was 4m by 1m and 1086 was 2.7m by 1.5m). The flints made up about half the fill in pit 1048 and formed a single layer in pit 1086. The few finds include Middle Saxon and Roman pottery. Although the function of these features remains uncertain, it is possible that they may have been used as soakaways.

Chapter 3. The Finds

I. Lithics

Lithics from the evaluation and excavation
by Barry John Bishop
(Figs 15–16)
A total of 678 struck flints and just under 8kg of burnt flint fragments were recovered. Just over half of the struck flints, representing a largely undisturbed knapping scatter, were recovered from a natural depression in the eastern part of the site (2314, Pl. I), whilst over 90% of the burnt flint was recovered from a similar feature to the west (Fig. 5, 2066). The remainder of the lithic material was thought to be largely or entirely residually deposited, and was found in low densities from a variety of features scattered across the excavated area.

The knapping hollow
A total of 358 struck flints and a small quantity of burnt flint was recovered from the base of a small depression, measuring *c.*4m by 4m, within the natural sands. Some of the flakes exhibit occasional edge-nicking, consistent with limited trampling, but are otherwise in a sharp condition, supporting their interpretation as representing an *in situ* knapping scatter.

The struck material was manufactured from translucent brown flint with a thick but weathered and iron-stained chalky cortex, with occasional recorticated thermal scars present, typical of local flint originating from relatively unweathered derived deposits. Similarities in the flint used to manufacture the assemblage suggest it could have resulted from the reduction of only a single nodule, a suggestion supported by limited attempts at refitting. One abandoned 'testing nodule' is also present, which had probably been discarded due to a serious thermal flaw running through its centre.

The assemblage predominantly consists of decortication, core shaping flakes including crested blades, trimming and maintenance flakes, many miss-hits, small chips, and fragments of knapping shatter and other irregular flakes. Many of the flakes, particularly the less-cortical ones, are relatively large, often exceeding 70mm in maximum dimension, and tend to be thin and narrow with small, frequently modified, striking platforms, although few true blades and no cores are present. Potentially usable flakes appeared under-represented and, of these, many may have been rejected due to breakage, undesirable terminal fractures, undue thickness, or other perceived faults. It would appear that this assemblage largely represents an episode of initial nodule preparation and core manufacture, with any cores and most other usable pieces removed for use elsewhere.

Within the hollow, the distribution of the struck flint was spatially restricted, with three quarters of the material confined within two main concentrations, each occupying less than 1m^2. These exhibit different reduction stage 'signatures'; the southern concentration contains higher proportions of larger decortication and mass-reduction flakes, whilst the northern scatter is dominated by smaller, core-shaping and trimming flakes and flake and blade fragments. These would suggest that the nodule was initially dressed in one position, with the knapper then either adjusting their position, turning around and moving further to the north, or handing the nodule over to a companion in that position, where the core was finally prepared.

It would appear that a limited number of nodules were brought to the hollow. One of these was rejected, probably due to thermal faults, whilst the others, perhaps only one, had been more fully reduced. Cores and possibly a number of usable flakes and blades were apparently produced, although these were then removed for use elsewhere. Such a scenario could have been undertaken within a matter of only a few minutes, and may have represented a short stop-off as part of a longer journey. Alternatively, as a few pieces of burnt flint were also present, it is possible that a small hearth was constructed within the hollow, suggesting that occupation may have been of longer duration, perhaps a short-stay camp that included an episode of knapping.

Although an unusually detailed picture can be reconstructed for the events occurring within the hollow, the fact that the assemblage consisted predominantly of primary core reduction waste, with no diagnostic types present or any idea of the metrical traits of the full reduction sequence, has resulted in difficulties in attempting to define chronologically when this might have happened. The careful effort made to prepare the cores, including the use of 'cresting' techniques, suggests that blade production was the aim, and the presence of technological traits such as edge-trimmed platforms and occasional platform faceting amongst the flakes, strongly indicates that the assemblage was the product of a systematic, blade-based reduction strategy. Such techniques are broadly datable from the Upper Palaeolithic until the Early Neolithic, but the lack of diagnostic pieces means that confident refinement of this date is not possible.

The burnt accumulation
Densities of burnt flint across the site were invariably low, and most of this probably represented general residual 'background' waste from hearth use at the site. However, a small depression, measuring just over 2m by 1m (2066), produced just over 7kg of burnt flint from a 50% sample. The flint had been burnt to the extent that all pieces had become 'fire crazed', changed colour to a uniform grey-white and had shattered, with the vast majority of pieces being less than 10mm maximum dimension. The severity and consistency of the burning is suggestive of systematic, rather than incidental, burning, and it appears that the flint had been placed into the hollow, as there was no evidence of *in situ* burning. The quantities present may be greater than would be expected from the simple disposal of hearth residues, and it would thus appear to represent an accumulation of deliberately burnt flint.

Recovered from within the sample were three broken blades, a narrow-blade micro-burin and twelve small chips, including six platform preparation flakes, all of

which indicate blade-based core reduction, datable to the later Mesolithic by the narrowness of the micro-burin. All of the struck pieces were in good condition and only two struck pieces had been burnt, suggesting that the knapping had occurred as the burnt flint was accumulating, rather than having been incorporated either before or during the burning process. Deliberate burning of flint is rarely found associated with Mesolithic struck flint but, although residual incorporation cannot be entirely dismissed, the mix of unburnt struck flint within the accumulating burnt material would indicate a close relationship.

The general scatter

Burnt flint fragments were recovered in small quantities from across the excavated area. These had been variably burnt, consistent with having been placed either intentionally or accidentally in hearths, although no concentrations that may indicate either the presence of *in situ* hearths or the disposal of hearth waste were noted, and the material probably represents incidental general 'background' waste from hearth use.

Additionally, 305 struck flints had been scattered across the site and were recovered from both topsoil deposits and a number of Roman and Saxon features, where it is assumed they were residually deposited.

The raw material used for the struck assemblage consists of good knapping quality grey, black or brown translucent flint, sometimes containing substantial quantities of opaque grey or black inclusions. Where present, the cortex mostly consists of a hard, rough and weathered chalky kind, and numerous pieces preserve heavily recorticated natural thermal fractures. These raw materials, like those from the knapping scatter, had probably been obtained from glacially derived superficial deposits, which, although not present on the site, could probably be obtained in the vicinity. A few pieces do exhibit a more rounded and smooth worn cortex, which may have derived from alluvial sources, also present close to the site. Some of the pieces, such as the transverse arrowhead (see below) which is made from a fine translucent black flint, could potentially have come from the mines at Grimes Graves, located less than 5km to the north, although no pieces retained any of the distinctively thick Grimes Graves' floorstone cortex.

The condition of the struck assemblage is variable, as may be expected from redeposited material, although generally it is in a good condition with only minor edge-chipping apparent. Some 'polishing' and edge rounding was probably caused by post-depositional movement within a sandy matrix. There is a high degree of breakage of the flakes and blades, at least partly due to the thinness of the products, but it would appear that the assemblage was largely recovered close to where it was originally deposited. The degree of recortication was also variable, with all stages from none to full recortication present, suggesting that the material may have been manufactured over a long period of time, although no clear chronological divisions were apparent and some variation in degrees of recortication may at least partly be due to localised soil conditions.

As with most assemblages, the bulk of the material comprises undiagnostic knapping waste and unclassifiable flakes and flake fragments, of limited analytical potential. Considerations of this assemblage's typological and technological characteristics would suggest that, as a whole, it was manufactured over a considerable period. Nevertheless, the predominant knapping strategy present was blade-based and involved the systematic manufacture of narrow flakes and blades. There were many small flakes (chips) present, including trimming and platform preparation flakes, as well as cores and other knapping waste that would indicate that core reduction had occurred at the site.

Flakes and blades vary considerably in size and technological attributes, with both carefully and systematically produced blades, as well as much more crudely produced, thick, squat flakes present. Although much variation is apparent, flakes generally tend to be thin and narrow, with many exhibiting narrow, often edge trimmed, striking platforms. True blades, with parallel margins and dorsal scars, account for just over 20% of the general scatter, and a further 7% consist of flakes with blade-like attributes, such as parallel dorsal scars. A concern with systematic core reduction is also testified by the presence of core rejuvenation flakes, including core-tablets and core-face removal flakes. The majority of the blades are small and narrow, rarely exceed 40mm in length and include a significant number of bladelets. There are, however, a few noticeably larger examples in the assemblage, all exceeding 80mm in length (*e.g.* Fig. 15, Nos 1 and 2). Systematic blade manufacture constituted the principal reduction style from the Upper Palaeolithic until it declined in favour of a predominantly flake-based industry during the Neolithic. The noticeable variation in the size of the blades here suggests that they were not all the product of a single phase of occupation, but may have been manufactured over a considerable period of time, a suggestion possibly supported by differences in the degree of their recortication which, although not exclusively, tends to be heavier on the larger examples.

Eleven cores were recovered. Six consist of blade cores and two had been used to produce flakes, whilst the remaining three had been only minimally reduced, and may be considered as 'tested' nodules or cores abandoned very early on in the knapping sequence. The blade cores consist of three with opposed platforms (*e.g.* Fig. 15, No. 3), one with platforms at right angles (Fig. 15, No. 4), and two with single platforms, one of which has been blunted along one side, possibly as a device to aid handling (Fig. 15, No. 5). One of the opposed platformed cores (Fig. 15, No. 3) had been reused after it had started to recorticate, and adds further support to the suggestion that the assemblage was manufactured over a long period. The flake cores were irregularly shaped with multiple, randomly aligned, platforms, although at least one of these may have been initially designed to produce blades prior to it becoming used for flake production.

Sixteen retouched pieces are present. The earliest diagnostic forms consist of two broken small straight-backed blades (*e.g.* Fig. 15, No. 6), which may have represented microliths, and two thicker, obliquely truncated blades, one with a 'squared-off' bulbar end (Fig. 15, Nos 7 and 8), both of which may be better classed as points. The microliths are characteristically Mesolithic, their relatively small size suggesting a possible later Mesolithic date for their manufacture, whilst the two 'points' are harder to categorise, and can be paralleled with implements from both late Glacial and early Post-Glacial assemblages.

Also recovered was a large and finely made transverse arrowhead weighing 18g, of Clark's (1935) type C1 and of Green's (1980) chisel type (Fig. 15, No. 9). Its base has been lightly trimmed and part of its cutting edge has broken, but it has clearly been made by transversely truncating a large flake. It has several multi-directional dorsal flake scars and may have been produced from a 'Levallois' core. Although originally thought to have Mesolithic affinities, chisel-type arrowheads are now thought to be exclusively later Neolithic or early Beaker, dating to *c.*3250–2500BC (Green 1984, 19).

Scrapers constitute the most numerous retouched type, with seven present, although these vary considerably in morphology and in the nature of their retouch. They include: diminutive types with light abrupt retouch on their ends or sides; significantly larger end-scrapers; steep-edge scrapers made on potlid spalls; and two made on large but relatively thin flakes, and with very worn and rounded semi-invasive shallow flaking on their distal ends. Use-wear analyses has suggested that, as a class, scrapers may have been used for many different functions and on a variety of materials, and it would seem unlikely that the diverse scrapers here were all utilised for the same purposes.

Other retouched implements consist of two notched pieces, one made on a narrow flake and the other on a blade, and a fragment of an edge trimmed flake or blade. Also recovered was a purposefully made chopping type core-tool with one side blunted, presumably as an aid to handling (Fig. 16, No. 10), and a rather crudely worked biface with heavily abraded edges made from opaque grey flint (Fig. 16, No. 11). The biface shares some similarities with waisted axes (*cf.* Gardiner 1987, fig. 5.13), but could equally represent an unpolished flaked axe or discoidal knife fragment. Large, often broken, crude core tools, comparable to the example here, concentrate in the Brecklands, and are generally dated to the later Neolithic or Early Bronze Age (Healy 1998). Alternatively, a large flake removed from one face prior to the implement breaking resembled a Levallois style removal, and may suggest this actually functioned as a discoidal core (*cf.* Healy 1998, fig. 29.2.1).

Discussion

The location of the site, in the Brecklands close to the fen edge, has long been noted for its wealth of prehistoric remains; the area has witnessed prodigious but casual collecting of surface material by Victorian and early 20th-century amateur antiquarians (Healy 1998), whilst extensive and systematic research has also been undertaken, initially by the Fenland Research Committee from the 1930s (Smith 1997), and more recently by its successor, the Fenland Project (Coles and Hall 1983).

At the Brandon Road site, only one definite subsoil feature could be associated with the flintwork, a natural hollow which appears to have served as a shelter or resting place during a short episode of core manufacture. Although this episode could not be dated with any precision, it is unlikely to have occurred after the Early Neolithic. The burnt flint accumulation is also, perhaps, more likely to be associated with the contained struck flint than not, and, if so, would be a rare and rather unusual example of a Mesolithic subsoil feature. Large accumulations of burnt flint, often termed 'burnt mounds', have increasingly been identified from across Britain, with numerous examples recorded alongside streams and rivers throughout East Anglia (*e.g.* Apling 1931; Layard 1922; Martin 1988; Edmonds *et al.* 1999), including an example located just downstream of the site on the opposite bank of the river (HER 24846). The feature at Brandon Road, however, is unlikely to represent the remains of a typical burnt mound, which are usually associated with later prehistoric, particularly Bronze Age, cooking places. Nevertheless, other possibilities have been forwarded to account for burnt flint accumulations (*e.g.* Barfield 1991), and there is slight but increasing evidence for the systematic burning of flint during the Mesolithic, including a series of burnt flint filled pits excavated at Perry Oaks in west London (Lewis and Walsh 2004), and a burnt flint filled depression found at Streat in Sussex, associated with a possible dwelling (Butler 1998).

The remainder of the Brandon Road assemblage, although residually deposited in later features, demonstrates that the site had been visited during the Mesolithic period, probably on multiple occasions over a long period, and during the later Neolithic, although these excursions left little trace other than the flintwork. Mesolithic lithic scatters are rarely associated with subsoil features, and in the Brecklands Healy has noted that 'Late Neolithic and Bronze Age subsoil features were extremely rare…while contemporary struck flint was near-ubiquitous' (Healy 1998, 226).

The main period of flint reduction at the site probably occurred during the later Mesolithic, as evidenced by numerous blades from the general scatter and supported by the narrow blade micro-burin recovered from the burnt accumulation. The presence of a few noticeably larger blades may suggest that even earlier material could have been present. The two truncated pieces may possibly be related to this material, as they are of a size not easily placed within later Mesolithic assemblages, but are, perhaps, more closely comparable to late Glacial or early Post-Glacial implements. Late Glacial flintwork is, as elsewhere in Britain, rare in East Anglia, although Jacobi (1984, fig. 4.2) indicates a few possible sites along the fen-edge to the west of Thetford, including those at Wangford, Lakenheath, Undley and Mildenhall. Some of the pieces from Wangford show certain similarities to the potentially early Brandon Road material, including the presence of basally squared-off points (Jacobi 1984, fig. 4.12). Numerous find-spots of Mesolithic material are known in the general area around Thetford (Wymer 1977; Jacobi 1984, 44–53), mostly concentrated along the river margins and the fen edge or its former river channels. Excavations less than 100m to the south in 1999 recovered a small assemblage of early Neolithic or Mesolithic flint (Bates 2000, 16). Probably the most prolific site in the immediate area is at Two Mile Bottom, located a few kilometres downstream of the Brandon Road excavations (Jacobi 1984; Robbins 1998). There, a considerable quantity of flintwork has been recovered, much of it from a series of natural shallow hollows. As at Brandon Road, much of that assemblage appeared to indicate repeated visitation of the river margins throughout the Mesolithic, and included Early Mesolithic microliths and basally retouched pieces (*e.g.* Jacobi 1984, fig. 4.7) as well as a number of small, straight-backed microliths, of later Mesolithic affinities (*e.g.* Robbins 1998, fig. 27.2). The quantities of flintwork at Brandon Road were much smaller, however, and could only suggest short-term

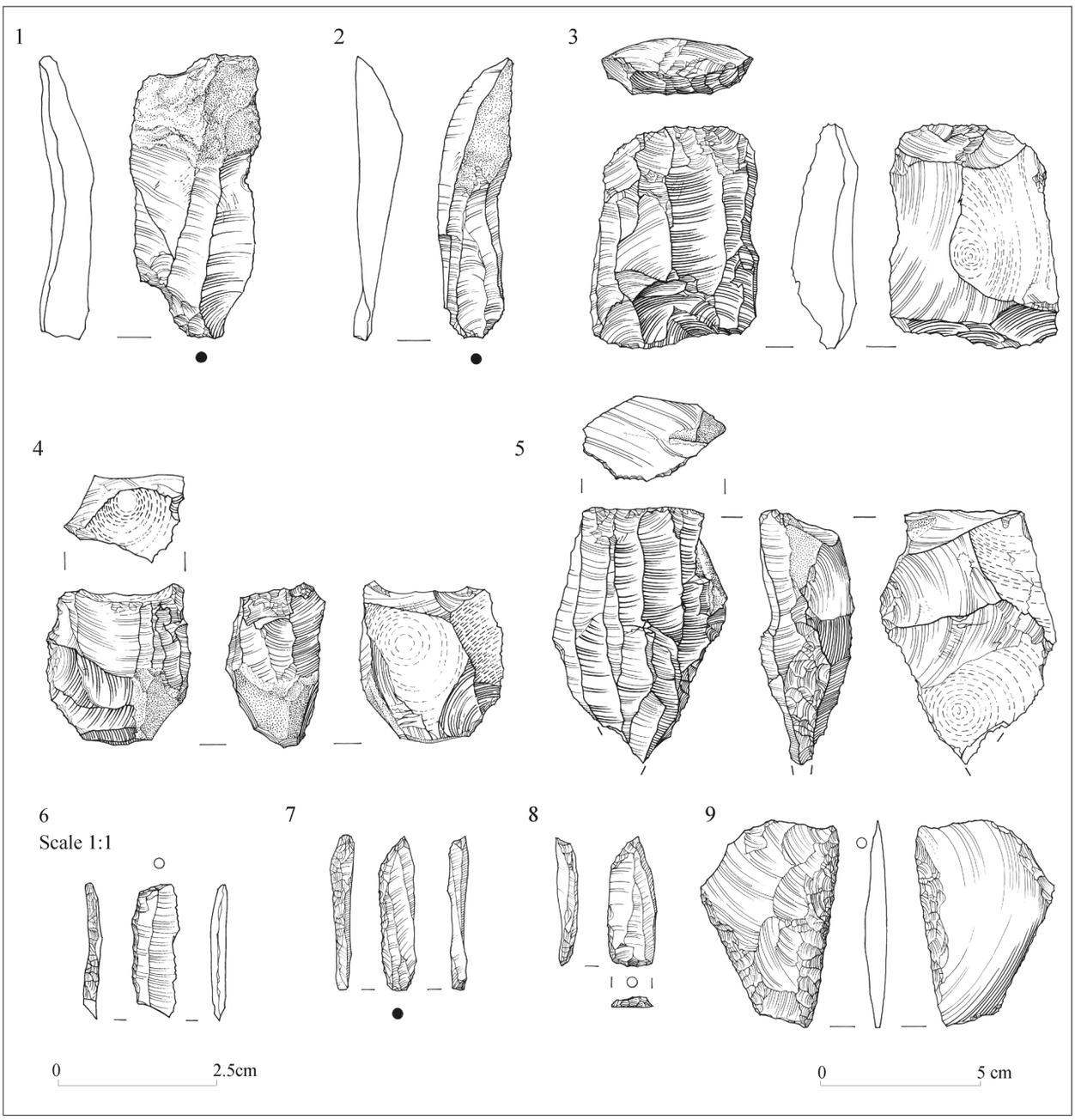


Figure 15 Worked flint. Scale 1:2 and 1:1

occupation, especially if formed over a substantial period of time. Robbins, however, does note that at Two Mile Bottom the Mesolithic material was 'generally confined to the immediate vicinity of the river' (1998, 207), and it is possible that at Brandon Road greater concentrations of artefacts could have been present further north of the site, nearer to the river.

Although it is possible that the knapping scatter was of Early Neolithic date, there was little further evidence that flintworking continued at the site on any significant scale after the Mesolithic. Substantial assemblages of Early Neolithic flintwork have been recovered during recent excavations close by at Kilverstone, on the eastern side of Thetford, mostly deriving from the structured deposition of artefacts within pits. In contrast to Brandon Road however, it was noted that although blades and narrow flakes were present, most flakes were broader and, in addition to scrapers, the retouched types were dominated by serrates and edge trimmed pieces (Conneller 2002; Beadsmore with Conneller 2003).

The clearest evidence for the later flint use at Brandon Road consisted of the transverse arrowhead, characteristic of later Neolithic industries, although some of the scrapers and the bifacial implement (Fig. 16, No. 11) may be of a similar date. The arrowhead was a particularly large and finely made chisel-type. These are generally rare throughout Britain although there is a marked cluster of chisel-types found within the Brecklands (Green 1980, fig. 40), some of which, such as those from West Stow, are significantly larger than the average (*e.g.* Pieksma and Gardiner 1990, figs 38–40). Transverse arrowheads are frequently associated with ceremonial locations and

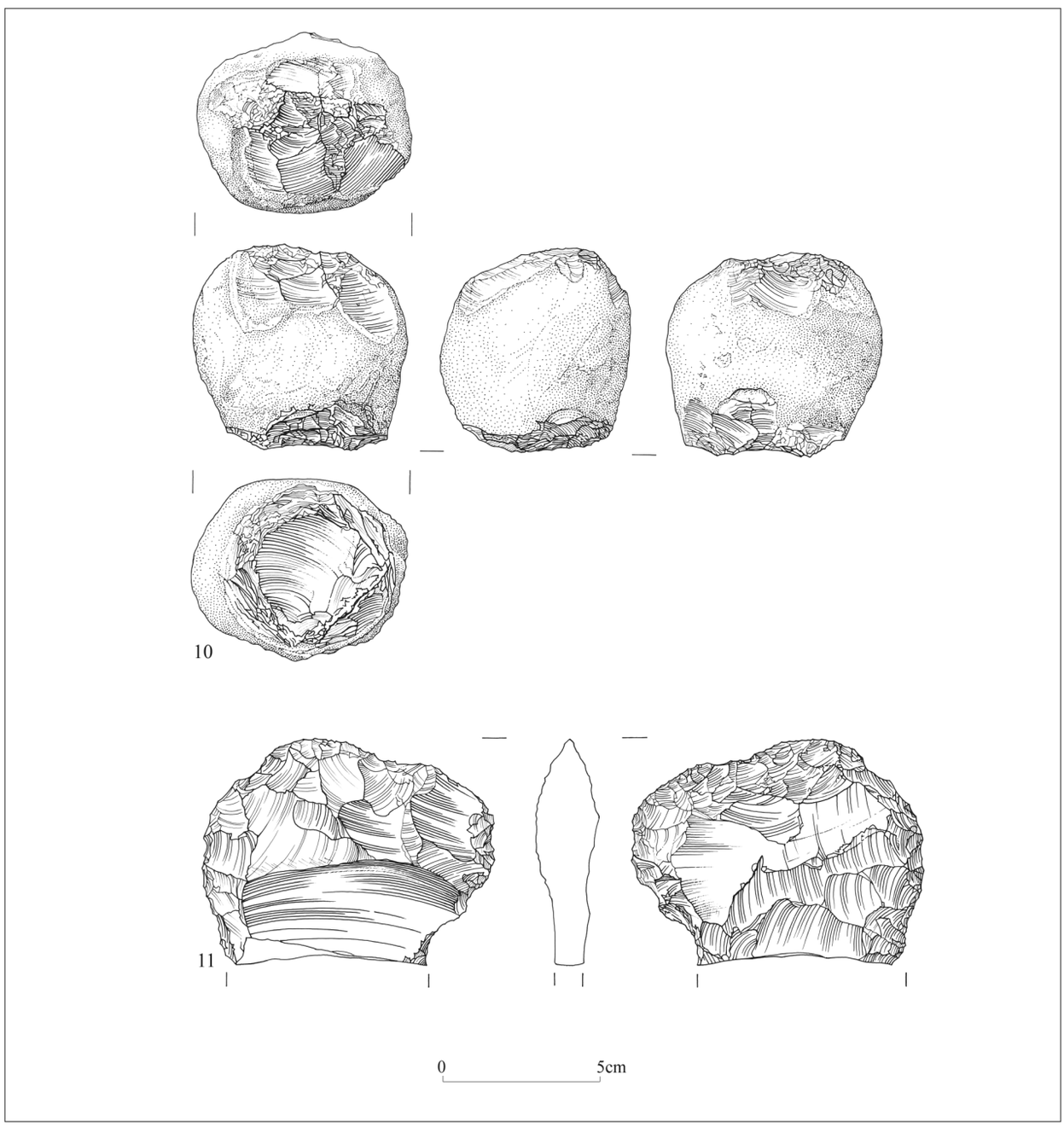


Figure 16 Worked flint. Scale 1:2

activities, the large examples at West Stow, for example, being associated with funerary activity (Pieksma and Gardiner 1990, 59: 106), although any such evidence was lacking at Brandon Road. The ceremonial deposition of flintwork into pits continued at Kilverstone during the later Neolithic period, although this did not seem to include the use of arrowheads (Conneller 2002). Transverse arrowheads also have a distinct association with Grooved Ware (Green 1980, 114), and there is a thin but fairly constant scattering of Grooved Ware producing sites across Norfolk (Cleal and Longworth 1999), including Redcastle Furze, less than 500m to the south-east of Brandon Road (Cleal and Longworth 1999, 191).

Catalogue of illustrated flint
(Figs 15–16)

1. Large **blade**. Weight 47g. Fill 683, SFB 2229, Phase 5

2. Large **blade**. Weight 17g. Unstratified

3. Opposed platform **blade core**. Reused after recorticating. Weight 80g. Fill of pit 1814, Phase 5

4. **Blade core** with two platforms set at right angles. Weight 74g. Fill of ditch 1795, Phase 2

5. Single platform **blade core** with side blunting. Weight 120g. Fill of pit 1909, Phase 2

6. **Backed blade/microlith**. Weight 0.4g. Layer 2316, Phase 4

7. Obliquely truncated **point**. Weight 3g. Layer 2316, Phase 4

8. Obliquely truncated **point**. Weight 4g. Layer 2316, Phase 4

9. Transverse **arrowhead**. Weight 18g. Unphased pit

10. **Chopping tool**. Weight 318g. Unstratified

11. Bifacially flaked **implement**. Weight 141g. Unstratified

Lithics from the Thetford Bypass, 1988
by J.J. Wymer
An assemblage of worked flints was found in spoil dumped immediately south of Brandon Road and can be traced to 1–2m deep trial excavation next to the Little Ouse, where peat overlay iron-rich gravel. Iron encrustation on some of the flints and some of the associated bone fragments suggests that they came from the interface between the two deposits. The assemblage consists of:

34 blades (14 about 100mm long)
14 blade fragments
1 plunging blade
5 prismatic cores
6 crested flakes (1 about 170mm long; 1 about 160mm)
37 flakes and blade failures
3 large blades with 'mashed' edges
1 flake scraper
1 hollow scraper
1 double burin on a thick blade

The industry is typical of later Upper Palaeolithic technology, comparable to that seen at Titchwell and Lynford. There is some use of a very fine quality brown flint which was also used at Lynford. In addition, six unpatinated flakes of normal Breckland Neolithic flintwork were recorded.

II. Coins

by Nina Crummy, with contributions by Mark Blackburn, Andrew Rogerson and Philip Wise
(Fig. 17)

A group of 83 coins was recovered from the site, ten from the evaluation and 73 from the excavation (Appendices 1 and 2; Fig. 17a). A further 68 coins came from the 1988 metal detecting of the Bypass and compound area (see below). Of the group of 83 coins, 80 are Roman issues that can be allocated to the coin periods established by Reece (1995, table 1; 2002, 145). Despite the recovery of 1st- and 2nd-century material from the site, there are no coins earlier than AD 260, and the overwhelming majority belong to the first three-quarters of the 4th century (although the 1988 compound material had coins predating AD 260 and coins dating up to the end of the 4th century).

Coins from the evaluation and excavation
A small hoard of five coins from a Phase 4 midden (1237) is undoubtedly a purse group. Three of the coins are issues of Valentinian I, reverse *Securitas Reipublicae*, and a fourth is probably the same but the obverse is not fully legible; they date to the period AD 364–75 and come from the mints of Arles (3) and Lyon (1). The fifth is from the Trier mint, Constantius I, reverse *Victoriae DD Auggq NN* and dates to some 20 to 30 years earlier.

Composition of this group is typical of purse groups, which tend to consist of coins close in date, mint and reverse type, with perhaps one or two earlier exceptions. For example, of a group of twelve to thirteen heat-damaged coins from Saltersford, Lincolnshire, those that could be identified were six of Magnentius (AD 350–53), one of Decentius (AD 351–3) and one of Constans (AD 346–50), with only *Victoriae DD NN Avg et Cae*, *Gloria Romanorum* and *Fel Temp Reparatio* reverses present (White 1980, 86; Robertson 2000, 324, no. 1344). A purse collection from Colchester consisted of nine coins of Constans, all from the Trier mint, eight with the AD 348–50 phoenix type of *Fel Temp Reparatio* reverse (seven phoenix on pyre, one phoenix on globe), and the ninth the slightly earlier *Victoriae DD Auggq NN* reverse (AD 346/7–8). A second purse from Colchester contained a group of thirteen coins, eleven of the House of Theodosius (388–402), one of Valentinian I (364–7), and one of Theodora (AD 337–41; Crummy and Winter 1987, 74, nos 21–2). The contents of a purse from Mickleham, Surrey also dated to AD 317–24, and consisted of issues of Constantine I (ten), Constantine II (seven) and Crispus (seven), eighteen from the London mint and six from the Trier mint (Robertson 2000, 260, no. 1089).

The four latest coins in the Brandon Road purse group all belong to Coin Period 19 (AD 364–78), the latest period represented on the site. The absence of identifiable coins of the House of Theodosius does not, however, necessarily mean that no coins of this date were present, as the illegible minim (SF 346) is quite possibly Theodosian, nor need an absence of coins later than AD 378 imply absence of activity, given the agricultural nature of the site.

The only Saxon coin from the excavation site is a *styca* of Æthelred II of Northumbria dating to the mid 9th century (see Wise below), although a second *styca*, and two *sceattas*, were found during construction of the Bypass (see below). There are no medieval coins, and the post-medieval period is represented only by two 17th-century farthing tokens.

Using the coin periods fixed by Reece, and his method for comparing coin loss on individual sites with each other and with the British mean (1995; 2002, 147, 149, fig. 3), the Brandon Road coin loss pattern is shown in Fig. 17a against the equivalent values for the coin assemblages from West Stow, Suffolk and Spong Hill, Norfolk, both sites with Roman and early Anglo-Saxon activity (Curnow 1985; Davies 1995).

The low coin loss in the Early Roman period at Brandon Road is typical of Romano-British sites and rural ones in particular and, although a few coins of the earlier periods were found at West Stow and Spong Hill, all three sites remain consistently below the British mean for Periods 1–16. From Period 17 Brandon Road and Spong Hill rise above the mean, and the two sites then share a similar pattern of coin loss, apart from in Period 19, when Brandon Road has a higher incidence of loss, probably due to the presence of the purse group. West Stow remains below the mean throughout.

Brandon Road's coin loss pattern conforms to that of a cluster of sites that includes Hacheston, Suffolk, and Caister-by-Yarmouth, Norfolk, as well as villas such as Gadebridge, Hertfordshire (Reece 1995, fig. 19). Reece links this pattern to the demolition of Gadebridge *c.*AD 350, but a mid 4th-century break in occupation conflicts with the evidence for activity at Brandon Road in the late 4th and early 5th centuries. An interpretation based on regional factors, including perhaps a change in the role of coinage in rural economies, is probably more likely for Brandon Road, especially given the similarity with other eastern region sites.

Styca
by Philip Wise
The misshapen nature of this coin, the retrograde obverse and the retrograde blundered reverse legends would

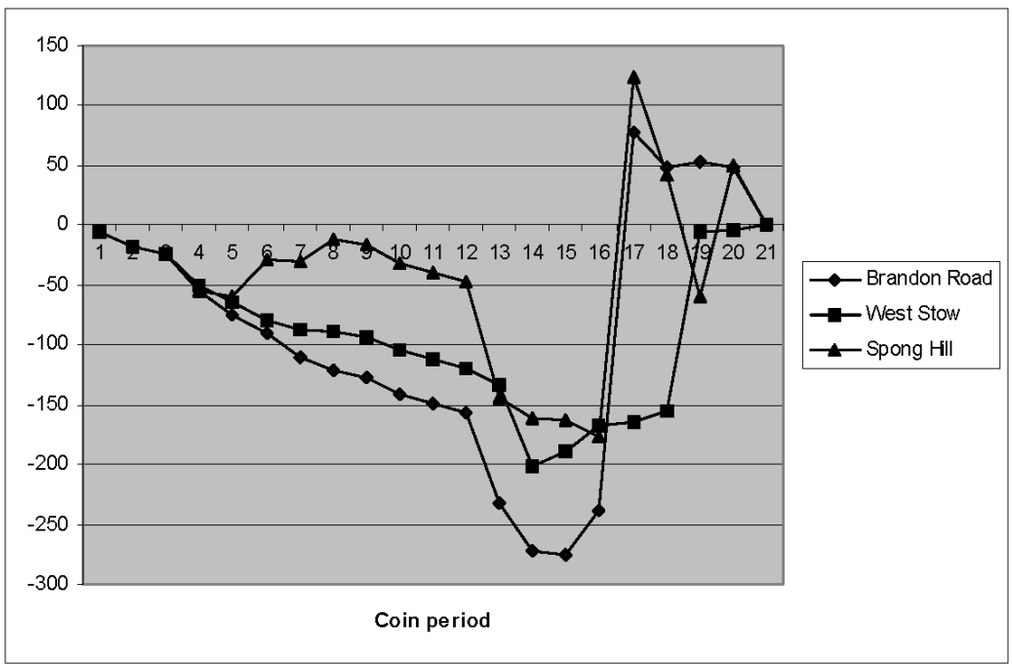


Figure 17a Graph of coins by period from the 1990 and 2002 excavations (after Reece 2002, 145)

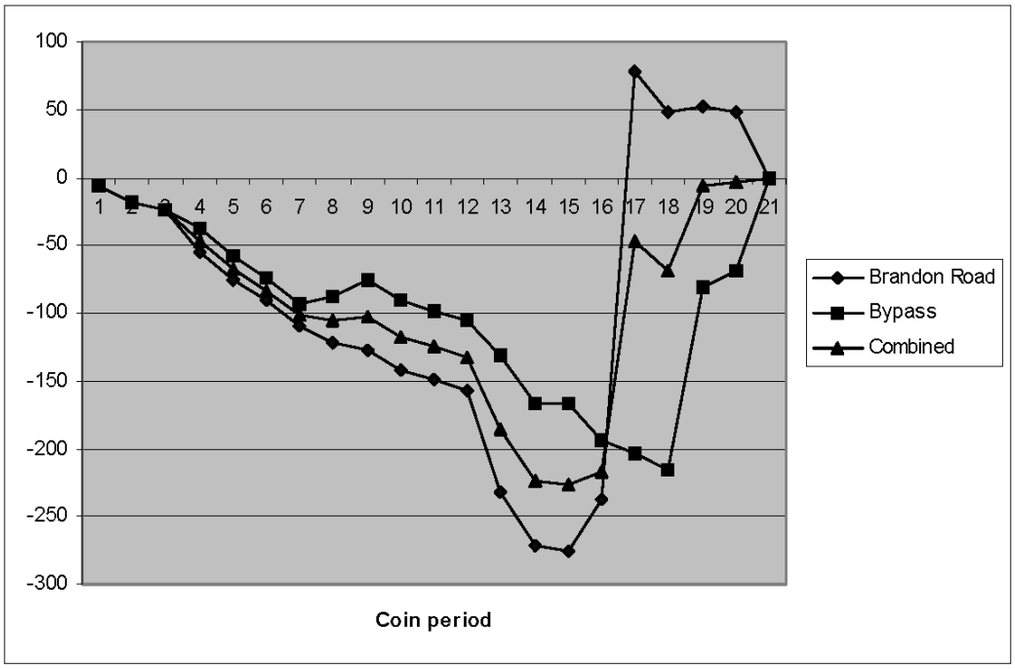


Figure 17b Graph of coins by period from the 1988 Bypass (after Reece 2002, 145)

suggest that this is a derivative issue (Grierson 1958, nos. 353 and 354 for similarly shaped coins). However, in general terms the style looks 'normal' for official coins of this moneyer in the second reign of Æthelred II. Reverse dies of this moneyer are often much cruder than the obverse, as here (Martin Allen, pers. comm.).

There are no matching dies for this coin in the standard work on Northumbrian coinage (Pirie 1975). This coin type is excessively rare in East Anglia with only one other example recorded on the Early Medieval Coin Index. This is a find from North Walsham in Norfolk, which was struck by Monne (EMC number 1980.9030). The main concentration of finds is, as might be expected, an area around York.

Catalogue

SF 390 ***Styca* of Æthelred II of Northumbria** (second reign *c*.844–*c*.848). Official issue, moneyer Eanwulf, North 190. *Obv.* EDILRED RX; small central cross within circle of pellets. *Rev.* E[retrograde]AVNVV (EANWULF); small central cross. Weight: 0.93g. Die axis: 8. Diameter: 11–13mm. Unstratified

Coins and jetons from the Thetford Bypass, 1988

Appendix 3 lists 113 coins and jetons found in 1988, most of them closely dated (these are additional to the sixteen Anglo-Saxon coins listed in Andrews 1995, appendix 1). Over half (68) are Roman, ranging in date from AD 69–79 up to 388–402, but concentrated in the late 3rd and 4th century. This fits in well with the Brandon Road excavated assemblage detailed above, and complements it by including issues pre-dating 260 and post-dating 378, periods for which there was ample evidence of activity on the site but no coins. It should here be noted that where coins have not been cleaned by a professional conservator the identification should be treated with an element of caution. The iconography of the reverse of worn small copies of the Constantinopolis issue of Constantine I is similar to that of the Victoria Auggg reverse of the small issues of the House of Theodosius. In the absence of a clear obverse image and at least partially legible obverse and/or reverse legend, reliance on the reverse iconography can introduce error. Both show a winged figure facing left, and the extended right arm of Victoria can be confused with the extended spear of Constantinopolis if the detail of the bent left arm of the former or the extended left arm and shield of the latter are not visible. That warning given, the absence of coins of 378–402 is somewhat unusual at Brandon Road, and the recovery of some from the Bypass site fills the gap.

Figure 17b shows the closely dated Roman coins from the Bypass compared to the Brandon Road assemblage and to the combined data from both groups using the same method as used for the evaluation and excavation. The two groups behave in much the same way apart from at the end of the Roman period, when the House of Theodosius issues from the Bypass site come into effect and produce the type of pattern to be expected for a site where occupation continued into the 5th century. Combined they are close to the norm for Coin Periods 19–21 and this area of Thetford thus becomes closely comparable to the British mean and to sites like West Stow (see above).

The number of Late Saxon and medieval coins is high, four and twenty-one respectively (excluding a medieval jeton), and they were recovered by all but one of the six detectorists who reported their finds (see Rogerson, Ch. 1.IV). The excavated Brandon Road assemblage had one mid 9th-century coin and no medieval issues. Coin loss was generally low in these periods because there were none of base metal and a dropped coin would have been searched for as it represented a considerable financial loss. Any assemblages that do contain fairly high numbers of coins are therefore often idiosyncratic and direct comparisons are rarely possible. For example, the Thetford excavations of 1948–59 and 1973–80 produced nine Late Saxon coins, most belonging to the St Edmund Memorial series, and no post-Conquest issues (Rigold 1984; Pagan and Archibald 1984). The possibility that at least some of the Bypass finds derive from a small dispersed hoard, perhaps the contents of a purse, should be considered, but most must have been very worn as they could not be closely dated, and they appear to be fairly evenly spread across the centuries, both factors which militate against their being hoard material. However, the main alternative, that all represent genuine casually lost site finds, also seems unlikely. Clearly this high retrieval rate was influenced by one or more factors, and the possibility that some of the declared provenances were inaccurate must rank at least equally with the chance of a small hoard having been buried on the site. The number is unusual for one site, but would not be unusual as the number from independent collections amassed over several years.

There is another possibility which is raised by the high number of jetons. These were used for reckoning accounts, but were occasionally fraudulently passed off as coins (Mitchiner 1988, 17, 20–1). Three jetons from the Bypass are contemporary with the medieval coins, the others are early post-medieval. Their recovery from this area of Thetford may be an indication of fairs or markets held on the site, which would account for high medieval coin loss.

Very few coins dating from the 17th century onwards were reported, and the absence of 17th-century farthing tokens adds to the unusual character of the post-Roman coin assemblage as they are quite common as excavated site finds; perhaps these small and very thin coins do not register well on detectors, especially if they are not lying flat within the soil.

Detailed catalogue of selected medieval coins

by Mark Blackburn and Andrew Rogerson

Numbers refer to the catalogue in Appendix 3.

72. **Aethelred II of England, long cross penny (Hildebrand D)**. York mint; moneyer Steorger. Obverse, + ÆÐELRÆD REX ΛNGLO. Reverse, + STE/ORGE/R MIO/EOFR. Weight 1.55g. Die-axis 290°. From the same dies as Hildebrand (1881) no. 870 and SCB1 Helsinki 359 (see Blackburn in Blackburn and Metcalf 1981, no. 29).

73. **Henry I, cut halfpenny** *c.*1125; pellets in quatrefoil type (BMC type XIV). Mint uncertain.]R[, moneyer +ST..... Weight 0.43g; die-axis 220°.

74. **Short cross Scottish halfpenny**; double cross with star in each angle. Either William the Lion 3rd issue (1165–1214), or Alexander II (1214–49).

83. **Richard I (1189–99)** or **John (1199–1216), short cross cut halfpenny**. Canterbury mint; moneyer ?GOLDWI]NE. Obverse, with sceptre.

85. **Henry III (1247–72), long cross cut halfpenny**, moneyer ION, mint]TER, ?Exeter. Obverse, with sceptre.

88. **English jeton, possibly of Edward I (1272–1307).** Obverse, sterling head with border of rosettes and pellets. Reverse, as on sterling penny, border of rosettes.

92. **Imitation Sterling, penny of John the Blind of Luxembourg (1309–46)**. Obverse, EDWANES DS REGIS YB. Reverse, COM ESL VCEBVOR. As Mayhew 1983, no. 27; probably dated to 1344–6.

99. **?Edward VI (1547–53), halfpenny**. London mint. Great Mary privy mark = pomegranate. Reverse, VERITAS TEMPORIS FILIA 155[-]; star in legend.

III. Metalwork

by Nina Crummy, with a note by Tony Gregory
(Figs 18–26)

Metalwork from the evaluation and excavation

Excluding numismatic items, an assemblage of 391 items of metalwork (including 131 nails) was recovered from the evaluation and excavation phases, with a further 99 items from the 1988 work (see below). The date range spans the Iron Age to the post-medieval period.

Some items shown below amongst the Anglo-Saxon and later group are probably medieval. Others are post-medieval or modern, but a large number cannot be closely dated and some may be residual Roman. Within each section below the objects are grouped by function, based on the categories defined in Crummy 1983, 1988,

and 1992. Within functional category, objects are listed as appropriate, generally by material, phasing, date or object type.

Iron Age and Roman

The only identifiably prehistoric object to be recovered is an Early, or perhaps Middle, Iron Age ring-headed pin found in SFB 2211 (evaluation Trench 3; Fig. 18, SF 34). The head is beaded, in a distinctive widely-spaced style reminiscent of Arras culture beaded and knobbed bracelets, but unparalleled on ring-headed pins (Dunning 1934, fig. 4, 12; Stead 1979, fig. 27, 6–8, fig. 28, 1; James and Rigby 1997, fig. 6; Jope 2000, 51–2, pl. 268). A plain ring-headed pin was found near a ribbed ?bracelet on the banks of the Little Ouse at Brandon, Suffolk (Martin *et al.* 1983, 229, fig. 48), and these objects and the Thetford pin may be examples of riverine votive deposits.

Few functional categories are represented amongst the early group. Quantifying small assemblages to establish how typical Brandon Road might be of similar sites in the Roman period is problematic when the range of objects present is both limited and varies from site to site. In general, however, the metalwork suggests a way of life only very slightly touched by the consumer goods that characterise the artefactual assemblages of the majority of Romano-British sites of all types, including rural settlements such as West Stow, Suffolk, which lies not far distant from Brandon Road (West 1990).

Dress accessories form the largest group of Roman items from the site other than iron nails. A very large proportion (64%) were either residual in post-Roman levels or unstratified and, similarly, of the two toilet instruments recovered one was residual in a Phase 6 context and one was unstratified. As objects such as nails and iron tools can rarely be assigned a date based on form rather than context, this implies that a considerable number of the other unstratified metal finds are also residual Roman, as well as some of the undatable objects from Phases 5 and 6, though they are listed here by context date in the Anglo-Saxon and later section.

The two objects from Phase 2 are an iron hobnail and a pre-Flavian brooch (Fig. 18, SF 282). Though the brooch is the only one that is stratified, it is still residual within Phase 2 (late 1st to 2nd century). In all, four bow brooches were recovered, two of pre-Flavian and two of Flavian (AD 69–96) date (Fig. 18, SFs 282, 113, 368, 4). A fifth brooch, a plain penannular (Fig. 18, SF 387), is probably also of 1st-century date. Three brooches of the same type were found at the Fison Way site in Thetford, two unstratified and one from an Early Roman post-hole (Mackreth 1992, 128). Examples of this form sometimes also occur in Early Anglo-Saxon graves in the region, including at Thetford (*e.g.* Penn and Andrews 2000, fig. 16, E). All the brooches are of British manufacture and are typical of assemblages in the eastern region. The lack of stratified features of similar date is unusual, and suggests that the brooches were deliberately deposited on the site rather than the result of casual loss. The most likely mechanism for such a practice would be the offering of *ex votos*, and small personalia are often found in considerable numbers on sanctuary sites both in Britain and the continent (*e.g.* Dudley 1968; Wedlake 1982; France and Gobel 1985; Leech 1986; Mackreth 1986; Woodward and Leach 1993; Bagnall Smith 1995; 1998; 1999; Simpson and Blance 1998; Bourgeois 1999). Bagnall Smith's study of the Oxfordshire temples has highlighted the location of sanctuary sites close to river crossings (1995, fig. 1), and it may be that the nearby River Little Ouse provided a similar focus for religious activity at Brandon Road.

The only dress accessory stratified in Phase 3 is a small iron armlet of Late Roman date (SF 414, not illustrated). A second hobnail came from Phase 4, as did an oval iron buckle with folded buckle-plate (Fig. 19, SF 299 and SF 286). The latter is of a form that also occurs in Migration Period graves, and is likely to be of 5th-century date.

None of the other dress accessories were found in Roman contexts. They include two hairpins (Fig. 18, SFs 374 and 362), one of which is of probable 2nd-century date and, like the brooches, typical of the region. The other is of unusual form but a second example comes from Cambridgeshire (Bevan 1998, fig. 50, 4) and the two are likely to be another regional type. The Cambridgeshire find was unstratified and the Brandon Road example was found with both Early and Late Roman objects (*e.g.* a 1st-century brooch, Fig. 18, SF 368, and a purse group of the late 4th-century) making dating the type difficult, though a Late Roman date is probably most likely. The other pieces, two armlet fragments and a finger-ring (Fig. 18, SFs 296, 85 and 401), are all Late Roman.

Neither of the two toilet instruments recovered (Fig. 18, SFs 416 and 389) was stratified in a Roman context, and, like the dress accessories, their presence on the site may possibly be due to religious activity. The tweezers have a marginal groove characteristic of Baldock-type toilet sets that date from the mid 1st century into the 2nd (Crummy and Eckardt 2004, 51–3).

A fragment of a round-section spike from a Phase 4 ditch is probably the tooth from either a wool-comb or a flax heckle (Fig. 19, SF 353). The majority of similar teeth from Roman Britain have usually been interpreted as coming from wool combs, but the close association of this example with a reliable source of water may link it to linen manufacture, as flax needs to be retted in ponds, ditches or running streams before it can be heckled (Manning 1985, 33–4; Bitenc 2002; Walton Rogers 1997, 1725). The recovery of similar spikes from Anglo-Saxon contexts at Brandon Road (see below) demonstrates the suitability of the site for this craft.

Two small knives come from Roman contexts (Fig. 19, SFs 271 and 427). Neither is of distinctive shape and they are likely to be personal knives for general use rather than craft tools. Nearly all the fastenings and fittings from the Roman phases of the site are nails; the exception is an iron shackle from a bar-and-shackle fitting. Despite the fact that little evidence for timber structures was found in Phase 2, several of the nails come from contexts belonging to that phase.

The miscellaneous objects include part of a copper alloy chain (Fig. 18, SF 232) and a large iron spike, too large to be a textile-processing spike (Fig.19, SF 408). The remaining pieces are fragments of copper alloy and iron sheet or strips.

Catalogue of illustrated items

(Figs 18–19)

In each of the catalogues below, Small Finds from the excavation (37158 THD) are shown without any prefix to the context details, while those from the evaluation trenches (site code 24849 THD) are noted as such (for example, Evaluation, Trench ...). In the catalogue entries the length given for bent objects is that of the items in their present condition, not the full measurement if they were straight.

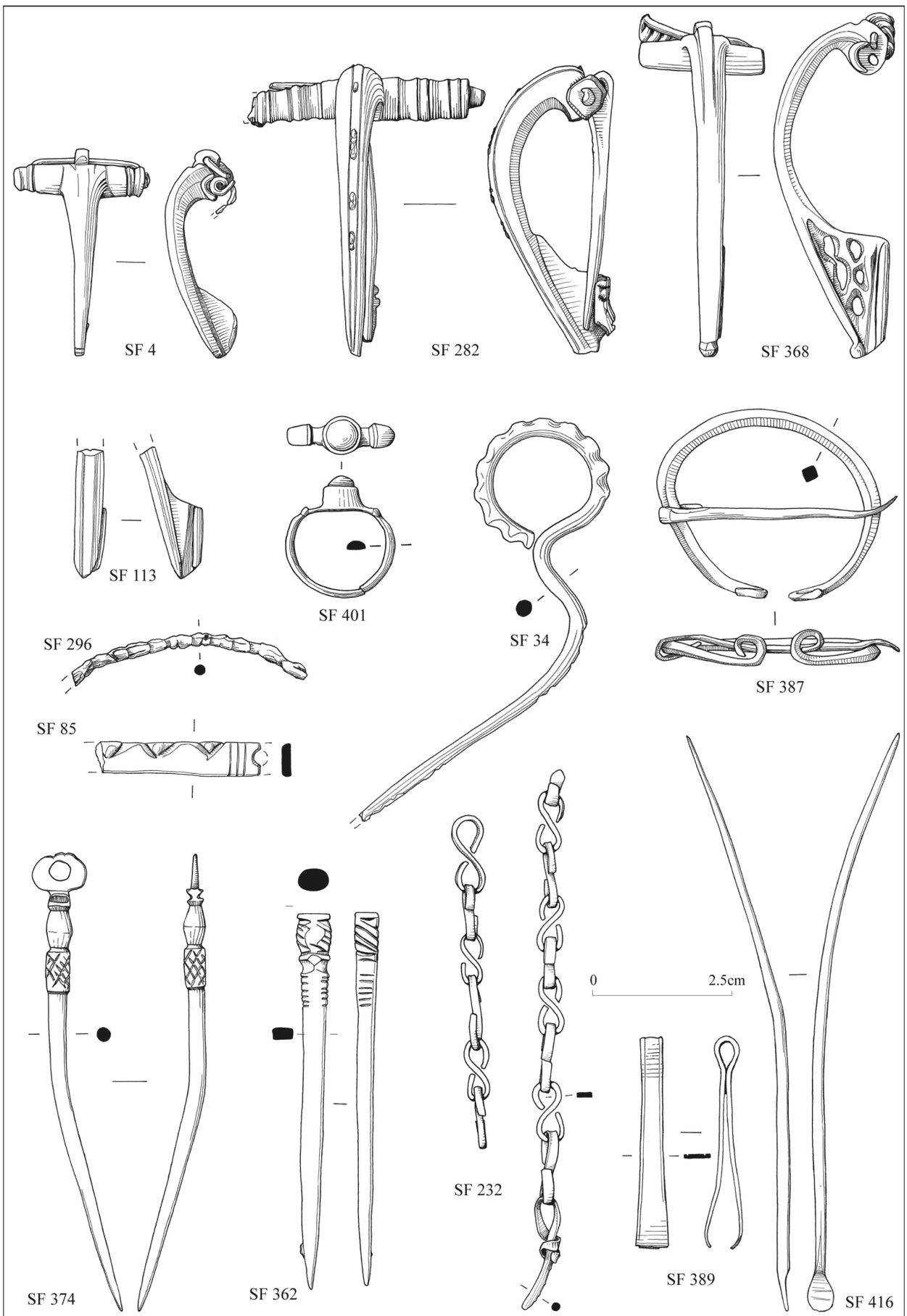


Figure 18 Iron Age and Roman copper-alloy objects. Scale 1:1

Dress Accessories

SF 34 Fig. 18 Copper alloy **ring-headed pin**, with the outer edge of the head ornamented with low bosses, producing a beaded profile similar to that of Arras-style bracelets. The shaft is bent and the tip missing. Length 80mm. Evaluation, Trench 3; SFB 2211. Phase 5.

SF 282 Fig. 18 Copper alloy hinged T-shaped **brooch** of Dolphin profile, complete apart from some damage to one end of the long hollow cylindrical crossbar. The front of the crossbar is decorated with a series of astragaloid mouldings alternating with narrow reels. The axial bar projects through a closed end-plate on the right side; the end-plate on the left side is missing and the axial bar is bent upwards. Its tip appears to be complete, though it is shorter than the remains of the side-wing. A narrow crest runs the full length of the curved bow, which is a stout D-shape in section. The catchplate is solid. Length 52mm. The closed ends of the crossbar ally this brooch to the Polden Hill series, both sprung and hinged forms, but in profile it is closer to Dolphin brooches. The distinction between these two contemporary British-made types is not always clear, but Dolphins (otherwise known as Rearhooks in their sprung form) are generally found in the east and Polden Hills in the west. The date of this example is probably Claudian-early Neronian (Crummy 1983, 12). Fill of pit 780. Phase 2.

SF 113 Fig. 18 The lower part of the bow of a copper alloy Colchester B derivative **brooch**, with characteristic cavetto flutings flanking a low ridge. The catchplate is complete and solid. Length 24mm. Colchester B derivatives date to *c.*45–70, with a pre-colonial example coming from the *canabae* at Colchester (Crummy 1983, 12, no 50); another example came from a phase 3 grave at King Harry Lane, dated *c.*AD 40–60 by the excavators but revised to 35–50/5 by Mackreth (Stead and Rigby 1989, 98; Mackreth 1994, 288). The distribution is centred on the territory of the Catuvellauni and Trinovantes but also spreads into neighbouring regions; there are some, for example, at Saham Toney, Norfolk (Brown 1986, 26–7, nos 116–8, 120–24). (9999), unstratified.

SF 368 Fig. 18 Large copper alloy Colchester BB derivative **brooch**; the pin, the axial bar, and part of the spring are missing. Most of the superior chord remains fixed in the upper hole of the doubly-pierced lug behind the head. The ends of the semicylindrical side-wings are marked by a shallow groove. The bow is D-shaped, with a low crest running down the upper part from the head. There is a small footknob. The catchplate is elaborately pierced with a series of oval holes, an unusual form of decoration for the type. (1237), midden layer. Phase 4.

SF 4 Fig. 18 Small copper alloy Colchester BB derivative **brooch**, complete apart from the pin, the edge of the catchplate, and small sections of the spring. The superior chord and the axial bar are held in the doubly-pierced lug. The semicylindrical side-wings terminate in astragaloid mouldings. The bow is of triangular section, with a small flat-topped crest at the head, vestigial of the forward hook of the Colchester A form, and two grooves across the toe hint at the footknob found on some BB derivatives. The catchplate is solid. Length 38mm. Evaluation, Trench 2; unstratified.

Colchester BB derivatives can be distinguished from the slightly earlier B derivatives by the lack of cavetto flutings on the sides of the bow (see SF 113 above). Details of form and decoration vary within the type, as can be seen on both this brooch and the larger example above (SF 368). The date-range is *c.*65–80. There are no examples from the King Harry Lane cemetery at Verulamium, and in the Roman *colonia* at Colchester and at Baldock they occur only in post-Boudican levels (Stead and Rigby 1989, 91; Crummy 1983, 12, Type 93; 1992, 142; Stead and Rigby 1986, 112, nos 74–5). The distribution is similar to that of the B derivatives.

SF 387 Fig. 18 A complete, but slightly distorted, copper alloy penannular **brooch** of Fowler's Type C (1960, 152), with the terminals coiled up at right angles to the hoop, which has a lozenge-shaped section. The diameter of the hoop decreases towards the terminals. The pin is of round section, beaten flat at the upper end and wrapped around the hoop, and tapering to a fine down-turned point. Maximum diameter 39mm, maximum thickness of hoop 3mm; pin length 42mm. Unstratified, spoilheap.

Many plain Type C penannular brooches date to the 1st century AD, and this example may well be of that date, which matches that of many of the other Roman objects in this assemblage, but there is some possibility that it may be later (Fowler 1983).

SF 374 Fig. 18 Copper alloy **hairpin** of Cool's Group 9 (1990, 160), with a notched and perforated ring above a bead and a latticed cylinder. The type is confined to south-east Britain and probably dates to the 2nd century. Length 82mm. (1237), midden layer. Phase 4.

SF 362 Fig. 18 Copper alloy **hairpin** of unusual form, elliptical rather than round in section. The head is ornamented with diagonal grooves, in places very worn. Below this is a small spool-shaped moulding, and below that six grooves are cut into the two narrower sides of the shaft. The shaft is straight and tapering, and has a slight projection on one side near the tip; this is probably a casting flaw, but it seems odd that it was not filed away. Length 67mm. A similar pin with two panels of incised chevrons running around the head comes from Cambridgeshire (Bevan 1998, fig. 50, 4). (1237), midden layer. Phase 4.

SF 296 Fig. 18 Copper alloy **armlet fragment**, the surface bumpy with corrosion and the original form therefore difficult to distinguish. The overall effect is chain-like, and in some places the surface resembles simple oval links though in others (and at the broken ends) it appears to be a single piece of metal. Length 41mm, maximum thickness 3mm. If this object is from an armlet it is of Late Roman date. (2315), midden. Phase 6.

SF 85 Fig. 18 Flattened fragment from the terminal of a copper alloy **armlet**, broken across the eye of a hook-and-eye fastening. The main section is decorated along one edge with notches, and three transverse grooves mark the terminal. Length 29mm, width 5.5mm. Evaluation, Trench 1; (1), unstratified.

SF 401 Fig. 18 A copper alloy **finger-ring** with shoulder mouldings and a high circular bezel set with a pellet of self-coloured glass. The thin narrow hoop is broken at the midpoint. Internal diameter 16.5mm, hoop 1mm thick, bezel diameter 6.5mm. Unstratified, spoilheap.

SF 286 Fig. 19 Oval iron **buckle** with folded buckle-plate bent back to lie beneath the tongue; there is a central rivet to secure the strap. Length of buckle 19mm, width 29mm; length of tongue 24mm; length of buckle-plate 25mm, width 15mm. This example is phased as Late Roman and, as it would not be out of place in Phase 5, is likely to date to the 5th century. Similar oval buckles with plates with a central rivet have been found in Migration Period graves at, for example, Barrington, Cambridgeshire (Malim and Hines 1998, fig. 3.44, G36/7; fig. 3.57, G79/13) and Morning Thorpe, Norfolk (Green *et al.* 1987, fig. 439, G383/Lii; fig. 442, G388/Ciii; fig. 444, G393/H). (2240), fill of ditch 610. Phase 4.

SF 299 Fig. 19 Iron **hobnail**. Length 13mm. (2286), fill of ditch 833. Phase 4.

Toilet instruments

SF 389 Fig. 18 Small copper alloy **tweezers** with a marginal groove on the blades and over the loop. The blades flare out slightly at the grip. Length 38mm. Unstratified.

SF 416 Fig. 18 A complete copper alloy toilet **spoon** with small round flat scoop. The long tapering shaft is bent. Length 106mm, scoop diameter 5mm. (2203), fill of ditch 849. Phase 6.

Textile manufacturing equipment

SF 353 Fig. 19 Fragment from the tip of a round-section iron **spike**, either from a wool-comb or a flax heckle. Length 48mm. (2248), fill of ditch 1162. Phase 4.

Tools

SF 271 Fig. 19 Small iron **knife** with short tapering tang; the tip of the blade is missing. The edge is straight; the back runs parallel to the edge before curving down towards the tip. Length 76mm, maximum width 14mm. (2221), fill of ditch 595. Phase 2.

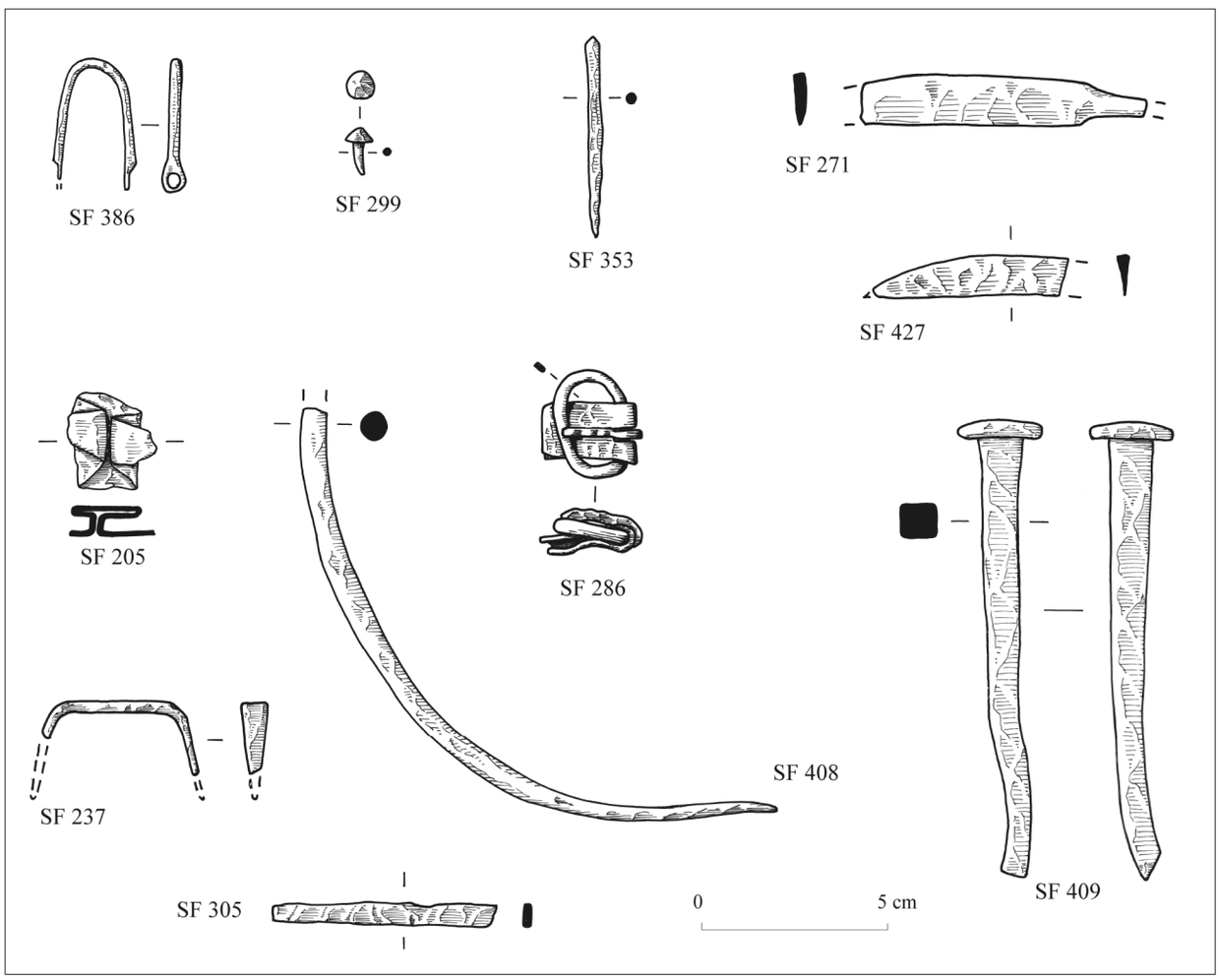


Figure 19 Roman iron objects. Scale 1:2

SF 427 Fig. 19 Narrow iron **knife blade** point, the edge straight, the back initially straight before curving down to the tip. Length 51mm, maximum width 10mm. (2298), fill of ditch 1867. Phase 4.

Fastenings and fittings

Most of the nails are of Manning's Type 1b (1985, 134), less than 150mm long, though one is close to that length and, if complete, may possibly have been classed as a Type 1a (Fig. 19, SF 409). Another is of unusual form, the head being hammered flat and straight-topped, almost resembling a strip-bow brooch were it not for the section at the tip and lack of catchplate (not illustrated).

Two fittings were found in hillwash layer 2319 consisting of an iron folded sheet rivet (Fig. 19, SF 205), which is of a type more usually found in copper alloy and used to repair small holes or splits in objects made from sheet metal (Egan 1998, 176), and a joiner's dog (Fig. 19, SF 237).

SF 409 Fig. 19 Iron **nail**. Length 118mm, maximum width 12mm. (1212), layer. Phase 2.

SF 386 Fig. 19 Long narrow iron U-shaped **fitting** with pierced flattened terminals, one of which is worn through; probably part of a bar-and-shackle fitting. Length 37mm, maximum width 21mm. (2316), layer. Phase 4.

SF 237 Fig. 19 Short-armed iron **joiner's dog**, with most of one arm missing. Length 20mm, width 35mm. (2319), hillwash layer. Phase 4.

SF 205 Fig. 19 Iron folded **sheet rivet**. Length 24mm, width 18mm. (2319), hillwash layer. Phase 4.

Miscellaneous objects and fragments

SF 232 Fig. 18 Two fragments of a copper alloy **chain** made from S-shaped links. At the end of the longer fragment is a terminal loop, with the flat inner end wrapped around the wire-like mid-section twice and the outer end missing. Length of individual links 10–13mm, total length of chain 158mm. Fill of pit 576. Phase 4.

SF 408 Fig. 19 Long curved round-section iron **spike**, longer and thicker at the top than textile-processing spikes. Length (bent) 165mm. (2316), layer. Phase 4.

SF 305 Fig. 19 Narrow, slightly tapering, iron **strip** fragment. Length 64mm, maximum width 8.5mm. Fill of pit 900. Phase 3.

Anglo-Saxon and later

As with the Roman objects, a large proportion of this assemblage is unstratified. Among the dress accessories this is shown particularly clearly by the group of fifteen copper alloy pins, of which only five are stratified. A further seven Middle Saxon pins were found during work on the 1988 Bypass compound (see below and Appendix 5).

Phase 5 (Early Saxon)

Only seven objects were found in Phase 5 contexts. They consist of a fragment of a girdle-hanger, one pin, an iron textile-processing spike, a padlock bolt, two fittings, and some fragments of copper alloy sheet. Most of these items came from the fills of sunken-featured buildings; the sheet fragments and the girdle-hanger (Fig. 20, SF 35) from SFB 2217, one of the pins from SFB 2229 (Fig. 20, SF 251), the textile-processing spike (SF 166, not illustrated),

an iron padlock bolt (Fig. 22, SF 161) and a ring-headed pin (Fig. 22, SF 170) from SFB 2206. The padlock bolt is not well stratified and may post-date Phase 5. A small silver rivet (Fig. 21, SF 435) came from the fill of oven 786. The absence of Roman objects from the sunken-featured buildings suggests that the textile-processing spike is contemporary with its context, not residual.

The small pin from SFB 2229 (Fig. 20, SF 251) is of *Hamwic* Type B (Hinton 1996), which is well-represented on Middle Saxon sites, and this example must date to the end of Phase 5 at the earliest.

Unstratified dress accessories that date to within the period covered by Phase 5 include the lower part of a girdle-hanger (Fig. 20, SF 103) and the head of a small-long brooch (Fig. 20, SF 101). The latter is similar in style to brooches from Little Wilbraham, Cambridgeshire, and West Stow, Suffolk (Leeds 1945, fig. 8, e; West 1985, 142, fig. 260, 6–7). A very plain strap-end may also be early (Fig. 21, SF 141). A spoon may belong to the late 6th century or later; it is considered in the next section (SF 352).

The studded fitting (Fig. 21, SF 284) is from a Phase 6 context and is similar to one from a 16th-century context at Norwich which retained traces of fabric (Margeson 1993, 34, no. 225). Both may be examples of the comparatively rare B1 form of Early Saxon wrist-clasps, although the use of almost the full length of the long side to form the hook would be unusual for a wrist-clasp of this period. Form B1 clasps constitute 96% of Class B clasps in Scandinavia, but less than 1% in England, making the latter, if it is an early piece, almost certainly of Scandinavian manufacture and indicative of a Scandinavian influence at Brandon Road (Hines 1984, 71–2, 104–5, figs 2.28–2.29).

Catalogue of Phase 5 and Early Saxon objects

Dress accessories
(Figs 20–21)

SF 101 Fig.20 The upper part of a copper alloy small-long **brooch**, broken across the bow. The head is of cross potent form, with the edges of each side lobe decorated with four triangular punch-marks, the upper lobe with six. The central panel is encrusted with corrosion but appears to be plain. The bow is plain apart from a slight step as it rises from the head. Length 34mm, width 31mm. Unstratified, topsoil.

SF 35 Fig. 20 The upper end of the shaft of a copper alloy **girdle-hanger**. It tapers slightly to a grooved and moulded terminal with a worn and broken suspension loop. Length 114mm, maximum width 6mm, thickness 3mm. The lack of decoration on the shaft is unusual but not unknown (Green *et al.* 1987, fig. 333, Vi–Vii; Gurney 2001, fig. 4, A). Evaluation, Trench 5; Fill of SFB 2217. Phase 5.

SF 103 Fig. 20 Copper alloy **girdle-hanger fragment**, with one arm missing and the broken edge filed and polished smooth. The upper face of the shaft has a central line of punched circles above marginal lines of the same, the two groups separated by a short plain panel defined by transverse grooves. A line of punched circles also runs from the outer corner of the remaining arm up to the point, with a single punched circle at the inner bend. Length 66mm, remaining width 21mm, 3mm thick. Unstratified, topsoil.

SF 251 Fig. 20 Copper alloy **pin** with a polyhedral head and a single collar. The head is a faceted cube, slightly flattened, with each of the four lozenge-shaped side faces filled by a ring-and-dot. Only a very short part of the shaft remains. Length 12.5mm. *Hamwic* Type Bb2 (polyhedral, ring-and-dot decorated, collared). Fill of SFB 2229. Phase 5.

SF 141 Fig. 21 A copper alloy triangular folded **strap-end**, fixed at the apex by a single copper alloy rivet. Length 20mm, maximum width 17.5mm. What may be part of a similar strap-end was found at West Stow (West 1985, fig. 239, 14), and another from a Migration Period grave at Brunel Way, Thetford (Penn and Andrews 2000, 425, fig. 17, C, which is described as a repair from a wooden vessel; its rivet is sufficiently long for this alternative interpretation to be correct, though it seems unlikely for the Brandon Road object). Unstratified, spoilheap.

SF 284 Fig. 21 Copper alloy **fitting** consisting of a strip with three flat-headed studs with riveted shanks set into it, and with one long edge turned over into a U-shaped profile. Length 36mm, maximum width 10mm, maximum width of return 4mm; diameter of studs 9mm, length 5mm. As the heads of the studs are raised above the strip and the riveted shanks lie close against it, they must have been used to attach a piece of cloth or thin leather to the upper side of the strip, covering it completely and leaving only the three discs visible. A fragment of a similar fitting from Norwich had the remains of textile between the stud heads and the strip (Margeson 1993, 34, no. 225). The returned side of the Thetford strip would have held a textile loop quite effectively, and may have served a purpose similar to wrist-clasps or hooked tags. This may be a rare example of a Hines B1 wrist-clasp (1984, 71–2), although the length of the hook is unusual. (2315), midden. Phase 6.

Fastenings and fittings
(Figs 21–22)

SF 170 Fig. 22 Iron ring-headed **pin** with a narrow moulding at the junction of ring and shank. Length 80mm. Fill 253, SFB 2206. Phase 5.

SF 435 Fig. 21 Small silver **rivet** with solid convex head; the shank is slightly curved and the end is burred where it has been hammered flat to fix it in position. Maximum length 6.5mm; diameter of head 3.5mm. The length of the shank between the underside of the head and the burred end suggests it was fixed to leather, either on its own, or perhaps to secure a thin metal mount. Fill of oven 786. Phase 5.

SF 161 Fig. 22 Iron barb-spring **bolt** from a barrel padlock, with a square stop-plate above the leaf springs. Length 104mm. The form is also found in the Roman and medieval periods, but this example is most likely to derive from either late Phase 5 or Phase 6 occupation. A padlock bolt and key were found in a 7th-century grave at Caistor St Edmund, Norfolk (Penn 2000, 18, 64–5). Fill 180, SFB 2006, Phase 5.

Phase 6 (Middle Saxon)

Dress accessories: the remaining dress accessories are mostly of Middle Saxon date. Stratified examples consist of four pins, a buckle, and an unusual studded fitting. Ten further pins are unstratified, as are two strap-ends and a hooked tag.

A pin from pit 1065 is long and ring-headed, and has part of a chain remaining in the head (Fig. 20, SF 335). Though it can be classified within both *Hamwic* Type G (ring-headed) and *Hamwic* Type I (linked pins), it might perhaps be better seen as belonging to the style of Anglian dress which made use of long pins as cloak-fasteners. One of the unstratified pins is, like that from pit 1065, long and ring-headed (Fig. 20, SF 102). All the small Middle Saxon forms from Brandon Road belong to *Hamwic* Types A (spherical) and B (polyhedral), the exception being a pin with a head that does not fit neatly into any type, being quite poorly formed and covered with small facets; it perhaps belongs to *Hamwic* Type C (biconical). Types A, B and C are the commonest form of these pins, though the latter occurs rather less frequently in general. All three forms have a wide distribution, from *Hamwic* and Winchester in the south to York and Whitby in the north, as well as on the continent (Hinton 1996, 20, 25, 28), though they rarely occur in such numbers away from urban centres, and even Ipswich has very few (West 1998, fig. 96, 9–12; some of those illustrated by West are Roman types). At West Stow one example of a Type A pin was

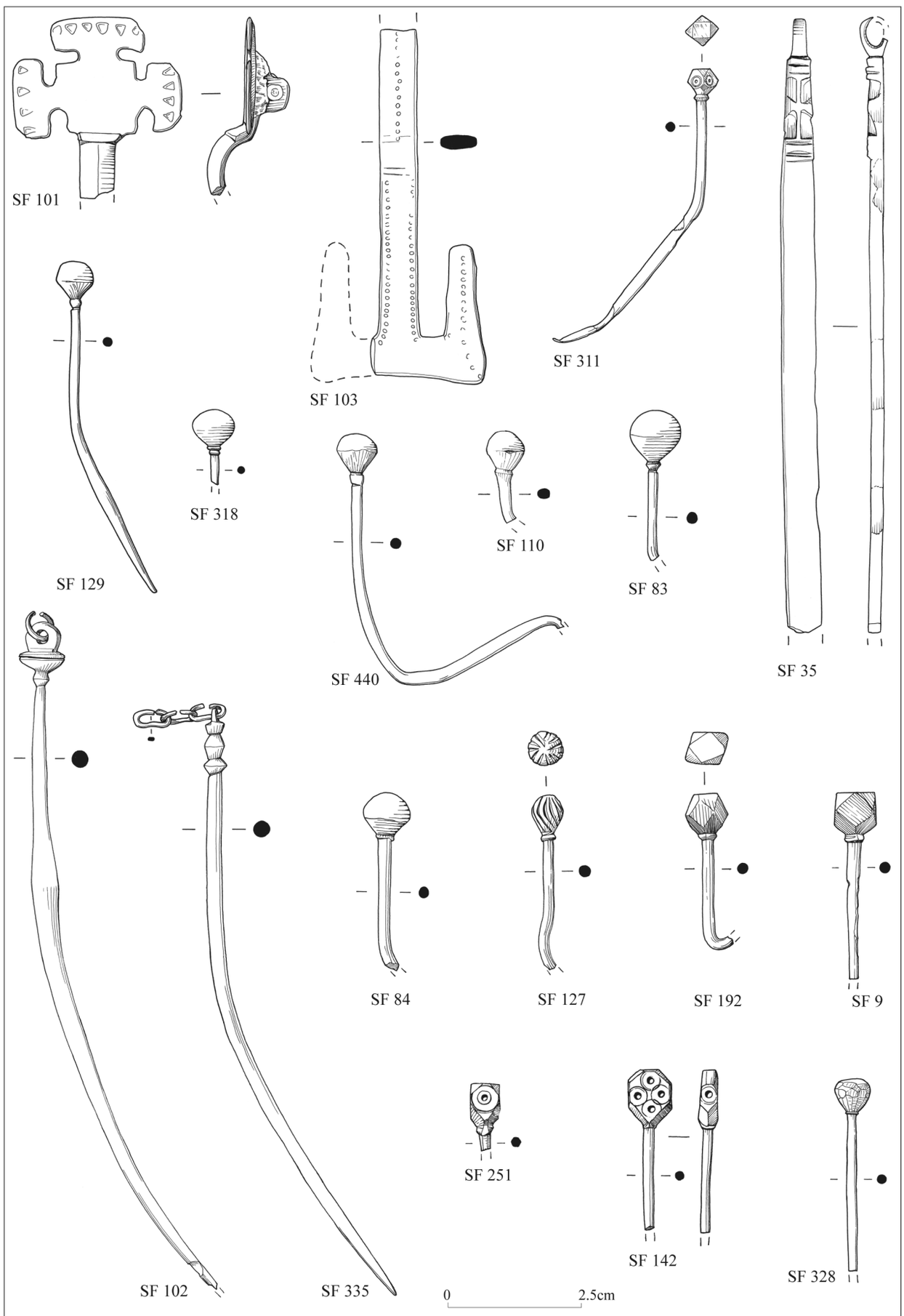


Figure 20 Anglo-Saxon and later copper-alloy objects. Scale 1:1

found in layer 2 (West 1985, fig. 246.2), and there are examples of Types B and C from Knocker's excavations at Thetford, though the latter differs from the *Hamwic* pins in being decorated (A. Goodall 1984, fig. 112, 45–6). The quantity of pins recovered from Brandon Road argues strongly that Thetford can be seen as comparable in this respect to important market centres and emporia in the Middle Saxon period, perhaps even *Hamwic*. In the light of the 180 pins from *Hamwic* and 234 from Brandon (Hinton 1996; Carr *et al.* 1988), this claim may seem ambitious. It can be justified by comparing the Brandon Road assemblage to those produced by the five groups of sites that provided the *Hamwic* material. The nine sites forming the eastern group lay close to the river Itchen and together produced fourteen pins; the St Mary's group of four sites at the southern end of the settlement thirteen; the central group of five sites eleven; the Clifford Street group of four sites further north 28; and the Six Dials group of eight sites at the northern end of the settlement 114. The Six Dials group, which contributed 63% of the total of 180, can be seen as unusual within the general spread of pins in *Hamwic*, while the fourteen from Brandon Road compare favourably to the other *Hamwic* groups. On this basis it seems reasonable to postulate that the pins from Brandon Road demonstrate the potential for Thetford being shown by further research to be an important settlement and a regional focus for trade in the Middle Saxon period.

The buckle has an integral strap-plate with zoomorphic terminal and is of Middle to Late Saxon style (Fig. 21, SF 151). Small medieval buckles with an integral strap-plate have been found on spurs and spur-straps in London and it has been proposed that all contemporary buckles with integral plates may have had the same origin (Egan and Pritchard 1991, 108, no 487, fig. 69; Clark 1995, fig. 91, 377, fig. 95, 326; Egan 1995, 150, fig. 109). Whether or not the earlier buckles of this form had a similar use remains to be established. Also of Middle to Late Saxon date is a split-end strap-end with zoomorphic tip (Fig. 21, SF 8). It is decorated with a punched design of crescents and a debased vegetal-like design formed by crosses and dots. The crescentic punch-marks on the tip also occur on a strap-end with geometric ornament from West Acre, Norfolk (Gurney 2001, fig. 5, D), while a more naturalistic, though perhaps related, design occurs on a strap-end from Brandon, Suffolk (Martin *et al.* 1998, fig. 52, E).

Pairs of hooked tags (such as Fig. 21, SF 88) have been found with 10th-century coin hoards from Rome and Tetney, Lincolnshire, and show that they were used to fasten purses or satchels, while grave finds suggest that they were also used as garter hooks or possibly shroud fasteners (Blunt 1974, 141; Wilson 1964, pl 32, 86–7; Lethbridge 1931, 48; Hinton 1990a, 548). The form is very long-lived; the main period of use is Saxo-Norman, but they first appear in the 7th century and appear to continue through to the mid 14th century, with a revival in a more elaborate form in the early post-medieval period (*e.g.* Penn 2000, fig. 88, 9b; Hinton 1990a, fig. 148, 1420). The majority of the Saxon examples are fairly plain — the decorated Brandon Road example is unstratified and may be Late Saxon or early medieval. Apart from a scatter of high-quality silver tags (Graham-Campbell 1982, 146–8), most are of copper alloy or iron and probably of local manufacture; there is evidence for their manufacture at Lincoln and Worcester, and also in Thetford (Ottaway 1992, 697; Crummy 2004, 387, 433; A. Goodall 1984, 69, nos 34–9).

Catalogue of illustrated items
(Figs 20–21)

SF 129 Fig. 20 Copper alloy **pin** with plain spherical head and a slight spiralled groove at the top of the shaft. The shaft is slightly swollen, bent in the middle, and the tip is missing. Length 64mm. *Hamwic* Type Aa1ii (spherical, undecorated, uncollared, swelling shaft; Hinton 1996, 14–21). Unstratified.

SF 440 Fig. 20 Copper alloy **pin** with plain spherical head and a single collar. The shaft is slightly swollen and is bent upwards above the swelling and downwards below it. The tip is missing. Length 48mm. *Hamwic* Type Aa2 (spherical, undecorated, collared). Evaluation unstratified; metal-detector find from disturbed topsoil west of trial trenches.

SF 110 Fig. 20 Copper alloy **pin** with plain spherical head and a single collar. Only a short part of the shaft survives and the broken end is slightly bent. Length 17mm. *Hamwic* Type Aa2 (spherical, undecorated, collared). Unstratified.

SF 318 Fig. 20 Copper alloy **pin** with plain spherical head and two collars. Only a stump of the shaft survives. Length 14.5mm. *Hamwic* Type Aa2 (spherical, undecorated, collared). Unstratified.

SF 83 Fig. 20 Copper alloy **pin** with plain spherical head and a single collar. Only a short part of the shaft survives and the broken end is slightly bent. Length 29mm. *Hamwic* Type Aa2 (spherical, undecorated, collared). Evaluation, Trench 12; Unstratified.

SF 84 Fig. 20 Copper alloy **pin** with plain spherical head and a single collar. Only a short part of the shaft survives and the broken end is slightly bent. Length 32.5mm. *Hamwic* Type Aa2 (spherical, undecorated, collared). Evaluation, Trench 13; Unstratified.

SF 127 Fig. 20 Copper alloy **pin** with wrythen spherical head and a single collar. The end of the shaft is missing and the broken end is bent. Length 33mm. *Hamwic* Type Ab2 (spherical, wrythen-decorated, collared). Unstratified, topsoil.

SF 192 Fig. 20 Copper alloy **pin** with plain polyhedral (faceted cuboid) head and a single collar. The end of the shaft is missing and the broken end is bent. Length 29mm. *Hamwic* Type Ba2 (polyhedral, undecorated, collared; Hinton 1996, 21–5). Fill of enclosure ditch 2203. Phase 6.

SF 9 Fig. 20 Copper alloy **pin** with plain polyhedral (faceted cuboid) head and a single collar. The end of the shaft is missing. Length 35mm. *Hamwic* Type Ba2 (polyhedral, undecorated, collared). Evaluation, Trench 3; unstratified.

SF 311 Fig. 20 Copper alloy **pin** with small polyhedral head and a single collar. The head is a neat faceted cube, decorated on the lozenge-shaped side faces with a single ring-and-dot motif. The shaft is swollen and bent both above and below the swelling. Length 58mm. *Hamwic* Type Bb2ii (polyhedral, ring-and-dot decorated, collared, swelling shaft). Fill of ditch 2204. Phase 6.

SF 142 Fig. 20 Copper alloy **pin** with flattened polyhedral head and a single collar. The head is decorated on the two largest faces by four overlapping ring-and-dots, and on the two central side faces by a single ring-and-dot. Only a short part of the shaft remains. Length 30mm. *Hamwic* Type Bb2 (polyhedral, ring-and-dot decorated, collared). Unstratified, spoilheap.

SF 328 Fig. 20 Copper alloy **pin** with plain flat-topped head, covered with many small facets, and a single collar. The lower part of the shaft is missing. Length 37mm. The head-shape falls between *Hamwic* Types A (spherical), B (polyhedral), and C (biconical). A similar pin from *Hamwic* with undecorated head was listed as Type C (Hinton 1996, fig. 10, 39/44), which places this example in Type Ca2 (biconical, undecorated, collared; Hinton 1996, 25–8). Fill of ditch 2225. Phase 6.

SF 102 Fig. 20 Copper alloy **pin** with a head consisting of a perforated ring, retaining a penannular wire ring from a chain, above a plano-convex moulding with a groove at the

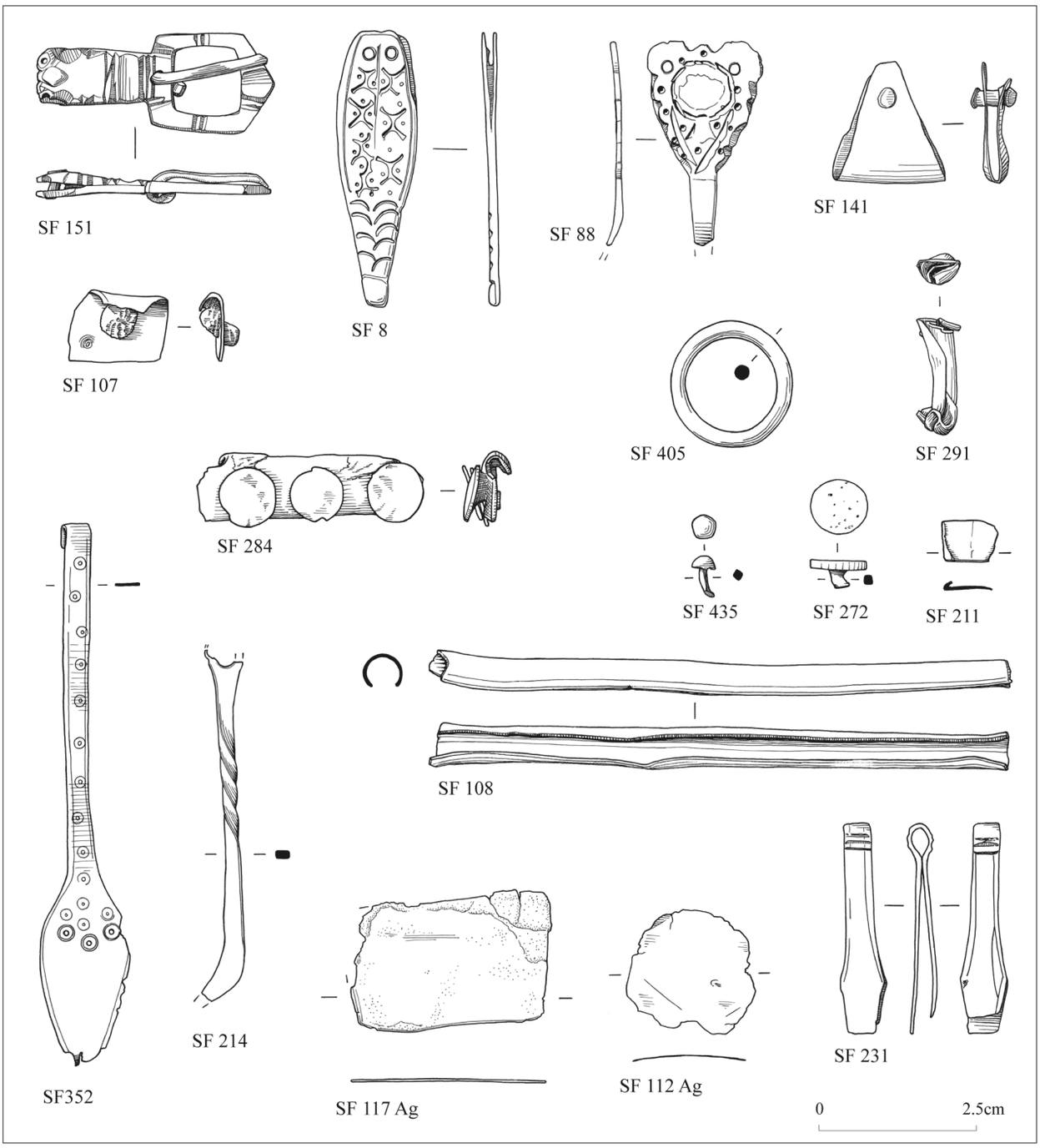


Figure 21 Anglo-Saxon and later copper-alloy and silver (SF 435 and SF 211) objects. Scale 1:1

top, and a single collar. The shaft is swollen above the midpoint and gently curved. Length 131mm. *Hamwic* Type G (Hinton 1996, 32). Unstratified, topsoil.

SF 335 Fig. 20 Copper alloy **pin** with a bead-and-reel-shaped head topped by a small perforated ring that retains a short length of chain made from oval penannular links. The shaft is straight and curved. Length, excluding chain, 118mm. *Hamwic* Type G. Fill of pit 1065. Phase 6.

SF 151 Fig. 21 A copper alloy **buckle** with integral split-end strap-plate. The buckle frame is trapezoidal, the outer edge extended to a point with a central channel to seat the tongue, and is decorated with pairs of transverse grooves. The tongue is secured by passing it through a hole in the inner edge of the frame. The strap-plate is also decorated with transverse grooves, and ends in an animal head with nostrils shown by two pits. A rivet with lozenge-shaped head secured it to the narrow strap. Length 38mm, buckle width 16mm, strap-plate width 8.5mm. The form and style of the belt-plate suggest a date from the 7th to 10th or early 11th centuries, and the shape and decoration of the buckle frame is paralleled at York on an iron buckle (without an integral plate) from a context dated from the 10th to 11th centuries (Ottaway 1992, fig. 294, 3738). Fill of enclosure ditch 2203. Phase 6.

SF 8 Fig. 21 A gently convex-sided copper alloy split-end **strap-end** with two rivets. The terminal is a very debased animal head, consisting of two parallel lines of crescentic grooves separated from a slightly thickened snout by a transverse groove. The surface of the snout is corroded and has flaked slightly, but appears to have been featureless. Above the lines of crescents the main body of the strap-end has marginal grooves and two panels of rudimentary vegetal decoration separated by a central groove. The plant-like

decoration consists of a repeating pattern of long-bodied crosses with a dot between each pair of arms. Length 43mm. This form of strap-end belongs to Thomas's Class A, Type 2, and has a date-range between the 8th and 10th centuries, with most examples belonging to the 9th century. This piece may be late in the series, although debasement of style may depend upon maker rather than period (Thomas 2003, 2; Hinton 1990b, 501; 1996, 41–2). Evaluation, Trench 3; unstratified.

SF 88 Fig. 21 Copper alloy **hooked tag**, with two perforated lobes flanking a small point at the top; the sides are notched to produce a scalloped effect. The front bears a grooved ring, formed by overlapping punch marks that look like cabling, beneath which is a similarly-cut triangle divided by two lines into three sections. The centre of the ring is obscured by corrosion but presumably held some form of decoration. The two side sections of the triangle have a punched dot in the centre, and there is a punched dot at the base of the central section. There may be another above it, but this area is also obscured by corrosion. A line of punched dots runs around the margin of the tag. The tip of the hook is missing. Length 32mm. Evaluation, unstratified; metal-detector find from disturbed topsoil west of trial trenches.

Toilet instruments: despite the high level of unstratified material from the site, both toilet instruments come from Phase 6 contexts. A pair of tweezers from ditch 2228 (Fig. 21, SF 231) have the mouldings below the loop that are a frequent feature of Anglo-Saxon tweezers (MacGregor and Bolick 1993, 224) and unusually shaped blades. A curved pick from the fill of SFB 2233 is less easily dated, but, given the absence of obviously Roman items from the fill of the Brandon Road sunken-featured buildings, it is probably most likely to be of either later Migration Period or Middle Saxon date (Fig. 21, SF 214).

Catalogue of illustrated items
(Fig. 21)

SF 231 Fig. 21 Small copper alloy **tweezers** with transverse mouldings below the sprung loop. The blades are flat and the tip of one is missing. They have marginal grooves and a distinctive angular expansion above the grip. Length 33mm. Fill of ditch 2228. Phase 6.

SF 214 Fig. 21 Copper alloy curved **pick** with a twisted shaft and broken suspension loop. The point is missing. Length 54mm. It has a twisted shaft, a feature that is typical of the post-Roman period (*e.g.* MacGregor and Bolick 1993, 216–7, nos 37.2–3; West 1998, fig. 57, 2; Margeson 1993, fig. 32) but first appears in the 4th century. Late Roman curved picks are usually comma-shaped (Bland and Johns 1995, 6), while Early Saxon examples are usually straight (*e.g.* Cook and Dacre 1985, fig. 60, 44/44; Evison 1988, fig. 33, 37/3). Fill of SFB 2233. Phase 6.

Textile equipment: Phase 6 produced two further fragments of iron textile-processing spikes (either wool-comb teeth or flax heckle spikes, though one may be from a needle) and another is unstratified (Fig. 22, SF 174). Given the recovery of one from a Roman context and the quantity of residual material on the site, there is some possibility that these three may be Roman. However, these spikes are frequently found on Middle and Late Saxon sites, 117 having been recovered from Knocker's excavations at Thetford alone (I. Goodall 1984, 79), and the Brandon Road Phase 6 fragments, like that from Phase 5, are probably also likely to be contemporary with their contexts.

Catalogue of illustrated items
(Fig. 22)

SF 174 Fig. 22 Square-section iron **textile-processing spike**, bent in the centre. Length (bent) 86mm. Unstratified.

Household equipment: three pieces of household equipment were recovered, one is from Phase 6, and two are unstratified. The object from Phase 6 is a two-tined flesh-hook (Fig. 22, SF 248), which, most appositely, was found in the fill of oven 646. Similar hooks have been found at North Elmham and Winchester, as well as two other examples from Thetford (Rigold 1964, fig. 35, 10; I. Goodall 1984, 95, fig. 133, 193–4; 1990, fig. 242, 2546–7). Flesh-hooks are usually associated with pulling pieces of meat out of large cauldrons or stew-pots (Egan 1998, 155), but both the context of the Brandon Road example and its form suggest that they were also used for pulling baked meat joints, bread or other food from closed ovens.

An unstratified lead pot repair from the spoilheap may be either residual Roman, Anglo-Saxon, or medieval (Fig. 23, SF 132). The low melting-point and malleability of the metal made it ideal for use in plugging small holes in ceramic vessels, and the form is characterised by a narrow neck between two irregular discs, one of which (the most accessible and most visible) is usually larger and smoother than the other. These repairs have been found in Roman contexts at London and Brough-on-Humber, Yorkshire (Crummy 2002a, 34; Wacher 1969, 26, note 1), Anglo-Saxon contexts at West Stow and Lackford, Suffolk (West 1985, 57, fig. 231, 1), and medieval contexts at London and Rumney Castle, Glamorgan (Egan 1998, fig. 188; Evans 1992, fig. 20. 4).

The second unstratified piece of household equipment is a decorated copper alloy sheet-metal spoon, which may belong to either Phase 5 or Phase 6 (Fig. 21, SF 352). Another spoon with twisted stem was found during building work on the site and is now held by Norfolk Museums and Archaeology Service. A spoon closely similar to SF 352, although larger, came from a pit at West Stow that probably dates to the late 6th century, contemporary with a nearby sunken-featured building (West 1985, 54, 150, fig. 228, 7). It is remarkably close in shape and design to the Brandon Road example, also cut from sheet metal, with the same terminal loop, the same faint marginal lines and the same line of ring-and-dots down the shaft and four in a diamond at the top of the bowl, though it lacks the lower three larger motifs of the Thetford piece. The two were undoubtedly made by the same hand, which suggests a late 6th-century date for the Brandon Road spoon, although the type is generally regarded as Middle Saxon. A parallel may be drawn to tweezers with similar decoration that come from late 4th/early 5th to 7th century contexts, including examples from West Stow and Stonea Grange (West 1985, 61, fig. 238, 24–5; Jackson and Potter 1996, fig. 109, 57; Eckardt and Crummy 2008, 156–8).

A spoon of stouter construction and broader bowl from Knocker's excavations at Thetford also has a group of ring-and-dots at the top of the bowl, in this case a quincunx aligned with the shaft with a sixth ring-and-dot partly worn away on the edge nearby (A. Goodall 1984, 69, fig. 112, 48). There are others from *Hamwic*, some cast rather than wrought, and there is one from York in a late 12th- to late 13th-century context (Hinton 1996, 55–6, fig. 24; Ottaway and Rogers 2002, fig. 1501, 15233). A bowl from Barham, Suffolk, has two crossed lines of ring-and-dots on the bowl, while another from the same site has a plain bowl and incised grooving on the shaft (West 1998, fig. 6, 54–5). Most similar spoons are decorated with ring-and-dots and/or groups of transverse grooves, and many have a

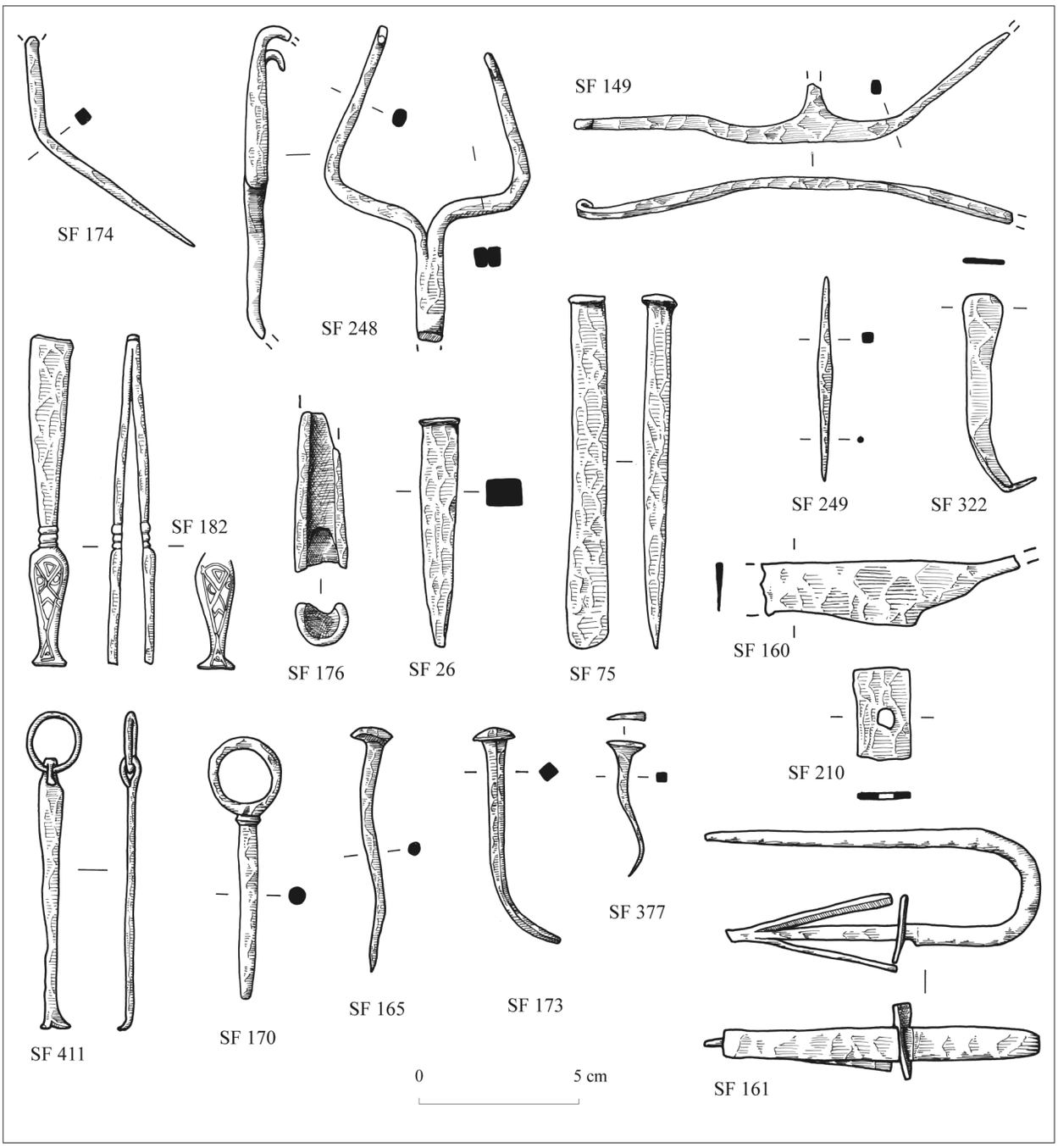


Figure 22 Anglo-Saxon and later iron objects. Scale 1:2

suspension loop at the top of the shaft. The loop at the top of the Brandon Road spoon is so small that it seems more likely to have been made to provide a comfortable grip rather than for suspension, though fine wire, string or yarn could have been threaded through it. Based on its size, which is the same as the Brandon Road example, Ottaway and Rogers suggest the York spoon was used either for cosmetics or in medicine (2002, 2934).

Catalogue of illustrated items
(Figs 21–23)

SF 352 Fig. 21 Copper alloy **spoon** cut from sheet metal. The end of the shaft is rolled over and has been neatly finished. The bowl is a long oval, flat across the width and curved lengthwise; the tip and one edge are damaged. A very fine marginal line runs round both shaft and bowl, though it has been largely worn away on one side of the shaft. A row of small ring-and-dot motifs runs down the shaft, and four of the same size are set in a diamond at the top of the bowl, with three larger ones in a curved line beneath them. Length 87mm. Unstratified, spoilheap.

SF 248 Fig. 22 Tanged two-tined iron **flesh-hook**, with the tip of each tine turned up. The tang is rectangular in section, the tines are square in section initially and taper to round at the points. Length 96mm. Fill of oven 646. Phase 6.

SF 132 Fig. 23 A lead **pot repair**, with one side larger than the other and worked to a smooth finish. Maximum dimensions 23.5 by 16.5mm, 8mm thick. Unstratified.

Weighing: part of an iron equipoise balance and two lead weights (Fig. 22, SF 149; Fig. 23, SFs 283 and 292) were

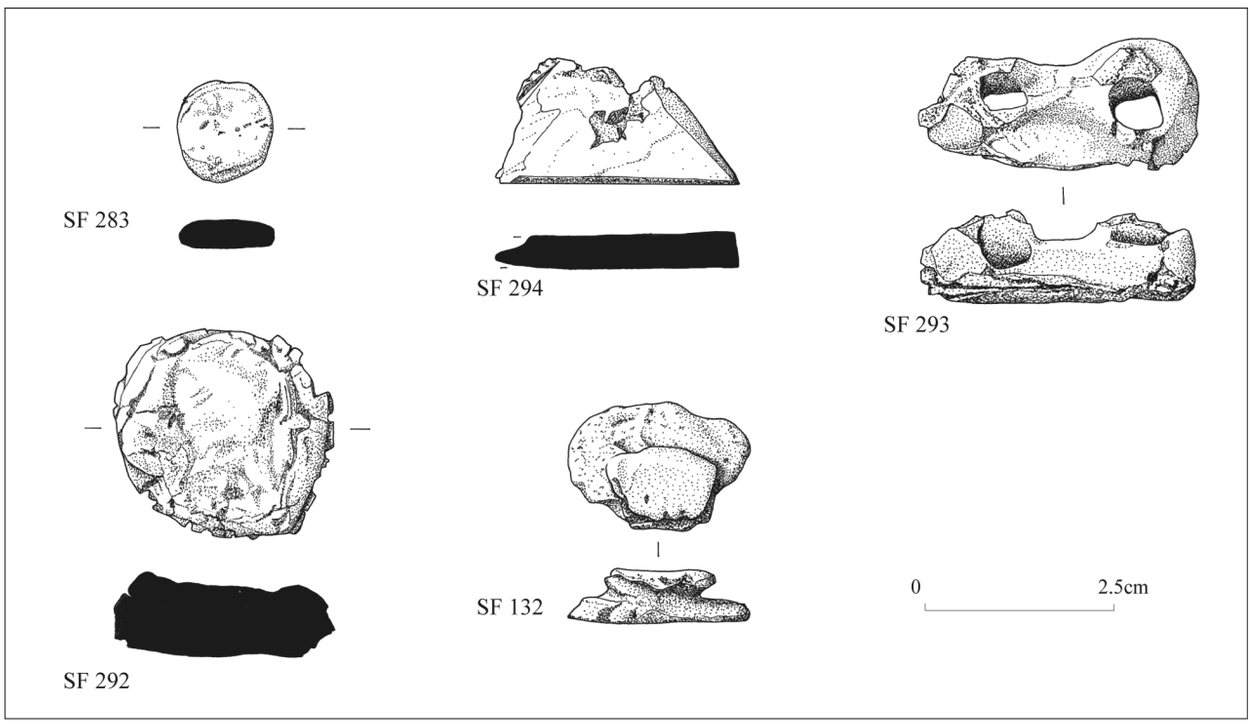


Figure 23 Anglo-Saxon lead objects. Scale 1:1

found in Phase 6 contexts. Balances of this type are more usually found in copper alloy (*e.g.* A. Goodall 1984, fig. 113, 56–9; Biddle 1990, 922–5), but this may largely be due to accidents of preservation, as fragments lacking the characteristic central pointer and stirrup would not be identifiable. There is one with its stirrup from the Anglo-Saxon settlement at Godmanchester, Cambridgeshire (Crummy 2003, 189). The two lead weights from Brandon Road are of simple discoid form; both come from midden 2315 and may be part of a set.

Catalogue of illustrated items
(Figs 22–23)

SF 149 Fig. 22 Most of an iron equipoise **balance**. The arms are bent. The upper part of the central pointer is missing, and there is no perforation for attaching the stirrup. Length (bent) 140mm. An iron balance with its stirrup remaining in place, and dating to the 6th to 7th centuries, has been found at Godmanchester (Crummy 2003, 189, fig. 25, 5). Fill of enclosure ditch 2203. Phase 6.

SF 283 Fig. 23 Small lead discoid **weight**. Maximum diameter 13mm, 3.5mm thick. Weight 4g. (2315), midden. Phase 6.

SF 292 Fig. 23 Delaminating lead discoid **weight**; any surface features are probably corrosion rather than a design. Diameter 29mm, 7mm thick. (2315), midden. Phase 6.

Literacy: there is only one object from the site that may be associated with literacy, but it is an unusual item and its identification is only tentative. Found in a Phase 6 post-hole (2234), it is made of iron inlaid on the terminals with white metal and superficially resembles tweezers (Fig. 22, SF 182), but it is much longer than most tweezers (though see West 1998, fig. 47, 10, which is only slightly shorter) and lacks any tension at the fold, while its elegant form and decorative terminals suggest that it was a high-status item. It may perhaps have served much the same function as copper alloy page-clips, which have themselves sometimes in the past been identified as tweezers (Biddle and Hinton 1990, 756; Ottaway and Rogers 2002, 2936).

Catalogue of illustrated items
(Fig. 22)

It should be stressed that the identification of this item as a piece of equipment associated with literacy is tentative.

SF 182 Fig. 22 Iron **fitting** made from a folded strip with decorative terminals; possibly a page-clip. Each arm is flat and tapers below the fold to a group of three mouldings, below which is a leaf-shaped terminal with a short flared foot, decorated with lines of white-metal inlay. Length 101mm, maximum width 13mm. Fill of post-hole 2234. Phase 6.

Transport: this is represented only by unstratified items. Two fiddle-key nails from horseshoes are likely to be of Late Saxon or early medieval date (SF 59, not illustrated).

Tools: only two of the fourteen tools found are stratified; one is an awl, used in leatherworking (Fig. 22, SF 249), the other is an open socket or ferrule which is probably from a tool but may alternatively come from a weapon (Fig. 22, SF 176). A small punch and a chisel/punch found during the evaluation are probably associated with the metalworking activity at Brandon Road (Fig. 22, SFs 26 and 75). A second chisel is probably a woodworking tool (SF 7, not illustrated) and a dished terminal may be the spoon-bit from an auger, also used in woodworking (SF 74, not illustrated). A pair of shears represented by one blade is probably too small to have been used for shearing or cutting cloth and is more likely to have a domestic use (SF 6, not illustrated). The remaining unstratified tools are all fragments of knives including SF 160 (Fig. 22), at least some of which could be Roman.

Catalogue of illustrated items
(Fig. 22)

See also SF 47 from the evaluation, catalogued below under metal-working, which appears to be a blade fragment prepared for recyling.

SF 249 Fig. 22 Small iron **awl** with traces of mineralised wood from a handle on the tang. The tang is square in section, the stem round. Length 64mm. Fill of ditch 2228. Phase 6.

SF 176 Fig. 22 Fragment of an iron tapering open **socket** or ferrule from a tool or weapon. Length 51mm, maximum diameter 19mm. Fill of ditch 2212. Phase 6.

SF 26 Fig. 22 Narrow iron **punch** with small round point. The upper end is burred from use. Length 71mm. Evaluation, Trench 5; unstratified.

SF 75 Fig. 22 Iron **chisel** or punch, the end rounded and slightly wider than the stem. Length 109.5mm. Evaluation, Trench 10; unstratified.

SF 160 Fig. 22 Fragment of an iron **knife** with short tapering tang. Only a short part of the blade remains. The back is straight, the edge has the S-shaped profile indicative of much sharpening. Length 82mm. Unstratified.

Fasteners and fittings: this covers those items which do not fall easily into another category; some, such as studs, may be dress accessories or from furniture, and others, such as keys and locks, could be seen as household equipment. Four fittings were found in Phase 6 contexts, including a copper alloy flat-headed stud and tubular ?tack (Fig. 21, SFs 272 and 291), and an iron padlock key (Fig. 22, SF 411). The unstratified fittings include a copper alloy ?strap-fitting (Fig. 21, SF 107), and a piece of copper alloy U-shaped binding with no holes for attachment (Fig. 21, SF 108). An iron folded sheet rivet from SFB 2233 (Fig. 26, SF 242, see below, Metalworking) is of a type more usually found in copper alloy and used to repair small holes or splits in objects made from sheet metal (Egan 1998, 176); iron ones may have been used on wooden objects. Most of the nails that do not come from the Phase 6 contexts associated with ironworking are short and have small round heads, flat or slightly convex, but one is T-shaped (Fig. 22, SFs 165, 173 and 377).

Catalogue of illustrated items
(Figs 21–22)
The iron nails from the evaluation are extremely delaminated, and in some cases the excavator's original identification has had to be taken on trust.

SF 272 Fig. 21 Small copper alloy **stud** with thick flat head and riveted shank. Length 5mm, diameter 9mm. Like the silver rivet SF 435 this was probably fixed into a leather strap (*cf.* Egan and Pritchard 1991, fig. 110), and it is similar in size to those in the mount SF 284, but the head is much thicker. Fill of ditch 2228. Phase 6.

SF 291 Fig. 21 A slightly tapering copper alloy **tube** made from rolled-up sheet metal; both ends are crumpled. Length 18mm, maximum diameter 6mm. This damaged object is similar in form and manufacture to a copper alloy tack from an early medieval context at York (Ottaway and Rogers 2002, fig. 1408, 15160) and there is another example from Norwich (Margeson 1993, 77, fig. 42, 470). (2315), midden. Phase 6.

SF 107 Fig. 21 Tapering fragment of copper alloy **sheet**, the narrow end bent over, and with an iron rivet set close to the wider end. This may be a repair, as there is a small rivet hole in the adjacent corner. Length 11.5mm, maximum width 15mm. Possibly part of a strap-fitting or a corner reinforcement plate. Unstratified.

SF 108 Fig. 21 Copper alloy **binding** of rounded U-shaped section, with no holes for attachment. Both ends flare out slightly, one more markedly than the other. A similar fragment came from SFB 1 at West Stow (West 1985, fig. 30, 2). Length 94mm, diameter 6mm, depth 5mm. Unstratified.

SF 411 Fig. 22 Iron **padlock key** with most of the bit missing. The top is turned over to form a suspension loop and is fitted onto a butt-jointed suspension ring. Length 82mm, diameter of ring 20mm. Fill of ditch 2203. Phase 6.

Food provision: an unstratified netsinker or fishing weight made from rolled sheet lead (SF 105, not illustrated) is the only object relating to food provision (being equated here with agriculture). It may be medieval rather than Saxon (Ottaway and Rogers 2002, 2747–8).

Metalworking: regardless of function, all the iron objects from the contexts associated with ironworking at Brandon Road are grouped together. They represent by far the largest group of material from the site, and most is stratified in Phase 6. They are divided into three groups: objects from the backfilling of SFB 2233, objects from pit 2223, and items from the evaluation similar to the SFB 2233 assemblage.

The most distinctive objects from SFB 2233 are a number of offcuts from smith's billets (bar iron), all of which are noticeably heavier than the rest of the ironwork and all of which appear very dense on the X-radiographs, both characteristics of bloomery iron. Most of the billet fragments are terminals and vary from rounded to rectangular or square in section, usually tapering to a blunt point or rounded end (Fig. 24, SFs 203/3, 203/4, 227/1 and 229/1; not illustrated SF 157). A few come from the middle part of a billet (Fig. 24, SFs 187, 227/2 and 239; not illustrated SFs 227/3–10 and SF 243). A few fragments of narrower bars and some more amorphous pieces are also noticeably heavy and dense (Fig. 24, SFs 196/4, 203/2 and 225/1). Bar iron is the end-product of smelting and the raw material for smithing, a basic item in the ironworking process, and complete billets similar to the fragments from Brandon Road have been found in Iron Age contexts at Aigueperse, France (Orengo 2003, 78–9, pl. 39, 2). The dense smaller bar fragments, as well as some less dense bars and strips (Fig. 24, SFs 196/2, 196/3, 196/5, 199, 203/5, 220, 228 and 241), probably represent a secondary smithing stage where billets have been worked into smaller blanks ready for the production of finished objects, and less dense pieces.

A much larger collection of bar iron and blank fragments, together with other scrap material was found at Anglo-Scandinavian Coppergate, York, as well as a number of metalworking tools (Ottaway 1992, 492–525). Though no tools have been identified among the SFB 2233 material, a punch and a chisel/punch from the evaluation trenches may be associated with the iron-smithing activity (see above).

Another distinctive group of items from SFB 2233 consists of a complete holdfast with a round head and lozenge-shaped rove (Fig. 24, SF 380), and a number of roves that vary in shape from square to rectangular to lozenge-shaped: one has one straight end and one convex end (Fig. 24, SFs 185, 202/1, 203/8, 229/2; not illustrated SFs 180 and 278). One rectangular rove (SF 278) has been cut from a strip of iron, with one end cut straight across, the other at a slight angle. The variation in form of these roves may therefore be a result of fairly random cutting, but it seems unlikely that the very acute angles of the lozenge-shaped roves were not deliberate. Holdfasts, or clench-bolts, are structural fittings, used to bolt two planks or pieces of timber-framing together. They first appear in the Iron Age, though examples of that date are comparatively rare (Montague 1997, table 20; Cunliffe and Poole 1991, fig. 7.25, 2.347–9), and also occur in the Roman period (Manning 1985, 132, 134). In the Anglo-Saxon period they are most closely associated with boats, several hundred having been found in the Mound 1 ship-burial at Sutton Hoo (Bruce-Mitford 1975, 451, Q), but they were all-purpose items and their use was not restricted to boat-building.

The reason for the variation in rove form is not known. All the Sutton Hoo Mound 1 roves were lozenge-shaped,

Fig. no	*SF*	*Description*	*Head diameter/width (mm)*	*Length (mm)*
-	195	6 nails, 1 complete and clenched; 1 shank fragment	17, 16, 10, 9, 13, 6,	15 (bent), 13, 28, 12, 13, 14; 25
-	201a	3 nails; 6 shank fragments; 1 ?head	9, 13, 12	21, 15, 16; 23, 18, 20, 28, 21, 38
-	316a	1 shank fragment	-	35
-	379	1 complete nail, clenched	12	20 (bent)
Fig. 25	223/1-5	5 nails, 4 of them complete	13, 12, 12, 15, 15	35, 34, 34, 34, 23
-	219	1 nail	11	25
-	221a-c	1 nail; 2 shank fragments (1 clenched)	8	27, 28 (bent), 22
-	222	1 shank fragment	-	67

Table 3 Iron nails from SFB 2233; incomplete unless stated otherwise

but of the 80 roves from Coppergate about a third were lozenge-shaped and two-thirds square to rectangular. In discussing the Coppergate roves Ottaway compared roves from boats and from inland sites but found no overall consistency in form, with both lozenge-shaped and rectangular roves sometimes occurring on the same vessel (1992, 615–18).

The complete holdfast from SFB 2233 is strong evidence for the collection of scrap ironwork for recycling. As its rove has been fitted on it must be a used object, and the poor condition of some of the separate roves also argues against their being new; they may therefore have a common origin. Similar finished objects or fragments of objects include a sheet rivet (Fig. 25, SF 242), strips with rivets or rivet holes (Fig. 24, SFs 181, 198, 226 and 378), a pintle (Fig. 25, SF 245), sheet fragments (Fig. 25, SF 229/3), and strap-fittings (Fig. 24, SFs 200 and 240). A number of nails from the building (Table 3) may also be scrap, though a group of complete nails of much the same size seem more likely to be unused end-products (Fig. 25, SF 223/1–5). A fragment of a blade may be a partly-worked discarded item (Fig. 25, SF 197); though it is damaged, the edge lacks the characteristic wear usually seen on used knives.

Overall, the assemblage therefore appears to be a mix of offcuts associated with both the early and later stages of ironsmithing, and scrap items. Both groups of material were probably put by for recycling, and their recovery from the backfill of SFB 2233 appears to represent the point at which they were no longer considered to be of any value, presumably when the smithy ceased to operate.

The group of ironwork from pit 2223 is much smaller, consisting chiefly of sheet and strip fragments and nails (Fig. 26, SFs 277/2, 277/4 and 277/6). The exceptions are two fragments from narrow bars, one an offcut terminal (Fig. 26, SFs 276a and b), though neither is sufficiently distinctive to have been identified as smithing offcuts without the associated metallurgical debris.

Items recovered from evaluation Trench 6 are very similar to those from SFB 2233. They include three offcuts from billets of heavy dense iron (Fig. 26, SFs 52 and 53; not illustrated, SF 45): an amorphous heavy dense fragment (not illustrated, SF 44), an offcut from a bar (not illustrated, SF 54), a lozenge-shaped rove (not illustrated, SF 50), and a knife blade fragment with neatly cut ends, probably collected scrap prepared for recycling (not illustrated, SF 47).

A small number of other objects also derive from metalworking on the site. Only three are stratified, all from Phase 6. Apart from one of silver and one of copper alloy, all are of lead. A small fragment of a silver strip was found on floor 426 (Fig. 21, SF 211). It may be part of a broken object saved as 'treasure', or curated for reuse as similar pieces of metal were saved in the Migration Period (*e.g.* Hamerow 1993, 71; Malim and Hines 1998, 225), but one end has been cut and the other hammered flat, suggesting that it may be smithing scrap, perhaps from the manufacture of a silver object, or perhaps from silver inlay on an iron object.

A small pellet of copper alloy from evaluation Trench 10 may be a refrozen drip (not illustrated, SF 79). The Phase 6 midden 2315 produced a refrozen puddle of lead and a thick lead offcut (Fig. 23, SF 294; not illustrated, SF 295). Several more refrozen dribbles and puddles are unstratified, and the unstratified items also include offcuts of sheet lead (not illustrated, SFs 25, 31, 82 and 406). Small-scale leadworking may have taken place at any period on the site. In eastern Britain very few lead objects are found on sites of the Early and Middle Saxon periods, and where they are found, there is often reasonable evidence that they were made from metal taken from Romano-British buildings in the vicinity. For example, the lead used at Mucking, Essex, to make a group of rings is believed to have derived from a nearby villa, which may also have been the source for lead rings found during excavations at Linford, in Mucking parish (Hamerow 1993, 70–1; Barton 1961, 100).

Catalogue

Ironwork from backfills of SFB 2233, Phase 6
(Figs 24–25)

SF 380 Fig. 24 **Holdfast** with round head and lozenge-shaped rove. Length 48mm, head diameter 22mm, rove 34 by 24mm.

SF 240 Fig. 24 **Looped terminal** with the ends of the loop hammered flat and fire-welded together to form a strap. Possibly broken across a perforation. Length 48mm, width 34mm.

SF 242 Fig. 25 Folded **sheet rivet**, similar to that from layer 2319 above (see Fig. 18, SF 205, Fastenings and fittings). 22 by 24mm.

SF 181 Fig. 24 Slightly curved **strip**, a little narrower at one end than the other, with a rivet hole near the narrow end and another 60mm away. Length 98mm, maximum width 12mm. Possibly a tang from a knife or other tool.

SF 185 Fig. 24 Lozenge-shaped **rove** from a holdfast. Length 50mm, width 33mm.

SF 187 Fig. 24 Large offcut from a rectangular-section **billet**; the iron is heavy and dense. Both ends are quite rough but were presumably cut with a chisel, though a projection on one corner shows that at that end the metal was at least partially torn apart. Length 61mm, section 37 by 32mm.

SF 191/1 Fig. 25 Slightly curved fragment with one edge partly rolled up; probably **waste debris**. Length 44 by 36mm.

SF 196/2 Fig. 24 Tapering **strip fragment**. Length 39mm, maximum width 14mm.

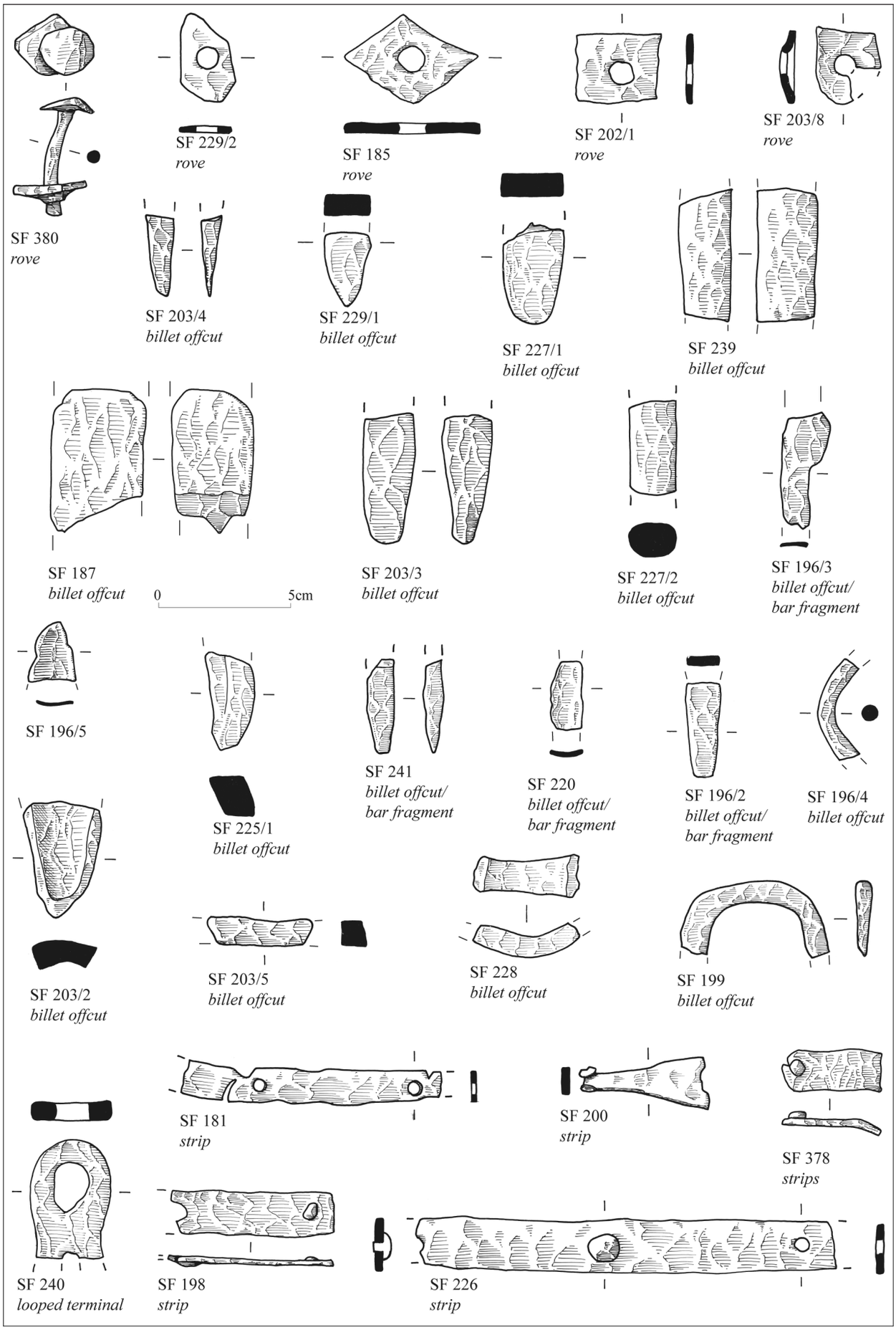


Figure 24 Anglo-Saxon iron objects from SFB 2233. Scale 1:2

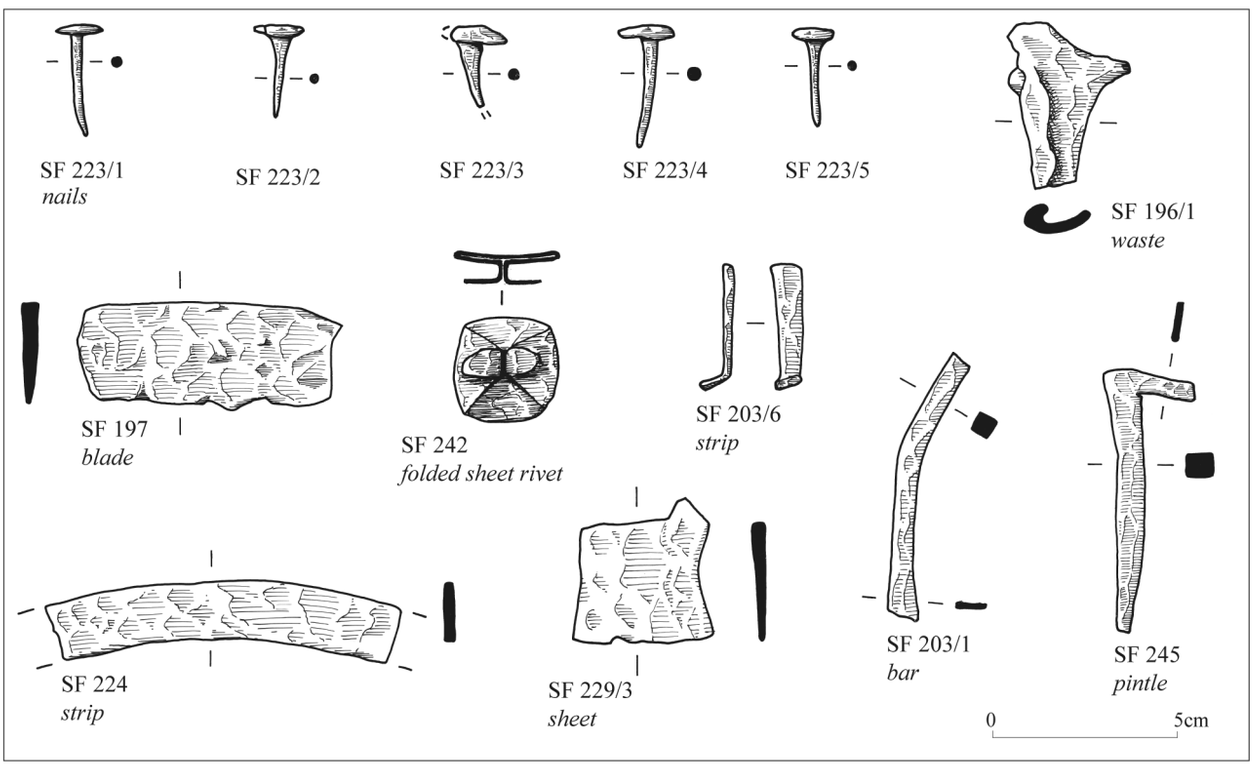


Figure 25 Anglo-Saxon iron objects from SFB 2233. Scale 1:2

SF 196/3 Fig. 24 **Sheet fragment**. 48 by 16mm.

SF 196/4 Fig. 24 Curved round-section **rod**; the iron is heavy and dense. Length 37mm, diameter 9mm.

SF 196/5 Fig. 24 Tongue-ended thin **strip fragment**. 26 by 19mm.

SF 197 Fig. 25 Triangular-section **blade** fragment, with back and edge straight and parallel. The edge is damaged, but appears to be unfinished rather than worn. Length 65mm, width 26mm.

SF 199 Fig. 24 Curved **bar**, tapering from square in section at one end (11 by 11mm) to narrow and rectangular at the other (10 by 4mm). Length 57mm.

SF 200 Fig. 24 Tapering **strip**, possibly broken across a perforation in the widest end. Probably a strap-fitting with large expanded terminal. Length 48mm.

SF 202/1 Fig. 24 Square rove from a **holdfast**, cut from a strip of metal. Length 29mm, width 26mm. Not illustrated, SF 202/2–3: two fragments of sheet. 32 by 29mm; 31 by 21mm.

SF 203/1 Fig. 25 Narrow **bar** fragment, square in section at one end (9 by 9mm), rectangular at the other (11 by 3mm). Length 78mm.

SF 203/2 Fig. 24 Thick slightly concave triangular fragment; probably an offcut from a billet; the iron is heavy and dense. Maximum dimensions 47 by 30mm, 12mm thick.

SF 203/3 Fig. 24 Offcut from the terminal of a billet. The section is rectangular, tapering slightly to a blunt end. Length 52mm, section 22 by 18mm, tapering to 19 by 12mm.

SF 203/4 Fig. 24 Offcut from the end of a billet; the iron is heavy and dense. The section is rectangular (13 by 10mm) and tapers to a blunt point.

SF 203/5 Fig. 24 Fragment of a narrow square-section **bar**. Length 41mm, section 13 by 13mm.

SF 203/6 Fig. 25 Tapering **strip** with the narrow end bent out at a right angle. Length 36mm, maximum width 8mm.

SF 203/7 (Not illustrated) Amorphous fragment. 21 by 11 by 6mm.

SF 203/8 Fig. 24 Fragment of a square or lozenge-shaped **rove** from a holdfast. 23 by 14mm.

SF 239 Fig. 24 Offcut from a **billet**, with both ends cut at a slight angle. Length 55mm, section 26mm square.

SF 241 Fig. 24 Fragment of a small square-section **bar**, reduced in thickness towards one end. Length 38mm, section 10 by 10, tapering to 10 by 4mm.

SF 245 Fig. 25 **Pintle** or wallhook, with a round-section point and the stump of a rectangular-section spike at right angles to it. Length of point 73mm, length of spike 29mm, width 13mm.

SF 378 Fig. 24 Fragment from the terminal of a **strip**, the end rounded and pierced. Length 37mm, width 15mm.

SF 198 Fig. 24 Iron **strip** fragment, broken across a rivet hole at one end. Length 62mm, width 16mm.

SF 224 Fig. 25 Curved iron **strip**. Length 96mm, width 19mm.

SF 225/1 Fig. 24 Tapering fragment of irregular rounded section; probably an **offcut**; in the centre the iron is heavy and dense. Length 43mm, maximum width 26mm. Not illustrated, SF 225/2: small amorphous fragment. 16 by 11 by 8mm. Not illustrated, SF 225/3: Offcut from a slightly tapering bar of rectangular section. Length 32mm, maximum width 14mm. Not illustrated, SF 225/4: Offcut from a tapering rectangular-section bar. Length 34mm, maximum width 19mm.

SF 226 Fig. 24 Fragment of a **strip** with one rivet remaining in place and a hole for another. Length 154mm, width 20mm. The rivet hole is close to one end, the surviving rivet 70mm away from it.

SF 227/1 Fig. 24 Offcut from the end of a **billet**; the iron is heavy and dense. The section is rectangular, the terminal is rounded. A central split visible on the X-radiograph suggests the billet was formed by folding a strip of iron in half. Length 36mm, section 22 by 9mm.

SF 227/2 Fig. 24 Offcut from an **bar** of rounded but slightly flattened section; the iron is heavy and dense. Length 36mm, section 18 by 13mm. Not illustrated, SF 227/3: Corroded and damaged ?bar fragment of similar section to SF 227/2 above; the metal is quite heavy and dense. Length 38mm, width 11mm. Not illustrated, SFs 227/4–12: Fragments and scraps, probably waste debris; one is probably slag, some are heavy and dense. 37 by 21mm; 31 by 15mm; 20 by 15mm; 19 by 13mm; 16 by 12mm; 17 by 8mm; 19 by 9mm; 10 by 9mm; 21 by 13mm.

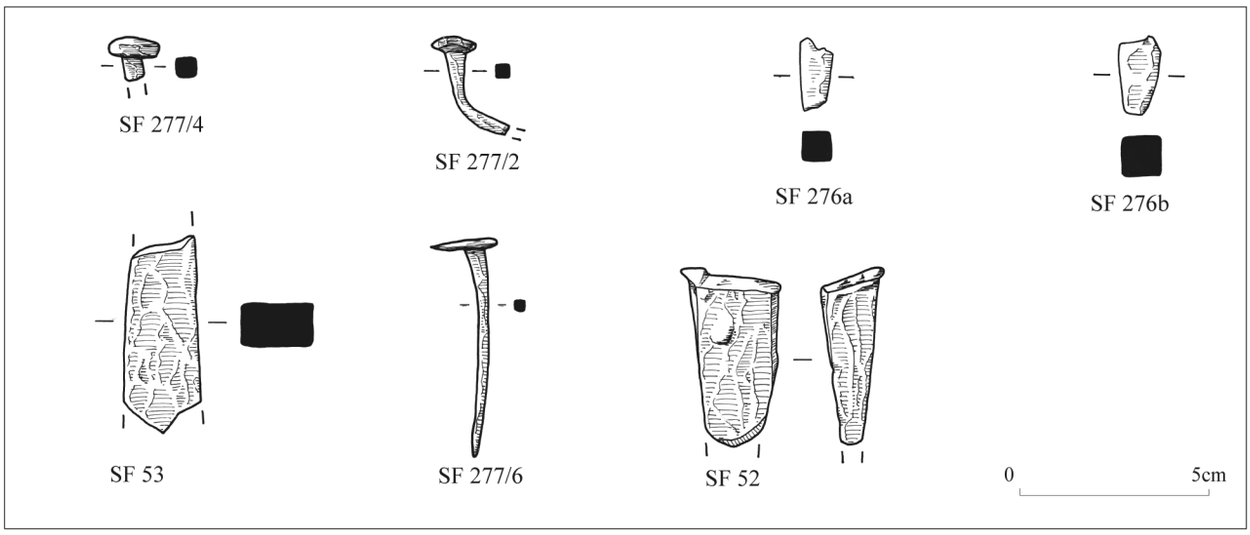


Figure 26 Anglo-Saxon iron objects from pit 2223 and related deposits. Scale 1:2

SF 229/1 Fig. 24 Offcut from the end of a **billet**; the iron is heavy and dense. The section is rectangular, the terminal a blunt point. Length 32mm, section 21 by 18mm.

SF 229/2 Fig. 24 Damaged lozenge-shaped **rove** from a holdfast. Length 35mm, width 22mm.

SF 229/3 Fig. 25 Fragment of **sheet**. 38 by 36mm. Not illustrated, SF 229/4: Iron strip. Length 62mm, width 19mm. Not illustrated, SF 229/5: Fragment of triangular section bar, too thick to be a blade; possibly an offcut. Length 45mm, width 24mm. Not illustrated, SF 229/6: Fragment of sheet. 28 by 21mm.

SF 220 Fig. 24 **Strip** fragment, slightly curved or bent on the short axis. Length 27mm, width 12mm.

SF 228 Fig. 24 Fragment of a curved rectangular-section **bar**, slightly thinner at one end. Length 39mm, section 16 by 10mm at maximum.

SF 278 (Not illustrated) Rectangular rove from a holdfast; made from a strip with one end cut straight across, the other at a slight angle. Length 31 mm, width 23 mm.

Ironwork from pit 2223, Phase 6
(Fig. 26)

SF 276a Fig. 26 Fragment of a small square-section **bar**. Length 18mm, section 7mm square.

SF 276b Fig. 26 Blunt-ended tapering terminal from a rectangular-section **bar** or shank. Length 22mm, section 13 by 10mm at widest. Not illustrated, SF 276 c–g: Five fragments of iron sheet. 38 by 25mm; 16 by 16mm; 27 by 12mm; 22 by 16mm; 12 by 10mm.

Ironwork from the evaluation similar to that from pit 2223
(Fig. 26)

SF 52 Fig. 26 Offcut from the end of a **billet**; the iron is heavy and dense. The thicker end has been cut at a slight angle and is burred on two edges, possibly a result of being cut, or possibly from use as a punch or wedge. The terminal is blunt-ended. Length 46mm, maximum width 26mm, maximum thickness 18mm. Evaluation, Trench 6; unstratified.

SF 53 Fig. 26 Offcut from a **billet**; the iron is heavy and dense. One end is slightly wider but narrower than the other, and has been roughly cut, leaving three facets. The other has been cut at a slight angle. Length 51mm, maximum width 24mm, maximum thickness 15mm. Evaluation, Trench 6; unstratified.

Other metalworking material
(Figs 21 and 23)

SF 211 Fig. 21 A small fragment of a silver **strip** with one end hammered thin. The other end is thicker, slightly bent, and has been cut. Length 8.5mm, width 6.5 m, average thickness 0.5mm. Floor 426. Phase 6.

SF 294 Fig. 23 Thick lead **offcut**, with two contiguous sides neatly cut and signs of crimping. (2315), midden. Phase 6.

Miscellaneous: the miscellaneous items are mainly unstratified, though a few come from Phase 5 and Phase 6 contexts including a lead figure-of-eight-shaped object (Fig. 23, SF 293; unillustrated items, SFs 86, 150, 157, 189, 210, 236, 247, 293, 322, 382 and 437). One of the Phase 6 iron objects may be a rove and therefore associated with the ironwork from SFB 2233, but it is smaller than the other roves from the site (Fig. 22, SF 210). Given the recovery of billet and bar fragments and a rove from evaluation Trench 6 (see above), it is likely that at least some of the seven miscellaneous iron objects from the trench may be scrap collected for reuse. Of the unstratified items some are of late medieval or modern date, but the majority cannot be closely dated and are perhaps most likely to be Roman or Saxon. There are three copper alloy objects of uncertain function consisting of a ring, a disc and a sheet (Fig. 21, SFs 112, 117 and 405).

Catalogue of illustrated items

Copper alloy
(Fig. 21)

SF 405 Fig. 21 Plain copper alloy **ring** of oval section. Diameter 19mm, height 3mm, thickness 2mm. Rings are multi-functional and this example cannot be attributed to a particular use. The section makes it unlikely to be a finger-ring. Unstratified, spoilheap.

SF 112 Fig. 21 Thin copper alloy **disc**, the edge very worn and rough. Diameter 21mm, <0.25mm thick. Unstratified.

SF 117 Fig. 21 Rectangular piece of thin copper alloy **sheet**, possibly part of a strap-plate, but with no rivets or holes for attachment. Length 31mm, width 20mm. Unstratified.

Lead
(Fig. 23)

SF 293 Fig. 23 Lead figure-of-eight-shaped **object**, one surface flat, the other rough. Length 36mm, maximum width 17mm. (2315), midden. Phase 6.

Iron
(Fig. 22)

SF 210 Fig. 22 Iron **strip** fragment with large central hole. Possibly a rove, but narrower than most. Length 28mm, width 17mm. Not illustrated, five iron sheet fragments. 37 by 25mm; 28 by 21mm; 25 by 22mm; 18 by 17mm; 23 by 11mm. Fill of enclosure ditch 2203. Phase 6.

SF 322 Fig. 22 Flat tapering iron **strip**, with a rounded wide end and bent point. Length 62mm, maximum width 13mm. (2315), midden. Phase 6.

Metalwork from Thetford Bypass, 1988

An assemblage of 99 items of metalwork was recovered by independent metal detectorists during the construction of the Thetford Bypass and was recorded by the former Norfolk (and occasionally Suffolk) Sites and Monuments Record over a period of months in the second half of 1988 (see Rogerson, Ch. 1.IV). Coins and jetons are detailed further above. Other objects are listed chronologically in three appendices (Appendices 4–6).

The dates used in this section are all AD unless stated otherwise, and are usually those assigned by the original recorder, but a few have been altered to match current dating conventions. As the objects themselves are no longer available for study, having long since been dispersed, the dates and identifications have had to be taken on trust, but occasionally they have been altered, or a comment has been added which either questions or clarifies them. For example, querns of Mayen lava from Germany were imported in the Roman, Saxon, medieval, and perhaps even the early post-medieval periods, making an absolute date impossible to assign; similarly, a copper alloy ring with slip-knot join was dated as Saxon, but similar items were also made in the Roman period. In the latter case a '?' has been added to the date range, in the former the range has been expanded to cover the wider possibilities.

While the record of the assemblage represents a valuable resource for assessing the occupation in the Bypass area, it is undoubtedly incomplete. A letter dated 8 July 1988 from Thetford Museum to the Sites and Monuments Record notes the recovery of Roman coins and brooches, Saxon strap-ends, pins, coins, and a spearhead, and two undated axes. Most of those items are represented here, but no spearhead or axe was handed in for identification, and the general paucity of ironwork is a reminder not only of how many finds of that metal were lost, but also of the absence of items of bone and stone in an assemblage covering periods rich in both.

Bronze Age, Late Iron Age and Roman
(Appendix 4)
The only prehistoric metal object is a probable Bronze Age awl. A Langton Down brooch belongs to the Late Iron Age or the first few years after the invasion of AD 43. There is a high proportion of Roman dress accessories, mostly of early date, but few other functional categories are represented. This pattern is not dissimilar to the excavated Roman assemblage, though in both cases the number of objects is small. The recovery of a complete Late Roman copper alloy bowl is unusual outside the context of a hoard and this example can be matched by three others from vessel hoards within the region. Fortunately the form can be identified because a note linking it to bowls in two hoards was made by Tony Gregory at the time of its recovery; this note forms the basis for the entry on this object given below. There is a very strong probability that this bowl is the sole survivor of a lost or destroyed metal vessel hoard, or that, like the metal bowl filled with glass vessels from Burgh Castle, it was used as a hoard container.

Anglo-Saxon
(Appendix 5)
This assemblage is markedly different to that from the excavated site at Brandon Road as it consists almost entirely of dress accessories and knives. Five of the thirteen dress accessories are Middle Saxon pins, and two more may also be pins of this date but the terminology employed could also describe Roman hairpins. Four of the pins can be positively attributed to the typology established for *Hamwic* and three of the four are of types also represented at Brandon Road. A disc brooch with cross design and traces of enamel is probably a parallel for another one from Thetford in a private collection (A. Goodall 1984, 68, fig. 109, 7).

Only one hooked tag (SF 88) was found at the Brandon Road excavation, but three were found on the Bypass compound site. They are more likely to date to the Late Saxon or early post-Conquest periods when such tags are generally more frequent as site finds rather than to the Middle Saxon period, which goes some way towards explaining their absence from Brandon Road.

Two strap-ends, one probably with stylised animal head terminal, complete the dress accessories and are object-types to be expected in an assemblage of Anglo-Saxon metalwork. As mentioned in the introduction above, a copper alloy ring with slip-knot join was dated as Saxon. Depending on its size, it may have been used as a suspension ring for a toilet set, or perhaps as part of necklace, but similar suspension rings were also made in the Roman period.

Little can be said about the knives save that the seven recovered represent a high proportion of the total amount of ironwork from the Bypass; presumably only selected, and recognisable, iron objects were retained.

Medieval and later
(Appendix 6)
This group of material is much closer to an excavated assemblage than the previous one. A range of metals is present, and a wide range of functional categories. The high number of dress accessories noted in the earlier date groups is here balanced by other object-types typical of medieval and early post-medieval occupation sites: a cloth seal, casket fittings, vessel foot, lead weights, harness fittings, and keys. The weights add to the impression given by the coins and jetons that this area might have been used as a market.

The copper alloy bowl

based on a note by Tony Gregory
The bowl is a Late Roman form that occurs in several British vessel hoards. Its chief distinguishing features are a low carination, omphalos base and footring, which places it within Kennet's *bassin uni* group (1971). In the context of Thetford the most pertinent hoards containing the form are those from Sturmer in Essex, Burwell in Cambridgeshire and Weeting in Norfolk (Kennet 1971, 124–8, no. 6; Gregory 1976, no. 13; Gregory 1977a, no. 8). Two examples, graded in size, came from the hoard

found at Helmsdale, Sutherland, in the 19th century (Joass 1886, nos 5–6). The bowl that contained the Burgh Castle glass hoard is of similar date but has a rounded base that places the carination higher up the vessel wall (Johnson 1983, fig. 35, 72). The date-range of the hoard finds is centred on the late 4th century, but the date of manufacture (if some of the vessels were old when buried) might be much earlier, perhaps in the 3rd century, and the date of burial might be as late as the late 5th century.

IV. Slag and Associated Materials

by Tom Eley and Rachel Fosberry

Slag and associated waste was examined from both the evaluation (0.942kg) and the excavation (5.849kg). The assemblage includes smithing slag, smelting slags, hammerscale and fragments of hearth or furnace structures.

Although the majority of metalworking debris was found in secondary deposits and dumping layers, a clear pattern of distribution by period emerges (Table 4). Evidence for Roman metalworking was largely confined to a Late Roman enclosure (Phase 4; 2298) in the western part of the site, which produced 0.621kg of smithing slag: although a small assemblage, this makes up 81% of slag from all Phase 4 contexts. Over 53% of the slag assemblage was recovered from the Middle Saxon backfill of two features: a sunken-featured building (2233; 1.769kg) and a pit (2223; 1.824kg), supplementing other evidence for a possible smithy in the vicinity. These features lay to the south-east, on the edge of the gravel terraces. It is likely that these assemblages are smithy waste products and the features also contained a considerable number of iron objects (many damaged prior to deposition) in their backfills, probably scrap ready for re-use (Crummy, Ch. 3.III).

Most of the slag appears to derive from the smithing process or is undiagnostic based upon a morphological assessment. It often displays a flowed, molten, texture suggesting it was created at a higher temperature than usual for smithing. Some of the slag also has a glassy component (*e.g.* structure 2237, Phase 6) indicating that it was formed in strongly reducing conditions, although occurring in quantities lower than would be expected for an iron smelting furnace. The clay lining fragments are also unusual due to the frequent occurrence of a glassy, vitrified green/black surface on one side. An unphased pit (1588) contained a lining fragment that consisted of alternating pink and grey bands. This vitrified, dark coloured layer would have formed in reducing conditions, which do not occur in a normal smithy hearth. Reducing conditions occur when the amount of air permitted into a hearth or furnace is limited. This can either be to smelt ore in the case of a furnace, of which there is no definitive evidence here, or for the de-carburisation of cast iron (see Rosenthal *et al.* below).

The methods of Anglo-Saxon high quality steel production are poorly understood and there is difficulty in recognising the debris associated with the process. Steel was of high value because it could hold a good cutting edge, but it was rare and therefore used sparingly. It was often welded onto a wrought iron back to make a blade. One of the methods by which Anglo-Saxon steel is thought to have been produced is the cementation method (Leahy 2003, 116) which works by taking a bar of low carbon wrought iron, packing it in a material high in carbon and heating in a reducing atmosphere. It would have been a difficult, slow process and when finished the bar would be smithed to homogenise the carbon content. A higher than usual smithy temperature would have been required to soften the high carbon steel, perhaps producing a more flowed smithing slag.

The combination of slag, tools (found unstratified), smith's billets and scrap iron found at Brandon Road is indicative of a smithy assemblage. Such tools have been found in earlier excavations around Thetford, including a hammer head and chisel (Leahy 2003, 117–20). Anglo-Saxon metalworking evidence is rare compared to that for the Romano-British and medieval periods; few forge sites have been identified and little is known about steel production (Leahy 2003, 116). Elsewhere in Norfolk the little evidence for metalworking in rural Early and Middle Saxon sites includes Spong Hill where there was a small-scale Early Saxon iron smithy (Bayley 1995). Here, a total of 2.3kg of slag was recovered, generally spread out in the backfill of several sunken-featured building deposits in the north-west corner of the excavated area. No sunken-featured building contained more than 0.7kg of slag deposits. Melford Meadows near Thetford had small-scale Early Saxon metalworking debris totalling 1.7kg, again found largely within several sunken-featured building backfills (Salter 2002). At Redcastle Furze, 1.68kg of slag was recovered, which included almost 1kg of hearth lining and slag from a pit and a complete hearth bottom (0.568kg) from a sunken-featured building (Andrews 1995, 98).

Phase	*Smelting slag (kg)*	*Smithing slag (kg)*	*Hearth lining/sand (reducing) (kg)*	*Hearth lining (oxidising) (kg)*	*Metal waste (kg)*	*Ore (kg)*	*Undiagnostic slags (kg)*	*Total weight (kg)*
1							0.032	0.032
2							0.020	0.020
3		0.171					0.027	0.198
4	0.041	0.680					0.047	0.768
5		0.293					0.048	0.341
6	0.377	3.168	0.582	0.075	0.123	0.009	0.200	4.534
Unphased		0.077	0.074				0.028	0.179
Unstratified		0.563	0.040				0.116	0.719
Total	**0.418**	**4.952**	**0.696**	**0.075**	**0.123**	**0.009**	**0.518**	**6.791**

Table 4 Phase distribution of the types of metalworking debris (by weight)

Sample Information		*Silicate*		*Iron oxide*		*Other phases*		
ID	*Type*	*Lath*	*Blocky*	*Dendritic*	*Globular*	*Glassy*	*Hercynite*	*Prills*
SFB 2233	PCB	x	x	x	x	x		?
SFB 2233	Liquid Fragment	x			x	x		?
SFB 2233	Smelting			x	x	x		
Structure 2237	Tap Slag					x		
Hollow 1006	PCB	x	x	x	x	x	x	?

Table 5 Summary of mineralogical phases present in the slag

V. Slag Microanalysis

by Rebecca Rosenthal, Gerry McDonnell and Samantha Rubinson

Introduction

Morphological examination of the slag assemblage (outlined above) identified an assemblage dominated by smithing debris, but with some slags displaying characteristics of tapped smelting slags. The slag was subjected to microanalysis to examine the material further and determine which metalworking procedure had resulted in the production of this slag assemblage.

Methodology

A number of samples were selected for analysis (Table 5). These consisted of four samples from Phase 6 (Middle Saxon) deposits (three samples from the backfill of SFB 2233 and one from structure 2237) and one sample from a Phase 4 deposit (1006) that may have originated from later material nearby. The selected samples were sectioned using a slow speed diamond-wafering saw and samples were then mounted into a cold setting epoxy resin. Standard laboratory techniques were used to prepared the samples, which were systematically ground and polished down to a 1 micron finish (1 μm = 1000th of a millimetre). A Nikon Optiphot microscope equipped with an Erec digital camera was used to examine the samples optically and digital images were captured. This enabled microstructural phases to be identified. The scanning electron microscope (SEM) facilitated a closer examination of the samples to characterise the phases present within the slag. The scanning electron microscope produces fully quantitative analyses using energy dispersive x-ray analysis. The SEM was operated at 20kV accelerating voltage with a spectrum range between 0–10keV, each analysis ran for 100 live seconds, the filament was at saturation and the working distance was 11mm.

Results

The full results of analysis are given in Appendix 7 and summarised in Table 6.

A plano convex hearth bottom (PCB) from SFB 2233 is taken as the 'control' sample as it has a typical smithing slag microstructure that is rich in iron oxide. This sample is somewhat unusual in that the microstructure exhibits silicate laths; this is unusual for PCBs or hearth bottoms. The smelting sample from SFB 2233 has a classic smithing slag composition and a similar microstructure to the PCB from the sample building. Compositionally SFB 2233 (smelting) has higher levels of silica present than SFB 2233 PCB. Slag from structure 2237 is very unusual in that it is very rich in silica; this is reflected both in the sample microstructure and its analysis; this sample also shows slightly elevated levels of alumina and is probably a hearth or furnace lining type material. A liquid fragment sample from SFB 2233 is probably a variation of slag sample 2237. The slag from hollow 1006 is very rich in iron oxide and also has high levels of manganese oxide compared to the SFB 2233 PCB; otherwise the two samples are almost identical in their composition.

Discussion and conclusions

Distinguishing iron smelting from iron smithing slag is difficult, and there is no single test or characteristic that can distinguish these slags. In some periods the smelting slags are very distinctive, but unfortunately in the Saxon period, there are considerable difficulties in

Formula	*SFB 2233 (PCB)*	*SFB 2233 (liquid frag)*	*SFB 2233 (smelting)*	*Structure 2237*	*Hollow 1006*
Na2O	0.5	0.4	0.4	0.3	0.2
MgO	0.1	0.2	0.2	0.4	0.5
Al2O3	1.3	1.9	2.3	2.9	3.7
SiO2	22.9	53.0	40.5	77.9	24.2
P2O5	2.1	1.2	1.0	3.1	1.1
SO3	0.2	0.3	0.2	0.2	0.3
K2O	3.0	1.8	3.1	2.2	1.1
CaO	2.4	1.5	6.2	3.5	2.5
TiO2	n.d	0.1	0.2	0.4	0.1
Cr2O3	0.1	0.1	0.1	0.1	0.1
MnO	0.1	0.1	0.2	0.1	1.5
FeO	67.4	39.5	46.0	9.2	64.9
NiO	0.1	0.1	0.1	0.1	0.1
CuO	0.1	0.1	0.1	0.1	0.1
Totals	**100.0**	**100.1**	**100.2**	**100.1**	**100.3**

Table 6 Summary of the average bulk analyses of the slag (percentages by feature)

distinguishing these technologies. The Brandon Road assemblage is a typical example of this problem. The control sample is a typical smithing hearth bottom, in form and composition. Its microstructure is untypical in that silicate laths are present, although a direct parallel can be drawn with a hearth bottom from Wharram Percy. The liquid fragment sample from SFB 2233 is a slagged lining, displaying enhanced silica content. Samples SFB 2233 (smelting) and 2237 display flowed characteristics, and both have elevated silica contents compared to the control. The high silica contents would raise the softening temperature of these slags considerably above that of normal fayalitic compositions. This would suggest that these slags derive from close to the air blast. The sample from layer 1006, is very similar in morphology and microstructure to the control hearth bottom SFB 2233. However it has elevated levels of manganese oxide, compared to all other slags (1.5% compared to 0.1% in the control). High levels of manganese oxide are one of the best indicators that the slag derived from smelting, although the levels in the Brandon Road sample are on the borderline. It can therefore be concluded that the Middle Saxon slags from Brandon Road derive from smithing, with some examples of flowed slags due to elevated temperatures in the hearth. This conclusion is not definitive, however, and there is still some doubt about the sample from 1006.

It must be noted that Saxon smithing was sophisticated and that other processes were involved in addition to shaping and welding. Of great significance is the production of high quality steel (Mack *et al.* 2000), and the debris associated with this process has not been recognised, but flowed slags may be expected. The results of micro-structural and elemental analysis of the PCB sample from SFB 2233 are concurrent with those of a typical hearth bottom. The liquid fragment sample taken from the same context as the PCB has similarities to materials examined from other sites, interpreted as deriving from the de-carburisation of cast iron. Morphological examination of the SFB 2233 liquid fragment indicates that it is a fragment approximate to a quarter of a circular slag (*c.*8–10cm in diameter). Such fragmentation is the result of fracture upon cooling and is characteristic of slag thought to be produced in the cast iron de-carburisation process. The microstructure of the sample shows fine silicate laths representative of a high state of liquidity as would be expected in the de-carburisation process where high temperatures (*c.*1200°C) were used (Mack *et al.* 2000). The quartz fragments observed in the slag microstructure and the large quartz fragments visible macrosocopically at the edge of the sample suggest that this slag was formed in a quartz-lined hearth. Evidence from Saxon Southampton (*Hamwic*) implies that such hearths were used for the de-carburisation of cast iron (Mack *et al.* 2000): the liquid fragment sample from SFB 2233 is interpreted as a slag resulting from this process.

VI. Ceramic and Shale Objects

by Nina Crummy
(Fig. 27)

Roman

Only three ceramic and shale objects date to the Roman period. One is a dress accessory, a fragment of a plain shale armlet found in a Phase 4 pit (SF 410). A fragment of a shale spindlewhorl was residual in a Phase 5 pit (SF 234), and a ceramic gaming counter (SF 348), the only object associated with recreation from the site, came from a modern ditch probably associated with the golf course. Rather than being a purpose-made object, as appears at first, this counter is almost certainly reworked from the base of a small Late Roman redware pedestalled beaker. Its distortion suggests the vessel may have been a waster. Pottery sherds reworked into counters are found in both Roman and Early Saxon contexts, and in the latter period there appears to be a preference for redwares; there is some possibility therefore that this item may belong with the Anglo-Saxon material discussed below.

Catalogue
(Fig. 27)

Dress accessories

SF 410 Fragment of a plain shale **bracelet** with curved outer face and angular inner one, sharply pointed where it was cut from the block on the lathe. Internal diameter 50mm, thickness 5mm, height 6mm. Fill of pit 1321. Phase 4.

Textile manufacturing equipment

SF 234 Thin **fragment** split from one face of a lathe-turned shale spindlewhorl. There is a pair of incised grooves close to the spindle hole, and another close to the outer edge. Minimum diameter 36mm; diameter of spindle hole 8mm. Fill of pit 578. Phase 5.

Recreation

SF 348 Small thin ceramic **counter** in an oxidised fabric with fine micaceous grit. The disc has distorted and cracked slightly during firing. Nearly all of one surface is missing, the other retains the distinctive rilling of clay cut with wire from a wheel. The edge is slightly rough. Diameter 16mm, 2mm thick. (2250), ditch. Modern.

Anglo-Saxon

All the Anglo-Saxon ceramic objects from the site are associated with the manufacture of cloth. Two ceramic spindlewhorls came from the Phase 5 SFB 2217, and fragments of another from structure 2237. All are in different fabrics, and the fabric of the whorl from structure 2237 is similar to that of the Phase 5 loomweights (see below), suggesting that it is contemporary with them and residual in its context.

Of the two whorls from SFB 2217, one is in a hard-fired reduced ceramic fabric and is likely to be locally-made (Fig. 27, SF 217), the other is a fine-grained 'chalk', with bands of fine rilling on the face, and would have been imported to the site (SF 212, not illustrated). The ceramic whorl is biconical and large. Five similar whorls were found at West Stow, Suffolk — two in a sunken-featured building (SFB 63) phased to the 5th century, and one in a sunken-featured building phased to the late 6th century (SFB 44) (West 1985, 37, 49, 149–50, fig. 150, 9, fig. 207, 6–7). At least one of the Spong Hill ceramic whorls also has a similar profile, though all are more or less biconical (Rickett 1995, fig. 137). A date late in Period 5 is suggested by the plano-convex rilled stone whorl, as examples of the type have been found in late 6th- to 7th-century sunken-featured buildings at West Stow and at Godmanchester, Cambridgeshire (West 1985, fig. 30, 7, fig. 72, 6; Crummy 2003, 186, fig. 25.12).

Fragments of a single unfired loomweight were recovered from SFB 2206 (SF 204), and twenty from SFB 2232. Only one of the latter is catalogued below; it is

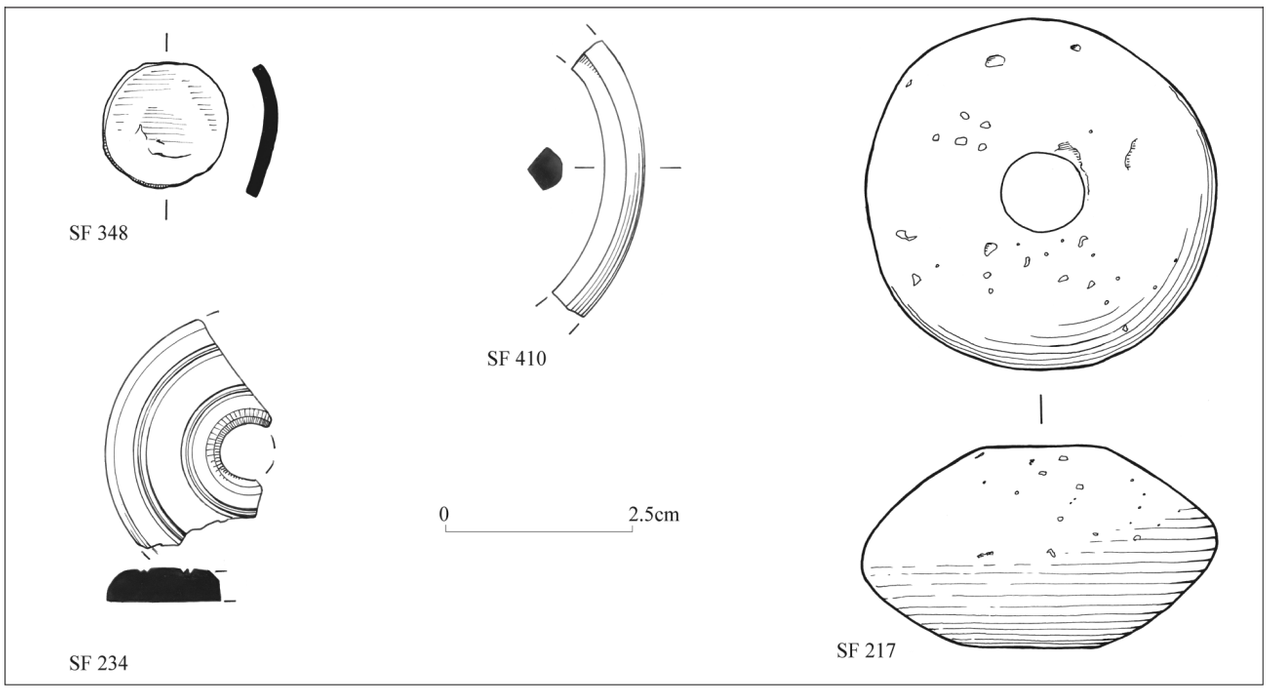


Figure 27 Ceramic and shale objects. Scale 1:1

complete, though fragmentary and friable (SF 268, not illustrated).

Loomweights of both annular and bun-shaped form have been found fired, partially fired, or, like these examples from Brandon Road, unfired ('green'). Weights in all three states were found at West Stow, Suffolk (West 1985, 138), while at Willington, Derbyshire, only unfired weights were found and were presumed to have been used in the green state (Elsdon 1979, 210). A single sunken-featured building found to the south of Brandon Road (HER 33812) produced twenty-nine pieces of unfired clay thought to be fragments of broken weights (Goffin 2000a, 17). As weights would have needed to be air-dried before firing, an alternative interpretation is that green ones were stored until a kiln-load was ready. The fabric of the Brandon Road loomweights is now so friable that is difficult to believe that in antiquity they would be stable enough for use without firing.

Unfired weights have also been found at Mucking, Essex (Hamerow 1993, 68), Pennylands, Buckinghamshire (Williams 1993, 123), Godmanchester, Cambridgeshire (Crummy 2003, 186–7), Upton, Northamptonshire (Jackson *et al.* 1969, 210), and Gamlingay, Cambridgeshire (Murray and McDonald in prep). The reason for their absence in the Anglo-Scandinavian period at the Coppergate site, York (Walton Rogers 1997, 1753), may be due to factors such as date, regional (?ethnic) practice, and the greater number of kiln-firings that probably took place in an urban environment.

The weight from SFB 2232 belongs to the intermediate form, with a central hole smaller than the thickness of the ring, which dates to the Middle and Late Saxon periods, while annular loomweights, with the ring wider than the thickness of the ring, are Early and Middle Saxon (Dunning *et al.* 1959, 23–5). This example presumably dates to late in Phase 5.

Both forms of loomweight were used on the warp-weighted loom and occur in some numbers on Saxon sites. On early rural settlements they are sufficiently common to demonstrate that most communities were self-sufficient in cloth production (Crummy 2002b), but it has yet to be satisfactorily determined whether or not at that period certain buildings functioned solely as weaving sheds, or if looms were set up in domestic dwellings. At West Stow twenty-two huts out of sixty-nine contained loomweights, usually fewer than would be needed for a loom, but one contained more than fifty (SFB 21) and two burnt huts, SFB 3 and SFB 15, contained seventy-three and *c.*170 weights respectively (West 1985, 138–40). This evidence could be taken to imply that some buildings were weaving sheds but that loomweights might also be stored in the owner's living quarters; or, that weaving was a general domestic activity and that loomweights were long-lived items that passed down the generations and were only discarded if broken, or if accident had destroyed the looms, as in SFBs 3 and 15. Gibson has also suggested that some loomweights may have been formally deposited in their contexts for socio-religious reasons (2003, 210–11).

The weights in West Stow SFB 21 were unfired and fragmentary; they appear to have been reused, along with other readily-available debris, to form a layer capping the lower fill of the building (West 1985, 26). The presence of loomweights need not necessarily therefore imply the contemporary presence of a loom in the same building, but this is far more likely where the weights were found in rows, as was the case for some of those in SFBs 3 and 15 at West Stow, and the best-preserved evidence of this kind comes from an 11th-century context at Winchester, where both stratified features and a row of weights provide evidence for the site of a loom (Hedges 1978, 29–39). A row of 100 weights found at the Middle Saxon settlement at Aldwych, London, was also presumed to be the site of a loom (Pritchard 1991, 167–8), yet the number recovered seems excessive and the length of the row seems rather too long for hand-weaving. Two shorter rows of loomweights (62 in all) found at Pakenham, Suffolk, were rejected as

loom-sites on that basis. The Pakenham rows were about 2.4m long, only 200–230mm apart, and converged at one end; the excavators suggested that the weights lay in the position in which they had been fired, an interpretation backed up by traces of wood beneath the weights and by a nearby heap of wood and charcoal (Brown *et al.* 1954, 198–9, fig. 23, pl 24). Similarly, at Old Erringham, West Sussex, lines of weights were not considered as sufficient evidence for the site of a loom, and at Upton, Northamptonshire, rows of weights with wood inside the holes were interpreted as evidence that they were stored on a stick or pole (Holden 1976, 309, pl. 4; Jackson *et al.* 1969, 210).

Catalogue

SF 217 Fig. 27 Complete well-made **spindlewhorl** of rounded biconical form in a hard-fired reduced fabric with inclusions of chalk and fine grit. Diameter 45mm, length 27mm; diameter of spindle hole 10mm. Fill of SFB 2217. Phase 5.

SF 268 (Not illustrated) Complete unfired bun-shaped clay **loomweight** with hard chalk or limestone inclusions. The fabric is a greenish sandy humic clay, now extremely friable. Diameter 105mm, height approximately 32mm. The central perforation measures *c.*20mm at the centre, *c.*26mm at the upper edge. Weight unavailable. (636), fill of SFB 2232, Phase 5.

VII. Glass

by Hilary Cool

Four fragments of vessel glass were recovered from the excavations. Two are body fragments (SF 61 and 314, not illustrated) from blue/green prismatic bottles (Price and Cottam 1998, 194–202). These were a very common vessel type during the later 1st to earlier 3rd century period, and were one of the few that people living on rural sites in the 1st to 2nd centuries found a use for (Cool and Baxter 1999, 84). The identification of the third Roman piece (SF 33) is made difficult by its fragmentary state, but the features preserved and the colour are consistent with it coming from a 4th-century vessel with high-pushed in base ring, most probably a jug (*cf.* Cool and Price 1995, 168, fig. 10.2, no. 1545).

No glass of Early Saxon date was found although a fragment of a claw-beaker of possible 5th or 6th century date was recovered from the fill of a sunken-featured building located approximately 75m to the south (HER 33812; Shepherd 2000, 16).

Though small, SF 337 can be assigned to the Middle Saxon period with certainty because reticella rods, such as the one it retains, were a feature of vessel glass of that time. Vessels with reticella decoration are not uncommon in the Anglian settlement at Fishergate in York occupied from the early 8th century to the middle of the 9th century (Hunter and Jackson 1993), and at *Hamwic* occupied in the 8th to 9th centuries (Hunter and Heyworth 1998). The combination of the rod and a convex-curved side indicated that it could either have come a Valsgärde bowl (Evison 2000, 79, fig. 4.III.1) or a globular beaker (Evison 2000, 80, fig. 4.III.6). Unfortunately the small size of the Brandon Road fragment makes a certain identification impossible. The very distinctive technique where the yellow trail of the cane 'spills' onto the body of the vessel has been noted and discussed before (Evison 2000, 85). The reason why it happens is unknown and no work has been carried out to establish whether such canes were used only on a sub-set of vessel types. It can be observed in other Middle Saxon assemblages (*e.g.* Hunter and Jackson 1993, 1453 no. 4644, plate 464 top right; Hunter and Heyworth 1998, 107 24/555 plate 1, bottom centre, though best seen on the front cover). Unfortunately these, too, are small body fragments whose forms are unknown, but a similar effect is seen on a beaker from a grave at Birka (Baumgartner and Krueger 1988, 72–3 no 15). The grave is dated to the 10th century, but the vessel may well have been an antique by that time (Hunter and Heyworth 1998, 57).

This fragment from Thetford joins a growing corpus of reticella-decorated bowls from English sites (Hunter and Heyworth 1998, 38; Evison 2000, fig.7). It would appear that these visually impressive vessels would not have been uncommon in Middle Saxon society and, though it might be tempting to see them as an elite possession, that temptation should probably be resisted. At *Hamwic* glass vessel fragments were ubiquitous suggesting they formed part of the equipment of many households there.

Catalogue

(Not illustrated)

SF 337 **Body fragment**; convex-curved. Body blue/green with many tiny bubbles. Blue/green cane with opaque white and opaque yellow marvered trails spiralling around with left-hand twist; opaque yellow trails forming a scalloped edge where they have melted onto the body. Dimensions 17 x 13mm. 2314, fill of flint working hollow, Phase 1

VIII. Roman Pottery

by Alice Lyons

(Fig. 28)

Introduction

A total of 2882 Romano-British sherds, weighing 33,158g (with an estimated vessel equivalent (EVE) of 39 pots) was retrieved from the evaluation and excavation stages (Table 7). The pottery was generally abraded, with an average sherd weight of 11.51g, although enough of the original surfaces of the vessels have survived for sooting and other evidence of use to remain. Although some Early Roman material was found, the majority of the Roman pottery was associated with Phases 3 and 4, which date between the 3rd and early 5th centuries AD. Together the pottery from these two phases constitutes 63.51% (by weight) of the entire Roman pottery assemblage.

The fabrics

Thirty-four individual pottery fabrics were identified and are listed in Table 8 in alphabetical order. Fabric name, abbreviation, description and published reference are given, also a summary of vessel types. Although abbreviations are not used in the text, they are included in the table as a key to the catalogue.

Phase	*Quantity*	*Weight (g)*	*Average sherd weight by phase (g)*	*Weight (%)*
1	-	-	-	-
2	448	4622	10.32	13.93
3	569	10650	18.72	32.12
4	1022	10407	10.18	31.39
5	190	1571	8.27	4.74
6	427	3979	9.32	12.00
-	226	1929	8.54	5.82
Total	**2882**	**33158**	**-**	**100.00**

Table 7 Romano-British pottery by phase

Fabric	*Rim EVE*	*Quantity*	*Weight (g)*	*Weight (%)*
Amphora **AMP** Description: Tyers 1996, 87. Tomber and Dore 1998, 82-113 Vessel types: Dr20	0.6	10	793	2.39
Black burnished ware (unsourced) **BB** Descriptions: Gurney 1995a, 101 or Andrews 1985, 93 Vessel types: 6.17	0.8	9	95	0.29
Black burnished ware 1 **BB1** Description: Tyers 1996, 182-186. Tomber and Dore 1998, 127-9 No vessel types identified	0.0	1	4	0.01
Black burnished ware 2 **BB2** Description: Tomber and Dore 1998, 131-5 No vessel types identified	0.0	1	10	0.03
Black surfaced red ware **BSRW** Broad fabric group which includes any misfired local grey ware, resulting in a red fabric and black surface Vessel types: 4.1, 5, 6.18 and 8.1	0.31	20	475	1.43
Brampton/Spong Hill grey ware **BSHGW** Description: Green 1977, 31-92 Vessel types: 8.1	0.15	7	44	0.13
Hadham oxidised red ware **HAD** Description: Tomber and Dore 1998, 151 No vessel types identified	0.0	3	18	0.05
Hadham oxidised red ware or Oxfordshire red colour coat **HAD/OX** This fabric name is used where it is visually impossible to differentiate between these two red fabrics; Description: Tomber and Dore 1998, 151 and 176 Vessel types: 3, 6.5/6, 6.13	0.15	22	106	0.32
Horningsea ware **HORN** Mostly large sherds from storage vessels; Description: Evans 1991, 35; Tomber and Dore 1998, 116 Vessel types: 4.5, 4.17 and 6	0.17	166	5916	17.84
Lower Nene Valley parchment ware **PARCH** Description: Tomber and Dore 1998, 118 No vessel types identified	0.0	1	17	0.05
Lower Nene Valley shell tempered ware **LNVSTW** Description: Perrin 1996, 119 No vessel types identified	0.0	2	48	0.14
Micaceous grey ware **MGW** Description: Tomber and Dore 1998, 184; Gurney 1995a, 102 Vessel types: 2.1.0, 2.1.2, 3.7, 3.10.1, 4, 4.1, 4.5, 4.5.1, 4.5.3, 4.10.2, 4.13, 4.13,1, 5, 5.3, 5.4, 5.10, 5.11, 5.14, 6, 6.3, 6.4, 6.5, 6.15, 6.15.1, 6.16, 6.17, 6.18, 6.19, 6.19.3, 6.21 and 8.1	16.60	1332	13431	40.51
Micaceous oxidised ware **MOW** Description: Lyons 2003, 98 Vessel types: 6.18	0.09	9	77	0.23
Nene Valley colour coat **NVCC** Description: Tomber and Dore 1998, 118 Vessel types: 1.4, 3.1, 4.5, 6.2, 6.2.1, 6.4, 6.15, 6.17, 6.18 and 6.19	1.73	46	320	0.97
Nene Valley grey ware **NVGW** Description: Anderson 1980, 38; Howe et al. 1981 Vessel types: 3.12 and 4 or 5	0.05	6	47	0.14
Nene Valley white ware (including mortaria) **NVWW** Description: Anderson 1980, 38; Howe et al. 1981; Tomber and Dore 1998, 119 Vessel types: 7,and 7.9.1	0.11	7	188	0.57
Oxfordshire Red colour coat ware (including mortaria) **OXRCC** Description: Young 1977, 123; Tomber and Dore 1998, 176 Vessel types: 5.12, 6, 6.6, 6.14, 6.15 and 6.18	0.20	32	315	0.95
Painted white ware **PWW** Description: Lyons 2003, 99 No vessel types identified	0.0	2	2	0.01
Pakenham colour coat **PAKE** Description: Tomber and Dore 1998, 182 Vessel types: 1.9.1, 3, 3.3.3, 3.6.2 and 4.5	0.54	45	346	1.04
Pakenham or Nene Valley colour coat	0.0	2	5	0.02
Reduced ware -some with organic inclusions	0.0	6	10	0.03
Rhenish colour coat **RCC** Description: Symonds 1992; Tomber and Dore 1998, 50 No vessel types identified	0.0	1	1	0.01

Fabric	*Rim EVE*	*Quantity*	*Weight (g)*	*Weight (%)*
Samian **SAM** Description: Webster 1983, 7; Tomber and Dore 1998, 25-41 Vessel types: Dr33, Dr67/68 and Dr80	0.60	27	158	0.48
Sandy grey ware **SGW** Description: Andrews 1985, 92 Vessel types: 1.9, 2, 2.1.0, 2.1.2, 3.1, 3.7, 4, 4.1, 4.4, 4.5, 4.5.2, 4.5.3, 4.5.4, 4.6.1, 4.8, 4.13, 4.13.1, 4.14, 5, 5.2, 5.2.2, 5.3, 5.4, 5.11, 5.12, 6.15, 6.17, 6.18, 6.19, 6.19.1, 6.19.2, 6.22, 6.3 and 8.1	12.84	723	7625	22.99
Sandy grey ware (fine), also known as West Stow ware or 'London-type' ware **SGW (fine)** Description: West 1990, 76; Tomber and Dore 1998, 185 Vessel types: 3.7, 4.5.3, 4.13 and 5.4	1.00	188	779	2.35
Sandy grey ware (grog) **SGW (grog)** A quite hard, grey (10YR 6/1), soapy, hackly-fractured fabric with occasional coarse grog inclusions Vessel types: 6 and 6.21	0.10	10	79	0.24
Sandy oxidised ware **SOW** Description: Andrews 1985, 90 (OW1) Vessel types: 1.2, 8.1, 4.13, 4.15 and 6.14	0.38	45	961	2.90
Sandy reduced ware **SRW** Description: Lyons 2003, 99 (RW(ms)) Vessel types: 5.2	0.20	7	59	0.18
Shell tempered Dales ware **STDW** Description: Loughlin 1977, type 108; Tomber and Dore 1998, 157 No vessel types identified	0.0	4	34	0.10
Shell tempered ware (misc) A general identifier for all unsourced shell tempered wares. No vessel types identified.	0.0	15	197	0.59
South Midland shell tempered ware **SMSTW** Description: Brown 1994, 51; Tomber and Dore 1998, 115 Vessel types: 2.1.0, 2.1.2, 4.4, 4.5, 4.5.2, 4.5.3, 4.5.4 and 8.1	2.32	111	798	2.41
West Norfolk reduced ware Description: Lyons 2004, 34 Vessel types: 3.7, 4.5.3 and 5.14	0.41	16	152	0.46
White ware Description: Andrews 1985, 94-95 (OW2) No vessel types identified	0.0	6	48	0.14
Total	**39.35**	**2882**	**33158**	**100.00**

Table 8 Romano-British pottery, quantified by sherd count and weight (listed in alphabetical order)

Most of the assemblage (81.23% by weight) is represented by three coarse ware fabrics consisting of Micaceous grey ware, Sandy grey ware and Horningsea reduced ware. The Micaceous grey wares were produced in north Suffolk at Wattisfield (and other associated kilns) throughout the Roman period (Tomber and Dore 1998, 184). The Sandy grey wares are unsourced but thought to be of local production. Recent excavations at Scole (Lyons and Tester forthcoming) suggest that the combination of Micaceous and Sandy grey ware fabrics forming the majority of pottery is typical of a south Norfolk assemblage.

The Horningsea reduced wares were made at a kiln site north-east of Cambridge (Evans 1991). It is worthy of note that the Horningsea fabric has rarely been recorded as such a large percentage of a ceramic assemblage in Norfolk. Moreover it was originally thought only to occur in Late Roman deposits (Rollo 2002, 84) but as ceramic analysis continues in the region it is apparent that Horningsea fabrics were a relatively common import around the fen-edge (including the Thetford area) and frequently occur in late 2nd- to late 3rd-century layers.

Amphorae are very minimally represented within this assemblage (2.39% of the assemblage by weight; 0.6 EVE). All the material found is consistent with the globular olive oil amphora Dr 20 type imported from southern Spain (Tyers 1996, 87).

The small quantity of samian recovered is all of Central Gaulish origin and dates mostly to the 2nd century. It is striking that samian is very poorly represented in this assemblage, only forming 0.48% (by weight). Analysis of the percentage of fine wares in various Roman settlement types in Norfolk has been undertaken (Cooper and Lyons in prep.; Lyons and Tester forthcoming) indicating that (where calculated) samian usually represents between 2.74% and 5.0% of Roman ceramic assemblages from settlements (of various types) in Norfolk. Later fine wares, such as Nene Valley colour coat (0.97% by weight) and Oxfordshire colour coat (0.95% by weight), are only marginally better represented. In this respect the assemblage is more usual for Norfolk, with Nene Valley colour coat representing between 0.93 % and 2% (by weight) and Oxfordshire red colour coat representing between 0.84% and 1.7% (by weight).

Another fabric diagnostic of the Late Roman period, South Midland shell tempered ware known to have been produced at the Harrold kiln in Bedfordshire, was also present in small quantities.

	Ph 1	*Ph 2*	*Ph 3*	*Ph 4*	*Ph 5*	*Ph 6*	*Unphased*	*Total*
Micaceous grey ware	-	12.95	33.62	35.74	3.94	9.90	3.85	100.00
Sandy grey ware	-	14.09	24.46	32.64	6.90	14.59	7.32	100.00
Horningsea reduced ware	-	8.99	54.45	27.06	0.78	6.63	2.09	100.00
Sandy grey ware (fine)	-	100.00	-	-	-	-	-	100.00
Samian	-	5.06	66.46	13.29	2.53	12.03	0.63	100.00
Nene Valley colour coat	-	16.25	7.19	40.31	1.56	32.50	2.19	100.00
Pakenham colour coat	-	5.25	17.79	25.36	38.48	9.04	4.08	100.00
South Midland shell tempered ware	-	1.92	7.03	30.69	13.30	32.99	14.07	100.00
Oxfordshire red colour coat	-	1.59	3.17	34.92	26.67	28.89	4.76	100.00

Table 9 The most common and most time-sensitive Romano-British pottery fabrics by phase (quantified by percentage of weight)

The fabrics by phase

The most commonly found coarse wares such as the Micaceous grey ware produced in north Suffolk in the Wattisfield (and associated) kilns were found in relatively large quantities throughout the Roman period, although they were most common in Phases 2 and 3 (Table 9). The unsourced but probably locally produced Sandy grey wares were also common throughout all periods of activity but were found most frequently in deposits associated with Phases 3 and 4. The Horningsea reduced ware (the third most common fabric found at Brandon Road) has a clear bias in Phase 3.

Samian was found in very small quantities in all the Romano-British phases (Phases 2 to 4), although it was most common (66.46% by weight) in Phase 3. No Colchester wares were identified, although the fine grey wares (also known as 'London-type' wares) probably originating from West Stow or Wattisfield during the late 1st to mid 2nd century were found exclusively in Phase 2.

Although recovered from all the periods of Roman occupation, Nene Valley colour coat was found primarily in Phases 4 and 6, which are the latest Roman phase and the Middle Saxon phase. This suggests that this material was in use at the end of Roman occupation at Brandon Road and may even have been curated by the Middle Saxon peoples who farmed this land at a later date. The Pakenham colour coats (produced in Suffolk) were also retrieved in small quantities from all the phases but are most common in Phases 4 and 5, also in the latest Roman deposits and immediately post-Roman layers. This again suggests a continuity of ceramic use in the post-Roman period (different from curation of 'heirloom' or 'antique' objects).

South Midland shell tempered ware was not traded into Norfolk until the late 3rd century AD. It remained in use throughout the 4th century until the end of the Roman period and is (alongside the Nene Valley material) commonest at Brandon Road in Phases 4 and 6. The Oxfordshire red colour coats did not reach Norfolk until the 4th century and they continued in use until the end of the Roman period. Interestingly, at Brandon Road such vessels are almost equally common in Phases 4 and 5, suggesting that they remained in use during the 5th century.

An analysis of fabrics by phase (Tables 7 and 9) suggests that, although there was activity in the Early Roman period (Phase 2, late 1st to 2nd century), the 3rd to early 5th centuries (Phases 3 and 4) saw the most intensive Roman activity, with fabrics continuing into the Early Saxon period without a visible break in the ceramic record. There is also a high level of residuality (perhaps reflecting an element of deliberate curation) in Middle Saxon deposits, although average sherd weights are generally low (below 15g). The most significant quantities occurred in midden 2315 (389 sherds, 13.56% by weight) and a possible soakaway (1048) that cut it (54 sherds, 50.54% by weight). The midden overlay Phase 3 and 4 Roman ditches and other features.

The forms

Most of this assemblage consists of undiagnostic body sherds. Where vessels can be identified (Table 10), wide and medium mouthed bowls and dishes are well represented. This is an indicator of a domestic utilitarian assemblage. The majority of vessels recovered from this site have been used for small scale storage (of food and water) and cooking (soot residues are visible on many sherds). Table wares (flagons, platters, beakers) are poorly represented as are other specialist wares (amphorae and mortaria). Amphora was recognised only as the globular olive oil type Dr20, while only two mortaria fragments were found (an exceptionally small number) both of the Nene Valley white ware type, one with a reeded rim (type 7.9.1, Hartley and Perrin 1999, 129–36, fig.77, M18–M21).

A very unusual vessel recovered from this site is the *unguentarium* (ointment bottle), a rare form in this region (see below, Well 1810).

The conservative nature of this assemblage is slightly different from the larger ceramic assemblage published from the Romano-British farmstead at St Nicholas' Street

Vessel Forms	*Quantity*	*Weight (g)*	*Weight (%)*
Undiagnostic (body and base sherds)	2245	21770	65.66
Wide mouthed jars	137	3023	9.12
Medium mouthed jars	188	2876	8.67
Dishes and bowls	147	2614	7.88
Amphora	10	793	2.39
Flagons (includes *unguentaria*)	6	528	1.59
Jars	65	510	1.54
Lids	27	343	1.03
Narrow mouthed jars	24	327	0.99
Beakers	31	269	0.81
Mortaria	2	105	0.32
Total	**2882**	**33158**	**100.00**

Table 10 Romano-British vessel forms of all fabric types (by descending order of percentage of weight)

in Thetford (Lentowicz 1999, 51) where the pottery was possibly associated with agricultural processing as well as domestic rubbish disposal. The Brandon Road assemblage has more in common with the pottery found at the Romano-British farmstead at Melford Meadows, Brettenham (Rollo 2002, 82).

The pottery by feature

The majority of the pottery came from ditches and other features relating to the Romano-British farmstead although it appears that none of the material in this assemblage was retrieved from its primary site of deposition (Table 11). It is likely that most of the pottery represents utilitarian vessels disposed of in a general midden with the other household waste which was rotted down or burnt, before being buried in permanent rubbish pits or ploughed into the soil as a fertiliser. None of the pottery was funerary in nature or obviously associated with ritual behaviour. A significant portion of the pottery was found in two of the wells, but this does not appear to have been deliberately placed (as in the ritual shafts at Ashill, Norfolk; Gregory 1977b, 9–27).

Well 1810

(Fig. 28)

It has proved difficult to select material for illustration, since 68% (by weight) of the assemblage consists of undecorated undiagnostic abraded body sherds with a small average sherd size — the remaining assemblage generally consists of fabrics and forms that have been well-illustrated in other publications. An assemblage from well 1810 has, however, been illustrated as it contained a mixture of pottery typical of the site as well as an unusual early form. The feature was infilled during Phase 2 or early Phase 3.

A total of 46 sherds, weighing 1445g, was recovered from two deposits within the well. Most of the pottery (36 sherds, weighing 1062g) was recovered from the lower deposit (1809), with a smaller amount (10 sherds weighing 383g) recovered from the upper fill (1859).

Pottery recovered from the Phase 2 layer included one (8g) Brampton Spong Hill grey ware lid fragment (Fig. 28, No. 1; type 8.1), eight (387g) Horningsea reduced ware undecorated body sherds (unillustrated), seventeen (371g) Micaceous grey ware fragments including a medium mouthed jar (Fig. 28, No. 2; type 4.5.3), a wide mouthed jar (Fig. 28, No. 3; type 5.4) and a straight-sided dish with a triangular rim (Fig. 28, No. 4; type 6.18). Decoration was rare but a single folded beaker (type 3.3.3) fragment was found in this fabric (Fig. 28, No. 5). Also recorded were nine (289g) Sandy grey ware sherds that included a globular beaker with an everted rim (Fig. 28, No. 6; type 3.7), a fragmentary sherd from a bowl with a flared rim (unillustrated; type 6.15) and a shallow straight-sided dish with a triangular rim (Fig. 28, No. 7; type 6.18).

Of particular interest is a Sandy grey ware miniature *unguentarium* (ointment bottle) with a sharply carinated body (Fig. 28, No. 8; type 1.9.2). This vessel is an unusual early form, a well-worn survivor from the mid to late 1st century AD. It is worthy of note that no comparable vessels have been published from the high status Late Iron Age and Early Roman site at Fison Way in Thetford, although comparable examples have been found in Chelmsford (Going 1987, 35, Q1, fig. 18) and Colchester (Hull 1963, 133, fig. 72.28–33). It is likely that this vessel was not locally produced but imported from (probably) Colchester.

The only fine ware retrieved from this deposit was a plain samian conical cup with footring (type Dr33). This vessel type was common during the 2nd century and was imported from Central Gaul (unillustrated).

The smaller amount of pottery recovered from the upper fill of the well includes four sherds (25g) of Brampton Spong Hill grey ware, two sherds (71kg) of Horningsea reduced ware body sherds and three Micaceous grey ware sherds (214g). The only diagnostic form found in this fill was a Central Gaulish sherd of a plain samian cup with strongly curving walls (type Dr80) that was produced in the second half of the 2nd century AD (unillustrated).

Feature	*Quantity*	*Weight (g)*	*% weight*
Ditch	1107	12548	37.84
Layer	945	10589	31.93
Pit	315	4439	13.39
Unstratified	247	2007	6.05
Well	77	1976	5.97
Sunken featured building	114	1048	3.16
Post-hole	31	208	0.63
Boundary marker	21	176	0.53
Hollow	11	97	0.29
Structure	9	46	0.14
Oven	5	24	0.07
Total	2882	33158	100.00

Table 11 Romano-British pottery by feature type (by descending order of percentage of weight)

Catalogue of illustrated pottery from well 1810

(Fig. 28)

1. Brampton Spong Hill grey ware lid fragment (type 8.1)

2. Micaceous grey ware medium mouthed jar with a globular body and undercut rim (type 4.5.3). Soot survives on the rim

3. Micaceous grey ware wide mouthed jar with a single groove on body (type 5.4), burnished

4. Micaceous grey ware straight-sided dish with triangular rim (type 6.18)

5. Micaceous grey ware folded beaker (type 3.3.3) fragment, sooted

6. Sandy grey ware globular beaker with an everted rim (type 3.7) and a double groove on shoulder. Metallic burnish, sooted

7. Sandy grey ware shallow straight-sided dish with triangular rim (type 6.18), burnished

8. Sandy grey ware (with one large flint inclusion and sparse silver mica) cupped pulley-wheel rim miniature *unguentarium* (ointment bottle) with a sharply carinated body (type 1.9.2), worn on rim and carination

Discussion and conclusions

The ceramic evidence indicates that the Brandon Road site was a low status farmstead settlement site during the Romano-British period and appears to have continued to have been settled without a break into the Early Saxon era. Early Roman ceramic imports were rare. No Colchester wares were found, and remarkably little samian or imitation samian was retrieved which has been interpreted as an indicator of the low status of the settlement at this time. Sandy grey ware (fine) or 'London ware' did reach the site in small quantities from either the West Stow or Wattisfield kilns, both of which were producing this vessel type. Of particular interest, however, is the *unguentarium* recovered from well 1810.

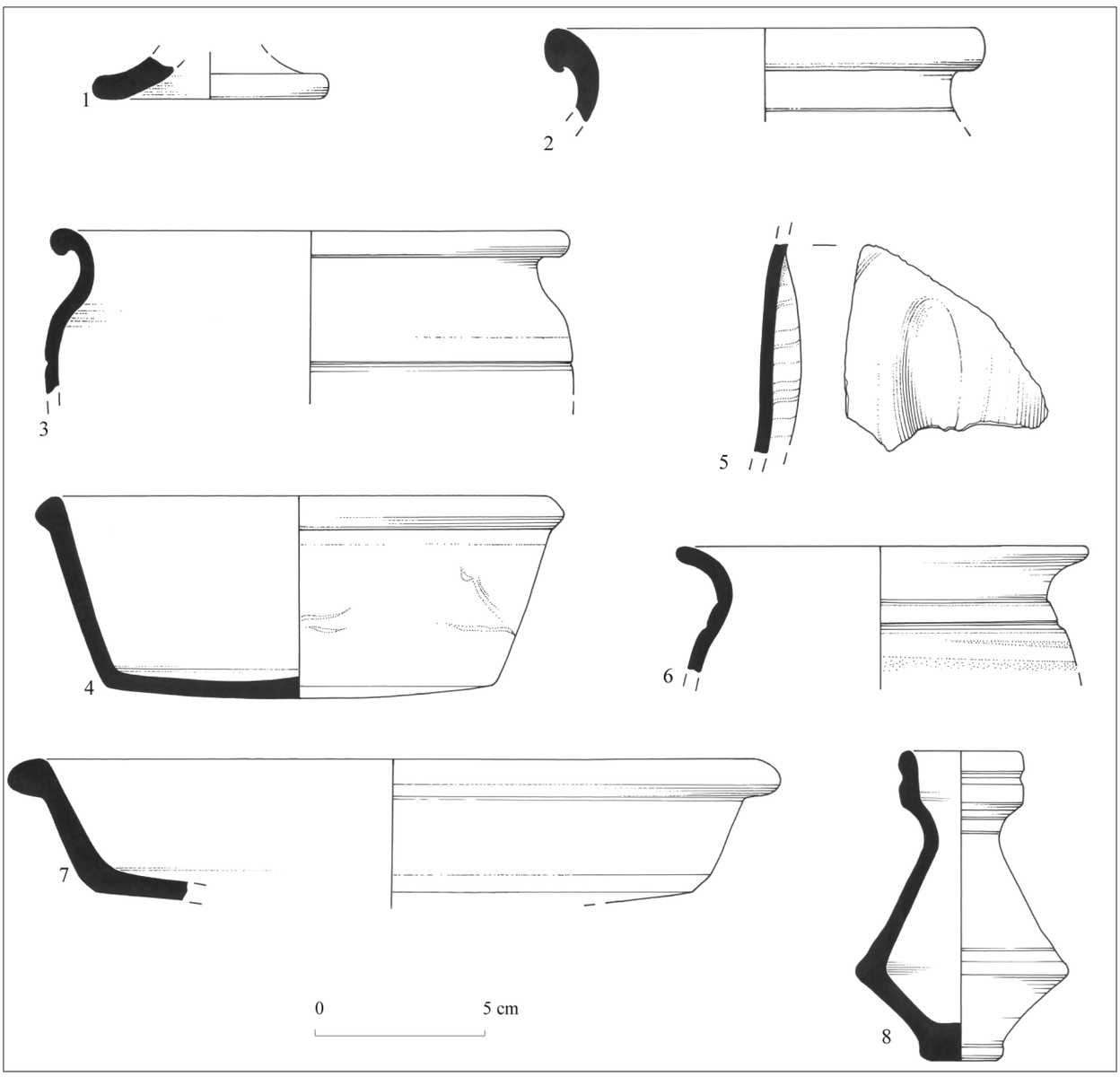


Figure 28 Roman pottery from well 1810. Scale 1:2

Pottery supply to the site increased during the 3rd, 4th and into the early 5th century AD. Locally produced Wattisfield micaceous and Sandy grey wares dominated the supply of utilitarian wide and medium mouthed jars, dishes and bowls. This is a very similar pattern to that found at the Roman small town of Scole (Lyons and Tester forthcoming) and would appear to be typical for south Norfolk settlements of this period. The presence of a significant assemblage of Horningsea reduced ware sherds (mostly from storage type vessels) is an indicator of a good trade link with Cambridgeshire. It is possible that this community might have a special requirement for this type of vessel or its contents which were traded out of Cambridgeshire.

Regional wares such as Nene Valley colour coat and the more local Pakenham colour coat reached the site in small but significant numbers, as did the Late Roman Oxfordshire red colour coats and South Midland shell tempered wares from the Harrold kilns in Bedfordshire. This suggests that the site, although never conspicuously wealthy, did become relatively more prosperous through time.

The pattern recorded in the ceramic assemblage from Brandon Road — little Early Roman activity, with denser Middle and Late Roman settlement that continued into the Early Saxon period — has rarely been documented in this area previously. There would appear, for example, to have been a hiatus in both the St Nicholas Street, Thetford (Lentowicz 1999) and Long Meadow, Brettenham (Rollo 2002) assemblages between the end of the Roman and beginning of the Saxon period. That Roman wares were still being found in Early Saxon features, not apparently residual or as heirloom pieces but as contemporary vessels, is an important aspect of this assemblage and one that makes it of importance to pottery studies within the region.

Fabric	*Description*	*Quantity*	*Wt (g)*	*EVE*
	Early-Middle Saxon hand-built wares			
F1	**Chaff and Chalk**. Moderate to dense chaff voids up to 5mm, sparse sub-rounded chalk up to 2mm	14	800	1.27
F2	**Chaff**. Moderate to dense chaff voids up to 10mm, few other visible inclusions except for rare quartz or sandstone grains up to 1mm	111	4536	2.19
F3	**Fine quartz**. Moderate to dense sub-angular quartz less than 0.5mm, rare calcareous material and flint up to 2mm	111	1910	0.84
F4	**Coarse quartz**. Sparse to moderate sub-rounded quartz, most around 1mm, rare grains up to 2mm, rare calcareous material and flint up to 3mm	96	1321	0.74
F5	**Quartz and chaff**. Sparse to moderate sub-rounded quartz up to 2mm, sparse to moderate chaff voids up to 5mm	29	275	0
F6	**Smooth**. Few visible inclusions apart from sparse flecks of silver mica. Occasional limestone fragment or chaff void	11	296	0.1
F7	**Shelly Limestone**. Moderate to dense shelly limestone fragments up to 3mm, rare flint up to 10mm, rare sub-rounded quartz up to 1mm	4	127	0.04
F8	**Sandstone**. Sub-angular lumps of sandstone up to 2mm, some with ferrous cement, free quartz grains up to 1mm, rare to sparse sub-rounded iron ore up to 2mm	22	621	0.26
F9	**Quartz and Chalk**. Moderate to dense sub-rounded quartz up to 1mm, sparse to moderate sub-rounded chalk fragments up to 2mm	15	168	0.35
F10	**Granite**. Sparse to moderate sub-angular granite up to 2mm, free flakes of biotite mica and quartz grains	15	119	0.11
	Middle Saxon			
	Ipswich Ware, AD 725-850 (Blinkhorn in prep.) Middle Saxon, slow-wheel made ware, manufactured exclusively in the eponymous Suffolk *wic*. The material probably had a currency of AD 725-740 to mid 9th century. There are two main fabric types, although individual vessels which do not conform to these groups also occur:			
F95	GROUP 1: Hard and slightly sandy to the touch, with visible small quartz grains and some shreds of mica. Frequent fairly well-sorted angular to sub-angular grains of quartz, generally measuring below 0.3mm in size but with some larger grains, including a number which are polycrystalline in appearance.	171	3564	2.69
F96	GROUP 2: Like the sherds in Group 1, these are hard, sandy and mostly dark grey in colour. Their most prominent feature is a scatter of large quartz grains (up to c.2.5mm) which either bulge or protrude through the surfaces of the vessel, giving rise to the term 'pimply' Ipswich ware (Hurst 1959, 14). This characteristic makes them quite rough to the touch. However, some sherds have the same groundmass but lack the larger quartz grains which are characteristic of this group, and chemical analysis suggests that they are made from the same clay.	58	1269	0.89
F94	**Buttermarket-type Ipswich Ware**, AD 725-850 (Blinkhorn 1990). Fabrics as above, but forms a range of distinctive, highly-decorated bottles and squat jars with combed girth-grooves.	1	25	0
F97	**Maxey-type ware**. Exact chronology uncertain, but generally dated c.AD 650-850 (e.g. Hurst 1976). Wet-hand finished, reddish-orange to black surfaces. Soft to fairly hard, with abundant fossil shell platelets up to 10mm. Vessels usually straight sided bowls with upright, triangular, rim-mounted pierced lugs.	4	214	0
	Late Saxon and Medieval			
F102	**Thetford-type ware**, 10th-12th centuries (Rogerson and Dallas 1984). Range of reduced, wheel-thrown and hand-finished fabrics mainly comprising quartz sand up to 1mm. Produced at many centres in eastern England (e.g. Hurst 1976), although most of these appear to be the products of the eponymous Norfolk centre.	26	430	0
F328	**Ely Ware**, mid 12th-15th centuries (Spoerry 2002; 2008): Generic name for a quartz sand and calcareous tempered group of pottery fabrics mainly manufactured in Ely, but also with a second possible source in the Hunts. Fenland. Earlier vessels hand-built and turntable finished, later vessels finer and usually wheel-thrown. Wide distribution, including King's Lynn, where it was originally identified as 'Grimston Software' (Clarke and Carter 1977).	1	2	0

Table 12 Anglo-Saxon and later pottery fabrics, with number and weight of sherds

IX. Anglo-Saxon and Later Pottery

by Paul Blinkhorn
(Figs 31–33)

Introduction

The post-Roman pottery assemblage, including the material from the evaluation, comprised 699 sherds with a total weight of 15,670g. The material spans the Anglo-Saxon to medieval periods, with the majority being Early to Middle Saxon. The small group of Late Saxon pottery was generally found intrusively in earlier contexts and no features of this date were identified.

Fabrics

The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference, was 9.48. Each fabric has a numeric code preceded by an ‘F’. The fabrics are noted in Table 12.

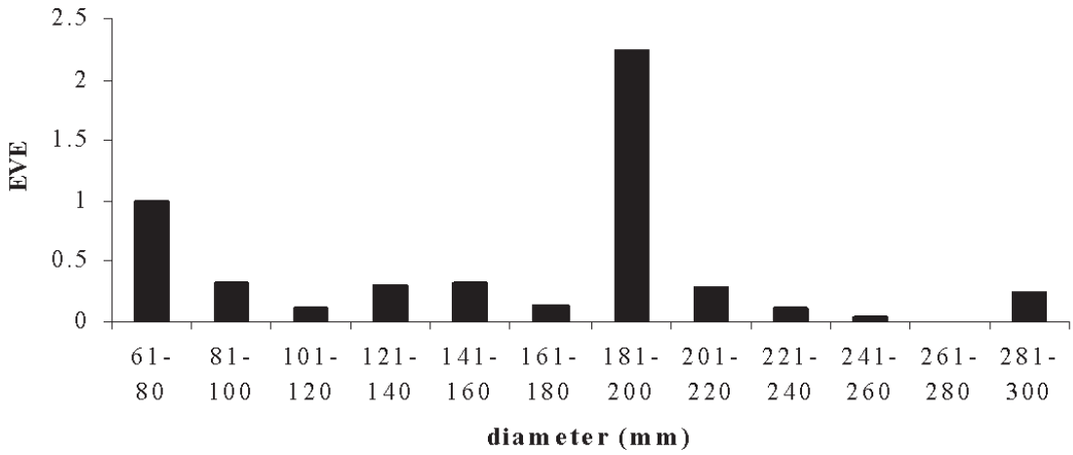


Figure 29 Rim diameter occurrence, hand-built jars, by EVE

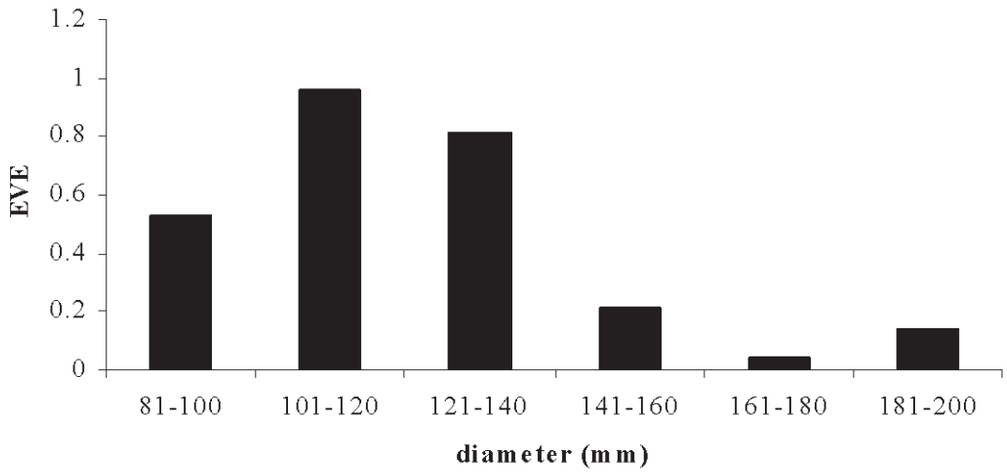


Figure 30 Rim diameter occurrence, Ipswich Ware jars, by EVE

Vessel forms
(Figs 29–30)

Early–Middle Saxon hand-built
Closed jar forms dominated (EVE = 5.10), but open bowls were also present (EVE = 0.53). The mean jar rim diameter was 186.9mm, although with a rather high standard deviation of 59.8mm, confirming that a wide range of vessel sizes was utilised. The largest vessels tended to be in the chaff-tempered fabric 2. These had a mean diameter of 217.1mm, although many of the vessels in these fabrics were very thick-walled (*e.g.* Fig. 33, No. 25). The data in Fig. 29 show very clearly that by far the dominant rim diameter was in the 181–200mm size range, but smaller peaks at the extreme ends of the size range suggest both very large and very small vessels with a special function. The data is perhaps distorted slightly by the presence of a complete, very small vessel from SFB 2206 (Fig. 33, No. 23).

The mean bowl rim diameter for all hand-built fabrics was 184.6mm, with a standard deviation of 53.9mm, showing that they had a narrower range than the jars.

Middle Saxon
All the Ipswich ware rims were from jars, although a fragment of a pitcher handle and another of a body sherd with a shoulder-mounted lug, possibly from the same vessel, were also noted, as was the base of a lamp. This is fairly typical of Ipswich ware assemblages at sites in the East Anglian kingdom, which are inevitably dominated by jars, particularly small ones with a rim diameter of less than 180mm (Blinkhorn in prep.), although lamps are a rare occurrence at sites outside the *wic* of Ipswich.

This assemblage shows such a size distribution (Fig. 30), with the vast majority of the assemblage being in the 'small' size-range. The mean rim diameter, 138.0mm reflects this, as does the standard deviation, 26.4mm. The assemblage gives the impression of being nothing other than domestic in nature.

The rim forms were classified using West's (1964) scheme, with the occurrence (by EVE) as follows:

I.A: 35.5%
I.C: 32.7%
I.E: 23.5%
II.F: 1.4%
II.K: 3.6%
III.I: 3.4%
(Total EVE = 3.58)

Chronology

Early Saxon

The general picture obtained from the range of pottery of this period is that there may have been occupation at the site from the very earliest years of the Anglo-Saxon period, perhaps even with continuity from the Late Roman era.

One sherd which is particularly worthy of discussion is a wheel-thrown grey ware sherd decorated in the so-called 'Romano-Saxon' style (Fig. 31, No. 9). This sherd, with a fragment of an incised concentric roundel surrounded by dots and with a fragment of an incised cordon appears typical of the tradition, which was first discussed by Myres (1956) and has been the subject of considerable discussion ever since: its distribution, which was mainly on the eastern coast of England, appeared to correlate with Late Roman Saxon shore forts, the larger Roman ports, and the main towns and supply bases, but also some of the earliest Anglo-Saxon cemeteries (Myres 1969, 66–7). Most finds of such material were datable to the 4th century, and as Myres put it, were seen to indicate 'the presence in these areas [of people] who liked their crockery decorated in barbaric fashion' (Myres 1969, 66–7). The reason for this is that the decoration of such pots, with stamps, bosses, lines and dots, was similar to the range of techniques used on the earliest Anglo-Saxon pottery, and also on the pottery found in the Germanic areas of north-west Europe in the Late Roman period. Myres noted that such decorative techniques were used by other Roman craftspeople, including the makers of glass and silver vessels (Myres 1969, 66–7), and it has been proposed that the Germanic modes of dress and personal material culture in the Late Roman empire were of such similar styles that the line between Roman and barbarian became blurred (Swift 2000, 96–7).

In terms of chronology, there seems little doubt that most of the known 'Romano-Saxon' sherds date to the mid to late 4th century, and others may belong to the time of the transition from the Roman to Anglo-Saxon pottery tradition. Rodwell (1970), in his survey of such pottery from Essex, noted several sites where such pottery was found in association with Anglo-Saxon hand-built pottery (*e.g.* Rodwell 1970, 275). Elsewhere, such vessels have been found in contexts with a reliable late 4th–5th century date (*e.g.* Stantonbury, Milton Keynes; Marney 1989, 54), and whatever their origins, they seem a reliable indicator of the very latest Roman activity in England.

In the case of the Early Saxon hand-built pottery, dating is entirely reliant on the presence of decorated sherds. It seems that the Anglo-Saxons generally stopped decorating hand-built pottery around the beginning of the 7th century (Myres 1977, 1), but it cannot be said that an assemblage which produced only plain sherds is of 7th century date. Usually, decorated hand-built pottery only comprises around 3–4% of domestic assemblages, as was the case at sites such as West Stow, Suffolk (West 1985) and Mucking, Essex (Hamerow 1993).

One of the most striking features of this Early Saxon assemblage is that by far the majority of the decorated pottery is bossed and/or incised. Stamping, which was very common in the 6th century, is rare, with just two vessels so treated. This suggests that the most intensive period of Early Saxon occupation dated to no later than the late 5th or early 6th century, and some activity may date to the very beginning of the Anglo-Saxon period.

Decorative Scheme	*No*	*Wt (g)*
Incised + stamped	1	88
Incised + bossed	3	68
Incised	32	630
Bossed	1	2
Stamped	1	6
Total	**38**	**794**

Table 13 Decorated Early Saxon pottery by number and weight of sherds

The preponderance of incised and bossed pottery over stamped vessels is one that has been noted before at other sites in the area. For example, at Redcastle Furze, Thetford (Andrews 1995), an assemblage of 365 sherds of Early–Middle Saxon hand-built pottery was noted, but just ten decorated sherds were present. All were incised, apart from one bossed sherd, with no stamped pottery, suggesting a similar chronology to this site. Similarly, at Melford Meadows, Brettenham, by far the majority of the pottery was incised, and a dating scheme of the late 5th to early 6th century was suggested for that site (Underwood-Keevil 2002, 97). At Kilverstone near Thetford (Tipper 2006), an assemblage of 100 sherds of hand-built pottery produced fragments from nine decorated vessels. Five of these vessels were stamped, and all had other decoration such as incised lines and/or bosses. The other sherds each had fragments of linear decoration. A sunken-featured building lying less than 75m to the south of Brandon Road produced a small assemblage (thirty-six sherds) of Early Saxon pottery dated to the 6th–7th century based on the lack of any pottery stylistically identifiable as earlier (HER 33812; Goffin 2000b, 9), although the lack of stamped pottery and the presence of a 5th- or 6th-century claw-beaker could indicate a date contemporary with the Brandon Road assemblage. This combines to suggest that stamped pottery was in use in the area in the early Anglo-Saxon period, and that a lack of it is likely to be due to chronological rather than social factors.

The assemblage from this site has other parallels with the Melford Meadows material. The vessel with the footring base and pierced lug on the waist (Fig. 32, No. 10) cannot in itself be dated, but was associated with a sherd with incised decoration, and is therefore likely to be of Early Saxon date. Fragments of vessels with footring bases and others with body-mounted lugs were noted at Melford Meadows, (Underwood-Keevil 2002*,* figs 23 and 24), although the two features were not noted on the same vessel. Pots such as these are far from common finds and many came from areas which would have been traditionally regarded as Saxon, rather than Anglian, areas. Myres (1977, figs 75–6) lists a number of them, with the find-spots including Essex, Bedfordshire, Berkshire, Wiltshire, Lincolnshire, Northamptonshire, Norfolk and Warwickshire, although the Essex examples all had solid rather than pierced lugs.

The most unusual vessel from the whole assemblage was a jar with incised decoration (Fig. 32, No. 11). The decorative arrangement, of vertical and horizontal lines forming a rectangular lattice, has no obvious parallels. There is nothing like it in the Myres corpus, despite there being a large number of vessels with incised decoration. It

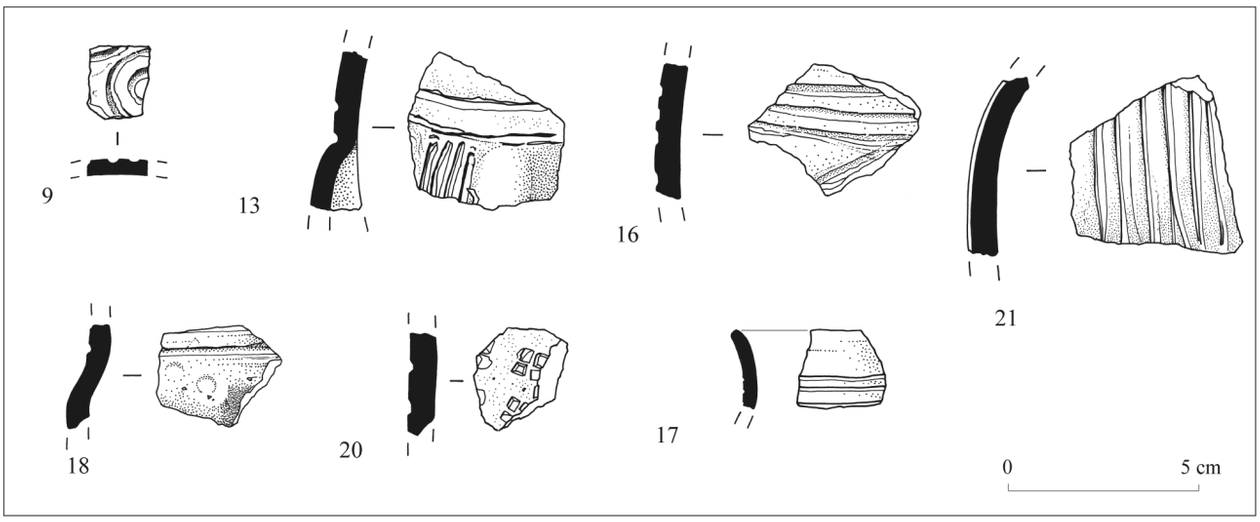


Figure 31 Early Saxon pottery. Scale 1:2

cannot therefore easily be dated, but the sherds were associated with only bossed and/or incised pottery, meaning that a date of the later 5th to early 6th century seems the most likely.

Fragments of one vessel (Fig. 32, No. 12) occurred in no less than six different contexts — this is possibly the earliest Anglo-Saxon vessel from the site. It is unfortunate the upper part is missing, but the decoration is in a style which is almost identical to early 5th-century pottery, particularly in Kent, which Myres regarded as being the 'Jutish' style (Myres 1986, fig. 4), and which he said could be 'linked culturally with the group of early 5th-century cruciform brooches from Kent' (Myres 1986, 66). However, similar vessels are found throughout Anglo-Saxon England (Myres 1977, figs 262–79), and while many are early, some are as late as the early 6th century (Myres 1977, 44–8).

Sherds from two vessels with bosses and incised decoration were present (Figs 31 and 32, Nos 13 and 14). The second of these was redeposited in a Middle Saxon context. Vessels with incised lines and bosses are fairly common, and have been found all across Anglo-Saxon England, including East Anglia. In Norfolk, the Caistor-by-Norwich cremation cemetery produced a large group of vessels with variations on this decorative scheme (Myres 1977, figs 220–1), as did Spong Hill (*e.g.* Hills and Penn 1981, figs 58–63). Such pots were seen by Myres, on the basis of continental parallels, as dating to the early part of the pagan Anglo-Saxon period (Myres 1977, 39–41; 1986, 64 and fig. 3), and his assertion appears valid. For example, a similar vessel was noted in grave 87 at the Dover Buckland cemetery (Evison 1987, 92), and although it could not be closely dated by the associated artefacts, it was accompanying one of the stratigraphically earliest inhumations in the cemetery, and thus a 5th-century date seems appropriate (Evison 1987, 29).

The sherd from the large incised jar (Fig. 32, No. 15) also has many parallels (*e.g.* Myres 1977, figs 88–92). Such pots tend again to be very early, although there are examples which were dated by associated artefacts to the late 6th century. A number of other incised sherds were noted (*e.g.* Fig. 31, Nos 16 and 17), including one very small example with a fragment of a boss (Fig. 31, No. 18), but it was not possible to ascertain the overall decorative scheme in every case. A further four incised sherds were not illustrated.

Only two sherds were noted with stamped decoration. The first of these (Fig. 32, No. 19) is a well-preserved sherd from the rim of a fairly large vessel with a single row of stamps between horizontal cordons. The overall scheme is uncertain, and the Anglo-Saxon potters produced numerous variations on such a theme (Myres 1977, figs 97–110), although Myres placed the bulk of pots with lines and stamps in the 6th century (Myres 1977, 21). The other stamped sherd (Fig. 31, No. 20) is likely to be of similar date.

The fact that so little stamped pottery occurred at this site may be indicative of its temporary abandonment in the 6th century. Elsewhere at sites such as Mucking in Essex (Hamerow 1993) and West Stow (West 1985), it has been shown fairly convincingly that early Anglo-Saxon settlements had a degree of mobility in the landscape, with the settlement nucleus moving short distances over time, and this may well be the case here at Brandon Road. A small group of Early Saxon pottery was noted during Knocker's excavations at Red Castle, Thetford (Knocker 1967, 137), and of the three decorated sherds, two had stamped schemes which are typical of the 6th century. It is possible therefore that at some time in the 6th century, the focus of Early Saxon occupation moved to the east of the area covered by these excavations. This is not especially problematic; at Mucking, the concentration of 5th-century settlement was located some 500m away from focus of 6th-century settlement, although there were 6th-century outliers in the area of the 5th century core, and *vice versa* (Hamerow 1993, fig. 3).

Catalogue of illustrated Early Saxon decorated pottery
(Figs 31–32)

9. Fig. 30 Wheel-thrown grey ware. Fine micaceous fabric with burnished outer surface. Fill of SFB 2232, Phase 5

10. Fig. 32 Fabric 2. Lugged jar with foot-ring base. Black fabric with reddish-brown, smoothed and lightly burnished outer surface. SFB 2217 (adjoining sherds found in 1990 evaluation and 2002 excavation), Phase 5

11. Fig. 32 Fabric 3. Jar with incised lattice. Uniform black fabric, lower outer surface brown. Upper outer surface

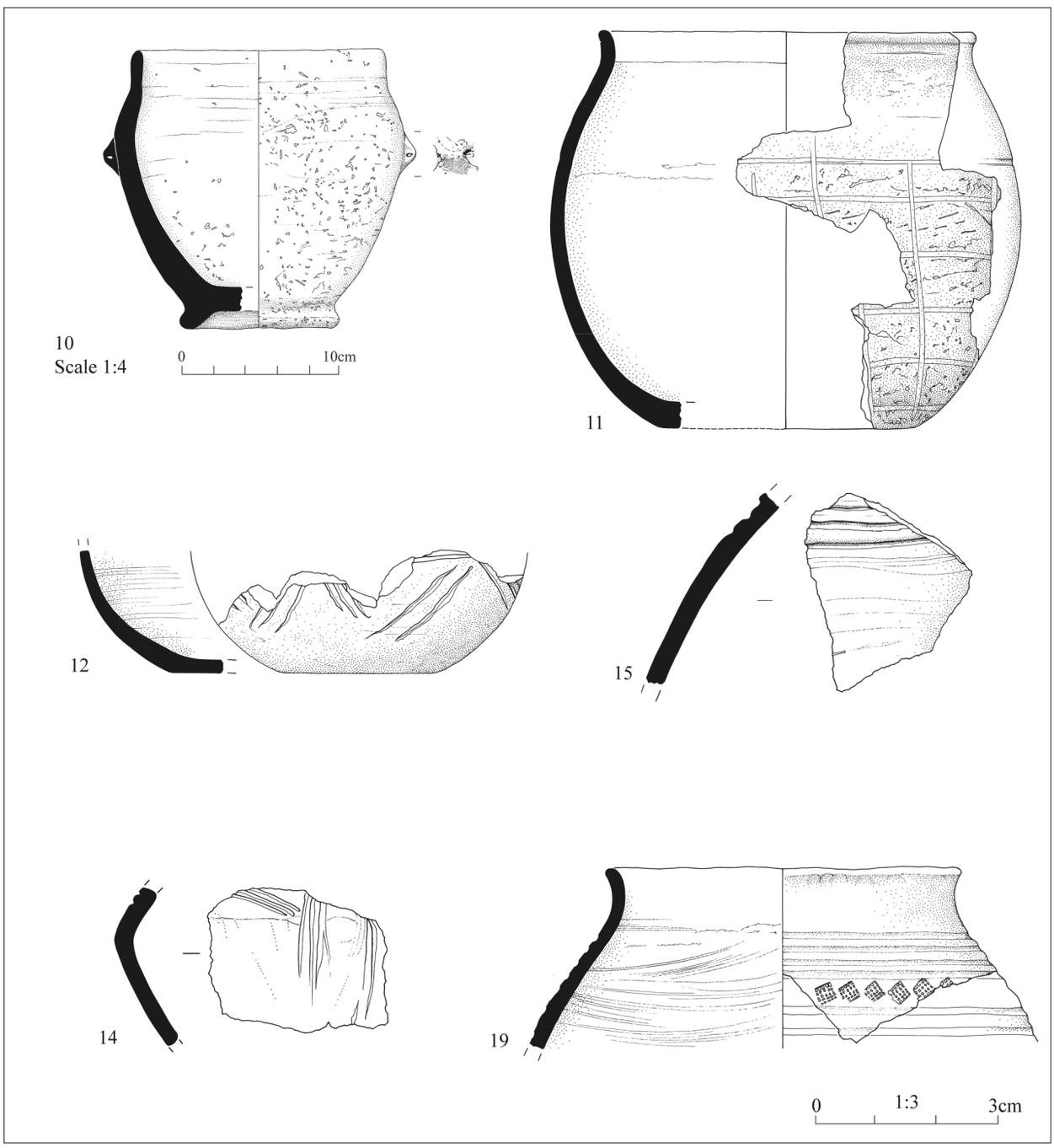


Figure 32 Early Saxon pottery. Scale 1:4 and 1:3

heavily sooted. Recovered from two layers in both SFB 2218 and 2219, Phase 5

12. Fig. 32 Fabric 6. Base and lower body of small jar with incised decoration. Dark grey fabric with smoothed outer surface, light brown patches on both surfaces. Adjoining sherds in SFBs 2217 and 2232 and pit 584, Phase 5

13. Fig. 31 Fabric 9. Bodysherd from bossed and incised vessel. Uniform black fabric, smoothed outer surface. SFB 2218, Phase 5

14. Fig. 32 Fabric 3. Bodysherd from sharply carinated, bossed and incised vessel. Uniform black fabric with smoothed and burnished outer surface, thick sooting/burnt residue on inner surface. SFB 2229, Phase 5

15. Fig. 32 Fabric 4. Bodysherd from large jar with incised decoration. Dark grey fabric with reddish-brown smoothed and burnished outer surface. SFB 2229, Phase 5

16. Fig. 31 Fabric 3. Bodysherd with incised decoration. Light grey fabric with reddish-brown outer surface. Both surfaces burnished. 2234, redeposited in a Middle Saxon context, Phase 6

17. Fig. 31 Fabric 3. Rimsherd from small vessel with incised decoration. Reddish-brown fabric with black burnished surfaces. SFB 2218, Phase 5

18. Fig. 31 Fabric 9. Bodysherd from bossed and incised vessel. Dark grey fabric with reddish-brown, burnished outer surface. SFB 2218, Phase 5

19. Fig. 32 Fabric 3. Rim and neck of stamped and incised vessel. Light grey fabric with variegated light grey and light brown smoothed outer surface. SFB 2211, Phase 5

20. Fig. 31 Fabric 8. Stamped bodysherd. Uniform dark grey fabric with burnished outer surface. SFB 2233, redeposited in a Middle Saxon context, Phase 6

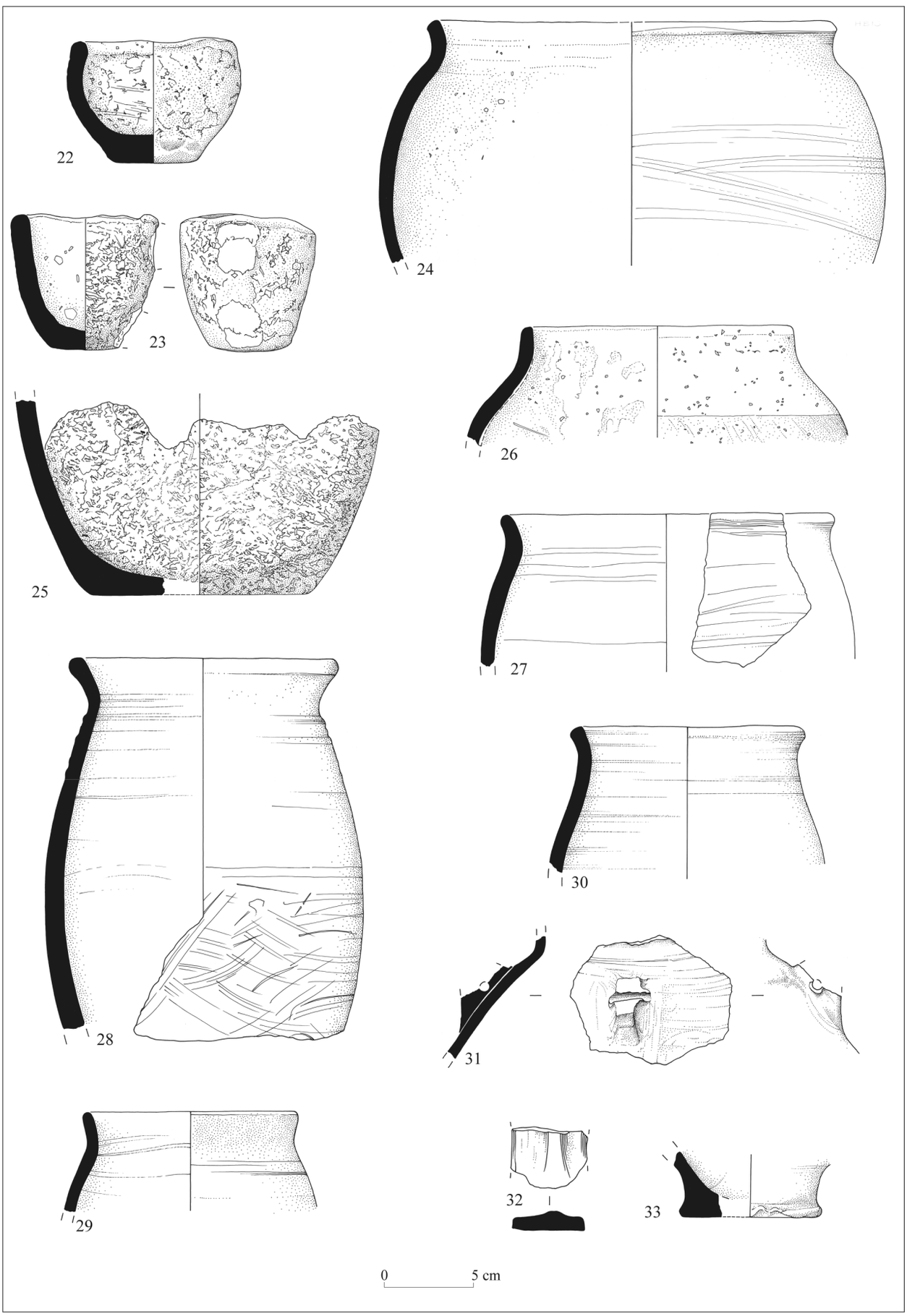


Figure 33 Early–Middle Saxon pottery. Scale 1:3

21. Fig. 31 Fabric 4. Incised sherd. Uniform black fabric with browner, burnished outer surface. Adjoining sherds in post-hole structure 2234 (redeposited in a Middle Saxon context, Phase 6) and evaluation Trench 5, unstratified

Catalogue of illustrated undecorated hand-built Early–Middle Saxon pottery
(Fig. 33)

22. Fabric 1. Small bowl. Dark grey fabric with brown unfinished surfaces, sooting on base and outer rim. SFB 2229, Phase 5

23. Fabric 1. Complete small jar. Dark grey fabric with orange-brown surfaces. SFB 2206, Phase 5

24 . Fabric 8. Rim and body of jar. Dark grey fabric with red and black variegated surfaces, outer smoothed and burnished. SFB 2232, Phase 5

25. Fabric 2. Base and body of jar. Black fabric with light brown, unfinished surfaces. Ditch 2205 and midden 2315, Phase 6

26. Fabric 7. Jar rim. Dark grey fabric with reddish-brown patches on both surfaces. Outer surface smoothed and burnished. SFB 2217, Phase 5

27 Fabric 3. Rimsherd from jar. Dark grey fabric with smoothed surfaces, outer burnished. Pit 168, Phase 6

Middle Saxon

The presence of a fairly large assemblage of Ipswich ware at this site means there is no doubt that there was occupation here in the Middle Saxon period, although it cannot be closely dated other than to within the broad period of AD 725–850 (Blinkhorn in prep.). This assemblage of 228 sherds is not the first from Thetford, or indeed from the Brandon Road area, but it is the largest. Knocker, during his excavations at Red Castle, produced an assemblage of nearly 200 sherds (Knocker 1967, 137), 51 (nearly all residual) sherds were noted at the Redcastle Furze excavations (Andrews 1995, 101) and six sherds were found during excavations located approximately 200m to the east of the Redcastle (Dallas 1993, 121). The Redcastle Furze site excavations also produced an imported Middle Saxon sherd. This all supports the suggestion that there is likely to have been a considerable Middle Saxon settlement stretching to the west along what is now Brandon Road from the Redcastle Furze area (Dallas 1993, 220).

Catalogue of illustrated Ipswich ware
(Fig. 33)

28. Fabric group 1. Large jar. Grey fabric with a brick-red core. Smoothed surfaces. Pit 1488, Phase 6

29. Fabric group 1. Rimsherd from small jar. Uniform grey fabric. Ditch 2298, Phase 4

30. Fabric group 1. Rimsherd from small jar. Grey fabric with brown core. Light sooting on outer surface. Layer 2316, Phase 4

31. Fabric group 2. Sherd from shoulder of lugged pitcher. Grey fabric with lighter core. Pit 717, Phase 6

32. Fabric group 2. Fragment of pitcher handle. Grey fabric with lighter core. Layer 2319, Phase 4

33. Fabric group 1. Base sherd from lamp. Grey fabric with brown core, sooting on inner surface. Unstratified

Pottery occurrence

The data in Table 14 show the changes in pottery use through the Anglo-Saxon period, and the pattern is very much as would be expected in the region. The Early and Early/Middle Saxon assemblages comprise entirely hand-built wares, with Ipswich ware and small quantities of Maxey ware dominating the Middle Saxon groups.

One trend which is of note, however, is the presence of large quantities of hand-built pottery in the Middle Saxon phase. Definition of the end date of hand-built Anglo-Saxon pottery in East Anglia can be somewhat problematic. Certainly, many of the sites in the region which produce Middle Saxon pottery usually have very little in the way of contemporary hand-built wares. For example, at Ely West Fen Road (Blinkhorn 2005a), over 400 sherds of Ipswich ware were noted, but just three sherds of hand-built pottery. This was also a pattern which was noted with the Middle Saxon sites from Norfolk examined during the Fenland Management Project (Blinkhorn 2005b). For example, at Terrington St Clement, Site 23 produced thirty-nine sherds of Ipswich ware but just three sherds, all from the same vessel, of hand-built pottery, while Site 17 at the same location produced seventeen sherds of Ipswich ware and just one hand-built sherd. Walpole St Andrew produced ninety-six sherds of Ipswich ware and five hand-built, West Walton forty-five Ipswich sherds and three hand-built, and Ingleborough forty-two sherds of Ipswich ware and two hand-built sherds. The general pattern would therefore suggest that hand-made pottery was not common in Middle Saxon Norfolk, with Ipswich ware acting as the 'local' domestic pottery for the region.

Thus, the difficulty is in deciding whether the hand-built wares in the Middle Saxon contexts at this site are contemporary or residual. There seems little doubt that residuality is a factor; hand-built pottery comprises 52.5% of the pottery found associated with Late Saxon pottery types, when it was definitely residual, which suggests a case can be made that the material in the Middle Saxon features is similarly residual, for it actually comprises a smaller proportion (37.7%) of the Middle Saxon assemblages.

Certainly, the decorated hand-built pottery in the Middle Saxon features is residual, but the same cannot be said for the rest of the material. The mean sherd weight for hand-built pottery in Early and Early/Middle Saxon contexts is 26.1g, and for hand-built sherds from Middle Saxon features (decorated sherds excluded on the grounds that they are definitely residual), the value is 20.4g. The

	Hand-built			*Ipswich*			*Maxey*			*Thetford*			*Total*
Phase	*Wt (g)*	*MSW*	*%*	*Wt (g)*	*MSW*	*%*	*Wt (g)*	*MSW*	*%*	*Wt (g)*	*MSW*	*%*	*Wt (g)*
2	12	6	31.58	26	26	68.42							38
3	4	4	5.8	37	12.33	53.62							69
4	731	34.81	54.35	503	17.34	37.4				106	17.67	7.88	1345
5	6501	22.97	95.36	251	19.31	3.68				62	6.89	0.91	6817
6	1731	25.46	34.46	2875	26.87	57.24	133	44.33	2.65	229	28.63	4.56	5023
Unstrat.	4	4	6.56	36	9	59.02				17	17	27.87	61
Unph.	63	31.5	25.71	101	33.67	41.22	81	81	33.06				245
Totals	9046			3829			81			414			13598

Table 14 Anglo-Saxon pottery weight, mean sherd weight (MSW) and occurrence (%), by site phase

evidence is by no means clear-cut, although one pointer may be the mean rimsherd size. For the hand-built pottery from Early and Early/Middle Saxon features, the mean is 0.15 EVE (*i.e.* rimsherds are, on average, 15% complete), whereas for the same material from Middle Saxon features the mean is 0.06 EVE (6%) complete. This would suggest very strongly that the material is residual in Middle Saxon features.

Cross-fits

A number of cross-fits were noted, as follows:

- Jar with incised lattice, fabric 3 (Fig. 32, No. 11). Recovered from two layers in both SFB 2218 and 2219.
- Small jar with incised decoration, fabric 6 (Fig. 32, No. 12). Sherds from SFBs 2217 and 2232 and pit 584 (including in three contexts from SFB 2232).
- Base and body of jar, fabric 2 (Fig. 33, No. 25). Ditch 2205 and midden 2315.
- Incised jar, fabric 4 (Fig. 31, No. 21). Adjoining sherds in 2234 and evaluation Trench 5 unstratified.

It is worthy of note that the only pottery which could be cross-fitted is the hand-built material, despite the fact that the entire Anglo-Saxon assemblage was examined.

The cross-fit analysis shows that at least some of the hand-built pottery in Middle Saxon features is residual. A sherd from a vessel stratified in an Early/Middle Saxon context joins with one from a group which contained Ipswich ware. This would suggest that the hand-built pottery had been somewhat disturbed, whilst the later material was very much stratified where it was originally deposited.

Pottery from the buildings

SFB2206

(Table 15)

This structure produced the small, complete jar shown in Fig. 33, No. 23, and two incised sherds with indeterminate decorative schemes. The latter suggest an Early Saxon date for the backfilling. The small complete vessel aside, all the pottery is fragmented, with every sherd seemingly from a different vessel and no refits noted. The group is thus likely to be the result of secondary deposition.

SFB 2211

(Table 16)

The large stamped and incised sherd illustrated in Fig. 32, No. 19 occurred in this feature, as did five sherds of Ipswich ware (41g). Four of these sherds came from an evaluation trench suggesting a Middle Saxon backfill date. All the sherds are from different vessels, indicating they are the product of secondary deposition.

SFB 2217

(Table 17)

This is one of the most interesting of the sunken-featured building groups in terms of the implications for the site's taphonomy. Sherds from the base of the lugged vessel with a foot-ring base (Fig. 32, No. 10) were noted in its basal fill (522). These join with other sherds from context 53 in evaluation trench 3. An incised sherd from context 522 joined another from evaluation trench 5, context 53 (unstratified) (Fig. 31, No. 21). The sherd in post-hole fill 545 was part of the possibly early 5th-century vessel illustrated in Fig. 32, No. 12. Cross-fitting sherds of this vessel were also found in pit 584 (which cut SFB 2232), SFB 2217 and three contexts in SFB 2232. The fact that

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Total*
180			75						11		86
250	245	6	74	99	9	10		4			447
252				73	4				33		110
369		11		78							89
Total	**245**	**17**	**149**	**250**	**13**	**10**	**0**	**4**	**33**	**0**	**721**

Table 15 Anglo-Saxon pottery from SFB 2206 by fabric type (weight in grams)

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Ipswich*	*Total*
21			113	7	20					9	57	206
56					5							5
189			14	13		15					10	52
190			92									92
Total	**0**	**0**	**219**	**20**	**25**	**15**	**0**	**0**	**0**	**9**	**67**	**355**

Table 16 Anglo-Saxon pottery from SFB 2211 by fabric type (weight in grams)

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Total*
Eval 5/53		558	32								580
470			116						12		128
514*		3									3
522	186			73		38	127				424
545*						7					7
Total	**186**	**61**	**148**	**73**	**0**	**45**	**127**	**0**	**12**	**0**	**1142**

Table 17 Anglo-Saxon pottery from SFB 2217 by fabric type (* = post-hole fills) (weight in grams)

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Total*
454		89	96	39	84	173		92	30		603
506	11	138	47								196
507					6						6
Total	**11**	**227**	**143**	**39**	**6**	**173**	**0**	**92**	**30**	**0**	**805**

Table 18 Anglo-Saxon pottery from SFB 2218 by fabric type (weight in grams)

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Ipswich*	*Total*
639			6		8			11			46	71
640			106	307	24						90	527
683				80								80
684		1027			15							1042
685				3				2				5
686			16	33	49							98
687				20								20
688		59										59
689	140	5	2									147
690		13	84	37						34	79	234
Total	**140**	**1104**	**214**	**480**	**96**	**0**	**0**	**13**	**0**	**34**	**215**	**2296**

Table 19 Anglo-Saxon pottery from SFB 2229 by fabric type (weight in grams)

two different buildings produced sherds of the same vessel indicates that they were almost certainly backfilled at the same time, and that the material used had a common source. The assemblage otherwise comprised sherds from individual vessels including a small incised sherd and a bossed sherd, that are likely to have derived from secondary deposition, offering further support to the suggested taphonomy. A large jar rim from the feature is illustrated in Fig. 33, No. 26. A small sherd of Thetford ware was present, but this seems very likely to be intrusive.

SFB 2218
(Table 18)
The most notable pottery from this feature was the jar with the unusual incised lattice (Fig. 32, No. 11). Most of the sherds came from fills 454 and 506, but another was noted in fill 467 from SFB 2219. This would, as with SFB 2217, suggest that the two features were backfilled with refuse from a common source. Again, the rest of the assemblage comprised individual sherds from different vessels. This feature also produced a bossed and incised sherd (Fig. 31, No. 13), a further, very small fragment from a similar vessel, and three incised sherds of indeterminate type. A 5th-century date again seems likely.

SFB 2219
This feature produced only one sherd of pottery, the fragment of the lattice-decorated jar discussed above.

SFB 2229
(Table 19)
A sherd from a sharply carinated, bossed and incised vessel (Fig. 32, No. 14) was noted in fill 640, as was another from a large incised jar (Fig. 32, No. 15). A partially-complete small bowl was also noted (Fig. 33, No. 22). These would all suggest a 5th-century date, but several of the fills of the feature produced Ipswich ware, indicating a Middle Saxon date. It is possible that the earlier material may represent the backfill of the feature and the later may be the product of subsidence, but it is impossible to be sure. The sherds in context 684 were all from the somewhat friable base of an extremely large chaff-tempered vessel. Otherwise, all the sherds were from different vessels.

SFB 2232
(Table 20)
The majority of the joining sherds from the 5th-century incised vessel (Fig. 32, No. 12) came from this feature. As noted above, these cross-fitted with a sherd from SFB 2217. The presence of a further small incised sherd suggests an early date for the feature, but both Middle and Late Saxon sherds were also noted, which would again suggest contamination. A large rim sherd from a jar (Fig. 33, No. 24) was also found.

SFB 2233
(Table 21)
This feature produced very little pottery. The lower fills contained 62g of hand-made pottery and 3g of Ipswich ware suggesting a (contaminated) Early Saxon date for their deposition whilst the upper fills contained only Ipswich ware (104g) indicating a Middle Saxon backfill date.

Hall 2209
This feature did not produce any pottery.

Overview
The impression gained from the pottery from the sunken-featured building hollows is that there were two major phases of clearance at the site, one in the 5th century and another during the Middle Saxon period. With the exception of the large stamped rimsherd (Fig. 32, No. 19) from SFB 2211, all the decorated hand-built pottery from the structures was of 5th-century date. A number also produced Ipswich ware, including SFB 2211. The pottery from the structures is, in each case, primarily collections

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Ipswich*	*Total*
39				13								13
590	50	54	153	29				383	75			744
636		8	22	73		25				13		141
677*		287	79	46				44			19	475
611**		6										6
Total	**50**	**355**	**354**	**161**	**0**	**25**	**0**	**427**	**75**	**13**	**19**	**1379**

* Context also produced 6 sherds of Thetford ware (17g)
** Post-hole fill, also produced 1 sherd (23g) of Thetford ware

Table 20 Anglo-Saxon pottery from SFB 2232 by fabric type (weight in grams)

Context	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*	*Ipswich*	*Total*
349											50	50
523											54	54
538		16	40					6			3	65
Total		**16**	**40**					**6**			**107**	**169**

Table 21 Anglo-Saxon pottery from SFB 2233 by fabric type (weight in grams)

of individual sherds from different vessels, suggesting that the material was not pots which were used in the buildings, but brought in from elsewhere on the site as refuse to backfill the hollows. This is further supported by the fact that cross-fitting sherds from a single vessel were noted in different building hollows and other features. This all suggests that there was a general clearance of the site during the Early Saxon period, and that it largely took place by the early years of the 6th century. It has been noted above that stamped pottery was scarce on this site, but was found during Knocker's excavations at Red Castle. The evidence from this site suggests that the settlement focus moved to that area during the 6th century. The site was again occupied during the Middle Saxon period, but whether the Ipswich ware noted in some of the building hollows is stratified, intrusive or the result of subsidence is very difficult to ascertain. What is certain is that the settlement fell from use in the early part of the Late Saxon period, presumably due to the population moving to the nearby defended burh. Certainly, it is very rare to find continuity from the Middle to Late Saxon periods at major settlement sites. All the Late Saxon towns which replaced *wics* were, with the exception of Ipswich, built next to them, and not on top of them. This seems also to be the case here.

X. Petrological Analysis of Early Saxon Pottery

by Alan Vince

A collection of Early Saxon pottery was divided visually into ten fabrics by Paul Blinkhorn. Samples of each fabric were selected and submitted to the current author for thin section analysis, deriving largely from SFBs (Table 22 and Appendix 8). The aims of the analysis were to provide a description of the rock and mineral inclusions present in the fabrics and to use these to suggest the raw materials used to make the vessels and their source.

All of the ten samples submitted have distinctive and different petrological characteristics. Similar inclusion types occur in several of the fabrics, however, suggesting that they can be grouped. These are summarised in Table 23.

In each case, there is a mixture of inclusions of different origins. Where these are quartzose (*e.g.* quartz, chert, sandstones) these could be transported over large distances from the outcrop by fluvial action. Softer materials, such as chalk and Jurassic limestones, would have survived less well in detrital deposits, but could have been redeposited in boulder clay, in which case, again, they might be transported over large distances without

Feature	*TSNO*	*Fabric*	*Cname*	*Sub-fabric*	*Form*	*Part*	*Description*
SFB 2217	V2806	01	ECHAF	Chaff; angular flint; subangular quartz; shell	Bowl	BS	
SFB 2217	V2807	02	ESAX	Chaff; chalk	Jar	BS	
SFB 2229	V2808	03	SST	Chaff; subangular quartz	Jar	BS	Bossed; sharp shoulder; linear dec
SFB 2229	V2809	04	SST	SSTMG; biotite granite; fine-grained sandstone	Jar	BS	Linear decoration; cordons at neck
SFB 2218	V2810	05	SST	Chaff; SSTMG; shell	Jar	BS	
SFB 2232	V2811	06	SST	GSQ; acid igneous	Jar	BS	Linear decoration
SFB 2217	V2812	07	LIM	Oolitic limestone	Jar	BS	Shouldered glob
SFB 2232	V2813	08	SST	Subangular quartz; red grog	Jar	BS	
SFB 2218	V2814	09	FE		Jar	BS	Bossed; incised decoration
Ditch 2240	V2815	10	CHARN	Biotite granite	Jar	BS	Rounded rim

Table 22 Anglo-Saxon pottery thin sections (by feature)

Fabric	*F1*	*F2*	*F3*	*F4*	*F5*	*F6*	*F7*	*F8*	*F9*	*F10*
Mountsorrel Granodiorite	Yes?	No	No	No	No	No	No	No	No	Yes
Carboniferous sandstones	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Permo-Triassic Sand	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Jurassic Limestones	No	No	No	No	No	No	Yes	No	No	Yes
Lower Cretaceous rocks	Yes	No	No	No	Yes	Yes	No	No	Yes	No
Upper Cretaceous rocks	No	Yes	No	No	Yes	No	No	No	No	No
Erratics	No	No	No	Yes	No	Yes	No	Yes	No	No
Microfossils	No	No	No	No	No	Yes	Yes	No	No	Yes
Ferroan calcite in groundmass	No	Yes	No	No	Yes	No	No	No	No	No

Table 23 Anglo-Saxon pottery thin sections (by fabric and inclusions)

further weathering. It is likely that most, if not all, of these fabrics contain material of fluvio-glacial origin.

Without further detailed knowledge of the composition of Quaternary deposits in the neighbourhood of the site it is impossible to locate the sources of these fabrics, but it is likely that they come from several different sources rather than a single, variable, source. Two different groups of inclusions can be recognised: Midland Drift, containing Mountsorrel Granodiorite and Jurassic Limestones (Fabrics 1 and 10); and North Sea Drift, containing glacial erratics of Northern British or Scandinavian origin (Fabrics 4, 6, and 8). However, the groundmasses of several of these fabrics share distinctive characteristics, namely microfossils or specks of ferroan calcite and the microfossils are found in fabrics with both North Sea and Midlands drift inclusions.

Of the remaining fabrics, those with inclusions of Lower Cretaceous origin could have been made from local clays, either boulder clays or *in situ* Lower Cretaceous clays, although they could have been made almost anywhere within East Anglia, where Lower Cretaceous quartz grains are ubiquitous in detrital sands and boulder clays.

In summary, it is not yet possible to localise the source of these fabrics but the varied and distinctive inclusions which they contain suggest that, with further work in the south-east Midlands and East Anglia, it will be possible to gain more knowledge of the character of Quaternary sands and clays and therefore localise their sources more accurately.

XI. Roman Brick and Tile

by Carole Fletcher

A small collection of thirty-seven fragments of small and abraded Roman brick and tile weighing 3kg was collected from features ranging from Early Roman to modern in date. Very few pieces could be identified to type although there are three *tegulae*, an *imbrex* and three further pieces with finger-applied signatures, also possibly *tegulae*. Within the small collection there are at least three fabric types.

The tile was found largely in the north-eastern part of the site although a few fragments were also recovered from the western part. Only one piece was found in an Early Roman context, whereas there was a concentration in the Late Roman period (Phase 4), from which half the assemblage was recovered (N=18; 1.482kg), perhaps suggesting that the material came from a structure/ building(s) which dated from the 3rd or 4th century. A third of the assemblage was found in Saxon contexts, including five sunken-featured buildings: this may indicate residuality although the reuse of Roman building materials in Anglo-Saxon structures (for post-pads, hearth bases *etc*.) was common.

XII. Daub/Fired Clay

by Rob Atkins

A small assemblage of fired clay or daub weighing 3.8kg came largely from the eastern side of the site, including samples from the ovens. Most of the assemblage comprised amorphous fragments of oxidised clay which was probably the debris from ovens and hearths used in domestic and 'industrial' activities. At least some could have come from burnt walls (daub) although no examples with wattle impressions were found.

Material from the Early Saxon phase was largely collected as a sample from one of the ovens (0.678kg) while small quantities of fired clay also came from SFB 2206. Most of the assemblage from Middle Saxon deposits came from two features/deposits. Midden 2315, which sealed Early Saxon features in the south-eastern part of the site, contained 1.022kg of fired clay including lining. Oven 786 yielded 0.963kg of fired clay and small quantities were also recovered from the backfills of SFB 2233.

XIII. Stone Objects

by Steve Critchley
(Fig. 34)

Fifty-six querns or quern fragments were found, along with three whetstone fragments and a rubbing stone. The quernstones and whetstones have been divided into two rock types: vesicular basaltic lavas (40 samples) and siliclastic sediments of varying grade (16 samples). The latter has been subdivided into Millstone Grit, Hertfordshire puddingstone conglomerate and Greensand (Table 24).

The quernstones were recovered from layers and all types of features including pits, ditches, sunken-featured buildings, a well and a post-hole. Most were concentrated in the later Roman and Middle Saxon periods, and to a lesser extent the Early Saxon phase. The presence of a lava fragment within a Mesolithic/Neolithic context may be the result of the activities of burrowing animals which had greatly disturbed the site.

Phase	*1*	*2*	*3*	*4*	*5*	*6*	*Unphased*	*U/S*	*Tot*
Lava	1	2	2	12	8	14		1	40
Millstone		2	1	2	1	2		4	12
Hertford				1			1		2
Greensand						1		1	2
Total	**1**	**4**	**3**	**15**	**9**	**17**	**1**	**6**	**56**

Table 24 Quernstone fragments by type and phase

Quernstones

Vesicular basaltic lavas

All the lava samples are of a similar light to mid grey fine textured vesicular trachybasalt. Most are fragmentary, somewhat friable and with many rounded, obviously abraded pieces. Four examples exhibit portions of worked faces and clean angular breaks. Some may have seen secondary use, such as grinding the raw materials for dyeing cloth or reducing ore (Watts 2002, 33).

The four more complete examples all retain sufficient exterior surfaces to provide approximate diameters ranging from two at 0.40m, one 0.42m and the fourth *c*.0.55m and their thicknesses were 42mm (x 2), 90mm and 40mm respectively. The thickest example has external grooves running vertically down the edge. All the faces are too worn to establish whether they are upper or lower stones.

Confirmation of the source area for the lava could only be determined with certainty by the future examination of thin sections and particular geochemical analysis of the whole rock. The latter would allow the subtle yet consistent chemical signatures to be used to identify areas of origin or even individual lava flows, outcrops or quarries. The nearest source area with a known extensive production record from the Neolithic to the 19th century is the Mayen Quarries in the Eifel region of Germany. Further afield less likely sources could include the Volvic area of Southern France or Ampurias in south-east Spain.

Siliclastic sediments of varying grade

Thirteen of the querns are made from medium to coarse grained, often pebbly, sandstones of the Carboniferous, Namurian (Millstone Grit) and Westphalian (Coal Measures) Series. Geographically their source can be inferred as the Southern Pennine area. Two samples are of a siliceous conglomerate identifiable as Hertfordshire Puddingstone. One is part of an upper stone from an East Anglian type Hertfordshire Puddingstone (beehive) quern.

Two samples of Lower Cretaceous Greensand were found. Bedfordshire has extensive outcrops of this formation and is a possible source area. The lateral equivalent of these beds, the Spilsby Sandstone of Lincolnshire, could be considered but is geographically more distant. One complete millstone of this type was found during machining (Fig. 34, SF 332). This is a lower stone, its internal face being divided into eight equal segments comprising a ridge and furrow pattern, angled differently in each segment to help reduce the grain to meal.

Site	*Lava*	*Other*
Thetford (Dallas 1993, 121)	120	6
Melford Meadows, Brettenham (Roe 2002, 76)	5	19
Thetford, Brandon Road	40	16

Table 25 Quernstone fragments recovered from three Thetford sites (by type)

Catalogue
(Fig. 34)

SF 332 **Quernstone** (lower) of Lower Cretaceous Greensand. Diameter 0.535m. Internal face divided into eight equal segments comprising ridge and furrow pattern. Unstratified (machining)

Discussion

The quernstone fragments were found across the eastern part of the site with some apparently deliberate deposition. Half of the quernstones from Phase 4 came from enclosure ditches 2240 and recut 2241 which contained seven fragments of lava and Millstone Grit quernstones. In Phase 6, the quernstone fragments were largely recovered from midden 2315 which contained eight examples (five lava, two Millstone Grit and one greensand) and enclosure ditch 2203 where three lava quern fragments were found. Environmental samples provide no evidence for crop processing in the area during the Roman period, suggesting that at this time querns were used for domestic purposes using grain brought in from another part of the site or settlement.

There is some similarity in the pattern of recovery of quernstones from the Brandon Road site and other sites in Thetford and other parts of Norfolk. Most sites of this period have four fabric types of quernstones (lava, Millstone Grit, greensand and Hertfordshire pudding-stone) though the quantities of each type and their fragmentary size varies from site to site (Table 25).

Lava querns were traded from the 1st and 2nd centuries of Roman occupation. Until recently, it was thought that there was a temporary halt in the trade (Peacock 1980, 50) although now the lava quern trade is thought to have continued throughout the Roman period before it ceased *c*.400 AD (Ian Riddler, pers. comm.). The trade restarted in the Middle and Late Saxon periods from *c*.650 AD (Buckley 1995, 86). The lava querns found in Early Saxon contexts are therefore probably residual.

In Thetford, at Davison's excavations *c*.500m to the east, 120 lava fragments were found, all of which were small fragments except one (Dallas 1993, 121). These fragments came from contexts of all periods. Small lava fragments were common at Spong Hill and were found in 122 generally Roman contexts (Buckley 1995, 86). Buckley argues that the abraded nature of the lava showed that the quernstones were present on the site for some period before reaching the features and were therefore of little value for dating purposes. In contrast at Mudd's excavation *c*.1.5km to the east of the Brandon Road site, lava quern was recovered from only five contexts, all but one of which were Roman (Roe 2002, 76).

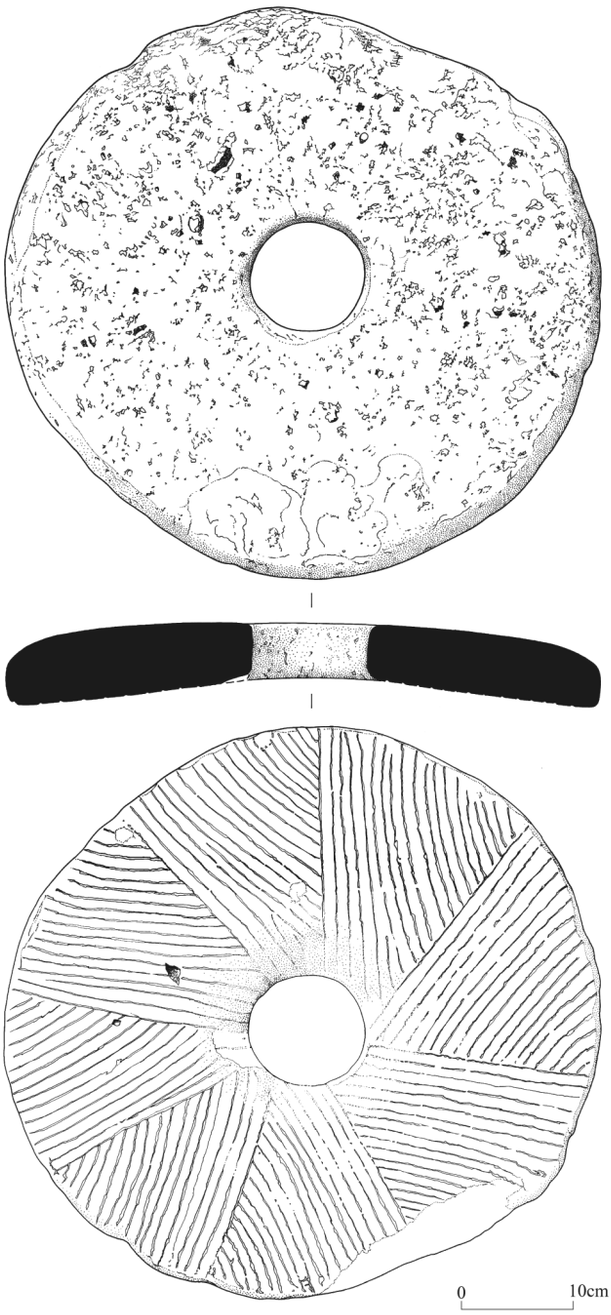


Figure 34 Quernstone SF 332. Scale 1:7.5

Millstone Grit stones were traded from the Pennines into Norfolk throughout the Roman period (Buckley 1995, 86). It has been argued that there was a possible chronological difference between the Roman use of Millstone Grit and of lava, and that the utilisation of Millstone Grit may on the whole be somewhat later than the use of lava (Buckley 1995, 86). Roe suggests that this chronological difference may account for the greater amount of Millstone Grit at Melford Meadows, and also at Great Staughton, Cambridgeshire, another Late Roman site (Roe 2002, 77). As Table 25 shows, on the Brandon Road site there does not seem to be a chronological difference between the different types of quernstones.

The quantity of non-lava querns also varies remarkably from site to site. The majority of quernstone fragments from Mudd's excavation were Millstone Grit, which came from eighteen contexts as well as a Greensand fragment. At Davison's excavation in Thetford only six fragments of non-lava types of quernstone were recovered (Dallas 1993, 121). There are no obvious reasons for different quantities of quernstone types recovered in nearby sites of similar periods — cost and/or personal choice of the inhabitants of a particular site may be a factor.

Whetstones and rubbing stone

Three whetstones were recovered (none of which is illustrated: 2245, Phase 4, SF 323, unphased SF 435, unphased SF 436). Two are made from a rock type common in many geological formations and could be from a local glacial erratic source or from Carboniferous outcrops in the Southern Pennines. The third is a burnt sandstone fabric. A rubbing stone (922, Phase 6 SF 437) is from a possible glacial erratic.

XIV. Bone and Antler Objects

by Ian Riddler
(Figs 35–36)

Four objects of bone and antler were examined. They consist of two double-pointed pin-beaters, a needle and a near-complete red deer antler stamp. These have been identified under low magnification to material and object type, and they are considered here in the light of other objects from Thetford excavations, as well as broader perspectives.

Pin-beaters

Both pin-beaters are of the double-pointed type, which is common in Early and Middle Saxon England, but is rarely found after the 9th century (Brown 1990, 226; Riddler 1996, 136). They are associated with the warp-weighted loom, as are ceramic loomweights, and both object types disappear from the archaeological record at the same time, during the course of the 11th century (Walton Rogers 1997, 1755). On the continent there is a tendency to regard double-pointed pin-beaters as fishing implements, but there is little doubt that they were used in weaving practices and they can be readily distinguished from fish gorges, which are smaller objects, usually provided with an indented centre (Brinkhuisen 1983, 33–4; Westphalen 1999, 9; and *cf.* Riddler 2006).

Two pin-beaters from Early Saxon contexts at Redcastle Furze, Thetford were probably also of double-pointed form (Andrews 1995, 116 and fig. 87.8–9). One of them is a similar size to the near-complete example here (SF 213), and both can be placed in the longer group of Early Saxon pin-beaters (Riddler 1996, 136). The remaining pin-beaters from Thetford are single-pointed and can be associated with the vertical two-beam loom, which was in use in England from the 9th century onwards (Walton Rogers 2001).

Catalogue
(Fig. 35)

SF 213 A near-complete **pin-beater** of double-pointed type, tapering from the centre to either end. It has probably been made from bone, rather than antler. One of the ends has been burnt and survives in degraded condition. The pin-beater is oval in section and has been polished. Length: 146mm, Width: 9mm. SFB 2218. Phase 5

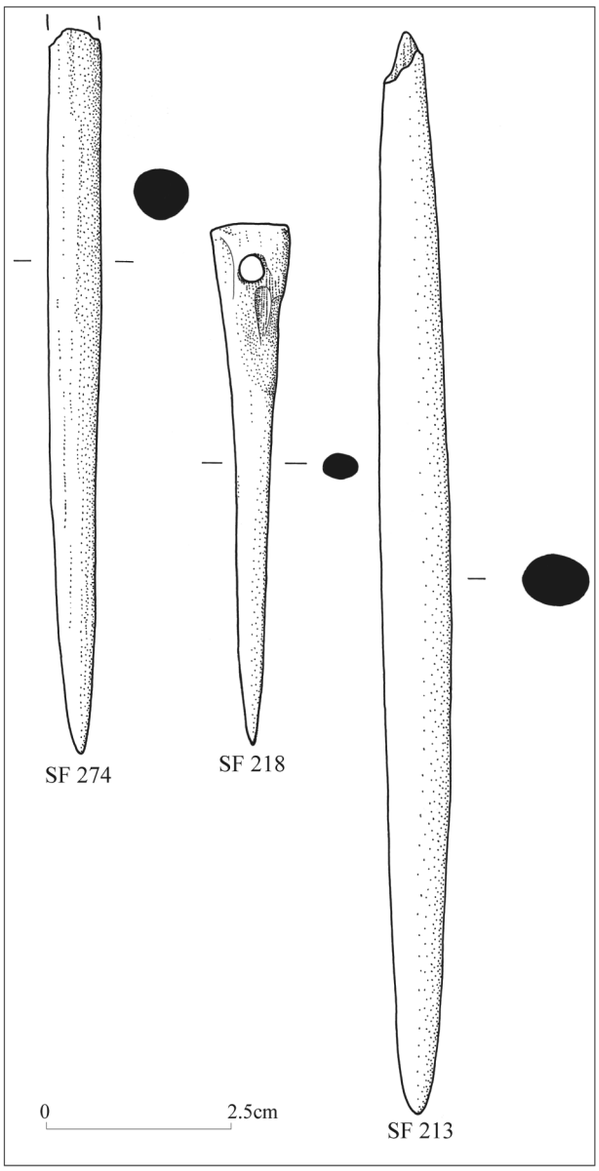


Figure 35 Worked bone objects. Scale 1:1

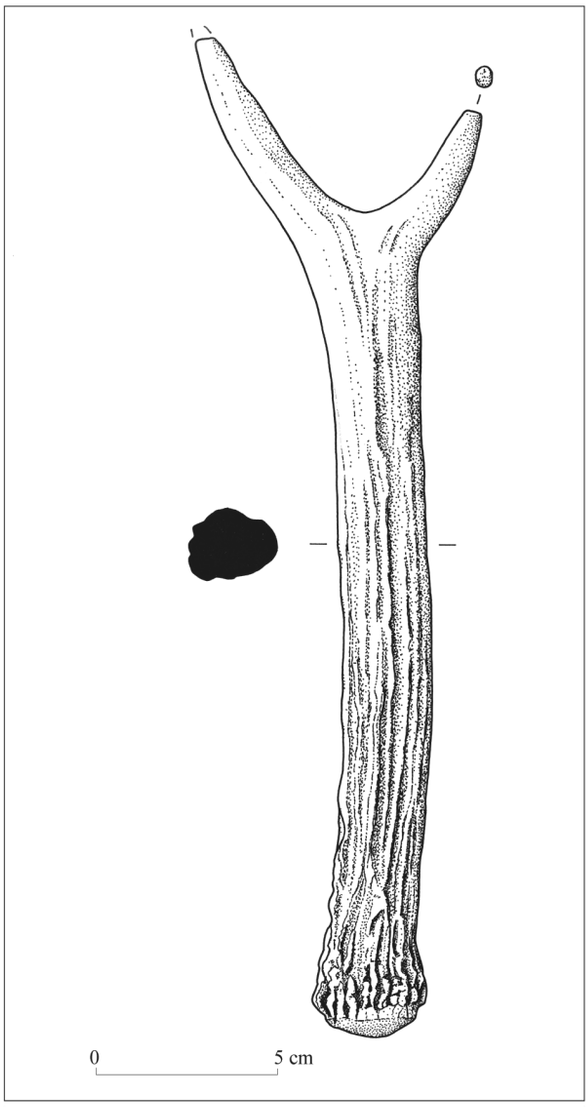


Figure 36 Antler stamp SF 391. Scale 1:2

Catalogue
(Fig. 35)

SF 274 A fragment of a double-pointed **pin-beater**, made from bone or antler. It is circular in section and tapers evenly to the surviving end. Draw-knife marks are visible along the shaft and the object has been polished. Length: 98mm, Width: 7mm. SFB 2229. Phase 5

SF 218 A complete bone **needle**, produced from a pig fibula, with the head cut from the distal end. The shaft is relatively short and circular in section, tapering to a sharp point. The needle has been polished. Length: 70mm, Width: 10mm. SFB 2217. Phase 5

Needle

The bone needle (SF 218) has been cut with some skill from a pig fibula. It can be compared with a number of examples from Thetford, all of which are also made from pig fibulae (Rogerson and Dallas 1984, fig. 189; Dallas 1993, 158 and fig. 160.6; Andrews 1995, 116 and fig. 87.5–6; Andrews and Penn 1999, 46 and fig. 43.2). Several needles with spatulate heads, also cut from the distal end of the bone, provide close parallels (Rogerson and Dallas 1984, fig. 189.32 and 34). Crowfoot (in Rogerson and Dallas 1984, 167) defined these implements as auxiliary implements used in weaving and they can be distinguished (albeit sometimes with difficulty) from bone pins, which have also been found at Thetford (Rogerson and Dallas 1984, fig. 189.31 and 33; Riddler 2004).

Antler stamp

A near-complete antler was recovered from midden deposit 2315. The antler is naturally shed and stems from a young red deer. It is interesting (from the point of view of the study of the development of antlers) that there is no sign of an emerging brow tine in this case, which would be expected (*cf.* van Vilsteren 1987, afb 3). The beam bifurcates to form a crown of two tines, suggesting that the animal was only one or two years old when the antler was shed. It can be compared, in this respect, with a small red deer antler from Berlin-Spandau, which was adapted to form a pick (Becker 1989, 122–3 and taf 34.2). In general, it is unusual for small antlers from young animals to be

collected for working. In this case the antler has been subtly modified, with a flattening of the end of the shorter tine. This small alteration of the natural form would, however, have enabled it to be used as a stamp on ceramics or leather.

Antler stamps from Anglo-Saxon England and the Continent were reviewed some years ago and new discoveries can be added to the earlier corpus (Riddler 1986 and 1988; Knaut 1987). Amongst them are Early and Middle Saxon stamps from Canterbury, Colchester, *Hamwic*, Hartlepool, Ipswich and Steyning (Riddler forthcoming). Antler stamps from *Hamwic*, Møen and West Stow are of particular relevance. They form a distinctive group which is defined by the presence of two tines and an adjoining section of beam, much in the manner of this example (Knaut 1987, abb 5.13; West 1985, fig. 61.13). In each case the stamps are little modified from the original form of the antler and they use one or both of the surviving tines. The West Stow stamp is of 6th-century date whilst the *Hamwic* stamp, a new example from Melbourne Street, comes from an 8th-century deposit; the Møen stamp is not closely dated (Riddler forthcoming). Most of the antler stamps recovered to date stem from contexts of Early or Middle Saxon date.

Catalogue
(Fig. 36)

SF 391 A near-complete **antler** of red deer, with a naturally shed burr and a lightly curved beam of oval section, leading to a crown formed of two tines. The larger tine is slightly damaged at its end whilst the shorter example has been flattened to form an oval surface. The antler is otherwise unmodified. Length: 290mm. Layer 2315 (midden deposit). Phase 6

Chapter 4. The Zooarchaeological and Botanical Evidence

I. Human Bone

by Corinne Duhig
(Pls IV and VIII–X)

Introduction

The three specimens examined are an Early Saxon child burial (Phase 5, sk. 859), fragments of an infant from a Middle Saxon midden deposit (2315) and a femur of an adult found in a Middle Roman ditch (Phase 3, 224–9). Methods used are primarily those of Cho *et al*. (1996), Stewart (1979) and Ubelaker (1989).

Skeleton 859

Approximately 63% of this skeleton was present in the deposit surrounding the burial (858). Remains excavated as skeleton 859 itself consist of: the whole skull (shattered but restorable), much of the vertebral column and rib cage, the slightly damaged bones of the shoulder girdle and arms, a small piece of pelvis, both femora and a fragment each of tibia and fibula (Pl. IV). One large piece of bone, a small femur and some fragments of tooth enamel, all animal, were also present in the context. In addition the left proximal tibia and left fibula of the burial was found *c*.5m to the south-west in Middle Saxon ditch 2203.

Assessment of age

Thirty-seven teeth are either in the jaws or were loose with the skull, representing a dentition changing from deciduous to permanent. The first ('six-year') molars are fully erupted and the second are visible in their crypts, which are beginning to open, as occurs at approximately 9 to 10 years of age. One half-formed crown of a third molar was still in its crypt. In the anterior dentition, the permanent incisors are fully erupted but the deciduous canines and molars are still in occlusion, with their permanent replacements beneath them. As a result of the breakage of areas of the jaws, it is possible to determine the stage of crown or root development of all these unerupted teeth, and to establish the dental age as 9.5 years ± 30 months.

Fusion of the arches to the bodies of the thoracic and lumbar vertebra had taken place, and this indicates an age of more than 7 years, although fusion had not occurred long before death (the fusion line is barely closed, and two vertebrae are unfused). Determination of age by the length of the diaphyses (shafts) of the long bones gives an age range of 6.5–7.5 years for the humerus and 5.5–7.5 years for the femur.

Pathological conditions

The skeletal age is at the lower end of the dental age range, suggesting that the child was genetically small or that there had been some growth interruption or inhibition. X-radiographs of the long bones were taken, in order to determine whether Harris lines are present. These are

Plate VIII Early Saxon skeleton 859, mandibular dentition showing erupting second permanent molars, empty crypt for third, overcrowding of anterior teeth and two hypoplastic lines on each incisor

dense horizontal lines at the ends of long bones, showing interrupted development caused by physiological stresses. The most common causes are severe dietary deficiency or high fever, although non-feverish systemic illnesses, such as congenital disorders or chronic infections, have been suggested for some examples. No Harris lines were observed, although the condition of the long bones makes visualisation difficult and the traces of faint lines might be missed.

Stronger evidence of extreme physiological stresses on the child comes from the state of the dentition. This has dental enamel hypoplasia (stripes or spots of defective or absent enamel) over wide areas of the crowns of most of the teeth, which indicates the same developmental effects as above, dietary deficiency or severe fever (Pl. VIII). The affected deciduous canines and molars began forming prior to birth, showing that the uterine environment was deprived, and the crowns of the first permanent molars formed from shortly after birth to 3 years of age: this indicates that stress factors were present in this child's life for that time period (Pls IX–X). The second molars are not observable, and it is therefore possible that these too are affected, which would indicate the same stress factors from approximately 3 to 7 years. There are, however, no hypoplastic defects on the one third molar crown. For the last few years of its life, the child appears to have been in improved circumstances, with adequate food supply, absence of episodes of feverish illness or relief from a chronic disease. The disappearance of the defects in the later-developing molar indicates that a congenital disorder is unlikely to be their cause.

Plate IX Early Saxon skeleton 859, maxillary dentition showing inadequate space for eruption of permanent teeth, hypoplasia on posterior surfaces of central incisors and spotted enamel and caries on the deciduous and permanent molars

Plate X Early Saxon skeleton 859, full thickness hypoplasia on the maxillary anterior surfaces of the central incisors

Dental caries

Unsurprisingly, dental enamel hypoplasia renders the tooth vulnerable to decay, as it causes thin enamel or fully exposes the underlying dentine. Several teeth in this child's jaws are carious, and the badly affected anterior teeth would have been likely to have become carious in a short time.

Malocclusion

The teeth are markedly overcrowded, with inadequate space for the permanent teeth to erupt in place. Examples of overlapping, angulation, rotation and eruption behind the predecessor teeth are all observable. Although dental overcrowding is, to some extent, heritable, it is also an indicator of developmental problems, sometimes also resulting from unfavourable environmental factors.

The Early Saxon date of the skeleton (AD 410–600 at 95.4% probability) places it in a time period when local conditions appear to have been favourable for skeletal development and health, with reasonable nutrition (summaries for the area in Duhig 1998 and Duncan *et al*. 2003). It seems, therefore, that the changes to bones and teeth are more likely to be attributable to a chronic systemic disease than environmental factors such as severe dietary deficiency, although there are no other indicators to enable diagnosis of the disease.

Skeleton 2315

Twenty fragments of skull vault, one right first rib, a tibia and half of a fibula are all that is present. The tibia and rib are the length to be expected in a full-term foetus/neonate (Fazekas and Kósa 1978; Stewart 1979, fig. 37) and the other bones are of comparable size so are probably from the same individual. There are no pathological changes.

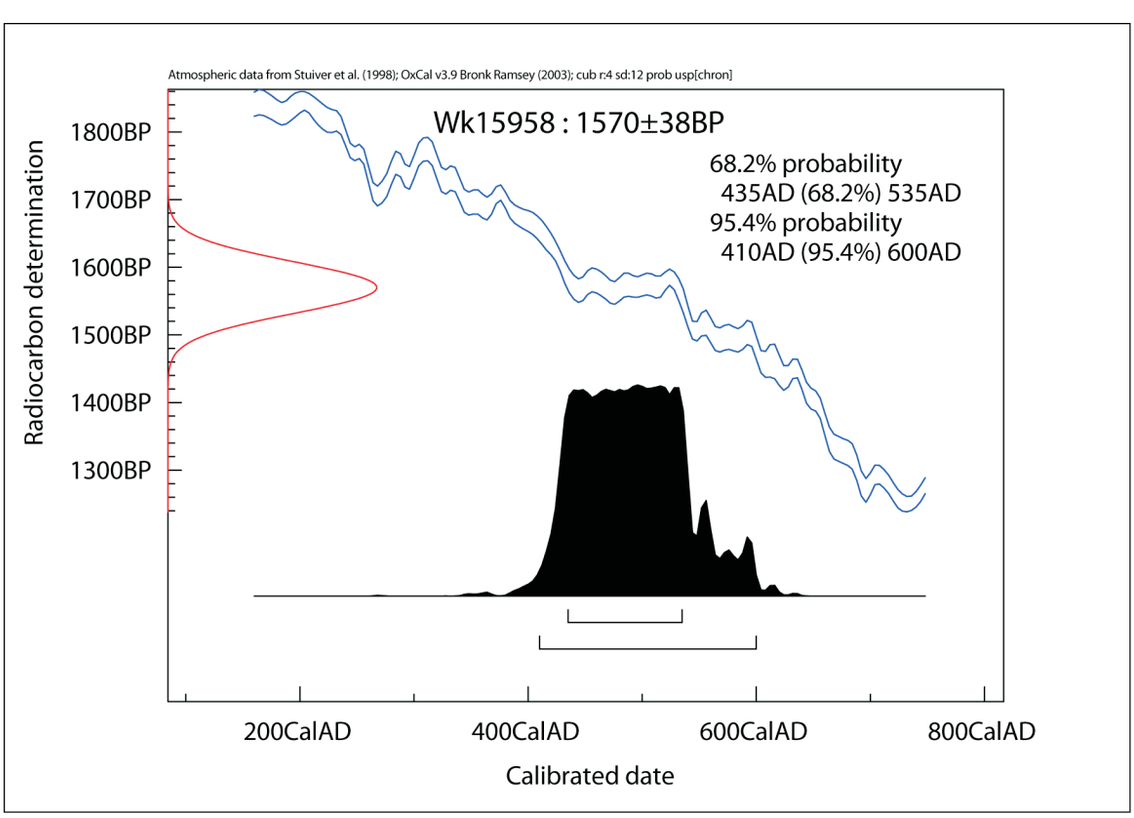


Figure 37 Radiocarbon date for skeleton 859

Taxon	*Phase 1*	*2*	*3*	*4*	*5*	*6*	*Total*
Cattle (*Bos* f. domestic)	-	4	20	69	193	108	394
Sheep/Goat (*Ovis/Capra* f. domestic)	-	2	3	40	51	46	142
Sheep (*Ovis* f. domestic)	(-)	(-)	(-)	(7)	(17)	(4)	(28)
Red Deer (*Cervus elaphus*)	-	-	-	+	-	1	1
Roe Deer (*Capreolus capreolus*)	-	-	-	+	-	-	+
Pig (*Sus scrofa*)	1	-	2	7	40	13	63
Equid (*Equus* sp.)	-	2	14	17	17	20	70
Dog (*Canis familiaris*)	-	-	-	-	2	-	2
Dog/Fox (*Canis/Vulpes* sp.)	-	-	1	-	-	-	1
Hare (*Lepus* sp.)	-		-	-	-	+	+
Rabbit (*Oryctolagus cuniculus*)	4	1	1	12	3	7	28
Mole (*Talpa europaea*)	-	-	-	1	-	-	1
Domestic Fowl (*Gallus* f. domestic)	-	-	-	-	+	+	+
Goose (*Anser/Branta* sp.)	-	-	-	1	+	-	1
Anuran Amphibian (*Rana/Bufo* sp.)	2	-	-	-	-	-	2
Toad (*Bufo bufo*)	(1)	(-)	(-)	(-)	(-)	(-)	(1)
Total	**7**	**9**	**41**	**147**	**306**	**195**	**705**

'Sheep/ Goat' and 'Anuran Amphibian' also includes the specimens identified to species. Numbers in parentheses are not included in the total of the phase. '+' means that the taxon is present but no specimens could be 'counted' (see text)

[1] Includes eleven bones from a partial skeleton
[2] Includes seventy bones from a partial skeleton
[3] Includes fifty-six, four and five bones from partial skeletons
[4] Includes eleven bones from a partial skeleton
[5] Includes fifteen, four, five and four bones from partial skeletons
[6] Includes thirty-two, thirteen and five bones from partial skeletons

Table 26 Number of hand-collected mammal, bird and amphibian bones (NISP)

Femur 2249
Part of a very robust midshaft femur was all that was present of a probable male adult. The femur was found in Phase 3 Roman enclosure ditch 2249.

II. Radiocarbon Date for Skeleton 859
(Fig. 37)

Four ribs from the Early Saxon burial were dated at the radiocarbon dating laboratory, University of Waikato. The result follows Stuiver and Polach (1977, 355–63) and is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. The result (Wk15958, 1570±38BP) produced at 68.2% probability a date of AD 435–535 and at 95.4% probability a date of AD 410–600.

III. Animal Bone
by Ian L. Baxter

Introduction
A total of 705 'countable' (see below) fragments of animal bones were hand-collected from the site (Table 26) and a further five fragments were recovered from the residues of sieved samples (Table 27).

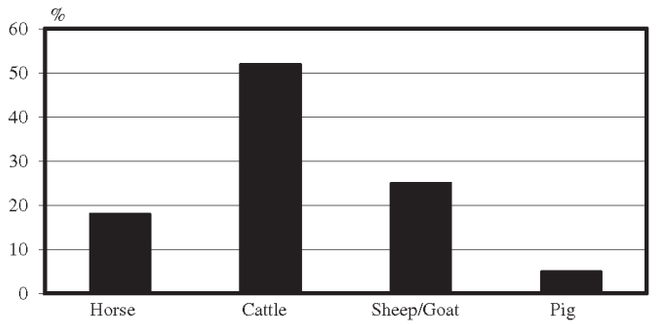
Bone preservation across the site is highly variable with many of the Anglo-Saxon bones poorly preserved while those from the Romano-British deposits are generally in much better condition. The Romano-British remains are primarily derived from the infills of ditches. The Anglo-Saxon material was recovered from SFBs, ditches, midden deposits, pits, post-holes and ovens. Since the sample sizes for the various periods are relatively small they have been grouped together as Romano-British (Phases 3–4) and Anglo-Saxon (Phases 5–6) for comparative purposes.

Methods
Most of the animal bones from Brandon Road were hand-collected. The few bones retrieved from the sample residues provide little further information on the faunal assemblage.

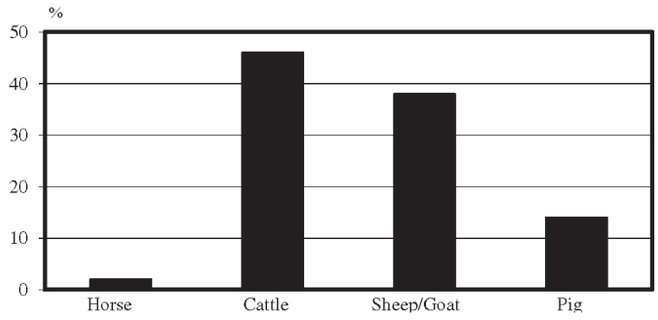
Mammal bones were recorded on an Access database following a modified version of the method described in Davis (1992) and used by Albarella and Davis (1994). In brief, all teeth (lower and upper) and a restricted suite of parts of the skeleton was recorded and used in counts. These are: horncores with a complete transverse section, skull (zygomaticus), atlas, axis, scapula (glenoid articulation), distal humerus, distal radius, proximal ulna, radial carpal, carpal 2+3, distal metacarpal, pelvis (ischial part of acetabulum), distal femur, distal tibia, calcaneum (sustenaculum), astragalus (lateral side), centrotarsale,

Taxon	*Phase 4: Late Roman (4th to early 5th c.)*	*Phase 5: Early Saxon*	*Total*
Cattle (*Bos* f. domestic)	-	1	1
Sheep/Goat (*Ovis/Capra* f. domestic)	1	1	2
cf. Rabbit (*Oryctolagus cuniculus*)	-	1	1
Pike (*Esox luscius*)	-	1	1
Total	**1**	**4**	**5**

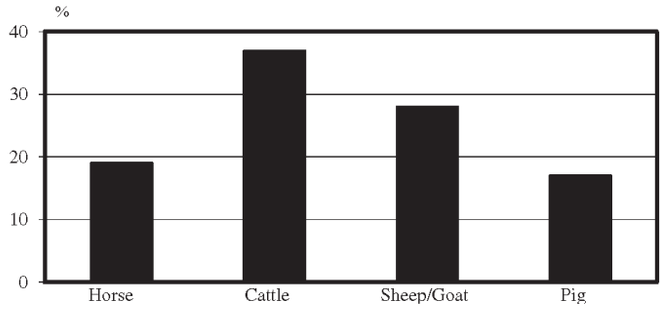
Table 27 Number of mammal and fish bones (NISP) in the sieved assemblage



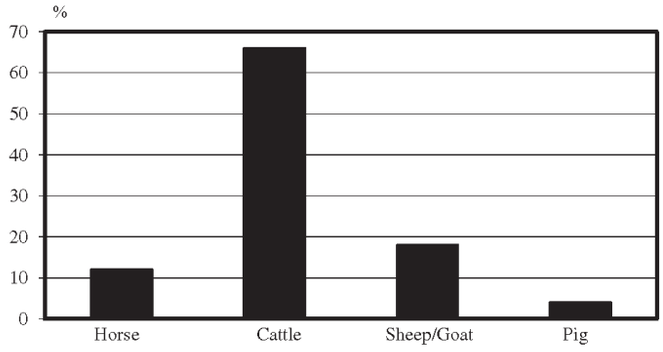
Brandon Road, Thetford
Total NISP = 180



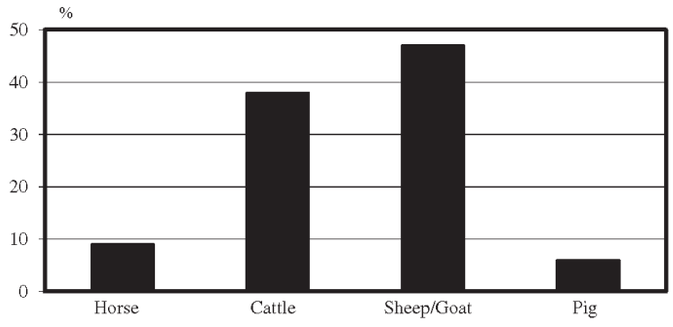
St Nicholas' Street, Thetford
Total NISP = 237



Norwich Road, Kilverstone
Total NISP = 695



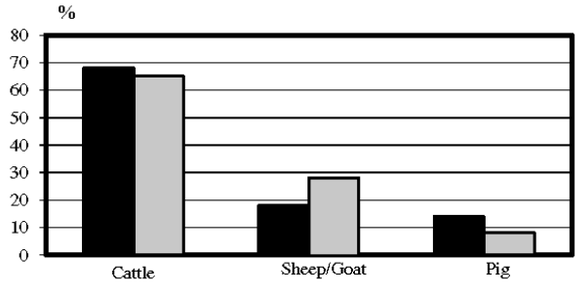
Melford Meadows, Brettenham
Total NISP =116



Haddon, Cambridgeshire
Total NISP = 1494

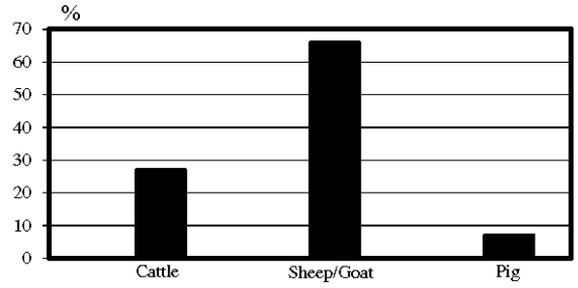
St Nicholas' Street, Thetford based on MacDonald (1999); Norwich Road, Kilverstone based on Clarke (2002); Melford Meadows, Brettenham based on Powell and Clarke (2002); Haddon, Cambridgeshire based on Baxter (2003)

Figure 38 Frequency of the main domestic mammals at Brandon Road, Thetford and other Romano-British sites in Norfolk and Cambridgeshire

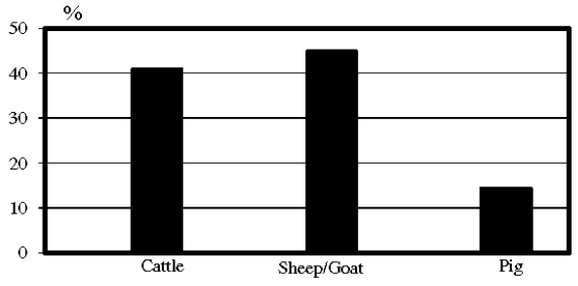


Brandon Road, Thetford
Total NISP = 451

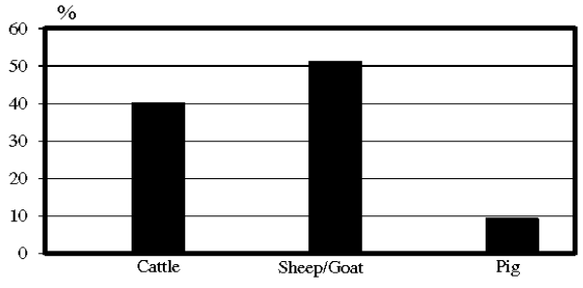
C5th-7th AD
C8th-9th AD



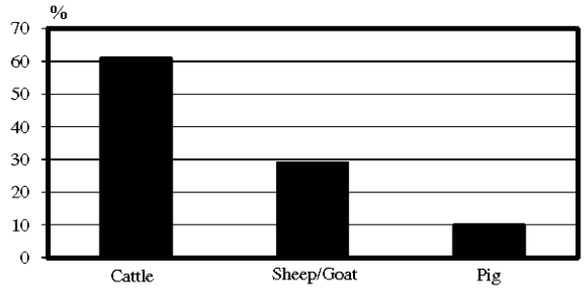
Cardinal Distribution Park, Godmanchester
5th-7th AD
Total NISP = 619



West Stow, Suffolk
5th-7th AD
Total NISP = 63603



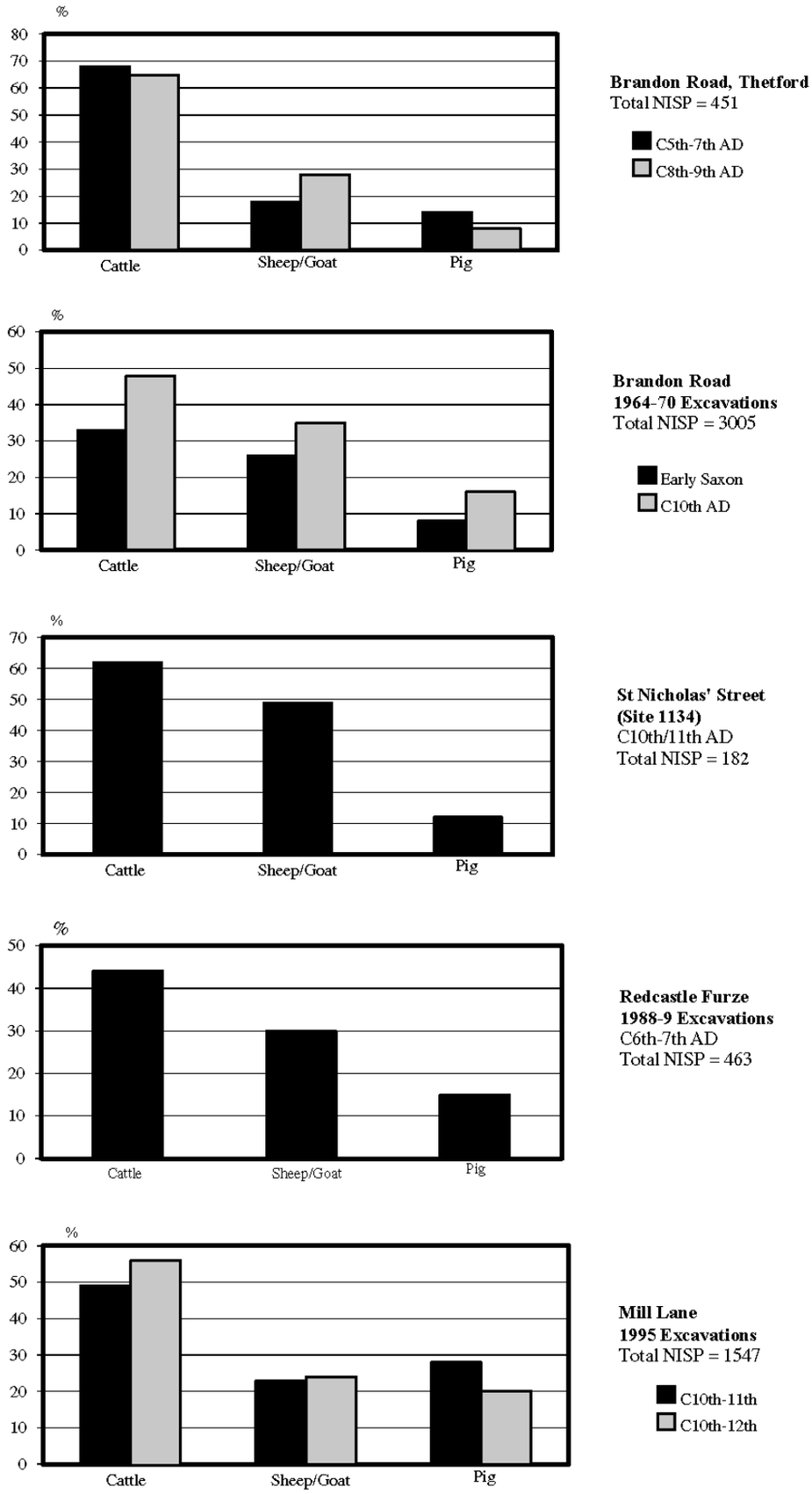
Stonea Grange, Cambridgeshire
5th-7th AD
Total NISP = 807



Melford Meadows, Brettenham
Early Anglo-Saxon
Total NISP = 479

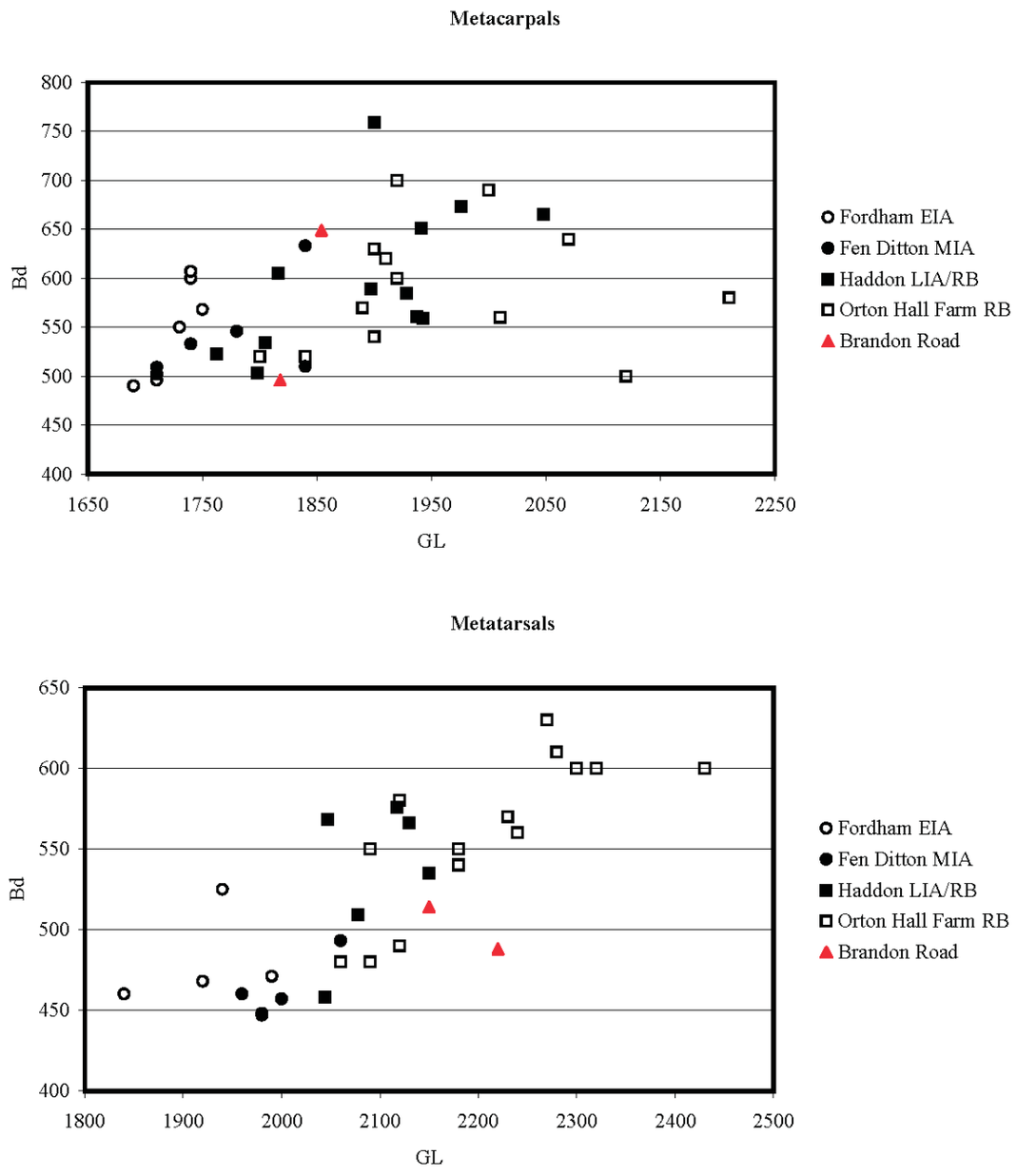
Godmanchester based on Baxter (1999b); West Stow based on Crabtree (1989); Stonea based on Stallibrass (1966); Melford Meadows, Brettenham based on Powell and Clarke (2002)

Figure 39 Frequency of the main domestic mammals at Brandon Road, Thetford and Early Anglo-Saxon rural sites in England



Brandon Road 1964-1970 Excavations based on Jones (1993); St Nicholas' Street based on MacDonald (1999); Redcastle Furze based on Wilson (1995); Mill Lane based on Albarella (1999, 2004)

Figure 40 Frequency of the main domestic mammals at Brandon Road, and other Anglo-Saxon sites in Thetford



Measurements in tenths of mm
Landwade Road, Fordham based on Baxter (1998b); Greenhouse Farm, Fen Ditton based on Baxter (1999a); Haddon based on Baxter (2003); Orton Hall Farm based on King (1996)

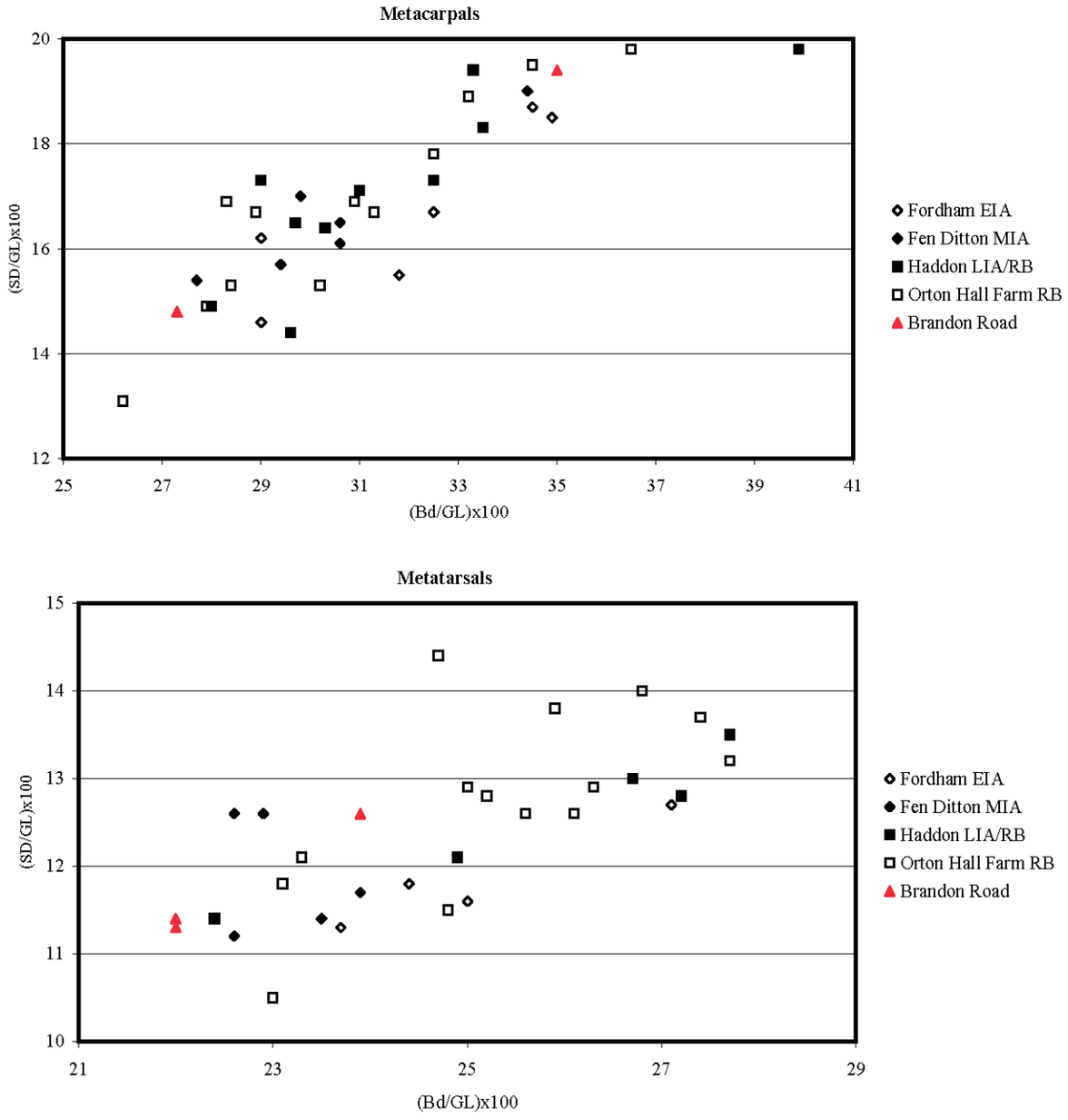
Figure 41 Size of Romano-British cattle metapodials at Brandon Road, Thetford (Phases 3–4 combined) compared with a selection of Iron Age and Romano-British sites in Cambridgeshire

distal metatarsal, proximal parts of the 1st, 2nd and 3rd phalanges. At least 50% of a given part had to be present for it to be counted.

The presence of large (cattle/horse size) and medium (sheep/pig size) vertebrae and ribs was recorded for each context, although these were not counted. 'Non- countable' elements of particular interest were recorded but not included in the counts. For birds the following were always recorded when present: scapula (articular end), proximal coracoid, distal humerus, proximal ulna, proximal carpo-metacarpus, distal femur, distal tibiotarsus, and distal tarsometatarsus. The ilium and main long bones were recorded and used in counts for anuran amphibians, with generic identification based on the morphology of the ilium following Gasc (1966).

Separation of sheep and goat was attempted on the following elements: horncores, dP, dP, distal humerus, distal metapodials (both fused and unfused), distal tibia, astragalus, and calcaneum using the criteria described by Boessneck (1969), Kratochvil (1969), Payne (1969 and 1985) and Schmid (1972). The shape of the enamel folds (Davis 1980; Eisenmann 1981) was used for identifying equid teeth to species. Equid postcrania were checked against criteria summarised by Baxter (1998a).

Wear stages were recorded for all Ps and dPs as well as for the lower molars of cattle, sheep/goat and pig, both isolated and in mandibles. Mandibular wear stages are



Landwade Road, Fordham based on Baxter (1998b); Greenhouse Farm, Fen Ditton based on Baxter (1999a); Haddon based on Baxter (2003); Orton Hall Farm based on King (1996)

Figure 42 Shape of Romano-British cattle metapodials at Brandon Road, Thetford (Phases 3–4 combined) compared with a selection of Iron Age and Romano-British sites in Cambridgeshire

listed in the archive. Tooth wear stages follow Grant (1982). Measurements are listed in the archive. These in general follow von den Driesch (1976). All pig measurements follow Payne and Bull (1988). Humerus HTC and BT and tibia Bd measurements were taken for all species as suggested by Payne and Bull (1988) for pigs. SD on dog long bones is measured as suggested by Harcourt (1974) and represents the midshaft diameter (msd).

Frequency of species
(Figs 38–40)
Cattle are the most frequent taxon by number of identified fragments (NISP) in the Romano-British period, followed by sheep/goat, horse and pig. Other species present at low frequency are red and roe deer, dog or fox, rabbit, mole and goose (Table 26). The deer are represented by antler fragments and the rabbits, which occur in deposits of all periods at the site, are certainly intrusive. The relative frequency of the main domestic species during the Roman period is similar to other sites in the region and particularly Melford Meadows, Brettenham (Fig. 38).

When compared with a selection of early Anglo-Saxon rural sites, Brandon Road is different from the majority in both the Early and Middle Saxon periods (Fig. 39).

At Brandon Road cattle are much more frequent than sheep/goat in both periods. The overall distribution is closest to Melford Meadows although there is an even

Taxon	*Mandibular wear stage*												
	A		**B**		**C**		**D**		**E**		**F**		**Total**
	n	%	n	%	n	%	n	%	n	%	n	%	n
Sheep/Goat	-	0	1	7	2	13	3	20	9	60	-	0	15

	Mandibular wear stage										
	Juvenile		**Immature**		**Subadult**		**Adult**		**Elderly**		**Total**
	n	%	n	%	n	%	n	%	n	%	n
Cattle	-	0	2	18	2	18	5	45	2	18	11
Pig	-	0	1	50	-	0	1	50	-	0	2

(following Crabtree 1989 and O'Connor 1988). Only mandibles with two or more teeth (with recordable wear stages) in the dP/P – M row or isolated worn M are considered

Table 28 Romano-British (Phases 3–4 combined). Mandibular wear stages

greater emphasis on cattle at Brandon Road. Compared to other Anglo-Saxon sites in Thetford (Fig. 40), Brandon Road most closely resembles Mill Lane in the relative frequency of cattle and sheep/goat although sheep/goat is less common in the early period (Phase 5) and pig is much less frequent in both periods.

Other species present include horse, which is more frequent than pig in Phase 6, red deer, dog, hare, rabbit (see above), chicken, goose and pike (Tables 26 and 27).

Period 1 (Phase 1): Prehistoric

The only certainly archaeological animal bone fragment identified from the prehistoric deposits is a juvenile pig humerus found in the prehistoric flintworking hollow. The rabbit bones and probably those of a toad are intrusive.

Period 2 (Phases 2–4): Romano-British

The total Roman assemblage is small with the largest component deriving from the 4th- to early 5th-century deposits of Phase 4. In all phases the animal bones primarily originate from the infills of ditches peripheral to the areas of human habitation and this has probably resulted in a bias against the bones of the smaller domestic species (Wilson 1996). Cattle are the most frequent taxon in all periods although sheep/goat bones and teeth are relatively common in Phase 4 where they comprise the next most frequent taxon (Table 26). There is insufficient material to demonstrate any changes in the domestic stock during the Roman period.

Cattle

(Figs 41–42)

A large shorthorned ox horncore was recovered from a Phase 4 ditch (2247). There are cut marks on the core base including a possible saw mark. Withers heights for the Roman cattle, calculated using the multiplication factors of Matolcsi (1970), range between 113cm to 121cm with a mean of 117cm. Comparison of the size of the Brandon Road metapodials with those of cattle from a selection of Iron Age and Romano-British sites in Cambridgeshire (Fig. 41) suggests no significant differences.

However, the shape indices of the two metatarsals from Phase 4 ditch 2247, which probably derive from the same individual, lie outside the Cambridgeshire sample (Fig. 42). The significance of this on the basis of two bones probably derived from the same animal is uncertain, but may possibly indicate genetic differences between the cattle populations.

Immature, subadult, adult and elderly beasts are represented by bones and teeth with most mandibles deriving from adult animals (Table 28). A partial calf skeleton was found in a Phase 4 layer (881) and gave a radiocarbon date of (Wk15957) 1781±39BP. This produced at 95.4% probability a calibrated date of AD 130–380. A perinatal radius was recovered from Phase 3 ditch 2310. A metatarsal from Phase 4 ditch 2247 has a broadened distal epiphysis, typical of draught cattle (Bartosiewicz *et al.* 1997). No lower third molars with missing or reduced third pillars or hypoconulids, a genetic anomaly frequent amongst Iron Age and Romano-British cattle populations, were seen amongst the Roman assemblage at Brandon Road.

Sheep/Goat

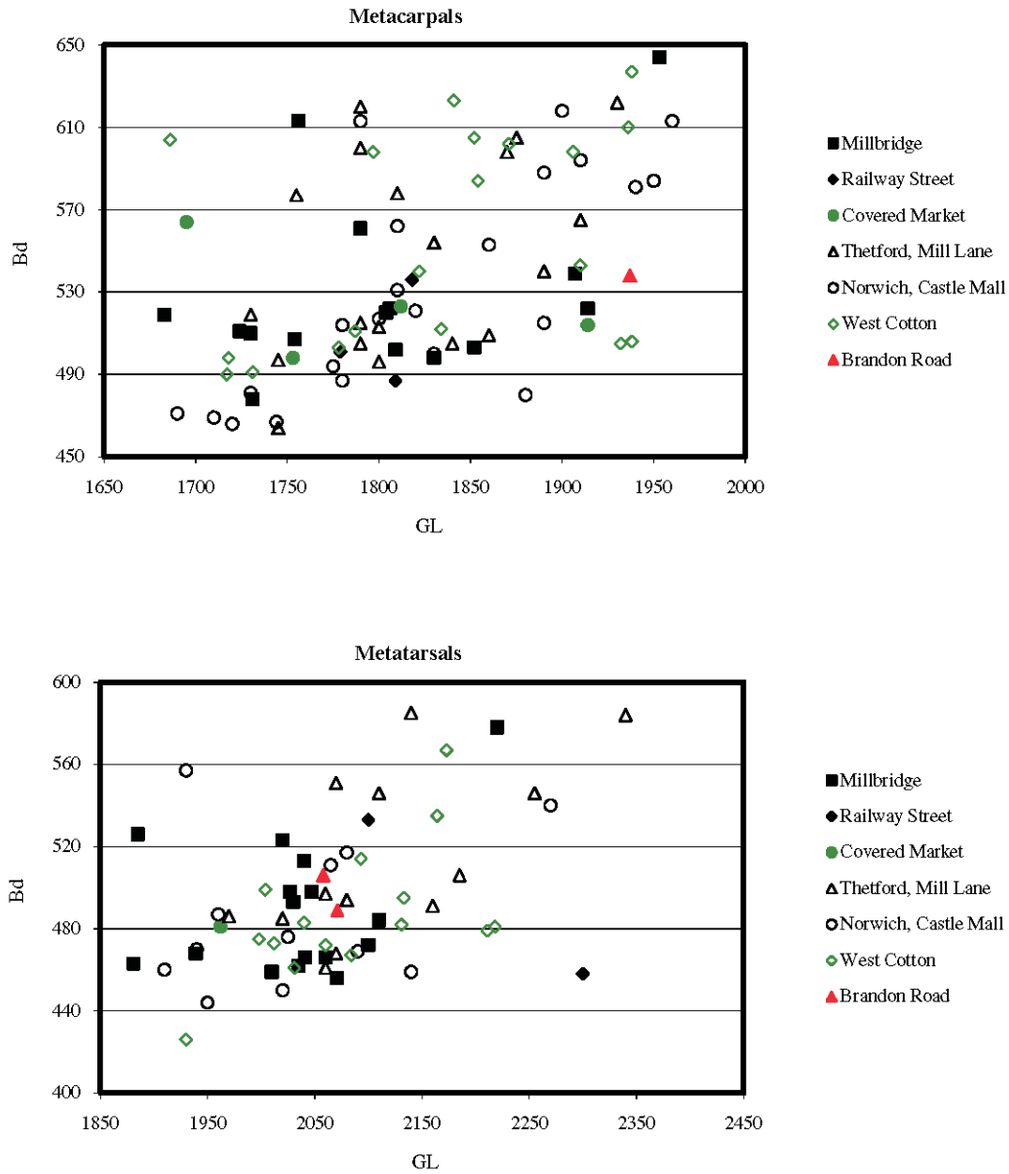
Sheep/goat account for 34% of the domestic food taxa in Phase 4. All of the specimens that could be identified to species are sheep. Sheep of all ages are represented in the Romano-British deposits but adult animals are in a majority with 60% of mandibles having M in full wear (Table 28). An astragalus from Phase 4 ditch 2247 came from an animal approximately 64cm high at the shoulder based on the multiplication factors of Teichert (1975).

Pig

Pig remains are relatively infrequent, accounting for 6% of the domestic food species in Phase 4. The only mandibles recovered came from immature and adult animals (Table 28).

Other domestic mammals

The other domestic mammals in the Roman deposits at Brandon Road are horse and dog. Horse remains are listed as 'Equid' in Table 26 as the presence of mules cannot be excluded. No remains diagnostic of donkey were, however, seen amongst the assemblage. Equid remains are frequent in the ditch infills of Phases 3 and 4, accounting for 35% of domestic species in Phase 3 and 13% in Phase 4. No suitable bones were sufficiently complete to calculate withers heights. Jaws and loose teeth came from animals aged between 2 to 9 years with a mean of approximately 6 years. The teeth were aged using the incisor wear diagrams of Barone (1980) and the comparative wear curves of Levine (1982). The only dog



Measurements in tenths of mm
Millbridge, Railway Street and Covered Market, Hertford based on Baxter (2001); Mill Lane, Thetford based on Albarella (1999; 2004); Castle Mall, Norwich based on Albarella *et al*. (1997); West Cotton based on Albarella and Davis (1994)

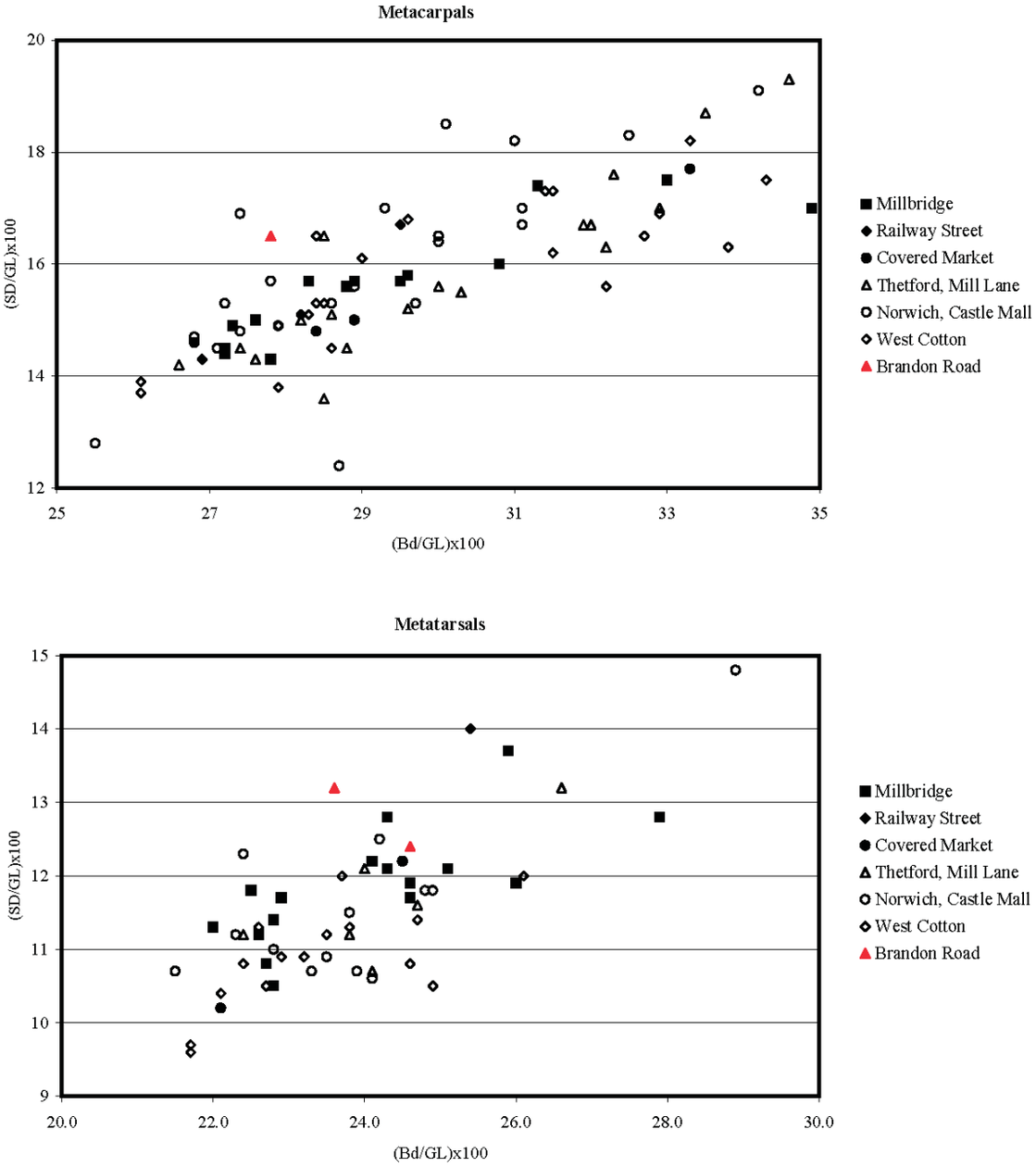
Figure 43 Size of Anglo-Saxon (Phases 5–6 combined) cattle metapodials at Brandon Road, Thetford compared with a selection of Anglo-Saxon and early medieval sites

bone found, a distal humerus from Phase 3 ditch 2242, is fox-sized.

Wild mammals
A cast antler from a roe deer was found in layer 2316 and the shed base of a red deer antler in midden layer 2245, both assigned to Phase 4. Neither shows any sign of working but the red deer antler base is burnt. Several rabbit skeletons were found in the Roman deposits and all are certainly intrusive. The same may be the case with the isolated mole tibiofibula found in layer 2316.

Birds
The only bird fragment found in the Romano-British features is a goose distal tibiofibula found in a Phase 4 pit (1471). This is of domestic or greylag size.

Period 3 (Phases 5–6): Anglo-Saxon
The relative frequencies by NISP of the main domestic mammals in the Early Saxon period (Phase 5) are cattle 64%, sheep/goat 17%, pig 13% and horse 6%. For the Middle Saxon period (Phase 6) cattle comprise 58%, sheep/goat 25%, pig 7% and horse 11%. While some of these differences are probably related to differences in the types of feature from which the remains were recovered, primarily structures (SFBs) in Phase 5 compared with ditches and middens in Phase 6, there would appear to be a



Millbridge, Railway Street and Covered Market, Hertford based on Baxter (2001); Mill Lane, Thetford based on Albarella (1999; 2004); Castle Mall, Norwich based on Albarella *et al*. (1997); West Cotton based on Albarella and Davis (1994)

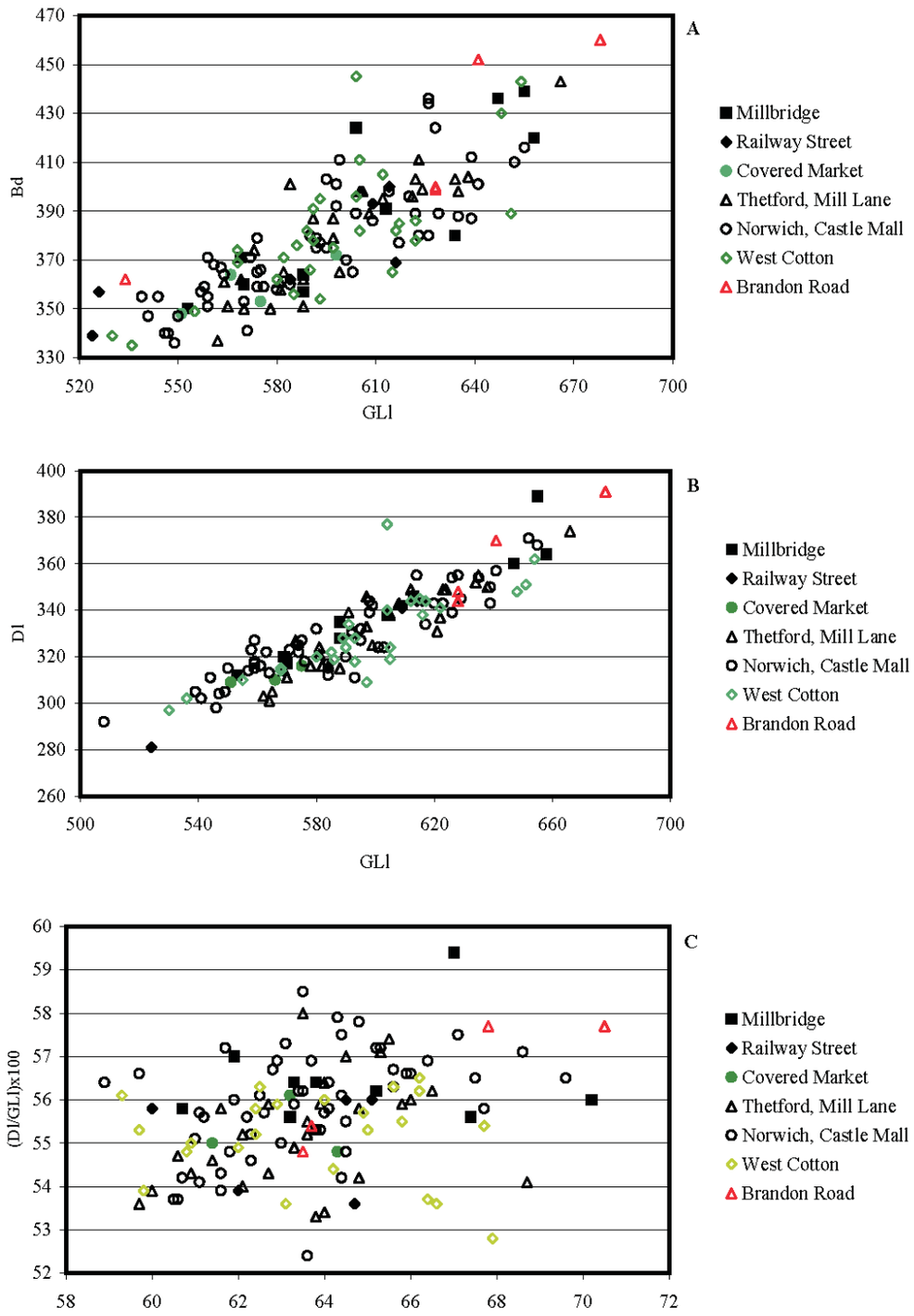
Figure 44 Shape indices of Anglo-Saxon (Phases 5–6 combined) cattle metapodials at Brandon Road, Thetford compared with a selection of Anglo-Saxon and early medieval sites

Taxon	*Mandibular wear stage*												
	A		**B**		**C**		**D**		**E**		**F**		**Total**
	n	%	n	%	n	%	n	%	n	%	n	%	n
Sheep/Goat	-	0	-	0	1	4	10	40	14	56	-	0	25

	Mandibular wear stage										
	Juvenile		**Immature**		**Subadult**		**Adult**		**Elderly**		**Total**
	n	%	n	%	n	%	n	%	n	%	n
Cattle	-	0	1	8	-	0	7	58	4	33	12
Pig	-	0	1	14	1	14	5	71	-	0	7

(following Crabtree 1989 and O'Connor 1988). Only mandibles with two or more teeth (with recordable wear stages) in the dP/P – M row or isolated worn M are considered

Table 29 Anglo-Saxon (Phases 5–6 combined). Mandibular wear stages

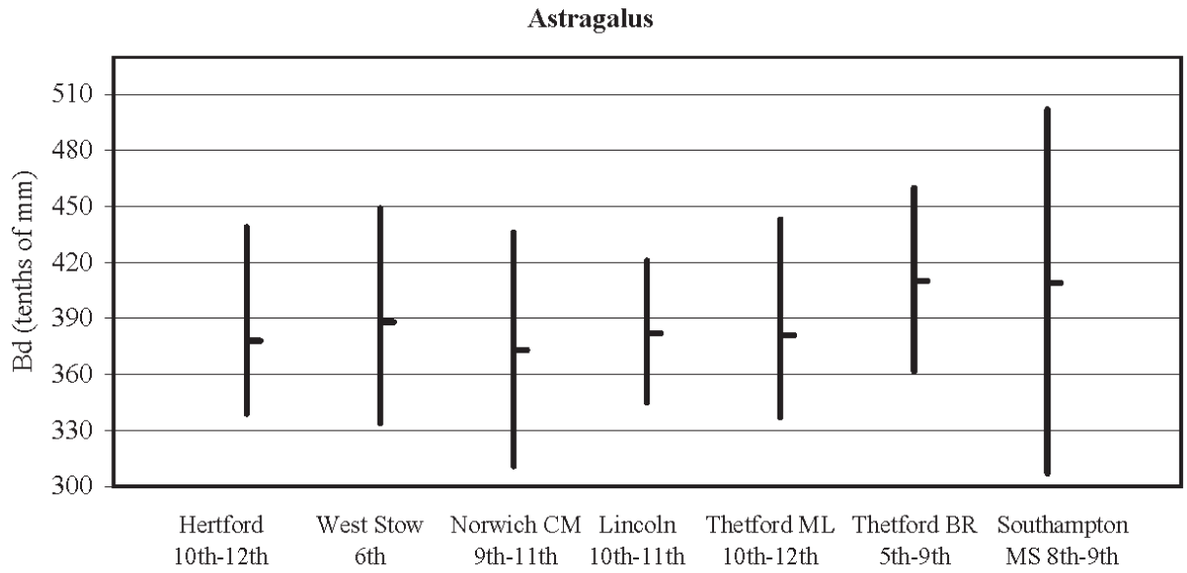


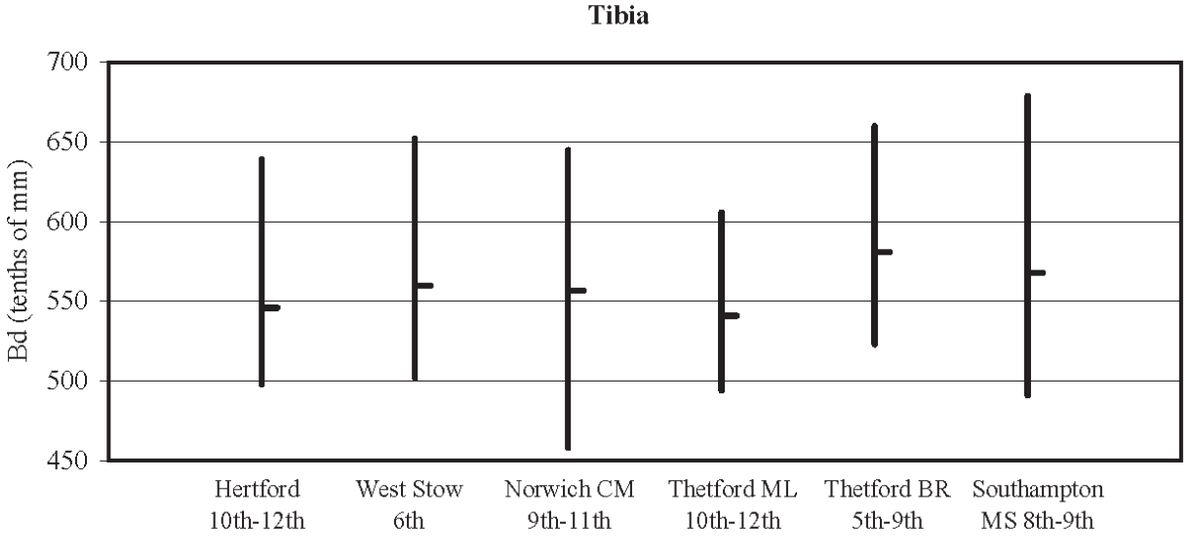
Measurements in tenths of mm
Millbridge, Railway Street and Covered Market, Hertford based on Baxter (2001); Mill Lane, Thetford based on Albarella (1999; 2004); Castle Mall, Norwich based on Albarella *et al*. (1997); West Cotton based on Albarella and Davis (1994)

Figure 45 Size (A and B) and shape indices (C) of Anglo-Saxon cattle astragali at Brandon Road, Thetford (Phases 5–6) compared with a selection of Anglo-Saxon and early medieval sites

relative increase in the importance of sheep/goat and decline in the numbers of pigs between the Early and Middle Saxon periods at the site.

Cattle
(Figs 43–48)
Cattle are the most frequent taxon in the Anglo-Saxon assemblage. Few horncores were recovered. A horncore from SFB 2206 (Phase 5) came from a shorthorned beast. Withers heights range between 109cm and 124cm with a mean of 117cm. There is little difference in the size (Fig. 43) or shape (Fig. 44) of the few complete metapodials recovered at Brandon Road and a selection of Anglo-Saxon and early medieval sites. However, cattle astragali at Brandon Road are on average larger than those from most of the Anglo-Saxon and early medieval sites with





Hertford Central = Millbridge, Railway Street and Covered Market combined. CM=Castle Mall; ML=Mill Lane; BR=Brandon Road; MS=Melbourne Street. Sample sizes are as follows: Astragalus 26, 61, 32, 19, 35, 6, 172; Tibia 27, 37, 34, 21, 8, 111

Figure 46 Range and mean of Anglo-Saxon (Phases 5–6 combined) cattle measurements at Brandon Road, Thetford compared with a selection of Anglo-Saxon and early medieval sites

which they are compared in Figs. 45 and 46 and have a mean breath similar to 8th–9th-century *Hamwic* (Melbourne Street, Southampton). The mean distal breadth of the tibia is significantly greater than all the other sites, including *Hamwic*.

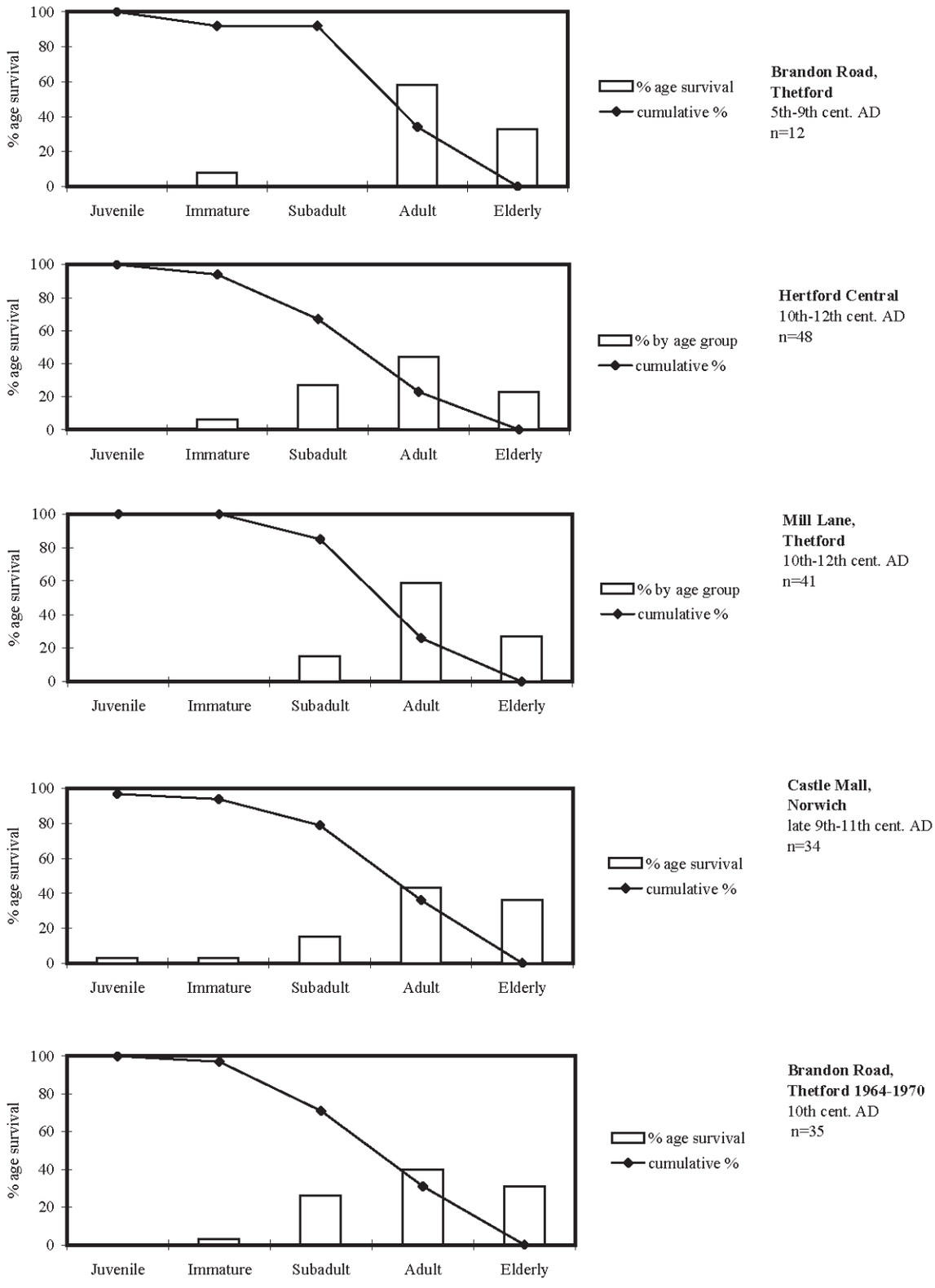
Of the cattle mandibles recovered 91% are derived from adult or elderly beasts. This pattern is essentially similar to that found in late Anglo-Saxon and early medieval urban sites (Fig. 47). Most of the available epiphyseal ends of cattle bones found at Brandon Road are fused and support the evidence provided by the mandibles (Table 29 and Fig. 48).

Isolated perinatal cattle bones were found in the fills of Phase 5 SFBs 2218 and 2229. All of the cattle pelves recovered are female in their morphology. No pathologies were seen affecting the cattle remains but an M from Phase 6 Ditch (2203) has a V-shaped wear pattern associated with absence of the M hypoconulid. No Ms with missing or reduced hypoconulids were seen in the Anglo-Saxon assemblage. All parts of the cattle skeleton are represented along with cattle-sized vertebra and rib fragments and the assemblage is generally composed of primary and secondary butchery waste.

Sheep/Goat

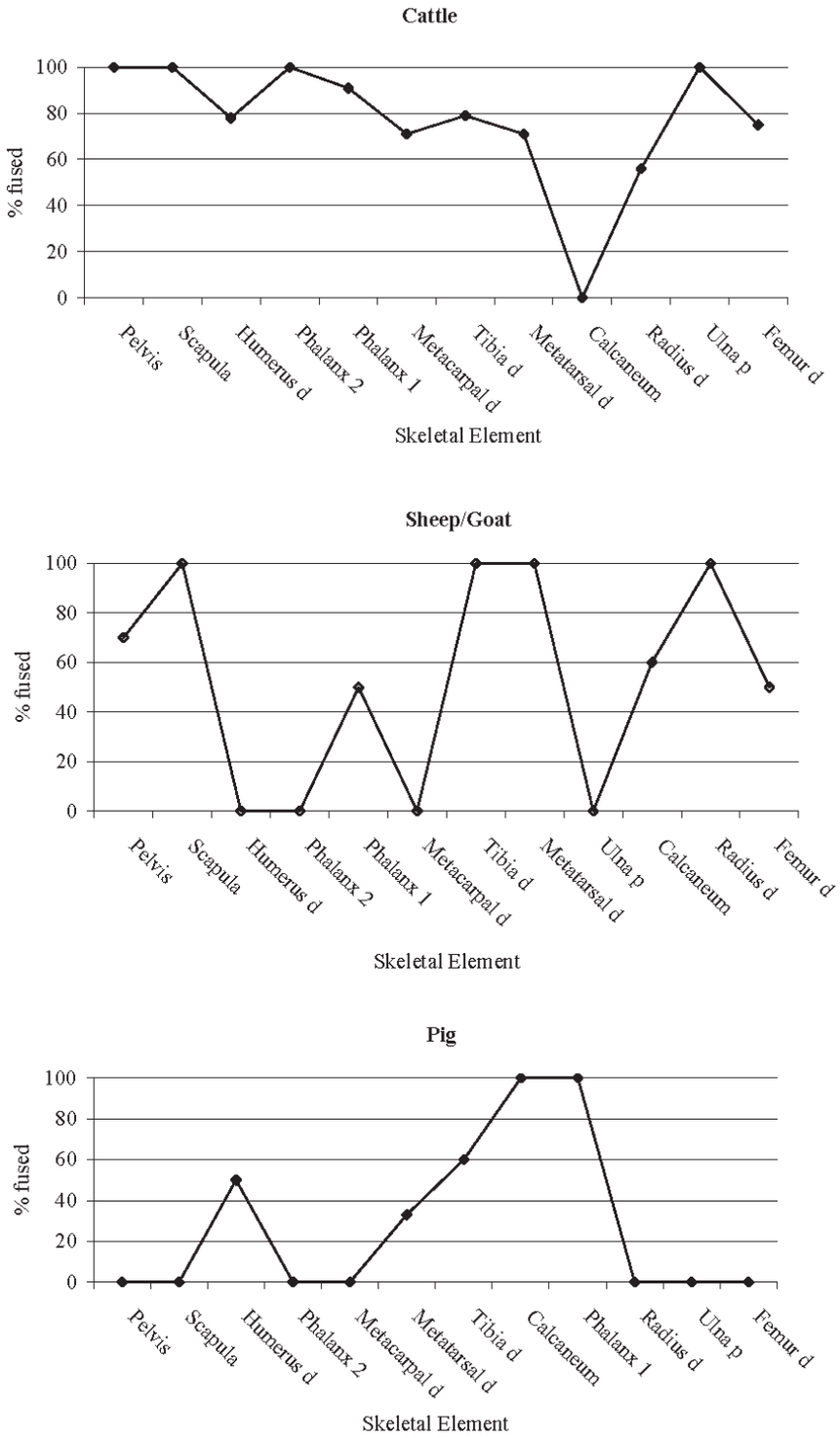
(Fig. 49)

Sheep/goat are the second most frequent taxon during the Anglo-Saxon period and show an increase relative to the other domestic species in the Middle Saxon period (Phase 6). In all cases where the species could be identified only sheep were present. A few ewe horncores were recovered and all of the pelves found also belong to females. The sheep mandibles found at Brandon Road primarily derive from older sheep (mandible wear stages D and E) (Table



Age stages as defined by O'Connor (1988)
Hertford Central based on Baxter (2001); Mill Lane, Thetford based on Albarella (1999; 2004); Castle Mall, Norwich based on Albarella *et al*. (1997); Brandon Road, Thetford 1964–1970 based on Jones (1993)

Figure 47 Distribution of cattle mandibles at Brandon Road and a selection of Late Saxon-early medieval sites in England by age stage

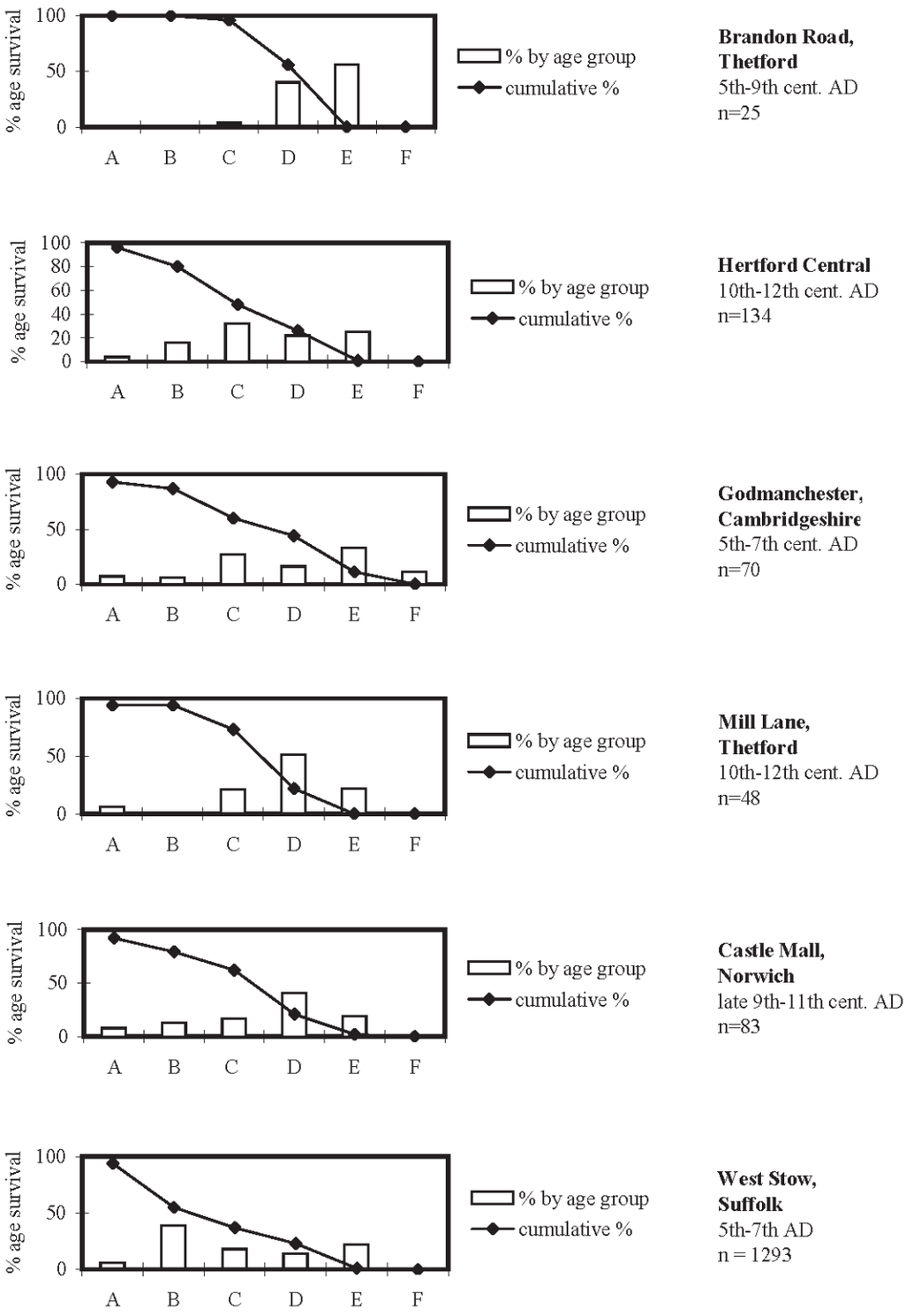


Fusion sequence based on Silver (1969)
When total number of epiphyses recovered is less than 10 this will appear as 0

Figure 48 Brandon Road, Thetford, Phases 5–6 combined. Percentage of fused/fusing epiphyses for the main domestic mammals

29). This pattern of slaughter is rather different from the other early to late Anglo-Saxon sites shown in Fig. 49 and suggests that the younger animals may have been sent to market elsewhere and/or wool production was relatively more important at Brandon Road.

Most of the earlier fusing epiphyses are fused also suggesting that older animals are in a majority (Table 30 and Fig. 48). Younger animals include a mandible from an unweaned lamb found in Phase 5 SFB 2229. Sheep withers heights at Brandon Road range between 53cm to 68cm with a mean of 61cm. A ewe frontal found in Phase 5



Age stages as defined by Crabtree (1989)
Approximate ages: A = 0-6 months; B = 6-12 months; C = 1-2 years; D = 2-4 years; E = 4-8 years; F = 8-10 years
Hertford Central based on Baxter (2001); Godmanchester based on Baxter (1999b); Mill Lane, Thetford based on Albarella (1999; 2004); Castle Mall, Norwich based on Albarella *et al*. (1997); West Stow based on Crabtree (1989)

Figure 49 Distribution of sheep/goat mandibles at Brandon Road, Thetford, Phases 5–6 combined, and other Anglo-Saxon and early medieval sites in England

SFB (2206) has 'thumbprints' a condition linked to malnutrition generally brought on by milking stress in older sheep (Albarella 1995). All parts of the sheep skeleton are represented along with sheep-sized vertebra and rib fragments and the assemblage is generally composed of primary and secondary butchery waste.

	Cattle			Sheep/Goat			Pig		
Element	*n*	*nf*	*%*	*n*	*nf*	*%*	*n*	*nf*	*%*
Scapula	4	4		3	3		1	-	
Humerus dist	9	7		1			2	1	
Radius dist	9	5		1	1		-	-	
Ulna prox	1	1		-	-		2		
Metacarpal dist	7	5		-	-		-	-	
Pelvis acetabulum	3	3		2	2		-	-	
Femur dist	4	3		2	1		1		
Tibia dist	14	11	79	5	5		5	3	
Calcaneum	3	-		5	3		1	1	
Metatarsal dist	14	10	71	2	2		3	1	
Phalanx 1	23	21	91	2	1		1	1	
Phalanx 2	7	7		-	-		-	-	

Fused and fusing epiphyses are amalgamated. Only unfused diaphyses, not epiphyses, are counted.
n = total number of fused/fusing epiphyses and unfused diaphyses; n = total number of fused/fusing epiphyses; % = percentage of fused/fusing epiphyses out of the total number of fused/fusing epiphyses and unfused diaphyses.
Percentages for total number of epiphyses smaller than 10 have been omitted

Table 30 Anglo-Saxon (Phases 5–6 combined). Number and percentage of fused epiphyses for the main domestic mammals

Pig
Pig remains are much more frequent in Phase 5, where they account for 14% of domestic food species than Phase 6 where they account for 8%. Pig numbers at Brandon Road are much less than the later site of Mill Lane (Fig. 40). Both males and females are represented in the assemblage and pigs were probably kept in close proximity to the site, although no perinatal remains were recovered. Immature and subadult animals are represented by mandibles but 71% have M in at least the early stages of wear (Table 29).

Other domestic mammals
The other domestic mammals in the Anglo-Saxon deposits at Brandon Road are horse and dog. The remains of horses account for 6% of domestic species in Phase 5 and 11% in Phase 6. Teeth from Phase 5 came from animals aged between 7 and 13 years and from Phase 6, 2 to 10 years with a mean of 6 years. In Phase 6 horse remains from midden 2315 include a mandible and several vertebrae. A metatarsal found in Phase 6 enclosure ditch 2203 came from an animal around 14 hands high at the shoulder based on the multiplication factors of Kiesewalter (1888). The remains of medium-sized dogs include a maxilla found in Phase 5 SFB 2206 and a partial skeleton recovered from Phase 5 (2217). This animal stood between 36cm and 40cm high at the shoulder.

Domestic birds
Scarce bones of chicken occurred in the deposits of both Phase 5 and 6 and goose in Phase 5. None of the fragments present included countable elements.

Wild mammals
Wild mammal remains present in the Anglo-Saxon features include red deer, hare and rabbit. The rabbits include several skeletons and are intrusive. The deer fragments consist of an antler tine found in Phase 6 midden 2315, a cast base, an almost complete antler with a tine modified to form a stamp from midden 2315 (Riddler, Ch. 5.XIV) and a centrotarsale found in the same context. A proximal hare radius was found in midden 2315.

Fish
The vertebra of a pike was found in the backfill of Phase 5 oven 757. This came from a fish of approximately 50cm in length (S. Hamilton-Dyer, pers. comm.).

Discussion
The animal bones found in the Romano-British deposits at Brandon Road provide evidence for a mixed farming economy similar to others found elsewhere throughout the region. The herding of stock, primarily cattle, with horses and dogs is a common feature with all of these types of settlement (Baxter 2003). There is circumstantial evidence for craft-working during the Romano-British period involving the removal of horn from cattle horncores and the collection of cast deer antlers.

The remains of cattle are again the most frequent domestic species in both the Early and Middle Saxon phases. These cattle appear, on average, to have been more heavily built than the cattle present in Thetford during the Late Saxon and early medieval periods. The sheep at the Brandon Road site were generally slaughtered later than those recovered from the 10th- to 12th-century burh and younger animals may have been sent to market elsewhere. It is also possible that there was greater emphasis on wool production at this site. Pigs are less common than at later periods in Thetford and it may be that pig husbandry was less organised than in later periods. There is some, slight, evidence for hunting but more substantial evidence for the collection of cast deer antlers and their utilisation in craft-working. The only fish remains recovered came from a freshwater species. As in the preceding Romano-British period, horses and dogs were used to herd stock.

IV. Charred Plant Macrofossils and Other Remains

by Val Fryer

Introduction

An initial assessment of sixty-eight plant macrofossil samples taken from a wide range of excavated features showed that the assemblages were characterised by a low density of material, with only small quantities of grain, chaff and weed seeds being recovered. There was no evidence that large scale cereal processing had occurred on or near the site during the entire period of its occupation, and it appeared most likely that both the Roman and Saxon inhabitants were practising a largely pastoral economy, and were primarily cereal consumers rather than producers. This evidence was generally supported by the archaeology; the modest Roman farmstead included a number of animal pens and related enclosures, and examination of the Saxon settlement produced considerable evidence for a craft-based economy.

Although the potential of the plant macrofossil assemblages was somewhat limited, it was decided to undertake limited analysis of eight samples which illustrated certain aspects of activities based on or near the site.

Methods

During the excavations ninety-two bulk samples were taken. The samples (or sub-samples thereof) were bulk floated by CAM ARC, and the flots were collected in a 500 micron mesh sieve. Although the wet retents from well 1810 were stored in water prior to sorting to prevent deterioration of the plant remains, the remaining flots were air-dried. Sixty-eight plant macrofossil samples were sent for initial assessment and all these samples were reported on in the assessment report (Fryer, section 8.3 in Atkins and Connor 2003).

All material was sorted under a binocular microscope at magnifications up to x16, and the plant macrofossils and other remains noted are listed on Table 31. Nomenclature within the table follows Stace (1997), and identifications were made by comparison with modern reference material. With the exception of the waterlogged material within a sample from a well (Sample 84), all plant remains were charred.

Within the table, plant remains were categorised as follows: cereals and other food plants, dry land herbs, wetland plants, tree/shrub macrofossils and other plant macrofossils. The occurrence of other material types was also noted. Counts of cereal grains include only whole grains or embryo ends. Modern contaminants, including fibrous roots, seeds and arthropods, were present throughout.

Seeds were moderately abundant within the waterlogged assemblage from Sample 84, but no attempt was made to quantify the assemblage, as this would have contributed little to the overall interpretation of the context and its flora. Therefore, the approximate density of material within this assemblage is expressed in Table 31 as follows: x = 1–10 specimens, xx = 10–100 specimens and xxx = 100+ specimens.

Sample composition

Although cereal remains are absent from Sample 84, grains and chaff are present at varying densities in all other samples. Seeds of common weeds are present throughout, and wetland plant and tree/shrub macrofossils are also recorded. Preservation of the charred material is generally poor to moderate, with a high density of both the grains and seeds being heavily puffed and distorted, possibly as a result of combustion at very high temperatures. Indeed, some grains within Sample 105 (ditch 2298, Phase 4) have been subjected to such high temperatures that partial vitrification has occurred. This intense burning may be partly responsible for the low density of chaff and weed seeds recovered from the samples, as neither will withstand such fierce combustion. However, although the original composition of the assemblages may have been slightly altered, it is firmly believed that their overall integrity has remained intact, and that the material recovered does reflect the presence/absence of activities which may have occurred on the site during its lengthy occupation.

Cereals

Oats (*Avena* sp.), barley (*Hordeum* sp.), rye (*Secale cereale*) and wheat (*Triticum* sp.) are all represented within the assemblages, although wheat appears to have been the staple crop during both the Roman and Saxon periods. Spelt was predominant during the Roman period, with the typical elongated 'drop-form' grains forming the main component of the cereal assemblage within Sample 40 (pit 1134, Phase 4). Double keeled spelt glume bases are also present within two of the Roman assemblages (Samples 40 and 88), although the largest quantity comes from a Middle Saxon midden (2315; Sample 47). The large scale production of spelt wheat had ceased in the eastern region by the Middle Saxon period and, unless this is an unusually late occurrence of the crop, it is assumed that this material has been re-deposited from underlying Roman contexts. With the exception of Sample 47, little wheat chaff survives from the Saxon deposits, but the recorded grains, particularly those from SFB 2206 (Sample 3), are noticeably of a rounded form more typical of hexaploid wheat types.

Barley is also present in both Roman and Saxon assemblages, but at a lower density than wheat. As a result of the generally poor condition of the material, only one grain, from Sample 7 (pit 278, Phase 6), is clearly identifiable as a lateral asymmetrical grain of six-row barley (*H. vulgare*). A single ground or milled grain, with a diagnostic rounded lateral broken surface, is also present within Sample 7.

Evidence for food plants other than cereals is exceedingly rare, although six fragments of an indeterminate large pulse (pea/bean) are recorded from Sample 3.

Wild flora

Seeds of common ruderal weeds and colonising plants form the main components within the waterlogged assemblage from the basal fill of Roman well 1810 (Sample 84), although grassland herbs and wetland plants are also represented. Three wells of Roman date were recorded, and all were associated with enclosures, probably indicating that they were intended for the watering of livestock. The assemblage from Sample 84

Sample No.		*84*	*88*	*40*	*105*	*3*	*46*	*7*	*47*
Feature No.		*1810*	*1840*	*1134*	*2298*	*2206*	*1280*	*278*	*2315*
Feature type		*Well*	*Pit*	*Pit*	*Ditch*	*SFB*	*Well*	*Pit*	*Midden*
Phase		*2*	*2*	*4*	*4*	*5*	*5*	*6*	*6*
Cereals and other food plants	**Common name**								
Avena sp. (grains)	Oats					4			2cf
(awn frags.)									4fg
Large Fabaceae indet.	Large pulses					6fg			
Hordeum sp. (grains)	Barley		2cf	58	6		25	20	26
(?milled/ground grain)								1	
(rachis nodes)				2cf	3				10
H. vulgare L. (lateral grains)	Six-row barley							1	
Hordeum/Secale cereale type (rachis nodes)	Barley/rye type				5			1	2
Secale cereale L. (rachis nodes)	Rye				11				
Triticum sp. (grains)	Wheat		13	214	26	402	7	3cf	78
(glume bases)			4	10					46
(spikelet bases)			2		1		1		8
(rachis internodes)					1				6
T. spelta L. (glume bases)	Spelt wheat		6	14					124
Cereal indet. (grains)			9	20	37	34	18	23	54
(detached embryos)				10		10		5	
(rachis node frag.)							1		
(rachis internode frag.)									1
(silica skeletons)								x	
Dry land herbs									
Agrostemma githago L.	Corn cockle				6				
Aphanes arvensis L.	Parsley piert	xw							
Apiaceae indet.									x
Asteraceae indet.				1fg					
Atriplex sp.	Orache		3	2			13	1cf	
Brassicaceae indet.								25	
Bromus sp	Brome					50	3		3cf
Chenopodium album L.	Fat hen	xw			2		508		
Chenopodiaceae indet.			4		1			3	2
Cirsium sp.	Thistle	xw							
Conium maculatum L.	Hemlock	xw							
Fallopia convolvulus (L.) A.Love	Black bindweed		26+19tf	10+6cf			5+1cf	1	40+8tf
Galium aparine L.	Goosegrass					6+6fg			
Lamium sp.	Deadnettle	xw							
Linum usitatissimum L.	Flax							86	
Lithospermum arvense L.	Corn gromwell								1cffg
Medicago/Trifolium/Lotus sp.	Medick/clover/trefoil		1cf	2				3cf	
Plantago lanceolata L.	Ribwort plantain		1				1		
P. major L.	Greater plantain	xcfw							
Small Poaceae indet.	Grasses	xw	4			2	1	5	
Polygonum aviculare L.	Knotgrass		5	4			6		4
Polygonaceae indet.					1			2	
Ranunculus acris/repens/bulbosus	Buttercup	xw							
Raphanus raphanistrum L. (siliquae)	Wild radish		2+3fg						1cffg
Reseda luteola L.	Weld							1cf	
Rumex sp.	Dock	xw	7+2cf	6		2		6	10
R. acetosella L.	Sheep's sorrel	xw	5						
Scleranthus annuus L.	Knawel		3	1					
Sherardia arvensis L.	Field madder		1				1		
Silene sp.	Campion		6	4	1		49	1cf+2fg	8
Spergula arvensis L.	Corn spurrey						1	1	

Sample No.		*84*	*88*	*40*	*105*	*3*	*46*	*7*	*47*
Feature No.		*1810*	*1840*	*1134*	*2298*	*2206*	*1280*	*278*	*2315*
Feature type		*Well*	*Pit*	*Pit*	*Ditch*	*SFB*	*Well*	*Pit*	*Midden*
Phase		*2*	*2*	*4*	*4*	*5*	*5*	*6*	*6*
Stellaria graminea L.	Stitchwort			8					
S. media (L.)Vill.	Chickweed	xw							
Thlaspi arvense L.	Field penny-cress		1				4		
Urtica dioica L.	Stinging nettle	xxw							
Vicia/Lathyrus sp.	Vetch/vetchling					12+8coty			
Viola sp.	Pansy						1cf		
Wetland plants									
Apium graveolens L.	Wild celery	xw							
Eleocharis sp.	Spike-rush			2			5	1+3fg	
Juncus sp.	Rush	xxw							
Montia fontana L.	Blinks	xw							
Tree/shrub macrofossils									
Corylus avellana L.	Hazel				2fg				4fg
Sambucus nigra L.	Elderberry	xxxw							
Other plant macrofossils									
Charcoal <2mm		x	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Charcoal >2mm			x	xx	xxx	xxx	xx	xx	x
Charcoal >5mm				x					
Charred root/rhizome/stem			xx	xx	x	x	x	xx	x
Waterlogged root/stem		xxx							
Pteridium aquilinum (L.) Kuhn (pinnule frag.)	Bracken								1
Ericaceae indet. (stem frags.)	Heather		x	xx	xx	x		x	xx
(florets)					1				
Indet.?capsule					1				
Indet.culm nodes							9		1
Indet.inflorescence frags.					3				
Indet.seeds			9	6		2	11	9	8
Indet.tubers/fruits			1				1	2	
Other materials									
Bone			x xxb	xb	x	xx xxb		x xb	xx xb
Burnt/fired clay				x	x	x		x	x
Burnt stone								x	
Eggshell									x
Fish bone				x					x
Siliceous globules				xx				x	
Mineralised/faecal concretions				x					
Small mammal/amphibian bone				x		x			
Vitreous material				x				x	
Waterlogged arthropods		x							
Sample volume (litres)		**2ss**							
Volume of flot (litres)		**0.4**	**<0.1**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**	**0.2**
% flot sorted		**12.5%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

x = 1 – 10 specimens xx = 10 – 100 specimens xxx = 100+ specimens
fg = fragment tf = testa fragment coty = cotyledon ss = sub-sample

Table 31 Plant macrofossils and other remains

appears to indicate that this particular well was situated within an area of damp and slightly unkempt grassland, and may have been at least partially shaded by elderberry (*Sambucus nigra*) scrub.

Common cereal crop contaminants are present within all the charred assemblages, although rarely at any great density. The large number of fat hen (*Chenopodium album*) seeds within Sample 46 is unusual, and may be indicative of a rodent's burnt stash, although it is known that fat hen was sometimes eaten as a vegetable. Within the general seed assemblage, it is of note that a number of the taxa recorded (for example brome (*Bromus* sp.), black bindweed (*Fallopia convolvulus*), wild radish (*Raphanus raphanistrum*) and vetch/vetchling (*Vicia/Lathyrus* sp.))

have seeds of a similar size to cereal grains. As these were too dense to be removed during the initial winnowing, they remained with the cereals, requiring hand picking at an advanced stage of processing. Similar weed assemblages are frequently seen as contaminants of batches of part-processed grain, and the current examples may support the hypothesis that the site relied heavily on grain imported to the site in a semi-cleaned state. Certainly, there is little in the weed assemblage to indicate that any large-scale processing was occurring on or near the site during either the Roman or Saxon periods.

Sample 7, from the fill of Middle Saxon pit 278, is of note as it contains a small assemblage of heavily burnt flax (*Linum usitatissimum*) seeds. Flax was commonly utilised as a food source during the Middle and Late Saxon periods, although the seeds required careful roasting due to their toxicity.

Other plant macrofossils

Charcoal fragments, possibly derived from fuel residues, are common or abundant in most of the assemblages. It would appear most likely that heather (Ericaceae) was also being utilised for fuel throughout both the Roman and Saxon periods as stem fragments are present in all but two samples. Heather would have been locally abundant, and was favoured as a fuel as it reached a high temperature very quickly and maintained its heat throughout combustion. Some bracken (*Pteridium aquilinum*) may also have been used as either fuel or bedding, although apart from a single pinnule fragment within Sample 47, this has not survived the high temperatures of combustion.

Other remains

Small bone fragments, including some burnt pieces, are recorded from all but two samples. Other remains are very rare, although a small number of compacted plates of faecal material (possibly animal dung) are present within Sample 40.

Conclusions

Despite the fact that the recovered assemblages are all small (mostly 0.2 litres in volume or less), and contain a very low density of diverse plant remains, it is possible to make a few concluding statements. During the Roman period, the site appears to have been dedicated almost entirely to animal husbandry, and was probably peripheral to any main centres of either domestic or agricultural activity. Areas of rough, damp pasture may have been locally common, with some shade or cover in the form of elderberry scrub. Somewhat unusually for a Roman rural site, cereal processing appears not to have occurred in the near vicinity, and it would appear most likely that the occupants of the site relied heavily on imported grain, which may have arrived in a semi-processed state, awaiting the final removal of the larger contaminant weeds by hand.

By the Early Saxon period, at least seven sunken-featured buildings had been constructed on the site, alongside a possible hall and an oven area. Although there is little in the plant macrofossil assemblages to indicate whether these buildings were primarily domestic dwellings or craft workshops, there is some evidence that limited culinary preparation may have occurred within SFB 2206. Evidence for primary cereal processing is again absent, although it is perhaps reasonable to assume that this activity may have occurred elsewhere within the 'village'.

Evidence from the Middle Saxon deposits is very minimal and ambiguous. Somewhat ironically, the assemblage from Sample 47 contains the only real evidence from the entire site for *in situ* cereal processing. However, the composition of the assemblage, with its predominance of spelt wheat is, to say the least, unusual for a Middle Saxon context, and it is perhaps more likely that the remains represent residual material from the underlying Roman features. Evidence for domestic activity is minimal, although the charred grains and flax seeds within Sample 7 may be the residue from a light meal.

Barn?	*Post-hole*	*Sample No*	*Mg.P per 100g. soil*
2265	1333	52	38
	1337	53	38
	1341	54	46
	1345	55	28
	1349	56	36
	1353	57	52
	1325	58	85
2263	1411	74	44
	1417	75	44
	1409	76	54
	1403	77	46
	1405	78	58
	1407	79	96

Table 32 Phosphate samples from possible Romano-British barns/byres (Phase 3, 3rd century)

V. Phosphate Analysis

by Paul Middleton

Sixteen samples were submitted for analysis, including three control samples derived from natural sands. The thirteen stratified archaeological samples were each derived from post-holes, associated with two possible Romano-British barns/byres.

Bulk samples were collected by the excavation team. All samples were air-dried, ground and passed through a 2mm-mesh sieve. Prepared and weighed samples were treated to assess total phosphate levels using a hydrochloric acid digestion method, adapted from Dick and Tabatabai (1977). The phosphate content of the processed samples was established colorimetrically by the standard molybdenum blue method, described by Murphy and Riley (1962) and quantified by reference to a standard curve. Samples were analysed twice and an average value assigned, where the two results were in close agreement (less than 5% difference). In no case was the difference greater than 5%.

Light sandy soils, where free drainage promotes rapid run-off, are not conducive to producing dependable phosphate results and the phosphate levels encountered in these samples are predictably low. It is clear that with two exceptions (Samples 58 and 79), the values are not significantly different from the background levels revealed in the control samples. Nevertheless, some interesting and potentially significant features do emerge from the analysis.

Samples 58 and 79 (post-holes 1325 and 1407) each derive from the lowest corner feature of different structures

(2265 and 2263 respectively) and in both cases represent a significant enhancement of local phosphate levels, which requires explanation. In the absence of additional, ground surface samples from the two structures, it is not possible to determine whether these enhanced results represent run-off from an internal feature within the structures. Their similar location, at the corner of the structure, however, does hint at some significance beyond an isolated peak. This is especially true of Sample 79, where adjacent samples indicate a fall-off in phosphate values away from the corner of the structure.

The presence of a phosphate-enhancing activity within the corner of the structure defined by post-holes (Samples 74–79) seems to be implied. The likely activity cannot be determined by phosphate analysis alone, although animal keeping would be consistent. It is not possible to interpret the available evidence further than this.

Chapter 5. Discussion and Conclusions

I. Prehistoric Activity

Thetford has long been noted as rich in finds attributable to the Palaeolithic period (Lawson 1978, fig. 5). Two isolated episodes of prehistoric activity were identified at Brandon Road itself — a flint knapping hollow and a second, smaller hollow containing a relatively dense accumulation of burnt flints. Further items of probable Upper Palaeolithic date came from the bypass in 1988 (Wymer, Ch. 3.I). A moderately-sized assemblage of unstratifed or redeposited flints from the excavation implies other, probably sparse and intermittent, activity of the Mesolithic and later Neolithic. Dating of the flintworking hollow is by no means precise, although it is unlikely to have occurred after the Early Neolithic period (Bishop, Ch. 3.I). The activity it represents was probably a single isolated instance of flint preparation. The site was located at *c*.12m OD. Similar activity found nearby includes a probable Mesolithic flintworking site at Redcastle Furze (Andrews 1995; HER 24822), 0.5km to the east and at 14m OD. Flint knapping here was on a similarly small scale and took place adjacent to the river (Wymer 1995, 98–99; table 1 (microfiche)). A small assemblage of Mesolithic or early Neolithic struck flint was found during excavation to the south of Brandon Road (HER 33812; Bates 2000, 16). More substantial evidence for Mesolithic flintworking and repeated visitation of the river margins comes from Two Mile Bottom a few kilometres downstream where a considerable quantity of flintwork has been found, concentrated in natural hollows close to the river (Jacobi 1984; Robbins 1998).

At Brandon Road, the burnt flint accumulation lay at *c*.9m OD, positioned at least 50m to the south of the present route of the Little Ouse. Dating is imprecise, since it is based on association with a small number of Late Mesolithic flint blades. The quantities involved suggest a specialised activity, such as communal cooking, or a sauna. Although numerous 'burnt mounds' have been identified across Britain, including an example only *c*.600m to the north-west on the north bank of the Little Ouse (HER 24846; Fig. 2), they are usually thought to relate to later prehistoric cooking sites: the Brandon Road feature is atypical of burnt mounds and may have more in common with the growing body of evidence for Mesolithic burnt flint deposits (*e.g.* Lewis and Walsh 2004; Butler 1998).

It is likely that the Mesolithic activity identified at Brandon Road and elsewhere in the area was taking place in a still-wooded landscape by people who were primarily hunter-gatherers, although it was during this period that the earliest clearances of the primeval 'wildland' began in Norfolk as farming and settlement developed (Williamson 1993, 20). The earlier prehistoric sites apparently gravitated to the lower lying ground close to rivers and it may not be a coincidence that later prehistoric sites are all recorded further away from the river and on higher ground. For example the Neolithic site at Kilverstone approximately 3km to the east lay between 200m and 400m to the north of the River Thet at between 18m and 23m OD. Here, later Neolithic flintworking on a much larger scale was associated with evidence of occupation, cremations and a possible mortuary enclosure (Garrow 2002, fig. 2; Garrow 2006, 8; HER 25763, 34489 and 37349).

II. Iron Age to Early Roman Origins

Significant Iron Age sites in the vicinity include the hillfort adjacent to the river and the temple complex at Fison Way, 2km to the north (HER 5940, 5853 and 30258), the latter perhaps indicating a major tribal centre (Davies 1999, 34). Continuity from Iron Age to Romano-British settlements, as revealed at Spong Hill (Rickett 1995, 147–9), has been suggested as the usual pattern in the county (Williamson 1993, 43) and settlement intensified in Norfolk in the first two centuries after the Conquest (Taylor 1983, 83–106). Occupation was well established at Fison Way and Kilverstone (Garrow 2002, 23–26) before the Roman period (*c*.4th century BC and 1st century BC respectively). An apparently short-lived mid to late 1st-century AD farmstead lay to the east of the Brandon Road site at Redcastle Furze, comprising pits, ditches and roundhouses (Andrews 1995; HER 24822), with numerous roundhouses and pits found nearby at site HER 5756 (Dallas 1993, 7). It has been suggested that abandonment of this settlement might be connected with instability following the suppression of the Boudiccan revolt (Andrews 1995, 10). At Melford Meadows, 3km to the east, a low status farmstead similar to that at Brandon Road appears to have been established in the later 1st century AD (Mudd 2002, 111).

These latter sites join a growing corpus of evidence which suggests that in some places an Iron Age building tradition continued long after the establishment of Roman rule. At Brandon Road, the earliest features included large circular enclosures and putative roundhouses of possible late 1st-century origin (Phase 2a), once again demonstrating that 'Romanised' rectangular structures had not yet become established here. There is slight evidence at Brandon Road for a north to south pattern of land division that may have been contemporary with the roundhouses and enclosures. On approximately the same alignment was a small sub-rectangular building within a larger rectangular enclosure, interpretation of which is uncertain (Phase 2b). It is broadly similar in form to features elsewhere that have been interpreted as shrines or mortuary enclosures, for example at Hinxton Road, Duxford (Lyons in prep.) and Trumpington Park and Ride, Cambridge (Hinman in prep.), a suggestion perhaps supported by the recovery of a relatively large assemblage of early metalwork from the site but — since no finds were directly associated with the structure and based on its form alone — a more prosaic interpretation as a stock enclosure or shelter, is perhaps more appropriate.

Nevertheless the presence of an Iron Age ring-headed pin (found residually in one of the Anglo-Saxon

buildings), a Late Iron Age or very Early Roman Langton Down type brooch recovered from the Bypass area in 1988 and five Early Roman brooches (two pre-Flavian, two Flavian, and one dated as 1st century AD; Crummy, Ch. 3.III) has led to the tentative suggestion that these and other items may have been deposited as votive offerings, perhaps confirming a ritual/ceremonial aspect. Such activity may also be suggested by other categories of finds of varying date such as a Late Neolithic transverse arrowhead (Bishop, Ch. 3.I) and Roman toilet instruments (a spoon and tweezers; Crummy, Ch. 3.III). All of these finds may indicate a focus of offering at or near the Little Ouse.

III. The Romano-British Farmstead

Fields and farms

Despite its limitations, the evidence from Brandon Road has provided a valuable insight into Roman rural life, particularly in relation to land management and the rural economy. Throughout the Roman period there were no occupied domestic buildings on the site itself (other than the possible roundhouses noted above) although finds provide ample evidence of the proximity of occupation. There was, however, significant evidence for agricultural buildings and field systems belonging to a farmstead that continued in use throughout most of the Roman period (late 1st to early 5th century). Obvious signs of change in the field systems presumably reflect alterations in the economy and character of the farm, although the location of the associated domestic buildings probably remained constant. While few in number, finds attributable to the 2nd century were consistently recovered from the north-eastern and to a lesser extent the north-western areas of the site — by the 4th century (Phase 4) the quantities had increased sufficiently to imply that domestic structures must lie nearby, probably to the north or east.

An adaptation of the field system in the early to mid 2nd century (Phase 2c) was based on two sets of ditches, one to the west which was extended and continued to form an important boundary throughout the 3rd century and the other to the east that represents the first in a series of enclosures which continued into the Middle Saxon period. The alignment defined by the eastern boundary set the parameters for much of the subsequent activity and can be seen particularly clearly in the orientation of the barns/byres and fields (Phase 3). It is interesting to note that this boundary also marked a division in land-use between enclosed fairly regular rectangular fields to the south and a much more open landscape on the northern (river) side, the river itself presumably forming the northern boundary of the farmstead.

Excavation to the south of Brandon Road (Brennand 1999 and 2000; HER 33812) found a series of ditches including two on a very similar alignment and distance apart (*c.*16m) to the possible Early Roman trackway found at the subject site (Phase 2b). An evaluation approximately 200m to the east of the subject site again revealed contemporary field or boundary ditches (Wessex Archaeology 1996; HER 31897). More substantial evidence for a similarly aligned Early Roman field system was found at Redcastle Furze, where north to south ditches were spaced at *c.*11m intervals and east to west ditches at *c.*16m (Andrews 1995, 7 and fig. 5; HER 24822). The fragmentary field system at Brandon Road shows a similar pattern in Phase 2, with ditches lying *c.*10m apart at their narrowest. Subsequent fields (Phase 3) were larger although more variable in size, with the smallest measuring *c.*15m wide.

A more dramatic change occurred during the 4th century (Phase 4) which saw a move away from a network of fields to a more open landscape containing three-sided enclosures apparently open on the river side. At Brandon, some 8km west of Thetford, pre-Roman remains included two similar enclosures which again appeared to be open towards the river, these and other remains suggesting a very pronounced Iron Age settlement of the valley floor (Andrew Tester, pers. comm). At Brandon Road this physical alteration to the landscape may reflect a change in the way that the farm was managed, perhaps as a result of an increase in the number of sheep. A greater range of artefact types was found associated with 4th-century deposits, many of the finds being deposited in two large middens. Similar enclosures and middens were noted in the 3rd- and 4th-century phases at Melford Meadows (Mudd 2002, 111; HER 17269).

The farm economy and daily life

While Breckland soils are not generally conducive to arable farming, excavations in and around Thetford suggest that both arable and livestock farming took place, resonating with the generally held view that the Roman rural economy was largely based on mixed farming. The Brandon Road site appears to have been more reliant on livestock than on arable farming; the layout of its small fields, isolated wells and larger open areas in the earlier phases and barns and enclosures in the later phases is indicative of animal control rather than crop growing. Environmental remains support this view. Seeds from a 2nd-century well (Phase 2) indicate rough damp pasture and scrub, whilst there was little evidence for primary crop processing implying that grain was imported to the site in a semi-processed state (Fryer, 4.IV). This type of assemblage (*i.e.* with a low percentage of chaff) may be indicative of a domestic context (*cf.* Murphy 1995, 131). The presence of some secondary processing is indicated by quernstone fragments, the majority of which were found in the north-eastern part of the site (in Phase 4). Sites nearby provide a range of evidence. At Melford Meadows primary processing of grains took place, including spelt-wheat, rye and barley, in preparation for milling (Robinson 2002, 108; HER 17269). At Mill Lane, pollen samples and cereal grains suggest that the immediate vicinity was probably utilised for mixed farming (Wallis 2004, 114–5; HER 1022), while samples from a possible corn drier at St Nicholas Street produced no clear evidence for large scale crop-processing (Fryer and Murphy 1999, 61; HER 1134).

At least two barn-like structures found at Brandon Road imply continued agricultural use of the site during the 3rd century. A similar building was excavated at Melford Meadows (Mudd 2002, 21, structure 1). Such barns may have been used as winter quarters for livestock, with nearby wells for watering alongside small fields and tracks consistent with stock management.

Unfortunately the evidence provided by the animal bone assemblage is insubstantial. Less than 200 countable animal bone fragments attributable to the Roman period were recovered, the majority (141 bones) being found in Phase 4 deposits (Baxter, Ch. 4.III). It has not been

possible, therefore, to demonstrate any changes in domestic stock during Roman times, nor can husbandry practices be inferred. Cattle dominated in all phases (47% of the total number), although sheep/goats were relatively common in the 4th century (Phase 4) where they comprise the next most frequent taxon followed by horse and pig. The composition of the animal bone assemblage is very similar to that from Melford Meadows (Mudd 2002, 112). Cattle and sheep would have provided meat, milk, hides and wool, but they would have also been important for providing traction and to improve the fertility of the fields, a function particularly significant in the Breckland where soil fertility is generally very low. Horses formed a relatively important part of the faunal assemblage in the 3rd century (Phase 3) and may have been used to herd livestock: indeed it is possible that the change in land management in the 4th century may be due to a change in the way stock was being managed.

Although less frequent in relation to cattle (contrasting, for example, with Haddon, Cambridgeshire where sheep dominated; Hinman 2003, 123) the age at death of the sheep is consistent with wool production. A possible wool comb or flax heckle (SF 353, Crummy, Ch. 3.III) may provide further evidence for such activity. Like the Wessex chalklands, the Brecklands have been a focus for sheep pasturage and wool production in recent times and it has been suggested that this may also have been the case in the Roman period (Jones and Mattingley 2002, 228).

There was little other evidence for craft-based or industrial activities during the Roman period. Small quantities of non-metallurgical hearth lining, daub and fired clay were found scattered in Roman features, especially in the eastern part of the site. These fragments are likely to have been a by-product of domestic activity rather than 'industrial' hearths, kilns or furnaces and are similar to material recovered from the Melford Meadows site (Barclay 2002, 98). Small quantities of iron slag were also found primarily in Early Roman contexts at Brandon Road. The limited evidence for craft suggests that such activities were absent or on such a small scale as to have left little trace or that they were confined to another area of the farm, perhaps closer to the domestic dwellings and away from the fields.

The Brandon Road farmstead appears to have been of low status in Phases 2 and 3 (Early and Middle Roman) rising to average status by Phase 4 (Late Roman). Early Roman ceramic imports were infrequent, with the notable exception of a rare ointment bottle from the Colchester area, and remarkably little samian was retrieved (Lyons, Ch. 3.VIII). The pottery supply evidently increased in the Middle and Late Roman phases and includes Horningsea vessels from Cambridgeshire as well as locally produced wares. By the 4th century a much broader range of pottery types indicates greater prosperity.

Metalwork of the period is dominated by dress accessories such as brooches, hairpins and armlets and a similar pattern emerges from the 1988 finds, accompanied by a few toilet instruments which may indicate religious activity. Of note is a purse group attributable to the late 4th century, along with a Late Roman bowl indicative of a metal vessel hoard or hoard container (which may have been deposited in the Anglo-Saxon period).

The wider context

Analysis of settlement within its landscape context has been identified as of major significance in developing understanding of the Romano-British period (Millett 1995, 29–37). Gregory (1982) described East Anglia as characterised by a preponderance of farmsteads or small agglomerations of farmsteads with few towns, substantial villages or villas. More recent studies (*e.g.* Brown 1995) show that 'small towns' may simply be under-represented due to difficulties in recognising them.

The 'small towns' of Icklingham, and Pakenham (Plouviez 1995) are located approximately 15km to the south-west and south-east of Thetford respectively (Fig. 3). Icklingham lies on the Icknield Way, a well known route of probable prehistoric origin that provided a link between Wessex and East Anglia (Chadburn 1999, 165). Pakenham is located on the Little Ouse, as was a possible small town at Hockwold approximately 12km to the west (Gurney 1995b, 61). At Brettenham (10km to the east) a relatively large local centre was sited at the point at which Peddars Way crosses the River Thet (Mudd 2002, 3). It is likely that the Little Ouse was navigable in the Roman period and would have provided an important route between the settlements and ultimately to the Wash and the North Sea. To the north, the closest 'small town' lies approximately 18km away, where Peddars Way meets a tributary of the River Wissey at Saham Toney (Gurney 1995b, 54). Gurney notes that of sixteen possible 'small towns' in Norfolk, fourteen were located at the junctions of major roads and rivers (Gurney 1995b). Such market towns appear to have developed at important road intersections near river fords within the larger Roman communication system, with up to thirteen examples being known in Suffolk (Plunkett 2005, 19).

Thetford itself would seem to have been ideally placed to develop into a 'small town', being located on the Icknield Way where it crosses the rivers Little Ouse and Thet (Fig. 3). The importance of the Icknield Way in the Roman period remains uncertain, however, since despite observations of settlement close to the route on its northern stretches (Gregory 1982, 360–6) a general absence of settlement along much of its length has been noted (West 1990, 111). Fording places are known at Red Castle (Andrews 1995, fig 10, 10), Bridge Street (Andrews and Penn 1999, 89) and Nuns' Bridges.

Although the hillfort at Fison Way seems to have been abandoned well before the Roman period, the site is known to have functioned as an important religious focus into the 4th and possibly even 5th century (Gregory 1991, 189) and may have included a 'farmstead' (HER 5744) directly to the east. Excavations at St Nicholas' Street (HER 1134) revealed the remains of a 3rd- to mid 4th-century farmstead which may have been part of a larger settlement (Andrews and Penn 1999, 89) and a hypocaust or tessellated floor reported in a newspaper in 1924 (HER 5852) suggests that a high status building, possibly a villa, stood nearby.

IV. Romans and Saxons — Continuity and Change

While the overall distribution of Roman sites is now reasonably well understood, that of the Early Saxon period remains unclear. Almost all the known sites are located along rivers, with the greatest concentration on the

lighter soils and little evidence for fen edge settlement (Mudd 2002, 3). Although this apparent distribution may represent a change in settlement type and location preference, it could also be the result of bias in the evidence; Early Saxon sites are much easier to find through excavation than through fieldwalking and consequently any distribution maps tend to be biased towards those areas that have seen modern development.

There is a general belief that the latest Roman remains in Britain date from soon after AD 410 when the imperial (civil and military) government was officially withdrawn. Subsequently the British and migrant populations both contributed to the Early Saxon society of East Anglia, although the extent and method of their convergence is richly debated (Plunkett 2005, 18). There is some evidence to suggest that Roman society still remained intact at least in part — for example, in 429 two Gaulish bishops, Germanus of Auxerre and Lupus of Troyes, visited Britain in order to assist the British church in their fight against heresy and were also reputed to have won a battle against the Saxons (Esmonde Cleary 1989, 162). Whatever happened to engender the change to the Anglo-Saxon settlement type, in the area around Thetford it occurred within former Roman settlements. Occupation clearly continued at the Brandon Road site into the 5th century as is demonstrated by the presence of late 4th-century coins and 5th-century Roman pottery, along with Early Saxon pottery and metalwork attributable to the 5th century (Lyons, Ch. 3.VIII; Blinkhorn, Ch. 3.IX; Crummy, Ch. 3.III). The introduction of Early Saxon material was coupled with characteristic Anglo-Saxon dwellings or workshops (sunken-featured buildings and a possible hall) that apparently favoured the higher ground whilst generally avoiding the Roman enclosures, suggesting that at least some of these may have remained visible and in use. Elsewhere in Thetford there has been little evidence for continuity of occupation from the Late Roman into the Early Saxon period; at Kilverstone for example the latest Roman phase lasted until the very early 5th century at latest while the Early Saxon occupation only began in the later 6th century (Lucy 2006, 199).

It is notable, however, that at a local level, there is a general frequency of finds of Early Saxon material adjacent to very late 4th- or early 5th-century Romano-British settlement although interpretation of their relationship is problematic (Scull 1992; Williamson 1993, 67–8). This association is frequently found in the Thetford area, and excavations elsewhere along Brandon Road, as well as at Melford Meadows and Kilverstone have all revealed such evidence. At Melford Meadows the excavator argued that the Romano-British settlement had been abandoned by the time of the first Anglo-Saxon occupation (Mudd 2002, 113). It was noted that there were hints that Romano-British boundary ditches had some residual influence upon the pattern of the Early Saxon settlement suggesting that banks or hedges might still have been visible. The coins from Melford Meadows dated up to AD 394/5 although there was little evidence to suggest any ceramic overlap (Rollo 2002, 78; Underwood-Kevill 2002, 91). At Kilverstone, Roman pottery had tailed off by the early 4th century, perhaps as a result of a change from domestic occupation (Anderson 2006, 143). Coin loss and metalworking, however, show that the site was the possible focus of votive offerings into the late 4th century (Lucy 2006, 169), with Anglo-Saxon pottery suggesting a 6th-century date for the Early Saxon settlement (Lucy 2006, 200; Tipper 2006, 194). This Early Saxon settlement was located in an area that had remained unoccupied for at least a hundred years, although Roman earthworks had almost certainly survived (Garrow 2002, 52). Several of the Anglo-Saxon sunken-featured buildings had been located in the ends and junctions of earlier ditches which suggests that they may have been intentionally sited within pre-existing hollows (Garrow 2002, 54; Lucy 2006, 199).

By contrast no direct evidence for Early Saxon occupation has yet been found on the Fison Way site where Roman occupation has been shown to have continued to at least AD 400 (Gregory 1991, 111). A small ?6th-century burial ground found close by at Brunel Way (HER 25154; Penn and Andrews 2000) suggests that an Early Saxon settlement is yet to be found in this location. An early 5th-century hoard of gold jewellery, precious stones and silver spoons found nearby may come from a sanctuary dedicated to *Faunus* since some of the spoons were inscribed with the name of that deity (Johns and Potter 1983, 73), and some may derive from a jeweller's hoard (unused jewellery and precious stones were found; Esmonde-Cleary 1989, 99 and 139). This, together with evidence for the manufacture of decorated copper alloy objects at Fison Way, suggests that visitors were able to buy precious items on the site perhaps to leave at the temple as votive offerings. Although it is tempting to interpret the Fison Way temple complex and it environs as a continuation of an Iron Age tribal centre that later transformed into an important town in the Saxon period, the evidence remains inconclusive.

V. Anglo-Saxon Farmers and Ironsmiths

The Early Saxon farmstead

(Fig. 50)

Early Saxon settlement at Brandon Road comprised a sub-rectangular cluster of structures placed on an area of slightly raised ground. The eight buildings (a possible hall and seven sunken-featured buildings) were associated with various ovens and a single burial. The ?hall lay centrally on the southern side of the group on the highest ground with sunken-featured buildings equidistant on either side of it, utilising the natural slopes (Fig. 50). Elsewhere a small number of scattered pits or wells were the only evidence that the adjacent land had been occupied during this time suggesting its continued agricultural use (probably for livestock).

Approximately 75m to the south of Brandon Road, the remains of one certain and a possible second sunken-featured building were found (HER 33812; Brennand 1999; 2000). The excavation area was very limited here and it is possible that these buildings are evidence of a similar family group.

Most of the excavated sunken-featured buildings in England were constructed with two post-holes, although the relative proportions on individual sites are variable; for example over 90% of sunken-featured buildings at Mucking were two-post or two-post derivative compared with 41% at West Heslerton (Tipper 2004, 68). At Brandon Road, there was a ratio of four two-post sunken-featured buildings to three of other types (just under 60%). The closest parallel on the continent is in the Elbe-Weser triangle of north-west Germany where the two-post

Figure 50 Reconstruction of the site during the Early Saxon period (Phase 5), showing the sunken-featured buildings clustered around the hall (*by Jon Cane*)

structure predominates (Tipper 2004, 70). At Brandon Road the dimensions of the SFBs were comparable to those at West Stow although the post-holes (between 0.49m and 0.93m below the base of the hollow) were generally deeper (West 1985, 115 and 15–53), possibly as a result of the soft sand through which they were cut rather than indicating a greater load-bearing capacity. It has been observed that the exact location of the post-holes in relation to the pit sides of sunken-featured buildings does not seem to be particularly important other than in a general sense that there should be one at each short end (Tipper 2004, 71). This has been taken as evidence that the pit itself must be part of a larger structure: the posts may not have been significant to the structural integrity of the finished building, serving as temporary scaffolding during construction. The main weight of the roof may eventually have been borne on wall-posts or load-bearing turf walls (Tipper 2004, 93).

There appears to be a strong correlation between the underlying geology of Early Saxon settlements and the ratio of sunken-featured to post-built structures (Tipper 2004, 24). Rahtz has suggested that the density of sites on sand and gravel may reflect a preference for these subsoils but equally may reflect the density of observations on aerial photographs or areas of gravel extraction (Rahtz 1976, 54). More sunken-featured buildings per hall were built on sand/gravel sites in comparison to chalk which has more halls per sunken-featured building (Tipper 2004, 24–5 and table 3). A few excavations have not uncovered any halls — only revealing sunken-featured buildings (Andrews 1995, 24; Melford Meadows, Mudd 2002) but it is uncertain if this is significant or whether the apparent lack of halls is the result of limited excavation coupled with excavation techniques (Tipper 2004, 24). At West Stow Tipper noted the presence of 69 sunken-featured buildings to 14 halls (although the excavator produced

different figures — 70 SFBs and 7 halls, West 2000; West 1985, 168) — a ratio of *c*.5:1 and thereby close to the Brandon Road figure of 7:1. At West Heslerton, where the whole settlement has been excavated, the site was divided into different zones including one for craft-working (consisting only of sunken-featured buildings), housing (consisting only of post-built structures), a multi-purpose area (consisting of both sunken-featured and post-built structures) and an area for agricultural processing (Powlesland 2000, fig 3.2).

The average length of the Brandon Road Early Saxon sunken-featured buildings was 4.05m, slightly more than at Melford Meadows (3.86m; Mudd 2002, 52) and Kilverstone (3.79m; Garrow 2002, 52). Two examples (SFB 2229, 5.80m long; SFB 2233 5.60m long) were larger than any from Davison's Brandon Road site, Redcastle Furze, Melford Meadows or Kilverstone. All of the sunken-featured buildings were aligned roughly east to west as were those at Redcastle Furze (Andrews 1995, 13–18), Davison's site (Dallas 1993, 13), Melford Meadows (Mudd 2002, 52), Kilverstone (Garrow 2002, 52) and Brennand's site (HER 33812; Brennand 2000, 7). Little of the original form or function of the single post-built structure can be gleaned from the rather insubstantial remains.

Whether any of the artefacts found in sunken-featured buildings can be interpreted as evidence for their function is much debated. At Brandon Road one structure (SFB 2232) contained nearly twenty unfired loomweights positioned along and near to its base, which may relate to the presence of a loom or related storage (Crummy, Ch. 3.VI). Similarly the sunken-featured building from Brennand's site to the south contained over twenty fragments of unfired clay thought to be the remains of weights from a loom (Goffin 2000a, 16). The finds from the other sunken-featured buildings are almost certainly the result of refuse disposal after the buildings went out of use. They include a wide variety of artefacts indicating a range of crafts, alongside animal bones and pottery that includes cross-fitting pieces found in a number of contexts across several features.

Based on criteria including small sherd size, abrasion and few cross-fits, Tipper (2004, 159) concludes that the disposal of rubbish in sunken-featured buildings represents only a small percentage of the rubbish produced on an Anglo-Saxon settlement, the majority probably being carted away to manure the fields. The average sherd weight (22.76g not including Ipswich ware) for pottery from sunken-featured buildings at Brandon Road is larger than those cited by Tipper (2004, 147): Mucking (12.3g), West Heslerton (14.3g), West Stow (9.8g) and Mudd (2002, 114): Melford Meadows (16.22g), perhaps implying that rubbish at Brandon Road suffered less re-working before reaching the abandoned buildings. The average weight of the Roman pottery was very small (9.41g) however, perhaps implying that the pottery had lain in surface middens or in the topsoil for many years. The majority of the Roman pottery (84 of 110 sherds) was found in the two sunken-featured buildings located closest to the greatest Roman activity (enclosures and middens) suggesting that this had been the source of the material. Deliberate curation of Roman finds does not appear to have been a feature either here or at Melford Meadows (Mudd 2002, 114). The single Iron Age pin was the only definite pre-Saxon metal artefact found in any sunken-featured building at Brandon Road, contrasting with West Stow where about one-third of nearly 300 Roman coins were recovered from such structures (West 1985, table 60).

Most of the sunken-featured buildings contained approximately the same proportions of Anglo-Saxon pottery and fragments of animal bone suggesting that no distinction was made between different types of rubbish at disposal. Only one building varied from this (SFB 2232) in that, despite containing the largest number of pottery sherds, it contained the fewest identifiable animal bones. Possible evidence for differential rubbish disposal can also be seen at Redcastle Furze where the majority of the finds were concentrated in only two of the Early Saxon features (sfbs 915 and 951; Andrews 1995, 17). By comparison at Davison's Brandon Road excavation just twenty-three hand-made pottery sherds were found in the four sunken-featured buildings, many from the same vessel (Dallas 1993, 14) and at Kilverstone few finds were deposited in the sunken-featured buildings (Garrow 2002, 54).

To the north-east of the Brandon Road buildings lay the grave of a child buried in a contracted ('crouched') position with the head to the east and arms together below its jaw (Pl. IV; Duhig, Ch. 4.I). This burial, together with the remains of an infant found in a Middle Saxon layer nearby and a girdle-hanger (Fig. 20, SF 103), a small long brooch and a strap-end (Fig. 21, SF 141) from the topsoil, suggest that a cemetery may have extended to the east of the site. Inhumations found in 1919 and 1961 300m to the east, on the north side of Brandon Road opposite Red Castle, have been dated in the Historic Environment Record (HER 5895) as Pagan Saxon but the evidence is limited and the date of these burials is therefore tentative (A. Rogerson, pers. comm.). It is possible that the burials are an indicator of a single large cemetery but more likely that they indicate the presence of at least two, since cemeteries of contemporary date are not usually large. The single burial ground at West Heslerton, for example, covered an area of about 110m by 100m (Haughton and Powlesland 1999).

Burials found in a tumulus in St Margaret's cemetery in 1855, 1869 and 1929 (Dunmore with Carr 1976, 5; HER 5828 and 5860; Fig. 2) may provide evidence for another Early to Middle Saxon cemetery. The information in the HER entries is inconclusive and the Early to Middle Saxon date assigned to the burials was presumably based in part on the presence of a shield boss and iron spearhead in one of the graves. Their position outside the settled area is a more normal location for cemeteries in rural areas and can be compared with cemeteries at West Heslerton (Powlesland 2000, fig 3.1) and West Stow (West 1985, vol 1, 65) which were both about 250m outside their respective settlements. At *Hamwic* (Southampton) at least three cemeteries are known within the 45ha town. These seem to have been established from about AD 700 onwards on the edge of a progressively expanding Middle Saxon settlement (Andrews 1997, 252). As the settlement grew, each of the earlier cemeteries was apparently built over (Morton 1992, 38–9 and 53–4).

It seems probable that the buildings found at the Brandon Road site represent a single Early Saxon family unit or farmstead, but whether it was isolated or lay within a larger scattered settlement is debatable. In addition to the Brandon Road site, excavations nearby (Brennand 1999

and 2000, HER 33812; Andrews 1995, HER 24822; Dallas 1993, HER 5756) have all found evidence for Early Saxon buildings that may be part of a single settlement situated to the south of the Little Ouse, encompassing an area from the Bypass in the west to a postulated fording point near Red Castle in the east (Andrews 1995, fig. 21). The suggested settlement area — at 800m by 300m (24 ha or 62 acres) — is very large, exceeding the occupied area of West Heslerton (*c.*550m by *c.*300m, Powlesland 2000 fig. 3.1), though here there was a separate burial ground 200m further to the north. At West Stow the settlement covered an area of more than 200m by 120m with numerous sunken-featured buildings grouped loosely around halls (West 1985, 168; West 2000).

Middle Saxon shuffle?

During the 7th century, many Early Saxon sites were apparently abandoned and new villages founded (Arnold and Wardle 1981). Although rivers continued to be a focus of settlement during the Middle Saxon period there is evidence for shifting occupation. Thetford, Brandon and Icklingham all developed into significant population centres, while others moved or were abandoned. The ceramic assemblage from the Brandon Road site suggests that it may have been unoccupied from the early 6th century until perhaps the early 8th century (Blinkhorn, Ch. 3.IX), during which time the focus of settlement may have moved to the Red Castle/Redcastle Furze area *c.*450m to the east (Fig. 2). Despite this there are also some indications of continuous occupation at the Brandon Road site, but the evidence is inconclusive. A small number of unstratified metal finds may be 6th to 7th century in date. Two of the sunken-featured buildings (2229 and 2233) are similar to larger 7th-century forms (Farley 1976; Hamerow 1993, figs 6 and 8; Tipper 2004, 66) but their position in relation to the other sunken-featured buildings strongly suggests broadly contemporary construction. While at least SFB 2233 appears to have still been visible (to be used as a pit if not a building) in the 8th century, it seems that the remaining Early Saxon buildings had been abandoned and backfilled by the early 6th century and the area may have reverted to fields.

More light may be shed on the question of whether or not the site was temporarily abandoned by considering the evidence from other Anglo-Saxon sites in the vicinity (Figs 1 and 2). A possible Early Saxon timber building and hearth were found at Red Castle along with 5th-century carinated bowls and stamped pottery indicative of a 6th- to 7th-century date (Knocker 1967, 125; HER No. 5746). Nearby at Redcastle Furze were nine Early Saxon sunken-featured buildings as well as a few ditches and pits (Andrews 1995; HER 24822). A lack of diagnostic finds from this site made dating difficult (Andrews 1995, 24) but a tentative date in the 6th to early 7th centuries was ascribed; an earlier date contemporary with the Brandon Road buildings is, however, possible (Blinkhorn, Ch. 3.IX). Four Early Saxon sunken-featured buildings and associated pits found at B.K. Davison's Brandon Road site (Dallas 1993, 13; HER 5756) were again difficult to date closely but the lack of both obviously early pottery and Ipswich ware suggested a 6th- to 7th-century date (Dallas 1993, 14). An evaluation and subsequent excavation found a sunken-featured building, pits and post-holes *c.*100m to the south-west of the Brandon Road site (Brennand 1999 and 2000; HER 33812) which probably date to the 6th century. Assuming that the ceramic dates are correct the overall impression is that settlement shifted towards the east in the 6th and 7th centuries, with all of the sites to the east of the Brandon Road site having been occupied at this time. Individual areas, such as the site at Brandon Road, may have been temporarily abandoned. In general, however, the evidence suggests that occupation was continuous but shifting within a loosely defined area.

Middle Saxon resettlement

After the apparent period of abandonment, the eastern part of the site was re-occupied in the early 8th century. Initial activity consisted of a field system (Phase 6a) which may relate to agricultural use of the site during the hiatus in occupation. The alignments of the field boundaries were virtually identical to those of the Roman field system, suggesting that remnants of the earlier pattern may have survived to be reused. Relatively narrow fields were evident in the eastern part of the site; in a later medieval setting these would be similar to burgage plots but in this earlier context they perhaps suggest multiple field layouts.

While the western part of the site appears to have continued in use as fields throughout the Anglo-Saxon period, the eastern area of higher ground housed a new settlement (Phase 6b). This comprised a large irregular enclosure (measuring *c.*80m by *c.*70m) within which were buildings that may represent accommodation for a single family or workshop/smithy, comprising two post-built structures, domestic ovens and a midden. The U-shaped form of the enclosure was reminiscent of those of the Roman period. The enclosure ditches were re-cut on a number of occasions indicating a relatively long-lived occupation. There is some evidence to suggest that the smithy may have continued in use after the large enclosure and associated buildings were abandoned, since the pit containing much of the metalworking waste cut through the enclosure ditch.

Much of the rubbish disposed of during the Middle Saxon period at Brandon Road seems to have been concentrated in middens. Similar layers have been found at Davison's excavations (HER 5756) and preliminary analysis of similar deposits at Brandon (10km to the west of Thetford) suggests that surface rubbish-heaps often developed adjacent to enclosure boundaries, and that there may be some discrimination between bone and pottery dispersal patterns (Carr *et al.* 1988, 373).

A period of decline appears to have heralded the site's final abandonment, reflected in the fact that the enclosure evidently fell from use, with features being cut into it.

Craft and economy

One of the main findings from the recent work is the possibility of a local market, supported by local production. Textile manufacture was the main craft represented at the site in the Early Saxon period. Loom-weights were the most numerous find (twenty were found in the base of one sunken-featured building), while other finds associated with this process included spindle whorls, a bone needle and a bone pin-beater. Similar arrays of textile manufacturing objects were found at Redcastle Furze (Andrews 1995, 11) and Melford Meadows (Mudd 2002, 116). By contrast Davison's excavation provided no definite evidence of craft activity (Dallas 1993, 14). Only limited evidence for spinning (a spindlewhorl) and primary processing (a wool comb or flax heckle) was

found in Middle Saxon deposits at Brandon Road. This possible decrease in domestic textile production coincides with an increase in the importance of sheep for wool production, perhaps suggesting that by the Middle Saxon period textile production was becoming a specialist occupation rather than an activity that took place in every home. A change from self-sufficient textile production in the Early Saxon settlements to specialist production during the Late Saxon period certainly took place (Crummy 2002). While some Early Saxon buildings may have been loom sheds (*e.g.* West 1985, 138–9), the first of a sequence of what can be seen as close to or wholly commercial weaving sheds was constructed at the manor of Goltho in Lincolnshire *c.*AD 850, where textile production formed an important part of the economy into the 11th century. There is evidence from one of the later sheds at Goltho that the weavers lived and worked in one building, matching the *Leges Alamannorum*, a law code probably first compiled *c.*AD 730 but with earlier roots, which established the level of fine for men seducing or violating a maiden (owned by a freeman) from the weaving shed (Beresford 1987, 55–8, 68). The word used for weaving shed comes from the late Latin *gynaecium* and is glossed as the earlier Latin *textrinum*, both words meaning a specialised building used for weaving, and, in the case of *gynaecium*, weaving by females (Radford 1957, 37). The change from home production to the employment of young female craftworkers seems to have taken place quite widely over the Middle Saxon period and Thetford can therefore be expected to have conformed to this trend.

The most important evidence for craft at Brandon Road was metalworking which was prevalent at the site during the Middle Saxon period. The ovens assigned to the Early Saxon period (although of uncertain date) are morphologically broadly similar to the group of hearths/ovens found at Wittering (Cambridgeshire), although could equally have served a domestic function. The single Middle Saxon example is of slightly different form and was perhaps a domestic oven. The Wittering hearths formed part of a large scale ironworking industry in the Rockingham Forest area: the best-preserved examples here ranged in size between 2.3m by 0.70m and 2.70 by 0.40m (Wall forthcoming, fig. 3) and were associated with ore-roasting pits. The model suggested on the basis of the Wittering findings for rural ironworking during the Middle Saxon period (away from towns and proto-urban centres, royal estates or other special places), was that smelting took place near to available raw materials such as iron ore, clay and wood for charcoal: finished iron, perhaps in bar form, would then be taken to the settlements, where it was smithed into artefacts (Wall forthcoming). Analysis of the Brandon Road slag suggests that de-carburisation of cast iron in order to produce steel may have been taking place. High carbon steel production is an indication of increasing technology in the Middle Saxon period and this material was also being produced at other major Middle Saxon centres such as *Hamwic* (Mack *et al.* 2000).

Iron production centres in Middle Saxon England are not common but include Ramsey (Wiltshire), Romsey (Hampshire) and Little Totham (Essex) (Palmer 2003, 59), while contemporary metalworking has also recently been found at Quarrington, Lincolnshire (Tom Lane, pers. comm.). Iron smelting usually took place close to the source of the ore and the Wittering hearths and those of Early to Middle Saxon date found at Fineshade Abbey, Northamptonshire, are part of a long tradition of ore extraction, smelting and smithing in an area rich in iron deposits, exploited from the Iron Age onwards (Mudd 2006, 93; Bellamy *et al.* 2001, 112–17; Foard 2001, 65–92). The winning of iron ore in the Breckland would have been far harder, and there is no firm evidence for smelting at Brandon Road. The billets of iron used for smithing may therefore have been brought in from the Northamptonshire area, or might have been won from naturally-occurring ironstone and smelted off-site, although collection of suitable material would have been a slow and time-consuming practice. For example, it has been estimated that in the medieval period at West Runton, Norfolk, 50 cubic metres of the local sand would have had to be dug in order to produce one cubic metre of either ore nodules or iron pan (Crossley 1981, 30). Even though ironstone and lumps of iron oxide were present at West Stow in Suffolk there was no evidence there for smelting (Macalister 1985), and a similar situation pertained for the 6th- to 7th-century site at Longbury Bank, Dyfed, with pieces of ore present, but no evidence for smelting on the site (Campbell and Lane 1993, 52). At Eynesbury, Cambridgeshire, where there must have been the potential for collecting ferruginous deposits from the terrace gravels of the River Great Ouse, only small-scale smithing was attested in the Early–Middle Saxon period (Andrews 2004).

Whatever the source of its iron, Brandon Road illustrates a smithy in a Middle Saxon settlement context, with various stages of the preparation and production process in evidence. Numerous iron billets, scrap and offcuts were found alongside a small number of partly-worked and finished items, notably a blade and a group of nails. A punch and a chisel/punch (unstratified) may have been tools associated with the same process, while the scrap and offcuts were probably collected for recycling. With iron either traded in or won with difficulty in the surrounding area, collection of scrap would have been an important source of the metal. Fuel in the form of charcoal would have been readily available and would also have been essential in the manufacture of steel, an alloy of iron and carbon. The production of this valuable material may account for the construction of the large ditched enclosure that surrounded the putative smithing area, although the pit producing much of the ferrous waste was cut into the enclosure boundary. It is possible that metals other than iron were also worked at the site, since small amounts of silver, copper and lead were found. In particular, a small fragment of a silver strip may be scrap from the manufacture of a silver object, or perhaps from inlaying silver into an iron object, a decorative technique popular in the pre-Conquest period.

Several items associated with fastening timber together were found amongst the smithy waste, including a complete holdfast and a number of roves. They were probably collected for recycling, as the complete holdfast with its rove attached must be a used item rather than a new one. The high number of loose roves supports both interpretation as collected scrap — having been prised loose from the timber in order to release the main section of the holdfast — and as end-products of the smithy, although in the latter case it might be expected that several main sections would also have been recovered. Although

roves are often associated with boat building (*e.g.* Sutton Hoo; Bruce-Mitford 1975, 451), they were an all-purpose item and cannot therefore be taken as firm evidence for boat building specifically, despite the proximity of this assemblage to the River Little Ouse. Their presence does, nonetheless, show that carpentry was an important activity on or near the site, which is perhaps confirmed by evidence for woodworking in the form of probable woodworking tools amongst the metalwork. Other minor crafts include possible secondary evidence for leatherworking.

As in the Roman phases, the metalwork from the site includes numerous dress accessories and a few toilet instruments, many of the items finding parallels at *Hamwic* and York. A decorated spoon may have seen use with cosmetics or medicine, while an unusual decorative item may have been used as a page clip, indicating relatively high status. Other household goods include weights and balances. Much of the pottery consists of jars and bowls, although notably includes a lamp base.

The Middle Saxon oven noted above contained a two-tined flesh-hook. Similar hooks found elsewhere include two other examples from Thetford (Rigold 1964, fig. 35, 10; I. Goodall 1984, 95, fig. 133, 193–4). While flesh-hooks are usually associated with pulling pieces of meat out of large cauldrons or stew-pots (Egan 1998, 155), the character and provenance of the Brandon Road example suggests that they were also used for pulling a variety of food from closed ovens.

Faunal remains and plant macrofossils combine to suggest a mixed farming economy with a heavy reliance on livestock (particularly cattle). Davison's Brandon Road and Redcastle Furze sites display similar characteristics although at Redcastle Furze there was evidence to suggest that crops were being cultivated on the nearby sandy terrace soils, extending down onto the flood plain (Murphy 1995, 134). Faunal remains from Brandon Road suggest a greater emphasis on cattle here, with sheep/goats appearing to be less numerous, particularly during the Early Saxon phase (Baxter, Ch. 4.II). Sheep/goats were generally comparatively old (2–8 years) at slaughter suggesting that the production of wool was relatively important, or that younger animals were sent away for slaughter. Pigs and horses seem to have had an equal presence throughout the Anglo-Saxon period at all three sites.

Pollen from Mill Lane suggests an increase in the number of trees during the Early Saxon period, followed by a period of woodland clearance during Middle Saxon times (Wallis 2004, 115). By inference this hints at a reduction in the amount of meadow available for grazing and an increase in the amount of woodland forage for pigs in the Early Saxon period followed by a reduction in forage during the Middle Saxon period. Interestingly the percentage of pigs decreases at Brandon Road (from 14% in the Early Saxon to 7% in the Middle Saxon), suggesting that the changes noted at Mill Lane may have had an impact on the local economy.

Evidence for utilisation of wild resources (specifically red deer and hare) is only very slight at Brandon Road. Hunting may have taken place, but it is more likely that cast deer antlers were collected. The nearby river was almost certainly fished although only a few freshwater species were evident from the excavation. A netsinker or fishing weight was also found.

Cultivated crops no doubt formed a significant element in the economy but there is no evidence for primary crop processing at the site and this must have taken place elsewhere. Over twenty quernstones and related fragments were recovered from Anglo-Saxon deposits and, as in the preceding period, were concentrated in the eastern part of the site. Eight examples came from one of the middens. During the Early Saxon period, a degree of culinary preparation (wheat) is indicated by the plant macrofossils from SFB 2206. There is otherwise a general lack of evidence for primary crop processing; the querns all seem to be residual by this time.

Middle Saxon Thetford

It is difficult to estimate the full extent of Middle Saxon settlement at Thetford. Its western limit may be in the vicinity of the Bypass where metal detecting recovered several items of Middle Saxon metalwork as well as 8th- and 9th-century coins (Crummy, Ch. 3.II and III; HER 24850; Andrews 1995, 26; appendix 1). The eastern limit would seem, on current evidence, to be in the vicinity of Redcastle Furze (HER 24822) where limited evidence comprising two ditches and a spread of pottery and other objects led the excavator to comment that the site probably lay towards the eastern limit of the settlement (Andrews 1995, 1). The fact that no Middle Saxon features and only six sherds of Middle Saxon pottery were found at Davison's Brandon Road site (HER 5756) to the east of Redcastle Furze would seem to support the argument (Dallas 1993, 14). The southern and northern boundaries of the settlement are even less certain although small scale evaluation and excavation work by Brennand in 1999 and 2000, to the south of Brandon Road did not recover any evidence for Middle Saxon activity (HER 33812). No Middle Saxon features were found in the evaluation 300m to the east (HER 31897; Wessex Archaeology 1996). There is evidence for Middle Saxon occupation in the area of Red Castle (HER 5746) and Redcastle Furze (HER 24922). Current evidence would therefore seem to suggest a dispersed settlement covering a similar area to that of the putative Early Saxon settlement (Fig. 2).

Work elsewhere in Thetford has produced very little evidence for contemporary occupation. Only residual Middle Saxon finds have been recovered from excavations to the north of the Little Ouse (*e.g.* HER 1134). A small quantity of Middle Saxon pottery recovered from limited excavations on the Iron Age fort defences (Fig. 2; HER 5940) has been taken as a possible indication that the fort was used in some way during the Middle Saxon period (Andrews 1995, 26). It lies immediately to the north of the important river crossing at Nuns' Bridges and, like Iron Age forts elsewhere (*e.g.* Hod Hill), may have been a site where exchange took place (Metcalf 1984, 54).

Despite its size in the Middle Saxon period there is no direct evidence that Thetford was of more than local importance. The possibility of greater status in the Early Saxon period cannot be ruled out, however, given its significance as a tribal centre in Iron Age and Roman times (see above, p.107) and as a major settlement in later periods. During this time the kingdom of the East Angles was established in Norfolk, Suffolk and part of Cambridgeshire (Plunkett 2005). Centres of administration would certainly have been needed and Thetford would have been an ideal candidate given its historic and strategic importance.

The only other Middle Saxon settlement of comparable size in Norfolk is Norwich, the origins of which are debated. The origins of Norwich have recently been discussed by Shepherd Popescu (in press) who makes it clear that the archaeological evidence for its Middle Saxon origins is still somewhat limited: one suggestion is that five small 'villages' merged to become a single larger settlement, although an alternative hypothesis is that the settlement initially developed along river margins (Ayers 1994, 24–7). Excavations at Staunch Meadows, Brandon, (Carr *et al* 1988) less than five miles away revealed a complete high status Middle Saxon settlement with strong ecclesiastical ties; possibly a small high status monastery (Blair 2001, 72). This site was very well preserved and rich in finds but covered a much smaller area than that estimated for Thetford. To the west of Thetford a large Middle Saxon settlement at West Fen Road, Ely, has been partially excavated (Mortimer *et al.* 2005). Although the scattered occupation noted at Thetford and Ely may be comparable in area to urban centres such as *Hamwic*, they seem to have developed very differently. At *Hamwic* the settlement appears to have experienced a rapid yet controlled development from a single, early nucleus (Andrews 1997, 252), whereas the settlements at Thetford, Norwich and Ely may have comprised several nuclei of early occupation, which later expanded and coalesced. No equivalent to *Hamwic* is known in Norfolk, the two major settlements at Thetford and Norwich both being smaller and non-urban in character (Andrews 1997, 255). Although Thetford is unlikely to have had such a large population as *Hamwic* (estimated at between 2,250 and 18,000 inhabitants at its height; Andrews 1997, 253) it was of sufficient importance to have been the winter headquarters of an army and the subsequent location for King Edmund's battle against the Danes in 869.

Thetford: an Early and Middle Saxon trading centre?

East Anglia benefited from trade with the continent and it is no coincidence that the wealthiest and most populated areas in the Early Saxon period were here and along the eastern coast. The minting of coins was important to the expansion of trade. At or soon after the beginning of Ælfwald's reign (early 8th century), East Anglian mints began to supplement the English coins in circulation (Plunkett 2005, 148). The principal mint was in or near Ipswich, but the fact that there were twelve different coin types in circulation suggests that there were several mints including one at Thetford (Plunkett 2005, 148). It is interesting to note that coins of the moneyer Tilberht were largely concentrated in north central Suffolk and around Thetford (Plunkett 2005, 149). A dispersed hoard of 53 pennies of Beonna, nine earlier *sceattas* and two blanks were found at Middle Harling on the Thet 11km east-north-east of Thetford (Rogerson 1995, 48) and this hoard, as well as other Beonna coins in the area, accent the early importance of Thetford and show that it was a royal centre of the first importance (Plunkett 2005, 155–8).

In recent years it has been suggested that there was a hitherto unsuspected complexity and structure to early medieval settlement, economy and society (Ulmschneider and Pestell 2003, 4). This may have resulted from the combined effects of increasing trade, cheap labour through use of slaves and 'urbanisation'. It has been estimated that the population of the area under English control in the time of Bede was half a million though Esmonde Cleary (1989, 174–5) suggests that this figure could be modest. On the basis of this estimate it has been calculated that approximately two million coins could have been in use at one time (Campbell 2003, 13). England was a booming area trading vigorously and it has been argued that the Middle Saxon period saw (in contrast to the Early Saxon period) something like a commercial revolution linked to the progress of the church (Campbell 2003, 18).

The location of Thetford at the junction of the Icknield Way and the River Little Ouse, coupled with the recovery of large numbers of Middle Saxon coins and metal objects, puts it in the category of a 'productive' site. It is the large scale of the coinage found on such sites, second only to that of the great *emporia*, which, together with their location along major lines of transport and communication, has led to the suggestion that they represent the places of former markets, fairs and/or settlements involved in trade (Metcalf 1984, 27).

Thirty-one sites have been categorised as principal 'productive' sites, all except four of them being located in the eastern counties of England (Blackburn 2003, 22 fig.3.1). An assessment of relative importance in terms of coin loss from AD 600–1180 puts Thetford in twelfth place with over 109 early medieval coins (Blackburn 2003, 35). Although the town has yielded many coins from the 8th century onwards their distribution is weighted to the 11th and 12th centuries since a substantial proportion of the Late Saxon and later medieval town has been extensively excavated (Blackburn 2003, 34). It has been postulated above that excavations on the west side of Thetford and along Brandon Road provide evidence for a quite widespread, if scattered settlement in the Early and Middle Saxon period (Fig. 2). Based on this evidence it is estimated that Middle Saxon Thetford may have covered an area of up to 19 ha, which, though very large, is still much smaller than the known *emporia* such as *Hamwic* (45 ha), Ipswich (over 125 acres) and *Lundenwic* (148 acres) (Campbell 2003, 14).

Perhaps surprisingly, excavated Early Saxon settlement remains in Thetford have not generally produced large quantities of metal objects. Alongside the metal items that may have been produced in the smithy at Brandon Road, a possible example of local production and trade was found in the Middle Saxon assemblage: a copper alloy spoon (SF 352, Fig. 21) is virtually identical to one from West Stow, 13km to the south (Fig. 3), leading to the suggestion that they were made by the same hand (Crummy, Ch. 3.III).

Finds of Middle Saxon metalwork certainly far exceed those of Early Saxon date in Thetford and the Brandon Road site suggests possible working of both ferrous and non-ferrous metals. In spite of limited excavation in the putative Middle Saxon settlement, Thetford sites have produced twenty-six Middle Saxon pins, fifteen of which were recovered from the Brandon Road excavations (Fig. 20) with a further five found by metal detecting of the Bypass compound (Crummy, Ch. 3.III). Two pins were found in Davison's excavation, one from Redcastle Furze, another by metal detectorists at the Priory of Holy Sepulchre (HER 11521) and another was found in the Late Saxon town on the north side of the river (HER 5913). A further Middle to Late Saxon pin was found while dredging the Little Ouse (Rogerson and Dallas 1984, fig.

112 no. 45). The number of pins thus far recovered from Thetford is comparable with several known Middle Saxon market centres and *emporia*, possibly even *Hamwic*, leading to the suggestion that Thetford may have held a similar role at this time (Crummy, Ch. 3.II). Estimation of the scale of Middle Saxon Thetford's importance is problematic on current evidence, but it is clear that it was already beginning to emerge as an important market centre before its adoption as the capital of Danish-ruled East Anglia in the 9th century.

The significance of metal finds on some 'productive' sites has provoked speculation that such pieces might have been used as currency (Campbell 2003, 14). Many Middle Saxon coins have been recovered from recent excavations at Brandon Road and from investigations during the construction of the Bypass including two silver *sceattas* (7th to 8th century), two middle 9th-century *stycas,* and sixteen other Anglo-Saxon coins of which ten are pre-10th century (HER 24849 and HER 24850; Andrews 1995, appendix 1). Other coins from the Bypass area are known to have been sold without record. The *stycas* (Æthelred II of Northumbria *c*.844–*c*.848) are both unstratified; one having been recovered from the excavation and another by metal detecting during construction of the Bypass. Two other *stycas* have been found in Thetford, both Æthelred II (one from excavation site HER 1092 2km to the south-east and another as a surface find 1km to the east; Andrews 1995, 26): these are rare finds in East Anglia, being most commonly found around York. A Series R *sceat* found at Red Castle (Knocker 1967, 148) is one of the relatively few other Middle Saxon coins that have been found elsewhere in Thetford.

The end of the settlement

There is little evidence for activity at the Brandon Road site after the middle of the 9th century — finds consist of a few sherds of Thetford ware (N = 26), production of which is generally thought to have begun in the late 9th or 10th century, and a few objects of possible Late Saxon date (including metalwork and a loomweight from the excavations and several metal items from the Bypass; Appendix 5). Coins from the Bypass area (HER 24849 and 24850) included several pennies spanning the mid 9th century to 1066 (Andrews 1995, 26 and appendix 1). When combined with the medieval coins from the same area this is an unusually high number for the period, particularly on an ostensibly vacant site. The possible reasons for this are explored by Crummy (Ch. 3.II), including continued, or occasional, use of the area for fairs or markets, which were important sources of revenue for both towns and monastic establishments as well as individual merchants.

At Brandon in Suffolk the evidence suggests a late 9th-century abandonment (Carr *et al* 1988, 374). The Anglo-Saxon Chronicle for 869 states that the Danish forces took winter quarters at Thetford, and that they slew the king (Edmund) and overran the entire kingdom (Swanton 2000, 71). It appears that the Middle Saxon settlements at Thetford and Brandon were both abandoned around this period. Although there is no evidence of destruction it seems more than coincidental that new defences were constructed at Thetford to the east of the Middle Saxon settlement (Fig. 2). Evidence for a similar movement of settlement has been found elsewhere — *Hamwic* was established on a new site *c*.700, but had been abandoned in favour of the defended burh to the west by *c*.900 (Blackburn 2003, 26). Another parallel comes from London where *Lundenwic* was located along the Strand to the east of the Roman city but by the 9th century had moved to *Lundenburgh* (Hodges 1989, 94).

It is uncertain whether Late Saxon Thetford began as a Danish camp, lying either to the north or south of the Bridge Street crossings or elsewhere (Andrews 1995, 137). Dallas has stated that if the northern circuit did have deliberate, military origins, these may lie in the period 870–920, either as a Danish creation as a winter camp, or perhaps a creation of Edward the Elder after the campaign which saw the submission of East Anglia to Edward in 917 (Dallas 1993, 218). Evidence from excavation in the Late Saxon town would seem to support an early 10th-century date for its establishment since Stamford ware and coins are conspicuously absent from the excavated assemblages (Andrews and Penn 1999, 91) on both the north and south banks of the river.

VI. Conclusions

Prior to excavation the site at Brandon Road was unpromising; its recent history as a road construction compound followed by a golf course had caused considerable disturbance in places, and it was anticipated that the local geology (soft, shifting sands) and wildlife (burrowing rabbits and moles) would make stratigraphic recording problematic. Despite these difficulties, the investigation provided important evidence for local land-use from the Mesolithic to the Late Saxon periods and has wide-reaching implications for the development of Anglo-Saxon Thetford.

Each of the research objectives outlined in Chapter 1 has now been addressed. The lithic assemblage has provided an excellent opportunity to make a detailed study of specific activities and to draw some general conclusions about early land-use. The strong possibility that the burnt flint 'mound' is Mesolithic makes it a valuable addition to the growing evidence for features of this date that are, as yet, rarely found or recognised. Survival of the adjacent flint knapping hollow has permitted an unusually detailed reconstruction of the events that took place here; the fact that it can not be dated precisely is disappointing but does little to detract from the results. Despite being set back a short distance from the Little Ouse, Brandon Road evidently attracted visitors during the Mesolithic and again in the later Neolithic suggesting that what constitutes the river margins can be applied quite loosely.

The general absence of remains prior to the late 1st century AD indicates that the earliest farming did not take place here until the very end of the Iron Age or beginning of the Roman period. Indeed the pottery suggests that the site was not intensively settled until the middle of the 2nd century AD. Many of the finds demonstrate a fairly low status, at least in the early phases. By contrast a group of 1st-century brooches appears incongruous and these and other items may be the result of riverside votive offerings.

A particularly valuable contribution has been made to examining the transition from Late Roman to early Anglo-Saxon traditions, since the continuation of Late Roman settlement without a break into the 5th century has rarely been documented in the Thetford area previously. The abandonment of the Early Saxon settlement by the early 6th century and apparent re-occupation in the 8th century

is also important since it builds on the work of others to tell an emerging story of shifting settlement within an area that can broadly be defined as Early and Middle Saxon Thetford. Although a number of craft activities are represented at Brandon Road it is Middle Saxon metalworking that is of greatest significance and of particular importance is the possibility of specialisation in steel production.

Finally the Brandon Road site has added to a growing body of evidence that supports the hypothesis that Thetford was beginning to emerge as an important market place in the Anglo-Saxon period, laying the foundations for its adoption as the capital of East Anglia under Danish rule in the 9th century.

Appendix 1. Summary catalogue of the coins from the 1990 evaluation

Roman coin periods are those defined in Reece 2002, 145.
Key to references given in Abbreviations.

SF	*Context*	*Phase*	*Identification*	*Mint*	*Reference*	*Date*	*Coin Period*
23	T5 u/s	-	Carausius, *antoninianus*, rev. Pax Aug(/-	London	as RIC 100	287-93	14
60	T8 (77)	-	Constantinopolis, rev. Victory on prow	-	copy as HK 52	330-45	17
63	T9 (67)	-	Constantine I, rev. Beata Tranquillitas	Trier	RIC 368	322-23	16
64	T9 (67)	-	Constantine I, rev. Gloria Exercitus, 2 standards	(Trier)	copy as HK 48	330-45	17
66	T9 (67)	-	Constantine I, rev. Gloria Exercitus, 2 standards	-	copy as HK 48	330-45	17
67	T9 (67)	-	Constantinopolis, rev. Victory on prow	Trier	HK 59	330-35	17
68	T9 (67)	-	House of Constantine, rev. Gloria Exercitus, ?1 standard	-	copy as HK 87	335-45	17
69	T9 67)	-	Urbs Roma, rev. wolf and twins	-	copy as HK 51	330-45	17
71	T9 (68)	-	Constantinopolis, rev. Victory on prow	(Trier)	copy as HK 52	330-45	17
72	T9 (68)	-	House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy as HK 48	330-45	17

Appendix 2. Summary catalogue of the coins from the 2002 excavation

The coins are listed by site phase and within phase by coin date. Roman coin periods are those defined in Reece 2002, 145. Key to references given in Abbreviations.

SF	*Context*	*Phase*	*Identification*	*Mint*	*Reference*	*Date*	*Coin Period*
361	2289	3	Valens, rev. Securitas Reipublicae	Arles	CK 528	367-75	19
369	2310	3	Valens, rev. Securitas Reipublicae	Siscia	as CK 1429	367-75	19
338	2241	4	?Tetricus I, *antoninanus*, rev. illegible	-	-	?270-73	14
340	871	3	Constantine I, rev. Marti Conservatori	Trier	as RIC 49	313-15	15
317	982	4	Constantine I, rev. Gloria Exercitus, 2 standards	Trier	HK 62	330-35	17
371	1899	4	Constantine II, rev. Gloria Exercitus, 2 standards	Lyon	HK 198	330-35	17
327	1062	4	Constantinopolis, rev. Victory on prow	-	copy as HK 52	330-45	17
297	2241	4	Urbs Roma, rev. wolf and twins	(Lyon)	copy as HK 190	330-45	17
298	2241	4	Constantine II, rev. Gloria Exercitus, 2 standards	(Lyon)	copy as HK 181	330-35	17
339	2240	4	Constantinopolis, rev. Victory on prow	(Lyon)	copy as HK 185	330-45	17
373	2303	4	Tetricus I, *antoninianus*, rev. illegible	-	-	270-73	13
370	1237	4	Gallienus, *antoninianus*, rev. Dianae Cons Aug, stag	-	RIC 178	260-68	13
404	1237	4	barbarous radiate, rev. ?Pax	-	-	270-90	14
356	1237	4	Constantius II, rev. two Victories	Trier	as HK 147	346-7/8	18
357	1237	4	Valentinian I, rev. Securitas Reipublicae	Arles	as CK 481	364-75	19
358	1237	4	House of Valentinian, rev. Securitas Reipublicae	Lyon	as CK 303	367-75	19
359	1237	4	found adhering to SF 360; Valentinian I, rev. Securitas Reipublicae	Arles	CK 492	364-7	19
360	1237	4	found adhering to SF 359; Valentinian I, rev. Securitas Reipublicae	Arles	CK 528	367-75	19
303	2245	4	illegible radiate *antoninianus*	-	-	3rd c.	-
285	2315	6	Constantine I, rev. Beata Tranquillitas	London	as RIC 239	322-3	16
206	2203	6	Urbs Roma, rev. wolf and twins	-	copy as HK 51	330-45	17
265	2223	6	Urbs Roma, rev. wolf and twins	-	copy as HK 51	330-45	17
429	2315	6	Theodora, rev. Pietas Romana	-	copy as HK 105	337-45	17

SF	*Context*	*Phase*	*Identification*	*Mint*	*Reference*	*Date*	*Coin Period*
109	-	-	Tetricus II, *antoninianus*, rev. ?sacrificial implements	-	-	270-73	13
131	-	-	Claudius II, rev. Pax Aug	-	-	268-70	13
266	-	-	Postumus, *antoninianus*, rev. illegible, standing figure	-	-	260-68	13
354	-	-	barbarous radiate, obv. ?Tetricus II, rev. illegible	-	-	270-90	14
364	-	-	silver-plated copper-alloy; barbarous radiate, obv. Victorinus, rev. Pietas	-	-	270-90	14
394	-	-	barbarous radiate, obv. Tetricus I, rev. Spes	-	-	270-90	14
122	-	-	Crispus, rev. Caesarum Nostrorum	Rome	as RIC 238	321	16
207	-	-	Constantine II, rev. illegible	-	-	317-37	16
128	-	-	Constantius II, rev. Providentiae Caess	Trier	RIC 506	327-8	16
133	-	-	Constantine I, rev. Beata Tranquillitas	London	as RIC 239	324-30	16
111	-	-	Constantinopolis, rev. Victory on prow	Trier	HK 71	330-35	17
114	-	-	Urbs Roma, rev. wolf and twins	(Trier)	copy as HK 51	330-45	17
115	-	-	Constantine II, rev. Gloria Exercitus, 2 standards	-	as HK 49	330-35	17
116	-	-	Constantine II, rev. Gloria Exercitus, 2 standards	-	copy as HK 49	330-45	17
120	-	-	Helena, rev. Pax Publica	(Trier)	copy as HK 112	337-45	17
121	-	-	House of Constantine, rev. Gloria Exercitus, 2 standards	(Siscia)	copy as HK 747	330-45	17
123	-	-	Constantine II, rev. Gloria Exercitus, 2 standards	Lyon	HK 198	330-5	17
124	-	-	Constantius II, rev. Gloria Exercitus, 1 standard	(Arles)	copy as HK 441	337-45	17
125	-	-	Constantine II, rev. Gloria Exercitus, 2 standards	(?Trier)	copy as HK 49	330-45	17
126	-	-	House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy as HK 87	335-45	17
130	-	-	Theodora, rev. Pietas Romana	-	as HK 105	337-41	17
136	-	-	Constantine II, rev. Gloria Exercitus, 2 standards	Lyon	HK 213	330-5	17
137	-	-	House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy as HK 87	335-45	17
139	-	-	Constans, rev. Gloria Exercitus, 1 standard	(Trier)	copy of HK 95	335-37 (-45)	17
145	-	-	House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy(?) as HK 87	335-41/5	17
148	-	-	minim: House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy as HK 87	335-45	17
162	-	-	Urbs Roma, rev. wolf and twins	Lyon	HK 190	330-35	17
167	-	-	Urbs Roma, rev. wolf and twins	Trier	HK 51	330-35	17
172	-	-	minim: Constantinopolis, rev. Victory on prow	-	copy as HK 52	330-45	17
175	-	-	House of Constantine, rev. Gloria Exercitus, 1 standard	-	copy as HK 87	335-45	17
186	-	-	minim: Constantinopolis, rev. Victory on prow	-	copy as HK 52	330-45	17
246	-	-	Constantine I, rev. Gloria Exercitus, 2 standards	-	as HK 48	330-5	17
267	-	-	Theodora, rev. Pietas Romana	-	copy as HK 105	337-41	17
300	-	-	Theodora, rev. Pietas Romana	-	as HK 105	337-41	17
106	-	-	House of Constantine, pierced for suspension so that obverse seen correct way up; rev. Fel Temp Reparatio, hut (1)	Trier	CK 29	346-50	18
118	-	-	Constans, rev. two Victories	Trier	as HK 160	346-7/8	18
341	-	-	Constans, rev. two Victories	Trier	HK 138	346-7/8	18
343	-	-	Constans, rev. two Victories	(Arles)	copy as HK 456	346-7/8	18
329	-	-	Gratian, rev. Gloria Romanorum (8)	Lyon	as CK 343	367-75	19
336	-	-	House of Valentinian, rev. Securitas Reipublicae	Arles	as CK 477	364-78	19
342	-	-	Valens, rev. Securitas Reipublicae	Siscia	CK 1395	367-75	19
163	-	-	illegible radiate *antoninianus*	-	-	3rd c.	-
395	-	-	illegible radiate *antoninianus*	-	-	3rd c.	-
398	-	-	illegible	-	-	3rd-4th c.	-
104	-	-	illegible	-	-	3rd-4th century	-
347	-	-	illegible minim	-	-	4th c.	-
296	-	-	minim-sized blank flan, or not coin	-	-	?4th c.	-
390	-	-	Æthelred II of Northumbria, *styca*	-		*c*.844-848	-
140	-	-	farthing token, ?James I	-	-	?1613-25	-

Appendix 3. Summary catalogue of the coins from the area of the 1988 Thetford Bypass

The coins are listed chronologically in catalogue number order.

Cat. No.	*Material*	*Identification*	*Date*	*Location*
1	cu-al	Vespasian(?), *sestertius*, rev. crossed cornucopiae with central caduceus	69-79?	spoil heap Area 7, Map 4
2	cu-al	Faustina II, *sestertius*	160-80	spoil heap Area 7, Map 4
3	cu-al	Commodus, *sestertius*, rev. illegible	180-92	golf course, river area
4	cu-al	Gallienus, *antoninianus*, rev. ?Libero P Cons Aug, panther to left	260-68	golf course, river area
5	cu-al	Claudius II, *antoninianus*, rev. Mars	268-70	golf course, river area
6	cu-al	Claudius II, *antoninianus*, rev. Libertas Augg	268-70	spoil heap Area 7, Map 4
7	cu-al	Tetricus I, *antoninianus*, rev. Salus Aug	270-73	golf course, river area
8	cu-al	Tetricus I, *antoninianus*, rev. Fides Militum	270-73	golf course, river area
9	cu-al	Tetricus II, *antoninianus*, rev. Pietas Augustor	270-73	golf course, river area
10	cu-al	Tetricus I, rev. Laetitia Aug	270-73	Brandon Road intersection
11	cu-al	barbarous radiate, obv. legend PROBUS retrograde	270-90	Vets garden, Map 3
12	cu-al	barbarous radiate, rev. illegible	270-90	spoil heap Area 7, Map 4
13	cu-al	barbarous radiate, rev. Spes	270-90	spoil heap Area 7, Map 4
14	cu-al	barbarous radiate, rev. Pax	270-90	spoil heap Area 7, Map 4
15	cu-al	barbarous radiate	270-90	Brandon Road crossing
16	cu-al	illegible *antoninianus*, rev. ?Pax	3rd c.	golf course, river area
17	cu-al	illegible radiate *antoninianus*	3rd c.	spoil heap Area 7, Map 4
18	cu-al	House of Constantine	307-61	spoil heaps
19	cu-al	Constantine I, rev. Felicitas Reipublicae, Trier mint	318-19	Vets garden, Map 3
20	cu-al	House of Constantine, rev. Gloria Exercitus 2 standards	330-35	golf course, river area
21	cu-al	House of Constantine, rev. Gloria Exercitus 2 standards	330-35	golf course, river area
22	cu-al	House of Constantine, rev. Gloria Exercitus 2 standards	330-35	Brandon Road intersection
23	cu-al	Constantinopolis, rev. Victory on prow, Trier mint	330-37	golf course, river area
24	cu-al	Constantinopolis, rev. Victory on prow	330-37	golf course, river area
25	cu-al	Urbs Roma, rev. wolf and twins	330-37	golf course, river area
26	cu-al	Urbs Roma, rev. wolf and twins, ?Lyon mint	330-37	spoil heap Area 7, Map 4
27	cu-al	Constantinopolis, copy; rev. Victory on prow	330-45	Vets garden, Map 3
28	cu-al	Constantinopolis, copy, rev. Victory on prow	330-45	spoil heap Area 7, Map 4
29	cu-al	House of Constantine, rev. Gloria Exercitus 1 standard	335-41	Brandon Road intersection
30	cu-al	Theodora, rev. Pietas Romana, Trier mint	337-41	golf course, river area
31	cu-al	House of Constantine, illegible copy	340-60	golf course, river area
32	cu-al	Constans, rev. twoVictories, Trier mint	347-8	golf course, river area
33	cu-al	House of Constantine, rev. twoVictories	347-8	golf course, river area
34	cu-al	House of Constantine, rev. twoVictories	347-8	golf course, river area
35	cu-al	House of Constantine, rev. Fel Temp Reparatio, falling horseman, Lyon mint	348-60	Brandon Road intersection
36	cu-al	Constantius II, rev. Fel Temp Reparatio, falling horseman, Lyon mint	348-60	golf course, river area
37	cu-al	House of Constantine, copy, rev. Fel Temp Reparatio, falling horseman	350-60	golf course, river area
38	cu-al	House of Constantine, copy, rev. Virtus, captive and hut	350-60	golf course, river area
39	cu-al	House of Constantine, copy, rev. Fel Temp Reparatio, falling horseman	350-60	golf course, river area
40	cu-al	Valens, rev. Securitas Reipublicae, Siscia mint	364-75	Brandon Road crossing

Cat. No.	*Material*	*Identification*	*Date*	*Location*
41	cu-al	Valens, rev. Securitas Reipublicae, Aquileia mint	364-78	golf course, river area
42	cu-al	Valens, rev. Securitas Reipublicae, Lyon mint	364-78	golf course, river area
43	cu-al	Valens, rev. Securitas Reipublicae; Arles mint	364-78	spoil heap Area 7, Map 4
44	cu-al	Valens, rev. Securitas Reipublicae; Lyon or Arles mint	364-78	spoil heap Area 7, Map 4
45	cu-al	House of Valentinian, rev. Securitas Reipublicae, Arles mint	364-78	golf course, river area
46	cu-al	House of Valentinian, rev. Securitas Reipublicae	364-78	spoil heap Area 7, Map 4
47	cu-al	House of Valentinian, rev. Gloria Romanorum	364-78	Area A, Map 4
48	cu-al	Valentinian I, rev. Securitas Reipublicae, ?Arles mint	364-78	Brandon Road intersection
49	cu-al	Valentinian I, rev. Gloria Romanorum, Lyon or Arles mint	364-78	Brandon Road intersection
50	cu-al	Valens, rev. Securitas Reipublicae	364-78	Brandon Road intersection
51	cu-al	Gratian, rev. Securitas Reipublicae, Lyon mint, as CK 320	367-75	spoil heap Area 7, Map 4
52	cu-al	Gratian, rev. Gloria Novi Saeculi, Arles mint	367-75	spoil heap Area 7, Map 4
53	cu-al	Gratian, rev. ?Gloria Novi Saeculi, ?Arles mint	367-75	spoil heap Area 7, Map 4
54	cu-al	Valens, rev. Securitas Reipublicae, Siscia mint	367-75	Brandon Road intersection
55	cu-al	Gratian, rev. VOT XV MVLT XX	378-83	Brandon Road intersection
56	cu-al	Arcadius, rev. Victoria Augg	388-402	spoil heaps
57	cu-al	House of Theodosius, rev. ?Salus Reipublicae	388-402	spoil heaps
58	cu-al	House of Theodosius, rev. Victoria Auggg	388-402	golf course, river area
59	cu-al	House of Theodosius, rev. Victoria Auggg	388-402	golf course, river area
60	cu-al	Honorius, rev. Victoria Auggg, Arles mint	394-402	spoil heap Area 7, Map 4
61	cu-al	?Honorius, rev. Salus Reipublicae, Aquileia mint	?394-402	Brandon Road intersection
62	silver	Arcadius/Honorius, clipped siliqua, rev. Virtus Romanorum	395-402	spoil heap Area 7, Map 4
63	cu-al	illegible	3rd-4th c.	spoil heap Area 7, Map 4
64	cu-al	illegible	3rd-4th c.	spoil heap Area 7, Map 4
65	cu-al	illegible	3rd-4th c.	spoil heap Area 7, Map 4
66	cu-al	?House of Valentinian, illegible	4th c.	golf course, river area
67	cu-al	illegible copy	4th c.	golf course, river area
68	cu-al	illegible	4th c.	spoil heap Area 7, Map 4
69	silver	*sceatta*, Series R	late 7th-8th c.	bypass
70	silver	*sceatta*, Series X	late 7th-8th c.	bypass
71	silver	Æthelred II of Northumbria *styca*	841-9	bypass
72	silver	Æthelred II of England, long cross penny; see detailed catalogue	c.997-1003	-
73	silver	Henry I, cut halfpenny; see detailed catalogue	c.1125	spoil heap Area 7, Map 4
74	silver	Scottish short cross halfpenny; see detailed catalogue	1165-1249	golf course, river area
75	silver	Henry II/III, short cross cut halfpenny; obv. with sceptre	1180-1247	golf course, river area
76	silver	Henry II-III, short cross cut farthing	1180-1247	-
77	silver	Henry II-III, short cross cut halfpenny	1180-1247	-
78	silver	Henry II-III, short cross cut halfpenny	1180-1247	Brandon Road intersection
79	silver	Henry II-III, short cross cut halfpenny	1180-1247	Brandon Road intersection
80	silver	Henry II-III, short cross cut halfpenny	1180-1247	Brandon Road intersection
81	silver	Henry II-III, short cross cut farthing	1180-1247	Brandon Road intersection

Cat. No.	*Material*	*Identification*	*Date*	*Location*
82	silver	Henry II-III, short cross cut farthing	1180-1247	Brandon Road intersection
83	silver	Richard I or John, short cross cut halfpenny; see detailed catalogue	1189-1216	-
84	silver	Henry III, long cross penny, Class 3	1247-72	golf course, river area
85	silver	Henry III, long cross cut halfpenny; see detailed catalogue	1250-72	-
86	silver	Edward I, penny, bifoliate crown, London mint, Class 10	1278-1307	golf course, river area
87	silver	?Edward I, penny, York mint	1272-1307?	golf course, river area
88	cu-al?	?Edward I jeton; see detailed catalogue	1272-1307?	spoil heaps
89	silver	Edward I-III, penny	1272-1377	golf course, river area
90	silver	Edward I-III, penny, York mint	1272-1377	Brandon Road intersection
91	silver	Edward III, halfpenny, London mint	1327-77	Brandon Road intersection
92	silver	penny of John the Blind of Luxembourg; see detailed catalogue	1344-6?	Brandon Road crossing
93	silver	Richard II, penny, cross on breast, as North 1328	1377-99	Brandon Road crossing
94	silver	unidentified cut farthing	medieval	-
95	cu-al	English jeton	medieval	-
96	cu-al	French jeton, as Barnard 1916 nos 68-74; legend AVE MARIA GRACIA PLENA	14th-15th c.	spoil heap Area 7, Map 4
97	cu-al	French jeton, as Barnard nos 68-74; legend AVE MARIA GRACIA PLENA	14th-15th c.	spoil heap Area 7, Map 4
98	silver	Venetian soldino or 'galyhalpens'; Doge not identified	14th-16th c.	golf course, river area
99	silver	?Edward VI, halfpenny, London mint; see detailed catalogue	1547-53	golf course, river area
100	cu-al	Nuremberg jeton; Hans Krauwinckel	late 16th to early 17th c.	spoil heap Area 7, Map 4
101	cu-al	Nuremberg jeton; Hans Krauwinckel	late 16th to early 17th c.	spoil heap Area 7, Map 4
102	cu-al	Nuremberg jeton	late 16th to early 17th c.	golf course, river area
103	cu-al	Nuremberg jeton	late 16th to early 17th c.	golf course, river area
104	cu-al	Nuremberg jeton; fictitious	16th-17th c.	spoil heap Area 7, Map 4
105	silver	William III, sixpence	1690	spoil heaps
106	cu-al	-	17th-18th c.	golf course, river area
107	cu-al	-	17th-18th c.	golf course, river area
108	cu-al	-	17th-18th c.	golf course, river area
109	cu-al	-	17th-18th c.	golf course, river area
110	cu-al	-	17th-18th c.	golf course, river area
111	cu-al	-	17th-18th c.	golf course, river area
112	cu-al	George III halfpenny	1760-1820	-
113	cu-al	illegible	-	golf course, river area

Appendix 4. Bronze Age, Late Iron Age and Roman objects from the Thetford Bypass, 1988

Material	*Identification*	*Date*	*Location*
cu-al	awl?, rectangular section	Bronze Age?	golf course, river area
cu-al	Langton Down brooch, upper part of bow only	first half 1st century AD	Area A, Map 4
cu-al	brooch foot; ?Rearhook type	Claudian-Neronian	Vet's Garden, Map 3
cu-al	brooch; Rearhook type, with mouldings on the end of the surviving wing and along the length of the bow	Claudian-Neronian	Area A, Map 4
cu-al	brooch; spring and pin only	Roman	Brandon Road intersection
cu-al	hairpin; narrow conical head with three grooves; Cool 1990, Group 5	Early Roman	Brandon Road intersection
cu-al	finger-ring; round section, lap joint, spiral groove decoration	Late Roman?	golf course, river area
cu-al	finger-ring, with blue glass setting	3rd century	Brandon Road crossing
stone	lava quern fragment	Roman-medieval	Brandon Road intersection
cu-al	bowl; complete; see Detailed catalogue	Late Roman	spoil heap Area 7, Map 4
lead	steelyard weight	Roman	Brandon Road intersection
stone	shelly limestone slab, probably wall veneer	Roman?	Brandon Road intersection
cu-al + iron	cu-alloy globular head on iron shank, ?furniture nail	Roman?	golf course, river area

Appendix 5. Anglo-Saxon objects from the Thetford Bypass, 1988

Material	*Identification*	*Date*	*Location*
cu-al	pin fragment; plain biconical head = Hamwic Type Ca1	Middle Saxon	golf course, river area
cu-al	pin fragment; plain biconical head with collar = Hamwic Type Ca2	Middle Saxon	golf course, river area
cu-al	pin fragment; biconical head with ring-and-dot decoration	Middle Saxon	golf course, river area
cu-al	pin fragment; facetted head with collar = Hamwic Type Ba2	Middle Saxon	-
cu-al	pin fragment; globular head above groove	?Middle Saxon	-
cu-al	pin fragment; cylindrical head with collar	?Middle Saxon	-
cu-al	pin fragment; facetted head = Hamwic Type Ba2	Middle Saxon	Vet's Garden, Map 3
cu-al	disc brooch with cross design and traces of enamel	Middle-Late Saxon	Vet's Garden, Map 3
cu-al	hooked tag; circular, plain, with two holes for attachment	Middle/Late Saxon to early medieval	golf course, river area
cu-al	hooked tag; circular, with ring-and-dot decoration and two holes for attachment (the centre of one ring-and-dot has also penetrated the metal, but by accident)	Middle/Late Saxon to early medieval	golf course, river area
cu-al	hooked tag; more or less circular, ring-and-dot decoration, two attachment holes	Middle/Late Saxon to early medieval	spoil heap Area 7, Map 4
cu-al	strap-end; stylised animal head terminal?	Middle Saxon	spoil heap Area 7, Map 4
cu-al + silver	strap-end	?9th c.	Brandon Road intersection, on golf course opposite Vet's
iron	knife; angled back	?Late Saxon	spoil heaps
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
iron	knife	?Late Saxon to early medieval	Brandon Road intersection
cu-al	ring with slip-knot join	Saxon?	golf course, river area

Appendix 6. Medieval and later objects from the Thetford Bypass, 1988

Material	*Identification*	*Notes*	*Date*	*Location*
cu-al	ring-brooch	?circular buckle	medieval	golf course, river area
silver	ring-brooch; with four brambled bosses; pin missing	probably similar to Egan and Pritchard 1991, fig. 163, 1333, which is pewter	13th c.	spoil heaps
cu-al	ring-brooch, with cable decoration on hoop	-	medieval	spoil heap Area 7, Map 4
cu-al	buckle and belt-plate, with moulded decoration on frame	-	medieval	golf course, river area
cu-al	buckle and belt-plate, with moulded decoration on frame	-	medieval	golf course, river area
cu-al	buckle; rectangular loop for strap	-	medieval	golf course, river area
cu-al	buckle; moulded decoration on frame	-	13th c.	-
cu-al	?buckle-plate; openwork, with stamped leaf decoration	-	medieval (?+)	-
cu-al	buckle fragment	-	post-medieval	Vet's Garden, Map 3
cu-al	buckle; D-shaped, with cast foliage ornament on the frame; two rivets on buckle-plate	-	13th c.	spoil heap Area 7, Map 4
cu-al	buckle; with mouldings on the frame; one rivet on buckle-plate	-	13th c.	spoil heap Area 7, Map 4
cu-al	buckle; with roller and with mouldings on the frame; buckle-plate has stamped decoration and two rivets	-	13th c.	spoil heap Area 7, Map 4
cu-al	small buckle; D-shaped; ?from shoe	-	medieval	spoil heap Area 7, Map 4
cu-al	buckle; asymmetrical, thistle-shaped	-	medieval	spoil heap Area 7, Map 4
cu-al	belt- or hinge-plate; openwork; two rivets, each with rove	-	medieval	golf course, river area
cu-al	belt-mount; with fleur-de-lys terminals	-	medieval	spoil heaps
cu-al	strap-end; composite, with pecked XXX decoration and acorn knop	-	14th c.	-
cu-al	finger-ring; square setting	-	medieval	golf course, river area
lead	?hooked fastener; cast animal ornament, attachment loop on reverse	-	medieval	golf course, river area
silver	chape (from dagger); with cut ogee pattern around opening	-	medieval	golf course, river area
cu-al	strap-end; pointed terminal, punched dot decoration and faint transverse lines	-	medieval (+)	spoil heap Area 7, Map 4
lead alloy	badge or token, man playing gittern, central rivet	as Spencer 1998, 325h-1	14th c.	on roundabout
cu-al?	hooked fastener; decorated	-	post-medieval	golf course, river area
lead	token; with chequered shield	?cloth seal	medieval	golf course, river area
cu-al; gilt	casket fitting; strip with perforated lobate terminal	-	medieval	golf course, river area
cu-al; gilt	hook with rivet hole; ?from casket	-	medieval	golf course, river area
cu-al	vessel foot; 'three toed'	-	medieval	golf course, river area
cu-al	upholstery stud, circular	-	16th century	spoil heaps
cu-al	furniture handle back-plate; star-shaped	-	16th century	spoil heaps
iron	bowl, complete; flat base, rim uneven, diameter 228 mm	-	post-medieval	Map 4, marked with cross
lead	weight, conical/biconical	-	-	golf course, river area
lead	weight, conical/biconical	-	-	golf course, river area
lead	weight, conical/biconical	-	-	golf course, river area
lead	weight, conical/biconical	-	-	golf course, river area
lead	weight, conical/biconical	-	-	golf course, river area
lead	weight	-	-	spoil heaps
lead	weight	-	-	spoil heaps
lead	weight	-	-	spoil heaps
lead	weight, conical	-	-	Brandon Road intersection
lead	weight, conical	-	-	Brandon Road intersection
lead	weight, conical	-	-	Brandon Road intersection
lead	weight	-	-	Brandon Road intersection
lead	weight	-	-	Brandon Road intersection

Material	*Identification*	*Notes*	*Date*	*Location*
lead	weight	-	-	Brandon Road intersection
cu-al	book-clasp; punched decoration	-	late medieval to early post-medieval	spoil heap Area 7, Map 4
cu-al	harness pendant; trilobate, plain	-	medieval	golf course, river area
iron	harness buckle; with roller	-	medieval or later	spoil heaps
cu-al; gilt	harness pendant; shell-shaped	as Goodall 1980, fig 264, 36	medieval	spoil heaps
cu-al	harness pendant, enamelled; quatrefoil-shaped, with lion rampant and fleur-de-lys	-	medieval	-
cu-al + iron	cu-al hook with moulded decoration and 'lis' terminal; two rivet holes for attachment, one retains iron rivet	-	medieval	golf course, river area
cu-al	hasp; stirrup-shaped with rivet hole in base	-	medieval	golf course, river area
cu-al	boss; with central rivet hole and milled border	stud or mount	medieval	spoil heaps
cu-al; gilt	mount fragment; rectangular	-	medieval	spoil heaps
iron	key	LMMC type VIIA	late medieval	Brandon Road intersection
cu-al; gilt	hinge-plate with two holes	-	medieval	spoil heap Area 7, Map 4
iron	key; kidney-shaped bow	LMMC Type VII	late medieval	spoil heap Area 7, Map 4
iron	scythe	-	modern?	Brandon Road intersection
lead	shot	-	?post- medieval	spoil heaps
lead	shot	-	?post- medieval	spoil heaps
lead	shot	-	?post- medieval	spoil heaps
lead	shot	-	?post- medieval	spoil heaps
cu-al; gilt	sheet fragment; zigzag 'chip-carved' decoration on edge; one rivet hole	?walked scorper decoration not chip-carving	medieval	golf course, river area
cu-al	ring; plain, D-section	-	?medieval	golf course, river area
cu-al	fragment; with ring-and-dot decoration	-	-	-
lead	equal-armed cross	-	medieval?	-

Appendix 7. Results of slag microanalysis

by Rebecca Rosenthal, Gerry McDonnell and Samantha Rubinson

The location of each of the samples discussed below appears in Fig. 14. NB: the phases used in the slag microanalysis do not relate to the site's stratigraphic phases.

Slag Sample 1

Description
(Pl. App.7.1)
A proto plano-convex accumulation of iron silicate slag formed in the bottom of the smithing hearth. This PCB came from context 349 (equates with fill 523), an upper fill of SFB 2233 (Phase 6b).

Optical Microscopy
(Pl. App.7.2)
This sample exhibits a heterogeneous microstructure There are areas of fine dendritic iron oxide and lath silicate in a glassy matrix, with other areas of globular iron oxide and blocky silicate in a glassy matrix.

SEM Analysis
(Pl. App.7.3)
Bulk analyses (see Table App.7.1) measured high levels of iron oxide and silica but low levels of NaO (0.5% av.) potash (3.0 % av.), lime (2.4 % av.) and alumina (1.3% av.). Magnesium oxide and manganese oxide levels were low (both 0.1% av.). Phase analyses (see Table App.7.2) show that the silicate phases (Phases 1 and 6) are fayalite (2FeO.SiO), the lath silicate (Phase 1) being significantly richer in lime than the blocky silicate (Phase 6). Phase 2 is

Plate App.7.1 Slag Sample 1

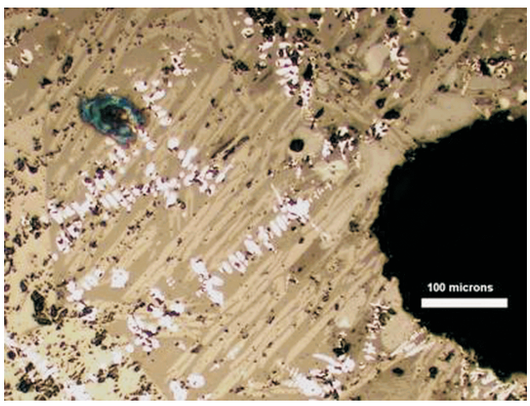


Plate App.7.2 Slag Sample 1, optical microscopy

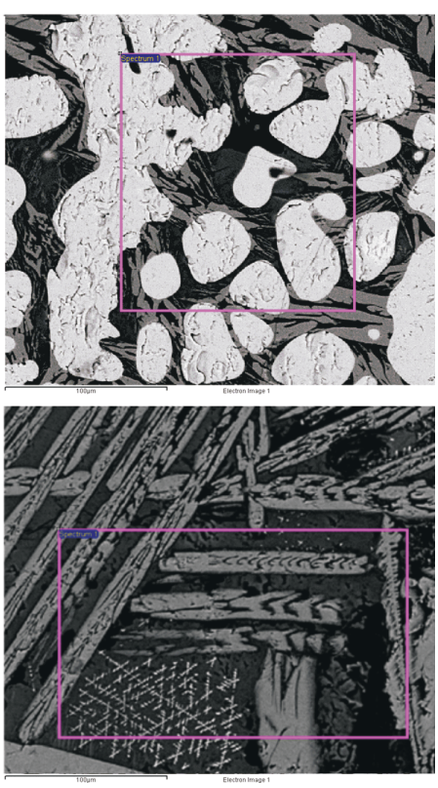


Plate App.7.3 Slag Sample 1, SEM analysis

Formula	*Bulk 1*	*Bulk 2*	*Bulk 3*	*Bulk 4*	*Bulk 5*	*Ave. Bulk*
Na_2O	0.4	0.5	0.8	0.2	0.7	0.5
MgO	0.1	0.0	n.d.	0.2	0.1	0.1
Al_2O_3	1.1	1.1	2.3	0.4	1.4	1.3
SiO_2	19.3	13.0	38.5	26.2	17.6	22.9
P_2O_5	2.0	1.6	3.0	0.8	2.7	2.1
SO_3	0.2	0.1	0.4	0.1	0.3	0.2
K_2O	1.5	2.3	7.5	0.5	3.4	3.0
CaO	1.6	1.8	5.4	0.9	2.4	2.4
TiO_2	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Cr_2O_3	n.d.	n.d.	0.1	0.1	n.d.	0.1
MnO	n.d.	n.d.	n.d.	n.d.	0.1	0.1
FeO	74.0	79.4	41.9	70.5	71.3	67.4
NiO	n.d.	n.d.	0.1	0.1	n.d.	0.1
CuO	n.d.	n.d.	n.d.	n.d.	0.1	0.1
Total	100.1	99.9	100.0	100.0	100.0	100.0

Table App.7.1 Results of bulk area analyses (percentages) for Slag Sample 1

Formula	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Na_2O	0.2	1.7	n.d.	n.d.	1.4	0.4	n.d.
MgO	0.2	n.d.	0.1	0.2	n.d.	0.1	n.d.
Al_2O_3	0.1	3.6	7.4	0.1	2.7	0.8	0.1
SiO_2	32.6	42.3	41.0	0.4	38.3	30.5	0.7
P_2O_5	0.9	4.2	9.4	0.1	6.6	2.4	0.1
SO_3	n.d.	0.7	0.2	n.d.	0.9	0.2	0.1
K_2O	0.1	15.2	0.2	0.1	13.2	1.1	n.d.
CaO	5.4	4.7	3.2	n.d.	6.9	2.4	n.d.
TiO_2	n.d.	0.1	0.3	n.d.	0.1	n.d.	0.1
Cr_2O_3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
MnO	0.1	n.d.	0.1	n.d.	n.d.	0.1	0.1
FeO	60.7	27.6	38.2	98.2	30.0	62.0	98.9
NiO	n.d.	n.d.	n.d.	0.8	n.d.	0.1	0.1
CuO	n.d.	n.d.	n.d.	0.2	n.d.	0.1	n.d.
Total	100.2	100.0	100.1	100.0	99.9	100.0	100.1

Phase 1 - silicate; Phase 2 - glassy; Phase 3 - glassy; Phase 4 - iron oxide; Phase 5 - glassy; Phase 6 - silicate; Phase 7 - iron oxide

Table App.7.2 Results of spot phase analyses (percentages) for Slag Sample 1

a glassy phase rich in NaO (1.7%), PO (4.2%), lime (4.7%) and alumina (3.6%), which suggests the addition of calcium phosphate, titania is also present. Phase 2 also shows high levels of potash (15.2%). Phase 5 is a glassy phase with similar analyses to Phase 2. Phase 3 is a silica rich silicate phase with elevated levels of PO (9.4%) and alumina (7.4%). Phases 4 and 7 are iron oxide phases; titania (0.1%) is present in Phase 7.

Slag Sample 2

Description
(Pl. App.7.4)
The clay lining of an industrial hearth, furnace or kiln which has a vitrified or slag-attacked face. The fragment is greenish black in colour with white flecks and has a glassy appearance. This sample also came from context 349, an upper fill of SFB 2233 (Phase 6b).

Optical Microscopy
(Pl. App.7.5)
The sample microstructure shows fine silicate laths in a blocky, angular phase, possibly hercynite and globular iron oxide in a glassy matrix, metallic prills are also observed. The microstructure also shows areas of silicate laths in a glassy matrix.

SEM Analysis
(Pl. App.7.6)
Bulk analyses (see Table App.7.3) measured high levels of silica and iron oxide. Low levels of potash (1.8% av.), lime (1.5% av.) and alumina (1.9% av.) were detected. Levels of magnesium oxide (0.2% av.) and manganese oxide (0.1% av.) were low. Phase analyses (see Table App.7.4) detected a silica inclusion (Phase 1). Phase 2 is a silicate

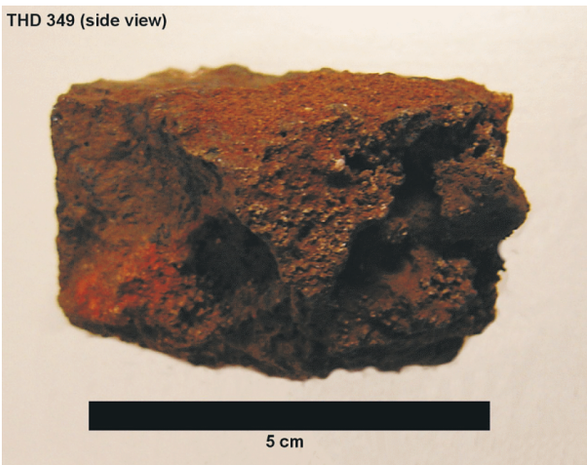


Plate App.7.4 Slag Sample 2

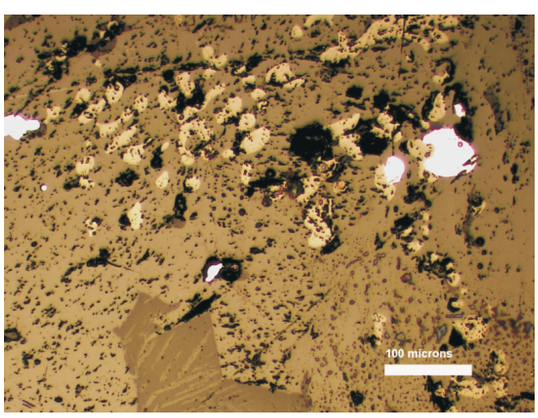


Plate App.7.5 Slag Sample 2, optical microscopy

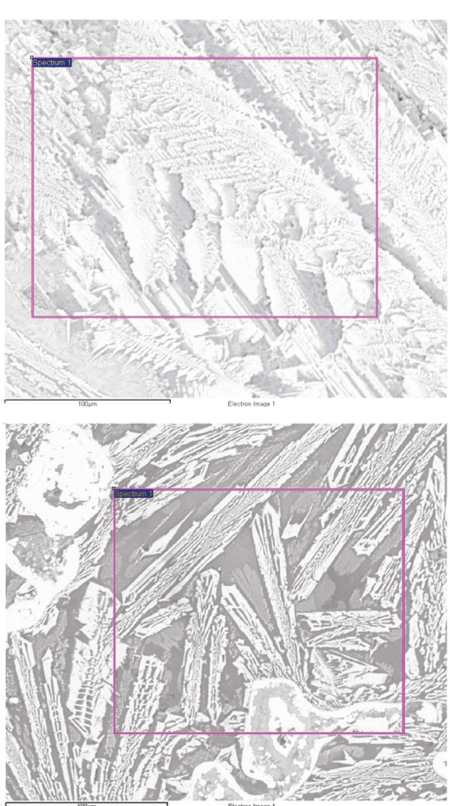


Plate App.7.6 Slag Sample 2, SEM analysis

Formula	*Bulk 1*	*Bulk 2*	*Bulk 3*	*Bulk 4*	*Bulk 5*	*Ave. Bulk*
Na_2O	0.4	0.5	0.6	0.2	0.4	0.4
MgO	0.2	0.2	0.2	0.1	0.2	0.2
Al_2O_3	2.4	2.5	2.0	0.4	2.2	1.9
SiO_2	48.1	48.3	47.9	72.9	47.9	53.0
P_2O_5	0.5	0.5	0.5	4.3	0.5	1.2
SO_3	n.d	0.1	0.2	0.6	0.2	0.3
K_2O	2.3	2.4	2.1	0.2	2.2	1.8
CaO	2.4	1.9	1.1	0.2	2.1	1.5
TiO_2	0.1	0.2	0.1	0.1	0.1	0.1
Cr_2O_3	n.d	0.1	0.1	0.1	0.1	0.1
MnO	0.1	n.d	0.1	n.d	0.2	0.1
FeO	44.0	43.5	45.4	20.8	44.0	39.5
NiO	n.d	n.d	n.d	0.1	0.1	0.1
CuO	n.d	n.d	n.d	0.1	n.d	0.1
Total	100.4	100.0	100.1	100.0	100.1	100.1

Table App.7.3. Results of bulk area analyses (percentages) for Slag Sample 2

Formula	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Na_2O	n.d	0.2	1.1	0.4	0.1	n.d	0.1
MgO	n.d	n.d	0.1	0.1	0.3	0.1	n.d
Al_2O_3	n.d	0.8	2.3	2.7	0.7	0.1	n.d
SiO_2	99.5	7.2	58.6	56.4	38.7	13.4	1.4
P_2O_5	0.1	8.8	1.0	0.7	0.5	0.7	n.d
SO_3	n.d	2.7	0.2	n.d	0.1	1.4	0.2
K_2O	n.d	n.d	4.3	2.9	1.5	n.d	n.d
CaO	0.1	0.5	10.5	2.2	1.8	0.2	n.d
TiO_2	0.1	n.d	0.4	0.1	n.d	n.d	n.d
Cr_2O_3	n.d	n.d	0.1	0.1	n.d	n.d	n.d
MnO	n.d	n.d	n.d	0.2	0.1	n.d	0.1
FeO	0.5	79.8	21.6	34.0	56.1	84.2	98.4
NiO	n.d	n.d	n.d	0.1	n.d	0.1	n.d
CuO	n.d	0.1	n.d	0.1	n.d	0.1	n.d
Total	100.1	100.2	100.1	100.0	99.9	100.3	100.1

Phase 1 - silica inclusion; Phase 2 - silicate; Phase 3 - glassy; Phase 4 - silicate; Phase 5 - silicate; Phase 6 - silicate; Phase 7 - iron oxide

Table App.7.4. Results of spot phase analyses (percentages) for Slag Sample 2

phase with elevated levels of PO (8.8%) and SO (2.7%). Phase 3 is a glassy phase rich in lime (10.5%) with lower levels of potash (4.3%), alumina (2.3%) and NaO (1.1%). Phase 4 was a silica rich silicate with levels of alumina (2.7%), potash (2.9%) and lime (2.2%) present. Phases 5 and 6 are silicate phases and Phase 7 is an iron oxide phase.

Slag Sample 3

Description
(Pl. App.7.7)
Iron silicate slag generated by the smelting process, *i.e.* the extraction of the metal from the ore. This sample has a viscous appearance. The sample of smelting slag again came from an upper fill (context 523, equates with fill 349) of SFB 2233 (Phase 6b).

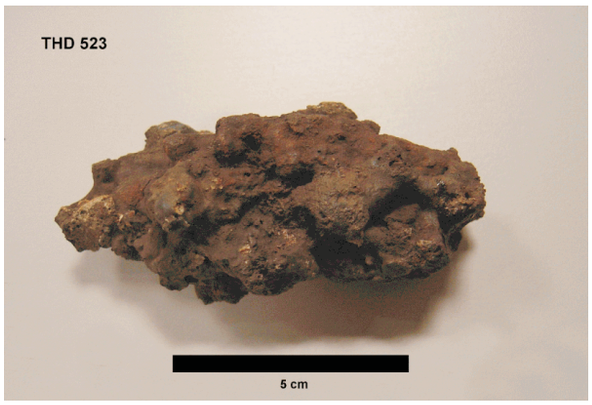


Plate App.7.7 Slag Sample 3

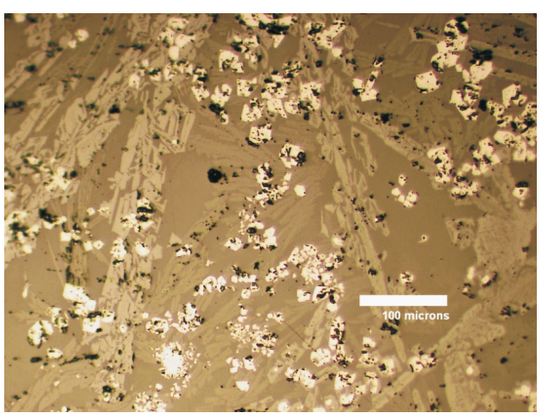


Plate App.7.8 Slag Sample 3, optical microscopy

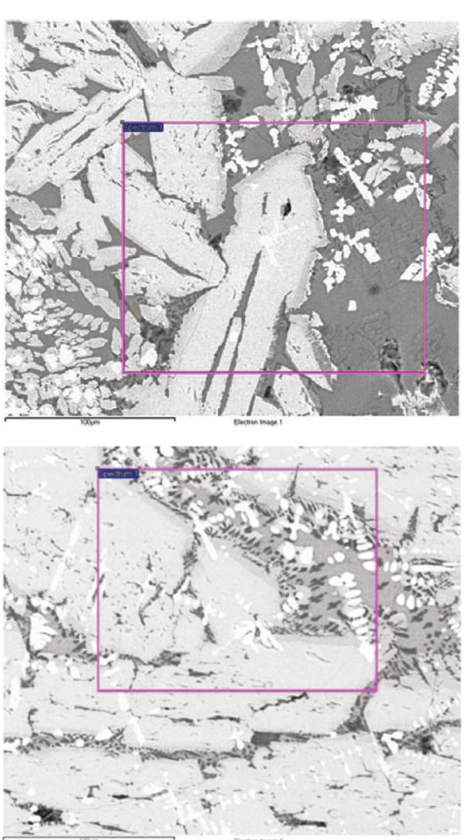


Plate App.7.9 Slag Sample 3, SEM analysis

Formula	*Bulk 1*	*Bulk 2*	*Bulk 3*	*Bulk 4*	*Bulk 5*	*Ave. Bulk*
Na_2O	0.5	0.5	0.3	0.4	0.2	0.4
MgO	0.3	0.1	0.3	0.2	0.3	0.2
Al_2O_3	1.2	1.7	2.1	1.5	4.8	2.3
SiO_2	29.7	38.8	32.4	37.4	64.2	40.5
P_2O_5	0.8	1.4	1.0	1.3	0.5	1.0
SO_3	n.d	0.3	0.1	0.2	n.d	0.2
K_2O	1.9	3.5	3.2	3.7	3.4	3.1
CaO	4.3	7.6	5.9	8.6	4.5	6.2
TiO_2	n.d	0.1	0.1	n.d	0.5	0.2
Cr_2O_3	0.1	n.d	n.d	n.d	0.1	0.1
MnO	0.1	0.1	0.2	0.1	0.2	0.2
FeO	61.0	46.3	54.8	46.8	21.4	46.0
NiO	0.2	n.d	n.d	0.1	n.d	0.1
CuO	n.d	0.1	n.d	n.d	n.d	0.1
Total	100.0	100.3	100.2	100.3	100.1	100.2

Table App.7.5 Results of bulk area analyses (percentages) for Slag Sample 3

Formula	*1*	*2*	*3*	*4*	*5*	*6*
Na_2O	n.d	0.1	0.2	n.d	0.3	0.2
MgO	n.d	0.7	n.d	n.d	1.3	0.8
Al_2O_3	0.7	n.d	14.0	0.1	5.1	5.2
SiO_2	2.6	49.6	54.1	99.5	45.1	47.6
P_2O_5	n.d	0.1	0.8	0.1	0.1	0.5
SO_3	n.d	0.1	n.d	0.2	n.d	n.d
K_2O	0.3	0.1	18.1	n.d	3.9	4.0
CaO	0.2	18.1	2.2	0.1	2.0	2.9
TiO_2	0.2	0.1	0.1	n.d	0.2	0.2
Cr_2O_3	0.1	n.d	n.d	n.d	n.d	n.d
MnO	n.d	0.1	n.d	n.d	0.1	0.1
FeO	96.5	31.3	11.1	0.4	42.1	38.7
NiO	n.d	0.1	n.d	n.d	0.1	n.d
CuO	0.1	0.1	n.d	n.d	n.d	n.d
Total	100.5	100.3	100.6	100.4	100.2	100.2

Phase 1 - iron oxide; Phase 2 - glassy; Phase 3 - glassy; Phase 4 - silica inclusion; Phase 5 - silicate; Phase 6 - silicate

Table App.7.6 Results of spot phase analyses (percentages) for Slag Sample 3

Optical Microscopy
(Pl. App.7.8)
The sample microstructure is dominated by lath silicate and fine dendritic iron oxide in a glassy matrix. There are also areas of lath silicate and free iron oxide in a glassy matrix, where the iron oxide has a blocky morphology rather than a globular or dendritic structure.

SEM Analysis
(Pl. App.7.9)
Bulk analyses (see Table App.7.5) detected high levels of silicate and iron oxide. High levels of potash (3.1% av.) and lime (6.2% av.) were detected along with levels of alumina (2.3% av.) and PO (1.0% av.). The levels of magnesium oxide detected were low (0.2% av.) as were the levels of manganese oxide (0.2% av.). Although the levels of manganese oxide were low they were slightly

higher, and not significantly higher, in comparison to the other samples analysed as part of this study. Phase analyses (see Table App.7.6) showed the iron oxide phase (Phase 1) showed low levels of titania (0.2%), potash (0.3%) and alumina (0.7%). Phase 2 is a glass phase with increased levels of lime (18.1%), indicating some substitution of FeO with CaO. Glassy Phase 3 has elevated levels of potash (18.1%) and alumina (14.0%) with low levels of lime (2.2%). Phase 4 is a silica inclusion. Phases 5 and 6 are silica rich silicate phases showing elevated levels of alumina (c.5%).

Plate App.7.10 Slag Sample 4

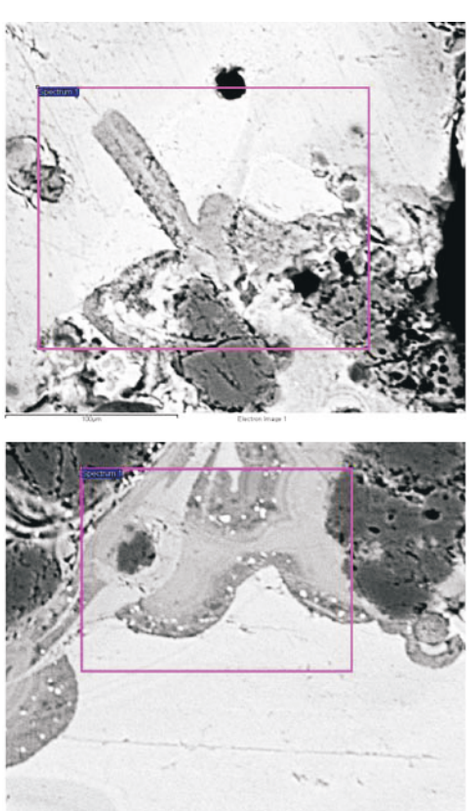


Plate App.7.11 Slag Sample 4, SEM analysis

Slag Sample 4

Description
(Pl. App.7.10)
Iron silicate slag generated by the smelting process, i.e. the extraction of the metal from the ore. Tap slag is one of the most characteristic forms and is distinguished by either a ropey morphology of the upper cooling surface or a fine crystalline fracture with spheroidal vesicles. This smelting slag came from context 922, a fill of slot 923 associated with Structure 2237 (Phase 6b).

Optical Microscopy
The sample microstructure was very fine and difficult to resolve using optical microscopy. Scanning electron microscopy is required to determine information regarding the phases present in this sample.

Formula	*Bulk 1*	*Bulk 2*	*Bulk 3*	*Bulk 4*	*Bulk 5*	*Ave. Bulk*
Na_2O	0.2	0.6	0.3	0.4	0.1	0.3
MgO	0.2	0.6	0.4	0.4	n.d	0.4
Al_2O_3	4.8	3.8	2.5	3.0	0.4	2.9
SiO_2	67.0	71.0	87.4	68.9	95.0	77.9
P_2O_5	7.7	3.1	0.4	3.3	1.1	3.1
SO_3	0.4	0.1	0.1	0.2	n.d	0.2
K_2O	2.7	2.7	1.3	4.0	0.3	2.2
CaO	4.0	6.1	2.9	4.0	0.4	3.5
TiO_2	0.8	0.5	0.4	0.3	0.1	0.4
Cr_2O_3	n.d	0.1	n.d	n.d	n.d	0.1
MnO	n.d	n.d	0.1	0.1	n.d	0.1
FeO	12.2	11.5	4.2	15.6	2.4	9.2
NiO	0.1	0.1	0.2	n.d	0.1	0.1
CuO	n.d	n.d	n.d	n.d	0.1	0.1
Total	100.2	100.0	100.0	100.2	100.0	100.1

Table App.7.7 Results of bulk area analyses (percentages) for Slag Sample 4

Formula	*1*	*2*	*3*	*4*	*5*
Na_2O	0.9	0.1	0.2	0.4	0.5
MgO	0.6	n.d	0.3	0.3	0.5
Al_2O_3	3.2	n.d	3.2	4.1	2.4
SiO_2	65.3	98.9	58.4	73.6	71.2
P_2O_5	0.9	0.2	9.1	2.9	0.8
SO_3	n.d	n.d	n.d	n.d	n.d
K_2O	4.1	n.d	3.9	5.2	4.5
CaO	6.9	0.1	2.5	1.9	6.7
TiO_2	0.3	n.d	0.3	0.2	0.1
Cr_2O_3	n.d	n.d	n.d	n.d	n.d
MnO	0.2	n.d	0.2	0.1	0.2
FeO	17.8	0.7	22.0	11.5	13.4
NiO	n.d	n.d	n.d	n.d	n.d
CuO	n.d	n.d	0.1	n.d	n.d
Total	100.1	100.0	100.3	100.1	100.2

Phase 1 - glassy; Phase 2 - silica inclusion; Phases 3, 4 and 5 - glassy

Table App.7.8 Results of spot phase analyses (percentages) for Slag Sample 4

SEM Analysis
(Pl. App.7.11)
Bulk analyses (see Table App.7.7) show that this sample is silica rich (77.9% av.) with relatively low levels of iron oxide (9.2% av.). Alumina is present (2.9% av.) and high levels of PO (3.1% av.) were detected. Analyses show high levels of potash (2.2% av.) and lime (3.5% av.). Low levels of titania (0.4% av.), Na0 (0.3% av.) and magnesium oxide (0.4% av.) were detected. Phase analyses (see Table App.7.8) were also dominated by silica rich phases. All the phases present with the exception of Phase 2, which is a silica inclusion, are glassy phases. Phase 1 shows slightly increased levels of NaO (0.9%) and magnesium oxide (0.6%). This phase has alumina present (3.2%), low levels of PO (0.9%) and high levels of potash (4.1%) and lime (6.9%). Titania (0.3%) and manganese oxide (0.2%) are also present. Phase 5 has a very similar analysis to Phase 1. Phase 3 has magnesium oxide (0.3%) and NaO (0.2%) present. Alumina is present in this phase (3.2%) and high levels of PO (9.1%), potash (3.9%) and lime (2.5%) were measured.

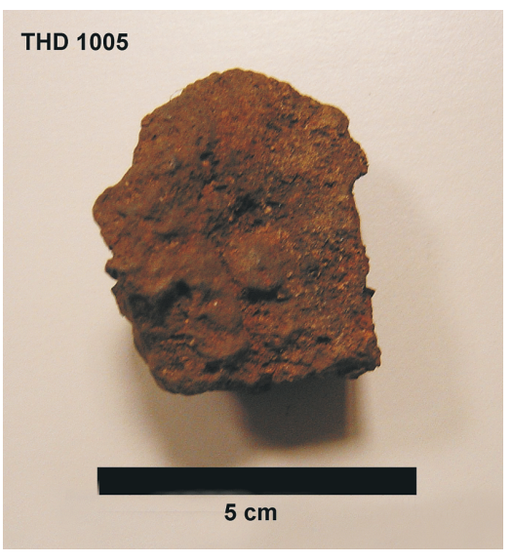


Plate App.7.12 Slag Sample 5

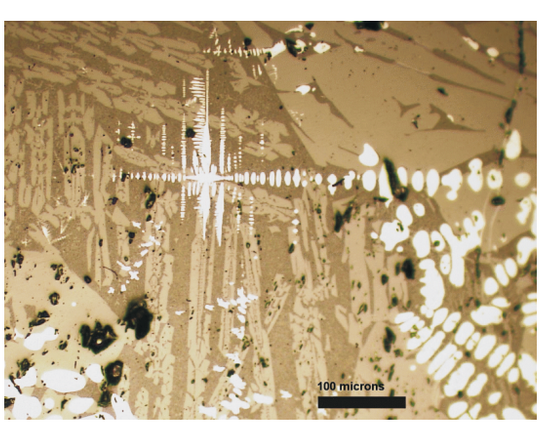


Plate App.7.13 Slag Sample 5, optical microscopy

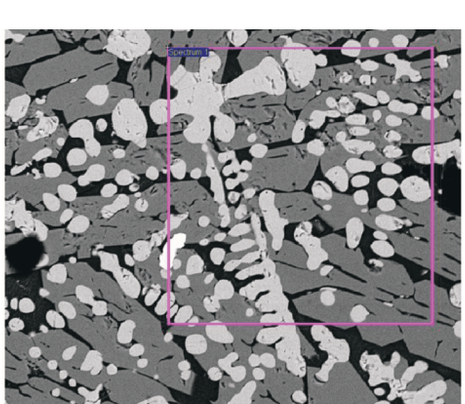


Plate App.7.14 Slag Sample 5, SEM analysis

Slag Sample 5

Description
(Pl. App.7.12)
A proto plano-convex accumulation of iron silicate slag formed in the bottom of the smithing hearth. This sample came from fill 1005, within hollow 1006, Phase 4.

Formula	*Bulk 1*	*Bulk 2*	*Bulk 3*	*Bulk 4*	*Bulk 5*	*Ave. Bulk*
Na_2O	0.1	0.3	0.1	0.2	0.2	0.2
MgO	0.7	0.5	0.4	0.4	0.4	0.5
Al_2O_3	3.9	3.3	3.8	3.4	4.0	3.7
SiO_2	28.6	26.0	22.8	20.9	22.8	24.2
P_2O_5	1.3	1.1	1.2	1.0	1.2	1.1
SO_3	0.3	0.3	0.3	0.4	0.1	0.3
K_2O	1.3	1.1	1.1	1.0	1.2	1.1
CaO	2.8	2.4	2.6	2.2	2.6	2.5
TiO_2	n.d	0.1	n.d	0.1	0.1	0.1
Cr_2O_3	n.d	n.d	0.1	0.1	0.1	0.1
MnO	1.5	1.5	1.4	1.5	1.5	1.5
FeO	59.8	63.5	66.4	69.0	65.9	64.9
NiO	0.1	n.d	n.d	n.d	n.d	0.1
CuO	n.d	0.1	n.d	n.d	0.1	0.1
Total	100.2	100.1	100.0	100.0	100.1	100.3

Table App.7.9 Results of bulk area analyses (percentages) for Slag Sample 5

Formula	*1*	*2*	*3*	*4*	*5*
Na_2O	n.d	n.d	n.d	0.1	0.8
MgO	n.d	0.9	0.2	0.6	n.d
Al_2O_3	1.0	0.3	n.d	0.3	14.6
SiO_2	0.5	30.8	0.8	2.2	34.2
P_2O_5	0.1	0.3	n.d	0.5	4.3
SO_3	n.d	n.d	0.1	0.3	1.1
K_2O	n.d	n.d	n.d	0.2	5.4
CaO	0.1	1.0	n.d	72.1	12.3
TiO_2	0.1	0.1	n.d	n.d	n.d
Cr_2O_3	n.d	n.d	n.d	n.d	n.d
MnO	0.7	2.3	0.1	0.6	0.8
FeO	97.8	64.1	99.1	22.6	26.9
NiO	n.d	n.d	n.d	0.5	n.d
CuO	n.d	0.1	n.d	0.1	n.d
Total	100.3	100.0	100.3	100.1	100.1

Phase 1 - iron oxide; Phase 2 - silicate; Phase 3 - iron oxide dendrite; Phase 4 - glassy; Phase 5 - glassy

Table App.7.10 Results of spot phase analyses (percentages) for Slag Sample 5

Optical Microscopy
(Pl. App.7.13)
The sample microstructure shows areas of lath silicate and dendritic iron oxide, areas of blocky silicate and globular iron oxide with metallic prills are also observed.

SEM Analysis
(Pl. App.7.14)
Bulk analyses (see Table App.7.9) detected low levels of potash (1.1%) and lime (2.5%). Alumina was present (3.7%) and low levels of PO (1.1%). Higher levels of manganese oxide, in comparison to other samples analysed, were detected (1.5%). Phase analyses (see Table App.7.10) detected levels of alumina (1.0%), titania (0.1%) and manganese oxide (0.7%) in Phase 1, an iron oxide phase. Phase 3 was an iron oxide dendrite with a slightly different analysis to Phase 1. Phase 2 is a silicate phase with a composition corresponding to fayalite. Analysis measured low levels of lime (1.0%), PO (0.3%) and magnesium oxide (0.9%). No potash was detected in this phase. Higher levels of manganese oxide (2.3%) were present in this phase. Phase 4 also a silicate phase had similar analyses. Phase 5 is a glassy/hercynite phase showing high levels of alumina (14.6%). High levels of PO (4.3%) and the presence of SO (1.1%) were detected in this phase.

Appendix 8. Petrological analysis of Early Saxon pottery

by Alan Vince

Thin sections of each sample were produced by Steve Caldwell, University of Manchester, and stained using Dickson's method, to distinguish between ferroan calcite, non-ferroan calcite and dolomite (Dickson 1965).

Fabric 1 (V2806)
In the hand specimen, chaff, angular flint, subangular quartz and shell were seen. The following inclusions were noted in thin section:
- Quartz. Abundant fragments ranging from *c*.0.2mm to 1.5mm. Most are either angular or subangular but some well-rounded grains with embayments are present which are likely to be of Lower Cretaceous origin.
- Opaque grains. Abundant angular opaque grains up to 2.0mm across, containing quartz and phosphate inclusions and sparse ferroan calcite up to 0.2mm across. These may be iron pan or fragments of an iron-cemented sandstone (such as occurs in the Lower Cretaceous).
- Sandstone. A single fragment containing angular quartz in a silicious matrix, 1.0mm across.
- Flint. Sparse rounded fragments of unstained flint.
- Biotite. A single sheave of biotite laths, 0.4mm long.
- Grog/relict clay. Sparse rounded fragments containing quartz and other inclusions, similar in colour and texture to the remaining fabric.
- Phosphate. Angular brown-stained fragments up to 0.5mm across.
- Organics. Sparse elongated inclusions up to 1.0mm long surrounded by a darkened halo.

The groundmass consists of optically anisotropic baked clay minerals with moderate quartz and muscovite up to 0.05mm across.

The biotite suggests that there may be some material from the Charnwood inlier present in the fabric, whilst some of the quartz grains appear to have originated in Carboniferous sandstones. However, no material of Permo-Triassic or Jurassic origin was noted. The remaining inclusions are either likely to be of Lower Cretaceous or Upper Cretaceous origin whilst the rounded flint fragments are probably derived from a Tertiary deposit. In sum, therefore, the inclusions suggest that this vessel was made from a boulder clay (or tempered with a fluvio-glacial sand) derived from the Midland drift (i.e. from ice flowing east-south-east over north-east Leicestershire.

Fabric 2 (V2807)
In the hand specimen, chaff and chalk inclusions were seen. The following inclusions were noted in thin section:
- Chalk. Moderate rounded fragments up to 1.5mm across.
- Quartz. Abundant rounded grains up to 0.4mm across.
- Chert. Sparse rounded grains up to 0.4mm across.
- Opaque grains. Rare well-rounded grains up to 0.2mm across.
- Organics. Moderate elongated organic inclusions up to 2.0mm long.
- Shell. Sparse fragments of thin-walled, bivalve shell, with little or no curvature. The shell is mainly composed of prismatic non-ferroan calcite although some have layers of ferroan calcite. Probably includes inoceramids of Upper Cretaceous origin.
- Flint. Sparse brown-stained angular fragments up to 1.5mm long.
- Sandstone. Sparse rounded grains of fine-grained sandstone of fine sandstone/coarse siltstone grain with a silica cement.

The groundmass consists of optically anisotropic baked clay minerals, sparse ferroan calcite, muscovite laths and quartz all up to 0.1mm across. The clay fraction is probably calcareous.

The inclusions in this fabric indicate the presence of Permo-Triassic sand (the rounded quartz, chert, opaque and sandstone grains) together with material of upper Cretaceous origin (the chalk, flint and shell). Permo-Triassic sand is widespread in the East Midlands, as well as being found in boulder clays deposited south of the Humber and east of the Lincolnshire Wolds. It may be that the origin of this fabric is a boulder clay derived from southerly-flowing ice somewhere between the Lindsey Marshes and Cambridgeshire.

Fabric 3 (V2808)
The following inclusions were noted in thin section:
- Quartz. Abundant fragments of subangular and rounded quartz up to 0.4mm across. Also larger, subangular to angular grains with at least one flat face. These are probably of Carboniferous origin.
- Chert. Sparse rounded fragments up to 0.4mm across.
- Feldspar. Sparse subangular un-twinned fragments up to 1.0mm across.
- Sandstone. Sparse rounded fragments up to 0.4mm, as in Fabric 2.
- Organics.

The groundmass is dark brown to black, probably due to a high organic content, obscuring the optical properties of the clay minerals and contains sparse angular quartz and muscovite laths up to 0.1mm across.

The inclusions in this fabric are probably derived from a mixture of Carboniferous sandstone and Permo-Triassic sands. Such sands have a wide distribution in the Midlands and East Anglia (although East Anglian sands normally contain flint and rounded quartzes of Lower Cretaceous origin).

Fabric 4 (V2809)
The following inclusions were noted in thin section:
- Quartz. Abundant grains of rounded, subangular and angular quartz. The rounded grains are mainly less than 0.4mm across. The angular grains include quartz of metamorphic origin with sutured boundaries.
- Feldspar. Sparse rounded fragments of perthite up to 0.4mm across and larger subangular fresh microcline up to 1.0mm across.

- Sandstone. Sparse rounded fine-grained sandstone fragments, as in Fabric 2 and larger subangular fragments up to 3.0mm across. The latter are composed of overgrown quartz grains with pores filled with kaolinite.
- Igneous rock. Moderate angular and subangular fragments of igneous rock of various lithologies, up to 2.0mm across. Rock fragments include altered feldspar, biotite and quartz. In one case the alteration products of the feldspar have a light green colour.
- Metamorphic rock. A single fragment of a rock composed of plagioclase feldspar, an opaque mineral and a pale green pyroxene.
- Chert. Sparse rounded grains up to 0.4mm across.

The groundmass consists of dark brown to black clay (optical status obscured).

The range of igneous and metamorphic rocks in this fabric indicate that it is derived from North Sea drift rather than Midland drift, although it contains Permo-Triassic sand and Carboniferous sandstone fragments as present in Fabric 3.

Fabric 5 (V2810)

The following inclusions were noted in thin section:

- Quartz. Moderate rounded grains up to 0.4mm across. These include mosaic quartz, metamorphic quartz with sutured boundaries, well-rounded grains of probable Lower Cretaceous origin with iron-rich veins. Some larger, angular fragments are also present.
- Chert. Rounded fragments up to 1.0mm across. These include one fragment of bioclastic origin in which brown staining of the original fossil content has been leached from the outer surface of the grain.
- Organics. Moderate fragments surrounded by a blackened halo, up to 1.5mm across.
- Dark brown clay/iron. Rounded fragments up to 0.5mm across.
- Non-ferroan calcite. A single rounded fragment composed of sparry calcite, 0.5mm across.
- Shell. A single fragment of bivalve shell, similar to those in Fabric 2.
- Flint. A single unstained angular fragment 1.5mm long.
- Sandstone. Sparse fragments of fine-grained sandstone, as in Fabric 2, and coarse-grained sandstone with a kaolinite cement.
- Opaques. Sparse rounded tabular fragments, up to 1.5mm long.
- Feldspar. Sparse rounded fragments of plagioclase feldspar, up to 0.4mm across.

The groundmass consists of optically anisotropic baked clay minerals with sparse angular quartz, ferroan calcite up to 0.2mm across and muscovite laths up to 0.1mm long. Some lenses of lighter coloured clay of similar texture are present.

The inclusions in this fabric are probably derived from Carboniferous sandstones, Permo-Triassic sands and Upper Cretaceous deposits (angular unstained flint, the bivalve shell and possibly the calcite). The ferroan calcite specks present in the clay matrix suggest a similar clay source to that of Fabric 2.

Fabric 6 (V2811)

The following inclusions were noted in thin section:

- Quartz. Abundant well-sorted angular quartz grains, *c*.0.1–0.2mm across. These are overgrown with flat faces and clearly derived from a fine-grained orthoquartzite. Well-rounded grains of Lower Cretaceous origin, some with iron-rich veins, rounded grains with a high sphericity and larger angular grains, probably of Carboniferous origin, are present but sparse.
- Igneous rock. Sparse angular fragments up to 0.5mm across composed of altered feldspar, biotite, fresh plagioclase and quartz.
- Sandstone. Sparse angular fragments of a fine-grained sandstone composed of well-sorted, overgrowth grains *c*.0.1–0.2mm across.
- Chert. Sparse rounded fragments up to 0.4mm across.
- Dark brown clay/iron. Sparse rounded fragments up to 0.5mm across.
- Opaques. Sparse rounded fragments up to 0.5mm across.
- Feldspar. Sparse rounded fragments of plagioclase feldspar up to 0.4mm across.
- Organics. Sparse rounded voids surrounded by a darkened halo, up to 0.5mm across. Probably roots.
- Metamorphic rock. A single angular fragment containing strongly pleochroic pyroxene and altered feldspar.

The groundmass consists of optically anisotropic baked clay minerals and rare quartz and muscovite up to 0.5mm across. Sparse microfossils and represented by voids.

The groundmass in this fabric is similar to that in Fabrics 2 and 5 but, if so, has been decalcified. The inclusions are similar in origin to those in Fabric 4 and indicate a North Sea drift origin. The source of the fine-grained orthoquartzite, which forms the majority of the inclusions, is not known. Similar sandstones occur in the Jurassic and a possible source would be the middle Jurassic rocks of North Yorkshire, which would be consistent with a northern origin for the sand.

Fabric 7 (V2812)

The following inclusions were noted in thin section:

- Quartz. Rounded, subangular and angular quartz grains, ranging from 0.2mm to *c*.0.5mm across. Examples of probable Permo-Triassic sand and Carboniferous sandstone origin were noted.
- Shell. Moderate fragments of non-ferroan calcite shell, with a nacreous structure and adhering ferroan calcite cement, up to 1.5mm across.
- Bioclastic Limestone. Moderate fragments of varying lithologies, all of which have a ferroan calcite matrix. Bivalve and gastropod shell fragments are visible, with varying quantities of clay minerals present alongside the calcite. The fragments are irregular in shape and range up to 2.0mm in length.
- Oolitic Limestone. Sparse fragments of oolitic limestone ranging up to 2.0mm across. The ooliths have a light brown micrite coating with ferroan calcite as a secondary cement.
- Opaques. Sparse rounded fragments up to 0.5mm across.
- Flint. A single subangular fragment, 0.5mm across, may be flint or chert.
- Chert. Sparse rounded fragments, including some with brown-stained fossils.

The groundmass consists of optically anisotropic baked clay minerals and rare quartz, ferroan calcite and muscovite up to 0.5mm across. Sparse microfossils and represented by voids.

The clay matrix is similar to that in Fabrics 2, 5 and 6. The distinctive feature of the inclusions is the presence of Jurassic limestones. The other inclusions are of Carboniferous and Permo-Triassic origin. It may be significant that no inclusions of Cretaceous origin are present, except for a single putative flint fragment.

Fabric 8 (V2813)

The following inclusions were noted in thin section:

- Quartz. Moderate rounded, subangular and angular grains, ranging from *c*.0.2mm to 1.5mm across. Well-rounded grains of Permo-Triassic origin and overgrown grains of Carboniferous origin were noted.
- Sandstone. Sparse fragments of coarse-grained sandstone with a kaolinite cement of Carboniferous character, up to 1.0mm across.
- Organics. Sparse elongated voids, some with carbonised contents remaining, surrounded by a darkened halo, up to 1.0mm long.
- Grog/clay/ironstone. Sparse rounded fragments of similar texture and colour to the groundmass but without the carbon content, up to 2.0mm across.
- Opaques. Abundant rounded angular fragments, some opaque. Some contain abundant angular quartz grains *c*.0.1mm to 0.2mm across.
- Basic igneous rock. Two angular fragment, 2.0mm across consisting of phenocrysts of altered plagioclase feldspar in a groundmass of altered glass. One has one curved edge suggesting that they may have been formed by breakage of a larger pebble.

The groundmass consists of optically anisotropic dark brown baked clay minerals with sparse muscovite laths up to 0.1mm long.

The clean groundmass and the abundant opaque material are both similar to Fabric 1. The basic igneous rock fragments might be of North Sea drift origin but it is suspicious that they are both clearly of exactly the same lithology and it is possible that they might be from a pebble of volcanic origin from the Sherwood Sandstone.

Fabric 9 (V2814)

The following inclusions were noted in thin section:

- Phosphate. Abundant, dark brown fragments, up to 2.0mm across, mostly angular and including some possible rectangular bone fragments, *c*.0.1mm wide and *c*.0.3mm long.
- Dark brown clay. Abundant rounded fragments, some merging into opaque grains, up to 2.0mm across.
- Quartz. Moderate angular fragments up to 1.5mm across. Mostly mono-crystalline and un-strained. Some with one or more straight faces and traces of kaolinite adhering to surfaces.
- Feldspar. Sparse subangular fragments of perthite up to 1.5mm.
- Opaques. Abundant rounded grains, mostly well-rounded and *c*.0.2mm across but including some up to 1.5mm across, some of which have angular quartz inclusions *c*.0.2mm across.
- Sandstone. Sparse fragments of probable Carboniferous sandstone, up to 1.5mm across.

The groundmass consists of dark brown, optically-anisotropic baked clay minerals with few visible inclusions.

The clean groundmass of this fabric links it with Fabrics 1 and Fabric 8 whilst the phosphate, opaques and dark brown clay inclusions, the presence of quartz, feldspar and sandstone of Carboniferous character and the lack of Permo-Triassic sand also link this fabric with Fabric 1. Phosphate beds occur within the Lower Cretaceous and this fabric is likely to have been made from such a bed, although whether it was *in situ* or redeposited by glacial action is unknown.

Fabric 10 (V2815)

The following inclusions were noted in thin section:

- Quartz. Abundant subangular and rounded grains, ranging from *c*.0.1mm to 1.5mm across. The larger fragments are probably derived from the igneous rock. The remaining grains are mostly less than 0.4mm across and include some well-rounded grains, and well-rounded grains which have been cracked and subsequently rounded, typical of the desert sand grains found in Permo-Triassic sands.
- Igneous rock. Moderate angular fragments of an acid igneous rock composed of quartz and feldspar. The feldspars are mainly altered orthoclase, some of which are zoned, but include fresh microcline and perthite. No biotite is present in section and must therefore be a minor constituent of the rock.
- Fine-grained sandstone. Sparse rounded fragments of sandstone similar to those in Fabric 2.
- Coarse-grained sandstone. Sparse angular fragments of a rock composed of angular quartz grains in a dark brown cement, up to 2.0mm across. This may be a breccia.
- Opaques. Moderate rounded fragments up to 0.5mm across.
- Voids. Sparse rounded voids, some of which have a low sphericity and range up to 2.0mm across whilst others are spherical and c.0.5mm across.
- Phosphate. A single rounded light brown grain, 0.4mm across, with a structure suggestive of bone.

The groundmass consists of dark brown, optically anisotropic baked clay with sparse quartz, muscovite, microfossils and voids up to 0.1mm across.

The groundmass of this fabric links it with Fabrics 6 and 7. The inclusions are mainly Mountsorrel Granodiorite and Permo-Triassic sand. The voids possibly once held Jurassic limestones, including oolitic limestones.

Bibliography

Albarella, U., 1995 'Depressions on sheep horncores', *J. Archaeol. Sci.* 22, 699–704

Albarella, U., 1999 *The Late Saxon and Early Medieval Mammal and Bird Bones excavated in 1995 from Mill Lane, Thetford, Norfolk*, AML Report 5/99 (London, English Heritage)

Albarella, U., 2004 'Mammal and bird bone', in Wallis, H., *Excavations at Mill Lane, Thetford 1995*, E. Anglian Archaeol. 108, 88–97

Albarella, U., Beech, M. and Mulville, J., 1997 *The Saxon, Medieval and Post-medieval Mammal and Bird Bones excavated 1989–1991 from Castle Mall, Norwich (Norfolk)*, AML Report 72/97 (London, English Heritage)

Albarella, U. and Davis, S.J.M., 1994 *The Saxon and Medieval Animal Bones excavated 1985–1989 from West Cotton, Northamptonshire*, AML Report 17/94 (London, English Heritage)

Anderson, A.C., 1980 *A Guide to Roman Fine Wares*, Vorda Research Series 1 (Swindon, Highworth)

Anderson, K., 2006 'Roman pottery', in Garrow, D., Lucy, S., and Gibson, D., *Excavations at Kilverstone, Norfolk: an Episodic Landscape History*, E. Anglian Archaeol. 113, 141–6

Andrews, G., 1985 'The coarse wares', in Hinchliffe, J. and Sparey-Green, C., *Excavations at Brancaster 1974 and 1977*, E. Anglian Archaeol. 23, 82–95

Andrews, P., 1995 *Excavations at Redcastle Furze, Thetford 1988–9*, E. Anglian Archaeol. 72

Andrews, P., 1997 *Excavations at Hamwic: volume 2*, Counc. Brit. Archaeol. Res. Rep. 109

Andrews, P., 2004 'Metalworking debris', in Ellis, C.J., *A Prehistoric Ritual Complex at Eynesbury, Cambridgeshire*, E. Anglian Archaeol. Occ. Pap. 17, 57

Andrews, P. and Penn, K., 1999 *Excavations in Thetford, North of the River, 1989–90,* E. Anglian Archaeol. 87

Apling H., 1931 'Bronze Age settlements in Norfolk', *Proc. Prehist. Soc. E. Anglia* 6, 365–70

Arnold, C. J. and Wardle, P., 1981 'Early medieval settlement patterns in England', *Medieval Archaeol.* 25, 145–9

Atkins, R. and Connor, A., 2003 *Prehistoric, Roman and Anglo-Saxon Remains at Land off Brandon Road, Thetford: Post-Excavation Assessment*, Cambridgeshire County Council Archaeological Field Unit Rep. No. PXA 42 (two volumes; unpublished)

Ayers, B., 1994 *Norwich: A Fine City* (Stroud, Tempus)

Bagnall Smith, J., 1995 'Interim report on the votive material from Romano-Celtic temple sites in Oxfordshire', *Oxoniensia* 60, 177–203

Bagnall Smith, J., 1998 'More votive finds from Woodeaton, Oxfordshire', *Oxoniensia* 63, 147–85

Bagnall Smith, J., 1999 'Votive objects and objects of votive significance from Great Walsingham, Norfolk', *Britannia* 30, 21–56

Barclay, A., 2002 'Fired clay and clay objects', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994: Romano-British and Early Saxon Occupations*, E. Anglian Archaeol. 99, 98–100

Barfield, L.H., 1991 'Hot stones: hot food or hot baths?', in Hodder, M.A. and Barfield, L.H. (eds), *Burnt Mounds and Hot Stone Technology: papers from the 2nd International Burnt Mound Conference, Sandwell, 12–14 October 1990*, 59–67 (Sandwell: Sandwell Metropolitan Borough Council)

Barnard, F.P., 1916 *The Casting Counter and the Counting Board* (Oxford)

Barone, R., 1980 *Anatomia Comparata dei Mammiferi Domestici Vol. III. Splancnologia*. (Bologna)

Barton, K. J., 1961 'Settlements of the Iron Age and Pagan Saxon periods at Linford, Essex', *Trans. Essex Archaeol. Soc.*, 3rd series 1.2, 57–104

Bartosiewicz, L., Van Neer, W. and Lentacker, A., 1997 *Draught Cattle: their osteological identification and history*, Koninklijk Museum voor Midden-Afrika, Tervuren, Belgi¸, Annalen Zoölogische Wetenschappen/Annales Sciences Zoologiques (Tervuren, Musée Royale de l'Afrique Central)

Bates, S., 2000 'Flint', in Brennand, M., *Report on Archaeological Excavation at Brandon Road, Thetford*. Norfolk Archaeol. Unit Rep. 412, 15–16 (unpublished)

Baumgartner, E. and Krueger, I., 1988 *Phönix aus Sand und Ashe* (München)

Baxter, I.L., 1998a 'Species identification of equids from Western European archaeological deposits: methodologies, techniques and problems', in Anderson, S. (ed.), *Current and Recent Research in Osteoarchaeology, Proceedings of the third meeting of the Osteoarchaeological Research Group*, 3–17 (Oxford, Oxbow)

Baxter, I.L., 1998b *Landwade Road, Fordham: Report on the Mammal, Bird and Amphibian Bone*, Report prepared for Cambridgeshire County Council Archaeological Field Unit (unpublished)

Baxter, I.L., 1999a *Greenhouse Farm, Fen Ditton. Report on the Mammal, Bird, Amphibian and Fish Bone*, Report prepared for Cambridgeshire County Council Archaeological Field Unit (unpublished)

Baxter, I.L., 1999b *Cardinal Distribution Park, Godmanchester, Cambridgeshire: The Animal Bones*, Report prepared for Hertfordshire Archaeological Trust (unpublished)

Baxter, I.L., 2001 *Hertford Central Part VI: Comparative Synthesis of the Animal Bones*, Report prepared for Hertfordshire Archaeological Trust (unpublished)

Baxter, I.L., 2003 'The mammal and bird bones', in Hinman, M., *A Late Iron Age Farmstead and Romano-British Site at Haddon, Peterborough*, Cambridge Archaeological Field Unit Monogr. 2 / Brit. Archaeol. Rep. Brit. Ser. 358, 119–32 and Appendix 2

Bayley, J., 1995 'Metalworking', in Rickett, R., *The Anglo Saxon Cemetery of Spong Hill, North Elmham. Part VII: The Iron Age, Roman and Early Saxon Settlement*, E. Anglian Archaeol. 73, 82–4

Beadsmore, E. with Conneller, C., 2003 'Flint', in Garrow, D., *Excavations at Kilverstone: Broom Covert (Area E)*, University of Cambridge Rep. 518, 24–7 (unpublished)

Becker, C., 1989 'Die Geweihfunde vom Spandauer Burgwall', in von Müller, A. and von Müler-Muèi, K., *Ausgrabungen, Funde und Naturwissenschaftliche Untersuchungen auf dem Burgwall in Berlin-Spanda*, 101–274 (Berlin, Spiess)

Bellamy, B., Jackson, D. and Johnston, G., 2001 'Early iron smelting in the Rockingham Forest area: a survey of the evidence', *Northamptonshire Archaeol.* 29, 103–28

Beresford, G., 1987 *Goltho: the development of an early medieval manor c.850–1150*, English Heritage Archaeol. Rep. 4 (London)

Bevan, L., 1998 'Jet, shale, copper-alloy, iron and lead objects', in Ellis, P., Hughes, G., Leach, P., Mould, C. and Sterenberg, J., *Excavations alongside Roman Ermine Street, Cambridgeshire, 1996*, Birmingham University Field Archaeology Unit Monogr. 1/Brit. Archaeol. Rep. Brit. Ser. 276, 82–5 (Oxford)

Biddle, M., 1990 *Object and Economy in Medieval Winchester*, Winchester Studies 7ii (Oxford)

Biddle, M. and Hinton, D.A., 1990 'Book-clasps and page-holder', in Biddle, M. *Object and Economy in Medieval Winchester*, Winchester Studies 7ii, 755–8 (Oxford)

Birks, C., 2000 *Report on a Watching Brief at Brandon Road, Thetford*, Norfolk Archaeol. Unit Rep. 446 (unpublished)

Bitenc, P., 2002 'Iron combs for wool or flax processing', *Bulletin Instrumentum* 15, 27–30

Blackburn, M., 2003 ''Productive' sites and the pattern of coin loss in England, 600–1180', in Pestell, T. and Ulmschneider, K. (eds), *Markets in Early Medieval Europe, Trading and 'Productive' Sites, 650–850*, 20–36 (Macclesfield, Windgather Press Ltd)

Blackburn, M. and Metcalf, D.M., 1981 *Viking Age Coinage in the Northern Lands*, Brit. Archaeol. Rep. Int. Ser. 122 (Oxford)

Blair, J., 2001 'Brandon' , in Lapidge, M., Blair, J., Keynes, S. and Scragg, D. (eds), *The Blackwell Encyclopaedia of Anglo-Saxon England* 72 (Oxford, Blackwell Publishers Ltd)

Bland, R. and Johns, C., 1995 *The Hoxne Treasure* (London, British Museum Press)

Blinkhorn, P.W., 1990 'Middle Saxon Pottery from the Buttermarket Kiln, Ipswich', *Medieval Ceramics* 13, 12–16

Blinkhorn, P.W., 2005a 'Anglo-Saxon and later pottery from West Fen Road, Ely', in Mortimer, R., Regan, R. and Lucy, S., *The Saxon and Medieval Settlement at West Fen Road, Ely: The Ashwell Site*, E. Anglian Archaeol. 110, 62–65

Blinkhorn, P.W., 2005b 'The Pottery', in Crowson, A., Lane, T., Penn, K. and Trimble, D., *Anglo-Saxon Settlement on the Siltland of Eastern England*, Lincolnshire Archaeol. and Hist. Heritage Rep. Ser. 7, *passim*

Blinkhorn, P.W., in prep. *The Ipswich Ware Project: Ceramics, Trade and Society in Middle Saxon England*, Medieval Pottery Res. Group Monogr.

Blunt, C.E., 1974 'The coinage of Athelstan, King of England, 924–39', *Brit. Numis. J.* 42 (special issue), 35–160

Boessneck, J., 1969 'Osteological differences between sheep (*Ovis aries Linne*) and goat (*Capra hircus Linne*)', in Brothwell, D.R. and Higgs, E. (eds), *Science in Archaeology*, 331–59 (London, Thames and Hudson)

Bourgeois, L. (ed.), 1999 *Le sanctuaire rural de Bennecourt (Yvelines)*, Documents d'Archéologie Francaise 77 (Paris, Editions de la Maison des Sciences de l'Homme)

Brennand, M., 1999 *Report on Archaeological Evaluation at Brandon Road, Thetford,* Norfolk Archaeol. Unit Rep. 382 (unpublished)

Brennand, M., 2000 *Report on Archaeological Excavation at Brandon Road, Thetford,* Norfolk Archaeol. Unit Rep. 412 (unpublished)

Brinkhuisen, D.C., 1983 'Some notes on recent and pre- and protohistoric fishing gear from north-western Europe', *Palaeohistoria* 25, 7–53

Bronk Ramsey , C., 2003 'Punctuated dynamic equilibria: a model for chronological analysis', in Bentley, R.A. and H.D.G. Maschner, H.D.G. (eds), *Complex Systems and Archaeology Empirical and Theoretical Applications, Foundations of Archaeological Inquiry*, 85–92 (University of Utah Press)

Brown, A., 1994 'A Romano-British shell-gritted pottery and tile manufacturing site at Harrold, Bedfordshire', *Bedfordshire Archaeol.* 21, 19–106

Brown, A.E. (ed.), 1995 *Roman Small Towns in Eastern England and Beyond*, Oxbow Monogr. 52 (Oxford, Oxbow Books)

Brown, B.J.W., Knocker, G.M., Smedley, N. and West, S.E., 1954 'Excavations at Grimstone End, Pakenham', *Proc. Suffolk Inst. Archaeol.* 26(3), 189–207

Brown, D., 1990 'Weaving tools', in Biddle, M., *Object and Economy in Medieval Winchester,* Winchester Studies 7ii, 225–32 (Oxford)

Brown, N. and Glazebrook, J. (eds)., 2000 *Research and Archaeology: a Framework for the Eastern Counties 2. Research Agenda and Strategy,* E. Anglian Archaeol. Occ. Pap. 8

Brown, R.A., 1986 'The Iron Age and Romano-British settlement at Woodcock Hall, Saham Toney, Norfolk', *Britannia* 17, 1–58

Bruce-Mitford, R., 1975 *The Sutton Hoo Ship Burial* (London, British Museum Publications Ltd)

Buckley, D., 1995 'Quernstones and quern rubbers', in Rickett, R., *The Anglo Saxon Cemetery of Spong Hill, North Elmham. Part VII: The Iron Age, Roman and Early Saxon Settlement,* E. Anglian Archaeol. 73, 86–7

Butler, C., 1998 'A Mesolithic site at Streat, East Sussex', *Council for British Archaeology South-east Newsletter* 14, 4

Campbell, E. and Lane, A., 1993 'Excavations at Longbury Bank, Dyfed, and early medieval settlement in South Wales', *Medieval Archaeol.* 37, 15–77

Campbell, J., 2003 'Production and distribution in Early and Middle Anglo-Saxon England', in Pestell, T. and Ulmschneider, K. (eds), *Markets in Early Medieval Europe, Trading and 'Productive' Sites, 650–850*, 12–19 (Macclesfield, Windgather Press Ltd)

Carr, R.D., Tester, A. and Murphy, P., 1988 'The Middle-Saxon settlement at Staunch Meadow, Brandon', *Antiquity* 62 (235), 371–7

Carson, R.A.G, Hill, P.V. and Kent, J.P.C., 1972 *Late Roman Bronze Coinage* (London, Spink and Son Ltd)

Chadburn, A., 1999 'Tasking the Iron Age: the Iceni and minting', in Davies, J. and Williamson, T. (eds), *Land of the Iceni*, 162–72 (Centre of East Anglian Studies, University of Norwich)

Cho, A.B., Falsetti, J., McIlwaine, C., Roberts, P., Sledzik, S., and Willcox, A.W. (eds), 1996 *Handbook of the Forensic Anthropology Course of the Department of Archaeological Sciences* (University of Bradford and the NMHM/AFIP, Washington, D.C)

Clark, J., 1995 *The Medieval Horse and its Equipment*, Medieval finds from excavations in London 5 (London, HMSO)

Clark, J.G.D., 1935 'Derivative forms of the *Petit Tranchet* in Britain', *Archaeol. J.* 91, 32–58

Clarke, A., 2002 'Animal bone', in Garrow, D., *Archaeological Excavations at Norwich Road, Kilverstone, Norfolk. Volume 2: Specialist Reports and Bibliography*, Cambridge Archaeological Unit Report 463, 128–32 (unpublished)

Clarke, H. and Carter, A., 1977 *Excavations in King's Lynn 1963–1970*, Soc. Medieval Archaeol. Monogr. Ser. No. 7 (London, Society for Medieval Archaeology)

Cleal, R. and Longworth, I.H., 1999 'Grooved Ware Gazetteer', in Cleal, R. and McSween, A. (eds), *Grooved Ware in Britain and Ireland*, Neolithic Studies Group Seminar Papers 3, 177–206 (Oxford, Oxbow Books)

Coles, J.M. and Hall, D., 1983 'The Fenland Project', *Antiquity* 57 (219), 51–2

Conneller, C., 2002 'Flint', in Garrow, D., *Archaeological Excavations at Norwich Road, Kilverstone, Norfolk*, Cambridge Archaeological Unit Report 463, 95–105 (unpublished)

Connor, A., 2002 *Specification for Archaeological Excavation on Land off Brandon Road, Thetford,* Cambridgeshire County Council Archaeological Field Unit (unpublished)

Cook, A.M. and Dacre, M.W., 1985 *Excavations at Portway, Andover, 1973–1975*, Oxford Univ. Committee for Archaeol. 4 (Oxford, University of Oxford)

Cool, H.E.M., 1990 'Roman metal hairpins from southern Britain', *Archaeol. J.* 147, 148–82

Cool, H.E.M. and Baxter, M.J., 1999 'Peeling the onion; an approach to comparing vessel glass assemblages', *J. Roman Archaeol.* 12, 72–100

Cool, H.E.M. and Price, J., 1995 *Roman Vessel Glass from Excavations in Colchester 1971–85*, Colchester Archaeol. Rep. 8 (Colchester, Colchester Archaeological Trust)

Cooper, N and Lyons A. L., in prep 'The Roman Pottery' in Wallis, H., *The Romano-British and Saxon Occupation at Billingford, Central Norfolk*, E. Anglian Archaeol.

Countryside Agency 2007 *Countryside Character Volume 6: East of England. The Character of England's natural and man-made landscape. Character Area 85 Breckland*. Available: http://www.countryside.gov.uk/Images/JCA085_tcm2-21187.pdf Accessed 19 September 2007

Cowgill, J., de Neergaard, M. and Griffiths, N., 1987 *Knives and scabbards*, Medieval finds from excavations in London 1 (London, HMSO)

Crabtree, P., 1989 *West Stow, Suffolk: Early Anglo-Saxon Animal Husbandry*, E. Anglian Archaeol. 47

Crossley, D.W., 1981 'Medieval iron smelting', in Crossley, D.W., (ed.), *Medieval Industry*, Counc. Brit. Archaeol. Res. Rep. 40, 29–41(London)

Crummy, N., 1983 *The Roman Small Finds from Excavations in Colchester 1971–9*, Colchester Archaeological Report 2 (Colchester, Colchester Archaeological Trust)

Crummy, N., 1988 *The Post-Roman Small Finds from Excavations in Colchester 1971–85*, Colchester Archaeological Report 5 (Colchester, Colchester Archaeological Trust)

Crummy, N., 1992 'The Roman small finds from the Culver Street site', in Crummy, P., *Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971–85*, Colchester Archaeological Report 6 (Colchester, Colchester Archaeological Trust)

Crummy N., 2002a 'Leadworking debris and other finds', in Taylor-Wilson, R., *Excavations at Hunt's House, Guy's Hospital, London Borough of Southwark*, Pre-Construct Archaeology Ltd Monogr. 1 (London, Pre-Construct Archaeology)

Crummy N., 2002b 'From self-sufficiency to commerce: structural and artefactual evidence for textile manufacture in Eastern England in the pre-conquest period', in Koslin, D.G. and Snyder J.E. (eds), *Encountering Medieval Textiles and Dress: objects, texts, images*, 25–43 (New York/Basingstoke, Palgrave)

Crummy, N., 2003 'Small finds', in Gibson, C., 'An Anglo-Saxon settlement at Godmanchester, Cambridgeshire', in Griffiths D., Reynolds, A., and Semple, S., (eds) *Boundaries in early medieval Britain*, Anglo-Saxon Stud. Archaeol. Hist. 12, 183–90 (Oxford, Oxford Univ. School of Archaeology)

Crummy, N., 2004 'Iron and copper-alloy objects', in Dalwood, H. and Edwards, R., *Excavations at Deansway, Worcester, 1988–89: Romano-British small town to medieval city*, 386–435 (York, Council for British Archaeology)

Crummy, N. and Eckardt, H., 2004 'Regional identities and technologies of the self: nail-cleaners in Roman Britain', *Archaeol. J.* 160, 44–69

Crummy, N. and Winter, M., 1987 'Coin hoards from Colchester', in Crummy, N., *The Coins from Excavations in Colchester 1971–9*, Colchester Archaeological Report 4, 69–76 (Colchester, Colchester Archaeological Trust)

Cunliffe, B. and Poole, C., 1991 *Danebury: an Iron Age hillfort in Hampshire, 5. The excavations 1979–88: the finds*, Counc. Brit. Archaeol. Res. Rep. 73 (London, Council for British Archaeology)

Curnow, P., 1985 'The Roman coins', in *West Stow, The Anglo-Saxon Village Volume 1: Text, Volume 2: Figures and Plates*, E. Anglian Archaeol. 24, 76–81

Dallas, C., 1993 *Excavations in Thetford by B K Davison between 1964 and 1970,* E. Anglian Archaeol. 62

Davies, J.A., 1995 'The coins', in Rickett, R., *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: The Iron Age, Roman and Early Saxon settlement*, E. Anglian Archaeol. 73, 67–70

Davies, J.A., 1999 'Patterns, power and political progress in Iron Age Norfolk', in Davies, J.A. and Williamson, T. (eds), *Land of the Iceni: The Iron Age of Northern East Anglia*, 14–44 (Norwich)

Davis, S.J.M., 1980 'Late Pleistocene and Holocene equid remains from Israel', *Zoological J. Linnean Soc.* 70 (3), 289–312

Davis, S.J.M., 1992 *A Rapid Method for Recording Information about Mammal Bones from Archaeological Sites*, AML Report 19/92 (London, English Heritage)

Davison, A., 1993 'The documentary evidence', in Dallas, C., *Excavations in Thetford by B K Davison between 1964 and 1970*, E. Anglian Archaeol. 62, 194–217

Dick, W.A. and Tabatabai, M.A., 1977 'An alkaline oxidation method for the determination of total phosphorus in soils', *J. Soil Science America* 41, 511–14

Dickson, J.A.D., 1965 'A modified staining technique for carbonates in thin section', *Nature* 205, 587

Driesch, A. von den., 1976 *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Bulletin 1 (Cambridge, Mass., Harvard University)

Dudley, D., 1968 'Excavations on Nornour, Isles of Scilly, 1962–6', *Archaeol. J.* 124, 1–64

Duhig, C., 1998 'The human skeletal material', in Malim, T., and Hines, J. (eds), *The Anglo-Saxon Cemetery at Edix Hill (Barrington A), Cambridgeshire,* Counc. Brit. Archaeol. Res. Rep. 112, 154–96

Duncan, H., Duhig, C. and Phillips, M., 2003 'A late Migration Period/Final Phase cemetery at Water Lane, Melbourn', *Proc. Cambridge Antiq. Soc.* 92, 57–134

Dunmore, S. with Carr, R., 1976 *The Late Saxon Town of Thetford: an archaeological and historical survey*, E. Anglian Archaeol. 4

Dunning, G.C., 1934 'The swan's neck and ring-headed pins of the Early Iron Age in Britain', *Archaeol. J.* 91, 269–95

Dunning. G.C., Hurst, J.G., Myres J.N.L. and Tischler, F. 1959 *Anglo-Saxon Pottery: a symposium*, Counc. Brit. Archaeol. Res. Rep. 4 (London)

Eckardt, H. and Crummy, N., 2008 *Styling the Body in Late Iron Age and Roman Britain: a contextual approach to toilet instruments*, Monographie Instrumentum 36 (Montagnac)

Edmonds, M., Evans, C. and Gibson, D., 1999 'Assemblage and collection – lithic complexes in the Cambridgeshire Fenlands', *Proc. Prehistoric Soc.* 65, 47–82

Egan, G., 1995 'Spur buckles', in Clark, J., *The Medieval Horse and its Equipment*, Medieval finds from excavations in London 5, 150 (London, HMSO)

Egan, G., 1998 *The Medieval Household*, Medieval finds from excavations in London 6 (London, HMSO)

Egan, G. and Pritchard, F., 1991 *Dress Accessories*, Medieval finds from excavations in London 3 (London, HMSO)

Eisenmann, V., 1981 'Etude des dents jugales inferieures des *Equus* (Mammalia, Perissodactyla) actuels et fossiles', *Palaeovertebrata* 10, 127–226

Elsdon, S.M., 1979 'Saxon clay objects', in Wheeler, H., 'Excavation at Willington, Derbyshire, 1970–72', *Derbyshire Archaeol. J.* 99, 210

Esmonde Cleary, A.S., 1989 *The Ending of Roman Britain* (London, Batsford)

Evans, D.R., 1992 'Objects of lead', in Lightfoot, K.W.B., 'Rumney Castle, a ringwork and manorial centre in South Glamorgan', *Medieval Archaeol.* 36, 96–163

Evans J., 1991 'Some notes on the Horningsea Pottery', *J. Roman Pottery Stud.* 4, 33–43

Evison, V.I., 1987 *Dover: Buckland Anglo-Saxon Cemetery*, Historic Buildings and Monuments Commission for England Archaeol. Rep. 3 (London, HBMC)

Evison, V.I., 1988 *An Anglo-Saxon Cemetery at Alton, Hampshire*, Hampshire Field Club Monogr. 4 (Gloucester, Alan Sutton)

Evison, V.I., 2000 'Glass vessels in England AD 400–1100' in Price, J. (ed), *Glass in Britain and Ireland AD 350–1100*, British Museum Occ. Pap. 127, 47–104 (London, British Museum)

Farley, M., 1976 'Saxon and medieval Walton, Aylesbury: excavations 1973–4', *Rec. Buckinghamshire* 20(2), 153–290

Fazekas, I.G. and Kósa, F., 1978 *Forensic Fetal Osteology* (Budapest, Akadémiai Kiadó)

Foard, G., 2001 'Medieval woodland, agriculture and industry in Rockingham Forest, Northamptonshire', *Medieval Archaeol* 45, 41–95

Fowler, E., 1960 'The origins and development of the penannular brooch in Europe', *Proc. Prehist. Soc.* 26, 149–77

Fowler, E., 1983 'Note on the Type C brooches', in Crummy, N., *The Roman Small Finds from Excavations in Colchester 1971–9*, Colchester Archaeological Report 2, 18 (Colchester, Colchester Archaeological Trust)

France, N.E. and Gobel, B.M., 1985 *The Romano-British Temple at Harlow* (Gloucester, Alan Sutton)

Fryer, V. and Murphy, P., 1999 'Plant macrofossils and molluscs', in Andrews, P. and Penn, K., *Excavations in Thetford, North of the River, 1989–90*, E. Anglian Archaeol. 87, 60–63

Gardiner, J., 1987 'Tales of the unexpected: approaches to the assessment and interpretation of museum flint collections', in Brown A.G. and Edmonds M.R. (eds), *Lithic Analysis and Later British Prehistory: Some Problems and Approaches*, Reading Studies in Archaeology 2 / Brit. Archaeol. Rep. Brit. Ser. 162, 49–63

Garrow, D., 2002 *Archaeological Excavations at Norwich Road, Kilverstone, Norfolk,* Cambridge Archaeological Unit Rep. 463 (two volumes; unpublished)

Garrow, D., 2006 'Earlier Neolithic activity', in Garrow, D., Lucy, S., and Gibson, D., *Excavations at Kilverstone, Norfolk: an Episodic Landscape History*, E. Anglian Archaeol. 113, 8–83

Gasc, J.P., 1966 'Les amphibiens', in Lavocat, R. (ed.), *Atlas de Préhistoire vol. III Faunes et Flores Préhistoriques de l'Europe Occidentale*, 475–8 (Paris, Éditions N. Boubée et C^{ie})

Gibson, C., 2003 'An Anglo-Saxon settlement at Godmanchester, Cambridgeshire', in Griffiths, D., Reynolds, A., and Semple, S., (eds), *Boundaries in Early*

Medieval Britain, Anglo-Saxon Stud. Archaeol. Hist. 12, 137–217 (Oxford, Oxford University School of Archaeology)

Goffin, R., 2000a — 'Clay', in Brennand, M., *Report on Archaeological Excavation at Brandon Road, Thetford.* Norfolk Archaeol. Unit Rep. 412, 16–17 (unpublished)

Goffin, R., 2000b — 'Pottery', in Brennand, M., *Report on Archaeological Excavation at Brandon Road, Thetford.* Norfolk Archaeol. Unit Rep. 412, 9–11 (unpublished)

Going, C.J., 1987 — *The Mansio and Other Sites in the South-eastern Sector of Caesaromagus: the Roman pottery*, Counc. Brit. Archaeol. Res. Rep. 62 (Chelmsford Archaeological Trust and the Council for British Archaeology)

Goodall, A., 1984 — 'Non-ferrous metal objects', in Rogerson, A. and Dallas, C., *Excavations in Thetford, 1948–59 and 1973–80*, E. Anglian Archaeol. 22, 68–75

Goodall, I., 1984 — 'Iron objects', in Rogerson, A. and Dallas, C., *Excavations in Thetford, 1948–59 and 1973–80*, E. Anglian Archaeol. 22, 76–105

Goodall, I., 1990 — 'Iron domestic implements' in Biddle, M, *Object and Economy in Medieval Winchester*, Winchester Studies 7ii, 818–23 (Oxford, Clarendon)

Graham-Campbell, J., 1982 — 'Some new and some neglected finds of 9th-century Anglo-Saxon metalwork', *Medieval Archaeol.* 26, 144–51

Grant, A., 1982 — 'The use of tooth wear as a guide to the age of domestic ungulates', in Wilson, R., Grigson, C. and Payne, S. (eds), *Ageing and Sexing Animal Bones from Archaeological Sites*, Brit. Archaeol. Rep. Brit. Ser. 109, 91–108 (Oxford)

Green, B., Rogerson, A. and White, S.G., 1987 — *The Anglo-Saxon Cemetery at Morning Thorpe, Norfolk*, E. Anglian Archaeol. 36

Green C., 1977 — *Excavations in the Roman Kiln Field at Brampton 1973–4*, E. Anglian Archaeol. 5, 31–95

Green, H.S., 1980 — *The Flint Arrowheads of the British Isles,* Brit. Archaeol. Rep. Brit. Ser. 75 (Oxford)

Green, S., 1984 — 'Flint arrowheads: typology and interpretation', *Lithics* 5, 19–39

Gregory, T., 1976 — 'A hoard of Late Roman metalwork from Weeting, Norfolk', *Norfolk Archaeol.* 36, 265–9

Gregory, T., 1977a — 'A hoard of Roman bronze bowls from Burwell, Cambs', *Proc. Cambridge Antiq. Soc.* 66, 63–79

Gregory, T., 1977b — *The Enclosure at Ashill*, E. Anglian Archaeol. 5, 9–27

Gregory, T., 1982 — 'Romano-British settlement in West Norfolk and the Norfolk Fen-edge', in Miles, D. (ed.), *The Romano-British Countryside: Studies in Rural Settlement and Economy*, Brit. Archaeol. Rep. Brit. Ser. 103, 351–76

Gregory, T., 1991 — *Excavations in Thetford, 1980–82, Fison Way, Volume 1*, E. Anglian Archaeol. 53

Grierson, P., 1958 — *Fitzwilliam Museum, Cambridge Part I – Ancient British and Anglo-Saxon Coins, Sylloge of Coins of the British Isles* (London, British Academy)

Gurney, D., 1995a — 'The Roman pottery', in Rickett, R., *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: The Iron Age, Roman and Early Saxon Settlement*, E. Anglian Archaeol. 73, 101

Gurney, D., 1995b — 'Small towns and villages of Roman Norfolk. The evidence of surface and metal-detector finds', in Brown, A.E. (ed.), *Roman Small Towns in Eastern England and Beyond,* Oxbow Monograph 52, 53–68 (Oxford)

Gurney, D., 2000 — *Brief for Archaeological Excavation of Land off Brandon Road, Thetford,* Norfolk Landscape Archaeology (unpublished)

Gurney, D., 2001 — 'Archaeological finds in Norfolk 2000', *Norfolk Archaeol.* 43(4), 694–707

Hamerow, H.F., 1993 — *Excavations at Mucking Volume 2: The Anglo-Saxon Settlement*, English Heritage Archaeol. Rep. 21 (London)

Harcourt, R.A., 1974 — 'The dog in prehistoric and early historic Britain', *J. Archaeol. Sci.* 1, 151–75

Hartley, K.F, and Perrin, J.R., 1999 — 'Mortaria form Excavations by E. Greenfield at Water Newton, Billing Brook and Chesterton 1956–58' in Perrin, J.R., *Roman Pottery from Excavations at and near to the Roman Small Town of Durobrivae, Water Newton, Cambridgeshire, 1956–58*, J. Roman Pottery Stud. 8

Haughton, C.A. and Powlesland, D., 1999 — *West Hestleton: the Anglian Cemetery* (2 vols) (London, English Heritage)

Healy, F., 1998 — 'The surface of the Breckland', in Ashton, N., Healy, F. and Pettitt, P. (eds), *Stone Age Archaeology: essays in honour of John Wymer*, Lithic Studies Society Occ. Pap. 6 / Oxbow Monogr. 102, 225–35

Hedges, J.W., 1978 — 'The loomweights', in Collis, J. (ed.), *Winchester Excavations 2: 1949–60. Excavations in the suburbs and the western part of the town*, 245–57 (Winchester, City Museum)

Hildebrand, B.E., 1881 — *Anglo-Saxon Coins in the Royal Swedish Cabinet of Medals at Stockholm, all found in Sweden, arranged and described by B.E.H.* (Stockholm)

Hills, C. and Penn, K., 1981 — *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part II*, E. Anglian Archaeol. 11

Hines, J., 1984 — *The Scandinavian Character of Anglian England in the Pre-Viking period*, Brit. Archaeol. Rep. Brit. Ser. 124 (Oxford)

Hinman, M., 2003 — *A Late Iron Age Farmstead and Romano-British Site at Haddon, Peterborough* Cambridge Archaeological Field Unit Monogr. 2 / Brit. Archaeol. Rep. Brit. Ser. 358

Hinman, M., in prep. — *Cambridge Park and Ride: Three places in a prehistoric landscape*, E. Anglian Archaeol.

Hinton, D.A., 1990a — 'Hooked tags', in Biddle, M., *Object and Economy in Medieval Winchester*, Winchester Studies 7ii, 548–52 (Oxford, Clarendon)

Hinton, D.A., 1990b — 'Split-end strap-ends', in Biddle, M., *Object and Economy in Medieval Winchester*, Winchester Studies 7ii, 500–2 (Oxford, Clarendon)

Hinton, D.A., 1996 — *The Gold, Silver and other Non-Ferrous Metal Objects from Hamwic*, Southampton Finds 2/Southampton Archaeol. Monogr. 6 (Southampton, Alan Sutton with Southampton City Council)

Hodges, R., 1989 — *Dark Age Economics* (London, Duckworth and Co. Ltd)

Holden, E.W., 1976 'Excavations at Old Erringham. Shoreham, West Sussex', *Sussex Archaeol. Collections* 114, 306–21

Howe, M.D., Perrin, J.R. and Mackreth, D.F., 1981 *Roman Pottery from the Nene Valley: A Guide*, Peterborough City Museum Occ. Pap. No 2

Hull M., 1963 *The Roman Potters' Kiln of Colchester*, Rep. Res. Comm. Soc. Antiq. London 21 (London, Society of Antiquaries and Corporation of the Borough of Colchester)

Hunter, J.R. and Heyworth, M.P., 1998 *The Hamwic Glass,* Counc. Brit. Archaeol. Res. Rep. 116 (York)

Hunter, J.R. and Jackson, C.M., 1993 'Glass', in Rogers, N.S.H., *Anglian and other Finds from 46–54 Fishergate*, The Archaeology of York 17/9, 1331–44 (London, Council for British Archaeology)

Hurst, J. G., 1959 'Middle Saxon pottery', in Dunning, G.C., Hurst, J.G., Myres, J.N.L. and Tischler, F., 'Anglo-Saxon pottery: a symposium', *Medieval Archaeol.* 3, 1–78

Hurst, J.G., 1976 'The Pottery', in Wilson, D.M (ed.), *The Archaeology of Anglo-Saxon England*, 283–348 (London, Methuen)

Jackson, D.A., Harding, D.W. and Myres, J.N.L., 1969 'The Iron Age and Anglo-Saxon site at Upton, Northants', *Antiq. J.* 49, 202–21

Jackson, R. and Potter, T.W., 1996 *Excavations at Stonea, Cambridgeshire 1980–85* (London)

Jacobi, R., 1984 'The Mesolithic of northern East Anglia and contemporary territories', in Barringer, C., (ed.), *Aspects of East Anglian Pre-History: 20 Years after Rainbird Clarke*, 43–76 (Norwich, Geo Books)

James, S. and Rigby, V., 1997 *Britain and the Celtic Iron Age* (London, British Museum)

Joass, Rev. J.M., 1886 'Notice of a hoard of bronze vessels found, in 1868, near Helmsdale, Sutherland', *Proc. Soc. Antiq. Scot.* 8 (new series), 214–18

Johns, C. and Potter, T.W., 1983 *The Thetford Treasure* (London, British Museum)

Johnson, S., 1983 *Burgh Castle, Excavations by Charles Green, 1958–61*, E. Anglian Archaeol. 20

Jones, B. and Mattingly, D., 2002 *An Atlas of Roman Britain* (Oxford, Basil Blackwell, reprint)

Jones, G., 1993 'Animal and bird bone', in Dallas, C., *Excavations in Thetford by B.K. Davison between 1964 and 1970*, E. Anglian Archaeol. 62, 176–91

Jope, E. M., 2000 *Early Celtic Art in the British Isles* (Oxford, Clarendon)

Kennet, D.H., 1971 'Late Roman bronze vessel hoards in Britain', *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 16, 123–48

Kiesewalter, L., 1888 *Skelettmessungen an Pferden als Beitrag zur theoretischen Grundlage der Beurteilungslehre des Pferdes*, dissertation (Leipzig)

King, J., 1996 'The animal bones', in Mackreth, D., *Orton Hall Farm: A Roman and Early Anglo-Saxon Farmstead*, E. Anglian Archaeol. 76, 216–8

Knaut, M., 1987 'Ein merowingerzeitliches Frauengrab mit Töpferstempel aus Bopfingen, Ostalbkreis', *Fundberichte aus Baden-Württemberg* 12, 463–78

Knocker, G.M., 1967 'Excavations at Red Castle, Thetford', *Norfolk Archaeol.* 34, 119–86

Kratochvil, Z. 1969 'Species criteria on the distal section of the tibia in *Ovis ammon* F. *aries* L. and *Capra aegagrus* F. *hircus* L.', *Acta Veterinaria* (Brno) 38, 483–90

Lawson, A.J., 1978 'A hand-axe from Little Cressingham', in *Norfolk: Various Papers*, E. Anglian Archaeol. 8, 1–8

Layard, N.F., 1922 'Prehistoric cooking-places in Norfolk', *Proc. Prehist. Soc. E. Anglia* 3, 483–98

Leahy, K. 2003 *Anglo-Saxon Crafts* (Stroud, Tempus)

Leech, R., 1986 'The excavation of a Romano-Celtic temple and a later cemetery on Lamyatt Beacon, Somerset', *Britannia* 17, 259–328

Leeds, E.T., 1945 'The distribution of the Angles and Saxons archaeologically considered', *Archaeologia* 91, 1–106

Lentowicz, I., 1999 'The Pottery', in Andrews, P., and Penn, K., E*xcavations in Thetford, North of the River, 1989–90*, E. Anglian Archaeol. 87, 46–51

Lethbridge, T.C., 1931 *Recent Excavations in Anglo-Saxon cemeteries in Cambridgeshire and Suffolk*, Cambridge Antiq. Soc. Quarto Publication, new series 3

Levine, M.A., 1982 'The use of crown height measurement and eruption-wear sequences to age horse teeth', in Wilson, R., Grigson, C. and Payne, S. (eds), *Ageing and Sexing Animal Bones from Archaeological Sites*, Brit. Archaeol. Rep. Brit. Ser. 109 (Oxford), 223–50

Lewis, J.S.C., and Walsh, K., 2004 'Perry Oaks — Neolithic inhabitation of a West London landscape', in Cotton, J., and Field, D. (eds), *Towards a New Stone Age: Aspects of the Neolithic in South-east England* Counc. Brit. Archaeol. Res. Rep. 137, 105–9

Longman, T., 1990 *Thetford, Brandon Road. Archaeological Evaluation,* Norfolk Archaeol. Unit (unpublished)

Loughlin N., 1977 'Dales Ware: a contribution to the study of Roman coarse pottery', in Peacock, D.P.S. (ed.), *Pottery and Early Commerce*, 85–146 (London, Academic Press)

Lucy, S., 2006 'The Early Anglo-Saxon settlement and cemetery', in Garrow, D., Lucy, S., and Gibson, D., *Excavations at Kilverstone, Norfolk: an Episodic Landscape History*, E. Anglian Archaeol. 113, 170–201

Lyons, A., 1999 'Roman pottery', in Brennand, M., *Report on an Archaeological Evaluation at Brandon Road, Thetford.* Norfolk Archaeol. Unit Rep. 382, 13 (unpublished)

Lyons, A., 2003 'Appendix 4. Roman pottery fabrics and forms identified at Two Mile Bottom (Site 5738) and Postwick (Site 31108)', in Bates, S. and Lyons, A., *The Excavation of Romano-British Pottery Kilns at Ellingham, Postwick and Two Mile Bottom, Norfolk, 1995–7*, E. Anglian Archaeol. Occas. Pap. 13, 98

Lyons, A., 2004 *Romano-British Industrial Activity at Snettisham, Norfolk*, E. Anglian Archaeol. Occas. Pap. 18

Lyons, A., in prep. *Excavations at Hinxton Road, Duxford, Cambridgeshire 2002*, E. Anglian Archaeol.

Lyons, A. and Tester C., forthcoming 'The Roman pottery', in Ashwin, T. and Tester, A. (eds) *Excavations at Scole Roman Town 1993–4,* E. Anglian Archaeol.

Macalister, F., 1985 'The slags', in West, S., *West Stow, The Anglo-Saxon Village Volume 1: Text, Volume 2: Figures and Plates*, E. Anglian Archaeol. 24, 69

MacDonald, R.H., 1999 'Animal bones from St Nicholas Street and Guildhall Street', in Andrews, P. and Penn, K., *Excavations in Thetford. North of the River, 1989–90,* E. Anglian Archaeol. 87, 75–82

MacGregor, A. and Bolick, E., 1993 *A Summary Catalogue of the Anglo-Saxon Collection (non-ferrous metals) in the Ashmolean Museum*, Brit. Archaeol. Rep. Brit. Ser. 230 (Oxford)

Mack, I., McDonnell, G., Murphy, S., Andrews, P. and Wardley, K., 2000 'Liquid steel in Anglo-Saxon England', *J. Historical Metallurgy Soc.* 34 (2), 87–96

Mackreth, D., 1986 'Brooches', in Gurney, D., *Settlement, Religion, and Industry on the Roman Fen-edge, Norfolk*, E. Anglian Archaeol. 31, 61–7

Mackreth D., 1992 'The brooches', in Gregory, T., *Excavations in Thetford, 1980–82, Fison Way*, E. Anglian Archaeol. 53, 120–9

Mackreth, D., 1994 'The brooches', in Williams, R.J. and Zeepvat, R.J., *Bancroft, a late Bronze Age/Iron Age Settlement, Roman Villa, and Temple Mausoleum*, Buckinghamshire Archaeol. Soc. Monogr. 7 (Aylesbury, Buckinghamshire Archaeological Society)

Malim, T. and Hines, J., 1998 *The Anglo-Saxon Cemetery at Edix Hill (Barrington A), Cambridgeshire*, Counc. Brit. Archaeol. Res. Rep. 112 (York, Council for British Archaeology)

Manning, W.H., 1985 *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum* (London, British Museum Publications)

Margeson, S., 1993 *Norwich Households: the medieval and post-medieval finds from Norwich Survey excavations 1971–8*, E. Anglian Archaeol. 58

Marney, P.T., 1989 *Roman and Belgic Pottery from Excavations in Milton Keynes, 1972–82,* Buckinghamshire Archaeol. Soc. Monogr. Ser. 2

Martin, E., 1988 'Swales Fen, Suffolk: a Bronze Age cooking pit?', *Antiquity* 62, 358–9

Martin, E., Plouviez, J. and Ross, H., 1983 'Archaeology in Suffolk 1982', *Proc. Suffolk Inst. Archaeol. Hist.* 35(3), 229–35

Martin, E., Pendleton, C. and Plouviez, J., 1998 'Archaeology in Suffolk 1997', *Proc. Suffolk Inst. Archaeol. Hist.* 39(2), 209–67

Matolcsi, J., 1970 'Historische Erforschung der Körpergröße des Rindes auf Grund von ungarischem Knochenmaterial', *Zeitschr. f. Tierzüchtg. u. Züchtungsbiol.* 87, 89–137 (Hamburg)

Mayhew, N.J., 1983 *Sterling Imitations of Edwardian Type*, Royal Numismatic Society 14 (London)

Metcalf, D.M., 1984 'Monetary circulation in southern England in the first half of the eighth century', in Hill, D. and Metcalf, D.M. (eds), *Sceattas in England and the Continent,* Brit. Archaeol. Rep. Brit. Ser. 128, 27–70

Millett, M., 1995 'Strategies for Roman Small Towns', in Brown, A.E. (ed.), *Roman Small Towns in Eastern England and Beyond*, Oxbow Monogr. 52 (Oxford, Oxbow)

Mitchiner, M., 1988 *Jetons, Medalets and Tokens: the medieval period and Nuremberg* (London, Seaby)

Montague, R., 1997 'Metalwork', in Fitzpatrick, A.P., *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, 2: the late Iron Age, Romano-British, and Anglo-Saxon cemeteries*, Wessex Archaeology Report 12, 89–109 (Salisbury, Trust for Wessex Archaeology)

Mortimer, R., Regan, R and Lucy, S., 2005 *The Saxon and Medieval Settlement at West Fen Road, Ely: The Ashwell Site,* E. Anglian Archaeol. 110

Morton, A.D., 1992 *Excavations at Hamwic: Vol 1*, Counc. Brit. Archaeol. Res. Rep. Brit. Ser. 84

Mudd, A., 2002 *Excavations at Melford Meadows, Brettenham, 1994: Romano-British and Early Saxon Occupations*, E. Anglian Archaeol. 99

Mudd, A., 2006 'Early to Middle Saxon iron smelting furnaces at Fineshade Abbey, Northamptonshire', *Northamptonshire Archaeol.* 34, 81–95

Murphy, J., and Riley, J.P. 1962 'A modified single solution method for the determination of phosphate in natural waters', *Anal. Chim. Acta* 27, 31–6

Murphy, P., 1995 'Plant Macrofossils', in Andrews, P., *Excavations at Redcastle Furze, Thetford 1988–9*, E. Anglian Archaeol. 72, 131–4

Murray, J. and McDonald, T., in prep. *Excavations at Station Road, Gamlingay*, Hertfordshire Archaeological Trust/Archaeological Solutions Monogr.

Myres, J.N.L., 1956 'Romano-Saxon pottery', in Harden, D.B. (ed.), *Dark Age Britain*, 16–39 (London, Methuen and Co.)

Myres, J.N.L., 1969 *Anglo-Saxon Pottery and the Settlement of England* (Oxford, Clarendon Press)

Myres, J.N.L., 1977 *A Corpus of Anglo-Saxon Pottery of the Pagan Period* (2 vols) (Cambridge, Cambridge University Press)

Myres, J.N.L., 1986 *The English Settlements* (Oxford, Clarendon)

North, J.J., 1980 *English Hammered Coinage* 1 (London, Spink & Son)

O'Connor, T.P., 1988 *Bones from the General Accident Site, Tanner Row*, The Archaeology of York 15/2 (London, Council for British Archaeology)

Orengo, L., 2003 *Forges et forgerons dans les habitats laténiens de la Grande Limagne de l'Auvergne*, Monographies Instrumentum 26 (Montagnac)

Ottaway, P., 1992 *Anglo-Scandinavian Ironwork from 16–22 Coppergate*, The Archaeology of York: the Small Finds 17/6 (York, York Archaeological Trust for Council for British Archaeology)

Ottaway, P. and Rogers, N., 2002 *Craft, Industry and Everyday Life: Finds from Medieval York*, The Archaeology of York: the Small Finds 17/15 (York: York Archaeological Trust)

Pagan, H. and Archibald, M., 1984 'The coins from Site 1092', in Rogerson, A. and Dallas, C., *Excavations in Thetford, 1948–59 and 1973–80*, E. Anglian Archaeol. 22, 68

Palmer, B., 2003 'The hinterlands of three southern English emporia: some common themes', in Pestell, T. and Ulmschneider, K. (eds), *Markets in Early Medieval Europe, Trading and 'Productive' Sites, 650–850*, 48–61 (Macclesfield, Windgather Press Ltd)

Payne, S., 1969 'A metrical distinction between sheep and goat metacarpals', in Ucko, P. and Dimbleby, G. (eds), *The Domestication and Exploitation of Plants and Animals*, 295–305 (London: Duckworth)

Payne, S., 1985 'Morphological distinctions between the mandibular teeth of young sheep, *Ovis*, and goats, *Capra*', *J. Archaeol. Sci.* 12, 139–47

Payne, S. and Bull, G., 1988 'Components of variation in measurements of pig bones and teeth, and the use of measurements to distinguish wild from domestic pig remains', *Archaeozoologia* 2, 27–65

Peacock, D.P.S., 1980 'The Roman millstone trade: a petrological sketch', *World Archaeol*. 12.1, 43–53

Peck, C.W., 1970 *English Copper, Tin and Bronze Coins in the British Museum 1558–1958* (London, British Museum Trustees)

Penn, K., 2000 *Norwich Southern Bypass, II: Anglo-Saxon Cemetery at Harford Farm, Caistor St Edmund*, E. Anglian Archaeol. 92

Penn, K. and Andrews, P., 2000 'An early Saxon cemetery at Brunel Way, Thetford', *Norfolk Archaeol.* 43.3, 415–40

Percival, S., 1999 'Prehistoric pottery', in Brennand, M., *Report on an Archaeological Evaluation at Brandon Road, Thetford.* Norfolk Archaeol. Unit Rep. 382, 12–13 (unpublished)

Perrin, J R., 1996 'The Roman pottery', in Mackreth, D.F., *Orton Hall Farm: A Roman and Early Saxon Farmstead*, E. Anglian Archaeol. 76, 114–204

Pieksma, E.J. and Gardiner, J., 1990 'The prehistoric flint and stone assemblage', in West, S., *West Stow, Suffolk: the Prehistoric and Romano-British Occupations,* E. Anglian Archaeol. 48, 46–59

Pirie, E.J.E., 1975 *Coins in Yorkshire Collections, Sylloge of Coins of British Isles,* 21 (London, British Academy)

Plouviez, J., 1995 'A hole in the distribution map: the characteristics of small towns in Suffolk', in Brown, A.E. (ed.), *Roman Small Towns in Eastern England and Beyond,* Oxbow Monogr. 52, 69–80 (Oxford, Oxbow Books)

Plunkett, S., 2005 *Suffolk in Anglo-Saxon Times* (Stroud, Tempus)

Powell, A. and Clarke, K.M., 2002 'Zoological and botanical evidence', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994: Romano-British and Early Saxon Occupations,* E. Anglian Archaeol. 99, 101–8

Powlesland, D., 2000 'West Heslerton settlement mobility: a case for static development', in Geake, H. and Kenny, J. (eds), *Early Deira*, 19–27 (Oxford, Oxbow Books)

Price, J. and Cottam, S., 1998 *Romano-British Glass Vessels*: *a Handbook,* Counc. Brit. Archaeol. Practical Handbook in Archaeology 14 (York, Council for British Archaeology)

Pritchard, F., 1991 'Small finds', in Vince, A. (ed.), *Finds and Environmental Evidence*, Aspects of Saxo-Norman London 2/London Middlesex Archaeol. Soc. Special Paper 12, 120–78 (London, LAMAS)

Radford, C.A.R., 1957 'The Saxon house: a review and some parallels', *Medieval Archaeol.* 1, 27–38

Rahtz, P., 1976 'Buildings and rural settlement', in Wilson, D. M. (ed.), *The Archaeology of Anglo-Saxon England*, 49–98 (London, Methuen and Co. Ltd.)

Reece, R., 1995 'Site-finds in Roman Britain', *Britannia* 26, 179–206

Reece, R., 2002 *The Coinage of Roman Britain* (Stroud, Tempus)

Rickett, R., 1995 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: The Iron Age, Roman and Early Saxon Settlement*, E. Anglian Archaeol. 73

Riddler, I.D., 1986 'Pottery stamps — a Middle Saxon viewpoint', *Medieval Ceramics* 10, 17–22

Riddler , I.D, 1988 'Pot dies from Southampton: a note', in Andrews, P., *The Coins and Pottery from Hamwic*, Southampton Finds Volume 1, 125

Riddler, I.D., 1996 'Objects of worked bone and antler: Early Saxon', in Williams, R.J., Hart, P.J. and Williams, A.L.T., *Wavendon Gate. A Late Iron Age and Roman Settlement in Milton Keynes*, Buckinghamshire Archaeol. Soc. Monogr. Ser. 10, 130–6 (Aylesbury, Buckinghamshire Archaeological Society)

Riddler, I.D., 2004 'Objects and waste of bone and antler', in Wallis, H., *Excavations at Mill Lane, Thetford,* E. Anglian Archaeol. 108, 58–66

Riddler, I.D., 2006 'Early medieval fishing implements of bone and antler', in Pieters, M., Verhaege, F., and Gevaert, G., *Fishing, Trade and Piracy. Fishermen and Fishermen's Settlements in and around the North Sea Area in the Middle Ages and Later,* Archeologie in Vlaanderen Monografie 6, Brussels, 171–80

Riddler, I.D., forthcoming 'An antler stamp from Melbourne Street, Southampton', *Proc. Hampshire Field Club Archaeol. Soc.*

Rigold, S.E., 1964 'The Anglian cathedral of north-east Norfolk', *Medieval Archaeol.* 6–7, 67–108

Rigold, S.E., 1984 'The coins from Sites 1, 2 South, 2 North and 4', in Rogerson, A. and Dallas, C., *Excavations in Thetford, 1948–59 and 1973–80*, E. Anglian Archaeol. 22, 66–8

Robbins, P., 1998 'Mesolithic sites at Two Mile Bottom, near Thetford, Norfolk', in Ashton, N.M., Healy, F. and Pettitt, P.B. (eds), *Stone Age Archaeology: Essays in Honour of John Wymer*, Lithic Studies Soc. Occas. Pap. 6, Oxbow Monogr. 102

Robertson, A., 2000 *An Inventory of Romano-British Coin Hoards*, Royal Numismatic Soc. Special Publication 20 (London, Royal Numismatic Society)

Robinson, M., 2002 'Plant remains', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994*: *Romano British and Early Saxon Occupations*, E. Anglian Archaeol. 99, 108–10

Rodwell, W, 1970 'Some Romano-Saxon pottery from Essex', *Antiq. J.* 50 (2), 262–77

Roe, F., 2002 'Worked stone', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994: Romano-British and Early Saxon Occupations*, E. Anglian Archaeol. 99, 76–7

Rogerson, A., 1995 *A Late Neolithic, Saxon and medieval site at Middle Harling, Norfolk*, E. Anglian Archaeol. 74

Rogerson, A. and Dallas, C., 1984 *Excavations in Thetford, 1948–59 and 1973–80*, E. Anglian Archaeol. 22

Rollo, L., 2002 'Romano-British pottery', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994*: *Romano-British and Early Saxon Occupations*, E. Anglian Archaeol. 99, 79–91

Salter, C., 2002 'Metalworking residues', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994*: *Romano-British and Early Saxon Occupations,* E. Anglian Archaeol. 99, 74–6

Scull, C., 1992 'Before Sutton Hoo: structures of power and society in early East Anglia', in Carver, M.O.H. (ed.), *The Age of Sutton Hoo: the seventh century in North-Western Europe*, 3–23 (Woodbridge, Boydell Press)

Schmid, E., 1972 *Atlas of Animal Bones for Prehistorians, Archaeologists and Quaternary Geologists* (Amsterdam, London and New York, Elsevier)

Shepherd. J., 2000 'Glass', in Brennand, M., *Report on Archaeological Excavation at Brandon Road, Thetford.* Norfolk Archaeol. Unit Rep. 412, 16 (unpublished)

Shepherd Popescu, E., in press *Norwich Castle: Excavations and Historical Survey 1987–98 Part 1: Anglo-Saxon to c.1345*, E. Anglian Archaeol.

Silver, I.A., 1969 'The ageing of domestic animals', in Brothwell, D. and Higgs, E. (eds), *Science in Archaeology*, 283–302 (London, Thames and Hudson)

Simpson, G. and Blance, B., 1998 'Do brooches have ritual associations?', in Bird, J. (ed.), *Form and Fabric: studies in Rome's material past in honour of B. R. Hartley*, Oxbow Monogr. 80, 267–79 (Oxford)

Smith, P.J., 1997 'Grahame Clark's New Archaeology: the Fenland Research Committee and Cambridge prehistory in the 1930s', *Antiquity* 71 (271), 11–30

Spencer, B., 1988, 'Pilgrim souvenirs', in Wallace, P.F. (ed.), *Medieval Dublin Excavations 1962–81: Miscellanea*, vol. 1 (Fascicule 5), 33–48

Spoerry, P., 2002 'Medieval pottery production, marketing and the growth of urban forms and functions: evidence from Ely', *Proc. Cambridge Antiq. Soc.* 91, 152

Spoerry, P., 2008 *Ely Wares*, E. Anglian Archaeol. 122

Stace, C., 1997 *New Flora of the British Isles*, 2nd edition (Cambridge University Press)

Stallibrass, S., 1996 'Animal bones', in Jackson, R.P.J. and Potter, T.W., *Excavations at Stonea, Cambridgeshire 1980–85*, 587–612 (London, British Museum Press)

Stead, I.M., 1979 *The Arras Culture* (York, Yorkshire Philosophical Society)

Stead, I.M. and Rigby, V., 1986 *Baldock, the excavation of a Roman and pre-Roman settlement*, *1968–72*, Britannia Monogr. 7 (London, Soc. Roman Studies)

Stead, I.M. and Rigby, V., 1989 *Verulamium: the King Harry Lane site*, HBMCE Archaeology Report 12 (London, English Heritage)

Stewart, T.D., 1979 *Essentials of Forensic Anthropology* (Springfield, Ill., Charles C. Thomas)

Stuiver, M. and Polach., 1977 'Discussion: Reporting of ^{14}C data', *Radiocarbon* 19, 355–63

Stuiver, M., Reimer, P.J., Bard, E., Beck, J.W., Burr, G.S., Hughen K.A., Kromer, B, McCormac, G., van der Plicht, J., and Spurk, M., 1998 'INTCAL98 radiocarbon age calibration, 24,000–0 cal BP', *Radiocarbon* 40 (3), 1041–83

Swanton, M., (ed. and trans.), 2000 *The Anglo-Saxon Chronicles* (London, Phoenix Press)

Swift, E., 2000 *The End of the Western Roman Empire. An Archaeological Investigation* (Stroud, Tempus)

Symonds R.P., 1992 *Rhenish Wares: fine dark coloured pottery from Gaul and Germany*, Oxford University Committee for Archaeology Monogr. 23

Taylor, C., 1983 *Village and Farmstead* (London, Philip)

Teichert, M., 1975 'Osteometrische Untersuchungen zur Berechnung der Widerristhöhe bei Schafen' in Clason, A.T. (ed.), *Archaeozoological Studies* (Amsterdam, Elsevier), 51–69

Thomas, G., 2003 *Late Anglo-Saxon and Viking-Age Strap-ends 750–1100: Part 1*, Finds Research Group AD 700–1700 Datasheet 32 (Stoke-on-Trent)

Tipper, J., 2004 *The Grubenhaus in Anglo-Saxon England* (Colchester, English Heritage)

Tipper, J., 2006 'Anglo Saxon pottery', in Garrow, D., Lucy, S., and Gibson, D., *Excavations at Kilverstone, Norfolk: an Episodic Landscape History*, E. Anglian Archaeol. 113, 192–8

Tomber, R. and Dore, J., 1998 *The National Roman Fabric Reference Collection, A Handbook*, MoLAS Monogr. 2 (London, Museum of London Archaeological Service)

Tyers P., 1996 *Roman Pottery in Britain* (London, Batsford)

Ubelaker, D.H., 1989 *Human Skeletal Remains: excavation, analysis, interpretation,* Manuals on Archaeology 2 (Washington, Taraxacum for Smithsonian Institution)

Ulmschneider, K., and Pestell, T., 2003 'Introduction: early medieval markets and 'productive' sites', in Pestell, T. and Ulmschneider, K. (eds), *Markets in Early Medieval Europe, Trading and 'Productive' Sites, 650–850*, 1–11 (Macclesfield, Windgather Press Ltd)

Underwood-Keevil, C., 2002 'Early Saxon pottery', in Mudd, A., *Excavations at Melford Meadows, Brettenham, 1994*: *Romano British and Early Saxon Occupations*, E. Anglian Archaeol. 99, 91–8

Van Vilsteren, V.T., 1987 *Het Benen Tijdperk. Gebruiksvoorwerpen van been, gewei, hoorn en ivoor 10.000 jaar geleden tot heden* (Assen)

Wacher, J., 1969 *Excavations at Brough-on-Humber 1958–61*, Rep. Res. Comm. Soc. Antiq. London 25 (Leeds, W.S. Maney)

Wall, W., forthcoming — 'Middle Saxon Iron Smelting near Bonemills Farm, Wittering, Cambridgeshire', *Anglo-Saxon Stud. Archaeol. Hist.*

Wallis, H., 2004 — *Excavations at Mill Lane, Thetford 1995*, E. Anglian Archaeol. 108

Walton Rogers, P., 1997 — *Textile Production at 16–22 Coppergate*, The Archaeology of York 17/11 (York, York Archaeological Trust)

Walton Rogers, P., 2001 — 'The re-appearance of an old Roman loom in medieval England', in Walton Rogers, P., Bender Jørgensen, L. and Rast-Eicher, A., *The Roman Textile Industry and its Influence*, 158–71 (Oxford, Oxbow Books)

Watts, M., 2002 — *The Archaeology of Mills and Milling* (Stroud, Tempus)

Webster P., 1983 — *Roman Samian Ware* (Cardiff, Department of Extra-Mural studies, University College)

Wedlake, W. J., 1982 — *The Excavation of the Shrine of Apollo at Nettleton, Wiltshire, 1956–71* (London, Society of Antiquaries)

Wessex Archaeology, 1996 — *The Warrener, Thetford, Norfolk Archaeological Evaluation 1996*, Wessex Archaeology report (unpublished)

West, S., 1985 — *West Stow, The Anglo-Saxon Village Volume 1: Text, Volume 2: Figures and Plates*, E. Anglian Archaeol. 24

West, S., 1990 — *West Stow: the Prehistoric and Romano-British Occupations*, E. Anglian Archaeol. 48

West, S., 1998 — *A Corpus of Anglo-Saxon Material from Suffolk*, E. Anglian Archaeol. 84

West, S., 2000 — *West Stow Revisited* (St Edmundsbury Borough Council)

Westphalen, P., 1999 — *Die Kleinfunde aus der frühgeschichtlichen Wurt Elisenhof,* Offa-Bücher 80, 1–232 (Neumünster)

White, A., 1980 — 'Archaeology in Lincolnshire and South Humberside, 1978', *Lincolnshire Hist. Archaeol.* 15, 67–91

Williams, R.J., 1993 — *Pennyland and Hartigans: Two Iron Age and Saxon sites in Milton Keynes,* Buckinghamshire Archaeol. Soc. Monogr. Ser. 4

Williamson, T., 1993 — *The Origins of Norfolk* (Manchester, Manchester Univ. Press)

Wilson, D.M., 1964 — *Anglo-Saxon Ornamental Metalwork 700–1100*, British Museum Catalogue of Antiquities. Later Saxon Period 1 (London, British Museum)

Wilson, R., 1996 — *Spatial Patterning among Animal Bones in Settlement Archaeology: An English regional exploration*, Brit. Archaeol. Rep. Brit. Ser. 251 (Oxford, Tempvs Reparatvm)

Wilson, T., 1995 — 'Animal bones', in Andrews, P., *Excavations at Redcastle Furze, Thetford 1988–9*, E. Anglian Archaeol. 72, 121–8

Woodward, A. and Leach, P., 1993 — *The Uley Shrines. Excavations of a Ritual Complex on West Hill, Uley, Glos, 1977–9*, English Heritage Archaeol. Rep. 17 (London)

Wymer, J.J., 1977 — *Gazetteer of Mesolithic Sites in England and Wales*, Council for British Archaeol. Res. Rep. 8 (London, Council for British Archaeology)

Wymer, J.J., 1995 — 'The Flint', in Andrews, P., *Excavations at Redcastle Furze, Thetford 1988–9*, E. Anglian Archaeol. 72, 98–99

Young C.J., 1977 — *The Roman Pottery Industry of the Oxford Region*, Brit. Archaeol. Rep. Brit. Ser. 43, 123

Index

Illustrations are denoted by page numbers in *italics*. All street names and locations are in Thetford unless specified otherwise.

East Anglian Archaeology

is a serial publication sponsored by ALGAO EE and English Heritage. It is the main vehicle for publishing final reports on archaeological excavations and surveys in the region. For information about titles in the series, visit **www.eaareports.org.uk**. Reports can be obtained from:

Oxbow Books, 10 Hythe Bridge Street, Oxford OX1 2EW

or directly from the organisation publishing a particular volume.

Reports available so far:

No.1, 1975 Suffolk: various papers
No.2, 1976 Norfolk: various papers
No.3, 1977 Suffolk: various papers
No.4, 1976 Norfolk: Late Saxon town of Thetford
No.5, 1977 Norfolk: various papers on Roman sites
No.6, 1977 Norfolk: Spong Hill Anglo-Saxon cemetery, Part I
No.7, 1978 Norfolk: Bergh Apton Anglo-Saxon cemetery
No.8, 1978 Norfolk: various papers
No.9, 1980 Norfolk: North Elmham Park
No.10, 1980 Norfolk: village sites in Launditch Hundred
No.11, 1981 Norfolk: Spong Hill, Part II: Catalogue of Cremations
No.12, 1981 The barrows of East Anglia
No.13, 1981 Norwich: Eighteen centuries of pottery from Norwich
No.14, 1982 Norfolk: various papers
No.15, 1982 Norwich: Excavations in Norwich 1971–1978; Part I
No.16, 1982 Norfolk: Beaker domestic sites in the Fen-edge and East Anglia
No.17, 1983 Norfolk: Waterfront excavations and Thetford-type Ware production, Norwich
No.18, 1983 Norfolk: The archaeology of Witton
No.19, 1983 Norfolk: Two post-medieval earthenware pottery groups from Fulmodeston
No.20, 1983 Norfolk: Burgh Castle: excavation by Charles Green, 1958–61
No.21, 1984 Norfolk: Spong Hill, Part III: Catalogue of Inhumations
No.22, 1984 Norfolk: Excavations in Thetford, 1948–59 and 1973–80
No.23, 1985 Norfolk: Excavations at Brancaster 1974 and 1977
No.24, 1985 Suffolk: West Stow, the Anglo-Saxon village
No.25, 1985 Essex: Excavations by Mr H.P.Cooper on the Roman site at Hill Farm, Gestingthorpe, Essex
No.26, 1985 Norwich: Excavations in Norwich 1971–78; Part II
No.27, 1985 Cambridgeshire: The Fenland Project No.1: Archaeology and Environment in the Lower Welland Valley
No.28, 1985 Norfolk: Excavations within the north-east bailey of Norwich Castle, 1978
No.29, 1986 Norfolk: Barrow excavations in Norfolk, 1950–82
No.30, 1986 Norfolk: Excavations at Thornham, Warham, Wighton and Caistor St Edmund, Norfolk
No.31, 1986 Norfolk: Settlement, religion and industry on the Fen-edge; three Romano-British sites in Norfolk
No.32, 1987 Norfolk: Three Norman Churches in Norfolk
No.33, 1987 Essex: Excavation of a Cropmark Enclosure Complex at Woodham Walter, Essex, 1976 and An Assessment of Excavated Enclosures in Essex
No.34, 1987 Norfolk: Spong Hill, Part IV: Catalogue of Cremations
No.35, 1987 Cambridgeshire: The Fenland Project No.2: Fenland Landscapes and Settlement, Peterborough–March
No.36, 1987 Norfolk: The Anglo-Saxon Cemetery at Morningthorpe
No.37, 1987 Norfolk: Excavations at St Martin-at-Palace Plain, Norwich, 1981
No.38, 1987 Suffolk: The Anglo-Saxon Cemetery at Westgarth Gardens, Bury St Edmunds
No.39, 1988 Norfolk: Spong Hill, Part VI: Occupation during the 7th–2nd millennia BC
No.40, 1988 Suffolk: Burgh: The Iron Age and Roman Enclosure
No.41, 1988 Essex: Excavations at Great Dunmow, Essex: a Romano-British small town in the Trinovantian Civitas
No.42, 1988 Essex: Archaeology and Environment in South Essex, Rescue Archaeology along the Gray's By-pass 1979–80
No.43, 1988 Essex: Excavation at the North Ring, Mucking, Essex: A Late Bronze Age Enclosure
No.44, 1988 Norfolk: Six Deserted Villages in Norfolk
No.45, 1988 Norfolk: The Fenland Project No. 3: Marshland and the Nar Valley, Norfolk
No.46, 1989 Norfolk: The Deserted Medieval Village of Thuxton
No.47, 1989 Suffolk: West Stow: Early Anglo-Saxon Animal Husbandry
No.48, 1989 Suffolk: West Stow, Suffolk: The Prehistoric and Romano-British Occupations
No.49, 1990 Norfolk: The Evolution of Settlement in Three Parishes in South-East Norfolk
No.50, 1993 Proceedings of the Flatlands and Wetlands Conference
No.51, 1991 Norfolk: The Ruined and Disused Churches of Norfolk
No.52, 1991 Norfolk: The Fenland Project No. 4, The Wissey Embayment and Fen Causeway
No.53, 1992 Norfolk: Excavations in Thetford, 1980–82, Fison Way
No.54, 1992 Norfolk: The Iron Age Forts of Norfolk
No.55, 1992 Lincolnshire: The Fenland Project No.5: Lincolnshire Survey, The South-West Fens
No.56, 1992 Cambridgeshire: The Fenland Project No.6: The South-Western Cambridgeshire Fens
No.57, 1993 Norfolk and Lincolnshire: Excavations at Redgate Hill Hunstanton; and Tattershall Thorpe
No.58, 1993 Norwich: Households: The Medieval and Post-Medieval Finds from Norwich Survey Excavations 1971–1978
No.59, 1993 Fenland: The South-West Fen Dyke Survey Project 1982–86
No.60, 1993 Norfolk: Caister-on-Sea: Excavations by Charles Green, 1951–55
No.61, 1993 Fenland: The Fenland Project No.7: Excavations in Peterborough and the Lower Welland Valley 1960–1969
No.62, 1993 Norfolk: Excavations in Thetford by B.K. Davison, between 1964 and 1970
No.63, 1993 Norfolk: Illington: A Study of a Breckland Parish and its Anglo-Saxon Cemetery
No.64, 1994 Norfolk: The Late Saxon and Medieval Pottery Industry of Grimston: Excavations 1962–92
No.65, 1993 Suffolk: Settlements on Hill-tops: Seven Prehistoric Sites in Suffolk
No.66, 1993 Lincolnshire: The Fenland Project No.8: Lincolnshire Survey, the Northern Fen-Edge
No.67, 1994 Norfolk: Spong Hill, Part V: Catalogue of Cremations
No.68, 1994 Norfolk: Excavations at Fishergate, Norwich 1985
No.69, 1994 Norfolk: Spong Hill, Part VIII: The Cremations
No.70, 1994 Fenland: The Fenland Project No.9: Flandrian Environmental Change in Fenland
No.71, 1995 Essex: The Archaeology of the Essex Coast Vol.I: The Hullbridge Survey Project
No.72, 1995 Norfolk: Excavations at Redcastle Furze, Thetford, 1988–9
No.73, 1995 Norfolk: Spong Hill, Part VII: Iron Age, Roman and Early Saxon Settlement
No.74, 1995 Norfolk: A Late Neolithic, Saxon and Medieval Site at Middle Harling
No.75, 1995 Essex: North Shoebury: Settlement and Economy in South-east Essex 1500–AD1500
No.76, 1996 Nene Valley: Orton Hall Farm: A Roman and Early Anglo-Saxon Farmstead
No.77, 1996 Norfolk: Barrow Excavations in Norfolk, 1984–88
No.78, 1996 Norfolk:The Fenland Project No.11: The Wissey Embayment: Evidence for pre-Iron Age Occupation
No.79, 1996 Cambridgeshire: The Fenland Project No.10: Cambridgeshire Survey, the Isle of Ely and Wisbech
No.80, 1997 Norfolk: Barton Bendish and Caldecote: fieldwork in south-west Norfolk
No.81, 1997 Norfolk: Castle Rising Castle
No.82, 1998 Essex: Archaeology and the Landscape in the Lower Blackwater Valley
No.83, 1998 Essex: Excavations south of Chignall Roman Villa 1977–81
No.84, 1998 Suffolk: A Corpus of Anglo-Saxon Material
No.85, 1998 Suffolk: Towards a Landscape History of Walsham le Willows
No.86, 1998 Essex: Excavations at the Orsett 'Cock' Enclosure
No.87, 1999 Norfolk: Excavations in Thetford, North of the River, 1989–90
No.88, 1999 Essex: Excavations at Ivy Chimneys, Witham 1978–83
No.89, 1999 Lincolnshire: Salterns: Excavations at Helpringham, Holbeach St Johns and Bicker Haven
No.90, 1999 Essex:The Archaeology of Ardleigh, Excavations 1955–80
No.91, 2000 Norfolk: Excavations on the Norwich Southern Bypass, 1989–91 Part I Bixley, Caistor St Edmund, Trowse
No.92, 2000 Norfolk: Excavations on the Norwich Southern Bypass, 1989–91 Part II Harford Farm Anglo-Saxon Cemetery
No.93, 2001 Norfolk: Excavations on the Snettisham Bypass, 1989
No.94, 2001 Lincolnshire: Excavations at Billingborough, 1975–8
No.95, 2001 Suffolk: Snape Anglo-Saxon Cemetery: Excavations and Surveys

No.96, 2001 Norfolk: Two Medieval Churches in Norfolk
No.97, 2001 Cambridgeshire: Monument 97, Orton Longueville
No.98, 2002 Essex: Excavations at Little Oakley, 1951–78
No.99, 2002 Norfolk: Excavations at Melford Meadows, Brettenham, 1994
No.100, 2002 Norwich: Excavations in Norwich 1971–78, Part III
No.101, 2002 Norfolk: Medieval Armorial Horse Furniture in Norfolk
No.102, 2002 Norfolk: Baconsthorpe Castle, Excavations and Finds, 1951–1972
No.103, 2003 Cambridgeshire: Excavations at the Wardy Hill Ringwork, Coveney, Ely
No.104, 2003 Norfolk: Earthworks of Norfolk
No.105 2003 Essex: Excavations at Great Holts Farm, 1992–4
No.106 2004 Suffolk: Romano-British Settlement at Hacheston
No.107 2004 Essex: Excavations at Stansted Airport, 1986–91
No.108, 2004 Norfolk: Excavations at Mill Lane, Thetford, 1995
No.109, 2005 Fenland: Archaeology and Environment of the Etton Landscape
No.110, 2005 Cambridgeshire: Saxon and Medieval Settlement at West Fen Road, Ely
No.111, 2005 Essex: Early Anglo-Saxon Cemetery and Later Saxon Settlement at Springfield Lyons
No.112, 2005 Norfolk: Dragon Hall, King Street, Norwich
No.113, 2006 Norfolk: Excavations at Kilverstone
No.114, 2006 Cambridgeshire:Waterfront Archaeology in Ely
No.115, 2006 Essex:Medieval Moated Manor by the Thames Estuary: Excavations at Southchurch Hall, Southend
No.116, 2006 Norfolk: Norwich Cathedral Refectory
No.117, 2007 Essex: Excavations at Lodge Farm, St Osyth
No.118, 2007 Essex: Late Iron Age Warrior Burial from Kelvedon
No.119, 2007 Norfolk: Aspects of Anglo-Saxon Inhumation Burial
No.120, 2007 Norfolk: Norwich Greyfriars: Pre-Conquest Town and Medieval Friary
No.121, 2007 Cambridgeshire: A Line Across Land: Fieldwork on the Isleham–Ely Pipeline 1993–4
No.122, 2008 Cambridgeshire: Ely Wares
No.123, 2008 Cambridgeshire: Farming on the Edge: Archaeological Evidence from the Clay Uplands west of Cambridge
No.124, 2008 *Wheare most Inclosures be*, East Anglian Fields: History, Morphology and Management
No.125, 2008 Bedfordshire: Life in the Loop: a Prehistoric and Romano-British Landscape at Biddenham
No.126, 2008 Essex: Early Neolithic Ring-ditch and Bronze Age Cemetery at Brightlingsea
No.127, 2008 Essex: Early Saxon Cemetery at Rayleigh
No.128, 2009 Hertfordshire: Four Millennia of Human Activity along the A505 Baldock Bypass
No.129, 2009 Norfolk: Criminals and Paupers: the Graveyard of St Margaret Fyebriggate *in combusto*, Norwich
No.130, 2009 Norfolk: A Medieval Cemetery at Mill Lane, Ormesby St Margaret
No.131, 2009 Suffolk: Anglo-Saxon Settlement and Cemetery at Bloodmoor Hill, Carlton Colville
No.132, 2009 Norfolk: Norwich Castle: Excavations and Historical Survey 1987–98 (Parts I–IV)
No.133, 2010 Norfolk: Life and Death on a Norwich Backstreet, AD900–1600: Excavations in St Faith's Lane
No.134, 2010 Norfolk: Farmers and Ironsmiths: Prehistoric, Roman and Anglo-Saxon Settlement beside Brandon Road, Thetford