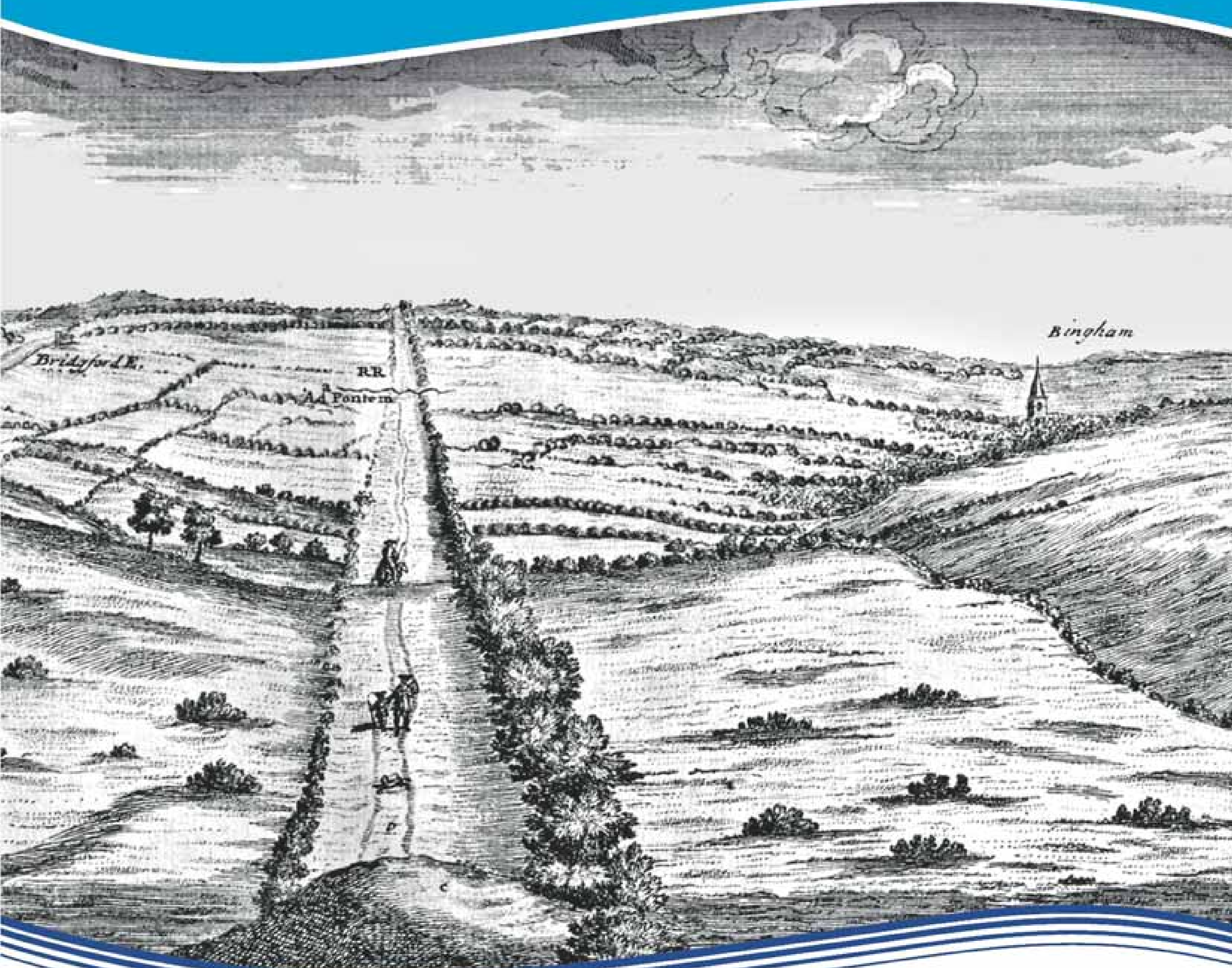
A46 NOTTINGHAMSHIRE

The Archaeology of the Newark to Widmerpool Improvement Scheme, 2009

by Nicholas Cooke and Andrew Mudd



Cotswold Wessex archaeology

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Front: William Stukeley's 1722 engraving: *A Prospect of* Ad Pontem *upon the Eminence A Mile South on the Foss.* (from Stukeley 1724 with the permission of the Society of Antiquaries of London)

Back: Recording the flint scatters at Farndon Fields and the Beaker from inhumation burial 304038, Stragglethorpe

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Contents

CHAPTER 5: SAXONDALE: PREHISTORIC, ROMANO-BRITISH AND EARLY ANGLO-SAXON LANDSCAPES, *by Ray Holt*

CHAPTER 6: HIGH THORPE IRON AGE SETTLEMENT, *by Nicholas Cooke*

CHAPTER 7: STRAGGLETHORPE ROUND BARROW, *by Tim Havard*

CHAPTER 8: CROPWELL WOLDS IRON AGE FARMSTEAD, *by Nicholas Cooke*

CHAPTER 9: OTHER SITES, *by Nicholas Cooke*

CHAPTER 10: DISCUSSION

CHAPTER 11: CONCLUSIONS 461

List of Figures

Chapter 3

Chapter 4

Chapter 5

Chapter 6

List of Tables

Chapter 5

Chapter 6

Chapter 7

Chapter 8

Chapter 9

Abstract

This report presents the results of archaeological works in advance of the construction of the new A46 trunk road between Newark-on-Trent and Widmerpool in Nottinghamshire. The new route largely follows the line of the earlier road, but diverges most notably south of Newark and around Bingham to avoid known archaeological remains. For most of its length, therefore, the new road closely follows the historic alignment of the Fosse Way, one of the major highways of the Roman province of *Britannia*.

A major concentration of Late Upper Palaeolithic (*c.* 13,000–10,700 BC) flintwork was examined at Farndon Fields on the gravel river terrace south of Newark. Here *in situ* flint-knapping debris of the Creswellian and Federmesser cultural traditions was found in palaeo-alluvial deposits beneath the present ploughsoil. This is the first time *in situ* knapping debris of this period has been identified on an open-air site in the British Isles. Most of this material has been preserved beneath the embanked construction. Further south-west, to the north of Bingham, early Holocene palaeochannel deposits were examined on the margins of a former lake bed known as the Bingham Basin. Here a sequence of well-preserved molluscs and ostracods enabled the local environmental development to be established; radiocarbon dating of the mollusc shells and an associated red deer bone places the sequence between about 8600 BC and 5600 BC. Mesolithic flintwork was relatively abundant nearby on the margins of the palaeochannel, there were also some pits and a tree-throw hole of Neolithic date. There was little identifiable Bronze Age or early Iron Age occupation in this area, but in the Middle Iron Age an alignment of pits and postholes was laid out across the infilled palaeochannel.

To the south-west of Bingham, near Stragglethorpe, there was a Beaker-period barrow; seven inhumation burials (five adults and two infants) were found in the upper ditch fills. A central grave-like pit was empty and may have contained a wooden chamber that had either decayed completely, or had been removed. The best-preserved skeleton was that of an adult woman who was accompanied by a nearly complete long-necked Beaker vessel. Another adult woman was buried with an unidentified burnt plank-like object. Five radiocarbon dates, three on the human skeletons and two on animal bones from deeper in the ditch fill, were modelled to show a relatively brief use of the barrow in the late 3rd and early 2nd millennium BC.

Three Middle Bronze Age cremation burials were the earliest features among the wide scatter of archaeological remains at Saxondale. There was also a (later) single post-built roundhouse here, and an enigmatic 'trough' of possibly similar date. Slightly later still were a group of three pits. In the Middle Iron Age a roundhouse was constructed with associated pits indicating a small-scale settlement. Elsewhere, by the Middle Iron Age and perhaps slightly earlier, boundary ditches were present in the Bingham Basin environs, south of the palaeochannel and pit alignment, and associated with settlements on the higher ground to the south – at High Thorpe and Cropwell Wolds. These Middle Iron Age settlements are the first to have been excavated on the Nottinghamshire Wolds although they are typical in character and date to others from the Trent Valley and elsewhere. Slight differences in site form and in the botanical remains may suggest different agricultural emphases; both sites were abandoned by the end of the 1st century BC.

Late Iron Age occupation was examined to the north of the Bingham Basin environs; an extensive farming settlement of linked enclosures was examined, while other individual enclosures were identified further south. This settlement was the direct precursor to the extensive farming landscape which developed in the hinterland of *Margidunum* Roman town from the 1st century AD. On the western side of the Fosse Way, this was probably related to the known (unexcavated) villa that developed at Newton. Cereal cultivation was important from the earliest Romano-British occupation, and early features included a large crop dryer. Small excavations on both sides of the Fosse Way showed roadside settlement from the later 1st century AD. There was no evidence for the date of the construction of the road itself, but the occupation of this location, which lay over 300 m from the core of the town, was shown to have been rapid. The first phase of buildings here were mostly post-built and circular in the Iron Age tradition; by the mid-2nd century the buildings were of rectangular form although apparently of quite rudimentary wooden construction, unlike those with stone foundations known from the core of the town. From the later 3rd century the buildings in the roadside settlement were larger, but still of similar construction. Activities undertaken in the roadside settlement included brewing, preserving meat, small-scale metal-working and repairing pottery vessels. There were several infant burials found in association with stone plinths which may have been bases for shrines. Other deposits of human bone hint at complex beliefs. Further south-west a small later Romano-British inhumation cemetery was established within roadside enclosures. To the north-west of the town, away from the road, late Romano-British timber and stone-founded buildings may have been barns forming part of another agricultural complex.

Early Romano-British farming enclosures were also established at Saxondale. One enclosed the Middle Iron Age roundhouse, and it appears that this must have

remained a visible feature. By the side of the Fosse Way a series of small later Romano-British rectangular and circular enclosures were laid out, initially focused on a possible circular structure. This later became the site of an early Anglo-Saxon cremation cemetery and arguably the structure had been a shrine with its significance retained or reinstated in the 5th–6th centuries AD. There were around 20 graves and the cremated remains were mostly within urns, although these had been badly damaged by later ploughing. Attention is drawn to the nearby site of a 'tumulus' of probably slightly later Anglo-Saxon date in the middle of the Fosse Way which survived until the early 18th century when it was illustrated by the antiquarian William Stukeley. The site is also close to the Bingham Wapentake meeting-place of historical times.

There was very limited Anglo-Saxon evidence in *Margidunum* Hinterland and occupation of the roadside settlement ceased around the end of the 5th century. A single isolated sunken-featured building lay in the area north-west of the town but it is not known whether this was part of a larger settlement. No significant medieval or later features were excavated, although extensive areas of furrows show the extent of medieval and later ploughing, while a few pieces of lead shot from fields south of Thorpe may derive from unrecorded skirmishes relating to the siege of Newark (1642–6) in the English Civil War.

Résumé

Ce rapport présente les résultats de travaux archéologiques entrepris en prévision de la construction de la nouvelle voie rapide A46 entre Newark-on-Trent et Widmerpool dans le Nottinghamshire. La nouvelle route suit en grande partie le tracé de l'ancienne, mais diverge, notamment au sud de Newark et autour de Bingham, pour éviter des vestiges archéologiques reconnus. Sur la plupart de sa longueur, donc, la nouvelle route suit de près le tracé historique de Fosse Way, une des principales voies de la province romaine de *Britannia*.

On a examiné une importante concentration de travail du silex de la fin du paléolithique supérieur (vers 13 000-10 700 av. J.-C.) à Farnon Fields sur la terrasse de gravier d'une rivière au sud de Newark. On a trouvé là des débris de débitage de silex *in situ* des traditions culturelles de Cresswell et Federmesser dans des dépôts de paléo-alluvions sous l'actuelle terre labourée. C'est la première fois que des débris de débitage *in situ* de cette période sont identifiés sur un site à ciel ouvert des îles britanniques. La majorité de ce matériel a été préservée sous la construction encaissée. Plus loin au sud-ouest, au nord de Bingham, on a examiné des dépôts d'un paléochenal du début de l'Holocène sur les bords d'un ancien fond de lac connu sous le nom de bassin de Bingham. Ici, une séquence bien préservée de mollusques et d'ostracodes a permis d'établir l'évolution de l'environnement local; la datation au C14 de coquilles de mollusques et d'un os de cerf associé situe la séquence entre 8 600 et 5 600 av. J.-C. Le travail du silex au mésolithique était relativement abondant à proximité des bords du paléochenal, il y avait également des fosses et un trou d'arbre datant du Néolithique. Il y avait peu d'éléments identifiables d'occupations de l'âge du bronze ou du début de l'âge du fer dans cette zone mais à l'âge du fer moyen un alignement de fosses et de trous de poteaux fut creusé dans le paléochenal remblayé.

Au sud-ouest de Bingham, près de Stragglethorpe, il y avait un tertre funéraire de la période Beaker, sept sépultures à inhumation (cinq adultes et deux enfants en bas-âge) furent découvertes dans les couches supérieures du remblai du fossé. Une fosse centrale ressemblant à une tombe était vide et avait pu contenir une chambre en bois qui soit avait complètement pourri, soit avait été enlevée. Le squelette le mieux préservé était celui d'une femme adulte qu'accompagnait un vase Beaker à long col presque complet. Une autre femme adulte était enterrée avec un objet calciné non identifié ressemblant à une planche. La modélisation de cinq datations au C14, trois de squelettes humains et deux d'ossements d'animaux d'une couche plus profonde du remblai du fossé a révélé une utilisation relativement brève de ce tertre à la fin du IIIe et au début du IIe millénaire av.J.-C.

Trois inhumations à incinération de l'âge du bronze moyen constituaient les plus anciens indices parmi le grand nombre de vestiges dispersés de Saxondale. Il y avait aussi là une seule maison ronde à ossature de poteaux (plus tardive) et une `auge' énigmatique peut-être d'une date similaire. Il y avait un groupe, encore un peu plus tardif, de trois fosses. A l'âge du fer moyen fut construite une maison ronde à laquelle étaient associées des fosses indiquant une occupation de petite taille. Ailleurs, d'ici l'âge du fer moyen, voire peut-être un peu avant, des fossés limotrophes étaient présents aux abords du bassin de Bingham, au sud du paléochenal et de l'alignement de fosses, associés à des occupations sur les hauteurs au sud, à High Thorpe et Cropwell Wolds. Ces occupations de l'âge du fer moyen sont les premières à avoir été excavées sur les Wolds du Nottinghamshire bien qu'elles soient typiques, par leurs caractéristiques et leurs dates, d'autres dans la vallée de la Trent et ailleurs. De légères différences dans la forme du site et les restes végétaux peuvent faire penser à des intérêts agricoles différents, d'ici la fin du Ier siècle av.J.-C. les deux sites avaient été abandonnés.

Une occupation de l'âge du fer final fut examinée au nord des abords du bassin de Bingham; un important complexe agricole d'enclos reliés fut examiné, tandis que d'autres enclos individuels étaient identifiés plus au sud. Ce complexe était le précurseur direct du vaste paysage agricole qui se développa dans l'arrière-pays de la ville romaine de *Margidunum* à partir du Ier siècle ap. J.-C. Du côté ouest de la voie Fosse Way, ceci était probablement rattaché à la villa connue (non fouillée) qui se développa à Newton. La culture de céréales fut importante dès le tout début de l'occupation romano-britannique, et parmi les premiers indices se trouvait un grand séchoir à grain. De petites fouilles, de chaque côté de Fosse Way ont révélé des occupations de bordure de route à partir de la deuxième moitié du Ier siècle ap. J.-C. Aucun vestige ne permettait de dater la construction de la route elle-même, mais l'occupation de ce lieu, qui se trouve à plus de 300 m

du coeur de la ville, s'est avérée avoir été rapide. Ici, les bâtiments de la première phase étaient pour la plupart circulaires à ossature de poteaux, dans la tradition de l'âge du fer, venu le milieu du IIe siècle, les bâtiments étaient de forme rectangulaire bien qu'apparemment de construction en bois assez rudimentaire, contrairement à ceux à fondations de pierre qu'on connaissait au coeur de la ville. A partir de la deuxième moitié du IIIe siècle, les bâtiments de l'occupation en bordure de route étaient plus grands, mais toujours construits de la même façon. Les activités pratiquées dans l'occupation de bord de route comprenaient la brasserie, la conservation de viande, de la métallurgie à petite échelle, et la réparation de récipients en céramique. Plusieurs inhumations d'enfants en bas âge furent découvertes associées à des plinthes en pierre qui avaient peut-être servi de base à des autels. D'autres dépôts d'ossements humains suggèrent des croyances complexes. Plus loin au sud-ouest, un petit cimetière à inhumation de la fin de l'époque romano-britannique fut établi à l'intérieur des enclos de bordure de route. Au nord-ouest de la ville, à l'écart de la route des bâtiments à fondations de bois et de pierre de la fin de la période romano-britannique étaient peut-être des granges faisant partie d'un autre complexe agricole.

Des enclos agricoles du début de la période romano-britannique s'étaient également établis à Saxondale. L'un entourait la maison ronde de l'âge du fer moyen, et il semble qu'elle a dû demeurer un indice visible. A côté de Fosse Way s'étendait une série de petits enclos rectangulaires et circulaires de la fin de la période romano-britannique, concentrés au début sur une éventuelle structure circulaire. Ceci devint, plus tard, le site d'un cimetière à incinération du début de la période anglo-saxonne et on peut supposer que la structure a été un lieu saint dont l'importance a perduré ou a été rétablie aux Ve et VIe siècles ap. J.-C. Il y avait environ vingt tombes et les restes incinérés se trouvaient essentiellement dans des urnes, bien que celles-ci aient été sérieusement endommagées par les labours. On attire l'attention sur le site voisin, au milieu de Fosse Way, d'un 'tumulus', de date anglo-saxonne un peu plus tardive, qui a survécu jusqu'au début du XVIIIe siècle, date à laquelle il fut illustré par l'amateur d'antiquités, William Stukeley. Le site se trouve aussi proche de Bingham Wapentake lieu de rencontre des temps historiques.

Il y avait un nombre très limité de témoignages anglo-saxons dans l'arrière-pays de *Margidunum* et le campement de bordure de route a cessé d'être occupé vers la fin du Ve siècle. Un seul bâtiment isolé, à fondations enterrées, se trouvait dans la zone nord-ouest de la ville mais on ignore s'il faisait partie d'une plus grande occupation. Aucun indice médiéval, ou postérieur, n'a été excavé, bien que de grandes zones de sillons attestent de l'étendue des labours au moyen âge et après, tandis que quelques morceaux de boulets de plomb dans des champs au sud de Thorpe proviennent peut-être d'escarmouches non enregistrées liées au siège de Newark(1642–6) pendant la guerre civile d'Angleterre.

Traduction: Annie Pritchard

Zusammenfassung

In diesem Band werden die Ergebnisse der archäologischen Untersuchung im Vorfeld der Baumaßnahmen zum Ausbau der Schnellstraße A46 zwischen Newark-on-Trent und Widmerpool in der Grafschaft Nottinghamshire vorgelegt. Die neue Trasse folgt größtenteils dem Verlauf der alten Straße, weicht aber vor allem südlich von Newark und in der Umgehung von Bingham von diesem ab, um bereits bekannte archäologische Fundstellen zu vermeiden. Die neue Straße verläuft folglich zumeist unmittelbar auf der historischen Trasse des Fosse Way, einer der wichtigsten Fernstraßen der römischen Provinz *Britannia*.

Eine große Konzentration spätpaläolithischer (ca. 13.000–10.700 v. Chr.) Feuersteingegenstände wurde bei Farndon Fields auf dem Schotter der Flussterasse südlich von Newark untersucht. Hier fanden sich *in situ* Feuersteinabschläge in der Tradition des Creswellien und der Feddermesser Kultur in fossilen Schwemmablagerungen unterhalb des derzeitigen Pflughorizonts. Damit konnten hier erstmals auf den Britischen Inseln Abschläge dieser Periode in einer Freilandstation *in situ* identifiziert werden. Der Großteil des Materials konnte dank baulicher Schutzmaßnahmen vor Ort erhalten werden. Weiter südwestlich, nördlich von Bingham, wurden früh-holozäne Ablagerungen eines Altarms im Randbereich eines als Bingham Basin bekannten ehemaligen Seebeckens untersucht. Anhand einer Abfolge gut erhaltener Mollusken und Ostrakoden war es hier möglich, die Entwicklung der lokalen Umweltbedingungen nachzuvollziehen; Radiokarbondatierungen von Molluskenschalen und vergesellschafteten Rothirschknochen datieren die Schichten zwischen 8600 und 5600 v. Chr. In unmittelbarer Nähe fanden sich mesolithische Feuersteingeräte in einiger Anzahl im Randbereich des Altarms. Des Weiteren wurden hier auch einige Gruben und ein Baumwurf neolithischer Zeitstellung freigelegt. Es wurden kaum Hinweise auf bronze- und früheisenzeitliche Besiedlung in diesem Bereich gefunden, aber in der mittleren Vorrömischen Eisenzeit wurde eine Gruben- und Pfostenloch-Reihung über dem zugeschütteten Altarm angelegt.

Südwestlich von Bingham, bei Stragglethorpe, lag ein becherzeitlicher Grabhügel, in dessen oberen Grabenverfüllungen sieben Bestattungen gefunden wurden (fünf Erwachsene und zwei Kinder). Eine im Zentrum befindliche grabähnliche Grube war leer und enthielt möglicherweise eine hölzerne Kammer, die aber entweder komplett vergangen oder entfernt worden war. Die am besten erhaltene Bestattung gehörte einer erwachsenen Frau, der ein nahezu vollständiges langhalsiges Bechergefäß beigegeben war. Eine weitere erwachsene Frau war mit einem nicht identifizierten, brettartigen Gegenstand bestattet worden. Ein Radio-karbonmodell mit fünf Datierungen, drei von menschlichen Skeletten und zwei von Tierknochen aus tieferliegenden Grabenschichten, belegt eine relative kurze Nutzungsphase des Grabhügels im späten 3. und frühen 2. Jahrtausend v. Chr.

Drei mittelbronzezeitliche Brandbestattungen sind

die frühsten Befunde der ausgedehnten Streuung archäologischer Funde bei Saxondale. Außerdem fand sich hier ein einzelnes, späteres, aus Pfosten errichtetes Rundhaus sowie ein rätselhafter „Trog“ wohl ähnlicher Zeitstellung. Noch etwas jünger war eine Gruppe von drei Gruben. Kleinmaßstäbige mitteleisenzeitliche Siedlungsaktivität wird durch ein Rundhaus mit dazugehörigen Gruben angedeutet. Des Weiteren fanden sich mitteleisenzeitliche und vereinzelt auch frühere Begrenzungsgräben in der Umgebung des Bingham Basin, südlich des Altarms und der Grubenreihung sowie in Siedlungsnähe auf den höher liegenden Flächen im Süden – bei High Thorpe und Cropwell Wolds. Diese mitteleisenzeitlichen Siedlungen sind die ersten, die bislang auf dem Höhenzug der Nottinghamshire Wolds ausgegraben wurden, sie gleichen aber in Charakter und Datierung anderen im Tal des Trent und darüber hinaus. Kleine Unterschiede in Siedlungsform und der Zusammensetzung der botanischen Reste könnten auf unterschiedlich ausgerichtete Wirtschaftsweisen hindeuten; beide Fundplätze wurden zu Beginn des 1. Jahrhunderts v. Chr. aufgelassen.

Besiedlungspuren der späten Vorrömischen Eisenzeit wurden nördlich des Bingham Basin untersucht, u.a. ausgedehnte landwirtschaftliche Strukturen in Form von miteinander verbundenen Feldfluren, wäh-rend weiter südlich vereinzelte Einfriedungen identifiziert wurden. Diese Siedlungsspuren waren die unmittelbaren Vorläufer der weitläufigen, agrarisch geprägten Landschaft, die sich ab dem 1. Jahrhundert n. Chr. im Hinterland der römischen Stadt *Margidunum* entwickelte. Die westlich des Fosse Way gelegenen Bereiche dieser Landschaft stehen vermutlich mit der bislang noch nicht ausgegrabenen römischen Villa bei Newton in Zusammenhang. Seit Beginn der frühsten romano-britischen Besiedlung war Getreideanbau von Bedeutung; so gehört eine große Getreidedarre zu den ältesten Befunden. In kleineren Ausgrabungen beiderseits des Fosse Way konnte Siedlungsaktivität entlang der Straße seit dem späteren 1. Jahrhundert n. Chr. nachgewiesen werden. Zwar ließ sich der Bau der Straße, die mehr als 300 m vom Zentrum der Stadt entfernt verlief, aus Mangel an Hinweisen nicht datieren, aber es konnte gezeigt werden, dass die Aufsiedlung dieses Bereichs rasch vonstatten ging. Die erste Bebauungsphase bestand noch vornehmlich aus runden Pfostenbauten eisenzeitlicher Bautradition. Ab der Mitte des 2. Jahrhunderts wurden die Bauten rechteckig, aber in offensichtlich recht einfacher Bauweise errichtet, ganz im Gegensatz zu den Gebäuden mit steinernen Fundamenten, die aus dem Stadtzentrum bekannt sind. Die Häuser der Straßensiedlung des späteren 3. Jahrhunderts waren größer, aber immer noch von gleicher Bauweise. Zu den in der Straßensiedlung ausgeführten Aktivitäten gehörten u.a. Brauen, Fleischkonservierung, kleinmaßstäbige Metallverarbeitung und Reparatur von keramischen Gefäßen. Mehrere Kinderbestattungen fanden sich in Vergesellschaftung mit steinernen Sockeln, die möglicherweise als Fundamente von Schreinen dienten. Weitere Deponierungen menschlicher Knochen weisen auf komplexe Glaubensvorstellungen hin. In kleinen Einfriedungen wurde weiter südwestlich entlang der Straße ein kleines später-romano-britisches Körpergräberfeld angelegt. Bei mehreren spät-romano-britischen Holzbauten mit Steinfundamenten, die abseits der Straße nordwestlich der Stadt errichtet wurden, handelt es sich möglicherweise um Scheunen, die Teil eines anderen landwirtschaftlichen Komplexes bildeten.

Früh-romano-britische Feldraine wurden auch bei Saxondale angelegt. Einer dieser Raine umgab das mitteleisenzeitliche Rundhaus, das anscheinend noch als obertägiges Geländemerkmal sichtbar war. Entlang des Fosse Way wurden eine Reihe kleiner spät-romano-britischer rechteckiger und runder Einfriedungen errichtet, die anfänglich auf eine möglicherweise vorhandene runde Struktur ausgerichtet wurden. Später wurde an dieser Stelle ein früh-angelsächsisches Brandgräberfeld angelegt, und es ist möglich, dass es sich bei der Struktur um einen Schrein handelte, dessen Bedeutung sich bis ins 5. oder 6. Jahrhundert erhalten hatte oder zu diesem Zeitpunkt wieder auflebte. Es wurden ungefähr 20 Gräber gefunden, deren kremierte Reste zumeist in durch späteres Pflügen stark beschädigten Urnen bestattet worden waren. Es wird des Weiteren auf die in der Nähe gelegene Fundstätte eines Tumulus wahrscheinlich etwas jüngerer angelsächsischer Zeitstellung hingewiesen, der bis in das frühe 18. Jahrhundert in der Mitte des Fosse Way erhalten blieb und zu diesem Zeitpunkt von dem Altertumsforscher William Stukeley illustriert wurde. Dieser Ort befindet sich auch in unmittelbarer Nähe des historisch bezeugten Versammlungsplatzes des Bingham Wapentake.

Im Hinterland von *Margidunum* fanden sich nur sehr wenige Anzeichen angelsächsischer Aktivität, und die Besiedlung der Straßensiedlung fand gegen Ende des 5. Jahrhunderts ihren Abschluss. Ein vereinzeltes Grubenhaus lag im Nordwesten der Stadt, aber es konnte nicht geklärt werden, ob es Teil einer größeren Siedlung war. Es wurden keine wesentlichen mittelalterlichen oder jüngeren Befunde ausgegraben, ausgedehnte Flächen mit Furchen deuten jedoch das Ausmaß mittelalterlichen oder späteren Pflügens an. Einige, in Feldern südlich von Thorpe aufgelesene Bleikugeln zeugen möglicherweise von nicht aufgezeichneten Gefechten in Verbindung mit der Belagerung von Newark (1642–6) während des Englischen Bürgerkriegs.

Übersetzung: Jörn Schuster

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Figure 2.30 reproduces flint drawings from Garton and Jacobi 2009. We are grateful to the Society of Antiquaries of London for permission to reproduce Figure 10.15. Figure 10.7 is based on the Ordnance Survey map of Roman Britain (5th edition, 2001).

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Chapter 1
Introduction

The course of the A46 trunk road in south-east Nottinghamshire follows the line of the Fosse Way, the Roman road linking the town at Lincoln to that at Leicester and eventually to Exeter (Fig. 1.1). The conversion of a *c.* 28 km stretch of the road, between Newark-on-Trent (hereafter Newark) and Widmerpool, from single to dual carriageway, has provided a rare opportunity to investigate not only how the construction of the Roman road influenced patterns of settlement, economy and agriculture during the period of Roman occupation, but also how those patterns had developed through the preceding prehistoric period, and in turn how they helped

Fig 1.1 The route of the A46 Newark to Widmerpool road improvement scheme

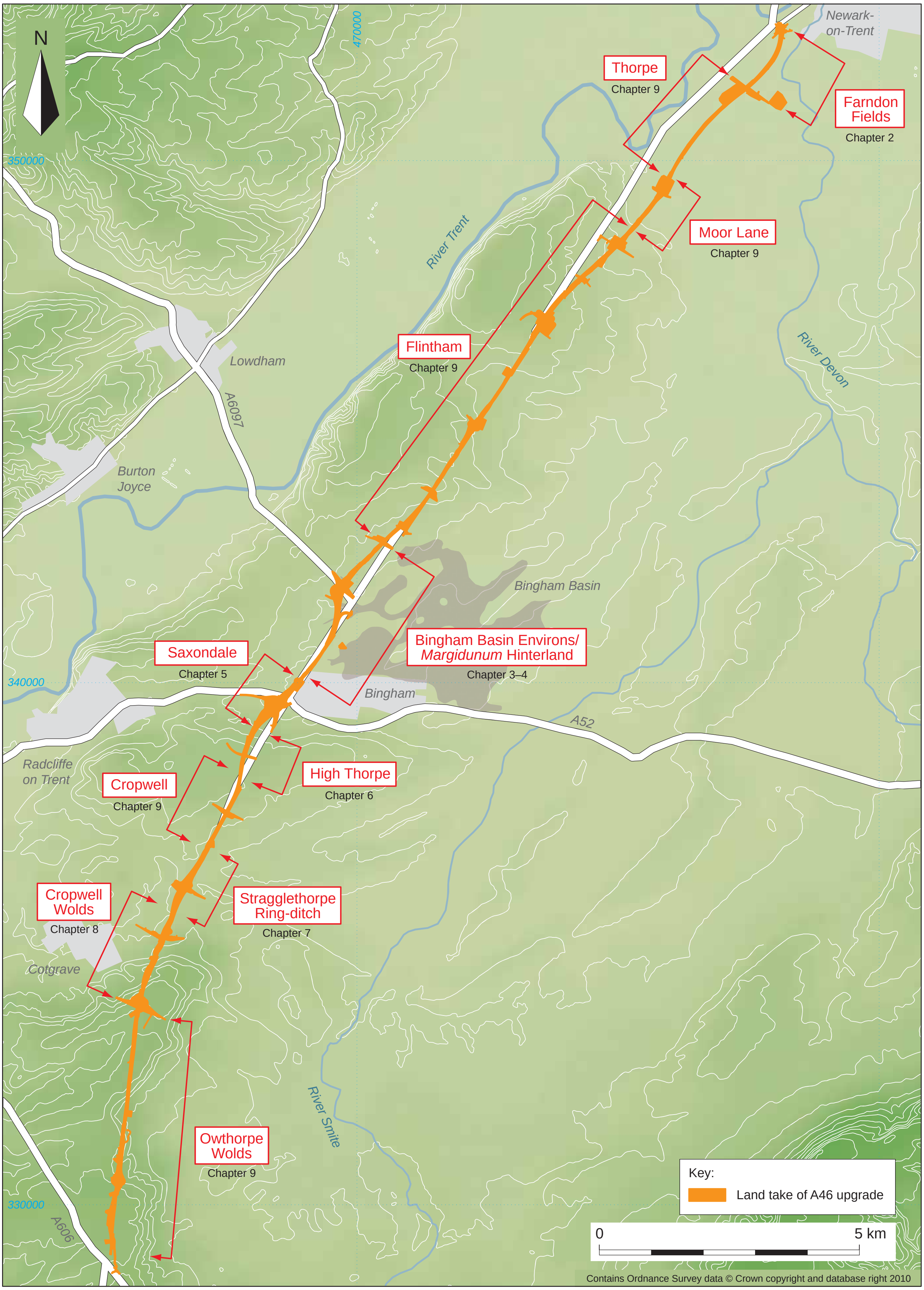


Fig. 1.2 The locations of the sites

shape the post-Romano-British landscape up to the present day.

These road improvements, as previously, have largely reproduced the line of the ancient road almost two millennia after its first construction. Yet, the archaeological discoveries during the investigations along its course have thrown light on longer-term patterns of continuity and change in the settlement and exploitation of the landscape. These new discoveries include flintworking in the Upper Palaeolithic, Mesolithic and Neolithic; barrow construction and burial in the Early Bronze Age; land division starting in the Late Bronze Age; settlement and agriculture in the Iron Age and, subsequently, in the Romano-British period around the town of *Margidunum* and elsewhere; funerary practices of Romano-British and Saxon date, and land use from the medieval period to the present.

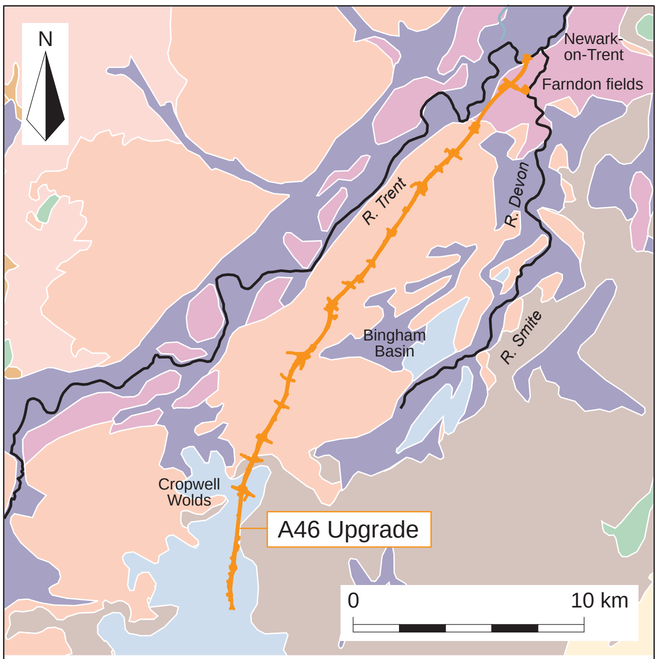
The archaeological works were undertaken, mostly in 2009, by Cotswold Wessex Archaeology (CWA), a joint venture between Cotswold Archaeology and Wessex Archaeology. CWA was appointed as the archaeological contractor to Balfour Beatty Civil Engineering Limited, the lead contractor for the Highways Agency, with Scott Wilson Ltd (now URS) as their Archaeological Designer.

Scheme-wide Geological and Topographical Context

The A46 road scheme ran between the B6166 roundabout junction south-west of Newark (NGR 478100 352600) and the A606 junction at Widmerpool, south of Nottingham (NGR 465350 329250), a distance of 28.3 km; the area of works varied between *c.* 60 m and 300 m wide (Fig. 1.2).

Where it passes through Nottinghamshire, the A46 runs just south of the middle reaches of the valley of the River Trent, one of the major rivers of Britain and one that forms a natural physiographic divide between the upland and lowland zones. The section of road from Widmerpool in the south-west to Newark in the north-east follows a tongue of higher ground between the valleys of the Trent and River Devon that is largely formed on sedimentary mudstones and siltstones of Triassic age belonging to the Mercia Mudstone Group, overlain by river terrace deposits near the confluence of the Devon with the Trent at Newark (Fig. 1.3).

The southern end of the route, on a cap of Pleistocene glacial diamicton, lies within the Nottinghamshire Wolds, and is the highest part of the scheme, at 85–95 m above Ordnance Datum (aOD). At Owthorpe, south of Cotgrave, the route descends to an embayment of underlying Lower Lias Clay and an exposure of limestone, but to the north rises to an eminence at Cropwell Wolds at 95 m aOD, where the Fosse Way makes a change in direction and runs in a straight line to Newark. The route from Cropwell Wolds drops to an extended ridge of Mercia Mudstone forming the interfluve between the Trent and the Devon (including a tributary, the Smite). This transect of land is undulating in its descent north-eastwards, and has a relatively steep fall at Fosse Farm,



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Superficial geology:
- Alluvium
- River Terrace deposit (largely Holme Pierrepont)
- Glacial sands and gravels
- Diamicton (till)

Bedrock:
- Lias Group: mudstone, siltstone, limestone and sandstone
- Triassic rocks: sandstone and conglomerate
- Triassic rocks: Mercia Mudstone Group

Fig. 1.3 The geology of the route

south-west of Bingham, where the land drops to the edge of a wide east-facing basin at no more than 30 m aOD. The Bingham Basin contains the buried remains of Roman *Margidunum* on its western margin on land now partly covered by the roundabout junction of the old A46 with the A6097. The land then rises gradually to *c.* 50 m aOD at Syerston Airfield (Flintham) and beyond this falls to 15 m aOD at the lowest margin of the Mercia Mudstone ridge at Thorpe. From here to the River Devon north of Farndon the underlying geology comprises Middle and Upper Pleistocene river terraces overlain in some areas by windblown coversands of Late Glacial origin.

Archaeological and Historical Background

The East Midlands is one of the most important regions in the country for the Late and Final Upper Palaeolithic (*c.* 11,000–9000 BP). The Creswell Crags cave sites have received international attention with the discovery of Britain's first parietal Upper Palaeolithic artwork at Church Hole, with engravings of deer, birds, bison and horse and possibly ibex (Bahn *et al.* 2003; Bahn and Pettitt 2009). Scatters of flintwork of this period are known from the Trent Valley and adjacent uplands, including at Farndon, East Stoke and Cotgrave (Howard and Knight 2004a, 23).

As is common elsewhere, evidence for Mesolithic activity in the Trent Valley region largely comprises surface scatters of lithics, the analysis of which has made little progress in establishing site types or in determining the activities represented (Myers 2006, 55–7); there are also difficulties in accounting for the greater frequency of later Mesolithic flint groups compared with earlier ones (Howard and Knight 2004a, 38). Fieldwalking in advance of the present project revealed possible foci of Mesolithic flintworking at Cropwell Bishop, East Bridgford and Thorpe (Howard and Knight 2004b, 35), while wide scatters of material have also been recorded during fieldwalking further down the valley at South Muskham and Collingham. Excavated features of possible Mesolithic date are rare in the East Midlands, and where found comprise only pits and gullies of uncertain function, the dating of which is often unclear due to the potential redeposition of flint in later features (Howard and Knight 2004b, 38). However, organic remains have come from palaeochannels in the Lower Trent at Bole Ings, Girton and Staythorpe, yielding palaeoenvironmental information about this period. Moreover, a human femur from Staythorpe, radiocarbon dated to 6790±40 BP (Beta-144016) 5740–5620 cal BC (95% confidence), represents the only human bone of this date from an open air site in the country; it is also the only one from which stable isotope analysis indicates a diet based on terrestrial animals – the femur was associated with butchered animal bone (Myers 2006, 65).

Scatters of Neolithic and Bronze Age flintwork indicate continued widespread activity, but again the activities these represent are difficult to characterise (Knight and Howard 2004b, 48). Settlement sites, too, remain rare in these periods, usually comprising low densities of pits and postholes, as at Holme Dyke, Gonalston and Willington, Derbyshire, and it has been suggested that a mobile hunting lifestyle lasted well into the Neolithic and even Bronze Age (Bishop 2000c, 6). Rectangular Early Neolithic buildings have been found at Lismore Fields, Buxton, along with charred remains of emmer wheat, flax and wild foods, but this is an exceptional site and one of continuing national interest in the debate over the importance of cultivation in the Neolithic (Jones 2000; Knight and Howard 2004b, 67).

Ceremonial enclosures, both individual and in complexes, are present in the Trent Valley area, but they are not common and have received little investigation. Two Early Neolithic causewayed enclosures are known, both upstream of the Trent–Tame confluence, and although Early Neolithic radiocarbon dates have come from a chambered tomb (Whitwell) in the Derbyshire Peak District (Clay 2006, 75), long barrows appear to be absent from the valley (*ibid.*, 62). It is possible, however, that some short 'long enclosures' may be ploughed out long barrows; there is a relatively high concentration of 'long enclosures' in the Middle Trent Valley, and also cursuses at Aston-upon-Trent and Potlock (Willington) in Derbyshire, and two others further upstream at Catholme in Staffordshire. These lie close to other monuments of probable Neolithic or Bronze Age date (Knight and Howard 2004b, 64). There are possible henges at Gunthorpe and Cromwell further down the valley (*ibid.*, 63) and at Bingham (Clay 2006, 80), and there is an exceptionally large post-circle at East Stoke (Knight and Howard 2004b, fig. 4.12).

Round barrows/ring-ditches are relatively common and are known mainly from cropmarks. Those that have been excavated are generally of Late Neolithic and Early Bronze Age date, and show some complexity of development. The ring-ditches at Swarkestone Lowes, Lockington, Aston cursus and Cromwell had surrounded barrow mounds, but at others there was no trace of a mound, while those at Great Briggs, Tucklesholme Farm and Holme Dyke, Gonalston yielded no evidence of burials (Knight and Howard 2004b, 60–1). Although hard to interpret, important and unique evidence for some form of Late Neolithic/Early Bronze Age mortuary practice also comes from the 'log-jam' deposits in a palaeochannel at Langford Lowfields, downstream from Newark, which contained over 200 single and semi-articulated bones, including at least 13 human skulls, and a range of animals including aurochs, domestic cattle, pig, deer, horse, sheep and dog (Knight and Howard 2004b, 54).

Domestic sites of this period are more common than in the earlier Neolithic, although still hard to characterise. A Neolithic site at Stanton on the Wolds had evidence of a sunken circular structure, while at Langford there were Neolithic and Beaker pits and postholes partly sealed by the Roman Fosse Way (Clay 2006, 77). Burnt mounds also appear to be an aspect of Neolithic and Bronze Age occupation near the Trent and its tributaries, including the exceptional site at Willington, although their role in the settlement pattern is unclear (Beamish 2009; Knight and Howard 2004b, 57). Flint scatters away from the rivers contain more diagnostically Late Neolithic and Early Bronze Age pieces, but remain difficult to interpret in terms of either settlement or more transient activity.

Palynological evidence indicates progressive deforestation in most parts of the valley during the Middle Bronze Age, and the expansion of agriculture (Clay 2006, 82; Knight and Howard 2004c, 86–7). A pattern of thin but extensive occupation, tied in with complex cycles of short- and long-distance transhumance, has been suggested for the Trent Valley, taking account of unusual, distinctive but perhaps temporary, activities at burnt mound sites and 'middens' (Knight and Howard 2004c, 87–9).

Settlement enclosures and extensive boundary ditches suggest a more contested landscape from the Late Bronze Age through to the Late Iron Age. Long distance linear boundaries of various forms are characteristic of the East Midlands generally (Willis 2006, 121–4), as well as further afield (Hurst 2011, 117). Presumably for territorial demarcation at various scales, they include single and multiple pit alignments, and ditches of varying size and complexity. The boundaries at Whitemoor Haye, Staffordshire, for example, appear to demarcate areas 200–400 m wide running down to the River Tame

(Buteux and Chapman 2009, fig. 6.15). The multi-ditched boundary at Aslockton, on the Trent–Smite interfluve east of Bingham, may have been defensive, apparently defining, in part, an enclosure of over 20 ha (Knight and Howard 2004c, 90). The dating of such boundaries, however, has often been problematic, and is unreliable from aerial evidence alone (Guilbert 2006).

A number of large enclosures, recorded under the generic term 'hillfort', may have had a variety of origins and functions (*ibid.*). Settlement sites are rare in the early part of the first millennium BC, and where found are often small and open, but by *c.* 400 BC they are very common, both open and enclosed, comprising elements such as penannular drainage ditches, compound enclosures (often subrectangular) at various scales, storage pits and four-post structures (Willis 2006, 97–105). Settlements in the Trent Valley are often characterised by small, subrectangular enclosures of up to 0.5 ha, within which were a small number of structures possibly housing an extended family (Knight and Howard 2004c, 95); more widely, however, settlements sometimes comprised groups of linked enclosures and unenclosed roundhouses (eg, Gonalston, Brough-on-Fosse) (Elliott and Knight 1996). It remains unclear how large some of these Late Iron Age settlements became, and the possibility that large nucleated settlements developed before the Roman conquest, as at Old Sleaford and Dragonby in Lincolnshire, is an important research topic in the region (*ibid.*, 100).

The enclosure of land and settlement continued to develop into the Romano-British period, when extensive field systems and trackways become more common. Coaxial field systems on the Holme Pierrepont terrace around South Muskham, north of Newark, probably developed from the Late Iron Age, and the whole of the Trent Valley appears to have been highly organised by the start of the Romano-British period (Knight and Howard 2004c, 102); comparisons have been made with the 'brickwork-plan' field systems on the Sherwood Sandstone geology of north Nottinghamshire (Knight *et al.* 2004, 116).

The most striking impact of the Roman conquest in the area was the superimposition upon the landscape of the military network of forts, roads and towns. The middle Trent Valley, at the interface between the province's lowland and upland zones each with distinctive 'civilian' and 'military' characteristics in the archaeological record, has the potential to provide insights into a variety of local responses to the new military and administrative situation. The archaeological record is certainly complex; north of the Trent a network of early forts, marching camps and vexillation forts is detectable, whereas to the south the military influence is less clear.

The suggestion that the Fosse Way was a military frontier in the early period of conquest is not now in favour, but there was an early fort at *Ad Pontem* (Thorpe), and a probable military presence at the secondary towns of *Margidunum* (East Bridgford) and *Crococalana* (Brough-on-Fosse). It is uncertain, however, whether such a presence should be seen as a necessary precursor to urban development. A vicus developed at the gate of *Ad Pontem*, and urban expansion is detectable at *Margidunum* and *Crococalana*, particularly in the 2nd century, while, for reasons that are not entirely clear, there appears to have been a pattern of defensive construction around the core of these towns in the late 2nd century.

A riverside settlement seems to have grown up at Newark, but the functional distinction between urban and rural centres, such as the large nucleated settlements at Rampton and Ferry Lane Farm, Collingham, in the lower Trent Valley, may be difficult to define (Bishop 2000a, 4). A small number of Romanised villas are known in the Trent Valley and its immediate surroundings, and they are as large and elaborate as any further south-east. They may have been related to the secondary towns, the villas at Car Colston, Newton, Shelford and Bingham lying not far from *Margidunum*, and the villa at Norton Disney perhaps related to *Crococalana*. Other enclosed farmsteads (villa-like or of native form) are more common, but their range of functions and their differing levels of adoption of Roman materials and ways of living are not yet understood.

Most diagnostically Anglo-Saxon material in Nottinghamshire dates to the 6th century AD and later, but it is possible that earlier sub-Romano-British communities lacked an archaeologically distinctive material culture. Their presence is hinted at by the association of Anglo-Saxon burials and material culture with Roman towns and villas, suggesting some sort of continuity of social and political structures (Bishop 2000b, 2), but as Knight notes (2004, 38) there is no evidence along the Fosse Way for continuity of occupation into the 5th century AD apart from at Lincoln (*Lindum*). The evidence for an early Anglo-Saxon presence is dominated by burials but most are no earlier than the 6th century AD, the Millgate cemetery, Newark, being a notable exception in having some 5th-century artefacts. Excavations at Holme Pierrepont and Windmill Hill, Cotgrave have shown a variety of funerary practices that include inhumations and cremations, ring-ditches and mounds (Elliott *et al.* 2004, 163; Bishop 1984).

The landscape setting of early Anglo-Saxon burials appears significant, with locally elevated positions being frequent, and a common association with prehistoric barrows and less frequently with Romano-British enclosures. Graves were cut into the Fosse Way at Cotgrave and Broughton Lodge (Willoughby-on-the-Wolds), and burial mounds appear to have been sited on or adjacent to the road at Saxondale, Broughton Lodge and Potter Hill, north-east of Brough, perhaps an indication that the road served as a boundary (Elliott *et al.* 2004, 163). From the later 7th century AD there is little evidence of burials (except occasionally those of high status) until churchyard burial became established in the 10th century. Early churches appear associated with Romano-British centres as symbols of past authority, and became established with the growth of the parochial system, which appears to have developed from the fragmentation of larger estates. There is evidence that an Anglo-

Saxon estate was based at East Stoke, near *Ad Pontem* (Bishop 2000b). Extensive estates were frequently held by monastic foundations from the 7th century AD but most in Nottinghamshire were later (Elliott *et al.* 2004, 166–7).

Early–mid-Saxon settlements are elusive in the region, Catholme in the Upper Trent Valley still being the principal excavated site (Losco-Bradley and Kinsley 2002), but there is also evidence from Brough, Holme Pierrepont, Girton and Langford in Nottinghamshire. The extensive, shifting and apparently unfocused nature of settlement at this time provides only partial settlement plans, but there is some suggestion that the framework for settlement and land use was provided by the extensive field boundaries of the Romano-British landscape (Elliott *et al.* 2004, 168, 174).

Village nucleation took place from the 9th century AD and continued in both planned and piecemeal form until around 1300. Towns also developed from the 9th century AD as trading, production and communication centres, Nottingham being the pre-eminent example in the area, and also a centre of royal administration, while Newark, at a lower crossing of the Trent, was established as a defended centre in the 10th century with its own mint.

By the 11th century it is likely that the settlement pattern of nucleated villages and open fields, typical of the English Midlands, had been established. It appears that south Nottinghamshire had relatively little recorded woodland in 1086, perhaps as a consequence of land intensively exploited for agriculture (Bishop 2000e, 1). The region retained a distinctively rural character throughout the medieval period and beyond. Bingham continued to hold administrative importance as one of the six county wapentakes, incorporating the parishes between Syerston in the north-east to the county boundary in the south-east, and the River Trent in the north-west. The court said to have been held at Moothouse Pit south-west of Bingham, by the Fosse Way.

As elsewhere in the country, medieval agriculture and settlement retracted in the 14th century and a process of enclosure of the open fields gradually took place. There is evidence for medieval agricultural regimes, and of the subsequent shrinkage or desertion of settlements, from the earthworks of ridge and furrow, house platforms and moats. Village earthworks have been found on the edge of East Stoke, including fishponds to the south (Knight 2004, 40), but these phenomena have not been examined in Nottinghamshire to the same extent as elsewhere in the Midlands (Elliott *et al.* 2004, 172).

The land south-west of East Stoke came into national consciousness as the scene of the Battle of Stoke Field, the ultimate battle of the Wars of the Roses, on 16 June 1487. The site is an English Heritage Registered Battlefield. Later Civil War earthworks are present around Newark which was a Royalist stronghold when besieged between 1642 and 1646. Two Parliamentarian siege lines, known as the lines of circumvallation, are thought to have crossed the road corridor near Farndon Fields. Two gun flints, recovered during fieldwalking at Farndon Fields (fields 373B and 374) may relate to the Civil War outer defences of Newark that are projected to cross the north end of field 370B (see Fig. 2.1).

Scheme Background

Archaeological works associated with the Department of Transport's proposal to improve this part of the A46 date back to the early 1990s when English Heritage commissioned Trent and Peak Archaeological Trust (now Trent and Peak Archaeology – TPA) to undertake an impact assessment of the scheme (Knight and Kinsley 1992). The report collated existing information about the archaeology of the route, which included the Roman road itself (Fosse Way), the Roman town of *Margidunum* near East Bridgford, and the fort of *Ad Pontem* north of East Stoke, both of them Scheduled Monuments. Sixteen sites of archaeological potential affected by the scheme were identified along the route, including a scatter of Upper Palaeolithic flint tools near Farndon, recorded during a fieldwalking survey covering most of the route. The report stressed the need for a planned archaeological strategy to mitigate the impacts of road construction on what was seen as an archaeological resource of possibly national importance. The context of the scheme includes the earlier archaeological work on the Newark to Lincoln section of the A46 improvement, which was completed in 2003 (Vyner forthcoming). Discoveries included part of a Late Iron Age and Anglo-Saxon settlement at Brough-on-Fosse, near the Roman town of *Crococolana* (see Knight and Howard 2004, fig. 5.16 for a pre-publication site plan).

Further archaeological fieldwork was undertaken by TPA over the following decade (Palmer 1993; Kinsley 1993a; Knight 1994a; 1994b; Priest and Knight 1995; Priest and Robson 1998; Knight *et al.* 1999; Appleton *et al.* 2004), leading to an assessment and synthesis of the archaeology of *Margidunum* and its hinterland (Leary and Baker 2004). At the same time Wessex Archaeology (WA) were commissioned to undertake evaluation and survey fieldwork, particularly around Farndon (WA 1993; 1994; 1995; 2006), while Cotswold Archaeology (CA) became involved in 2009 with fieldwalking in the Farndon area (CA 2010a) and a metal detecting survey of *c.* 37 ha of land between the villages of Thorpe and Syerston to look for evidence for the 1487 battle of Stoke Field (CA 2010b).

The archaeological strategy eventually adopted in the design of the road scheme involved significant diversions around the walled area of the Roman town of *Margidunum* and to the east of the Roman fort of *Ad Pontem*, as well as an integrated archaeological response to the impacts of construction on the historic environment. The Cultural Heritage chapter of the Environmental Statement outlining the mitigation works required was undertaken by Scott Wilson Ltd (2006), drawing heavily on the Archaeological Research Framework for the scheme produced by TPA for the Highways Agency (Knight 2004).

The move to progress with road construction was made during the depths of economic recession as part of the government's Fiscal Stimulus Package, announced in late 2008. In 2009 the Highways Agency, with Jacobs as their Agent, awarded the construction contract to Balfour Beatty Civil Engineering Ltd, with Scott Wilson Ltd (now URS) as their Designer and Cotswold Wessex Archaeology as their Archaeological Contractor. Fieldwork started in March 2009 and was largely completed by November of the same year, although sporadic watching briefs took place thereafter until 2012. Due to careful planning and organisation by Scott Wilson (now URS), the archaeological works were successfully dovetailed with the road construction activities, and were accomplished without significant effects on the construction programme. An assessment report summarising the findings of the fieldwork, and containing an updated project design (UPD) and publication proposal, was delivered by CWA in June 2011 (CWA 2011).

Methods

Fieldwork

The works undertaken by CWA comprised a comprehensive suite of interventions ranging from the finely detailed to the 'broad-brush' (Table 1.1). In total, with the exception of Farndon Fields, they comprised 281 machine-excavated trial trenches (indicated below with a TT prefix), 74 strip, map and sample excavations (SM), seven detailed excavations (DE), and a general watching brief covering the entire scheme (GW); only those watching brief areas mentioned in the text are shown on the site plans. The investigations at Farndon Fields employed a number of techniques not used elsewhere during the works (ie, hand-excavated test

Table 1.1 The archaeological sites: location, interventions and summary findings

Site name	*NGR (N end, on road line)*	*Fieldwork interventions*	*Summary findings*
Farndon Fields (Chapter 2)	478100 352600	10 auger holes 13 TT: 1312–4, 1316–25 1 linear SM: 2063 114 FF (trenches/test pits) (in range 6000–7999) (for detailed breakdown see Table 2.2, Chapter 2)	Late Upper Palaeolithic open-air site. Later archaeology, primarily concentrating on the evidence for later prehistoric activity at Farndon
Thorpe (Chapter 9)	477500 351400	10 TT: 1273–82 21 linear SM: 2030–35, 2039–53 1 area SM: 2053 1 GW: 4021	Small quantity of relatively widely spaced Neolithic, Late Bronze Age, Late Iron Age, Romano-British etc. archaeology
Moor Lane, East Stoke (Chapter 9)	476000 349650	12 TT: 1261–72 3 linear SM: 2028–9, 2036 4 area SM: 2055, 2058–9, 2064	Small quantities of late prehistoric and Romano-British material, including the Elston subcircular settlement enclosure, and small quantities of Anglo-Saxon material
Flintham (Chapter 9)	475250 348650	110 TT: 1142–1260 (9 unex.) 7 linear SM: 2021–7 5 area SM: 2037, 2056–7, 2074–5 1 GW: 4021	Widely spaced archaeological remains alongside the Fosse Way; a possible prehistoric ditch, a Romano-British pit, some undated features and sherds of Romano-British pottery, parish boundaries and medieval ridge and furrow
Bingham Basin/ *Margidunum* Hinterland (Chapters 3 and 4)	470450 342650	6 TT: 1139–41, 1326–8 4 linear SM: 2017–20 1 area SM: 2076 6 DE: 3001–4, 3006, 3008 1 GW: 4036	Multi-period landscape from Early Holocene (flint scatters) to post-medieval (field boundaries). Main concentration: Romano-British edge of town features (complex ditched enclosures, building, road)
Saxondale (Chapter 5)	468950 340100	11 linear SM: 2006–16 7 area SM: 2067–70, 2072–3, 2077	Multi-period landscape including features from the Bronze Age (pits) to post-medieval period (field boundaries). Main concentration: Romano-British road and ditched enclosures
High Thorpe (Chapter 6)	468000 339050	15 TT: 1124–1138 1 area SM: 2061	Middle/Late Iron Age ladder enclosure, similar in layout, locale etc. to Cropwell Wolds
Cropwell (Chapter 9)	467750 338300	15 TT: 1107, 1109–23 2 linear SM: 2004–5 2 area SM: 2060, 2065	Imprecisely dated enclosures

Table 1.1 (cont.) The archaeological sites: location, interventions and summary findings

Site name	*NGR (N end, on road line)*	*Fieldwork interventions*	*Summary findings*
Stragglethorpe (Chapter 7)	467100 336850	23 TT: 1289–1311, 1329–32 1 DE: 3005	Late Neolithic ring-ditch with Beaker burials in its upper fill
Cropwell Wolds (Chapter 8)	466500 335650	58 TT: 1048–55, 1057–1106 1 area SM: 2038	Small Middle/Late Iron Age settlement
Owthorpe Wolds (Chapter 9)	465800 333800 465350 329250 *(south end)*	35 TT: 1004–16, 1021–34, 1036, 1038, 1040–4, 1047 3 linear SM: 2001–3 1 area SM: 2071 3 GW: 4034–5, 4046	Scattered archaeological features, largely devoid of remains

KEY: FF = Farndon Fields trench/test pit; TT = trial trench; SM = strip, map and record excavation; DE = detailed excavation; GW = general watching brief

pits, geotechnical trenches, augering etc.) and all the fieldwork events, other than one strip, map and sample excavation and 13 trial trenches, were prefixed FF (these are fully detailed in Chapter 2, Table 2.2).

The archaeological works were conducted under generic Written Schemes of Investigation (WSIs) prepared for the Highways Agency by Scott Wilson (now URS), for trial trenching and archaeological mitigation (2009a–c). The strategy drew upon Scott Wilson's wide experience of archaeological mitigation in Britain and Ireland using flexible combinations of trial trenching, strip, map and sample, and detailed excavation to define and deal appropriately with the archaeology. These approaches benefited from advice from a range of professional consultees, with additional procedural detail supplied by CWA in site-specific WSIs. The works were undertaken in accordance with the relevant Institute for Archaeologists' (IfA) Standard and Guidance, the IfA Code of Conduct,

Fig. 1.4 SM trenches at Saxondale

the Highway's Agency's Design Manual for Roads and Bridges (DMRB Vol. 10, Section 6), and other current and relevant best practice and standards and guidance.

The trial trenches, generally 50 m by 2 m, were targeted on areas of known archaeological activity, as identified in the Environmental Statement that would be impacted by construction as well as on specific locations where the preservation *in situ* of archaeological remains was proposed (specifically Farndon Fields). In some cases where significant archaeological remains were identified during the trench investigation, the trenches were extended and progressed immediately to strip, map and sample excavation.

The mitigation works, comprising strip, map and sample excavation, detailed excavation and watching brief, aimed to confirm and enhance the results of trial trenching, if applicable, and to preserve by record the archaeological remains that would be impacted by the proposed scheme. The strip, map and sample excavations were initially 4 m wide continuous strips, the results of which were subsequently used to define area excavations (Fig. 1.4).

The fieldwork identified 12 principal sites of differing size and complexity (Table 1.1). The most significant were sealed Late Upper Palaeolithic deposits at Farndon Fields, areas of extra-mural Romano-British settlement near *Margidunum*, and a multi-period landscape of prehistoric and Romano-British settlement and an Anglo-Saxon cremation cemetery at Saxondale. Also of significance were a Beaker period ring-ditch with burials at Stragglethorpe, and Iron Age settlements at Cropwell Wolds and High Thorpe. Table 1.2 lists the sites by period.

Analysis

Methods of artefactual and environmental analysis are described within the site chapters, at the start of the first main report for each specialist subject. In many cases

Table 1.2 Sites with evidence of activity by period

Period	*Main evidence of activity*	*Site name*
Late Upper Palaeolithic	*In situ* and *ex situ* flint scatters	Farndon Fields
Mesolithic	Flint	Bingham Basin; Owthorpe Wolds
Neolithic	Pits	Owthorpe Wolds
	Flint	Bingham Basin
	Pottery	Thorpe; Bingham Basin
Early Bronze Age	Ring-ditch	Stragglethorpe
	Human remains (inhumation burials)	Stragglethorpe
	Pottery	Stragglethorpe
'Prehistoric'	Boundary ditches	Cropwell
	Enclosure	Moor Lane, East Stoke
Bronze Age	Occupation	Saxondale?
	Pit(s) (and trough)	Thorpe; Saxondale
	Boundary ditches	Bingham Basin
Iron Age	Pit alignment	Bingham Basin
	Enclosed settlement	Bingham Basin; Saxondale; High Thorpe
	Unenclosed settlement	Cropwell Wolds
	Field system	Bingham Basin
	Ladder enclosure	High Thorpe
	Roundhouse	Saxondale
Romano-British	Enclosures and field system	*Margidunum* Hinterland, Saxondale
	Roman road	*Margidunum* Hinterland, Saxondale
	Pit(s)	Moor Lane, East Stoke; Flintham; Saxondale
	Buildings	*Margidunum* Hinterland
	Human remains (mainly inhumation burials)	*Margidunum* Hinterland
	Ditch(es)	Thorpe; Moor Lane, East Stoke
Anglo-Saxon	Sunken-featured building	*Margidunum* Hinterland
	Pottery	Saxondale
	Human remains (urned and unurned cremation burials)	Saxondale
Medieval/post-medieval	Ridge and furrow	Various
	Pottery	Various (esp. Moor Lane, East Stoke; *Margidunum* Hinterland and Saxondale)
Undated	Enclosure	Cropwell
	Ditches	Flintham

these are to be found in the reports relating to Bingham Basin/*Margidunum* Hinterland (Chapters 3 and 4).

Radiocarbon dating

The radiocarbon dates quoted in the text are calibrated against the IntCal09 Northern Hemisphere radiocarbon curve (Reimer *et al.* 2009) using the program OxCal 4.1 (Bronk Ramsey 1995; 2001). Calibrated dates are quoted as calibrated years BC, with date ranges quoted using the 2σ calibrated range (95%) and end points rounded outward to 10 years in the form recommended by Mook (1986). The results from the Bayesian models (the posterior density estimate) appear in italics and are given at 95% probability unless otherwise stated. Where Bayesian modelling has resulted in greater precision, then the posterior density estimates are given and highlighted in italics (eg, *2130–2010 cal BC (81%) at 95% probability*). However, where there is no significant increase in precision due to a lack of prior information and/or wiggles/plateau in the calibration curve then the dates are quoted in plain text as simple calibrations (eg, 1610–1440 cal BC at 95% confidence).

The assessment report paid particular attention to the potential of Bayesian statistics for enhanced dating precision using radiocarbon in conjunction with stratigraphic sequences (CWA 2011, 35). In general terms, the shortage of both stratified sequences and radiocarbon samples in appropriate primary contexts slightly limited the applicability of the technique. Bone was poorly preserved, except in the Bingham Basin/*Margidunum* Hinterland (Chapters 3 and 4), although even here three radiocarbon samples failed due to insufficient collagen.

Bayesian analysis proved most valuable at Stragglethorpe (Chapter 7) where bone was present in the lower and upper fills of the ring-ditch, enabling the modelling of the construction and span of use of the monument. At Saxondale (Chapter 5), however, simulations of Bayesian modelling for the Anglo-Saxon cemetery showed that improvement of the 5th/6th-century pottery dating was not possible due to the plateau in the radiocarbon calibration curve and the lack of a stratified sequence. However, it did confirm the pottery dating and the suggested period of use. The technique was also used to confirm and improve chronological precision on a number of prehistoric sites (Chapters 4, 8 and 9).

Format of the Report

Linear schemes of this nature inevitably result in the accumulation of a great deal of archaeological information of varying significance. It is not possible, or even desirable, to give a detailed account of all the findings, and a selection has been made for the key sites which are presented, together with supporting artefactual, environmental and osteological information in appropriate (but not comprehensive) detail. The choice of presentation was not difficult to make since the results from the scheme fell into more or less clearly defined sites and were without a clear unity of theme which might have suggested a different form of report structure.

Six major sites and five minor sites are described, each of them containing archaeological remains of multiple periods (Tables 1.1 and 1.2). The results from all but one of the major sites are presented in single chapters. The exception is the concentration of remains found between East Bridgford and Bingham, the results from which have been divided between two chapters. Chapter 3 describes the prehistoric remains (up to and including the Middle Iron Age) whose layout appears to have been affected in part by a major topographical feature, the Bingham Basin. Chapter 4 describes all later features from the same area, starting with the Late Iron Age due to the evident continuity into the Romano-British period, and covering subsequent developments in the hinterland of the Roman town of *Margidunum*. As a result the site is referred to as Bingham Basin/*Margidunum* Hinterland, although for simplicity's sake this may be shortened to either name depending on the period being discussed. The chapters for the main sites (Chapters 2–8) are ordered from north to south, as are the minor sites described in Chapter 9.

The chief challenge in presenting the results was in condensing the supporting information into a succinct form while bringing out the relevant detail. This report is, therefore, in a conventional monograph format, starting with site narratives and supporting specialist reports, with the syntheses of different periods, strands of information and archaeological themes brought out in the later discussions. This report does not dwell on the design of the scheme of archaeological works, or on the sequence or scope of the various interventions undertaken (summarised in Table 1.1). While the design of the project was clearly instrumental in its success, it is not of direct archaeological concern and its recounting in detail here is unnecessary. Notwithstanding, in summary the archaeological mitigation strategy adopted a hierarchical approach, comprising evaluation (349 trial trenches, 69 test pits and ten auger drills, Fig. 1.4), 66 strip, map and sample areas, 20 detailed excavation areas and 43 separate general watching brief phases. Where significant archaeological remains were identified, next stage works invariably followed this hierarchy, accompanied by a commensurate and appropriate elevation in required excavation and/or sampling levels. The overall methodology and details of individual interventions is presented in the assessment report (CWA 2011) while the particular methodology adopted for dealing with the Late Upper Palaeolithic archaeology at Farndon Fields is detailed in Chapter 2.

Neither does the report interrogate unpublished or undigested data (such as the Historic Environment Record), although reference is made to such sources as appropriate. Of particular importance is the information assessed and presented in the report by Trent and Peak Archaeological Trust for English Heritage (Knight and Kinsley 1992), the synthesis of the evidence from investigations at *Margidunum* Roman town and its environs (Leary and Baker 2004) and the archaeological strategy report for the Highways Agency (Knight 2004), all the work of Trent and Peak Archaeology.

Location of the Archive

The archive is currently stored at the offices of Cotswold Archaeology and Wessex Archaeology under the project codes 71310–71312 (WA) and 2827 and 9122 (CA). At the time of writing discussion between University of Nottingham, CWA and URS about the archive's long-term storage is ongoing.

Chapter 2
Late Upper Palaeolithic Farndon Fields

Phil Harding, Chris Ellis and Michael J. Grant

with contributions by
Martin R. Bates, John Crowther, Richard I. Macphail and Jean-Luc Schwenninger

Introduction

by Phil Harding, Chris Ellis and Michael J. Grant

The Upper Palaeolithic period (40,000–10,000 years ago) marks the end of the longest period in human evolution, the Palaeolithic (Old Stone Age), which began in Britain approximately 800,000 years ago. Throughout much of the Upper Palaeolithic, Britain was in the grip of the Last (Devensian) Ice Age and was unoccupied or occupied only intermittently.

The site at Farndon Fields dates from the end of the Upper Palaeolithic when a period of warming of the Windermere Interstadial, *c.* 12,700 BC, encouraged human recolonisation of Britain. This human recolonisation is represented in the Late Upper Palaeolithic (LUP) by two stone tool industries. Typologically the earlier is represented by the Creswellian, the British cultural tradition with origins in the European Final Magdalenian on the Continent. The type-site of Creswell Crags lies about 30 km (in a direct line) north-east of Farndon Fields and it is possible that the hunter gatherers of this period were far ranging, visiting the Trent Valley and the Magnesian limestone uplands in a regular cycle of movement (Howard and Knight 2004a, 23).

A separate and later technology, the Federmesser tradition, which is also LUP, but referred to by some (Conneller and Ellis 2007; Conneller 2009) as Final Upper Palaeolithic, and also with continental origins, is generally considered to be slightly later within the Windermere Interstadial; the relationship between the Creswellian and Federmesser remains a subject of debate. Both Creswellian and Federmesser flintwork has been recovered sporadically as superficial and redeposited finds in the Trent Valley and nearby. Within this backdrop Farndon Fields is rare both in its extent and now, for the first time, the demonstration of *in situ* knapping material from both industries on an open-air site of this period. By about 10,700 BC the extreme cold of the Loch Lomond Stadial (Younger Dryas) appears to have driven human groups away from Britain again until another phase of recolonisation, about a thousand years later.

The area of investigation at Farndon Fields was at the northern end of the road scheme, on the southern outskirts of Newark (Fig. 2.1). The site, which measured approximately 60–70 m wide, covered an area of approximately 15 ha. It was bounded by Hawton Lane to the south-west and curved gently northwards to Farndon Roundabout. The road corridor lay within arable farmland with a small area to the east of Farndon Roundabout, which was grassland. The site was crossed by three large field drainage ditches and a modern residential access road. A number of archaeological and geotechnical investigations between 1991 and 2005 (Table 2.1) had focused on the potential of the site for Late Upper Palaeolithic remains, culminating in the extensive programme of fieldwork undertaken between July and October 2009.

Although numerous, the earlier investigations of the site were predominantly non-intrusive in character, with most of the available evidence therefore being surface- or ploughsoil-derived. The preliminary studies produced more than 300 worked flint artefacts of Late Upper Palaeolithic (LUP) Magdalenian (Creswellian) type (TPA 2004; Garton and Jacobi 2009), including material in two distinct ‘clusters’. Assemblages of this period (Fig. 2.2), dating to the early stages of the Windermere Interstadial, are extremely rare, making the site of national importance (Garton and Jacobi 2009).

The 2009 fieldwork was the first extensive, intrusive archaeological investigations of the site undertaken to mitigate the impact of road construction on any archaeological deposits, especially those of LUP date that might be found *in situ*. The new road was deliberately constructed to avoid the removal of the ploughsoil, hence preserving all deposits for future study irrespective of their current condition. Archaeological test pits and trenches were subsequently located in areas of impact along the flanking drainage ditches of the new road.

Geology, Topography and Hydrography

The site lies on an interfluve between, and close to the confluence of, the Rivers Devon and Trent (Fig. 2.1). The underlying prevailing geology comprises Holme Pierrepont Sand and Gravel (HPSG) of the Holme Pierrepont Terrace (Marine Isotope Stage 2; *c.* 24,000–9700 BC (Howard *et al.* 2009; 2011)) on the east side of the River Trent Valley. The ground was relatively level,

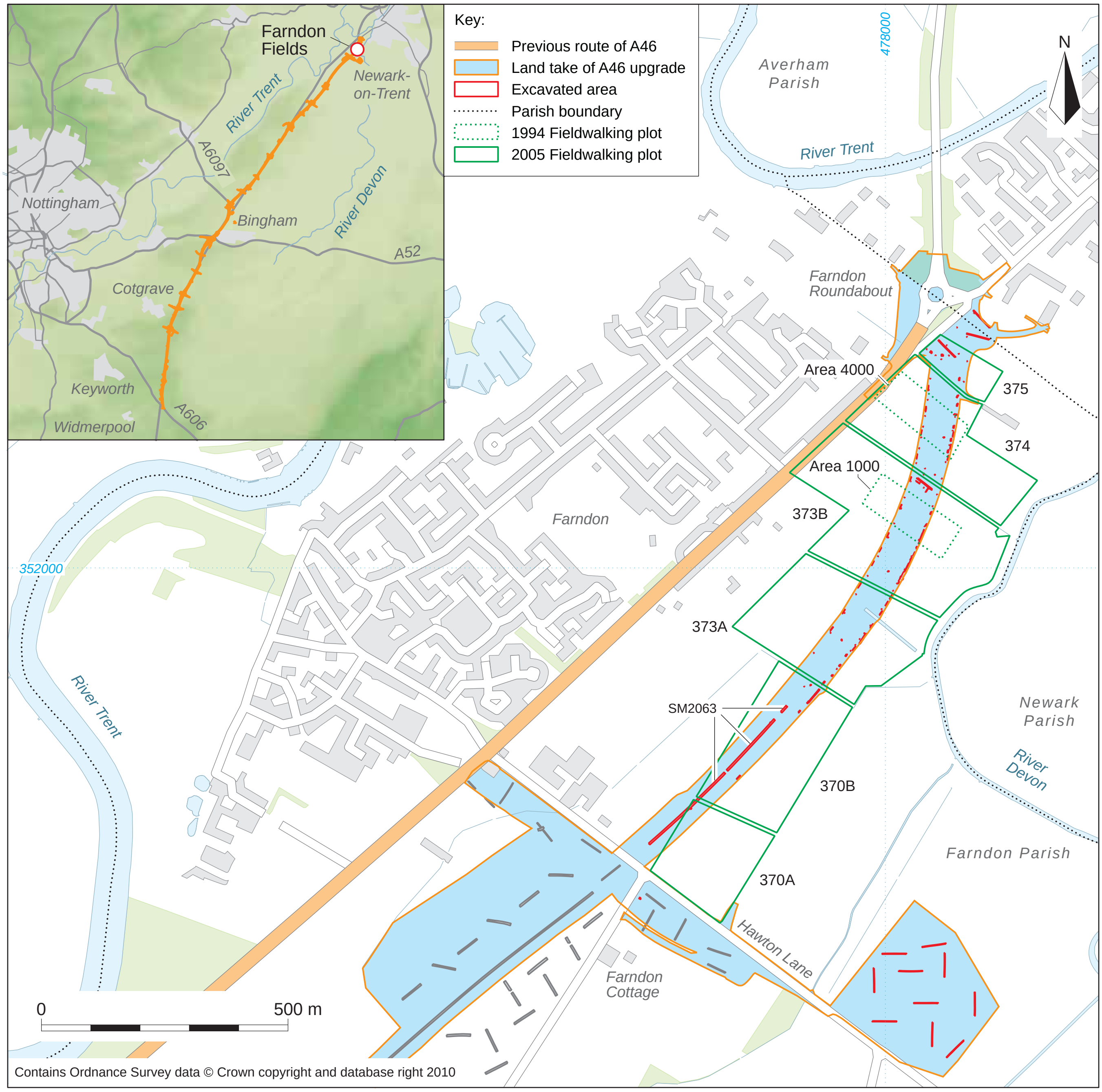


Fig. 2.1 Farndon Fields site

Table 2.1 Farndon Fields: preliminary investigations 1991–2005

Year	*Organisation*	*Fieldwork*	*Results*	*Bibliography*
1991	TPA	Fieldwalking in 10 m transects of Fields 370A & B, 373A & B, 374, 375	A scatter of LUP artefacts (2 borers, a bec, 2 long end-scrapers, 2 blade cores with facetted platforms, blade core) most in a 'corticated' condition. Recovered from Fields 370B, 373B and 374. Farndon Fields LUP & medieval (Site 18) Field 373B – a scatter of LUP tools & knapping debris of Creswellian tradition – a poss. open-air site). Concentration of medieval pottery in Fields 370A & 373 and a thin scatter of RB sherds.	Knight and Kinsley 1992
1992	FES	Early phase of geotechnical investigat-ions. Includes geotechnic test pits 190 & 191A south of Hawton Lane	Organic remains recorded in slightly sandy silt at the base of alluvial deposits at 1.55 – 1.65 m depth. No other organic remains found in test pits close to TP191A (TPA 2005, 3). Nothing found by TPA (2004) in field (TP781) or CWA 2009 (FF6004).	FES 1992

Table 2.1 (cont.) Farndon Fields: preliminary investigations 1991–2005

Year	*Organisation*	*Fieldwork*	*Results*	*Bibliography*
1993	TPA	Fieldwalking at 2.5 m intervals of Fields 370B, 373B, 374, 375	Cluster of over 30 LUP lithics in western side of Field 374 and a wider scatter of LUP diagnostic material in excellent condition. LUP flint and medieval pottery distribution from 1991/92 (Field 373B) now found to extend into Field 374. Also a significant concentration of Neo material, the LNeo particularly well represented (Location not mentioned!). A no. of LUP diagnostic pieces from Field 374, found 50 m to west of cluster of patinated flint. Pieces include: flake with 'en éperon' butt, core with faceted platform, tip of a backed piece, a long end-scraper and an edge-retouched 'Magdalenian' blade. Absence of Meso flintwork in 373B but poss. 1–2 pieces in Field 374. LNeo is well represented by tools & debitage – a marked concentration of LNeo material *c.* 120 m across in east side of Field 374. x1 Sherd of IA/Saxon pot from Field 370B.	Kinsley 1993a
1993	WA	x9, 1 m² test pits spaced at 50 m intervals in Fields 373B and 374	Only 2 undiagnostic worked flints from a single test pit (No. 5) in Field 373B otherwise post-med. pot, glass & cbm. Noted variability in the 'subsoils' (reddish-brown silty sand) at 0.3–0.5 m depth below ploughsoil.	WA 1993
1993	Cox and Palmer	Assessment of aerial photographs of site at Cambridge		Cox and Palmer 1993
1994	WA	Fieldwalking in 2.5 m transects of two 1.5 ha areas (1000 & 4000) Auger survey (177) on a 25 m grid in Fields 373B and 374 Test pitting – 14 test pits (1 m²) & 6 – 5 m² test pits in Fields 373B and 374	Concentration of LUP flints (120) in west of Areas 1000 & 4000. Also from fieldwalking a common general spread of Neo/BA flint (305) identified in both areas. Pottery: 1 sherd LPreh (?LIA) (Area 1000), 28 RB pot over both areas (date range 1st–2nd century AD). 59 med. sherds (13th–15th century). General scatter of burnt flint across both areas. Whetstone on poss. ground stone axe frag LNeo/EBA (Area 4000). Single poss. RB blue glass bead from Area 4000. LUP flints patinated (120) of which 60 from surface (ploughsoil) and 60 sub-surface (ploughsoil). More concentration of post-med. material in Area 1000 probably from recent manuring as highlighted in geophysical survey (Oxford Archaeotechnics 2005). Low densities of RB & med. material probably result of manuring of fields. Two gun flints from surface contexts. Natural palaeotopography slopes down to the s/east of eval area. Flint scatter ('North Cluster') on edge of area of thicker 'subsoil' based upon plot from auger survey data. No features encountered in TPs. 'Natural' generally 0.4–0.5 m depth apart from TP 726 (1.1 m), TP 732 (1.21 m), TP 727 (0.9 m). TP Finds include 2 RB sherds, 10 sherds of LMed. 'LUP flint concentrations occur on or close to higher areas of the natural base surface.' Modern artefacts found in TPs to a depth of 0.55 m. A *c.* 30 m diameter area contains northern concentration. A more diffuse concentration in west of Area 1000. TP 727 – a total 54 lithics in topsoil and 6 in uppermost 100 mm of 'subsoil' though modern artefacts down to 150 mm (TPA 2004). 'North Cluster'. TP725 – patinated blade segment from ploughsoil (TPA 2004 LUP Assess)	WA 1995

Table 2.1 (cont.) Farndon Fields: preliminary investigations 1991–2005

Year	*Organisation*	*Fieldwork*	*Results*	*Bibliography*
1994	Geoquest Associates	Magnetometry of Field 374 – part of WA 1994 works	A series of parallel features 8 m apart in Field 374 interpreted as possible land drains. High magnetic susceptibility levels in Field 373B because of post-medieval rubbish dumping.	Geoquest Associates 1994
2004	TPA	W/Brief of 15 geotechnic test pits & 3 boreholes including TP 781 excavated to the south of Hawton Lane	No significant results from TP 781 (south of Hawton Lane near TP191A location). Recording of Trent terrace deposits (sands & gravels) and directly below topsoil in TP781.	TPA 2005
2004	TPA	Assessment of LUP activity	'Subsoil' thickness plotted by TPA (Nov 2004) from WA 1994 fieldwork.	TPA 2004
2004	Oxford Archaeotechnics	Geophysical survey	High magnetic susceptibility of readings in Field 373B probably correlates with dumping of post-medieval rubbish recorded in 1994 (Geoquest Associates).	Oxford Archaeotechnics 2005
2005	WA	10 test pits prior to 18 geotechnical test pits and 3 boreholes	Only 18 pieces of worked flint, no LUP (just Meso–LNeo). 4 RB sherds and 1 glazed LMed. sherd.	WA 2006
2005	TPAU	Fieldwalking of site at 2.5 m intervals (Fields 373B, 374) and 5 m intervals (Fields 370, 373A and 375)	Report tabulates (non-LUP) Meso–BA flint and plots of 'prehistoric non-corticated' flint. Analyses by Marcie Rockman suggests raw material from southern English source. Holocene (non-LUP) flint from Lincs/Yorks Wolds, most probably from River Trent gravels. Concentration of Holocene flint in Fields 373B(S) & 370. Leaf, B+T & oblique arrowheads recorded. Poss. LMeso cores from 374 & 373B. Poor soil conditions in Fields 374 and eastern edges of Fields 373A and 373B. Further confirmation of LUP material in north of Field 374, near WA TP727 – 'North Cluster' inc. a Cheddar/Creswell point frag. Relative concentration of LUP flint at n/west end of Area 1000. Also concentration in Field 373A(S) – 'South Cluster'.	TPAU 2005

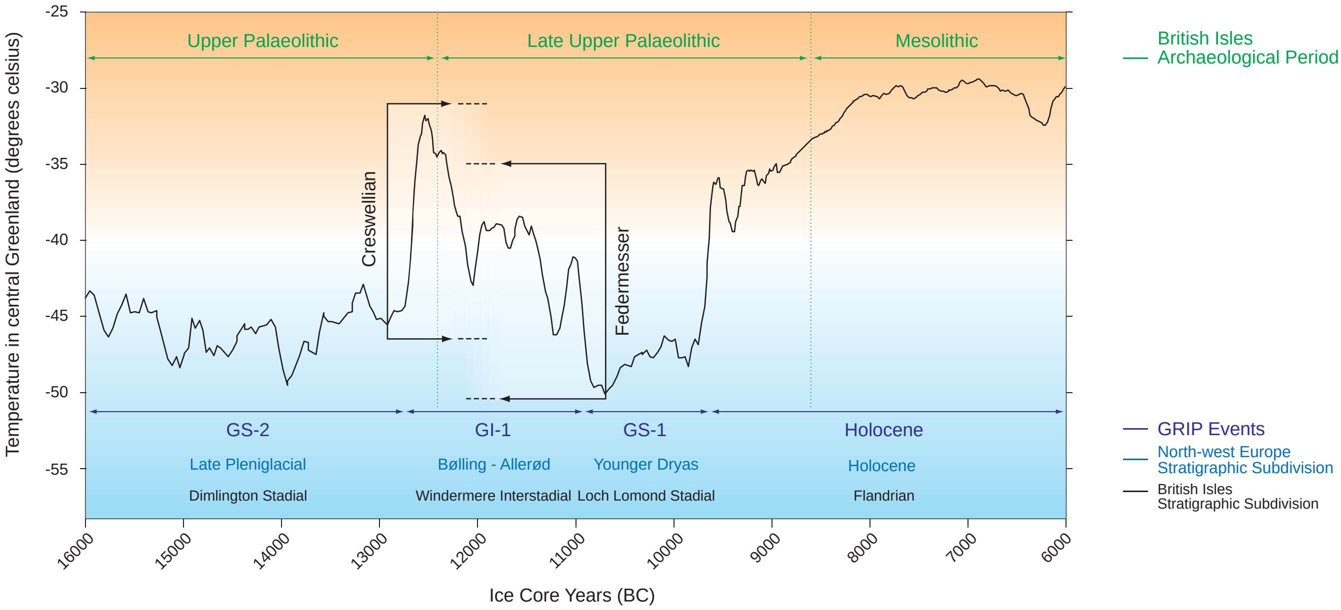


Fig. 2.2 Late Glacial event stratigraphy derived from the Greenland Ice-core Project (GRIP), with stratigraphic subdivisions of the Late Glacial in north-west Europe and the British Isles, archaeological periods in the British Isles, based upon Walker (2005, fig. 1.5). Approximate timespans for the Late Upper Palaeolithic (LUP) Creswellian sourced from Barton et al. *2003 and Jacobi and Higham 2009 and for the LUP Federmesser from Conneller 2007, Darvill 2010 and Street* et al. *2006. Past temperature changes for Greenland are based upon GRIP $\delta^{18}O$, taken from Alley 2000 and Cuffey and Clow 1997*

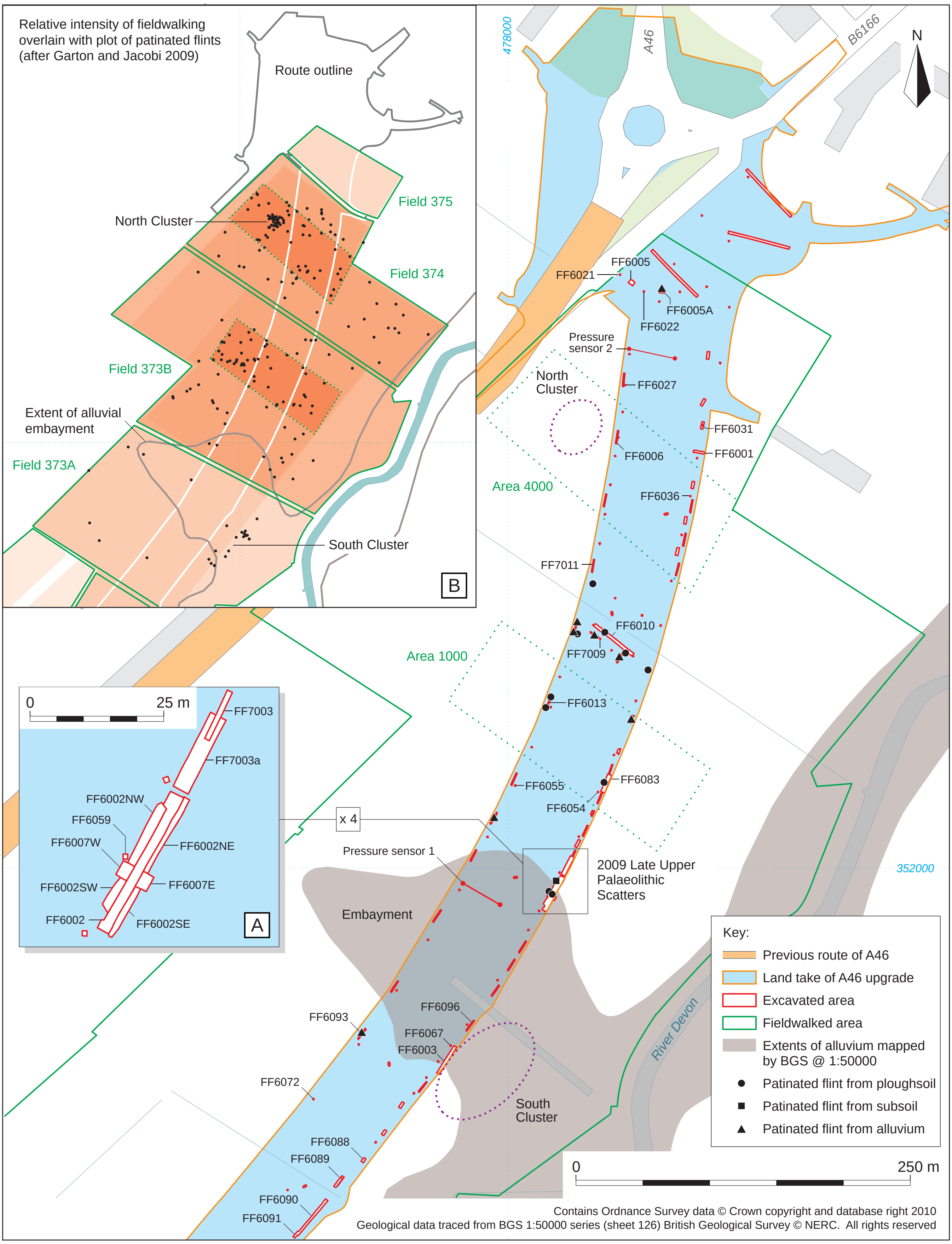


Fig. 2.3 Farndon Fields, showing principal areas of excavation during road construction, numbered trenches cited in text, distribution of patinated LUP flints from the road construction, and (inset A) detail of trenches around excavated LUP scatters and (inset B) distribution of LUP flints overlain on areas of fieldwalking, shown by relative intensity

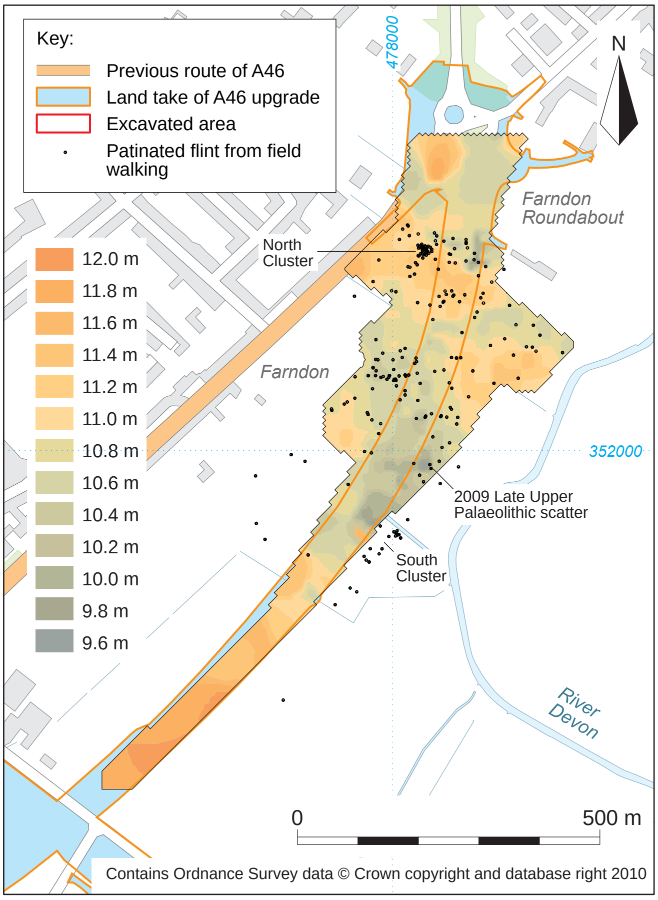


Fig. 2.4 Topography (metres aOD) of the underlying HPSG overlain with the distribution of LUP Creswellian flints derived from previous fieldwalking

lying generally at *c.* 12 m aOD, falling to *c.* 10.8 m aOD in a central 'embayment' area, *c.* 150 m N–S, created by the River Devon and subsequently filled with alluvium, mapped by the British Geological Survey (BGS 1996) as Holocene alluvium, though later Roberts (2007) identified that this was Pleistocene in origin (Fig. 2.3).

Although relatively flat, subtle variations were evident in the prevailing underlying gravel topography (Fig. 2.4). A ridge, approaching 12 m aOD and aligned NW–SE, was clearly discernible in the north of the site (Field 374, Fig. 2.1) from where the land drops into the embayment. The land from Field 373B northwards, on the north side of the embayment, is capped by deposits of clay, silt and sand alluvium of varying thickness, which overlie the HPSG.

The embayment gently slopes to the south-east towards the River Devon, before rising again to the south-west. In this part of the site the gravels are overlain with fine aeolian/fluvial coversands which are likely to have been deposited during the Loch Lomond Stadial (Younger Dryas; GS-1) and Early Holocene, 10,500–9400 BC.

Earlier Investigations

The potential importance of Farndon Fields was first recognised in 1991 when fieldwalking by Trent and Peak Archaeological Unit (now Trent and Peak Archaeology, TPA) recovered a small quantity of diagnostic LUP worked flints, including tools and knapping debris north of Hawton Lane (Fields 370B, 373B and 374) (Knight and Kinsley 1992; Garton and Jacobi 2009, figs 2–3). Most artefacts were in a distinctive patinated (Garton and Jacobi's (2009) 'corticated') condition, a feature which has since been considered a characteristic trait for LUP material at Farndon Fields (TPA 2005, 6; Garton and Jacobi 2009, 1). The remains were considered indicative of a LUP open-air location, perhaps comprising a number of sites, and to be of major archaeological significance. The patinated LUP artefacts were generally of high grade raw material. They were mixed with unpatinated flints, apparently of Neolithic (4000–2200 BC) and Bronze Age (2200–700 BC) date, made from local river gravels, which constitute exotic lithologies in these deposits.

These discoveries led to a structured programme of additional archaeological and geological investigations, up to and during road construction, comprising additional fieldwalking, test pitting and trenching, auger survey, assessment of aerial photographs (Cox and Palmer 1993) and geophysical survey (Geoquest Associates 1994) (Table 2.1). This work was primarily concerned with the recovery of additional LUP material, although the investigations have also demonstrated multi-period activity on the site, with single finds of possible Iron Age or Anglo-Saxon pottery being recovered, over 60 sherds of Romano-British pottery and more than 100 sherds of medieval pottery. Also recovered, from FF6006 (Fig. 2.3) during road construction, was a disc-shaped amber bead (ON 698), 22 mm in diameter with a central perforation; its surface is slightly worn and matt, with some slight recent damage (CWA 2011). Disc-shaped amber beads of similar size are known both from the Bronze Age in Britain (eg, Beck and Shennan 1991, fig. 11.6, 2; fig. 11.16, 1), and from Saxon contexts (eg, Evison 1987, fig. 11, type A03).

These low density spreads of pottery were most common in Fields 373B, 374 and 375 and are probably indicative of the manuring of fields close to settlement activity (Knight and Kinsley 1992), with the Romano-British fort at *Ad Pontem* to the south and the town of Newark to the north.

Fieldwalking on the site (Fig. 2.3 (inset B)) was undertaken to further characterise the nature and extent of LUP evidence (WA 1993; 1995). This established the presence of a cluster of over 30 LUP worked flints (the North Cluster) on the ridge in the north-western part of Field 374. Artefacts were all undamaged by ploughing suggesting that they were derived from an *in situ* sub-ploughsoil scatter (Kinsley 1993a, 105) that was being actively eroded. The subsequent work, in two 1.5 ha areas (Areas 1000 and 4000), identified a concentration of over 100 LUP worked flints from Area 4000 which contained the North Cluster; a more diffuse spread of LUP artefacts was recorded to the south-west, in the western part of Area 1000 (WA 1995), an area that produced additional material during road construction. Subsequently, further extensive detailed fieldwalking (TPA 2005) increased the number of LUP artefacts from the North Cluster specifically, and from the site more generally. In addition, a second cluster of LUP material was recorded to the south (South Cluster), immediately east of the proposed road line and close to the edge of the River Devon floodplain (Fig. 2.3). These combined campaigns have repeatedly identified a broad zone of artefacts lying parallel to the valley of the River Devon. Artefact density thinned to the south coincidental with the area of thicker alluvium and also to the east on the Devon floodplain, where fluvial deposits may also have accumulated.

Small-scale excavations commenced in 1993 when nine 1 m² hand-dug and sieved test pits were excavated along the centre-line of the proposed road line (WA 1993). This work yielded just two undiagnostic pieces of worked flint, but did highlight for the first time the variable nature of what was termed by all investigators as *subsoil* (sub-ploughsoil deposits) at the site. A more detailed strategy, involving a further 14 test-pits and a 5 m² test trench (TP727) in the area of the North Cluster (WA 1995), was employed to examine the survival of artefacts in the subsoil. TP727 produced 54 LUP artefacts in the ploughsoil with six from the uppermost 100 mm of the subsoil. These results established that small numbers of flints were preserved below the ploughsoil, but failed to identify any possible associated sub-ploughsoil features or *in situ* flint scatters. The subsoil also contained more recent material, including modern artefacts, to a depth of 150 mm. The report (WA 1995, 16) noted that LUP artefact concentrations apparently occurred on or close to areas of higher underlying HPSG topography, and also that recent cultivation had significantly impacted upon any deposits of less than *c.* 0.35 m depth (*ibid.*, 18).

An auger survey in Fields 373 and 374, comprising 177 auger points spaced at *c.* 25 m intervals, was also employed to help characterise the underlying deposits on a wider scale (WA 1995). The results demonstrated that the palaeotopography of the area sloped down to the south and east, into what is now known to be a probable palaeochannel adjacent to Area 4000 (see Geoarchaeological Investigations, below). The auger survey defined the deposits into three main units: ploughsoil, subsoil and natural, the last associated with the HPSG. Although several of the auger holes did not reach the HPSG, the mapping of the palaeotopography in this area (WA 1995; TPA 2004) did suggest some complexity of deposition, including the presence of thick sand deposits (within the subsoil unit; >0.5 m), likely to be fluvially derived, running approximately east–west in the north of Field 374; a second alignment of thick sand deposits was found running SW–NE through the centre of the field.

Variations in the subsoil (including several clearly defined units) were taken to be indicative of episodic pre-Holocene alluviation and/or solifluction, which could have preserved surfaces and/or horizons containing LUP material below the present ploughsoil (TPA 2004, 6).

Subsequently, ten hand-dug test pits, in advance of geotechnical survey, were excavated by Wessex Archaeology (2006) along the site. These broadly confirmed the earlier identified stratigraphic sequence at the north end of the site, of ploughsoil and subsoil overlying the HPSG, but additionally demonstrated that alluvial deposits were present, which were clearly differentiated from the subsoil horizon (WA 2006, TP753).

The use of the term subsoil is problematic, as it is often used as a catch-all term for layers (or apparent layers) immediately underlying the topsoil or ploughsoil. In practice these layers may be alluvial or colluvial (in which case they are stratigraphic depositional layers and should be described appropriately), though more often they are horizonation arising from soil formation processes. In the latter case they may be superimposed on the stratigraphy, rather than part of it.

Organic deposits were recorded to the south-west at Hawton Lane in 1990 (Geotechnical Test 191A; SK75SE112), and consisted of a ‘grey slightly sandy silt with many organics present’ located directly above the gravel deposits at a depth of 1.55–1.65 m (11.05–10.95 m aOD) (FES 1992). This layer is probably best interpreted as an active channel fill of an undated and unmapped palaeochannel, containing plant remains. A machine-dug trench (FF6004) (Fig. 2.5), excavated to relocate these deposits south of Hawton Lane, recorded well-sorted sand deposits, which may be of aeolian (ie, coversands) or fluvial origin, within which was a lens of finer-grained clay loam indicative of low-energy alluvial deposition. The sequence contained no indication of stasis horizons or palaeo-landsurfaces, and no organics were present.

Roberts (2007) undertook a site-wide review of the stratigraphic and diagenetic relationship between the parent geological bodies (HPSG), the subsoil (which for the study was interpreted as an alluvial deposit), and the overlying ploughsoil horizons containing the LUP flintwork. Part of this review included deposit modelling along the road corridor to identify differences in the height and thickness of the main stratigraphic units. The model was based upon 32 locations that had been previously recorded (as discussed above). Roberts (2007, 6) noted the difficulty of subsurface modelling and sediment mapping for this site due to the widely differing nature of the subsoil, the variance in its recording between the various contractors who have carried out excavation, and the disparate spatial distribution of the data points leading to a considerable amount of interpolation to produce surface maps.

The report demonstrated the general underlying topography of the route corridor, showing the HPSG highest in the south-west of the site, dipping towards its centre (in the area mapped by the BGS (1996) as Holocene alluvium), before rising again gradually towards Farndon Roundabout. It also identified that topsoil across the site had an average depth of 0.32 m, consistent with the light cultivation undertaken since 1987 (TPA 2004; Garton 2005). However, the presence of modern debris to a depth of 0.55 m in some test pits was interpreted as being consistent with the deep ploughing associated with the cultivation of potatoes, known to have occurred across the site prior to 1987. Based upon the limited available data (notably, that the vast majority of LUP flints had been found in the ploughsoil during fieldwalking and subsequent test pits), it was suggested that the distribution of LUP flints must therefore reflect their original spatial distribution, and that their source context has now been destroyed by ploughing. Consequently it was stated that there could not be any deep *in situ* sealed context for the LUP flints because, if this was the case, it would be impossible for them to be brought up into the ploughsoil (Roberts 2007, 7). However Garton and Jacobi (2009) suggested that LUP flints continued to be introduced into the ploughsoil from surviving subsoil deposits, and that the future potential for retrieving *in situ* deposits would diminish annually. Whilst the flints recorded in the near-surface horizons were obviously not arising from deep *in situ* contexts, there were no grounds to suggest that such sealed artefact-bearing contexts might not exist outside the original scatter areas. As a consequence the mitigation strategy was conducted as though the potential for *in situ* survival existed.

Research Aims and Objectives

The preliminary archaeological and geoarchaeological investigations established that LUP material, including at least two relatively dense clusters, was present within the site. The highest priority for the further investigation of the site was to instigate a multi-disciplinary approach to ascertain its potential to contain *in situ* evidence of LUP activity, to place this material in its wider sub-surface palaeotopographical and geological context, and to provide a satisfactory mitigation strategy to limit damage to this important area. Two possible palaeotopographic zones were considered to have the highest potential to preserve *in situ* LUP deposits or lithic scatters (TPA 2005) – those near increasing depths/thicknesses of subsoil (ie, sub-ploughsoil deposits), and those near alluvium/gravel interfaces, especially around the fringes of the embayment. The results of the initial phases of evaluation in 2009 were used to compile a series of fundamental geological and archaeological research aims:

- to reconstruct the distribution, stratigraphy, chronology and site formation processes of the sediments, and to establish their relationships to any LUP artefact scatters, especially any that might be *in situ*;
- to contribute to the LUP palaeoenvironmental reconstruction;
- to investigate the sedimentary sequences and geoarchaeological character of the site to characterise further areas of enhanced archaeological potential to contain *in situ* artefact scatters;
- to identify any such areas threatened by the proposed road construction and mitigate any scheme impacts by total excavation;
- to recover additional LUP flint artefacts from both the ploughsoil and subsoil (sub-ploughsoil) deposits and their density;
- to establish the integrity, or not, of the various LUP finds and scatters, clarify the taphonomic history of the artefacts, and establish their relationships both to the sedimentary sequences and the known distribution of material recovered from the ploughsoil.

From the outset the fieldwork adopted a multi-disciplinary, continually developing, iterative approach. The results of the preliminary interventions (Stage 1) were used to guide the nature and extent of subsequent interventions (Stages 2 and 3), the excavation methodology and the palaeoenvironmental and geoarchaeological sampling. Each stage was governed by revised Written Schemes of Investigation (WSI) (Scott Wilson 2009a–c). The work was completed by an archaeological watching brief (Stage 4).

Fieldwork Stages

The new road within the Farndon Fields site was constructed on an embankment, which, to the north of Field 370B (Fig. 2.1), directly overlay unstripped ploughsoil. This approach was adopted to preserve *in situ* any artefact distributions within the ploughsoil and to limit damage to undisturbed deposits. The most sensitive of these deposits were considered to be those within the deep alluvium, an area of approximately 2.73 ha, which the road bisected, preserving *c.* 1.15 ha (30%) for posterity beneath the road. Construction works were restricted to the cutting of flanking drainage ditches for the embankment, and three large storm drain culverts, which exploited pre-existing field boundary drainage ditches, under the embanked road.

The four stages of fieldwork resulting from the iterative research approach (Table 2.2), comprised a total of 140 archaeological interventions, with a total area of 1.47 ha (10.46% of the whole site). The three stages all lay within areas of the site directly impacted upon by the road construction and associated drainage, and outside the areas identified for 'preservation *in situ*'. The locations and methodologies employed for the archaeological interventions were undertaken to fulfil the research aims of the project.

The Stage 1 fieldwork was intended to map the extent of any LUP material, in particular to establish the distribution of any lithic material, to characterise the geological/stratigraphic sequence within the site, and to identify deposits which might contain *in situ* lithic material. Key to this was the need to understand the processes resulting in the presence of LUP material in the ploughsoil and in some sub-ploughsoil deposits. This phase of work included both machine-excavated trenches and 1 m² hand-dug test pits, with spoil dry sieved through a 10 mm mesh.

The Stage 2 fieldwork was undertaken to further clarify the sedimentary sequences of the site. This

Table 2.2 Farndon Fields: summary of fieldwork stages (2009)

Stage	*Intervention task*	*Intervention no.*	*Purpose*	*Methodology*
1	x3 50 m long evaluation trenches	TT1312–1314	To assess the archaeological potential of the northernmost part of the site for archaeological features/ deposits or lithic scatters. To also assess the presence of prehistoric hearths/burning.	Machine excavation of trenches with hand excavation of any archaeological features and deposits. Magnetic susceptibility survey at 10 m intervals along the base of trenches.
1	490 m x 4 m wide strip, map and sample area (with 3 test pits in base)	SM2063 (includes trenches SM2063A–C)	To assess the archaeological potential of the southernmost part of the site for archaeological features/ deposits or lithic scatters.	Machine excavation of strip, map, sample (SMS) area followed by the hand excavation and recording of any archaeological features/ deposits.
1	10 m geoarch trench	FF6001	To map and investigate the interface between the southern side of the BGS mapped 'Holocene' alluvium and the terrace gravels.	Machine excavation across the interface between BGS mapped 'Holocene' alluvium and gravels on the southern edge of the 'embayment'. Recording of stratigraphic sequence.
1	x10 auger holes (South of Hawton Lane)	Auger Nos 1–10	To investigate and locate an organic deposit recorded in an earlier geotechnical pit (TP191A).	Employ a circular auger array to allow deposit modelling in this area prior to machine excavation of FF6004 (see below).
1	4 m x 3 m geoarch trench in centre of auger array (see above)	FF6004	To investigate the organic silt deposit recorded in an earlier geotechnical pit at the same location (TP191A).	Machine-excavated trench in centre of auger array to investigate possible organic deposit, possibly associated with lithic scatters.
1	x59 1 m² hand-dug test pits	FF6017–FF6074, FF6023A	To assess the distribution of artefacts within the ploughsoil only, specifically earlier prehistoric lithic material, to complement data gathered during numerous earlier investigations.	Hand-excavated test pits with all arisings dry sieved through a 10 mm sieve. All artefacts and coarse components retained, sorted and assessed.
1	2 m x 2 m trench in base of SM2063	SM2063D	To investigate the potential of the 'coversands' to contain LUP flint scatters following recording of a possible LUP worked flint within the 'coversands' on the machined base of SM2063.	Hand excavation of 'coversands' in 1 m² and 50 mm spits, with all arisings dry sieved through a 10 mm sieve. All artefacts and coarse components retained, sorted and assessed.
2	25 m geoarch trench	FF6002	To map and investigate the interface between the northern side of the BGS mapped 'Holocene' alluvium and the terrace gravels.	Machine excavation across the interface between BGS mapped 'Holocene' alluvium and gravels on the southern edge of the 'embayment'. Recording of stratigraphic sequence.
2	30 m geoarch trench	FF6003	To investigate and record the alluvial sequence close to the earlier recorded South Cluster of LUP artefacts.	Machine excavation to record stratigraphic sequence close to South Cluster area.
2	10 m trench	SM2063E	To assess the potential for possible Late Devensian 'palaeosol' to contain lithic material.	Machine excavation of trench down to 'palaeosol' then hand excavated.
2	x3 4 m x 3 m trenches	FF6005, FF6005A, FF6007W&E	For FF6005, FF6005A to further investigate this area after the recording of a relative concentration of Mesolithic/?Neolithic lithic material including worked quartzite) in the area derived from the 1 m² hand-excavated test pits. For FF6007 West & East to further investigate possible *in situ* lithic material previously recorded in sub-ploughsoil alluvium in the sections of FF6002.	For FF6005 and FF6005A - machine excavation of ploughsoil and dry sieving through a 10 mm sieve in 1 m² units. To excavate three 50 mm spits (1 m² units) of sub-ploughsoil deposit and 3D all artefacts. For FF6007W&E wet sieving of ploughsoil in 1 m² units through a 10 mm sieve. Then hand excavation of underlying alluvium in 50 mm spits and 0.25 m² units (where a scatter is present) otherwise bulk excavated. All artefacts 3D recorded and long-axis data recorded for worked flint. For all three trenches all artefacts and coarse components to be retained, sorted and assessed.

Table 2.2 (cont.) Farndon Fields: summary of fieldwork stages (2009)

Stage	*Intervention task*	*Intervention no.*	*Purpose*	*Methodology*
2	x2 10 m x 1 m trenches	FF6006, FF6013	Machine-excavated trenches adjacent to known ploughsoil concentrations of LUP material.	Wet sieving of ploughsoil in 1 m² spits through a 10 mm sieve. All artefacts and coarse components retained, sorted and assessed.
2	40 m trench (flood culvert)	FF6010	To investigate the stratigraphic sequence across the gravel terrace in this area, identified from the 1 m² test pits as an area with a relative concentration of lithic material.	Machine excavation of trench unless archaeologically significant deposits, features or lithic scatters encountered.
2	x18 3 m x 1 m geoarch test pits	FF6075–FF6092	Targeted geoarchaeological trenches in a combined investigation of the sedimentary sequence along the terrace in areas with the greatest potential to contain deposits and artefact scatters of LUP/Mesolithic date.	Machine excavation down to natural gravels to record the full stratigraphic sequence.
2	Detailed topographic survey	SR011	To investigate the possible correlation between surface topography, gravel palaeotopography, deposit sequences and known ploughsoil and sub-ploughsoil artefact concentrations.	Sub-1 m resolution GPS survey of the topography of the whole site.
3	Grid of hand-dug alluvium along 12.3 m of FF6002 edge	FF6002NW	To investigate the potential for areas within a proposed drainage easement and contiguous to lithic scatters in FF6007W & E to contain further *in situ* lithic scatters.	Machine excavation of ploughsoil. Hand excavation of three 50 mm deep spits of alternate 1 m² areas. All artefacts to be 3D recorded. Methodology the same as for FF6007W & E if scatters recorded. All artefacts and coarse components retained, sorted and assessed.
3	Grid of hand-dug alluvium along 16.5 m of FF6002 edge	FF6002NE	To investigate the potential for areas within a proposed drainage easement and contiguous to lithic scatters in FF6007W & E to contain further *in situ* lithic scatters.	Machine excavation of ploughsoil. Hand excavation of three 50 mm deep spits of alternate 1 m² areas. All artefacts to be 3D recorded. Methodology the same as for FF6007W & E if scatters recorded. All artefacts and coarse components retained, sorted and assessed.
3	Grid of 1 m² hand-dug alluvium along 6 m of FF6002 edge	FF6002SW	To investigate the potential for areas within a proposed drainage easement and contiguous to lithic scatters in FF6007 W & E to contain further *in situ* lithic scatters.	Machine excavation of ploughsoil. Hand excavation of three 50 mm deep spits of alternate 1 m² areas. All artefacts to be 3D recorded. Methodology the same as for FF6007W & E if scatters recorded. All artefacts and coarse components retained, sorted and assessed.
3	x2 3 m x 2 m hand-dug flint scatter areas	FF6007W & E	To investigate the extent (vertical and horizontal) of *in situ* lithic scatters located within a proposed drainage easement.	Hand excavation of scatters and deposits in 0.25 m² areas and 50 mm spits. All artefacts 3D recorded. All deposit(s) containing scatters and a control 1 m² for each area, 100% sampled for micro-debitage. When scatters finished bulk excavation could be undertaken. All alluvium down to natural gravel hand excavated. All artefacts and coarse components retained, sorted and assessed.
3	x26 10 m x 1 m trenches, hand excavation of 3 spits of alluvium (7010 to gravel)	FF6006, FF6013, FF6093–7016	To investigate the potential of other areas of the site to contain sub-ploughsoil lithic artefacts or scatters. Trench 7010 was fully excavated down to natural gravels.	Machine excavation of ploughsoil. Hand excavation of three, 50 mm spits of sub-ploughsoil deposits in 1 m² areas. All artefacts to be 3D recorded. All artefacts and coarse components retained, sorted and assessed. All archaeological features to be sample excavated. Final machine excavation of test pits at trench ends to expose natural gravels and to record stratigraphic sequence. The full extent of trench 7010 was hand excavated in 1 m² areas and 50 mm spits down through the full alluvial sequence to the natural gravels. All artefacts were 3D recorded and all artefacts and coarse components were retained, sorted and assessed.

Table 2.2 (cont.) Farndon Fields: summary of fieldwork stages (2009)

Stage	*Intervention task*	*Intervention no.*	*Purpose*	*Methodology*
3	Grid (1 m²) of hand-dug alluvium around FF6083	FF6083A	To investigate further an area adjacent to FF6083, where an *in situ* bladelet core had been recorded from sub-ploughsoil alluvium (possibly the same alluvium as in trenches FF6007W & E.	Hand excavation of three 50 mm spits of sub-ploughsoil alluvium in alternate 1 m² areas. All artefacts were 3D recorded and all artefacts and coarse components were retained, sorted and assessed.
3	Grid of (1 m²) of hand-dug alluvium around FF7003	FF7003A	To investigate further an area adjacent to FF7003, where a possible lithic scatter had been recorded from sub-ploughsoil alluvium in the southern 2 m² of the trench.	Hand excavation of three 50 mm spits of sub-ploughsoil alluvium in alternate 1 m² areas. All artefacts were 3D recorded and all artefacts and coarse components retained, sorted and assessed.
3	Machine-cut extension between FF6090 and FF6091	FF6090 & FF6091	A geoarchaeological trench to investigate the stratigraphic relationship between 'coversands' to the south and an alluvial sequence to the north.	Machine excavation down to the natural gravels of the area between the two earlier trenches. Record the stratigraphic sequence.
3	Machine cut extension of FF6089	FF6089	To investigate and record the stratigraphic sequence.	Machine excavation down to the natural gravels and the recording of the stratigraphic sequence.
3	Excavation of 3 spits of alluvium from x4 1 m² test pits	FF6041, FF6042, FF6045, FF6047	To investigate further the relative concentration of ploughsoil and derived lithic material.	Hand excavation of three 50 mm spits of sub-ploughsoil material. All artefacts to be 3D recorded and all artefacts and coarse components to be sorted/assessed by lithics specialis
3	Surface collection x2 60m by 10m areas	FF7017, FF7018	To investigate any surface artefacts within the areas of the proposed pressure sensors	Walkover survey of the surface of the road corridor prior to the installation of pressure sensors to investigate the effects of compaction/movement on any potential *in situ* lithic scatters from the embanked new road. Total collection – no area subdivisions.
4	Watching brief – topsoil stripping	Fields 373A–375	To check for archaeological features and deposits and further ploughsoil-derived lithic material.	Watching brief during topsoil stripping in the north of the site to potentially record further *in situ* lithic material.
4	Watching brief – flood culvert construction	Fields 373A–373B	To check for archaeological features and deposits and further ploughsoil-derived lithic material.	Watching brief during construction of large flood culvert across road corridor to potentially record further *in situ* lithic material.

included two geoarchaeological trenches (FF6002 and FF6003), located along the line of the flanking ditch, to characterise the gravel/alluvium interface of the alluvium-filled embayment at the centre of the site (Fig. 2.3 and inset A). The Stage 2 fieldwork also proposed a further twelve 4 m by 3 m trenches, although only three (FF6005, FF6005A and FF6007 East (E) and West (W), Fig. 2.3 and inset A) were authorised. Trenches FF6007E/W were included to examine in more detail the context of four possible LUP flints, including both unpatinated and patinated pieces, that were recorded in opposing sections at the southern end of FF6002. These artefacts were all within the uppermost *c.* 60 mm of an orange/brown alluvium that directly underlay 0.34 m of ploughsoil/subsoil. The 12 square metre area provided by the Stage 2 strategy was divided into two areas, each covering 3 m by 2 m (FF6007E/W) on either side of FF6002, to cover the area of the possible *in situ* lithics at risk by the construction of the proposed drainage ditch. Initially these trenches had 1 m² subdivisions of ploughsoil machined and wet sieved separately through a 10 mm mesh. Thereafter, three 50 mm spits of 1 m² subdivisions of sub-ploughsoil deposits were hand-excavated and similarly wet sieved, with all artefacts (>10 mm) three-dimensionally recorded.

The Stage 3 fieldwork, which developed from the results of the earlier stages, identified concentrations in the recovered lithic material from ploughsoil and sub-ploughsoil deposits. Most importantly additional work in FF6007E and W confirmed that assemblages in these trenches were *in situ* and, although stratigraphically separate, were both of LUP date. The earlier of these worked flint industries, in FF6007E, comprised patinated material identical to the LUP Creswellian artefacts already known from Farndon Fields (Garton and Jacobi 2009). The LUP assemblage from FF6007W was stratigraphically later, unpatinated and of Federmesser type (12,000–11,000 BC). Areas were also excavated by hand around FF6002, FF6083 and FF7003 where results of preliminary work had demonstrated that material might be preserved *in situ*. These areas were also excavated using a 1 m² grid, although only alternate squares were excavated in FF6083, with spits 50 mm thick.

The Stage 4 watching briefs observed works associated with the cutting of the flanking drainage ditches during road construction, and a large culvert at the boundary of Fields 373A and 373B.

Excavation Methods: Late Upper Palaeolithic Scatters (Trenches FF6007E/W)

All ploughsoil/subsoil from FF6007E was machine excavated in 1 m² subdivisions and wet sieved through a 10 mm mesh. Ploughsoil (0.24 m thick) from FF6007W was removed in a similar way; however, the subsoil (0.1 m thick) was hand-excavated as worked flints were visible in the upper surface. The subsoil from this trench was excavated in two 50 mm spits and in 1 m² subdivisions, with all artefacts, including post-medieval material, being three-dimensionally recorded to assess the nature and degree of artefact taphonomy.

The scatters in the alluvium in FF6007E and FF6007W were hand-excavated in 50 mm spits and 1 m² squares subdivided into 16 x 0.25 m² subdivisions (ascribed suffixes 'A–P'). All artefacts, including intrusive post-medieval material (>10 mm), were three-dimensionally recorded and allocated unique small find numbers, presented here as Object Numbers (ONs). By prior agreement no systematic *long-axis* data for artefacts were recorded for either of the scatters. However, where groups of artefacts were defined they were subjected to detailed and georeferenced digital photography to assess visually the degree of long- and short-axis inclinations related to artefact taphonomy.

Once both scatters were defined, all the excavated alluvium from each spit was retained for the recovery of micro-debitage, with unique sample and context numbers being allocated to each 0.25 m² and 50 mm spit subdivision. Bioturbation features and plough scars in the upper spits of alluvium were 100% bulk sampled by 0.25 m² subdivision, and allocated the same sample and context number as the alluvium subdivision but with an 'X' suffix. Artefacts were retained with the sample for further analyses, including refitting. All intrusive plough scars and bioturbation features in the uppermost two spits (0.1 m) of alluvium, from both FF6007E and FF6007W, were planned and photographed pre-excavation. No intrusive features were present below the second spits of alluvium.

This methodology was applied to the recorded vertical and horizontal extents of both scatters. By prior agreement 100% sampling of the alluvium in 0.25 m² subdivisions ceased when either a 1 m² area or a vertical sequence of two 50 mm spits (0.1 m) of alluvium were recorded with no lithic artefacts. Thereafter the alluvium was excavated in 50 mm spits and 1 m² subdivisions, with the caveat that the methodology would revert back if additional artefact scatters were revealed. The two scatters were subsampled for micro-debitage both at their core and periphery (spatially). Samples were wet sieved and residues sorted for micro-debitage at 4 mm, 2 mm and 1 mm levels.

Geoarchaeological Investigations

by Michael J. Grant, Richard I. Macphail, Martin R. Bates, John Crowther and Jean-Luc Schwenninger

Introduction

Throughout the 2009 fieldwork, geoarchaeological investigations were led and coordinated by Martin R. Bates who routinely visited the site to inspect and record the available trench and test pit exposures and direct the sampling strategy. The nature of the sediments recorded in the different trenches and test pits indicated, at an early stage in the project, that considerable potential existed for reconstructing site-specific formation processes as well as for examining more regional pictures of site and landscape development.

Reconstruction of site formation processes and sequence development at different scales has been attempted because of the local landscape context of the site and the considerable lateral variability in the sequences recorded. However, at no location within the site can a 'master sequence' be defined, and consequently a number of different sequences from different test pits and trenches have been investigated to provide a detailed site narrative. A large number of test pits and trenches were excavated (Figs 2.1 and 2.3), although only nine were selected for detailed geoarchaeological analysis, based upon their proximity to the known LUP archaeology (FF6002, FF6007E/W) and their representativeness of the remainder of the sequences across the site.

Palaeoenvironmental and dating investigations of the sediments were undertaken following extensive on- and off-site consultation. Optically stimulated luminescence (OSL: Jean-Luc Schwenninger) dating of sediment sequences commenced during site investigation works in order to determine broad dating controls on sequences. Following completion of the fieldwork full OSL dating was carried out on a range of samples. Soil micromorphology (Richard I. Macphail) and geochemical analysis (John Crowther) of the main stratigraphic units was also begun during the site works, and forms a significant part of the work undertaken.

It was considered by the geoarchaeologist leading the investigations (Martin R. Bates) that other palaeoenvironmental material was either absent, or of problematic taphonomic history, with absence of any organic-rich sediments precluding the preservation of pollen and plant macrofossils, and the acidity of the sediments preventing the preservation of bone, molluscs and ostracods. Although other forms of organic material (such as charred seeds etc) may have been preserved within some sediments, the presence of modern contaminants in some stratigraphic units and the relatively shallow depth of the sequences all mitigated against any meaningful results being obtained from their investigation. As a consequence it was decided that no material suitable for radiocarbon dating could be obtained from the site.

Methods

Geochemical and particle size analysis

A total of 23 bulk samples of sediments were analysed, using the fine earth fraction (<2 mm) for loss-on-ignition (LOI), phosphate and magnetic susceptibility enhancement. Analysis of a small number of samples for particle size analysis was also undertaken (following Avery and Bascomb 1974). Phosphate-Pi was determined by colourimetry using 1N HCl as the extractant; and LOI by ignition at 375°C for 16 hours (Ball 1964). In addition to χ (low frequency mass-specific magnetic susceptibility), determinations were made of χ_{max} (maximum potential magnetic susceptibility) by subjecting a sample to optimum conditions for susceptibility enhancement in the laboratory. χ_{conv} (fractional conversion), which is expressed as a percentage, is a measure of the extent to which the potential susceptibility has been achieved in the original sample, viz: (χ/χ_{max}) x 100 (Tite 1972; Scollar *et al.* 1990) which provides a better indicator of magnetic susceptibility enhancement than raw χ data, particularly in cases where soils have widely differing χ_{max} values (Crowther and Barker 1995; Crowther 2003). A Bartington MS2 meter was used for magnetic susceptibility measurements. χ_{max} was achieved by heating samples at 650°C in reducing, followed by oxidising, conditions. The method used broadly follows that of Tite and Mullins (1971), except that household flour was mixed with the soils and lids placed on the crucibles to create the reducing environment (after Graham and Scollar 1976; Crowther and Barker 1995). Particle size was determined using the pipette method on < 2 mm mineral (peroxide-treated) soil. Results are shown in Table 2.3.

Soil micromorphology

A total of 18 thin sections (and 23 associated bulk samples) were selected for study from eight trenches. These included the two *in situ* Late Upper Palaeolithic artefact scatters (FF6007E and FF6007W). Soil micromorphology also involved complementary SEM X-ray EDS analyses on three selected thin sections.

Fieldwork was carried out employing standard soil and geoarchaeological methods (Courty *et al.* 1989; Goldberg and Macphail 2006; Hodgson 1997). Undisturbed samples were collected as variously sized monoliths for soil micromorphology, and closely associated bulk samples for chemistry and magnetic susceptibility studies. The 18 thin section samples were collected using monoliths from test pits FF2063A, FF2063B, and FF2063C in the area of SM2063 and trenches FF6007E and W, FF6078, FF6084 and FF6091 (Fig. 2.5). Samples were impregnated with a clear polyester resin-acetone mixture and topped up with resin, ahead of curing and slabbing for 75x50 mm-size thin section manufacture by Spectrum Petrographics, Vancouver, Washington, USA (Goldberg and Macphail 2006; Murphy 1986). This included a 300 mm-long monolith sample M6 from FF6007E, which was cut up into two convenient 150 mm-long samples.

Thin sections were further polished with 1000 grit papers and analysed using a petrological microscope under plane polarised light (PPL), crossed polarised light (XPL), oblique incident light (OIL) and using fluorescent microscopy (blue light – BL), at magnifications ranging from x1 to x200/400. Thin sections were described, ascribed soil micro-fabric and micro-facies types (see Macphail 2010a), and counted according to established methods (Bullock *et al.* 1985; Courty 2001; Courty *et al.* 1989; Macphail and Cruise 2001; Stoops 2003; Stoops *et al.* 2010). X-ray microchemical analyses (SEM/EDS) were applied to typical features in selected thin sections (M6A, M6B and M7). Full details of the soil micromorphology results are available in the archive.

Table 2.3 Farndon Fields: geochemical analysis of bulk samples associated with soil micromorphology thin sections

Test pit/ trench	*Monolith*	*Sample*	*Context*	*LOI* [a] *(%)*	*Phosphate-*P_i [b] *(mg* g^{-1}*)*	χ [c] *(*10^{8} m^3 kg^{-1}*)*	χ_{max} [d] *(*10^{8} m^3 kg^{-1}*)*	χ_{conv} [c] *(%)*
FF2063A	M1	1a	263002	0.919	0.041	3.6	1470	0.24
		1b	263006	1.15	0.013	4.7	2470	0.19
FF2063B	M2	2a	263002	0.672	0.092	10.8*	1080	1.00*
		2b	263003	0.953	0.060	8.2	1600	0.51
FF2063C	M3	3a	263006	0.713	0.072	7.1	1290	0.55
		3b	263006	0.992	0.033	7.0	1860	0.38
FF6091	M5	5a	609101	2.27*	0.346**	28.7**	1060	2.71**
		5b	609103	0.726	0.133*	4.6	1470	0.31
		5c	609103	0.504	0.049	4.0	927	0.43
		5d	609104	1.10	0.056	6.2	1900	0.33
		5e	603105	0.663	0.029	3.3	1340	0.25
		5f	609103	0.802	0.043	5.3	1560	0.34
		5g	609103	0.997	0.033	5.0	2060	0.24
FF6007E	M6	6a	607042	2.76*	<0.005	8.0	6820**	0.12
		6b	607014	1.57	<0.005	4.5	3340*	0.13
FF6007W	116	116	607068	2.15*	<0.005	6.2	5400**	0.11
FF6084	M7	8a	608401	6.27**	0.265**	89.9**	1920	4.68**
		8b	608403	2.28*	0.020	9.4	1950	0.48
		8c	608404	0.966	0.032	4.2	865	0.49
		7d	sands	0.327	0.015	1.0	288	0.35
FF6078	M8	8a	607805	2.35*	<0.005	6.7	6130**	0.11
FF6078	M9	9a	607803	0.68	0.046	7.4	1730	0.43
		9b	gravel lens	1.11	0.039	6.0	2890*	0.21

KEY:

[a] Loss-on-ignition: figures highlighted have notably higher values: * = 2.00–4.99%, ** = 5.00–9.99%

[b] Phosphate-P_i: figures highlighted show signs of phosphate-P_i enrichment: * = enriched (0.100–0.249 mg g^{-1}), ** = strongly enriched (0.250–0.500 mg g^{-1})

[c] χ and χ_{conv}: figures highlighted have (or are associated with) notably higher $_{conv}$ values: * = 1.00–2.49%, ** = 2.50–4.99%

[d] χ_{max}: figures highlighted have notably higher values: * = 2500–4900 x 10^{8} m^3 kg^{-1}, ** = 5000–9990 x 10^{8} m^3 kg^{-1}

Optically-stimulated luminescence (OSL) dating

Sand samples for OSL dating were collected in either opaque plastic or stainless steel containers and then stored in light-tight bags until processed. *In situ* gamma-ray spectroscopy measurements were also made, and sample locations were chosen to maximise the likelihood of zeroing before deposition and were usually clean, well-sorted sand beds. However, in some cases clays and silts were present in the sediments.

Preparation to quartz involved separation of the modal size fraction by wet sieving and treatment with hydrochloric and hydrofluoric acids, removal of heavy minerals using sodium polytungstate and final dry sieving. Sample purity was tested using infra-red (IR) light stimulation, which detects contamination by feldspars (Hütt *et al.* 1988). Those samples with feldspar contamination were subjected to further treatment in fluorosilicic acid to ensure samples comprised quartz only. The palaeodose was determined at the Research Laboratory for Archaeology and the History of Art, University of Oxford, using automated Risø measurement systems equipped with both blue diodes and green halogen light.

Optically stimulated luminescence dating results are based on luminescence measurements of sand-sized quartz (180–255µm) extracted from the samples and mounted onto aluminium discs as small-sized (3 mm) multigrain aliquots. All samples were measured in automated Risø luminescence readers (Bøtter-Jensen 1988; 1997; Bøtter-Jensen *et al.* 2000) using a SAR post-IR blue OSL measurement protocol (Murray and Wintle 2000; Banerjee *et al.* 2001; Wintle and Murray 2006). Luminescence measurements were made at 125°C, with a preheat 1 (PH1) value of 260°C for 10 s, preheat 2 (PH2) of 220°C for 10 s and up to six regeneration dose points. Equivalent dose (D_e) is a weighted mean of between 8 and 12 aliquots.

Dose rate calculations are based on the concentrations of radioactive elements (potassium, thorium and uranium) within the specimens and the surrounding matrix. The beta dose rate was calculated from the concentrations of radioisotopes by fusion ICP-MS analyses. The external gamma-dose rate was derived from *in situ* radioactivity measurements made with a portable gamma-ray spectrometer (Ortec micro-nomad) calibrated against the Oxford blocks (Rhodes and Schwenninger 2007). The final OSL age estimates include an additional 2% systematic error to account for uncertainties in source calibration. Dose rate calculations are based on Aitken (1985). These incorporated beta attenuation factors (Mejdahl 1979), dose rate conversion factors (Adamiec and Aitken 1998) and an absorption coefficient for the water content (Zimmerman 1971). The contribution of cosmic radiation to the total dose rate was calculated as a function of latitude, altitude, depth and average overburden density based on data by Prescott and Hutton (1994). It was assumed that overburden accumulated soon after deposition and was negligible relative to the burial period. Ages were calculated by dividing the mean D_e by the dose rate and the results are presented as $\pm 1\sigma$. Results are given in Table 2.4. OSL dates are quoted in ka BC throughout the text with the raw dates (ka, measured in 2010) given in Table 2.4.

Results

Test pits FF2063A–C (in SM2063)

The basal deposits in all three test pits (Fig. 2.5) consisted of gravels with some interspersed sand layers (263004), and were probably deposited under braided channel conditions in a high discharge fluvial system under cold climate conditions. A possible ice wedge feature was noted within the top of the gravels in FF2063A (Fig. 2.6). Overlying the gravel deposits in parts of FF2063A and FF2063C was a thick clay deposit,

Table 2.4 Farndon Fields: optically stimulated luminescence (OSL) dating results

Lab code	*Trench*	*Depth below surface (m)*	*Depth (maOD)*	*Context*	*Radioisotopes*			*Field water (%)*
					K (wt%)	*Th (ppm)*	*U (ppm)*	
X3738	FF2063B	0.73	11.88	263002	1.29	5	1.9	8
X3739	FF2063B	0.90	11.53	263005	1.15	8	2.7	6
X3740	FF2063B	1.30	11.33	263005	1.04	5.4	2	7
X3741	FF2063C	0.80	11.57	263002	1.18	3.7	1.7	7
X3742	FF2063A	1.51	11.09	263004	1.05	6.1	2	11
X3745	FF6003	0.40	10.80	600303	1.11	6.3	2.8	16
X3746	FF6003	0.50	10.70	600304	1.24	7.4	3.1	15
X3747	FF6003	0.82	10.38	600306/7	1.40	7.7	2.8	20
X3787	FF6091	0.83–0.89	11.32–11.38	609103/5	1.34	6.0	1.6	11
X3790	FF6091	1.10–1.15	11.06–11.11	609103	1.52	6.7	2.1	13
X3791	FF6002	0.22–0.35	9.99–10.12	600224/5	1.37	8.3	2.4	16
X3792	FF6002	0.10	10.24	600202	1.44	8.5	2.6	18

Lab code	*In situ external γ-dose rate (Gy ka^{-1}; ± 1σ)*	*Cosmic dose rate (Gy ka^{-1}; ± 1σ)*	*Palaeodose (Gy; ± 1σ)*	*Total dose rate (Gy ka^{-1}; ± 1σ)*	*OSL age (years before 2010 ± 1σ)*	*Age (years BC ± 1σ)*
X3738	0.692 ± 0.035	0.192 ± 0.030	16.23 ± 1.13	2.03 ± 0.10	7980 ± 690	5970 ± 690
X3739	0.812 ± 0.041	0.187 ± 0.025	26.71 ± 1.89	2.24 ± 0.10	11940 ± 1020	9930 ± 1020
X3740	0.883 ± 0.044	0.178 ±0.019	20.89 ± 4.77	2.08 ± 0.09	10050 ± 2340	8040 ± 2340
X3741	0.658 ± 0.033	0.190 ± 0.027	5.43 ± 2.42	1.89 ± 0.09	2870 ± 1290	860 ± 1290
X3742	0.472 ± 0.024	0.173 ± 0.017	36.40 ± 7.42	1.63 ± 0.08	22330 ± 4690	20320 ± 4690
X3745	0.756 ± 0.038	0.756 ± 0.038	5.92 ± 1.54	1.99 ± 0.10	2970 ± 790	960 ± 790
X3746	0.820 ± 0.041	0.820 ± 0.041	19.97 ± 2.43	2.19 ± 0.10	9100 ± 1200	7090 ± 1200
X3747	0.827 ± 0.041	0.827 ± 0.041	16.09 ± 5.14	2.18 ± 0.11	7390 ± 2400	5380 ± 2400
X3787	0.640 ± 0.032	0.187 ± 0.025	19.30 ± 2.24	1.95 ± 0.09	9910 ± 1260	7900 ± 1260
X3790	0.756 ± 0.038	0.184 ± 0.022	21.51 ± 2.98	2.20 ± 0.10	9760 ± 1440	7750 ± 1440
X3791	0.854 ± 0.043	0.196 ± 0.038	18.13 ± 5.74	2.23 ± 0.10	8120 ± 2600	6110 ± 2600
X3792	0.825 ± 0.041	0.199 ± 0.049	21.77 ± 2.45	2.24 ± 0.11	9740 ± 1210	7730 ± 1210

which in the field was suspected as possibly indicating a palaeosol (263006). This was, in turn, buried by a series of coversand deposits (263002, 263003) which are generally attributed to cold climate conditions and are by definition windblown (aeolian); they appeared to seal the ice wedge. In FF2063B, evidence was noted of down-cutting and erosion of the gravels by gullying, which themselves are typically formed towards the end of the Loch Lomond Stadial; these, like the ice wedge, were sealed by the coversands.

Three sediment micromorphological samples (M1–M3) were taken from across the suspected palaeosol (263006) in these test pits. One OSL sample (X3742) was taken from a sand lens (263004) within the gravels in FF2063A, three (X3738–40) from the coversands (263003/263005) in FF2063B and one (X3741) from the coversands (263002) in FF2063C.

Trench FF2063A (M1)

Although the Kubiena sample was taken across an apparent boundary in the field (Fig. 2.6), it is in fact heterogeneous throughout. It is composed of coarse silt and fine and medium sand, with frequent iron and clay-depleted sandy soil (Soil Micro-fabric Type (SMT) 1a), common burrow-mixed very poorly humic silt and sand (SMT 2a), and very few poorly humic soil areas containing trace amounts of charcoal and fine rubefied (burned) mineral grains (SMT 2b), with common strongly iron-stained clay-enriched soil (SMT 3a) present in very broad channels. The latter includes very abundant thick microlaminated clay void infills up to 550 μm thick. SMT 2a and 2b include thin clay coatings but are more commonly characterised by abundant dusty and very dusty clay textural pedofeatures. This translocated clay enrichment is more abundant in the lower half

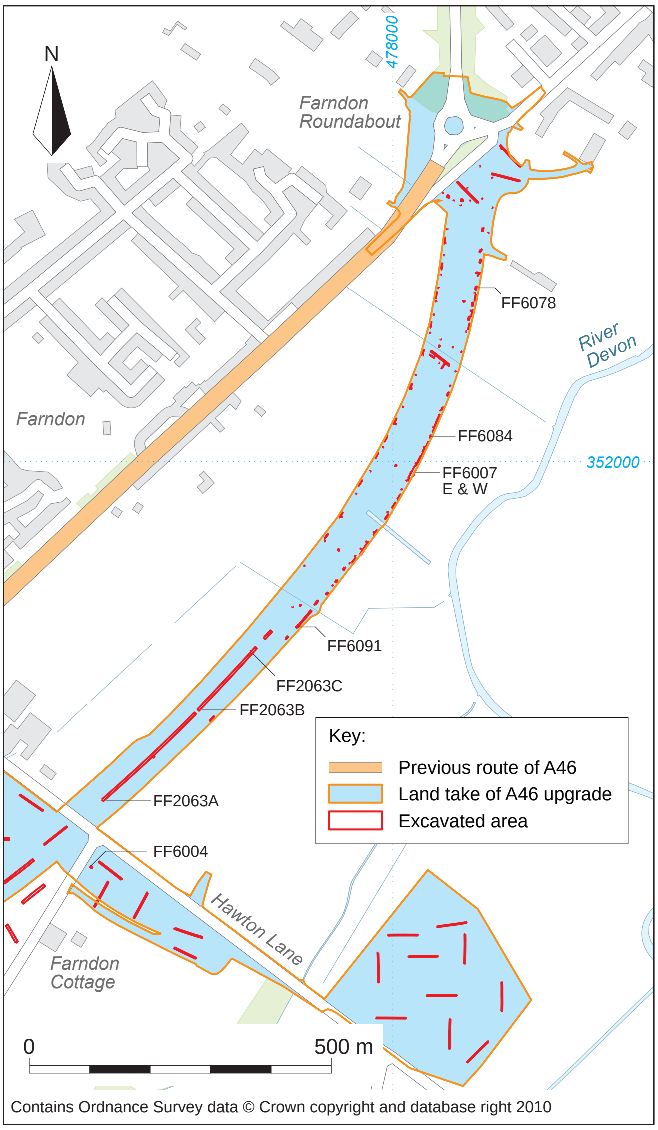


Fig. 2.5 Location of thin-section samples and trench FF6004

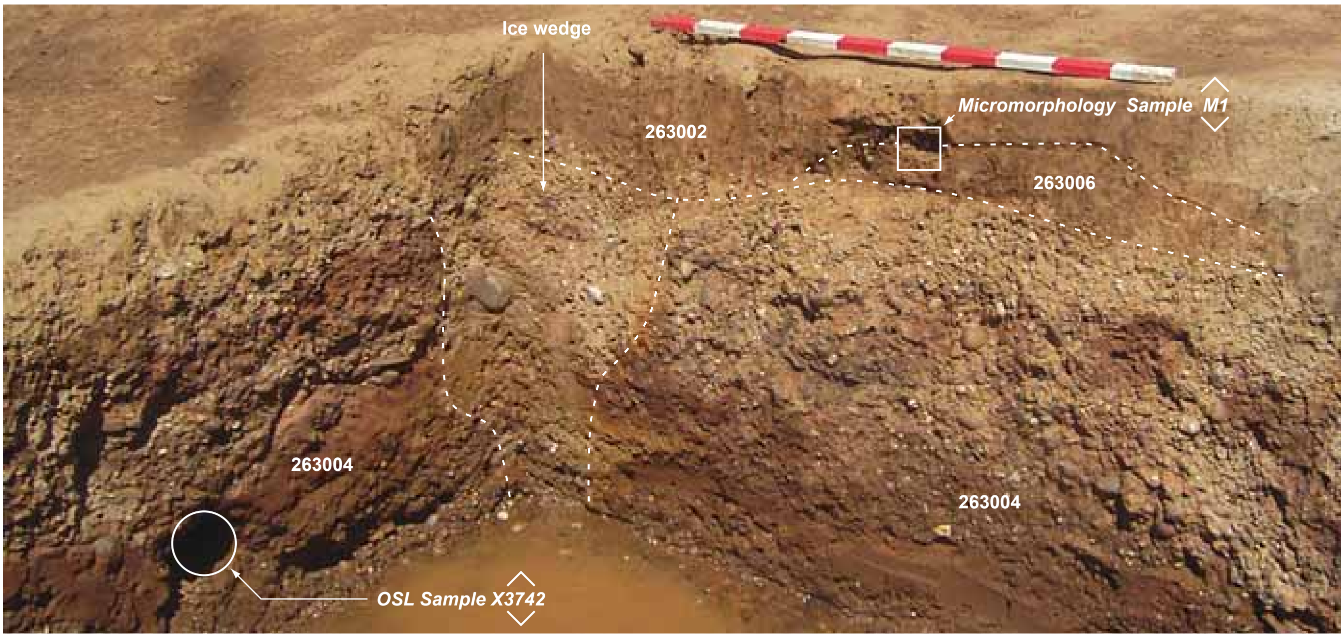


Fig. 2.6 FF2063A showing HPSG (263004) overlain by thin alluvial deposit (263006) and coversands (263002). An ice wedge sealed by coversand deposits is shown in the corner of the test pit with OSL sample X3742 and micromorphology samples also located

of the thin section, hence the 'boundary' noted in the field. Very abundant secondary iron impregnations, Fe-Mn hypocoatings and staining are also present.

The soil is a palimpsest, as recognised from the hierarchy of the pedofeatures (Courty *et al.* 1989), although this pattern is partially disturbed by more modern rooting and burrowing (eg, broad earthworm and very broad insect burrows). The iron and clay-depleted soil (SMT 1a) is relict of the coversand and a history of leaching (forming an Eb horizon) during the Holocene. The major very broad (8 mm), very strongly clay-enriched "soil" (SMT 3a) is regarded as more likely recording Late Pleistocene alluviation (Brammer 1971; Phillips *et al.* 2006) rather than Holocene argillic brown earth soil formation (Kühn et al. 2010). SMT 2a and 2b and their textural pedofeatures may have formed through probably later Holocene and recent arable activity; SMT 2b, with its trace amounts of charcoal and fine burned mineral material occurs in 4 mm-broad insect burrows. Fluctuating water tables have also caused mottling at the site.

Trench FF2063B (M2)

At a depth of 710–760 mm the palaeosol is a massive, coarse silt and fine and medium sand, with a relict 0.5 mm thick silty laminae. Very abundant void clay infills, which are very strongly impregnated with iron, occur alongside iron coated channels. Many relict thin to broad burrows are present.

This is a moderately poorly sorted coarse silt and fine and medium sand, which is characterised by the partially burrowed remains of silty laminae which are relict of the fluvial origin of this sediment (palaeosol). Subsequently the soil was strongly enriched with later, probably alluvial clay, and then cemented by iron impregnating this clay and coating remaining voids.

At a depth of 680–710 mm the base of the coversand is a loose, heterogeneous, fragmented coarse silty and fine and medium sandy soil. It has inclusions of SMT 4a (palaeosol), bioworked weakly humus-enriched SMT 4b soil, loose sand, and weakly calcitic humic SMT 5a. The last is also fine charcoal-rich, contains a shell fragment and is associated with secondary calcitic hypocoatings. Very abundant broad burrows and many organo-mineral excrements are present here too. There is slight magnetic susceptibility enhancement with χ=10.8 (10^{-8} m^3 kg^{-1}), 1.00 χ^{conv}.

This is a partially biologically worked and fragmented mixture of coversand and underlying 'palaeosol', with weak humus mixing of the palaeosol, and evidence of recent ploughsoil marling (calcitic and fine charcoal-rich SMT 5a present as earthworm crumbs), hence relative magnetic susceptibility enhancement.

Trench FF2063C (M3)

At a depth of 1.03–1.11 m, the soil is very heterogeneous, as M1 but more so, and has a very high void space (45%) and very broad (10 mm) burrows. Very abundant microlaminated void clay coatings and infills, some of which are opaque because of very abundant iron impregnation. Dusty clay coatings are associated with some complete planar void infills, which also include silty clay. Rare very fine charcoal in SMT 2b, with trace amounts of <1 mm-size charcoal in burrowed SMT 2a. Burrows containing SMT 2b material are characterised by Fe-Mn hypocoatings.

At this depth the hierarchy of the features first suggests 'Btg' horizon formation – clay translocation through alluviation and iron impregnation of resulting clayey soil charateristics (pedofeatures) and micro-fabric. Later formation of dusty clay textural pedofeatures, with down-profile sorting into microlaminated clay with silty clay laminae, took place. Weakly humic soil was introduced by burrowing that included rare, very fine charcoal; the humic matter was impregnated with Fe-Mn. Patchy iron impregnation occurred throughout. Lastly, very broad burrowing affected the whole soil, creating very mixed and open (45% voids) micro-fabric.

The HPSG, observed in all three SM2063 test pits, are known to have been deposited during two separate phases of aggradation in the Trent Valley catchment (Howard *et al.* 2011). The first phase occurred around the onset of the Last Glacial Maximum (LGM; Greenland Stadial (GS-) 3; *c.* 24,500–17,000 BC; Clark *et al.* 2009), a period when aggradation is recorded in other adjacent catchments of eastern England (Rogerson *et al.* 1992; Gao *et al.* 2000; Briant *et al.* 2004; Lewin and Gibbard 2010). A second aggradational phase has been attributed to Loch Lomond Stadial (Younger Dryas; GS-1, *c.* 10,700–9700 BC) when the earlier Devensian deposits were reworked in some locations, clearly demonstrated at Holme Pierrepont Quarry further upstream, to the south-west (Howard *et al.* 2011). The OSL date from context 263004 of 20.32±4.69 ka BC (X3742, shown in Fig. 2.6), equivalent to GS-3 to -2, did contain a relatively high degree of scatter between measurements made on multiple aliquots, but is consistent with gravel deposition during the first phase of aggradation.

The coversands are also known to be cold climate deposits. Dating of coversand deposition, based upon thermoluminescence (TL) of quartz, in north Lincolnshire, has shown the main phase of coversand deposition took place between *c.* 10.5 and 9.4 ka BC, during the Loch Lomond Stadial (Younger Dryas; GS-1) climatic oscillation and Early Holocene (Bateman 1998), with similar dates derived from coversands in Nottinghamshire at Girton, *c.* 9.3 ka BC (Baker *et al.* 2013), while at Tiln coversand deposition was found to commence *c.* 11.7 ka BC (Howard *et al.* 1999). These dates correlate with similar TL and OSL quartz ages for the Younger Coversands found in continental North West Europe (Bateman 2008; Singhvi *et al.* 2001). Reactivation of coversands during the Holocene is recorded at both Tiln and Girton, with two phases at *c.* 7.3 and 6.2 ka BC, coincidental with notable climatic anomalies, and during the Iron Age/Romano-British period, resulting from woodland clearance and land-use intensification (Baker *et al.* 2013).

At Farndon Fields the OSL dates recorded towards the base of the coversands in FF2063B and FF2063C provided similar dates to those recorded by Singhvi *et al.* (2001) and Baker *et al.* (2013), with 9.93±1.02 ka BC

(X3739) and 8.04±2.34 ka BC (X3740) corresponding broadly with the 10.5–9.4 ka BC date range for coversands in north Lincolnshire (Bateman 1998). The correlation of the basal OSL dates between these different datasets demonstrates a broad agreement that coversand deposition occurred during the Loch Lomond Stadial (GS-1) and continued into the very early Holocene. The uppermost two OSL samples in each sequence provided younger dates of 5.97±0.69 ka BC (X3738) and 0.86±1.29 ka BC (X3741). These dates are similar to the dated coversand reactivation at the nearby Girton Quarry, showing correlation in their timing. However, the clear presence of signs of biological working within the coversand deposits casts caution over the interpretation of the younger dates, notably X3741, as these may have also incorporated younger quartz grains. This could mean that these dates are not necessarily directly linked to climatic drivers and sand reactivation but could be due to the incorporation of more recently bleached quartz grains resulting in younger dates. Singhvi *et al.* (2001) found that the reworking of coversand deposits could often lead to erroneous Holocene dates for periglacially derived deposits.

The clayey deposit (263006), which overlay the gravels and lies beneath the coversands, although a complex palimpsest, is a terrestrial soil formed in silty alluvium, which is then buried by coversand deposition. After, and possibly alongside, coversand deposition, alluvial clays were also laid down by flooding of the area (cf. Drayton Cursus, Oxfordshire; Lambrick 1992). Soil formation at the top of the profile has resulted in more modern material being incorporated by bioturbation (principally worm burrowing) right through this permeable sequence. This palaeosol (263006), found overlying the gravels but beneath the coversands, can therefore be chronostratigraphically placed between the LGM and Loch Lomond Stadial, and is therefore most likely to be attributable to the Windermere Interstadial (Greenland Interstadial (GI) 1).

Trenches FF6091, FF6090 and FF6090Ext (Figs 2.3, 2.5, 2.7 and 2.8)

FF6091 (Figs 2.7 and 2.8) contained a sequence of very well-laminated alluvial sands and silts (609103/4/5) resting upon the basal gravels (609106). These were overlain by coversand deposits (609102), heavily bioturbated in places, in turn sealed by the ploughsoil (609101) (Fig. 2.7). Five soil micromorphological samples (M5 A1/A2/B1/B2/C) were taken from this trench, as well as two OSL dates (X3787 and X3790, contexts 609105/609103). The general pattern of sedimentation (within context 609103) revealed by the soil micromorphology was as follows:

C) 1.09–1.12 m: This lowermost sub-unit is composed of very poorly sorted and partially relict laminated fine micaceous silts, coarse silts, fine and medium sands, with very abundant silty laminae/silty pans (1.0–1.5 mm thick), with associated void infills. There are many but patchy ferruginous iron clay void and grain coatings. Rare traces of charcoal (max 1 mm), an example of a blackened humic soil clast (400 µm) with embedded charcoal, and trace amounts of burnt sand grains, were all recorded. Patchy abundant ferruginous impregnation and very broad burrowing from sands above through this laminated sequence are obvious pedofeatures.

B) 1.04–1.09: This is a massive moderately sorted coarse silt, fine and medium sands, with rare traces of fine charcoal.

A) 1.04–1.06 m: The uppermost sub-unit is a massive, mainly

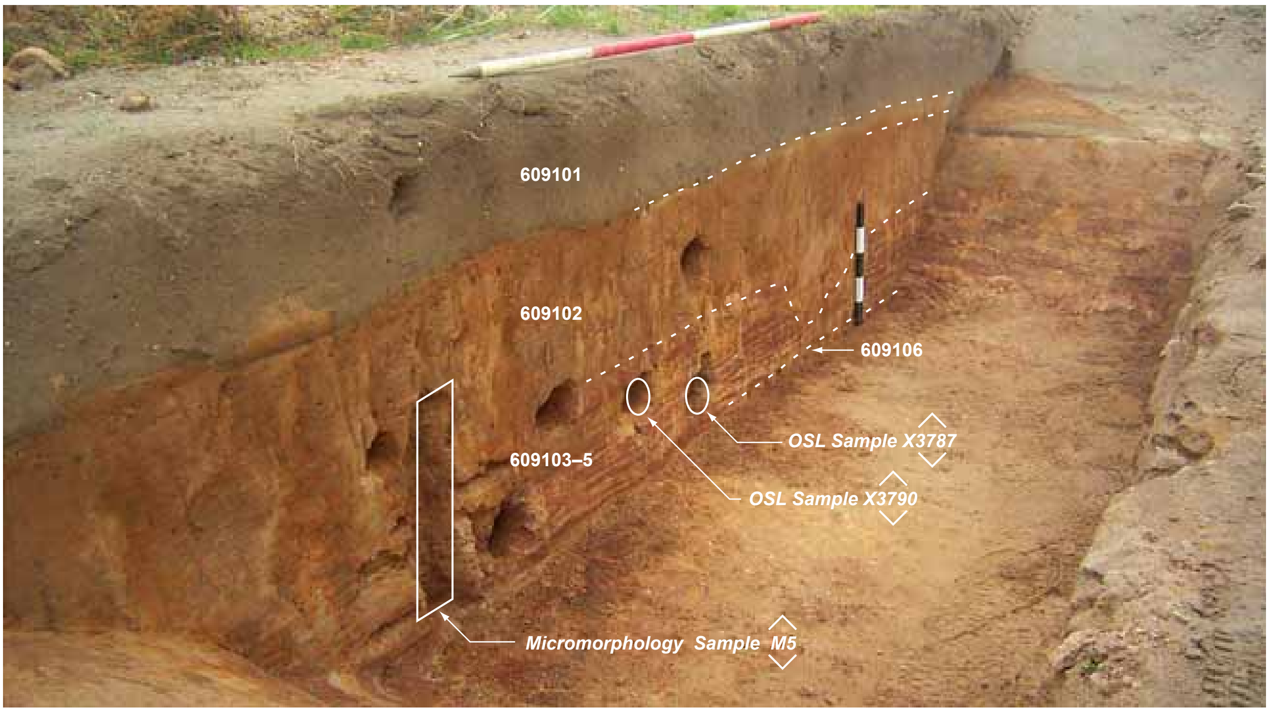


Fig. 2.7 FF6091 showing laminated sands and silts (609103/4/5) overlain by bioturbated coversands (609102). Sampling locations for soil micromorphology, OSL dating and monolith M5 are shown

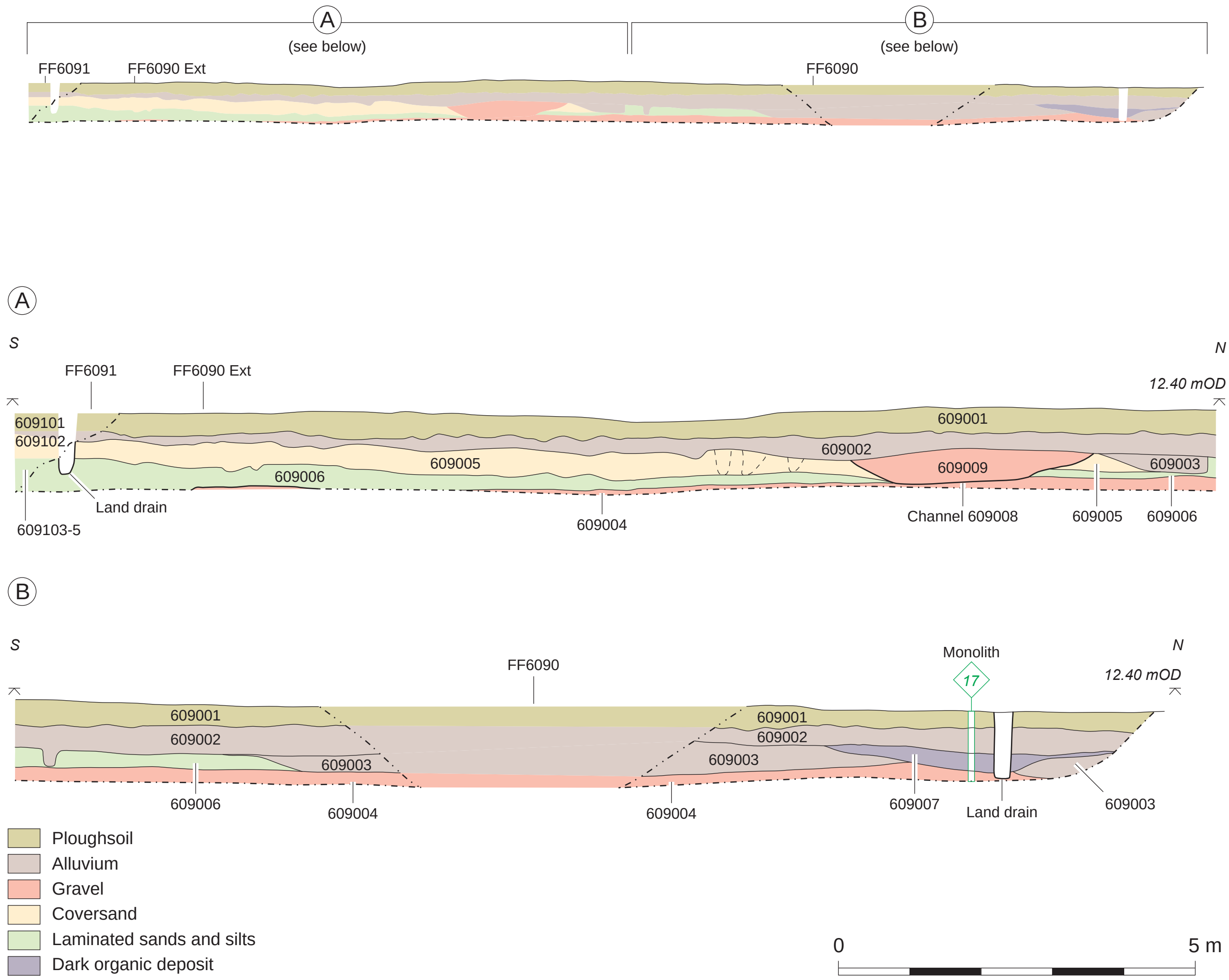


Fig. 2.8 FF6090Ext section drawing

fine and medium sand, with very abundant ferruginous clay void and grain coatings some 100–200 µm thick.

The timing of the sediment deposition is uncertain due to the presence of some bioturbation recognised in the cleaned section and soil micromorphology. The OSL dating from the base of the sequence provides dates of 7.75±1.44 ka BC (X3790) and 7.90±1.26 ka BC (X3787) which are broadly contemporary with, albeit slightly later than, the OSL dates from the coversands (263005) in FF2063B (X3739 and X3740), again similar to the TL dates from Girton Quarry (Baker *et al.* 2013) that were interpreted as sand reactivation during the 7.3 ka BC climatic anomaly. In context 609103, the lowermost fine laminated sediments (C) record moderately low energy alluviation/sheetwash, carrying, for example, very small amounts of detrital charcoal and fragments of humic soil, with episodic muddy silt alluviation also being probable. Such deposition may have been occurring within a low-energy alluvial deposition environment probably consisting of areas of temporary standing water during the early stages of coversand deposition. These alluvial deposits appear to be stratigraphically equivalent to the alluvial deposits in FF2063A–C (263006). After some bioturbation and burrowing/rooting, massive clean sandy coversand deposition occurred (B). This is followed by coversand sedimentation which is then affected by fine clayey alluviation (edge alluvial stream/palaeochannel), with clay infilling most voids, due to later flooding/fine alluviation (eg, Brammer 1971; cf. Thames at Drayton Cursus, Oxfordshire; Lambrick 1992).

FF6090 was extended (FF6090Ext) southwards to join FF6091 to explore the stratigraphic relationship between the basal laminated alluvial sands and silts (609006=609103–5) and coversands (609005=609102) (Fig. 2.8), and how these relate to the alluvial deposits found to the north associated with the LUP flint scatters (FF6007E/W). FF6090Ext demonstrated the lateral continuation of the deposits in FF6091, with the coversands continuing for a further 15.5 m and the basal alluvium for 20 m, both overlain by a series of silty clay alluvial deposits (609002), which became indistinct in FF6091. These deposits also included a clear channel cut (609008; fill 609009) truncating both the cover sands and basal alluvium and reaching the underlying gravels (609004) in the centre of the trench.

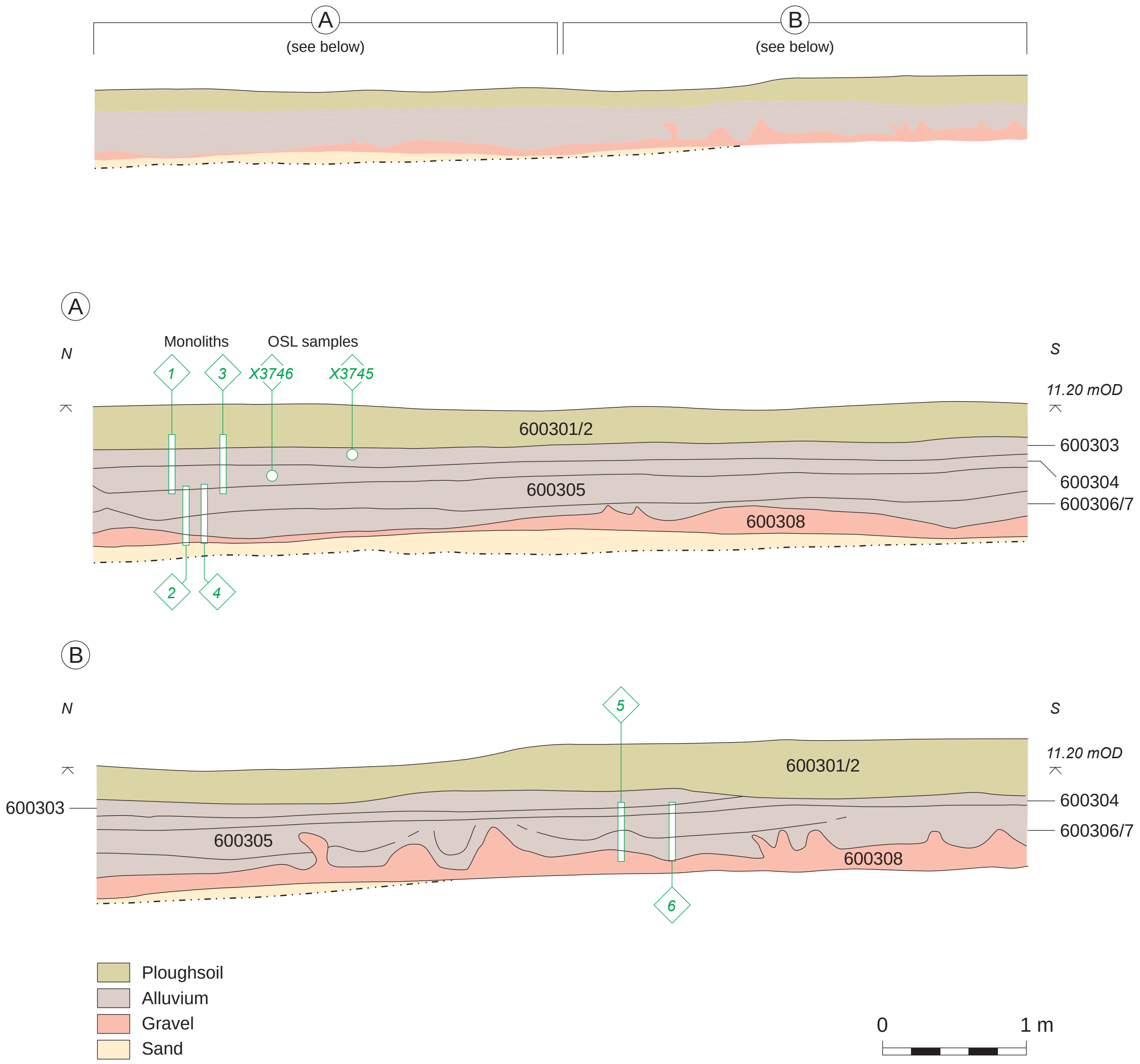


Fig. 2.9 FF6003 section drawing including locations of monolith and OSL samples X3745 and X3746, sample X3747 lay to the north of the illustrated section

North of FF6090 (Fig. 2.3) (which was incorporated into FF6090Ext) a fill (609007), described as a grey/medium brown silty clay with sparse gravel, appeared to be somewhat organic (though the dark colouration might be attributable to manganese staining) and contain charcoal fragments (Fig. 2.8). The fill was *c.* 4 m wide, of uncertain origin (ie, whether anthropogenic or palaeo-channel) and although sampled in the field was not investigated further. The age of the upper alluvial deposits observed in this trench (609002, 609003, 609007 and 609009) is unknown, but given their stratigraphic position overlying the coversands (609005) they must be of Holocene date. These deposits were found to continue to the north in FF6089 (Fig. 2.3) where they peter out against a rise in the underlying gravel topography, which out crops directly under the ploughsoil. This gravel high point is also seen in FF6088 (Fig. 2.3) and seems to imply that the alluvial deposits to the north and south are separated by a gravel ridge. This division was also observed in a LiDAR survey of the route corridor (CWA 2011, fig. 86).

Trench FF6003

FF6003 was a long trench excavated adjacent to Garton and Jacobi's (2009) South Cluster (Fig. 2.3), which lay to the east of the road corridor. The trench contained a series of fine-grained units (600301–7) overlying a basal gravel (600308) (Fig. 2.9). Three OSL dates (X3745–7; contexts 600303, 600304 and 600306/7), associated with monoliths M1–M4, were obtained from these deposits as well as information on the grain size of the sediments from M1 (included 600303–5), M2 (included 600304–8) and M6 (included 600303–8).

The geometry of the sediment bodies across this section indicate broadly horizontal patterns of sedimentation along much of the trench (eg, 600307 upwards to 600302). The basal gravel surface (600308) is broadly horizontal although at the southern end gravel

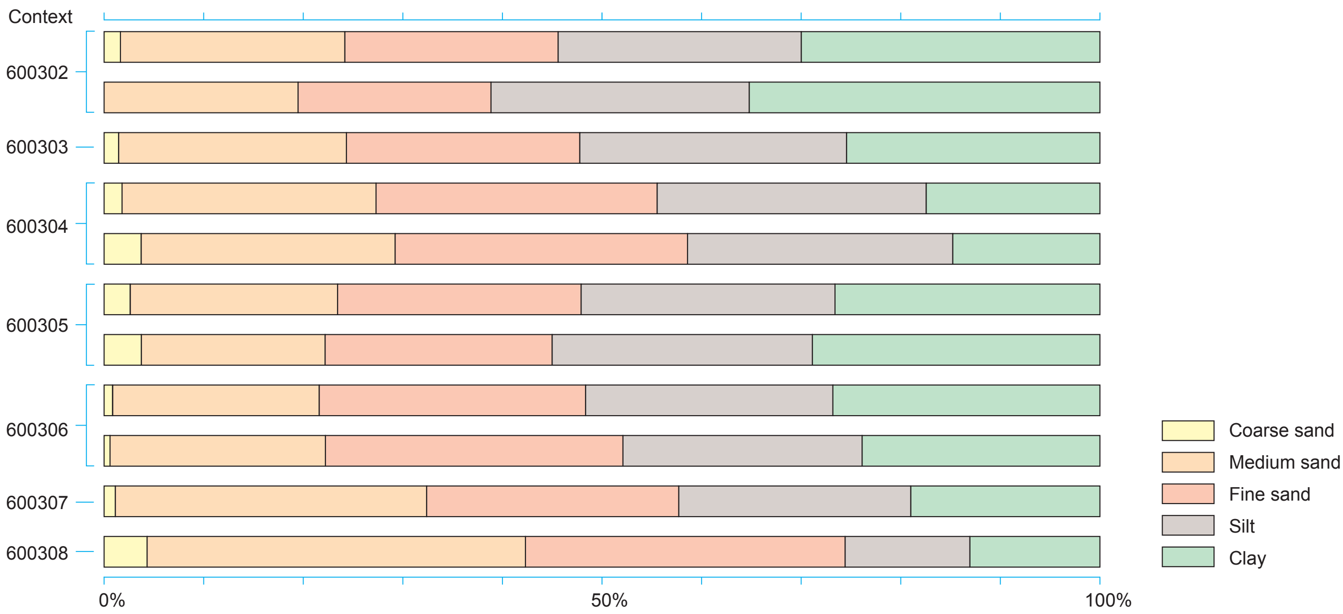


Fig. 2.10 Particle size distribution from monoliths M1 and M2, FF6003

clearly appears to protrude into the overlying finer grained silts of contexts 600306/7. These involutions are indicative of periglacial cryoturbation ('frost heaving') processes operating within the sediment body, with the formation of a series of lobes of gravel supported by the 600306/7 alluvial deposits, indicating that the alluvium must have been present prior to the involution taking place. This stratigraphic relationship would imply that the alluvium formation is pre-Loch Lomond Stadial (pre-GS-1) in date to have been affected by such cryoturbation processes. The alluvium is likely to have been deposited during the Windermere Interstadial (GI-1), contemporary with the age of the LUP flints found within the alluvium body on the opposite side of the embayment (Fig. 2.3). The fine-grained nature of the overlying sediments and their horizontal geometry indicate a fluvial origin for much of the sequence.

Grain size data from monoliths M1 and M2 (Fig. 2.10) indicate that there appears to be a trend towards decreasing grain size up the sequence through contexts 600308 to 600305, a slight coarsening in 600304, before a second sequence of fining upwards in 600303–2. The gradual fining upwards of the grain size would indicate material settling out in water of decreasing energy. The horizontal layer (600304) observed along the length of the trench, unaffected by cryoturbation, might indicate two cycles of sedimentation occurring in this part of the site over different climatic periods. Some caution should

Fig. 2.11 FF6002 with FF6007E extension (showing the location of the LUP Creswellian scatter). Locations of OSL samples X3791 (600224/5) and X3792 (600202) are shown

be given to such an interpretation as horizonation can occur due to post-depositional soil formation rather than necessarily indicating two separate phases of alluviation under differing climatic regimes. However, due to ploughing any upper horizons of a soil profile would have become incorporated into the ploughsoil layer (600301/2). This problem is clearly demonstrated by French (2009, 170–1), where an apparent buried soil associated with a LUP flint assemblage was shown, using soil micromorphology, to be a completely preserved Holocene soil profile of brown earth type, and thus post-date the flint assemblage. OSL dating of the basal alluvium (600306/7) provided a date of 5.38±2.4 ka BC (X3747) which is incompatible with the cryoturbation features within this context identified in the south of the trench. Overlying dates of 7.09±1.2 ka BC (X3746; 600304) and 0.96±0.79 ka BC (X3745; 600303) were derived from the sequence. It is likely that these dates are also too young (particularly the date from the base of the sequence) for these contexts, and this may be attributable to a mixture of bioturbation and soil development leading to the incorporation of younger quartz grains into the deeper contexts.

Trenches FF6002 and FF6007E/W

FF6002 and FF6007 (Fig. 2.3 inset A) are directly associated with the recorded Creswellian (FF6007E) and Federmesser (FF6007W) flint scatters. The sequence in FF6002 and FF6007 consists (Fig. 2.11) of a thin sequence of fine-grained silts and clays (including 600201–3, 600205–25) overlying the basal gravels (600204 and 607082). The gravel surface in FF6002 undulates considerably, and in places, away from the excavated flint scatters in FF6007E/W, appears to rise through the finer-grained alluvium to almost reach the ploughsoil. These involutions may be indicative of periglacial cryoturbation processes operating between the two bodies of sediments, similar to that observed in FF6003. Grain size changes within the alluvial sequences of both trenches indicate a slight fining up sequence indicative of declining energy as sedimentation occurs within a floodplain situation.

OSL dating was undertaken in FF6002, immediately adjacent to FF6007E, with two samples taken from the alluvium; X3791 (600224/5) and X3792 (600202) (Fig. 2.11). Samples were also taken for soil micromorphological analysis (Figs 2.12–2.15), focused predominantly upon FF6007E (M6A–D, M12/112) (Fig. 2.26) associated with the Creswellian scatter, though one sample (M116; context 607068, which formed part of Group 607067) (Figs. 2.17, 2.36) was also taken from the edge of the Federmesser scatter in FF6007W.

Trench FF6007E

Base of clayey alluvium (425–495 mm; M6D)

This is a heterogeneous and complex mixed moderately well-sorted clay-poor sediment(s), composed of coarse silt to medium sands (loamy sands) and clay-rich silt to medium sands (sandy loam) containing trace amounts of very fine to fine charcoal (400 μm). Both very abundant broad (2–3 mm) and many thin (0.5–1.0 mm) burrows have caused mixing but not homogenisation of the two texture types. Four possible textural pedofeature types/phases are recognised: A) associated with clay-rich soil; B) very abundant once limpid (now Fe-stained) major channel clay infills (150–750 μm thick); C) dusty to impure silty and laminated infills/pans; and D) dusty clay void coatings affecting extant voids. There is very abundant iron impregnation of clayey fabrics and

Fig. 2.12 FF6007E 150 mm-long scan of block M6 (contexts 607060, 607042), thin-sections M6A and M6B

textural pedofeatures and strong Fe-Mn nodular impregnation of channel/burrows. SEM/EDS analyses found that the relict burrow fills are iron and manganese stained (7.82–10.9% Fe, 2.77–2.86% Mn), with less manganese-, more iron-stained outer nodular parts (18.7% Fe, 0.98% Mn). There are also very strongly impregnated iron nodules (68.4% Fe [88.0% FeO], and iron- and manganese-stained secondary clay inwash features (13.4–41.5% Fe, 5.44–12.7% Mn) also occur. These are complex soil-sediments formed by probable once thinly laminated loamy sand and sandy loam alluvium, which became burrowed but not homogenised. Alluvium contains trace amounts of very fine to fine charcoal. Subsequently, broad rooting/void/channel formation and burrowing took place, as the site developed as a 'soil'. As base levels rose (alongside continued alluviation) waterlogging ensued (cf. Swanscombe; Kemp 1985) leading to preferential Fe-Mn impregnation of once-humic channel and burrow fills. Other channels and voids were later partially infilled with possible alluvial overbank clay filtering down from flood clay deposits (Brammer 1971). This may imply weathering of the 'loamy sand–sandy loam' alluvium, and shifting of the river channel. Continued fluctuating waterlogging led to iron staining.

Lower clayey alluvium (350–425 mm; M6C)
This is similar, but more homogeneous compared to M6D below. The same kind of iron and Fe-Mn impregnations occur. Reddish clay (type 2) infills and coatings are less abundant. Clayey SMT 6b is dusty compared to SMT 6a in M6D, and occurs in the abundant burrows. Very dusty clay occurs in extant voids. Depletion (of fine fabric) is also exemplified by a thin bleached rim on very coarse sand-size chert. Upwards from M6D, there is more homogenisation and mixing of the loamy sand and sandy loam elements, with inclusion of dusty and impure silty clay in the broad burrows. Possible alluvial clay inwash is again recorded but is less marked. The origin of the dusty clay soil which is partially mixed by burrowing requires explanation, but could occur in muddy conditions. The later very dusty clay may originate from more recent land use.

Upper clayey alluvium (275–350 mm; M6B)
This is less heterogeneous than the underlying alluvium but nevertheless is characterised by very broad burrows infilled with reddish clay, dusty clay infilled possibly earlier-formed fissures and voids (intercalatory textural features), and a final phase of dusty clay coating extant voids. Patchy iron-depletion and very abundant iron staining is in evidence and relict root channels are impregnated with nodular Fe-Mn. At this level, loamy sand and sandy loam alluvium have been mainly homogenised by burrowing, probably under muddy conditions and may have been subject to trampling, because the fills are very dusty and intercalations are also common. Again, large burrows have become totally infilled with probable alluvial clay (backswamp flooding). Final dusty clay translocation is related to modern cultivation (see M6A).

Uppermost preserved clayey alluvium (225–275 mm; M6A)
This is a generally compact loamy sand–sandy loam, showing horizontal separation of clayey and loamy probable bedding developing upwards from a more homogeneous and burrowed soil-sediment (Fig. 2.13). Some likely small peds are separated by infills and intercalatory fills – including 'limpid' reddish clay fragments papules. Broad voids are infilled with 'limpid' clay, but only occasional Fe-Mn vertical 'root' traces are present. There is minor mixing of Ap horizon soil from above. SEM/EDS records iron-enriched silty (6.41–10.0% Fe) and clayey (30.6–31.1% Fe) laminae, and nodular iron impregnation (60.2% Fe, 0.52% Mn). This is a homogeneous soil-sediment – as seen in M6B-C – which becomes more laminated in character, indicating renewed near-channel sedimentation. Fe staining is a post-depositional process associated with continuing high and fluctuating water tables, occurring when it became re-inundated (see M7).

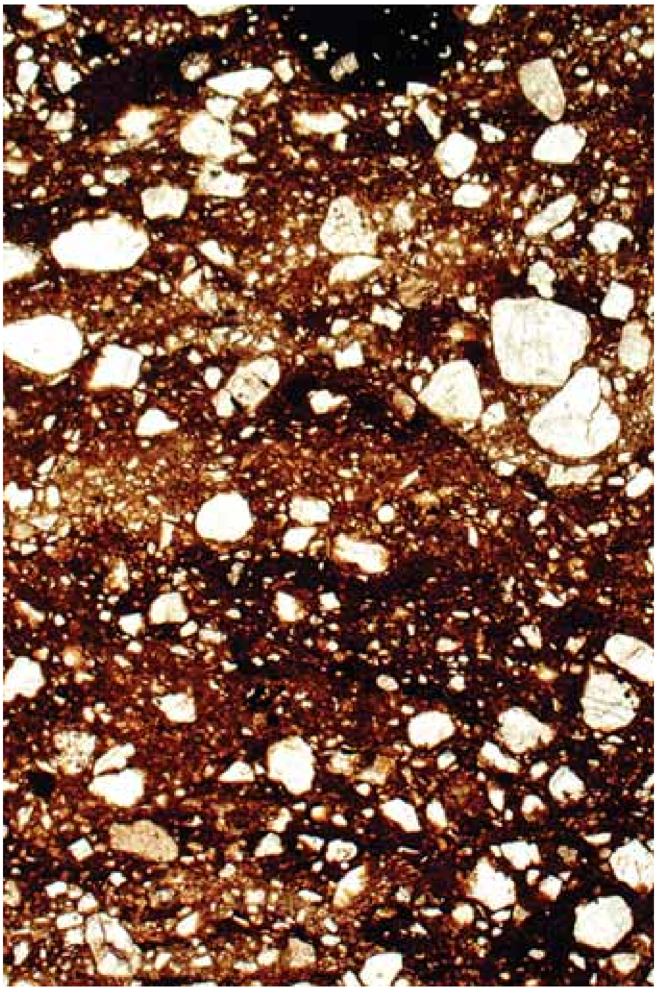


Fig. 2.13 FF6007 photomicrograph of M6A (context 607060), showing microlaminated silty clay and loamy sands. Note iron-staining of clay-enriched laminae. PPL, frame height is c. *4.62 mm*

Base of modern Ap ploughsoil (200–225 mm; M6A)
This is a homogeneous clayey sandy loam, with very abundant very organic matter, charred organic matter, coarse charcoal, examples of coal, 'brick', 'rusty' iron slag and strongly burnt bone (Figs 2.14 and 2.15). The fine fabric is dominated by dusty intercalations and dusty clay void coatings (such material has been worked down-profile). It has a marked LOI of 2.76%. The Ap horizon is a humic, clayey and manured ploughsoil, with an LOI of 2.76%, which was probably ploughed under wet conditions.

Context 607061 within Creswellian flint scatter (M112/M12)
This sampled layer is a moderately homogeneous (like M6C), compact, massive sandy loam, with poorly developed prisms (0.5 mm fine vertical fissures) and fine channels and open vughs. It contains rare trace amounts (x5) of flint micro-

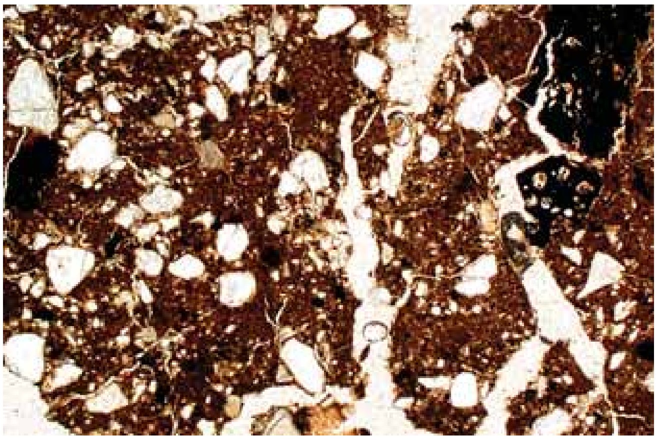


Fig. 2.14 FF6007E photomicrograph of M6A (ploughsoil; context 607042) (see Fig. 2.12); relatively humic ploughsoil, with charcoal inclusions. PPL, frame width is c. *4.62 mm*

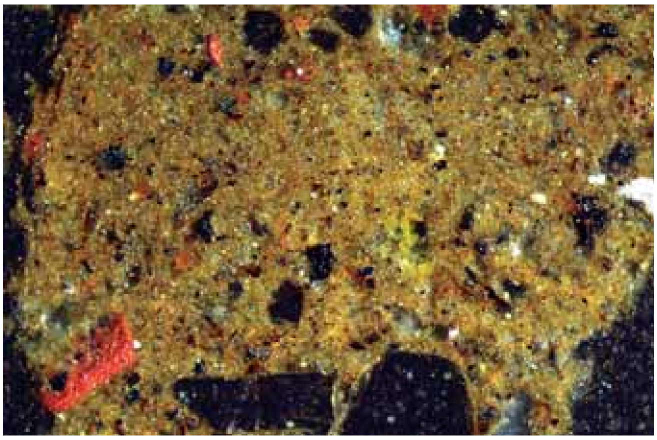


Fig. 2.15 FF6007E detail of Fig. 2.14, under OIL, showing inclusions of fine charcoal and red burnt material from manuring. Frame width is c. *0.9 mm*

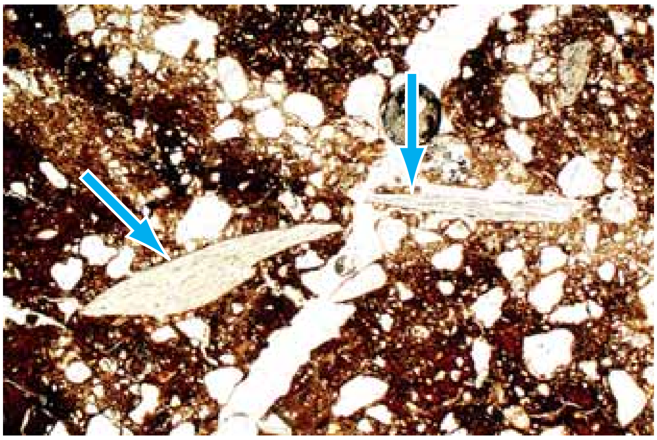


Fig.2.16 FF6007E photomicrograph of M112/12 (context 607061); flint microflakes (indicated by blue arrows). PPL, frame width is c. *4.62 mm*

debitage, with a mean size of 1.5 mm (Fig. 2.16). There is also a rare trace of charcoal (max 1.0 mm), some next to flint micro-debitage, and fine burnt mineral material also occurs. Both very abundant broad (2–3 mm) and many thin (0.5–1.0 mm) burrows, and iron-stained 4 mm-size very broad burrow, were recorded. Three possible textural pedofeature types/phases were recognised (as M6D): A) very abundant once limpid (now Fe-stained) major channel clay infills (max 1 mm), especially in upper 0–5 mm; B) dusty to impure silty and laminated infills/pans; and C) dusty clay void coatings affecting extant voids. Very abundant iron impregnation of clayey fabrics and textural pedofeatures, and possible strong Fe(-Mn) nodular impregnation of relict very broad burrows, including Fe-pseudomorph of clay-infilled 2.5 mm-wide root channel, were observed.

Context 607061 is composed of complex soil-sediments formed by probable once thinly laminated loamy sand and sandy loam alluvium, which became burrowed and moderately homogenised. This presumably occurred during the period of occupation and development of the flint scatter, due to an ephemeral period of subaerial weathering. Flint micro-debitage (some probably due to chipping activity), fragmented charcoal and fine burnt mineral material could be virtually contemporaneous with this homogenisation; bioactivity likely led to scattering of flint flakes and charcoal fragmentation (cf. unit 4c, Boxgrove; Roberts and Parfitt 1999; and similarly dated Cactus Hill, Virginia, USA; Feathers *et al.* 2006; Macphail and McAvoy 2008). This occupation probably post-dates one phase of laminated alluviation (as in M6D) and pre-dates renewed laminated alluviation (as in M6A). Subsequently, the channel shifted and overbank alluviation and down-profile clay inwash (and later textural pedofeatures and hydromorphic transformation – Fe impregnation), took place. The occupation thus seems to have taken place on soil-sediments within/near to the active stream channel. At the Upper Palaeolithic site of Chongokni, on the Hantan river (within the Imijin basin), Korea, humans occupied the floodplain in the dry season (Macphail 2010b). At Farndon Fields it is suggested that occupation could have occurred in the summer, between seasonally periodic winter stream activity.

Trench FF6007W

Context 607068 (edge of Federmesser flint scatter, M116 (Fig. 2.17)

This is a compact, massive sandy loam, with fragments of 1–2 mm thick sandy laminae, sometimes worked into broad burrows down-profile. Trace amounts of fine sand-size papules occur (alluvial sediment?). Fe-Mn may be picking out ancient rooting. Rare trace amounts of anomalous quartzite (eg, 5 mm, hammerstone/core?) and burnt fine mineral occur (Fig. 2.18). Complex textural, depletion and amorphous features, with major Fe-stained clay void infills, textural intercalations and dusty clay void coatings, channel and void infills of impure clay and matrix material up to 1 mm wide, are present in some relict channels. Thin, broad and very broad burrowing of original sediment and some disruption of Fe-clay infills was noted. Here, at the edge of the scatter, alluvial overbank fine and coarse (coarse silt and sands) sedimentation was followed by moderate bioworking, but not complete homogenisation. Occupation is only very sparsely reflected in rare traces of quartzite – one angular 5 mm fragment in particular, and

Fig.2.17 FF6007W showing location of micromorphology sample M116 and excavated spit divisions through the subsoil and alluvium

some likely burnt sand. Unfortunately, because of so much background pedological 'noise' (inwash of clay, both iron depletion and mottling), it is impossible to know if conditions were stable or muddy. The site seems to have become vegetated and subsequently, as the stream migrated and fine alluviation (clayey alluvium) occurred, this was washed down root holes. Later disturbances of the surface, and further alluviation led to more recent downwash of silty clay.

The alluvial deposits within which the two scatters reside are clearly of Pleistocene age but have been partially disturbed by subsequent human activity and biological

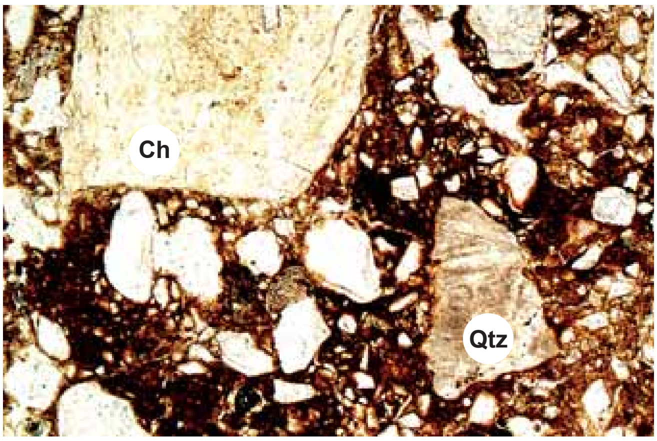


Fig.2.18 FF6007W photomicrograph of M116 (near LUP Federmesser scatter, context 607068). Burnt quartzite (Qtz) next to chert (Ch), which is also possibly burnt. PPL, frame width is c. *4.62 mm*

mixing. The Pleistocene age of these deposits is supported by both the horizontally intact flint scatters and presence of cryoturbation features in the base of FF6002, similar to those observed in FF6003. The samples prepared for soil micromorphology contained, at FF6007E, some six flint chips (M12/112; context 607061) with a mean size of 1.5 mm; these occurred in a matrix containing rare traces of charcoal (max. 1.0 mm) and fine burned mineral material. Sample M116, at the edge of the scatter in FF6007W (context 607068), contained only a trace amount of microartefacts, in the form of anomalous quartzite, including an angular chert fragment (5 mm in size) and trace amounts of burned mineral including coarse sand-size quartzite.

Analysis of the worked flint assemblage (see below) has demonstrated that artefacts have become vertically dispersed within the sediment with charcoal fragmented by ensuing biological working and possibly by occupation trampling. Such biological dispersion of artefacts is well recorded at, for example, Boxgrove Unit 4c (Roberts and Parfitt 1999). It is clearly evident in the bulk sample analyses where there is contamination and mixing of modern soil component with the essentially very poorly humic underlying Pleistocene alluvium. Samples taken from the upper parts of the sampled sequences contained notably higher LOI and magnetic susceptibility values. Where intrusive soil is humic it was also found to contain anomalous red burned mineral material, calcined bone, calcareous micro-fabrics and coarse charcoal – all due to recent marling of the sands for agricultural reasons. Monolith samples from the

Fig.2.19 FF6084 showing principal stratigraphic divisions

margins of FF6007E and FF6007W (M200 and M201, respectively) were found to contain fragments of coal and blue glass within the Pleistocene alluvium (as did a number of the processed spits). A pollen assessment through both of these monolith sequences demonstrated deteriorating pollen preservation towards the base of the sequence, but did show the presence of temperate woodland and cereal pollen in the uppermost alluvium further indicating recent sediment contamination and vertical mixing.

The two OSL samples from FF6002 provided dates of 6.11±2.6 ka BC (X3791; 600224/5) for the base of the alluvium and 7.73±1.21 ka BC (X3792; 600202) towards the top. However, both OSL dates are taken in close proximity to the Creswellian scatter (stratigraphically below and contemporary, respectively). The Holocene age ranges for these OSL samples are clearly too young and, similar to other dated sequences across the site (notably FF6003), are probably the result of contamination by the incorporation of younger quartz grains into the deeper deposits. At Nea Farm, Hampshire (Barton *et al.* 2009), OSL dating associated with a Federmesser-type scatter was found to also produce young dates, attributed to a relatively high degree of quartz grain mobility as a result of small scale bioturbation since deposition. Consequently, these dates can only provide *termini ante quem* for the deposits.

Trench FF6084

FF6084 (Fig. 2.5) was sampled for soil micromorphology (M7) due to the possibility of the presence of a remnant palaeosol (608403) overlying the basal sands and gravels (608404) (Fig. 2.19). These were found below a dark brown sandy silt (608402) and overlying ploughsoil (608401).

M7, across 608403/4, was composed of poorly sorted coarse silt, fine and medium sands with gravel, and shows evidence of very coarse recent burrow-mixing of overlying humic and charcoal-rich more clayey Ap horizon soil. The *in situ* soil is moderately homogeneous and burrowed, with dusty void coatings and matrix intercalations. Minor inwash of reddish 'limpid' clay is recorded in some broad burrows. Relict rooting is marked by semi-pseudomorphic iron and Mn hypocoatings and impregnations, and overall the soil shows marked iron depletion and impregnation features. SEM/EDS was employed to analyse a mottled area with a ferruginous matrix (30.6% Fe), very strongly formed Fe-Mn nodules (41.8–47.4% Fe and 17.6–24.2% Mn; trace of P (0.40% P)).

Here, it seems that alluvial sands and gravels were biologically mixed (under often moist/wet conditions) with finer alluvial elements that still have relict traces of a once weakly humic content. This may suggest a gley soil was partially stabilised at this depth before renewed alluviation. It is likely that this alluvial gley soil formed nearer channel activity compared to the palaeosols recorded at FF6007E.

Trench FF6078

This trench (Fig. 2.5) contains a sequence of two main units beneath the ploughsoil consisting of sandy silt (607802) lying above yellowish brown sand (607803). This, in turn, rests on gravel (607804). The main sand unit contains stringers of gravel in places indicative of higher energy events. The trench appears to lie close to the edge of one of the palaeochannels identified during the auger survey (WA 1995). This trench has been investigated with a series of micromorphological samples (Fig. 2.20). M8 is taken through the margin of the channel deposits where a sandy clay (607805) overlies the HPSG gravel (607804). M9A and B are taken from the channel sand

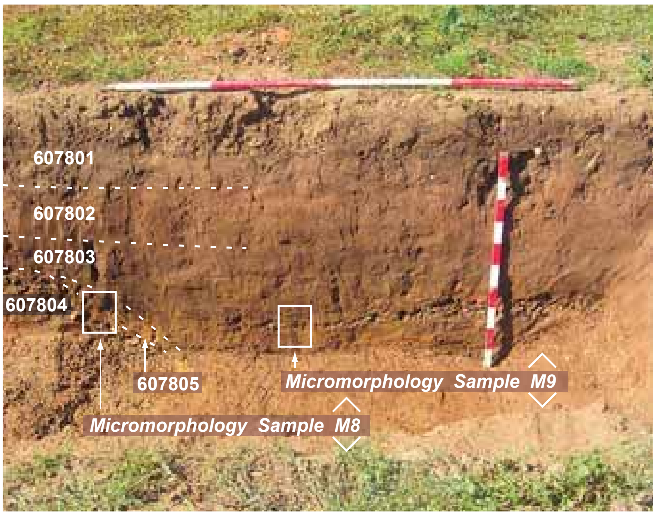


Fig.2.20 FF6078 showing the location of M8 and M9 and principal stratigraphic divisions

(607803) deposits themselves and include a thin gravel lens (unrelated to the HPSG) within the sand deposits that is separate to 607804. Samples for OSL dating were taken from this trench for initial assessment but were not deemed suitable for analysis.

607804 (M8)

Contains a semi-cemented layer of fine to medium gravel and very coarse sands (quartz, quartzite and possible chert) indicative of a moderately coarse stream deposit. It is also composed of poorly sorted coarse silt to medium sands, which include frequent coarse mica (some weathering and ferruginised). Overall, it has a massive structure, with channels, open vughs and chambers. Many wood and probable monocotyledonous charcoal (max 1.5 mm) occur (Figs 2.21 and 2.22), the later of unknown origin but may indicate the burning of wetland (possibly monocotyledonous) plants. The layer is variously affected by iron depletion, iron staining and thin to very broad burrowing. This is a moderately micaceous, coarse silty to medium sandy alluvial soil-sediment, and displays no bedding because of biomixing mixing and turbation.

607805 (M8)

This is a fill made up of vughy and channelled and sometimes layered fine sands, with many very fine to fine charcoal, including a 600 µm woody fragment. It is very strongly affected by iron and Fe-Mn cementation and void hypocoatings. Reddish clay void coatings are tertiary features. Bulk analyses found a relatively high 2.35% LOI and very marked χmax. This is an enigmatic fill, of a subsoil rooted feature and/or burrow, with layered fills that include fine charcoal concentrations.

607803 (M9B)

This is a massive, finely laminated (1.5–2.5 mm) well-sorted coarse silty–very fine sandy and fine sandy sediment. It is quartz-rich but with opaques (eg, limonite) and weathering/ferruginised mica; the last is often generally horizontally oriented. Few thin root channels and many broad burrows are recorded, along with rare ferruginised thin clay void coatings, and many ferruginous coatings. There is a small concentration of fine, Fe-stained charcoal just below gravels at 1.01–1.02 m.

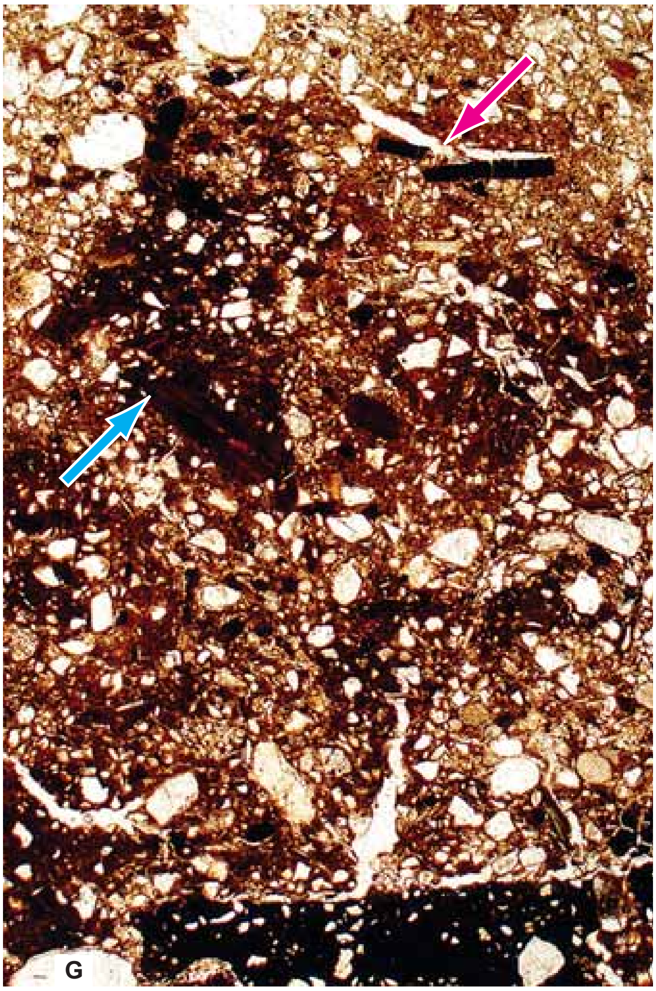


Fig.2.21 FF6078 photomicrograph of M8 (context 607804) just above gravels (G), with ferruginised weathered mica fragments (blue arrow), and fragmenting monocotyledonous(?) charcoal (red arrow). Frame height is c. *4.62 mm*

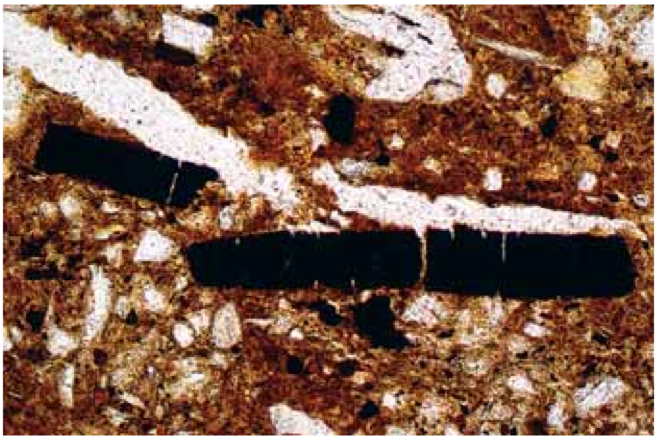


Fig.2.22 FF6078 detailed photomicrograph of M8 (context 607804) of possible monocotyledonous charcoal, in relatively fine charcoal-rich soil-sediment. Frame width is c. *0.9 mm*

This is well-laminated fine channel alluvium composed of very coarse silts and fine sand. A slight increase in fine fabric and a small but notable charcoal concentration records burrowing down of 'humic' soil and charcoal from above the gravel lens (see M9A).

Gravel lens (M9B)
The gravel lens is composed of very dominant rounded gravel (max 25 mm) of quartzite, flint and ironstone/limonite; it is massive and very poorly sorted with fine, medium and very coarse sands. Dusty ferruginous clay void coatings, small amounts of iron staining and broad burrowing are visible. These are relatively coarse channel stream gravels, with subsequent inwash of ferruginous dusty clay and broad burrowing from above.

607803 lower (M9A)
There is an irregular, broadly and very broadly burrowed boundary to mixed sands (burrow fills) and fine soil with examples of two burnt (calcined) very coarse sand-size quartzite grains (max 1750 μm), occasional charcoal (250 μm) fragments and concentrations. There may be possible other organic fibres and fungal material. The lower part of the unit is ferruginised, whereas the upper part appears to be impregnated with Fe-Mn. Reddish clay void coatings are tertiary features, alongside a 2 mm-wide silty clay channel fill. A thin (probably truncated) fine soil-sediment formed over channel gravels (see M9B), which includes evidence of occupation in the form of burnt quartzite traces and a moderate fine charcoal concentration. Post-depositional subaerial burrowing and rooting took place before rising base levels led to marked iron-manganese panning (as in M8), and renewed stream channel activity and erosion. This thus records a short-lived period of palaeosol formation.

607803 upper (M9A)
Here there are massive, moderately poorly sorted, fine to coarse quartz sands, with opaques and weathering micas. They contain one example of 2 mm size angular calcined flint. Rare ferruginised clay grain coatings and rare very broad (3 mm) burrows also occur. These appear to be stream channel sands; stream flow and the deposition of which probably led to truncation of ephemeral 'soil', below.

Samples M8, M9A and M9B thus record both the deposition of channel sands and higher energy gravel phases, but also instances of fine soil formation and subsoil-feature formation associated with concentrations of charcoal; trace amounts of burned very coarse sand were also recorded. Whereas the presence of probable monocotyledonous charcoal in the alluvial soil-sediments may result from background wildfires/human management of wetland, the association of various fine charcoal concentrations in an ephemeral soil and subsoil feature could be more indicative of occupation at or very near this location. Such findings suggest that humans may have been managing the wetland by fire (monocotyledonous charcoal), and that charcoal from their hearths was dispersed by wind and water (cf. Gibraltar Middle and Upper Palaeolithic cave sediments; Goldberg and Macphail 2000; Macphail and Goldberg 2000). In addition, the relative concentrations of charcoal (and traces of burned sand) at FF6078 imply the likely proximity of a now lost/eroded combustion zone and/or use of fire.

Remodelling the Deposits along the Route Corridor

The volume of geoarchaeological data that has been collected at Farndon Fields since the 1990s has meant that it is now possible to remodel the deposits of the site with a greater density of sample points than was previously used by Roberts (2007). This also allows the detailed investigations reported above to be placed within a broader context by identifying patterns across the study area and trends within site development, as well as characterising the deposits within their three-dimensional form. The resultant model is based upon 388 data points incorporating the data from all of the above-mentioned investigations and the 2009 fieldwork reported in this chapter. The detailed dataset also allows a re-evaluation of the location of the recorded LUP material, including the *in situ* scatters, with respect to their stratigraphic position. This permits a reconsideration of the reasons why the scatters in FF6007 were found largely intact, whilst those previously recorded from the area (Garton and Jacobi 2009; Garton 2005; TPA 2004; WA 1995; 2006) were within the plough zone and identified by fieldwalking, leading Roberts (2007) to suggest that preserved *in situ* LUP scatters were unlikely at Farndon Fields.

The terms alluvium and subsoil have often been used interchangeably at Farndon Fields during different investigations (see Roberts 2007). Consequently, in order to model the site-wide stratigraphy it was decided to retain subsoil and alluvium as separate stratigraphic units (shown in Figs. 2.23–2.25). Where the subsoil deposits could be further differentiated into distinct stratigraphic units, such as the coversands in the south or channel sands in the north, this has been undertaken. The area of the resultant deposit model has been constrained by a polygon around the margin of all the sample points and the road scheme to minimize extrapolation of the model results beyond the available data set (see Figs 2.3, 2.24 and 2.25). Deposit modelling was undertaken using Rockworks 15, with 2-D and 3-D stratigraphical maps plotted, using the gridding method of Inverse Distance Weighting. All position data are presented in 12 unit British National Grid format, with the ground surface datum in metres measured against Ordnance Datum Newlyn (OD).

Results of the deposit model

The basal deposits along the length of the route are the HPSG (Fig. 2.24). Their thickness along the route corridor is poorly defined, although previous boreholes indicate that the underlying Triassic Edwalton Member mudstone occurs at *c.* 5–6 m aOD. The top of the gravels is clearly seen to be highest in the south, attaining an altitude of *c.* 12.4 m aOD at FF2063B (Fig. 2.24), prior to a gradual decrease in altitude to the north reaching *c.* 9.6 m aOD at FF6096 (Fig. 2.3). Situated upon this decline between FF6091 and FF6089 there appears to be a clear depression in the gravel topography, demarcated on its north-eastern edge by a gravel ridge in FF6089 and FF6088 (Fig. 2.24). This ridge provides a division

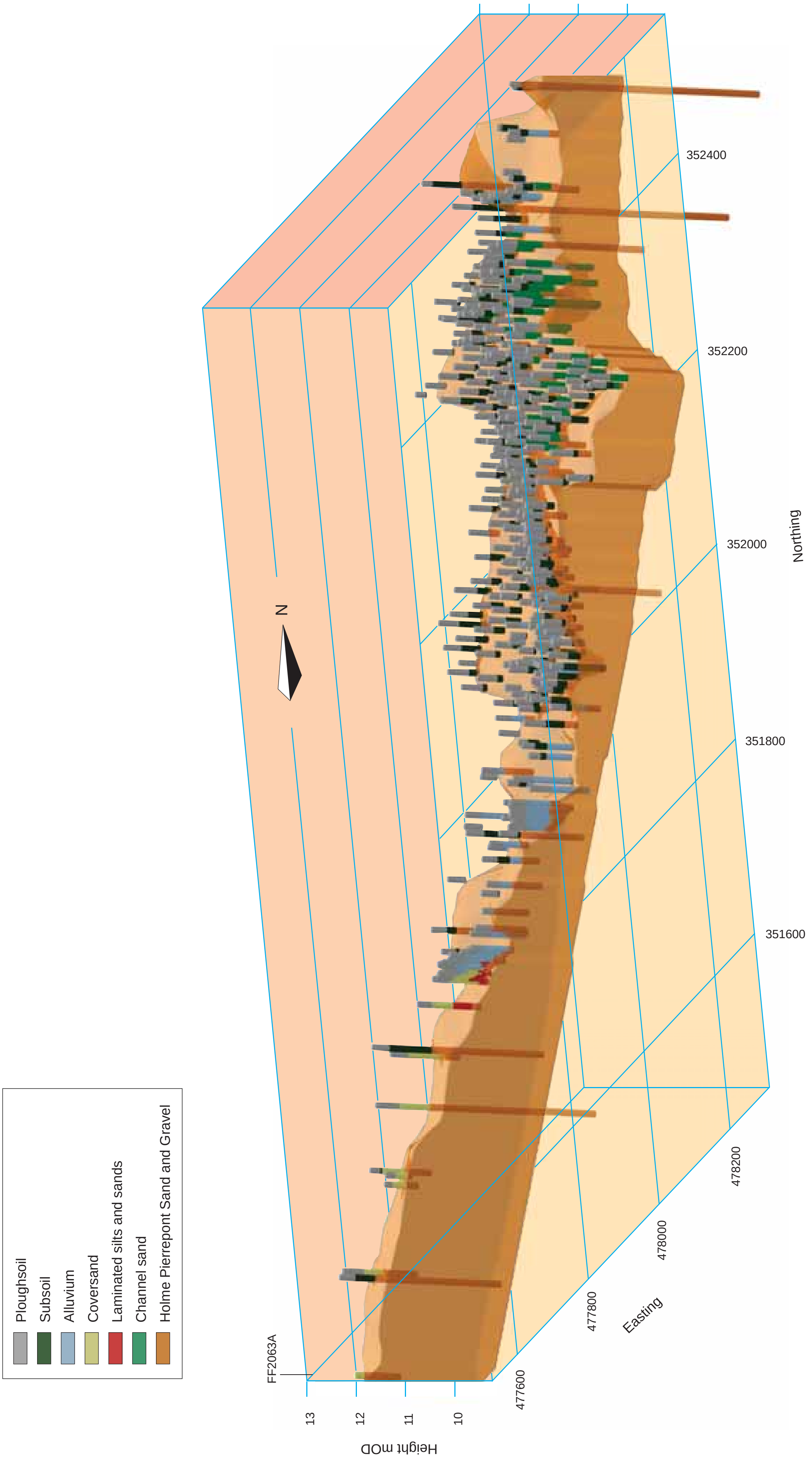


Fig. 2.23 Distribution (and stratigraphy) of the data points used to construct the deposit model

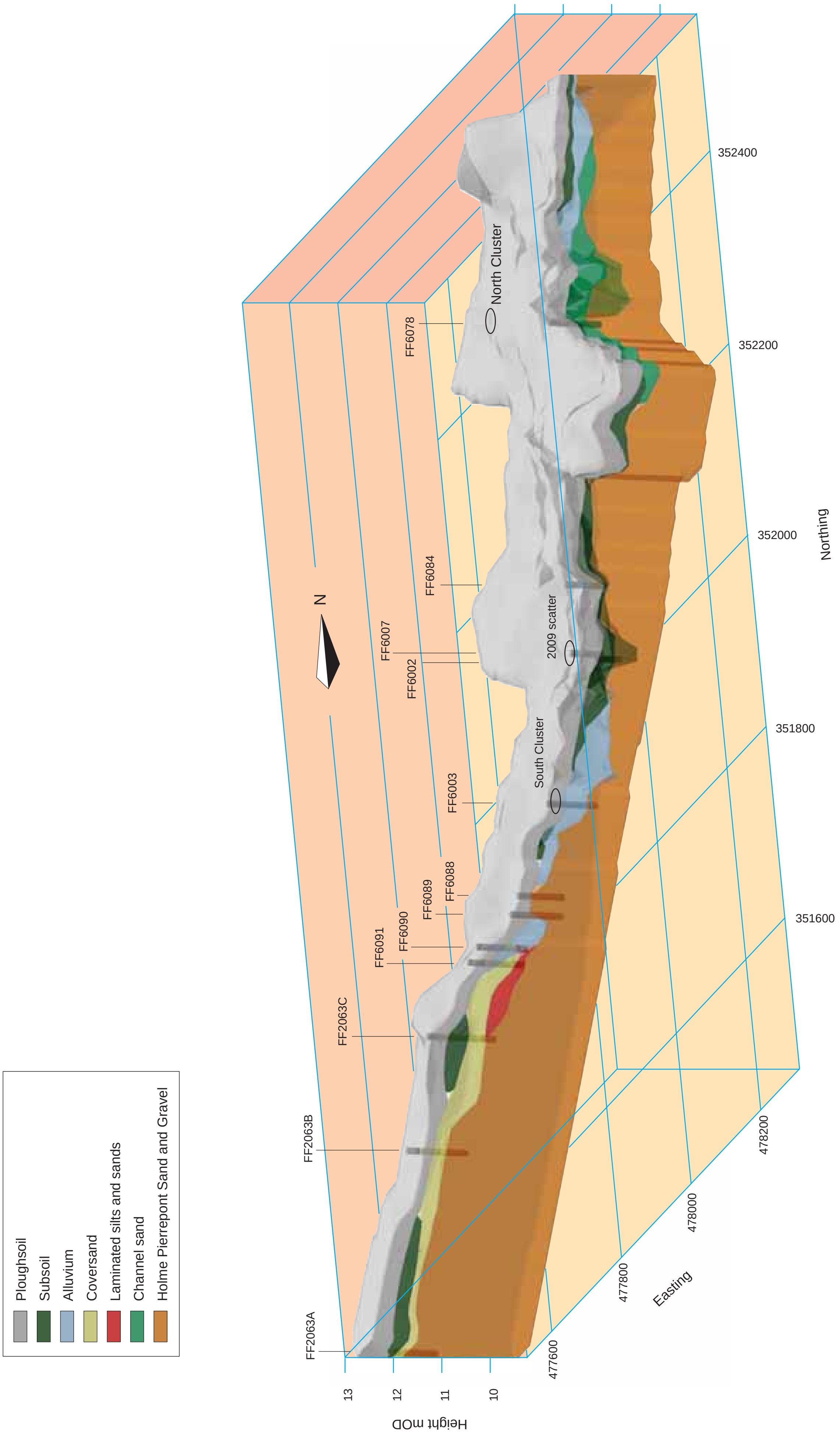


Fig. 2.24 3D representation of deposit model and main stratigraphic units. Main trenches mentioned in the text (and investigated) are shown

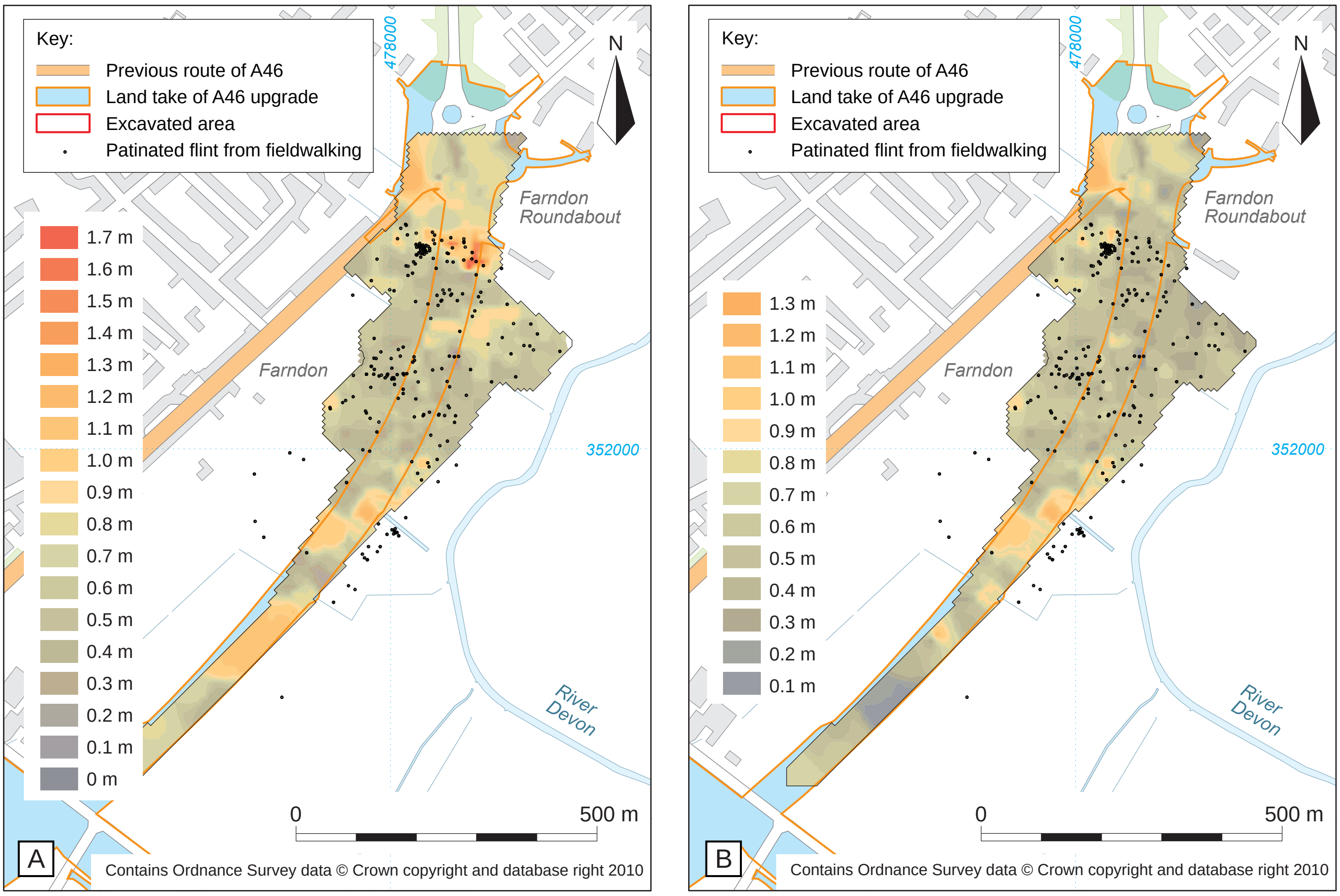


Fig. 2.25 A) Thickness of topsoil and subsoil deposits across the site; B) thickness of topsoil, subsoil and alluvium (excluding coversand and channel sand deposits) across the site, overlain with the distribution of LUP Creswellian flints derived from previous fieldwalking

between the alluvial deposits situated to its south and north. The alluvial deposits to the south of this ridge contained a series of distinct stratigraphic units. The lowermost is a series of laminated sands and silts of Pleistocene age overlying the HPSG in trenches FF6091 (Fig. 2.7) and FF6090Ext (Fig. 2.8) and underlying the coversands, that were themselves found in all trenches and boreholes south of FF6090. It is possible that the laminated sands and silts may be broadly contemporary with the alluvial deposits found beneath the coversands in FF2063A–C. The coversands are overlain (and cut by) a series of alluvial deposits including a clearly defined palaeochannel in FF6090Ext. These are likely to be Late Pleistocene or Holocene in date due to their stratigraphic relationship to the coversands. The gravel ridge in FF6088 is likely to form a boundary between the laminated Pleistocene alluvium, coversand deposits and subsequent Holocene alluvium in the south and the Pleistocene alluvium to the north.

The broad depression in the gravel topography within the centre of the site, which is *c.* 100 m wide and *c.* 150 m long (north–south), is most pronounced between FF6003 and FF6002 (Fig. 2.24), indicating the location of the embayment, where up to 1 m of Pleistocene alluvium and/or subsoil, comprising silts and silty clays, was encountered (Fig. 2.25A and B). The presence of involutions, possibly related to cryoturbation, in the base of some of these trenches clearly indicates a Pleistocene date for deposition. FF6007E and FF6007W, with their accompanying LUP flint scatters, are found on the north eastern edge of the embayment, within an area of intermediate alluvium/subsoil, and do not show any signs of possible periglacial disturbance.

Beyond FF6002 there is a gradual rise in the gravel topography towards the north of the site. In this northern area there are a series of clear depressions that relate to palaeochannel features which intersect areas of elevated gravel topography. To the north of FF6010 (Fig. 2.3) there is an eastward orientated palaeochannel, 20–50 m wide (see Figs. 2.4 and 2.24). There may also be a continuation of the palaeochannel/gravel depression opposite this in the west beyond the modelled area. A second depression is found across the north of the site including a palaeochannel, running NW–SE, identified north of FF6078. These two palaeochannels match the location of thick subsoil areas containing sand-rich deposits identified during the 1995 auger survey (WA 1995), and are categorised as the separate subsoil unit called channel sands. Trenches situated overlying these channel deposits were too dangerous to excavate to any depth due to the unconsolidated nature of the sands, exacerbated by significant groundwater ingress. As a result it was not possible to successfully sample from these trenches, and the HPSG underlying these channels was not always reached. Consequently the deposit model will underestimate the depth of HPSG (and thickness of channel sands) in many of these locations and it is not possible to estimate the direction of drainage of each of the channels. It can be assumed that the northernmost channel was draining eastwards towards the River Devon. On the margins of these channels there is often a higher sand component within the alluvium than those deposits in the centre of the site.

The distribution of the LUP flints across the study area demonstrates that LUP artefacts occur across a range of topographic localities (Garton and Jacobi 2009) and are not simply related to areas of higher natural geology as was originally postulated during the earlier investigation in the north of the site (WA 1995, 16). The North Cluster (Fig. 2.24) is clearly associated with an area of elevated Pleistocene gravels on the margins of a channel area. A broad mixture of flint artefacts was also recorded across the remainder of the same area of raised gravel. However, south of this area the flint distribution is focused predominantly in the lower-lying areas associated with the thicker floodplain deposits. This pattern suggests that the location of LUP activity at Farndon Fields was associated more with proximity to the floodplain and channel edge environs rather than exposed gravel high spots in the landscape. This pattern corresponds with similar LUP distributions found in NW Europe (eg, Bos *et al.* 2013; Deeben 1992). However, the altitudinal variation of the HPSG associated with these flints is less than 2 m. It is also worth noting that the LUP flints are not associated with the surface of the HPSG but instead belong with the overlying alluvial deposits. As a consequence, although the HPSG topography forms the basis for later sediment deposition, the infilling of this template with alluvial deposits, of varying thickness, was the landscape inhabited by the LUP peoples at Farndon Fields.

Lithics

by Phil Harding

Introduction

The stone artefact assemblage from the excavations at Farndon Fields was quantified (Table 2.5) according to raw material type: struck flint, worked quartzite and sandstone. Of these, struck flint was the most prevalent, accounting for 3542 (98%) pieces. This raw material component was represented by at least three distinct chronological phases. Two of these phases were represented by concentrations of relatively well-stratified material from the eastern margins of the alluvium-filled embayment, in Trenches FF6007E and FF6007W, which flanked Trench FF6002. This area produced 58% of the listed totals, excluding material from the micro-debitage samples. Worked flint and other stone was present elsewhere as relatively low density spreads from geoarchaeological test pits and trial trenches along the entire length of the site.

The earlier of the two principal worked flint industries comprised 162 artefacts from a patinated blade industry,

Table 2.5 Farndon Fields: worked stone quantification

Field work stage	Sub-class	1	2	3	4	5	6	7	8	9.	10.	11	12	13	14	15	16	17	18	19
1	Flint	1	2	-	-	1	14	16	-	1	-	3	-	1	1	-	2	2	44	6
1	Quartzite	-	5	15	-	-	3	14	-	-	-	-	-	-	-	-	-	-	37	
1	Sandstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	
2	Flint	1	1	4	1	3	10	16	-	-	-	3	-	1	-	-	-	3	43	4
2	Quartzite	-	-	3	-	-	2	3	-	-	-	-	-	-	-	-	-	-	8	
2	Sandstone	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	
3	Flint	3	3	21	29	34	76	124	3	16	87	9	1		1	2	5	6	420	11
3	Quartzite	-	1	3	-	-		1	-	-	-	-	-	-	-	-	-	-	5	1
3	Flint (FF6007E)	1	-	4	7	14	27	44	2	15	48	-	-	-	-	-	-	-	162	
3	Flint residue 1 mm	-	-	-	-	-	-	-	-	-	846	-	-	-	-	-	-	-	846	
3	Flint residue 2 mm	-	-	-	-	-	-	-	-	-	363	-	-	-	-	-	-	-	363	
3	Flint residue 4 mm	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	78	
3	Flint (FF6007W)	1	-	10	13	15	32	62	1	1	38	4	-	-	1	2	8	6	194	5
3	Flint residue 1 mm	-	-	-	-	-	-	-	-	-	578	-	-	-	-	-	-	-	578	
3	Flint residue 2 mm	-	-	-	-	-	-	-	-	-	673	-	-	-	-	-	-	-	673	
3	Flint residue 4 mm	-	-	-	-	-	-	-	-	-	141	-	-	-	-	-	-	-	141	
	Total	7	12	61	50	67	164	280	6	33	2852	19	1	2	3	4	18	17	3596	27

KEY: 1. Blade/bladelet cores; 2. Flake cores; 3. Core fragments & debitage; 4. Blades/lets; 5. Broken blades/lets; 6. Flakes; 7. Broken flakes; 8. Crested pieces; 9. Core rejuvenation; 10. Micro-debitage; 11. Scrapers; 12. Microlith; 13. Projectile points; 14. Piercers; 15. Burins; 16. Other tools; 17. Miscellaneous retouch; 18. Total worked stone; 19 Burnt unworked

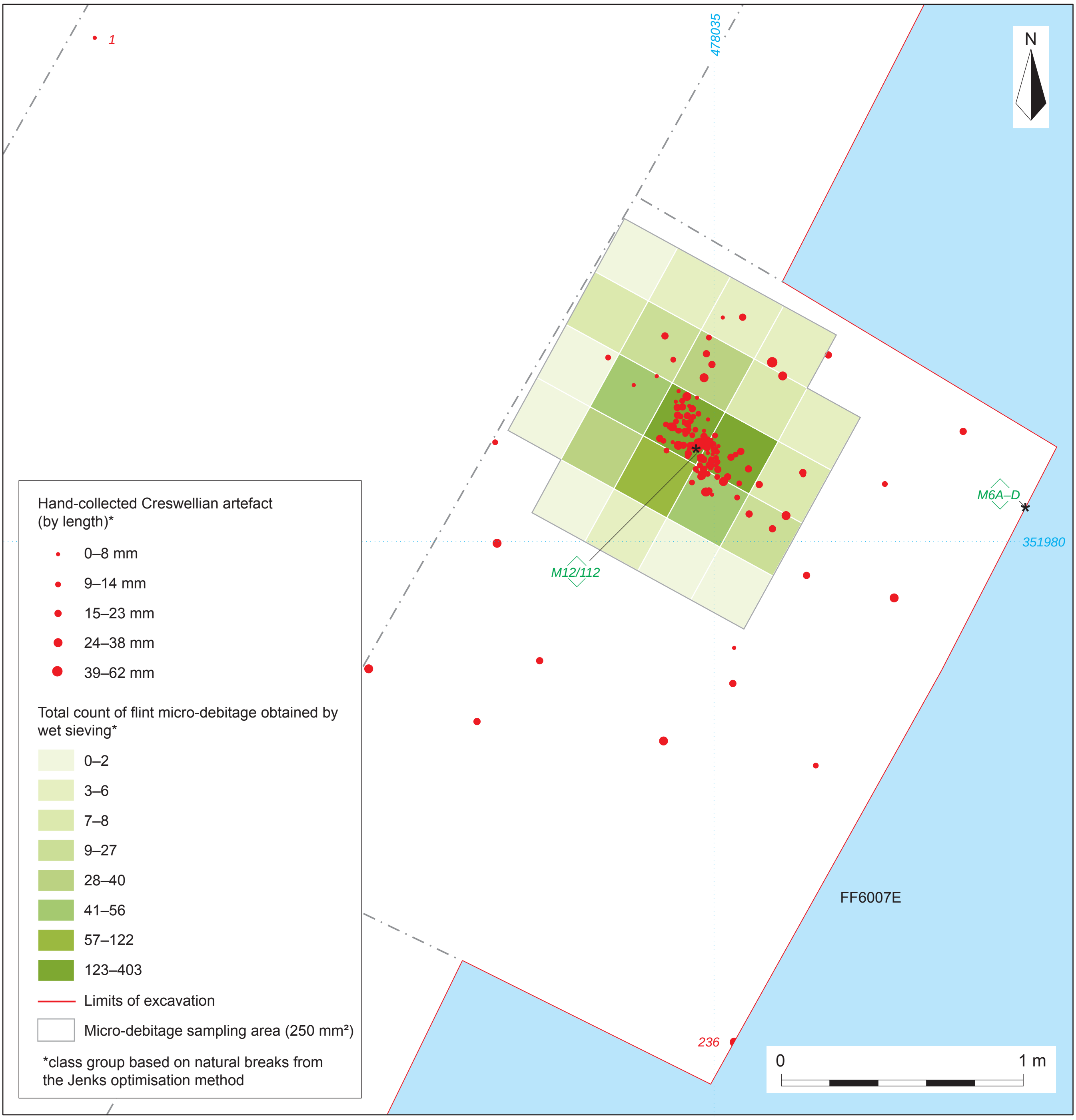


Fig. 2.26 FF6007E distribution of LUP Creswellian flaking scatter and micro-debitage with location of micromorphology samples M12/112 and M6A–D

including 48 chips, that were recorded in three dimensions from FF6007E (Fig. 2.26). This material represents additional LUP (Creswellian) material to that described by Garton and Jacobi (2009). The largest component, 138 pieces, lay in an undisturbed nucleated scatter towards the northern edge of the trench and was sealed within a deposit of orange/brown alluvium, which was directly below the prevailing subsoil. This scatter was surrounded by a diffuse spread of 21 outlying artefacts, including a blade (ON 1, Fig. 2.27.4) found in the alluvium of the section of FF6002 (Fig. 2.26). Some of these peripheral artefacts could be refitted to others in the nucleated cluster. An additional 22 patinated or lightly patinated artefacts were collected from ploughsoil, subsoil and alluvium in test pits and trenches (Fig. 2.3) along the edges of the road corridor.

A more diffuse scatter of stratigraphically later, unpatinated artefacts from a blade industry, with associated micro-debitage, was found in the subsoil and underlying alluvium, primarily in alluvium spit 2, of FF6007W (see below, Fig. 2.36). It was centred on a concentration of material approximately 0.8 m in diameter towards the

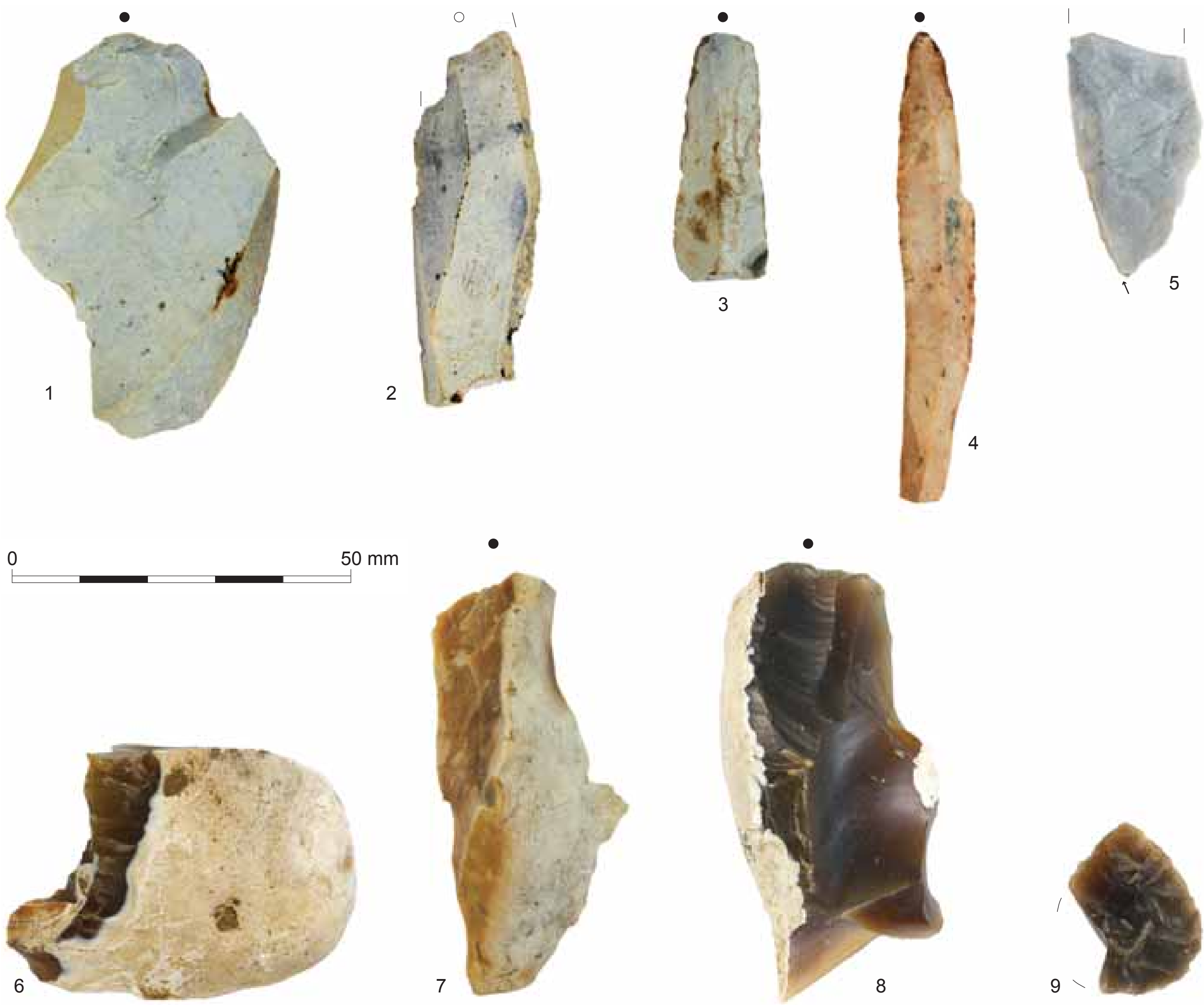


Fig. 2.27 Raw material and condition. Patinated LUP Creswellian material above showing (1) cortex from FF6007E and (2) from FF6013, (3) blade with post-depositional edge damage from FF6013, (4) blade ON 1 from FF6002 with surface staining and (5) burin from southern pressure sensor 1 with, below unpatinated material (6) LUP Federmesser core made from local flint gravel and (7) blade from FF6007W with (8) unpatinated blade from FF6083 and (9) Early Neolithic arrowhead from SM2063

south end of the trench. Artefacts from the scatter were also present in a very low density in the subsoil and upper parts of the alluvium in FF6007E. The assemblage contrasted with the Creswellian assemblage in its technology, raw material and retouched tool component, which included backed pieces and scrapers, attributes that suggest that this industry is also of LUP date, but of Federmesser type.

The final chronological phase was generally poorly stratified but was principally of Neolithic and later prehistoric date, with isolated Late Mesolithic micro-cores. Only a small number of struck pieces from this phase, including a flake from a Neolithic polished axe, were stratified. These pieces were found at the north end of the alluvium-filled embayment (Fig. 2.3); the remainder was derived from plough and subsoil deposits.

The 53 pieces of unstratified worked quartzite included two flake cores, from ploughsoil in FF7011 and FF6007E (Fig. 2.3). Both showed elements of a planned reduction strategy from a prepared striking platform, but were apparently unproductive. There were also 18 flakes, of which an unspecified number were undoubtedly products of prehistoric stone technology. They represent the first record of quartzite exploitation from Farndon Fields. Two other possible cores and 29 pieces listed as 'debitage' were found in trenches at the north end of the project area, where a thin spread of Neolithic worked flints was identified; however, these pieces appear to have been manufactured or crushed on an anvil. They were also relatively standardised in weight, ranging from 17 to 67 g (mean 21 g), and were probably derived from mechanically crushed aggregates used to fill land drains.

A fragment of a well-used sandstone whetstone, with an elliptical cross section, faceted edges and a flattened base was found in ploughsoil in FF6027 towards the north end of the site. It is technically undated but thought most likely to be of Neolithic or later prehistoric date.

Worked Flint

Phase 1: Late Upper Palaeolithic (Creswellian)

Condition and raw material

The 138 plotted artefacts in the nucleated cluster in FF6007E (Fig. 2.26) were in mint condition with all surfaces covered by a well-developed white, less frequently blue, surface patina. This is a noticeably recurring feature of the LUP (Creswellian) industry at the site, although variations do occur; within the scatter (Fig. 2.30) two refitting portions of a broken flake (ON 5016 and ON 5017), found only 80 mm apart, and conjoining artefacts (ON 312 and ON 346) were contrastingly of light and dark blue patina. A blade (ON 1 (Fig. 2.27.4)), which was found protruding from the alluvium of the section in Trench FF6002, had acquired a red-brown surface stain over the patina. This surface staining was similar to that covering the unpatinated Federmesser assemblage in that trench. Differential levels of patination were also noted on artefacts from the extant surface collections (WA 1993; 1995; TPA 2004; 2005; Garton and Jacobi 2009) and included some diagnostic material that is totally unpatinated (Garton and Jacobi 2009).

The Late Upper Palaeolithic Creswellian scatter was apparently detached from one nodule with a thin, grey weathered cortex that was present on both debitage and micro-debitage. Raw material with this distinctive cortex was recorded not only from the alluvium in Trench FF6007E (ON 228 (Fig. 2.27.1)) but also on a naturally backed blade from FF6013 (Fig. 2.27.2), 150 m north of FF6007E, on an unstratified core fragment from the area near FF6054 (Fig. 2.3) and on cores described by Garton and Jacobi (2009, illus 5.4 and 6.6). Post-depositional edge chipping on these cores and on other patinated objects (Fig. 2.27.3) that had been subjected to extensive reworking in ploughsoil shows the flint to be of good quality with an even dark colour, impaired infrequently by incipient thermal fractures. Flint does not occur naturally in the Trent Valley, although glacially derived nodules of variable quality are present in the gravels. The lack of fluvial impact indicates that this raw material was not from the gravel but, judging by consistent cortex, was probably obtained from a single source on or close to the natural Chalk. The nearest outcrop lies approximately 60 km to the east.

Distribution

The artefacts were centred on a densely packed elliptical nucleus of patinated debitage at the north end of the trench, of which 48 pieces were micro-debitage (chips <10 mm). Additional micro-debitage was extracted from 4 mm, 2 mm and 1 mm sieved residue in an area centred on the cluster to maximise assemblage recovery and confirm its definition. Silica 'dust' (Newcomer and Sieveking 1980) of the type produced by flint working is likely to have passed through the mesh. Micro-debitage is most readily susceptible to post-depositional reworking, but is an essential component to identify *in situ* flaking. Newcomer and Sieveking (1980) demonstrated that quantities of micro-debitage increased in technologies where soft hammers were used to undertake detailed platform preparation.

The elliptical nucleus of the scatter, as recorded in three dimensions, was aligned NW–SE and measured *c.* 0.5 m long and 0.25 m wide in alluvium spit 2 (Fig. 2.28A), from which 62 flints over 10 mm were recorded from 0.5 m grid squares. Alluvium spit 3 (Fig. 2.28B) produced 39 plotted artefacts that were more nucleated. The grid size was reduced to 0.25 m squares in this and subsequent spits to provide more detailed distribution of micro-debitage, which showed the debris scatter to be much larger. The nucleus lay at the apex of a spread that fanned out northwards for a distance of *c.* 0.9 m, the outer extent only traceable in the distribution of micro-debitage. Similar densely packed patterns of flaking debris with outlying micro-debitage have been recreated experimentally (Newcomer and Sieveking 1980; Barton and Bergman 1982) and recorded by excavation (Harding 1990; Austin and Roberts 1999). They result when the knapper is seated on the ground, dropping debris between the legs, and indicate that the assemblage is almost certainly *in situ* and formed part of one short-term event.

The distribution of patinated material (Figs 2.3 and 2.26) beyond the nucleated scatter thinned to the south with only one broken blade (ON 236) plotted beyond an arc 1.5 m from the central concentration. To the west, a blade (ON 1) was plotted in the alluvium of the section in FF6002, a flake was found in the ploughsoil of adjacent test pit FF6059 and a blade in the subsoil of FF6002NW, 12 m north of the main cluster. One flake was also recovered from machined upcast in FF6002. These outlying artefacts indicate that the spread of worked flints may extend for a considerable distance beyond the nucleus.

The vertical distribution of flint artefacts recorded from alluvium spit 2 (Fig. 2.28A), spit 3 (Fig. 2.28B) and spit 4 (Fig. 2.28C), shown with 47 pieces of micro-debitage from the underlying sand lens, demonstrated clear evidence of bioturbation through the sediment profile. This could be seen by artefact size and the presence of intrusive material. Small quantities of unpatinated micro-debitage, similar to that from the stratigraphically higher Federmesser industry in FF6007W, were present in alluvium spit 2. A fragment of brick and an iron nail were also recovered from the 4 mm residue, with two glass fragments and four pieces of brick in the 2 mm residue from this spit. Ploughshare scars were clearly visible in alluvium spit 1 while spit 2 lay at the base of plough-scar penetration. These traces of the plough zone were sufficiently visible at that depth to indicate that they had not penetrated the main cluster of flaking debris. The density of plotted flints decreased in alluvium spit

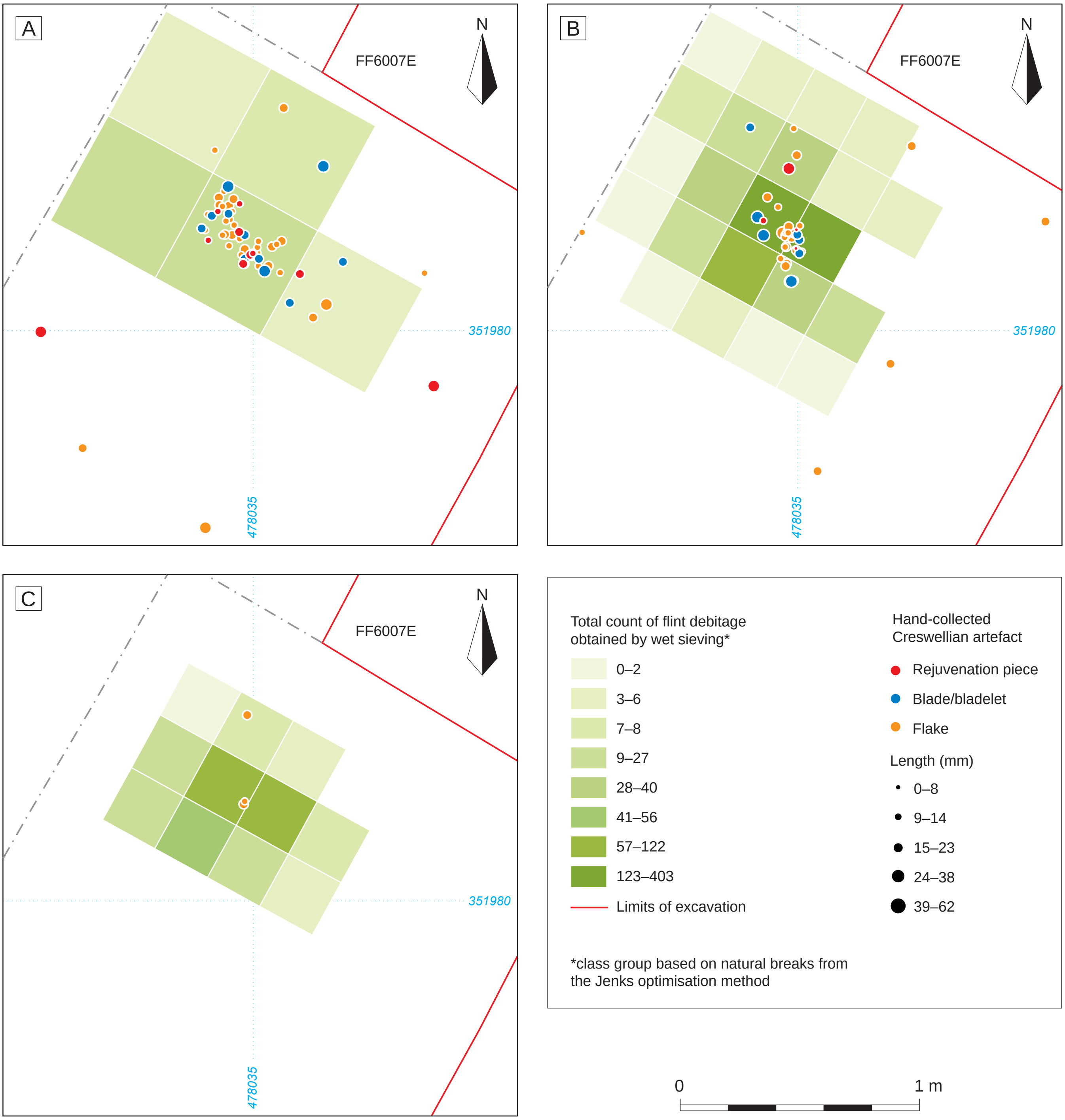


Fig. 2.28 FF6007E distribution of LUP Creswellian scatter by artefact type shown with micro-debitage density in A) alluvium spit 2, B) alluvium spit 3 and C) alluvium spit 4 and sand lens

3, although quantities of patinated micro-debitage were at their greatest here, totalling 690 pieces (Table 2.6) from 22 0.25 m squares. Single pieces of blue china, coal/coke and glass were found in the 4 mm residue with glass in 1 mm residue. Quantities of all material reduced dramatically in the underlying alluvium spit 4 and its basal sand lens. This was especially notable in the frequency of recorded flints and decreased quantities of micro-debitage from the 4 mm residue, indicating the greater susceptibility of small micro-debitage to vertical movement than the larger fraction. The presence of intrusive material throughout the sediment profile is similar to observations recorded in TP727 in the North Cluster (WA 1995).

Micro-debitage

A total of 1,287 pieces of micro-debitage (Table 2.6), shown by mesh size and spit, was collected from the wet sieved residue of 64 samples from alluvium spits 2, 3, 4 and from the basal sand lens in the area of the patinated artefact scatter. The 4 mm component can be supplemented by 48 chips (Table 2.5) that were plotted

Table 2.6 Farndon Fields: micro-debitage totals by mesh size and spit from LUP Creswellian scatter in FF6007E

FF6007E			
Total	1,287	%	
1 mm	846	66	
2 mm	363	28	
4 mm	78	6	
Alluvium spit 2 (20 units)	No. Total 204	%	Mean
1 mm	142	69.6	7.1
2 mm	50	24.5	2.5
4 mm	12	5.8	0.6
Alluvium spit 3 (22 units)	No. Total 690	%	Mean
1 mm	418	60.5	19
2 mm	216	31.3	9.8
4 mm	56	8.1	2.5
Alluvium spit 3 (11 units)	No. Total 647	%	Mean
1 mm	385	59.5	35
2 mm	206	31.8	18.7
4 mm	56	8.6	5
Alluvium spit 4 (11 units)	No. Total 346		
1 mm	248	71.7	22.5
2 mm	89	25.7	8.1
4 mm	9	2.6	0.8
Sand lens (11units)	No. Total 47		
1 mm	38	80.8	3.4
2 mm	8	17.0	0.7
4 mm	1	2.1	0.1

from alluvium spits 2, 3 and 4 during the excavation. Micro-debitage from the alluvium spit 3 is tabulated from the total area processed and also, for comparison, from 11 sample units processed from alluvium spit 4 and the sand lens.

Chips with cortex identical to that recorded on larger pieces of debitage confirmed a source from the same nodule. The micro-debitage was characterised (Newcomer and Karlin 1987) by lamellar abrasion and trimming chips from the flaking face of the core, occasional ovoid faceting pieces and miscellaneous broken pieces from around the point of percussion. No retouch chips were noted. The distribution of micro-debitage (Fig. 2.28A–C) included higher concentrations on the south-west side. This may have resulted from micro-debitage being moved down-slope by fluvial activity as the embayment was inundated or possibly by the knapper leaving the abandoned spread, however, there is no corresponding drift in the spread of plotted artefacts. An alternative possibility is that the biased micro-debitage spread was dictated by the core being held in the left hand (Newcomer and Sieveking's (1980) Freehand) as it was dressed, encouraging more chips on that side. Similar bias can be argued in the plotted artefact scatter from Unit 4b at Boxgrove, West Sussex (Austin and Roberts 1999, figs 237 (inset) and 238) and, as a reversed pattern, in an experiment created by Newcomer, a left-handed knapper, to examine the development of debris fields (Newcomer and Sieveking 1980, fig. 7). The issue of handedness has been addressed on a number of occasions (Steele and Uomini 2005) and it is possible that this well-preserved debitage scatter reflects additional evidence of this naturally controlled condition.

The vertical distribution of material shows that plotted artefacts were marginally more plentiful in alluvium spit 2, thinning proportionally thereafter. Micro-debitage on the other hand dominated in alluvium spit 3 before also decreasing in frequency in underlying spits. The winnowing effect of artefacts through the sediment profile, relative to size, is visible in the micro-debitage alone. The 1 mm fraction was consistently the most numerous component in all spits, accounting for 69.6% of the total in alluvium spit 2, however, despite reduced quantities of chips in successive spits, its quota increased to 81% in the basal sand lens, most notably at the expense of the 4 mm fraction.

Debitage (cores and blanks)

The nucleated scatter contained approximately 33 mainly small unbroken pieces over 10 mm long, plus 23 blade/lets and broken blade/lets derived from detailed platform preparation and core trimming during blank production from a blade core. The broken material contained 35 proximal and 31 distal ends, a small number of which could be refitted. The detailed distribution of this material (Fig. 2.29) shows that the blade and bladelet component formed a tight nucleus within the cluster, with other forms of debitage being more widely dispersed.

No trace of the core was found; nevertheless the debitage contained sufficient detail, as demonstrated by refitting artefacts, to reconstruct its probable form and technology (Fig. 2.30) using a 'template' core illustrated by Garton and Jacobi (2009, illus. 6.7). The notable absence of primary flakes and crested pieces from across the project area, and from Trench 6007E in particular, suggests that the core may have been brought to the site in a prepared form, although Garton and Jacobi (2009, 31) did not necessarily rule out core preparation on site. Irrespective of this (re)crested pieces recorded by Garton and Jacobi (2009, illus. 7) do demonstrate that this technique was practiced at Farndon Fields as a technique of core rejuvenation.

By-products of platform preparation, particularly faceting (ON 5117 and 5128), were plentiful in Trench

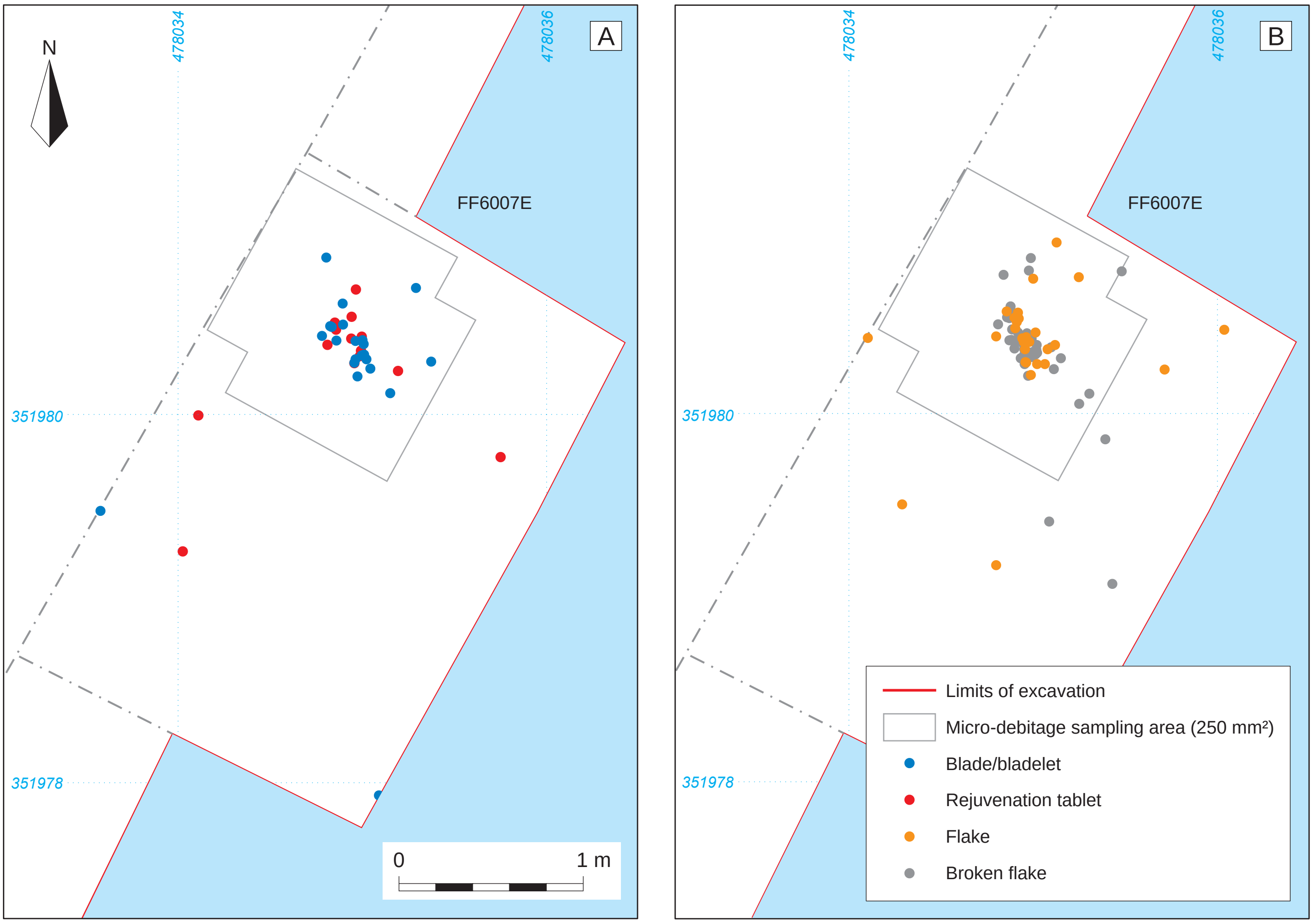


Fig. 2.29 FF6007E distribution of A) blades, bladelets and rejuvenation tablets and B) flakes and broken flakes from LUP Creswellian scatter in FF6007E

6007E, notably 15 plotted pieces quantified as 'rejuvenation tablets' that were mostly small faceting chips and flakes. Additional faceting chips were recorded from the 4 mm sieved residue, including two from a single 0.25 m sub-square at the edge of the main cluster. The extensive use of faceting was confirmed by 23 flakes in the cluster with faceted butts and by two refitting rejuvenation tablets (ON 312 and ON 346) (Fig. 2.30) with negative flake scars preserved on their dorsal surfaces. The relict core edge of these two tablets prescribed a radius of approximately 22 mm at the time of their removal, thereby making it possible to reconstruct the arc of the striking platform as being similar to Garton and Jacobi's (2009) 'template' core.

Details of the flaking face and its probable length were provided by the longest artefact in the cluster, a broken conjoining naturally backed blade (ON 4 and ON 5033) (Fig. 2.30), which measured 56 mm long and was removed from a single platform core. A narrow blade (ON 1 (Fig. 2.27.4)), 73 mm long, was found in the section of FF6002 (Fig. 2.26) and may also have been related to the debitage cluster in FF6007E. Garton and Jacobi (2009) demonstrated that cores from Farndon Fields were generally constructed with a single main striking platform, and an opposed striking platform most frequently employed as a feature of rejuvenation or core correction. Negative flake scar patterns recorded on 113 artefacts from the assemblage have confirmed this trend; only one piece was noted with evidence of opposed platform flaking.

These technological features, core morphology and size correspond favourably not only with cores found at Farndon Fields (Garton and Jacobi 2009, illus. 5 and 6) but also further afield, with other Creswellian sites including Gough's Cave, Cheddar (Jacobi 2004). The fate of the core from the cluster is uncertain; it may have been retained for further blank production or thrown away beyond the limits of the excavation.

Flaking technology associated with LUP assemblages includes a number of distinctive characteristics, most notably production of blades produced with butts *en éperon* (Cheynier 1956; Barton 1990), of which nine examples were recorded at Farndon Fields by Garton and Jacobi (2009) providing vital indicators of age. This technique is considered to be a diagnostic characteristic of Late Magdalenian blade production in Britain (Jacobi 2004) and necessitates precise faceting to isolate a spur at the point of percussion. It results in the production of relatively large quantities of faceting flakes and chips of the type found at Farndon Fields. Similar platform flakes,

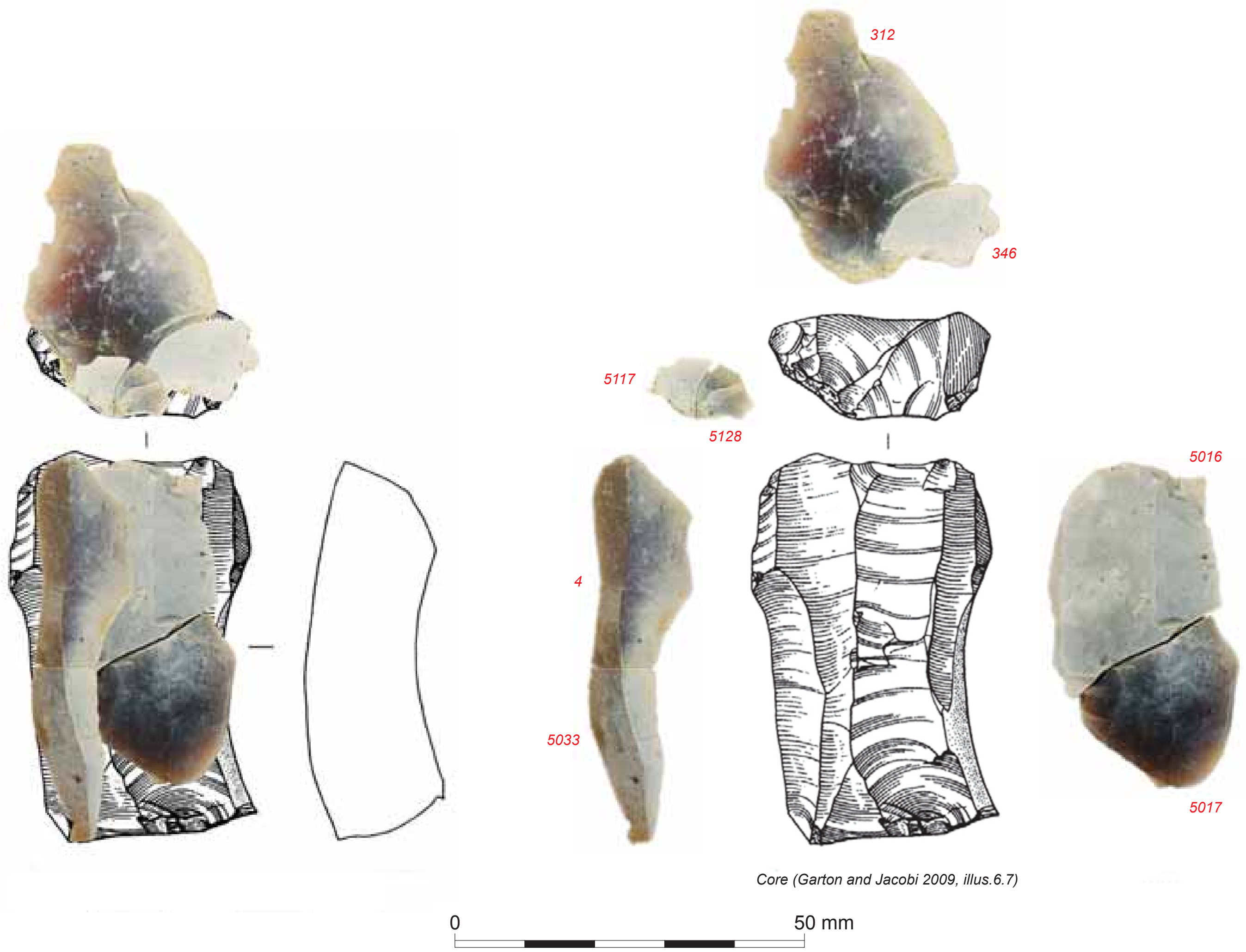


Fig. 2.30 FF6007E conjoining LUP artefacts from LUP Creswellian scatter FF6007E reconstructed as elements of core technology 'refitted' to LUP core 'template'(Garton and Jacobi 2009, illus. 6.7).

found in association with butts *en éperon*, are known from Kents Cavern, Devon, Gough's Cave, Somerset, where some of these refit, and Robin Hood's Cave, Derbyshire (Barton *et al.* 2003; Jacobi 2004). The combination also features in blade production at contemporary sites on mainland Europe including Schweskau, north Germany (Breest and Veil 1991) and Pincevent, France (Karlin 1972).

Results of analysed butt type for flakes and blades from the Creswellian knapping scatter are shown in Table 2.7, classified according to the type list adopted by Jacobi (2004) where butts *en éperon* were included with faceted butts. Comparable results are shown for blades from previous work at Farndon Fields (Garton and Jacobi 2009, table 4), with other contemporary British sites and with contrasting data from LUP Federmesser assemblages. All complete specimens from the scatter were included to maximise the sample available. The results show undoubted overall similarities in the relative frequency of butt type to other Creswellian industries. However, Garton and Jacobi (2009) classified 10% of all flakes and blades at Farndon Fields with butts *en éperon*. In contrast they were relatively scarce from the FF6007E scatter; only two candidates were included and neither was unequivocally of this type. This may relate to the fact that the assemblage comprised debitage derived from blade manufacture, including by-products of *en éperon* preparation, rather than from the blades themselves. Linear butts accounted for much lower figures in the recent sample, while 'others' were much higher. This may be partly explained by the latter containing 25 pieces with butts recorded as 'crushed', a result of percussion very close to the striking platform edge.

Platform faceting was used with platform abrasion, as a precursor to blade removal; as confirmed by micro-debitage. Flaking was undertaken using soft hammer percussion, possibly antler or soft stone; flake and blade butts consistently showing well-defined, lipped, ventral edges (Fig. 2.31.1 and 2) typical of this mode (Ohnuma and Bergman 1982).

The 39 unbroken pieces of core trimming waste, comprising both flakes and blades, from the nucleus of the scatter were analysed metrically. The results (Fig. 2.32) indicated that flakes predominated with only seven

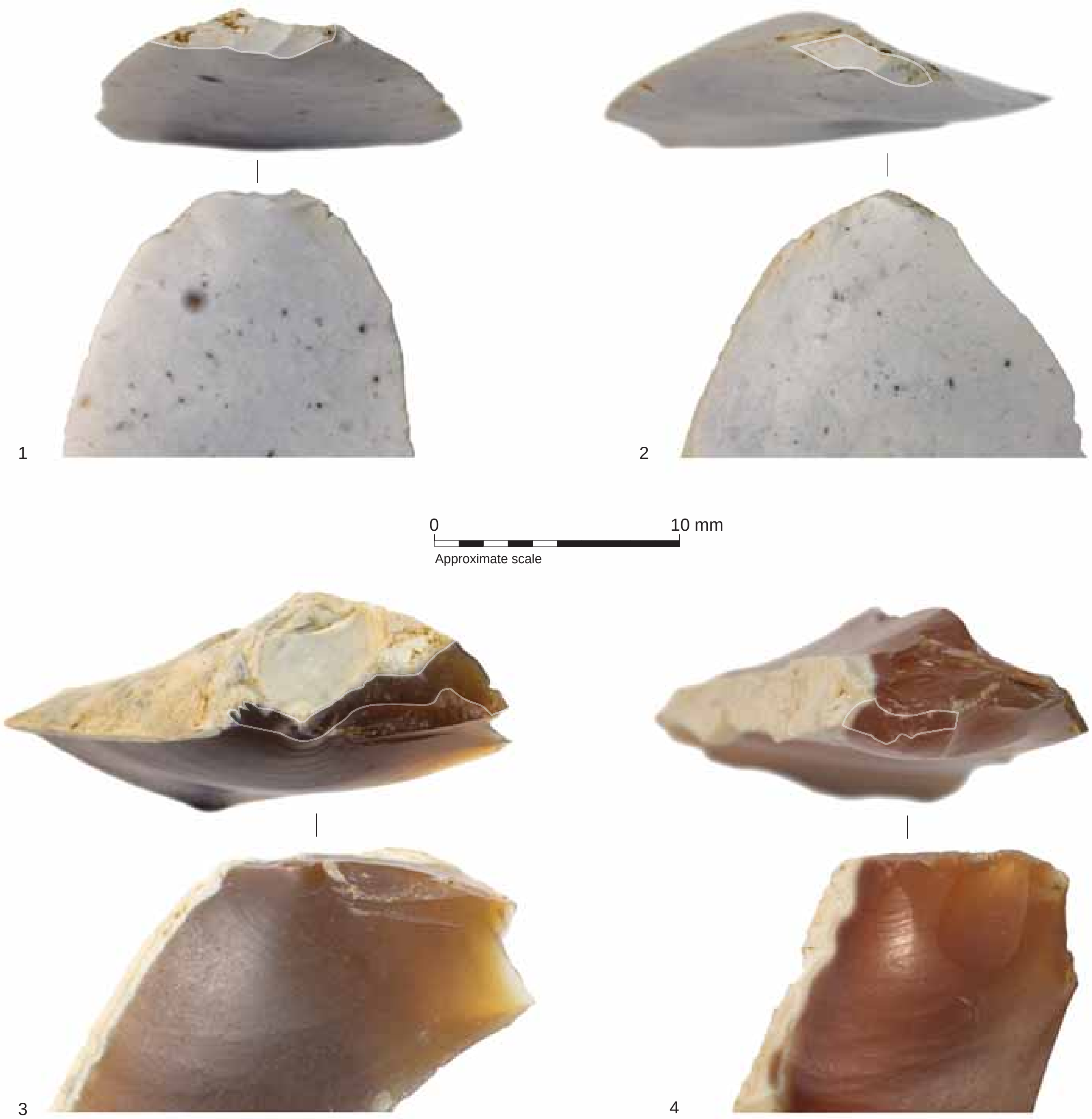


Fig. 2.31 Photographs showing variations in hammer mode and platform preparation between (1 and 2) LUP Creswellian blades from FF6007E and (3 and 4) LUP Federmesser artefacts from FF6007W

of blade dimension and that all but six pieces measured less than 20 mm long. Comparable measurements of 17 retouched tools, comprising end scrapers, burins and points collected by Garton and Jacobi (2009) have been superimposed on these results from the Trench FF6007E scatter. It is clear that only two pieces from the extant collections, a truncated broken blade, 24 mm long, and an end scraper, represented by the distal end of a broken implement, were of similar dimensions to those of trimming debitage recorded from the Trench 6007E patinated scatter. The preferred tool blanks comprised blades, ranging from 35 to 65 mm long. Blades of this size were undoubtedly removed from the core represented in the patinated scatter; a pair of conjoining pieces (ON 4 and ON 5033) forming a blade 57 mm long fell within this bracket and the plotted lengths of retouched material. In addition two other conjoining fragments (ON 5016 and ON 5017) which measured 46 mm long and within the acceptable blank size (Figs 2.32–33), were found together close to the speculated position of the seated knapper and may represent deliberate caching of tool blanks, as demonstrated at the French Late Magdalenian

Table 2.7 Farndon Fields: butt types from LUP Creswellian scatter in FF6007E and LUP Federmesser scatter in FF6007W with comparable data from similar British Late Upper Palaeolithic assemblages

Site	*Cortical %*	*Plain/ punctiform %*	*Linear %*	*Dihed faceted %*	*Faceted (incl en éperon) %*	*Total pieces (number)*	*Not preserved (number)*	*Not determined (number)*
Creswellian								
Gough's Cave*	-	53.4	2.3	4.6	39.6	217	40	20
Kents Cavern*	-	37.2	2.3	2.3	58.1	43	5	1
Robin Hood's Cave*	-	37	3.7	11.1	48	27	4	5
Farndon **	11	30	22	9	28	100	-	-
Farndon FF6007E	1.2	50	8.9	8.9	30.7	78	25	-
Bradgate Park[1]	-	21	23	12	43	99	-	10
Federmesser								
Rookery Farm***	2.1	68.9	-	2.0	26.9	-	-	-
Hengistbury****	0.6	85.4	-	2.4	11.5	-	-	-
Brockhill****	0.9	84.5	5.4	1.8	7.3	-	-	-
Titchwell****	0.6	82.8	5.3	2.0	9.3	-	-	-
Nea Farm*****	-	83.8	5.9	7.2	2.9	236	-	-
Farndon FF6007W1	21.1	54	15.5	3.3	5.5	90	16	-

KEY: *Jacobi 2004; **Garton and Jacobi 2009; [1]Cooper pers. comm.; *** Conneller 2009; ****Barton 1992; *****Barton 2009

site of Pincevent (Leroi-Gourhan and Brézillon 1972, figs 63–4).

Refits

Ten groups of artefacts, including eight broken flakes, two broken blades, two unbroken dorsal to ventral faceting flakes and a broken faceting chip, comprising 22 pieces (13.9%) of the 158 artefacts over 10 mm, could be conjoined in FF6007E (Fig. 2.33). Of these pieces, three, including the possible broken tool blank (Figs 2.30 and 2.34.1 and 1a), could be conjoined by dorsal to ventral surfaces. Seven flakes were snapped by flexion breaks, two by Siret (accidents of debitage) fractures and the probable abandoned tool blank had broken along a thermal flaw. These refitting pieces represent most of the *chaîne opératoire*, including faceting/platform rejuvenation, core trimming and blank production.

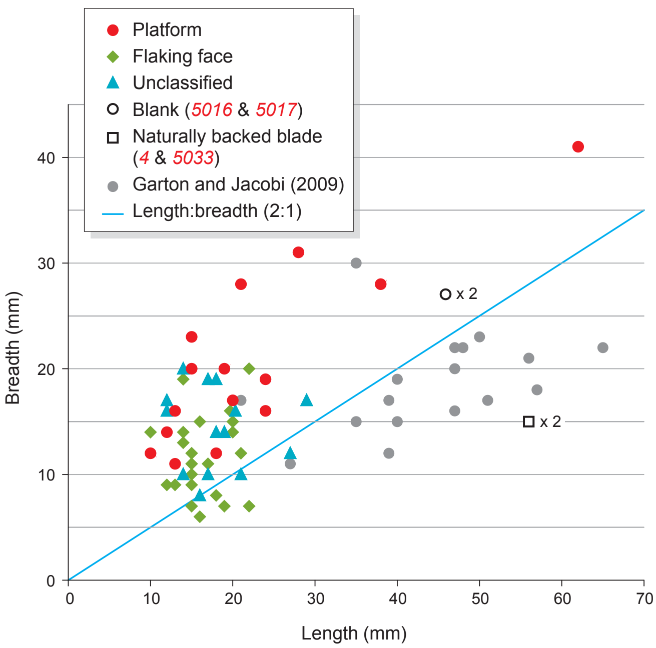


Fig. 2.32 Length and breadth analysis of trimming waste from LUP Creswellian scatter classed according to the origin on the core, with comparable data of retouched artefacts from Farndon Fields illustrated by Garton and Jacobi (2009)

These conjoining artefacts have helped define the extent, as well as the completeness, of the scatter. From their horizontal distribution it is also possible to infer that other material may lie beyond the limits of the excavation. Most notably the proximal end (ON 5033) of a naturally backed blade, which lay at the edge of the debris nucleus, conjoined to its distal end (ON 4), which was found 1.66 m away to the south-west. Similarly the largest refitting flake (ON 312), a rejuvenation tablet, which was of sufficient mass that it might have been tossed away following its removal, was found 0.80 m to the south-west of its companion rejuvenation tablet (ON 346), which lay in the main cluster. Elsewhere, a flake (ON 5111) was found a similar distance away to the north-east. These isolated, widely dispersed conjoining pieces were aligned perpendicular to the main axis of the scatter. All other refitting groups were found within the body of the scatter, where mean distance between refits measured 0.38 m. This included the two smallest pieces, plotted faceting chips (ON 5117 and ON 5128) that were broken by a Siret fracture and which lay only 70 mm apart where they had apparently been allowed to drop. This distribution of material is reminiscent of that recorded in the scatter of flaking debris recovered

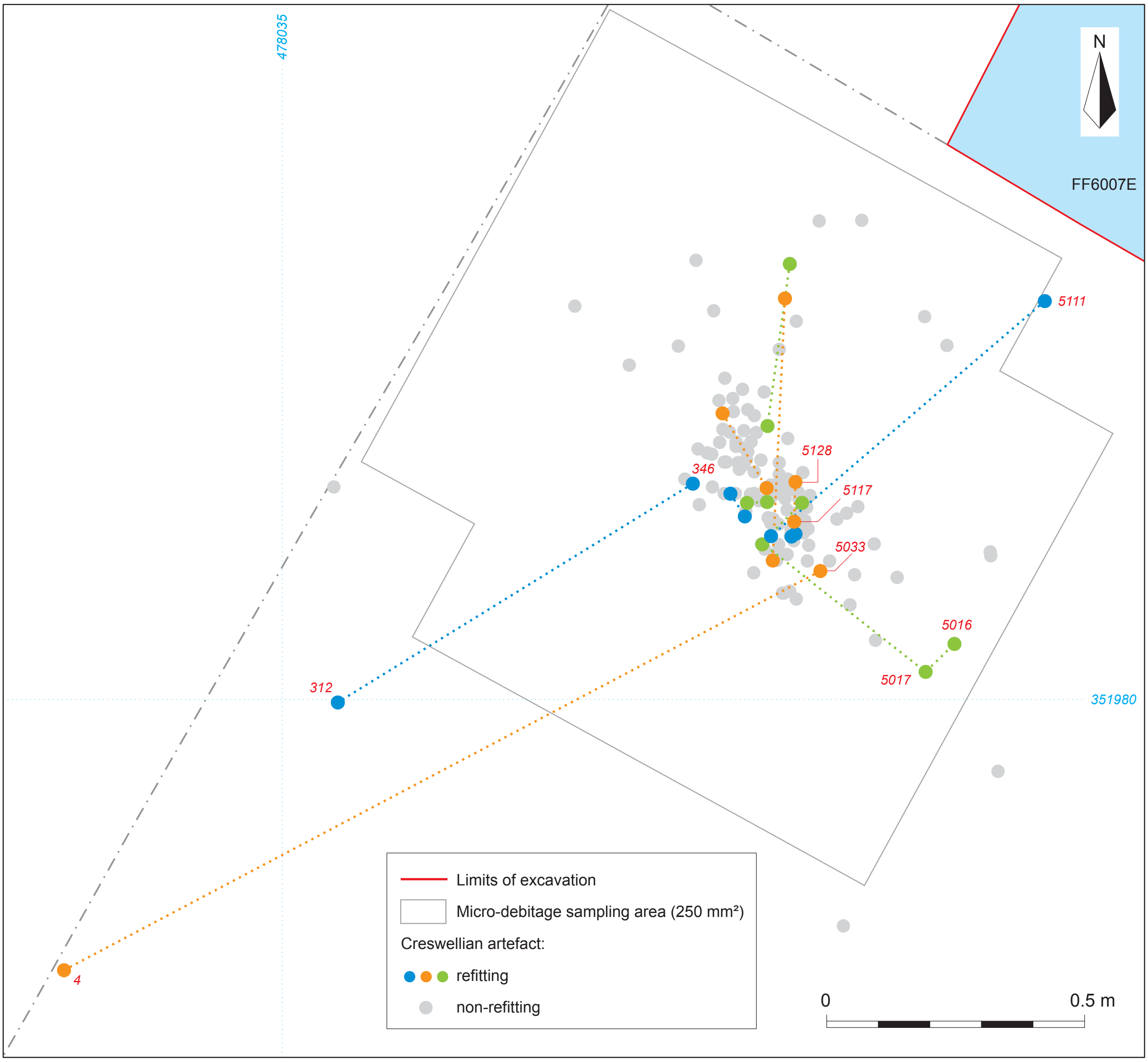


Fig. 2.33 FF6007E refitting artefacts from LUP Creswellian scatter in FF6007E superimposed on the artefact distribution

from Unit 4b at Boxgrove, Sussex, where the maximum distance separating refitting flakes was approximately 0.50 m (Austin and Roberts 1999, fig. 241a–c). The general trend of these conjoining artefacts lay on an axis that was parallel with the main concentration of debris. This alignment of refitted pieces within the scatter is reminiscent of an *in situ* conjoining debitage cluster which fanned out from the position of the knapper at the Early Neolithic long barrow ditch Amesbury 42, Wiltshire (Harding 1990). The detailed plan of the debitage cluster, the concentration of micro-debitage and alignment of refitting artefacts at Farndon Fields all point to the projected position of the knapper as being located at the south end of the scatter, with the outlying pieces representing items that may have been cast aside.

A reassembled broken flake, broken blade and a probable broken tool blank, conjoined by dorsal-ventral surfaces, represent the only evidence of a 'reduction sequence' (Fig. 2.34.1 and 1a). These pieces contain traces of a thermal fracture which may account for their removal and abandonment on the site and for the cessation of knapping at that time. The relative scarcity of multiple refitting reduction sequences, together with the limited size of individual flakes in the cluster, argues that elements of the flaking process are clearly missing; the most notable absentees being tool blanks which were probably taken away. The quantity of micro-debitage demonstrates the care and attention lavished on platform preparation. Such detail to technique probably ensured that successful blade output was maximised.

Replication of the scatter

An attempt was made to replicate the form, distribution and density of the Farndon Fields cluster using as close

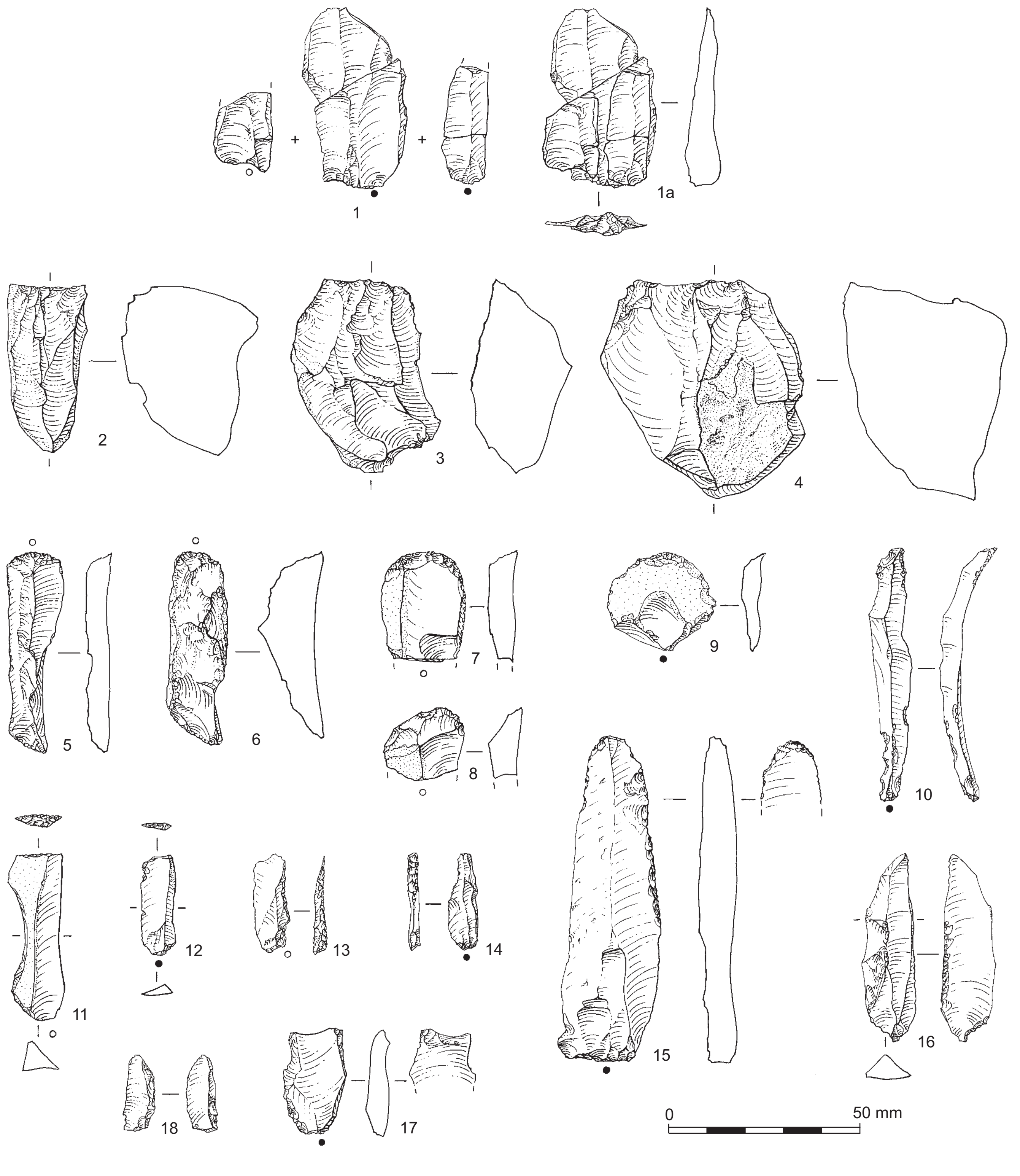


Fig. 2.34 Artefacts from FF6007E LUP Creswellian and FF6007W LUP Federmesser scatters showing: LUP Creswellian 1) refitting blades from LUP Creswellian scatter individually, including ON 5016 and 5017 and 1a) as reassembled flaking sequence: LUP Federmesser 2–4) cores; 5–9) end scrapers; 10) piercer/bec; 11–12) truncated blades; 13–14) backed blades; 15–18) retouched blades

an approximation of the technology as possible. Flaking scatters produced by knappers seated on the ground have been replicated on a number of occasions (Newcomer and Sieveking 1980; Barton and Bergman 1982). These usually result in tightly packed debitage clusters, which fan out beyond a narrowly defined concentration retained by the legs of the knapper. The primary aim of the Farndon Fields replication experiment was to examine how closely a freshly made scatter would correlate with the size of the excavated cluster, and

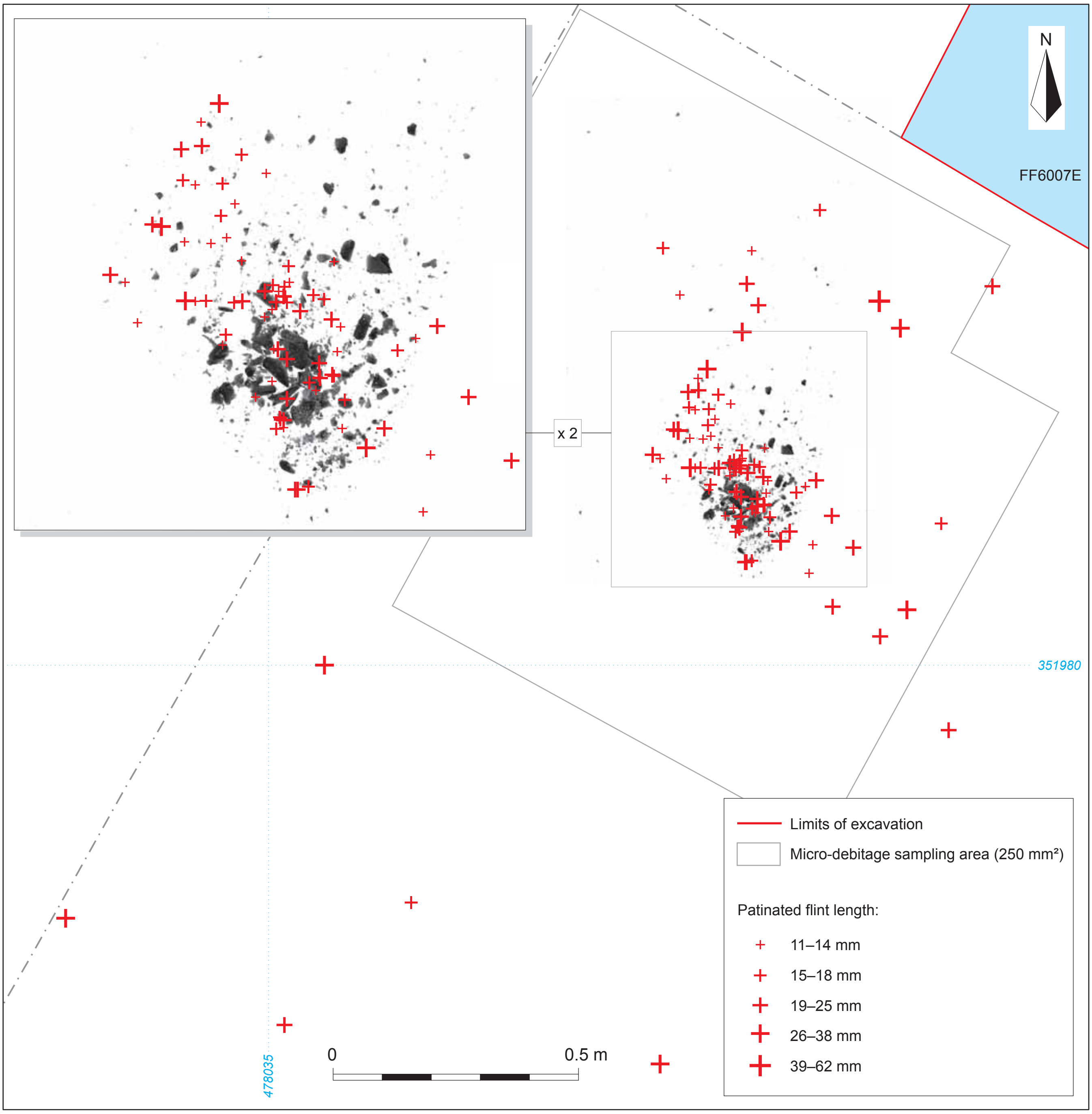


Fig. 2.35 Photograph of experimental debitage spread superimposed on distribution of LUP Creswellian scatter from FF6007E, with [inset] detail of main cluster

might help test whether any horizontal movement had occurred. A single platform, pre-prepared blade core, of approximately similar dimensions to that envisaged for Farndon Fields, was therefore flaked by a knapper seated on the ground using soft hammer percussion. Platform faceting and abrasion were also employed as features of preparation. Sixteen blades were removed from the core and stored separately, as prospective tool blanks, leaving only the trimming and preparation waste in the scatter.

The two debitage spreads, when superimposed (Fig. 2.35), showed marked similarities in form. Both original and new scatters were centred on relatively dense nuclei of material which included proportionally more of the larger pieces. Debitage fanned out across an arc extending approximately 0.4 m from the apex of the scatter. The excavated cluster was slightly more elongated in plan than the experimental example, which was noticeably nucleated with a bias of material towards the left side, corresponding with the hand in which the core was held. Both clusters became more diffuse at approximately 0.65 m from the apex with only isolated fragments beyond this point. These broad divisions were present in the distribution of micro-debitage in the excavated scatter.

Irrespective of variations in detail, as for example whether the knees of the knapper are extended, as here, or flexed (Barton 1992, fig. 3.11), which allows a broader spread of debris, the results of the replication have provided additional confirmation that the Creswellian scatter has undergone only limited disturbance since its formation. Variations in horizontal distribution can be attributed to anthropogenic causes at the time of its creation, possibly the knapper rising from the ground, or resulting from post-depositional spreading and deflation of the debitage pile through natural causes. Micro-debitage is also likely to have undergone secondary movement, although the results of excavation suggest that this was unlikely to have exceeded 0.25 m, the size of the excavation grid.

Other patinated pieces from the site

Seventeen additional artefacts (Fig. 2.3), with five others less certainly, were recovered from ploughsoil, subsoil and alluvium in test pits, trenches and stripped areas along the flanks of the easement. These pieces included five broken blades, three blade fragments and seven flakes, two of them by-products of faceting, an end scraper and a burin. This material from the road construction was frequently characterised by post-depositional edge damage (Fig. 2.27.3), but otherwise shared all the visible attributes, patina, extensive use of platform faceting, blank production, mode and raw material selection with material from the *in situ* scatter and with artefacts described by Garton and Jacobi (2009), which also included retouched tools, principally end scrapers made on blades.

The distribution of patinated artefacts from across the site correlated strongly with results from former surface collection projects undertaken in 1991, 1993, 1994 and 2005 (WA 1993; 1995; TPA 2005; Garton and Jacobi 2009). Apart from one undiagnostic artefact from the extreme north end of the road line, which lay beyond the areas of previous survey, the greatest density (Fig. 2.3) coincided with a known spread of material in the west part of Area 1000 (WA 1995). These artefacts, of which approximately 50% were from the alluvium, were most prevalent in an area that was more extensively trenched to assess the likely impact of a cross-carriageway culvert.

Artefact density thinned southwards towards Field 373A (N and S) (TPA 2005), but produced a lightly patinated, but nevertheless well-made, end scraper on a naturally backed blade. This artefact, from FF6093, lay within Field 373A (N) and 120m west of Garton and Jacobi's (2009) South Cluster. It joins another end scraper, made on a blade, which was found by fieldwalking (TPA 2005).

A burin made on a distal truncation (Fig. 2.27.5) was found from the area of the pressure sensor 1 (Fig. 2.3), at the edge of the alluvium embayment and immediately west of the excavated Creswellian knapping scatter. There were also three heavily patinated, unstratified artefacts recorded from SM2063 (Fig. 2.1). All showed soft hammer attributes and included a flake, with a dihedral butt that was probably a by-product of platform faceting and a fragment of a crested piece. This group of material also included a well-made, opposed platform, blade core with faceted and abraded striking platforms and overlying mottled, light blue patina. These pieces supplement a thin spread of four patinated pieces of possible LUP date from Field 370 (TPA 2005) and stress the possible extension of Late Upper Palaeolithic activity to the south in deposits capped by cover sands.

Phase 2: Late Upper Palaeolithic (Federmesser)

Condition and distribution

Worked flints and associated micro-debitage were principally concentrated within a diffuse linear band, up to 1.5 m wide, aligned approximately north–south across FF6007W (Fig. 2.36). Some artefacts from the subsoil showed traces of post-depositional edge damage typical of material that has been disturbed by ploughing; however, flints from the alluvium were in mint condition, with a slight red-brown surface stain.

Density of all artefact types, including micro-debitage, thickened to the south in a well-defined oval concentration covering approximately 1.3 m north–south by 1.12 m east–west. Refitting sequences of worked flints (Fig. 2.37) were limited within the assemblage suggesting extensive horizontal dispersal of artefacts. Nevertheless, limited structure remained within the relationship of artefacts and micro-debitage (Fig. 2.37) to suggest that elements of specific site activities do survive. Two flakes, of a distinctive raw material, were found in alluvium spit 2 in the concentration. They were associated with micro-debitage that included 14 pieces of similar flint, in an area 0.5–0.75 m in diameter, suggesting that they lay close to their point of manufacture. The flakes refitted to core ON 694, which was found approximately 2 m to the south of the debitage scatter (Fig. 2.37). More generally a concentration of 17 naturally backed chips was found from the same general area, of which two broken fragments refitted. Breakage may have resulted from a number of factors including debitage fracture, trampling or post-depositional sediment pressure. Elsewhere isolated but nevertheless adjacent occurrences of probable retouch chips were also sufficiently consistent to speculate that they represent the possible locations where tool manufacture or resharpening had taken place. One such concentration was superimposed on the main artefact scatter at the south end of the trench, possibly related to a hearth, with another ill-defined arc of chips in three adjacent 0.25 m squares located around the periphery of the burnt flint scatter that formed the putative hearth on the western edge of FF6007W (Fig. 2.37).

Blades and broken blades, frequently naturally backed pieces, were more prevalent in the northern and western parts of the main concentration than elsewhere, with other retouched forms more common in the western part of the scatter (Fig. 2.38A and B). Five scrapers, in contrast, were located towards the eastern part of the trench (Fig. 2.38B), where debitage was scarce, with only two examples near the west edge of the trench. Artefact density, including micro-debitage, thinned eastwards to

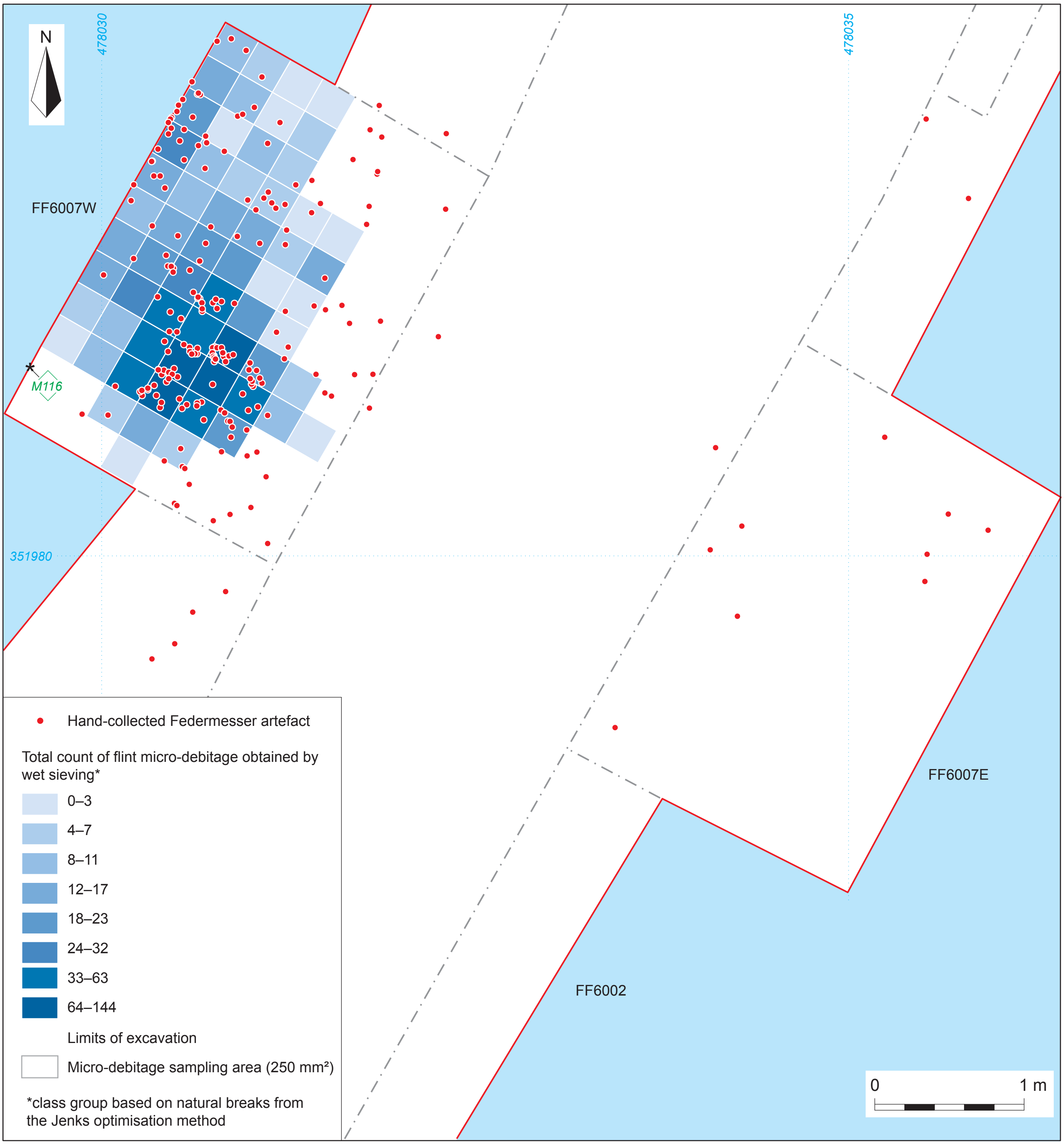


Fig. 2.36 Distribution of LUP Federmesser scatter in FF6007E and W superimposed on distribution of micro-debitage from alluvium spit 2

the western margins of FF6007E, possibly reflecting the eastern extent of this particular phase of human activity.

The vertical distribution of material in FF6007W extended from the base of subsoil spits 1 and 2, where plough scars ran obliquely across the trench, into spits 1 and 2 of the underlying alluvium. The extent of this vertical movement could be demonstrated by one notable example of refitting. Flake ON 330, which had developed a light blue patina, was found from subsoil spit 1, where it was recorded only by grid square; nevertheless it conjoined with its unpatinated distal fragment (ON 8087), which was plotted in alluvium spit 2, from which it was calculated that the two fragments had moved approximately 0.20 m apart horizontally and 0.10 m vertically. Records of artefact alignment and orientation also documented individual pieces that were found on edge, with others aligned vertically down, possibly influenced by later desiccation of the sediment. Micro-debitage samples also included numerous small fragments of glass that confirm bioturbation had occurred.

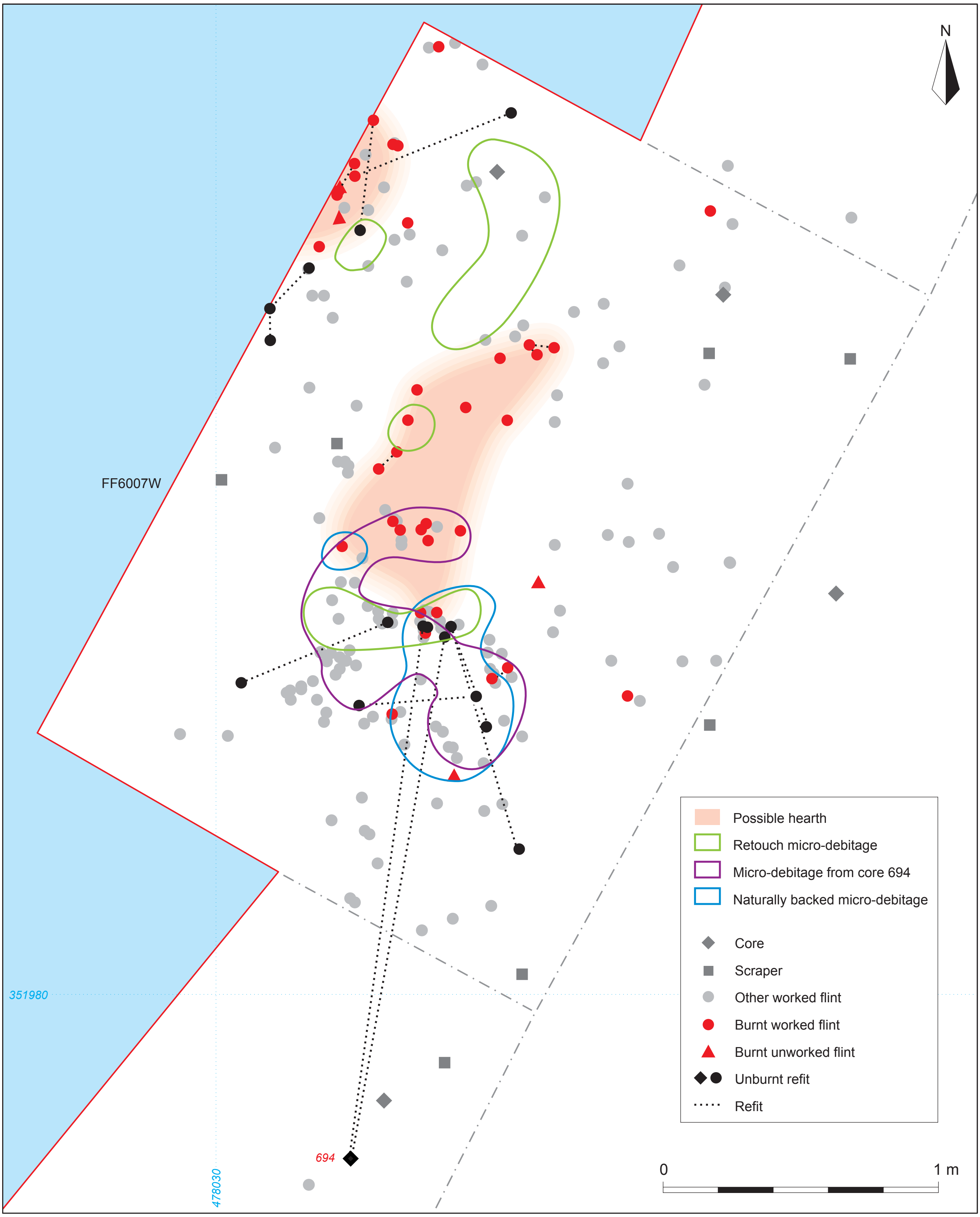


Fig. 2.37 Distribution of LUP Federmesser scatter FF6007W showing suggested site organisation and activity areas with possible areas of hearth activity

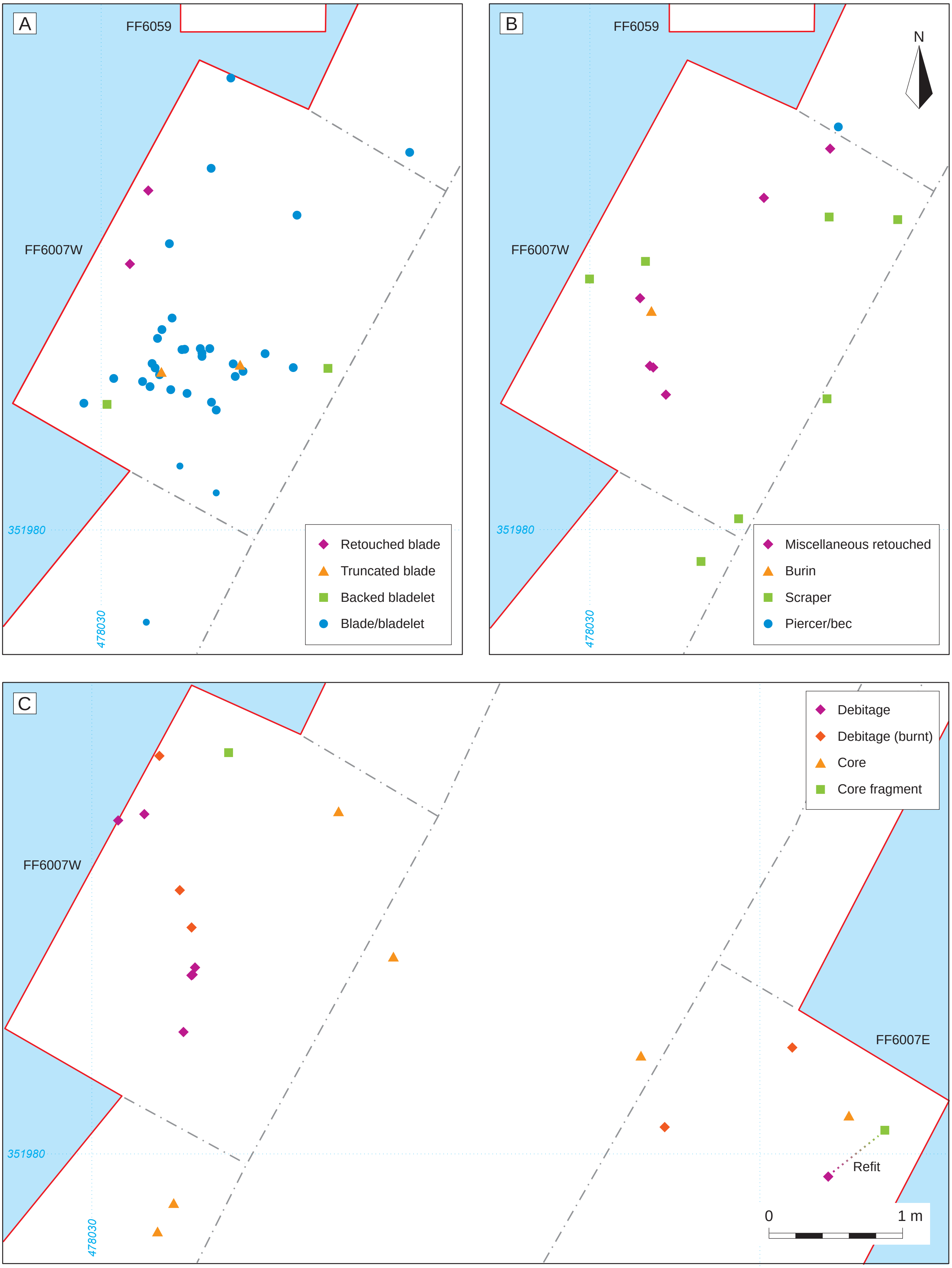


Fig. 2.38 FF6007W LUP Federmesser scatter showing A) and B) distribution plots of retouched tools by type and C) all core material extending into FF6007E including debitage fragments

Burnt material

Approximately 40 pieces of burnt flint, comprising five pieces of unworked material weighing 41 g, and 35 pieces of burnt struck flint, were catalogued from FF6007W. These totals (Fig. 2.37) contained 14 pieces that could be refitted into pairs or small groups and constituted the most common component of refitting material. They were most prevalent in alluvium spits 1 and 2, in an area extending approximately 0.75 m along the north-western edge of FF6007W, and were frequently found in close proximity (mean 64 mm), indicating that they had broken *in situ* and had not been subjected to major post-depositional movement. This area also produced 13 other pieces of burnt flint, a total that was enhanced by small fragments and thermal pot-lids from sieved residue.

A separate and less concentrated, but nevertheless complete, arc of burnt worked flint, approximately 1 m across, was recorded from alluvium spit 1 in the central part of the trench and immediately north of a dense artefact cluster at the south end of the excavated area. Concentrations of burnt flints are significant indicators of potential hearth sites (Barton 1992; Harding 2000; Lewis 2011), around which various domestic, social and industrial activities occurred. No charcoal or sediment rubefied by heat or stone hearth settings were found to suggest whether the burnt material was associated with hearths or raked-out hearth debris; it is not possible to demonstrate whether trace quantities of burnt mineral, identified in sample M116, were derived from this source or were intrusive.

Raw material

Heavily abraded, subrounded cobbles of river gravel flint, weighing from 32 g to 136 g (mean 70 g) and covered with white chalky to thin, heavily abraded cortex formed the primary source of raw material (Fig. 2.27.6 and 7). The flint was dark and of relatively good quality with a slight post-depositional red-brown stain. Most nodules contained incipient thermal fractures, probably a result of periglacial weathering, which impaired the reliability of the knapping quality and restricted potential blade output from individual cores.

Debitage (cores and blanks)

Nine unpatinated cores and broken core fragments were distributed around the eastern periphery of the debitage scatter in FF6007W and across the north part of FF6007E (Fig. 2.38C) where the Creswellian assemblage was most concentrated. Two burnt fragments of debitage, found in alluvium spit 2 of FF6007E, have also been included in the distribution, although it is not certain that they formed part of the Federmesser activity. The technology and raw material types of the unburnt, unpatinated pieces contrasts strongly with the Creswellian material, but were identical to the unpatinated material in FF6007W. The spread of cores was undoubtedly from the same horizon varying by no more than 60 mm in altitude, dipping north–south across both trenches, corresponding to the shallow gradient of the alluvium-filled embayment to the south.

All cores shared a consistent reduction strategy (Fig. 2.34.2–4) based on blade manufacture, but lacked some of the refinements otherwise present in the Creswellian technology. Striking platforms were prepared by the removal of a flake to allow production of elongated flakes and blades down the axis of the flaking face. Two cores were manufactured with opposed striking platforms (Fig. 2.34.3), although it seems likely that these were supplementary platforms for core rejuvenation. One other core was rotated to create fresh flaking surfaces and prolong blank production. Platform faceting, in marked contrast to the Creswellian assemblage, was almost entirely absent and platform rejuvenation similarly rare. Cresting was employed sparingly both as a feature of core preparation and renovation of the flaking face. Core backs were unmodified. One core was burnt. Relict flake scar length on surviving flaking faces ranged from 52 mm to 12 mm (mean 29 mm), a range that was mirrored in the length of flakes and blades.

Single, or in some cases multiple, incipient cones of percussion, resulting from miss-hits, were present on the striking platforms of five cores. Striking platform edges were irregular or poorly trimmed, indicating that platform abrasion was of reduced importance as a means of strengthening the edge of the core before blank removal.

All parts of a characteristic blade *chaîne opératoire* were present, from core preparation to tool manufacture. The blades were more diverse than those in the Creswellian scatter, which were specifically by-products of core trimming. Blades from the Federmesser industry, 80% of which were removed from cores with a single striking platform, ranged from 12 mm to 114 mm long (mean 34.6 mm) and from 4 mm to 43 mm (mean 13 mm wide). The longer pieces fell well within the length of blanks selected for retouched tools as described by Garton and Jacobi (2009) for Creswellian retouched material; however, there were marked differences which confirmed that they were not from the same industry. Plain or punctiform butts were most prevalent, with faceted butts only rarely present and lipped butts absent. This pattern (Table 2.7) is comparable with published results from Federmesser assemblages elsewhere. Blank production was almost certainly undertaken using direct percussion, probably using stone hammers (Fig. 2.31.3 and 4), although mode was markedly more indistinct with a considerable proportion listed as 'indeterminate'. In addition, remnant cortex was more common, 70% of all analysed blades showing at least 25% cortical cover, representing by-products of less well-prepared cores.

Micro-debitage

A total of 61 samples from 0.25 m square excavation units were processed from alluvium spit 2 (Fig. 2.36), which contained the greatest density of plotted artefacts in FF6007W (Table 2.8). These samples covered 63.5% of the trench and produced 1274 pieces of micro-debitage. Thirteen samples were also processed from locations across the underlying alluvium spit 3. This included a block of eight below the densest concentration of artefacts in alluvium spit 2, to assess vertical post-

Table 2.8 Farndon Fields: micro-debitage totals by mesh size and spit from LUP Federmesser scatter in FF6007W

FF6007W			
Alluvium spit 2 (61 units)	No Total 1,274	%	Mean
1 mm	523	41	8.6
2 mm	610	48	10
4 mm	141	11	2.3
Alluvium spit 2 (8 units)	No. Total 443	%	Mean
1 mm	144	33	18
2 mm	244	55	30.5
4 mm	55	12	6.9
Alluvium spit 3 (8 units)	No. Total 118	%	Mean
1 mm	52	44	6.5
2 mm	60	51	7.5
4 mm	6	5	0.7
Alluvium spit 3 (5 units)	No. Total 7	%	Mean
1 mm	3	43	0.6
2 mm	3	43	0.6
4 mm	1	14	0.2

depositional taphonomy, and five other samples spaced across the trench, of which four produced only minimal totals. The exhaustive sieving strategy also provided an opportunity to look for microliths or microburins, if the assemblage in FF6007W dated to the Mesolithic period; none were found.

The greatest density of micro-debitage in FF6007W was also contained within alluvium spit 2. A concentration coincided with the south edge of the irregular, oval artefact scatter at the southern end of the trench, where values of over 120 pieces were recorded from individual 0.25 m grid squares. Elsewhere a low density satellite concentration, where values exceeded 20 pieces per 0.25 m grid square, extended from the west edge of the trench coincidental with the area of the putative hearth (Figs 2.36 and 2.37). These concentrations of material comprised predominantly debitage chips, derived from platform preparation of the flaking face, indicating blank production as the principal activity. In contrast to the patinated Creswellian assemblage no micro-debitage from platform faceting was observed.

The greatest quantities of micro-debitage from the sampled area of alluvium spit 2 were collected from 2 mm and 1 mm residues. The contribution of 2 mm residue was more marked in the eight collection units that lay in the epicentre of the main concentration where 55% of the chips were recovered. The density of micro-debitage in these eight collection units decreased markedly in the underlying alluvium spit 3, where only 118 pieces were recovered. Chips from the 2 mm fraction were again most plentiful, but this material, together with material from the 4 mm fraction, decreased proportionally, with 1 mm micro-debitage showing proportional increases. Vertical migration of artefacts through the sediment profile therefore favoured the smallest pieces, which were more susceptible to earthworm activity, root action and cracking of the sediment in dry conditions, all borne out by soil micromorphological analyses (see above).

Unpatinated micro-debitage was scarce on the east side of the sieved area in FF6007W; however, the horizon of activity could be confirmed in the north-east corner of FF6007E. Ten unpatinated chips from the 4 mm and 2 mm residue were recovered from alluvium spit 2 during processing of the LUP Creswellian patinated scatter.

Retouched tools

Nineteen pieces of retouched material, plus the tip of a broken backed point/microlith from sieved residue, were recovered from FF6007W. The collection contained a range of tools which could be classified, pieces rejected in manufacture or use and the remainder with undiagnostic miscellaneous retouch. Significantly, although only a small number of pieces are represented, the retouched material is comparable with collections from other contemporary sites across Britain (Fig. 2.39). Most categories of retouched material showed some patterning in their distribution (Fig. 2.38A and B) which may relate to possible areas of specific site use. None were found within the central arc of burnt fragments, however retouched blades were found towards the west side of the excavation, while a probable burin, truncated and backed blades coincided with the main debris scatter at the south end of the trench. Scrapers generally favoured the east side of the excavation.

End scrapers

The seven scrapers were the most common tool form from the trench. They included two examples made on blades (Fig. 2.34.5–6) (ON 329, ON 362), one of which was crudely crested, two (ON 454, ON 584) that were snapped (Fig. 2.34.7–8), possibly during or post manufacture, and one (Fig. 2.34.9) (ON 703) made on a partially cortical flake. One other end scraper (ON 186), also made on a flake, was found in the section of FF6002, in spit 2 of the alluvium, with the last (ON 692) from the step of FF6002SW. Cortical remnants were a recurring feature of this small assemblage; only one scraper was free of cortex, whereas only one of the Creswellian scrapers illustrated by Garton and Jacobi (2009) showed any cortex. Both implements made on blades were manufactured with the scraping edge at the proximal end with an obliquely retouched distal end. A similar multiple use tool was noted previously on a patinated end scraper from Farndon Fields (Garton and Jacobi 2009, illus. 10.29), which was also formed at the proximal end with the distal tip retouched to a point.

Fig. 2.39 Retouched tool assemblage composition from LUP Federmesser scatter FF6007W at Farndon Fields compared with other comparable contemporary assemblages (Barton 2009; Barton 1992; Conneller and Ellis 2007)

The distribution of the scrapers (Fig. 2.38B) is marked; two (ON 703 and ON 584) were recovered from the same 1 m grid square at the west side of the trench, the former from a plough scar in the alluvium spit 3. The remainder were concentrated along the eastern margins of the trench, where the general artefact density was otherwise lower. This strongly biased distribution may hint that this area may have functioned specifically as a hide processing zone.

Bec/piercer

A bec/piercer (Fig. 2.34.10) (ON 445) (Jacobi 2004) was found with a broken or damaged retouched tip formed at the distal end of a blade. The implement was made on a long, slender, lightly crested blade with a plunging distal end. It was found at the north edge of the trench in an area coincident with the scrapers.

Burins

A burnt fragment of a probable burin (ON 532), broken in resharpening, was found within the main artefact concentration at the south end of the trench.

Truncated blades

Two blades (Fig. 2.34.11–12) (ON 8082, ON 8085) with straight, direct truncations at the distal end were plotted *c.* 0.6 m apart in alluvium spit 2, in the main artefact concentration at the south end of the trench.

Backed bladelets

A backed bladelet (Fig. 2.34.13) (ON 458), 25mm long, was found in the south-west corner of FF6007W in alluvium spit 1. It showed faint traces of micro-chipping along the opposite edge, suggesting that it might have been used. One other partially backed bladelet (Fig. 2.34.14) (ON 426), found on the eastern side of the scatter, was perhaps unfinished.

Retouched blades

Two retouched blades (Fig. 2.34.15–16) (ON 460, ON 8026) were plotted at the western side of the trench in alluvium spits 1 and 2. The larger measured 84 mm long and was made from a well prepared core face, using soft hammer percussion. The flint showed similarities to core ON 694 (Fig. 2.34.4) to which flakes could be refitted. However the retouch, which extends part way along most of one edge, truncates the stain of the blank, raising the possibility that the two are of different periods. The other blade was a crested piece with a sharply curved profile.

Miscellaneous retouch

The remaining six pieces (ON 8019, ON 8018, ON 401, ON 446, ON 461, ON 496) and a fragment possibly from the tip of a backed point, found in sieve residue near the centre of the artefact scatter, comprised objects with small amounts of unclassified retouch. They included one piece (Fig. 2.34.17) (ON 8019) with pseudo-burin-like removals and a retouched flake (Fig. 2.34.18) (ON 8018) that was broken by a Siret fracture. These pieces from subsoil spit 2 and alluvium spits 1 and 2 most probably reflect accidental manufacturing breaks or fragments of tools broken in use.

Refits

Thirty-three pieces, including burnt material, could be refitted (Fig. 2.37). The most informative group, representing the final stages of a reduction sequence, comprised a fragment of debitage and a flake that refitted to a multi-platform core (Fig. 2.34.4). The two pieces were found *c.* 80 mm apart with associated micro-debitage on the north edge of the scatter in FF6007W and probably mark the flaking location. They were *c.* 2 m from the discarded core, which lay to the south-west. Two blades and two small flakes, all found in the scatter, and one other blade (ON 685) found *c.* 2.2 m to the north, were of similar raw material and may have come from this core, although none could be refitted.

In addition, four fragments of a thermally fractured gravel nodule refitted to form a largely unproductive, discarded core. Two of the fragments were recorded *in situ*, *c.* 0.5 m apart horizontally and 0.02 m vertically in the north-east corner of FF6007E at a comparable level to the spread of Creswellian debitage in that trench. However, the raw material type and technology were comparable with the unpatinated scatter in FF6007W.

The other conjoining fragments were both unstratified, probably from the subsoil/alluvium, but were recorded from the upcast of machine excavated trench FF6002, 2.5 m to the west. It is unclear whether this is an accurate record of their source or whether spoil from FF6002 was reworked with material from FF6007E. No flakes or blades from the core were recovered.

Elsewhere, dorsal-ventral refitting groups of blades (ON 8057 and ON 8003), from the flaking face of a prepared core, preparation flakes (ON 8049, ON 8075 and ON 483) and flakes (ON 478 and ON 8039) were all found in the main artefact scatter, shared similar cortex type and may well have been removed from the same core.

Other unpatinated material from the area

The integrity of the Federmesser industry was assured within the area of Trench FF6007W by virtue of it having been sealed within the alluvium, raw material selection, technology, character of the blade supports and retouched tool typology as well as the lack of contradictory tool types. Beyond the fringes of the scatter identification of associated material became less assured. Artefacts from Trench FF6083, approximately 100 m to the north, were similar in terms of raw material, lack of patina and technology (Fig. 2.27.8) and may be contemporary. However the presence of an unpatinated fragment of polished axe in the alluvium (FF 7003), only 35 m north of Trench 6007W and of a leaf arrowhead from SM2063 (Fig. 2.27.9), indicates that these criteria cannot be used unquestioned.

The separation of additional unpatinated LUP artefacts from unpatinated Early Neolithic and 'later prehistoric' flakes and blades found in ploughsoil and subsoil elsewhere along the site was therefore doubtful. The most notable exception comprised an unpatinated truncated blade from the ploughsoil of test pit FF6072 (Fig. 2.3), which was found at a comparable elevation to Trench FF6007W on the west side of the alluvium-filled embayment. This object was of comparable flint and technology to the industry centred on FF6007W. A similarly truncated blade, listed as an 'obliquely blunted point', was found with an assemblage containing pen-knife points at the Final Upper Palaeolithic (Federmesser) site at Rookery Farm, Great Wilbraham, Cambridgeshire (Conneller 2009, fig. 5iv).

Phase 3: Holocene – Late Mesolithic, Neolithic and later

Very little Mesolithic material is known from Farndon Fields; material of this period often survives badly in the ploughsoil. A notable addition to the inventory comprised an isolated microlith, produced using the microburin technique, that was found in alluvium in machine-excavated trench FF7009 (709015) (Fig. 2.3). It is difficult to know whether this object relates specifically to the Mesolithic, possibly Early Mesolithic, period or represents an outlying artefact of the Federmesser industry. Apart from this stray find previous phases of field survey at Farndon Fields (WA 1993; 1995; TPA 2005) have identified a scatter of distinctive micro-cores considered to be Late Mesolithic, from Fields 373A (N), 373B (N and S) and 374) (TPA 2005; Garton and Jacobi 2009). Five additional bladelet/flake micro-cores made from small gravel nodules were found at Farndon Fields during the A46 road construction. These comprise a single platform bladelet core from ploughsoil (605509), a multi-platform flake core from a plough scar (605033), another bladelet core (ON 683) from FF6083, an unstratified piece found near a test pit (FF6031) and an unproductive specimen from the south end of the site (SM2063).

Earlier survey work (WA 1995) also produced a number of Early Neolithic polished axe fragments and arrowheads from the eastern margins of Survey Area 1000 (Fig. 2.3). Subsequent survey (TPA 2005) confirmed Early Neolithic material in the Fields 373B (S) and 374, which ran parallel with the course of the River Devon and north of the alluvium embayment. Field 374 produced a leaf arrowhead, one oblique and one barbed and tanged arrowhead (TPA 2005). Late Neolithic/Early Bronze Age activity was also indicated by an oblique arrowhead and a fabricator from Field 370, to the south, an area which correlated with the area of SM2063 (Fig. 2.1).

Trenching in advance of road construction also identified relatively undisturbed Early Neolithic material in the area bordering the River Devon. A large flake, 114 x 43 mm, from an Early Neolithic polished flint axe (ON 697) (703324) was found in the northernmost margins of the alluvium filled embayment at the south end of FF7003 (Fig. 2.3). Six other unpatinated flints included an opposed platform flake core (ON 628; 703004) (178 g) to which a flake (ON 632; 703005) from an adjacent 1 m square within the spit 1 of the alluvium could be refitted. One other flake from a polished flint axe was found approximately 5 m south of the refitting pieces in FF7003. The composition and location of this material suggest that it was probably independent of and later than the Federmesser assemblage in FF6007W, which was located approximately 35 m to the south.

The spread of unstratified Early Neolithic material was more extensive to the north (Fig. 2.3); a flake from a polished flint axe was found in FF7009, with a flake of a greenstone axe, probably from Great Langdale, in test pit FF6022. Two Early–Middle Neolithic chisel arrowheads came from ploughsoil in FF6001 and test pit FF6036, excavations *c.* 35 m apart in this northern part of the site, and a fragment of a fabricator-type implement from ploughsoil in test pit FF6021. These finds of Neolithic material suggest that the spread of Neolithic material can be recognised as far north as the Farndon Roundabout. Early Neolithic material was not restricted to the northern parts of the site. A leaf arrowhead (Fig. 2.27.9) was recovered from the machined surface of the coversands in the southern part of the site (SM2063). A small number of end scrapers may be of Bronze Age date, although nothing was found to indicate specific areas of Bronze Age activity.

Elsewhere, individual artefacts and small groups of worked flints were recovered from sieved residue from test pits and trenches along the entire length of easement. This material frequently comprised unpatinated, relatively robust by-products of flake production, with edge damage characteristic of plough reworking. Apart from a small number of blade fragments of Mesolithic or Early Neolithic date the remainder of the collection was technologically characterised by hard hammer percussion, occasional cortical butts and unsystematic flake scar patterns on the dorsal surface. These features are consistent with Neolithic and Bronze Age material from surface contexts.

Two gun flints that were recovered during fieldwalking of Fields 373B and 374 (WA 1995) may relate to the Civil War outer defences of Newark that are projected to cross the north end of Field 370B.

Discussion

by Phil Harding and Michael J. Grant

Farndon Fields has become one of the most closely studied LUP open-air sites in Britain since its initial discovery in 1991, lying within a small concentration of contemporary sites (Jacobi 2004, figs 44–5) clustered in the Peak District. Despite the absence of independent scientific dating, the presence of artefacts characterised by their distinctive technology enabled a significant proportion to be firmly assigned to the earlier (Creswellian) phase. The technology is regarded (Jacobi 1991; 2004; Barton 2009) as a British derivative of the European Final Magdalenian, related to recolonisation of Northern Europe, early in the Windermere Interstadial (GI-1) (Fig. 2.2), a brief period of climatic oscillation between *c.* 12,750 and 10,700 BC (Jacobi and Higham 2009; see also Pettitt and White 2012 for discussion of the Magdalenian). The importance of the site was confirmed by Garton and Jacobi (2009), who described the collections and speculated, correctly, that deposits of fine grained alluvium might contain *in situ* assemblages. They advised that these deposits be afforded protection or detailed investigation in the event that they might be impacted upon by any future development. The archaeological work undertaken as a result of road construction has confirmed their potential, leading to the first recovery of undisturbed, well-preserved material of this date from sealed contexts at the site. The work has also identified traces of a small, stratigraphically later, nucleated encampment also thought to be of LUP (Federmesser) date, *c.* 12,000–11,000 BC (Darvill 2010, 54–6), in the second half of the Windermere Interstadial. The resulting multi-disciplinary study has not only examined these stone tool assemblages but also undertaken geoarchaeological trenching which, for the first time, has provided an opportunity to study and sample the deposits at first hand. In addition it has been possible, using borehole data in conjunction with deposit modelling, to provide a broad narrative for the development of Farndon Fields and place the artefacts in their correct geological context. This approach, in combination with scientific dating techniques, has provided a framework for the material that correlates with other collections of the period.

Geological Site Development

The Holme Pierrepont Sands and Gravels (HPSG) at Farndon Fields, which underlie the remaining deposits, date from the Late Pleistocene, probably during the first phase of aggradation (Howard *et al.* 2011), as indicated by the OSL date from FF2063A (X3742; 20.32±4.69 ka BC). The date matches the model of deposition proposed by Roberts (2007) whereby aggradation is likely to have taken place within a braided, fluvial system of the River Trent, continuing through to the end of Late Glacial Maximum (LGM), when ice sheet retreat was supplying large volumes of sediment and meltwater into the Trent system. It is possible that the River Devon in this location was originally subsumed by a much wider braided River Trent system but reverted to independent tributary status at the end of the LGM. The altitude of the HPSG terrace gravels above the floodplain in this location is likely to have segregated the River Devon (and Farndon Fields) from the River Trent influence by the second phase of aggradation at the end of the Loch Lomond Stadial (*c.* 10,700–9700 BC), as recorded at Holme Pierrepont Quarry (Howard *et al.* 2011). The absence of scouring and subsequent gravel aggradation during this time meant that the LUP flint scatters (and alluvial sediments) at Farndon Fields were preserved.

Along the length of the site alluvial deposits are found overlying the gravels. In the south these consist of thin alluvial layers at the base of the coversands, with thicker deposits of laminated sands and silts found around FF6091. In the area of the test pits (FF2063A–C), micromorphology demonstrated the presence of soil formation within these laminated alluvia. Although no artefacts were recovered directly from this context isolated pieces of patinated material have been recorded from the southern end of the site. The presence of soil formation beneath the coversands does demonstrate the possibility at least of a stable terrestrial surface which may have been contemporary with phases of activity associated with the Creswellian and/or Federmesser flint deposition found to the north. These deposits are clearly of Late Pleistocene date and likely to correlate chronostratigraphically with the Windermere Interstadial. It is possible that the alluvial deposits within which the soil formation occurred were being deposited towards the end of the Interstadial, as there appears to have been initial coversand deposition (in FF6091) into shallow water and a transitional zone between the laminated alluvial deposits and main coversand deposition. The vegetation during this time would have been responding to the climatic amelioration, making a transition from the open ground tundra of the preceding Stadial to open grassland, juniper scrub and subsequently birch-dominant woodland towards the end of the Interstadial.

The exact date of alluvial deposition across much of the site still remains uncertain. Although OSL dating of these deposits failed to yield dates attributable to the Interstadial, the presence of clearly stratified LUP flint scatters within the alluvium confirm the broad age of these deposits. This is possibly supported by the subsequent cryoturbation ('frost heaving') of the basal alluvium and gravel deposits in some locations which must have occurred within a subsequent cold climate such as the Loch Lomond Stadial (GS-1). These deposits demonstrate the temporary visitation to the lower lying wetland area at two phases during the Interstadial – the Creswellian signifying a single visitation (also suggested by Garton and Jacobi 2009), but possibly part of repeated activity, probably early in the Interstadial (Barton *et al.* 2003; Jacobi and Higham 2009). The subsequent Federmesser scatter, located stratigraphically above the Creswellian scatter, is attributable to the later part of the Windermere Interstadial (Conneller 2007, 215; Darvill 2010, 54–6), often correlated with the continental Allerød (GI-1a–c) Interstadial (Street *et al.* 2006). This may imply the seasonal deposition of floodplain alluvium was occurring during much of the Interstadial at a very slow rate of accretion.

The alluvium/subsoil deposits found across the north of the site, in addition to the channel sand deposits, are again of uncertain age but likely to be predominantly attributable to the Windermere Interstadial. This is in part due to the presence of the previously recorded Creswellian flint scatters being associated with plough-soil (WA 1995; Roberts 2007) and rarely found in the underlying fine grained deposits, implying that in many locations the deeper sediments (unaffected by ploughing) must precede such LUP flint deposition.

The stratigraphic relationship between the channel sands and alluvium/subsoil in the north of the site is unclear but it is likely that the channel sands underlie the alluvium/subsoil. Consequently it is possible to envisage a landscape during the Windermere Interstadial with a series of low-lying wetland areas and areas of raised gravel islands that were intersected by a series of channels. The presence of LUP flints, often close to the surface, also suggests that subsequent sedimentation across much of the site during the Holocene was limited and instead probably related to post-depositional soil development of the Pleistocene deposits. The scatters from FF6007E and FF6007W, and their location upon the deposit model, imply that occupation was situated upon the wetland edge separate from the main channel (and deeper alluvium areas), but also away from the gravel highs. This location is similar to that inhabited by the South Cluster, whereas the North Cluster, although on the edge of a gravel high, is situated on the margins of one of the main channel areas.

In the Trent Valley, palaeoenvironmental records from this period are rare (Knight and Howard 2004a, 23) and restricted to a series of discrete organic deposits infilling scour hollows (Howard *et al.* 1999) or eroded clasts exposed within quarry faces (Howard *et al.* 1999; 2011; Greenwood *et al.* 2003). Consequently, these can only provide a series of localised snapshots into the conditions upon the floodplain at a time contemporary with the LUP occupation at Farndon Fields. At Hemington, Greenwood *et al.* (2003) found a local vegetation dominated by abundant submerged and emergent vegetation, notably sedge and rushes, dated *c.* 11,830–11,450 cal BC (AA35118; 11,735±75 BP). The caddisfly fauna indicated slow-flowing and standing waters, probably associated with cut-off channels, on the floodplain and also indicated a climate with a greater degree of continentality than currently prevailing in the Trent catchment. In the Idle Valley similar slow-moving or static water bodies were identified, dated 11,370–10,960 cal BC (Beta-100931; 11,250±80 BP), fringed by reeds, sedges and wet moss in a grassland landscape largely devoid of trees (Howard *et al.* 1999). Organic deposits from Holme Pierrepont Quarry (Howard *et al.* 2011), dated towards the end of the Interstadial at 11,160–10,780 cal BC (OxA-13062; 11,055±45 BP), contained plant macrofossil, pollen and coleopteran assemblages. These indicated abundant floating and emergent vegetation surrounding a series of pools, with tall herb fen vegetation at the water's edge and the wider floodplain being herb-rich grassland largely devoid of trees (although a single *Betula pubescens* (downy birch) fruit was present). However, evidence of higher energy channel activity was also found within the Trent Valley at Barrow-upon-Trent dated *c.* 11,700–11,320 cal BC (AA35112; 11,580±75 BP) (Greenwood *et al.* 2003). For comparison, in a contemporary dated sequence from the Kennet Valley, Berkshire, Collins *et al.* (1996, 370) envisioned an Interstadial riverine landscape characterised by damp grassland present on the elevated parts of the floodplain (gravel bars and slightly higher ground), together with areas of willow scrub and sedge-dominated wetland and birch trees present on the valley margins and favourable locations on the floodplain itself.

The onset of the Loch Lomond Stadial, *c.* 10,700 BC and lasting until *c.* 9700 BC, led to a return to colder climatic conditions and open tundra conditions. The onset of periglacial conditions led to both possible cryoturbation of deposits present on the site and the deposition of windblown coversand deposits, which are prevalent in the south of the site. The OSL dating of the coversands in test pit FF2063B confirms the timing of their deposition, and this can be correlated with similar dated deposits at Girton (Baker *et al.* 2013), in north Lincolnshire (Bateman 1998) and across North West Europe (Singhvi *et al.* 2001). Coversand deposits are extensive in the Lower Trent Valley (Knight and Howard 2004a; Baker *et al.* 2013) and are mapped on the terraces of the HPSG on the eastern side of the valley floor (Brandon and Sumbler 1988) and in the Idle Valley around Tiln, Nottinghamshire (Howard *et al.* 1999).

The only clear evidence of Holocene deposits on the site appears to relate to the palaeochannel and alluvial deposits in FF6090Ext and FF6089 that are found to stratigraphically overlie/truncate the coversand deposits. The unconsolidated nature of the coversand sediments does render them highly susceptible to reworking, with some of the OSL dates implying possible coversand reactivation taking place at Farndon Fields during the Holocene. Some of the reworked coversand is likely to have been widely incorporated into the Holocene fluvial environment. However, there has been no detailed geoarchaeological or geochronological investigation of the proposed Holocene deposits at Farndon Fields so the timing of the channel incision (609008) in FF6090Ext is unknown. Subsequent Holocene archaeological activity across Farndon Fields would have taken place upon the Pleistocene deposits, which may have experienced some limited Holocene alluvial deposition locally, but which now form part of the ploughsoil zone. As a consequence LUP flints were found with later material spanning the Mesolithic to the medieval period during fieldwalking. Furthermore, as previously stated, post-depositional processes have played an important role in modifying the observed deposits. This is highlighted by the results of the OSL dating, especially in FF6002 where, despite the presence of LUP flint scatters, OSL age estimation provided ages during the earlier part of the Holocene. Barton *et al.* (2009) attributed such variations at the LUP site at Nea Farm, Hampshire to the introduction of younger quartz grains into the samples from above through bioturbation, a mechanism that has been demonstrated at Farndon Fields by micromorphological analyses and artefact taphonomy. As a consequence many of the OSL dates can only be regarded as a youngest possible age for the sequences, and because of other geological criteria must indicate contamination of older sediments by the incorporation of younger material.

The Late Upper Palaeolithic Industries

Two LUP flint assemblages exhibiting strongly contrasting approaches to raw material procurement, technology and settlement patterns have been recorded from the Pleistocene alluvium of the Windermere Interstadial landscape. The Creswellian assemblage comprised a patinated blade industry employing extensive use of platform faceting, soft hammers and non-local flint. This material is, in all respects, identical to the collections described by Garton and Jacobi (2009). The stratigraphically later, unpatinated blade industry, distinguished from the earlier industry by the use of poor quality nodules from the local river gravel, unsophisticated core technology and hard hammer mode, is regarded as belonging to the subsequent Federmesser tradition. These two assemblages are significant in that both share similar topographic settings overlooking the valley of the River Devon.

Taphonomy

Essential to understanding and interpreting these assemblages, and the likelihood that other material may survive in undisturbed deposits below the ploughsoil, is the need to consider horizontal and vertical artefact distribution across the site. The current database of artefact distribution has been largely compiled using collections from the ploughsoil. Archaeological excavations have demonstrated that most of the road line at Farndon Fields has undergone some level of truncation and reworking by ploughing. This is most notable on the higher gravel ridge at the north end of the route, which includes the North Cluster (Garton and Jacobi 2009). However LUP artefacts do survive in Pleistocene alluvium remnants across relatively large areas of the landscape extending from the gravel ridge southwards where alluvium thickens. Previous studies (Ammerman 1985; Tingle 1987; Clark and Schofield 1991) have calculated that only 0.5–7.0% of an assemblage might be expected to lie on the surface at any one time. Similarly Gingell and Schadla-Hall (1980) calculated that as much as 90% of all artefacts in a ploughed field are contained within the ploughsoil. This figure is comparable with results obtained from a 5 m x 5 m test pit (WA 1995), centred over the North Cluster, which produced 54 pieces of worked flint from the ploughsoil with only six from the underlying 'subsoil'. The density, condition and artefact size of the surface material contrasts with that of the newly excavated assemblages from relatively undisturbed sealed environments that lie below the ploughzone.

Some explanation for artefact survival and recovery may relate to the overall mass of individual pieces. Few of the additional Creswellian artefacts from the road construction were large enough or sufficiently intact to merit metrical analysis; however, of six pieces that were, only one measured less than 20 mm long. Analysis of the Creswellian scatter (Fig. 2.32) suggests that most of the plotted pieces are unlikely to have survived in the ploughsoil and none of the micro-debitage. In contrast, relatively more pieces from the Federmesser assemblage, which were larger, may be expected to survive.

The mechanics of taphonomy from sealed deposits were discussed in detail by Barton and Collcutt (1992) at the LUP open air site at Hengistbury Head, Dorset. They stressed the need to separate natural from anthropogenic movement in order to interpret and reconstruct human activity at a site. They concluded that major vertical movement was more likely to be affected by natural post-depositional agencies, including bioturbation, while horizontal distribution might reflect more directly human influences, linked both to deliberate tool use combined with accidental trampling and scuffing. Vertical artefact migration, in particular, has blurred the stratigraphic separation of the assemblages at Farndon Fields to some extent, although both industries can be distinguished by the different patina and technology of the artefacts.

Barton and Collcutt (1992, table 3:3) demonstrated that there was a direct correlation between the vertical movement of artefacts and the composition of the substrate, concluding that material was more likely to move down in mobile material, notably sand, than in more coherent fine-grained clay or silt. These results showed that vertical movement of up to 0.5 m had occurred in the sandy deposits at Hengistbury Head. This was far greater than the 0.15–0.2 m through which artefacts were recorded in the two scatters at Farndon Fields, and which was more typical of other contemporary sites, such as Verberie, Oise, in the Paris Basin (Audouze *et al.* 1981) or Nea Farm, Hampshire (Barton *et al.* 2009), both on fine-grained sands and silts. Gifford-Gonzalez *et al.* (1985), adopting an experimental approach to artefact behaviour on archaeological sites, noted that enhanced moisture levels in the sediment may also provide a consolidating effect in reducing levels of vertical movement in the sediment. Similar influences, resulting from waterlogging during deposition of the alluvium, may have restricted vertical artefact movement at Farndon Fields.

Micro-debitage analysis from both scatters at Farndon Fields established a direct relationship between the size and vertical displacement of artefacts, with smaller material apparently moving further down through the sediment body. This effect has also been examined during experiments (Stockton 1973; Barton 1992) to study the effects of trampling on a debitage scatter, although these two studies produced contradictory results. Soil micromorphology has also suggested that trampling may have served as a mechanism of vertical artefact distribution of the Creswellian scatter at Farndon Fields as well as bioturbation; however the horizontal definition of this spread favours the opinion that bioturbation was largely responsible for vertical movement. Artefact movement within the Federmesser scatter was affected not only by bioturbation but also by agricultural activity as a result of being higher in the sediment profile.

Refitting material, its frequency, the distribution of artefacts by type and the spread of micro-debitage have all contributed to assessing horizontal migration of artefacts within each scatter across the site from the point of manufacture. The results have helped to indicate the degree to which horizontal movement is attributable to human or natural processes. Both LUP industries contained elements that remained largely *in situ*, nevertheless there were notable differences in the spatial distribution of artefacts and the diversity of artefact types.

Topographic survey records indicate that both scatters were collected from relatively level surfaces so neither is likely to have been seriously affected by slope movement. The Creswellian scatter was largely undisturbed whereas the Federmesser assemblage showed clear signs of horizontal dispersal that is probably attributable to the effects of intensive human activity, including repeated trampling. This redistribution of material may evoke an image of longer term but nevertheless probably transient activity, by a mobile population. Despite these levels of post-depositional reworking the Federmesser scatter retained sufficient coherent structure to reconstruct spatial planning connected to activity at the short-term hunting camp.

Site activities

The extensive excavations at Hengistbury Head (Barton 1992) identified two types of closely spaced, but mutually exclusive, artefact scatters linked to site activities: manufacturing/flaking sites and tool use locations. The former contained flaking waste, cores, micro-debitage and low tool counts while the latter represented a more diverse range of domestic activities, including food preparation and hide processing, characterised by retouched tools. Barton (1992) set out a simple premise that all artefacts began life at the flaking site and that information was contained in material that could be related back to that location. Flaking sites were characterised by complex reduction sequences that often conjoined to cores with voids that corresponded with the anticipated form of preferred tool blanks which were removed elsewhere for use. No such large-scale refitting sequences were possible in either of the scatters at Farndon Fields; nevertheless blank production was undoubtedly undertaken on a regular basis, indeed formed the sole function of the Creswellian scatter. Evidence of these relatively short-term events was preserved in debitage and micro-debitage within both assemblages.

Karlin and Newcomer (1982) proposed that such isolated, tightly packed clusters of flaking debris, from the LUP site at Pincevent in the Paris Basin, may represent ‘dumps’. In contrast, the well-structured plan-form, the distribution and limited horizontal disturbance of micro-debitage and refitting pieces, and the lack of retouched material in the Creswellian scatter at Farndon Fields argue that this assemblage represents an ephemeral *in situ* knapping episode, as defined by Barton (1992), and was the work of one person seated on or close to the ground. It is directly reminiscent of experimental manufacturing scatters produced to replicate axe (Newcomer and Sieveking 1980) and blade manufacture (Newcomer and Sieveking 1980; Barton and Bergman 1982; Barton 1992, table 3.1). These experiments reproduced the complete knapping cycle, and therefore created relatively large quantities of waste. The scatter at Farndon Fields, which has also been replicated successfully, was represented only by small quantities of trimming debris, indicative of successful blank production from a pre-prepared core. Irrespective of the technology and end product these experiments have consistently produced tightly defined circular or elliptical debitage spreads covering approximately 0.50 sq m. The scatter studies have concluded that such episodes illustrate prehistoric knappers working from a position of relative comfort, either a low seat utilizing a convenient stone block, as at Pincevent (Leroi-Gourhan and Brézillon 1966) or Cheddar (Davies 1904; Parry 1929; Jacobi 2004), or sitting on the ground if no alternative seat was available. Scatters of this type, characterised by form, distribution, micro-debitage and refitting can be interpreted, with some confidence, as places where knappers sat to work flint. Locations where a knapper flaked from a standing position are more difficult to identify. Newcomer and Sieveking (1980) demonstrated that such activity produces a much more diffuse scatter of debitage of the sort that might well result from extensive trampling or as a by-product of post-depositional movement.

Barton examined the radii of four, relatively well-preserved, refitting LUP manufacturing flint scatters from Hengistbury Head (Barton 1992, 79) which, in contrast to totally undisturbed examples, ranged from 2.4 m to 3.6 m in extent. He concluded that horizontal post-depositional movement had therefore occurred producing a more dispersed scatter 500–600% larger than the original. Much of this could be attributed to human activity and only rarely could scatters have escaped some form of horizontal dispersal. A number of artefacts, including isolated pieces that refitted to others in the scatter, but which nevertheless fell well within the radii recorded at Hengistbury Head, were recovered beyond the nucleus of micro-debitage at Farndon Fields. Such occurrences of extremely localised, relatively undisturbed knapping clusters in the archaeological record (Austin and Roberts 1999; Harding 1990) remain extremely rare.

The Creswellian cluster was seemingly separated from and largely undisturbed by social and domestic activity around it, certainly to the west where excavation revealed no associated material. It undoubtedly documents a single, relatively uninterrupted, moment-in-time accumulation of one, highly skilled individual. The knapper, perhaps part of a mobile group, sat on the ground to produce blanks, before collecting the output and moving on, causing minimal disturbance to the scatter, after which the location was abandoned. The attention to detail, as demonstrated in the micro-debitage of platform preparation, and the absence of more extensive refitting material suggests that this individual was a highly competent flint worker. This technology is synonymous with the consistently high levels of flint working across the entire Creswellian assemblage. Trimming waste was minimised from a pre-prepared core and only blanks were detached, collected together, taken away and converted into tools of the type listed by Jacobi (2004) of which examples have been recovered from Farndon Fields (Garton and Jacobi 2009). The fate of the core is unknown. It may have been curated for further blade production or, as a result of the thermal fracture which probably terminated this flaking episode, been tossed away beyond the limits of the excavation. Whatever the truth the picture represents a clear example of forward planning by the knapper, creating prepared blanks for future use.

Similar discrete areas of flaking activity appear to have coexisted within a general spread of occupation activity in the Federmesser assemblage, but here located around what appear to have been hearths. Specific activity areas were defined by micro-debitage, notably chips of distinctive raw material, indicative of a single flaking event location. In this case flakes of identical raw material, dispersed around the fringes of the cluster, refitted to a core found some distance away. This distinct debitage and core pattern finds parallels with the 'drop and toss' model proposed by Binford (1978) at the Mask site, and adopted by Lewis with Rackham (2011) at Three Ways Wharf, Uxbridge; low density material was 'dropped' at the place of manufacture or use, with heavier material 'tossed' away. Successful application of the 'drop and toss' model to confirm areas of activity related to debitage has suggested that it is also possible to identify areas of tool use activity by the distribution of retouched implements. For example, within the Federmesser assemblage at Farndon Fields there was a distinct distribution of scrapers which may hint at an area of hide processing on the eastern fringes of the camp where artefact density thinned.

The broader pattern

Conneller (2009), summarising work undertaken in the 1980s and 1990s (Barton 1997; Bodu *et al.* 2006; Fagnart 1997; Street *et al.* 2006; Coudret and Fagnart 1997) across Northern Europe, notably the Paris Basin and German Rhineland, provided a contrast between the Late Magdalenian (Creswellian) locations and the succeeding Federmesser sites. The former were characterised by large sites that were repeatedly occupied, demonstrating well-organised use of space and incorporating a palimpsest of base and hunting camps that were regularly reoccupied. Groups exploited a landscape with which they were familiar, knowledgeable of the availability of game and raw material. The Federmesser sites were often smaller and apparently created by more locally mobile groups (Conneller 2009; Barton *et al.* 2009). This model, demonstrating extensive use of the area, can be applied to Farndon Fields. Creswellian artefacts have been recovered across at least 500 m of the landscape in places where LUP material is near the present ground surface in a band parallel to the River Devon, although it is possible that the distribution may extend beneath the coversands at least to Hawton Lane. The distribution illustrates a diverse range of LUP occupation although the artefact collections represent only a fraction of the debitage created; they lack micro-debitage and fragile trimming waste that must have been broken and dispersed by ploughing. Nevertheless they document a palimpsest of activity with repeated visits to a familiar location that included a favourable communication network, water and food supply. Inevitably variations to this model can be cited, as at Bradgate Park, Leicestershire (Cooper 2002), where a LUP camp site was represented by a scatter of Creswellian material only 5 m across. This pattern of landscape occupation may have evolved, become fossilised into one of tradition and adopted by subsequent Federmesser groups in the later parts of the Windermere Interstadial, when site attributes remained favourable. Repeated use of locations from an earlier period, and the possible time gap between the two events, has been documented and discussed at Mother Grundy's Parlour (Conneller 2007) and Gough's Cave where Creswellian and Federmesser occupation also occur at the same location.

The general background of Creswellian worked flints is interspersed with distinct 'clusters', where increased levels of artefact density hint at specific site use. Garton and Jacobi's (2009) North Cluster, measuring approximately 30 m across (WA 1995), lay on the highest part of the gravel ridge to the north of the alluvial embayment. The assemblage was characterised by scrapers; the apparent rarity of weapon/projectile heads suggested that this indicated a temporary encampment at which hide processing was a principal activity rather than refurbishment of hunting equipment. The South Cluster was located on the south side of the modern drainage ditch that truncated the southern edge of the alluvium-filled embayment. This cluster, 120 m south of the excavated Creswellian flaking scatter in Trench FF6007E, was poorly defined and may have derived from deep down in the alluvium as the ditch was cleaned out (Wright pers comm.). However, Garton and Jacobi (2009, illus. 3) locate the cluster at the edge of the alluvium, where it might be freshly exposed by ploughing. The assemblage was insufficient to speculate about issues of site use, however, its location, near a probable water source, may acquire additional significance in the context of the newly excavated flaking scatter. The landscape therefore probably contained discrete camping locations, possibly with differing emphases on function.

The zone of Federmesser activity from FF6007W was relatively clearly defined on its eastern boundary but extended westwards beyond the limit of excavation. It is not certain, but likely, that the camp covered a relatively restricted area and formed a short-term isolated camp. The retouched tool component, which included end scrapers, burins and backed blades/bladelets, with occasional truncated pieces, suggests that a diverse range of tasks was undertaken. As with Garton and Jacobi's (2009) North Cluster there were no projectile points and a greater number of scrapers, perhaps indicating that this too was not primarily a hunting camp.

The technology, lack of patina and raw materials of the Federmesser industry were sufficiently indistinct in isolation to apply detailed criteria to the unstratified assemblage from the project or to material from the extant surface collection. It was therefore impossible, apart from a possible truncated blade from test pit FF6072, itself near the edge of the alluvium embayment, to separate other contemporary material from the 'later prehistoric' assemblage or establish the extent of activity beyond the alluvium. The difficulty in recognising additional material beyond the immediate area may be due to the fact that Federmesser sites were more restricted in extent, many covering no more than approximately 5–6 m^2 as recorded at Rookery Farm, Great Wilbraham, Cambridgeshire (Conneller 2009), La Sagesse, Romsey (Conneller and Ellis 2007) and Nea Farm (Barton *et al.* 2009), both in Hampshire. These assemblages incorporated similarly diverse inter-assemblage variability unified by equally broad trends in retouched tool assemblages, occasionally accompanied by distinctive curved backed pen-knife points. Coincidentally Garton and Jacobi (2009) described two abruptly modified pieces (illus. 9.18 and 19), including one curved, backed piece which they considered might be of Federmesser type. They speculated to what degree these artefacts from the ploughsoil in the area of the North Cluster might be related to material manufactured using the *en éperon* technique and whether this might indicate, as the recent work has confirmed, prolonged use of the site. There is nothing otherwise to link these outlying pieces directly to the assemblage from FF6007W, nevertheless the recovery of Federmesser type material from a sealed context does mark a significant development in the study of human activity and continuity throughout the Windemere Interstadial.

Economy and raw material exploitation

The two episodes of LUP activity conform to accepted patterns of behaviour as summarised by Conneller (2009) and Barton (1999) during the Windermere Interstadial; the Late Magdalenian (Creswellian) represented by well-organised groups that utilised and revisited larger sites; the Federmesser activity, in contrast, is characterised by less structured, relatively short-term activity centred on smaller more mobile groups. Existent palaeoenvironmental records provide an indication of how the landscape at Farndon Fields may have looked and been exploited when LUP peoples were there. The distribution of flints across the study area indicates that activity was not simply focused upon one landscape zone but instead occurred along low-lying wetland margins and areas of elevated gravels adjacent to channels. This spatial pattern may simply be reflecting fluctuations in the local water tables depending upon the timing of visitation and water table height rather than necessarily implying different activities in different parts of the landscape. In FF6007E the Creswellian scatter is suggested as probably post-dating one phase of alluviation (as in M6D) and pre-dates renewed alluviation (as in M6A) and later overbank alluviation, implying that the flints were knapped on site during the summer months, when floodplain conditions were drier, and occupied an area close to an active river channel.

Garton and Jacobi (2009, 32–6) also envisioned that the River Trent and Devon confluence provided a natural funnel where kills were made and carcasses butchered. They suggested that the large number of scrapers found in the North Cluster might indicate a site of specialised hide processing and suggested summer site use. Hunting strategies probably focused on Currant and Jacobi's (2011) Gough's Cave Mammal Assemblage which included horse, red deer or wild cattle (Currant 1986), with limited focus on reindeer. This species preference is supported by isotope reconstruction and the archaeological remains from contemporary (albeit early Interstadial) British cave assemblages (Stevens *et al.* 2010; Kaagan 2000). These animals would have been drawn to Farndon Fields by the different vegetation communities and water sources presented on the floodplain, and this would have subsequently enticed LUP hunters to the same location.

Soil micromorphology identified in a number of locations trace amounts of charcoal and burnt sand, especially in the sequences of FF6007E, FF6078 and FF6091. At FF6078, charcoal is much more concentrated within the basal gravel (607804; M8) and included monocotyledonous charcoal up to 1.5 mm. Such charcoal may imply the deliberate burning of wetland plants (such as reeds) and is a common find in British Early Mesolithic sites (eg, Barnett 2009; Mellars and Dark 1998). However, this practice has also been associated with the Federmesser culture in north-west Belgium where active burning of the reed-swamps may have been caused by people in order to create openings in the vegetation to improve the growth of herbs and shrubs in order to attract herbivores (Bos *et al.* 2013). In

FF6007E the close association between micro-debitage, fragmented charcoal and fine burnt mineral material could suggest these were almost contemporaneous, especially where the micro-charcoal was found in direct contact with the micro-debitage. However, the widespread biological reworking of the sediments at Farndon Fields does caution against such an interpretation of landscape management as the micro-charcoal is of uncertain age.

It is probable that later occupants shared similar concepts in what constituted a favourable location, namely with sources of fresh water on a slightly elevated, terrace location, here the terrace of the River Devon, immediately upstream of its confluence with the River Trent. The latter provided a major north–south route-way (Pettitt 2008) to the Humber or eastwards along the present course of the River Witham (the proto-Trent) via the Lincoln Gap, through which the River Trent flowed for much of the Last Glacial (Devensian) period (Brandon and Sumbler 1988). The proximity to a major fluvial system finds similarities with LUP Federmesser sites at both La Sagesse, Romsey (Conneller and Ellis 2007), and Nea Farm (Barton *et al.* 2009), both in Hampshire, which occupied terrace locations overlooking the Rivers Test and Avon, respectively. This phase of activity at Farndon Fields included more convincing evidence for the construction of hearths, as represented by burnt flints, around which a diverse range of flintworking and tool use, as well as social and domestic activity, took place. The presence of more than one concentration of burnt flints may hint that some of the location was revisited or that fires were relit, leading to superimposition of material.

Much of the established knowledge of LUP activity derives from studies of stone tool technology and typology. Procurement of high quality raw material provides a recurring feature of Late Magdalenian technology, reflecting the extent of territorial range or exchange networks across both mainland Europe and Britain (Fagnart 1997; Barton and Roberts 1996; Coudret and Fagnart 1997; Jacobi 2004; Valentin 2008). Creswellian assemblages from contemporary sites in Britain (Jacobi 2004) and in the central Rhineland (Floss 2000) have also been marked by an absence of cortical core preparation flakes. From this it has been concluded that cores were prepared at the flint source and transported, with blades, as finished items across the landscape or cached at favoured locations for reuse during subsequent visits. In contrast, Federmesser groups may have exploited relatively poor quality raw material with implications of a reduced territorial range, and increased population density, and assemblages exhibiting the complete *chaîne opératoire*. This pattern has been upheld at Farndon Fields, although both Conneller (2007; 2009) and Barton (2010) have cautioned against generalisations, citing examples of relatively good quality raw material use at some Federmesser sites, where it was available. The contrasts in the quality of material exploited by the Creswellian groups at Farndon Fields to produce blade blanks as supports for the retouched tools (Garton and Jacobi 2009) and the fluvially battered, thermally flawed nodules exploited by the Federmesser groups, are notable. It is clear that, in this region where flint does not occur naturally, raw material was obtained from two contrasting sources, of which only the later industry is likely to have been sourced within the local catchment, if not at the site itself.

The scientific techniques by which flint can be sourced remain in their infancy (Craddock *et al.* 2012, Pettitt *et al.* 2012) with, as yet, no confirmed methods by which to establish its geological origins with any confidence. Previous analyses of flint from Farndon Fields (Rockman 2003) have suggested that flint was brought from as far away as the Vale of Pewsey, Wiltshire or Beer Head, Devon, to the south. More recently a pilot study by Pettitt *et al.* (2012), using Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS), has examined artefacts from both Farndon Fields and Bradgate Park, Leicestershire. The results for Farndon Fields have suggested, in contrast to Rockman (2003), that flint was sourced from the Chalk geologies of East Anglia/north Lincolnshire. These sources provided the most local source of fresh flint at Farndon Fields, approximately 60 km to the east. A more diverse range of sources has been postulated for flints from Bradgate Park, Leicestershire (Pettitt *et al.* 2012) locating the source of raw material in East Anglia, the Lincolnshire Wolds and Salisbury Plain, which are all broadly equidistant from Bradgate Park. From an archaeological perspective, of these sources, only East Anglia has produced assemblages containing either blades with *talons en éperon* or bi-truncated trapezoidal backed blades (Jacobi 2004, figs 44 and 45) characteristic of Creswellian industries.

Farndon Fields continued to attract people into much later periods, but fits into patterns that have been recognised elsewhere in the local Trent Valley. The sparse evidence for Mesolithic activity may be linked to Late Mesolithic flints reported (see Leivers, Chapter 3) from the Bingham Basin at *Margidunum*. This material, like that from Farndon Fields, exploited local flint from the gravel for blank production. Similarly Early Neolithic activity is represented, not only on the north edge of the alluvium-filled embayment but also at the north end of Farndon Fields. This period is traditionally seen as one associated with more permanent settlement, however it remains possible that aspects of the mobile hunter-gatherer lifestyle still dominated much of human behaviour, especially in close proximity to the river valley. These traces have also provided evidence of contacts further afield. A fragment of an imported polished stone axe from Great Langdale, Cumbria from Farndon Fields can be mentioned (see above) with two other fragments from intercutting pits at *Margidunum* (see Chapter 3). Such contacts reinforce the evidence for continued transport of resources across the landscape that can be traced to the movement of high quality flint by Creswellian groups.

Chapter 3
Bingham Basin Environs: Early Holocene to Iron Age Environment and Activity

Nicholas Cooke and Michael J. Grant

Introduction

This stretch of the route, between East Bridgford and Bingham, lies near the midpoint of the road scheme (Fig. 1.2), and incorporates the major westward deviation of the route to avoid the site of the Roman town of *Margidunum*, a Scheduled Monument (SM No. 321885) (Fig. 3.1).

The topography of the area varies. The land to the south-east and south-west of the route is generally flat or slightly undulating, at *c.* 25 m aOD, incorporating the western edge of an extensive low-lying area named by Knight *et al.* (1999) as the 'Bingham Basin' and interpreted as a former lake bed and area of marsh. The Basin, mapped by the BGS (1972) as 'thin peaty loam on shelly marl', and also by Kinsley (1993a), runs from Saxondale junction in the west to Scarrington *c.* 5 km to the east. In contrast, the land to the north rises to the north-east of the A6097, to *c.* 40 m aOD along the ridge forming the north-eastern edge of this basin. A series of springs rise to the west and south-west of the route, and two small streams flow eastwards across the centre of the excavations and join, forming Car Dyke immediately to the east.

The underlying solid geology comprises Mercia Mudstone, overlain in the deeper valleys by alluvium, composed locally of the thin peaty loam on shelly marl to the south and south-east (BGS 1972, sheet 126).

The investigations on this site (Table 1.1) revealed archaeological features ranging in date from the Early Holocene through to the post-medieval and modern periods. This chapter describes the prehistoric activity, from the Early Holocene through to the Middle Iron Age, while Chapter 4 below describes the results from the Late Iron Age/early Romano-British period up to the modern period.

Early Holocene, Mesolithic and Neolithic (*c.* 10,000–2200 BC)

There is evidence for human activity on the site from the Mesolithic onwards, associated with a shallow channel containing deposits dated to the Early Holocene. This Early Holocene landscape may well have influenced much of the later land use in the area, including the line of the Fosse Way and the location of the Roman town of *Margidunum*.

The Landscape in the Early Holocene

The excavations lie to the north-west of the Bingham Basin. An earlier auger survey of the Basin (Knight *et al.* 1999; Howard 2004) (Fig. 3.1) carried out over an area of *c.* 60 ha, bounded by Bingham village to the south, the A46 to the west and Chapel Lane to the east, established the presence of relatively deep and extensive fluvial and lacustrine sediments, including the later marls, peat and alluvium (Fig. 3.2). In places the alluvial deposits overlay thick boulder clay.

Infra-Red Stimulated Luminescence (IRSL) dating of the lower shelly marl provided dates of 11450±2360 BC and 14194±2475 BC (Barnett 1996), indicating a Late Pleistocene/Early Holocene origin for the deposits within this part of the Basin. The alternation between marls, alluvium and peat records a history of fluctuating water levels with shallow, fairly open water during the earliest deposition (deepest marls), followed by periods of lower water levels and marsh development (associated with the peats), punctuated by open shallow water during the later phases of marl deposition.

A band of peat overlying shelly alluvium, recorded on the edge of the Basin during a water pipeline watching brief between RAF Newton and Wynhill, is suggested as being contemporary with the peat within the Basin itself, and was dated to between 6090–5790 cal BC (95% confidence Beta 80324, 7090±80 BP) and 2280–1890 cal BC (95% confidence Beta-80322, 3680±60 BP) (Knight and Malone 1993; Knight *et al.* 1999; Howard 2004). Knight *et al.* (1999, 9) interpret the peat as representing the establishment of emergent vegetation as water levels temporarily fell, allowing peat formation to occur. However, this would have ceased when water levels subsequently rose and marl deposition recommenced. In pollen samples from this peat (Greig 1995) trees and shrubs were well represented, including lime (*Tilia*), elm (*Ulmus*), oak (*Quercus*), pine (*Pinus*), alder (*Alnus*) and hazel (*Corylus*), typical of a mid-Holocene (*c.* 5000–3000 BC) woodland; the samples contained little sign of human activity. Knight *et al.* (1999) suggested that these deposits were extensive across the Basin, although towards its western edge they become less well defined, reflecting both fluctuating water levels and the influence of drainage features, such as channels, entering the Basin.

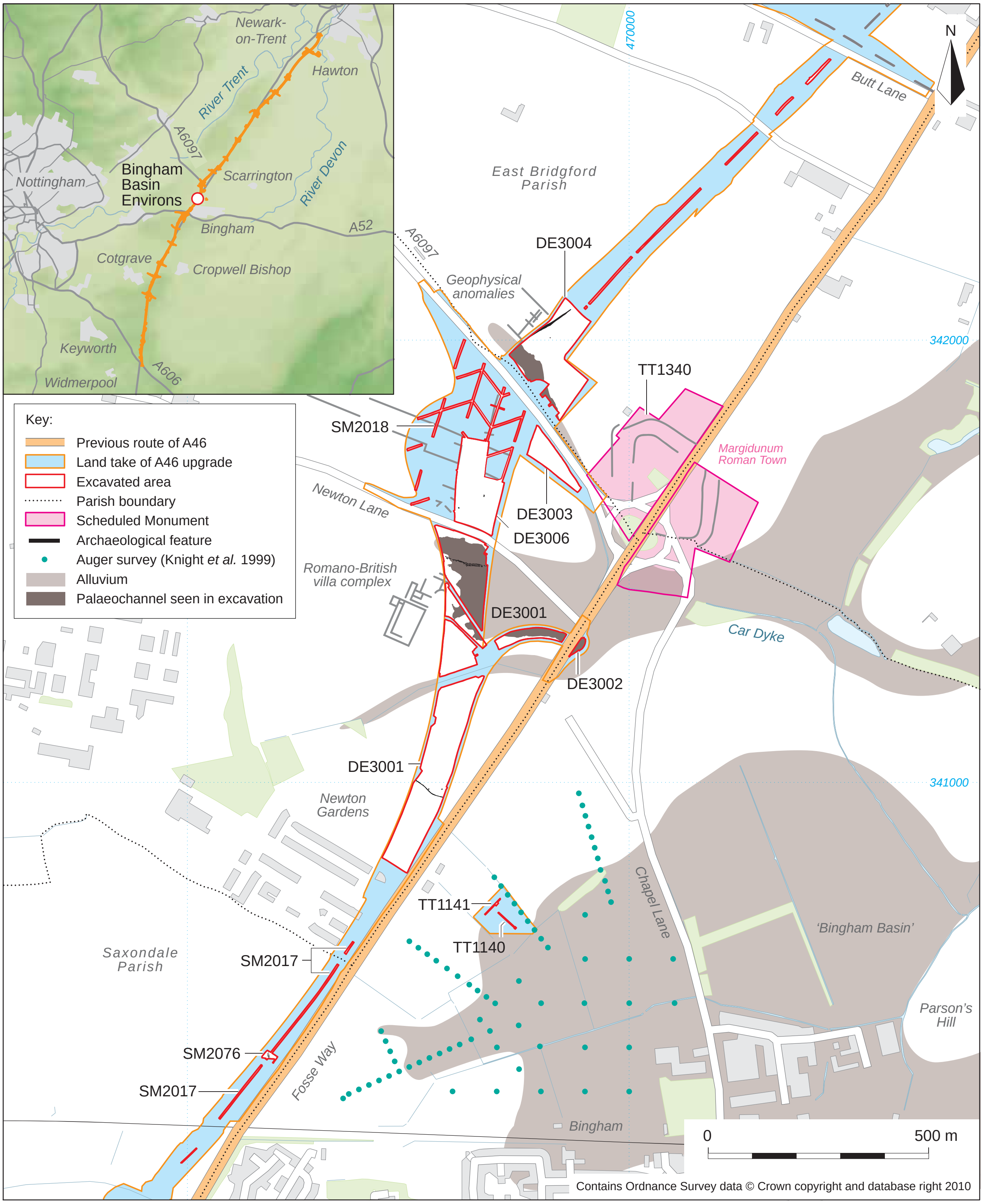


Fig.3.1 Bingham Basin Environs site

The accumulated evidence indicates that the Basin would have been an important feature within the landscape throughout much of prehistory. The alluvial deposits associated with it, and found more extensively along the River Devon floodplain, from Cropwell Bishop in the south to Hawton in the north, would have created a significant barrier across the landscape.

In the current investigations, no peat was found in TT1140 and TT1141, *c.* 200 m to the east of the Fosse Way, but alluvium and (in TT1140) an overlying layer

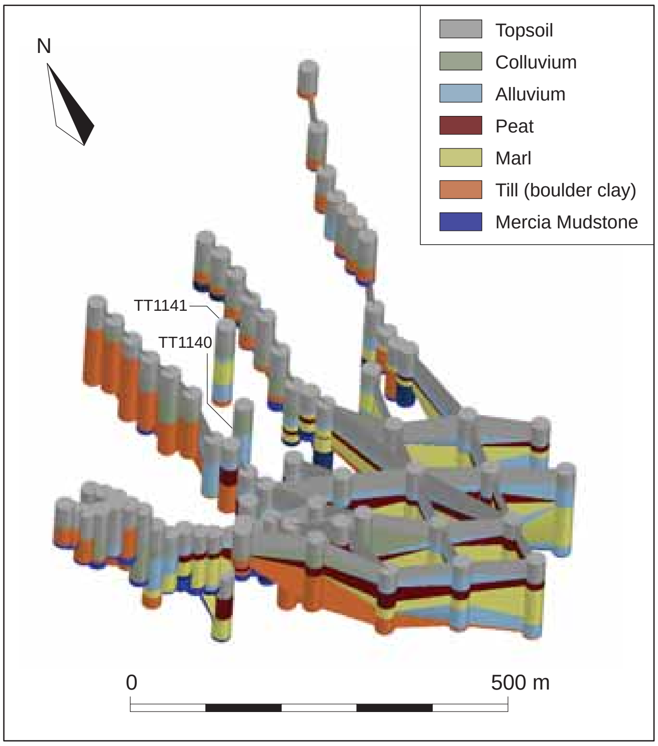


Fig.3.2 Results of the 1999 auger survey (Knight et al. *1999)*

of marl (context 114003) were identified, indicating that these deposits form part of the Basin deposits previously mapped by Knight *et al.* (1999) (Fig. 3.2). The basal alluvium was dominated by quite well-sorted non-calcareous silts with horizontal laminations indicative of slow-moving or still water. However, these had been affected by post-depositional processes (from soil formation higher in the profile). Although these sediments were unphased, they are likely to be of broadly Mesolithic date.

Many of the archaeological features in DE3001 were cut through the upper fill of a palaeochannel evident as a broad spread of dark alluvium, with diffuse ill-defined edges, running approximately north-west to south-east across the excavation area (Fig. 3.3). The sedimentary sequence recorded on the eastern edge of the excavation (Figs 3.3 and 3.4) lies outside the main part of the Bingham Basin as mapped by Knight *et al.* (1999), but within a *c.* 100–200 m wide tributary valley, mapped by Kinsley (1993a) and the BGS (1972), running eastwards along the southern edge of the Roman town of *Margidunum* and joining the main Basin north of Parson's Hill. These deposits eventually join the Bingham Basin deposits *c.* 2 km to the east.

Investigation of this palaeochannel, through test pits and trial trenches (TT1326–8) (Fig. 3.3), established that it was a broad shallow low-energy channel, prone to episodes of drying out – on at least one occasion for

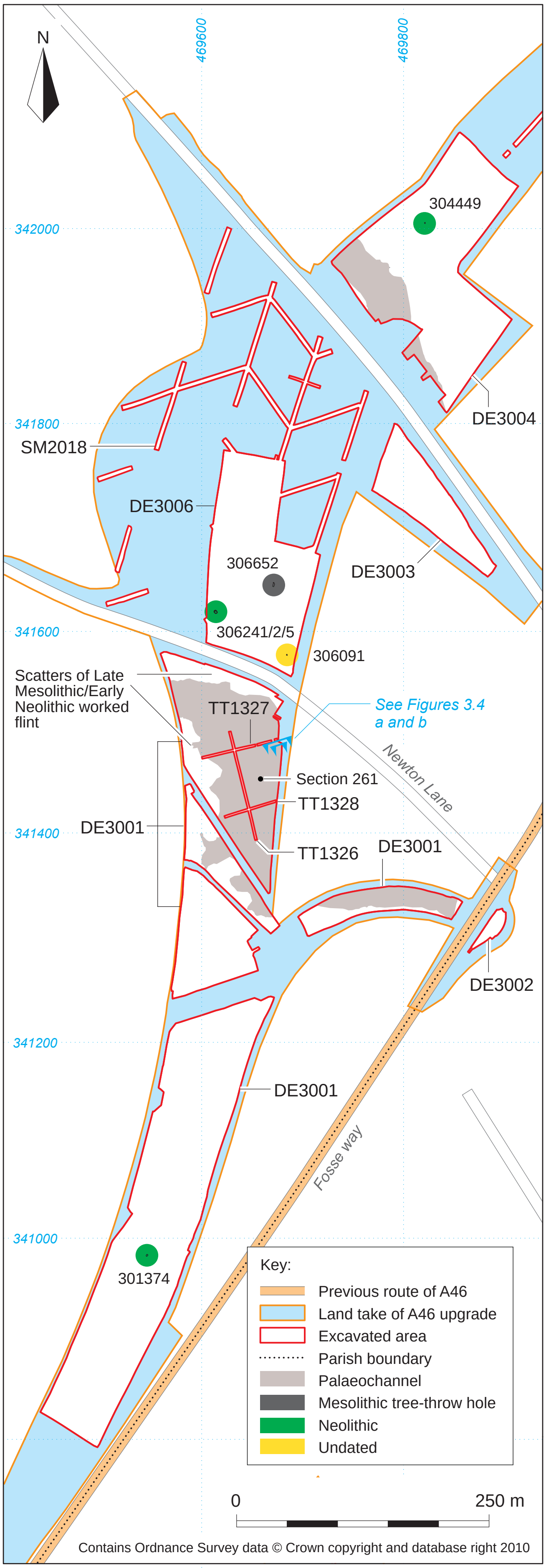


Fig.3.3 Extent of the palaeochannel and the distribution of Mesolithic and Neolithic evidence

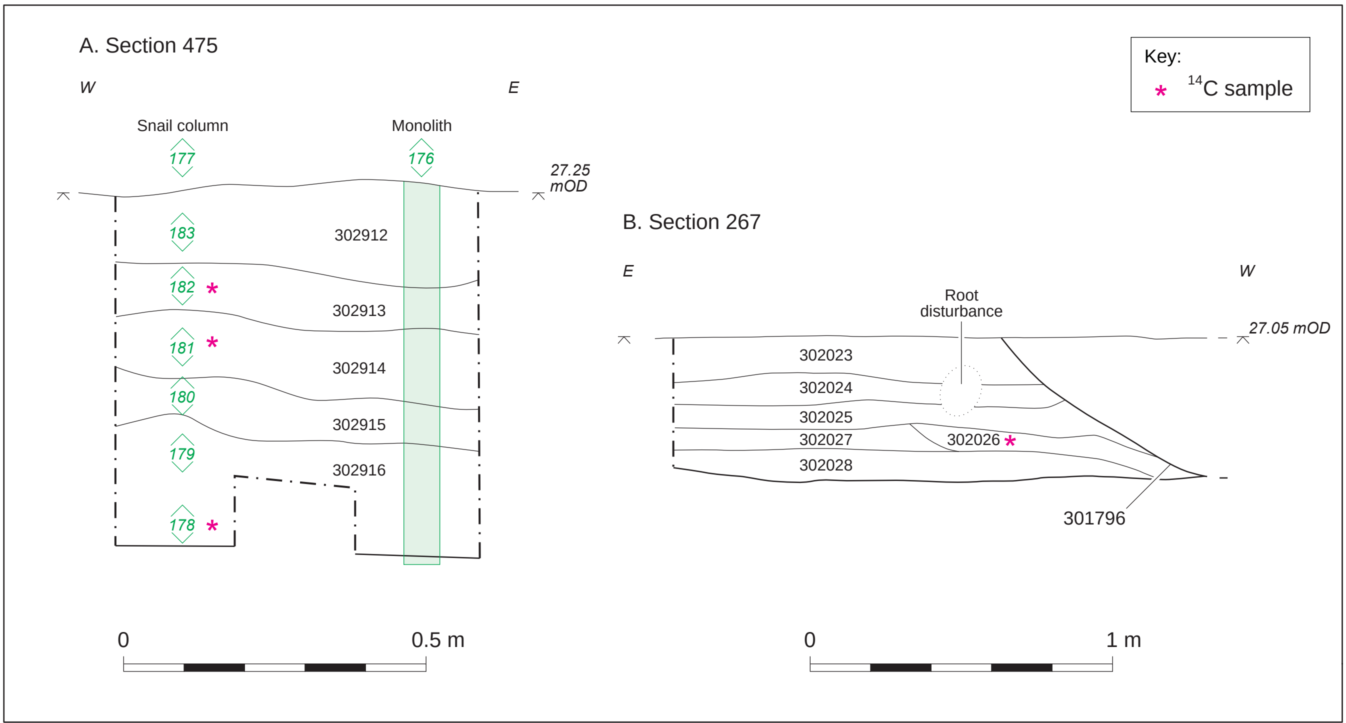


Fig.3.4 Palaeochannel deposits: A) Section 475 showing samples series 177 and monolith 176; B) Section 267

long enough for a stable land surface to develop before alluvial deposition resumed (see Norcott and Macphail, below). The channel was probably fed by calcareous springwater from the west or north-west, close to the modern village at Newton. A single red deer bone (unfused distal metatarsal epiphysis), recovered from alluvial layer 302026 at the eastern end of TT1327 (Fig. 3.4B), returned a radiocarbon date of 6420–6120 cal BC (95% confidence Beta-260721, 7410±50BP), placing it in the Late Mesolithic; there was no indication, however, that the animal had been hunted.

A series of bulk samples (177) taken through the channel sequence, some directly associated with monolith 176 at the eastern end of TT1327 (Fig. 3.4A), were subject to detailed mollusc and ostracod analysis. Other environmental indicators such as pollen, charcoal and charred plant remains were found to be in low abundance unsuitable for further investigation, and there was no surviving waterlogged material.

Radiocarbon dating of the snails, as well as the date from the deer bone (above), show that the sediment sequence was of Early Holocene date (Table 3.6, below). It contained a number of rare molluscs and ostracod taxa. The freshwater ostracod *Paracandona euplectella*, previously rarely found in the British fossil record, was recorded in abundance throughout the sequence. There was a wide range of mollusc species of freshwater, marshland and terrestrial habitats, with notable species including the locally extinct *Cochlicopa nitens* and *Discus ruderatus*, and the rare marshland species *Vertigo geyeri*. In addition, this sequence has shown that *C. nitens* seems to have survived later into the Holocene than previously thought. This is confirmed by the direct dating of minute molluscs, and the associated deer bone, which show that *C. nitens* persisted until at least 6420–6100 cal BC (Beta-260721, 7410±50 BP). Previously it was believed to have become extinct in Britain very early in the Holocene, prior to the forest optimum.

Hunter Gatherers and Early Farmers in the Mesolithic and Neolithic

Mesolithic (*c.* 8500–4000 BC)

The earliest evidence for human activity on the site comprised dispersed scatters of worked flint recovered from the alluvial banks on both sides of the palaeochannel, in DE3001, DE3006 and SM2018 (Fig. 3.3). The diagnostic material from DE3001 comprised blades and bladelets, trimming flakes from bladelet cores, cores with two opposed platforms and cortical backs, and a truncated blade. All of this material is consistent with a Late Mesolithic/Early Neolithic date.

The flints from DE3006 included blade and bladelet cores, a large chert blade, a microburin, a notched blade and microliths. A number of them were recovered from the upper fill of a large tree-throw hole (306652), which may have been open in the Late Mesolithic period (*c.* 6000–4000 BC); it was partially truncated by a Late Iron Age/early Romano-British enclosure ditch.

The flints from SM2018 included a bladelet core with two opposed platforms and a cortical back, and a core on a flake, both likely to date to the Late Mesolithic. Smaller quantities of similar worked flint were also recovered from later features and deposits in DE3002 and DE3003, perhaps evidence of wider activity in the area.

The presence of these worked flints on areas of slightly higher ground on either side of the channel suggest that the watercourse may have formed a focus for activity, providing small bands of hunter gatherers, travelling through the landscape perhaps on a seasonal basis, with both a source of water and an opportunity to gather plant resources and catch animals, birds and fish. This area – close both to the River Trent and the marshier land of the Bingham Basin, as well as to the numerous small watercourses fed by local springs – is likely to have been attractive for these people.

Neolithic (*c.* 4000–2200 BC)

The evidence for Neolithic activity on the site was relatively small scale. It is not clear for how long the Early Holocene channel in DE3001 remained active, but the overall landscape is likely to have changed little from the Mesolithic. The gradual silting up of the Bingham Basin, demonstrated by the shift from marls and peats to floodplain alluvium, is likely to have resulted in the creation of a marshland, but this still probably supported diverse plant communities and attracted animals to its watercourses. IRSL dates from a thin basal alluvial deposit provided a date of 6910±475 BC, with dates from the overlying colluvial deposits of 1940±260 and 258±740 BC, indicating a protracted sedimentation sequence (Knight *et al.* 1999; Barnett 1996).

Much of the Neolithic material was recovered from several possibly contemporary features such as tree-throw holes and pits, with only small quantities of diagnostic material recovered from later features or deposits. The earliest Neolithic feature is likely to be tree-throw hole 304449 (in DE 3004) (Fig. 3.3) containing an assemblage of worked flint that appears to comprise the debris from the manufacture of a Neolithic axe. Some 116 flakes, including refitting flakes, were recovered, all from the same flint nodule, suggesting the final shaping of an axe prior to finishing or polishing (see Leivers, below).

Another Neolithic flint assemblage was recovered from three (possibly just two) intercutting pits (306241, 306242 and 306245) in DE3006 (Fig. 3.5). It includes four cores (three multi-platform flake cores and a single 'levallois'-type core) from which all of the debitage recovered appears to derive, as do the two retouched tools – an unfinished willow-leaf arrowhead and an end and side scraper on a long tablet. Two fragments of polished Langdale stone axe were also recovered, possibly from the same axe (see Roe, below) – a large

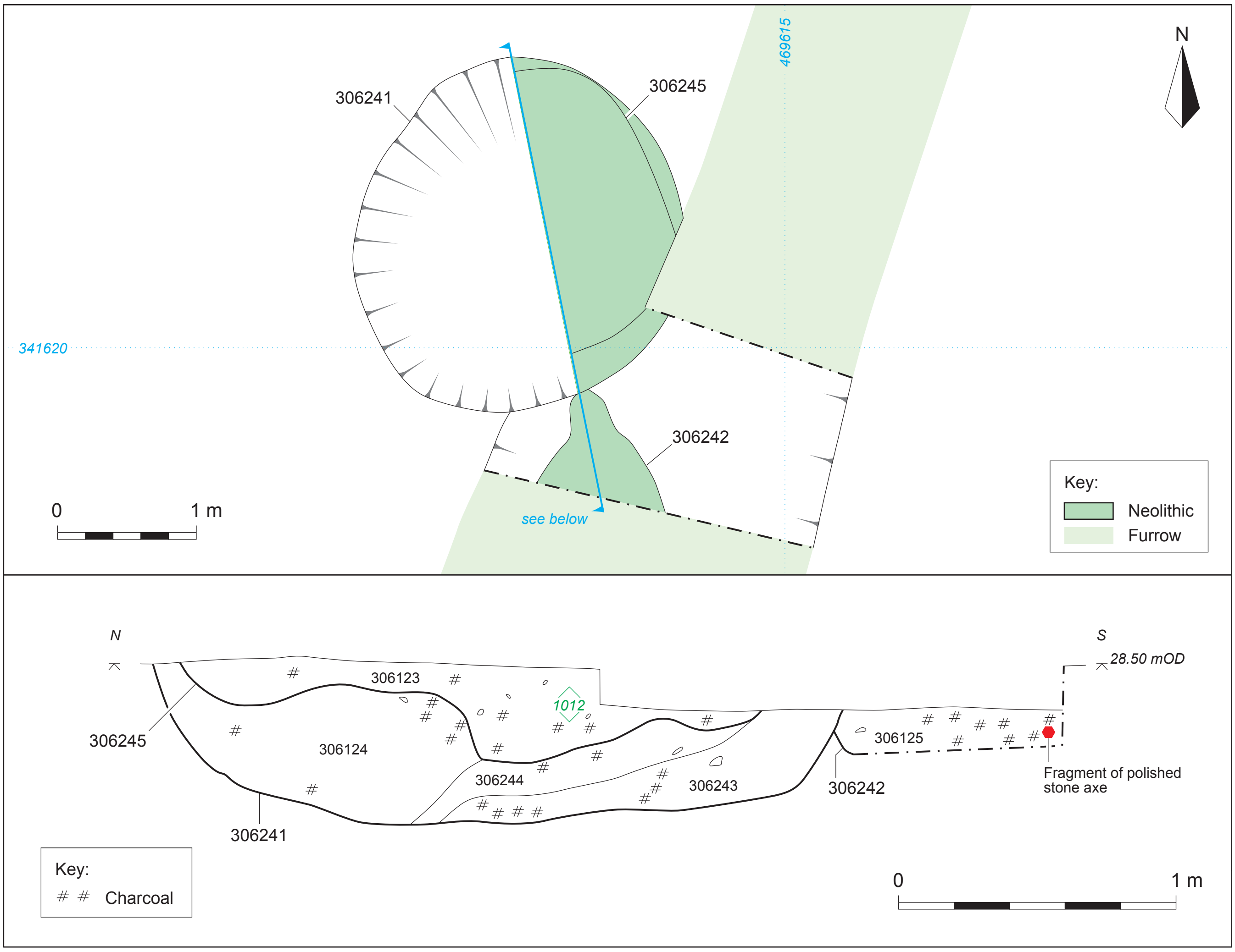


Fig.3.5 Neolithic pits 306242, 306241 and 306245, plan and section

fragment from pit 306242 (fill 306125) and a smaller second fragment from possible pit 306245 (fill 306123). It is clear that flint knapping was taking place close to these pits, probably in the Late Neolithic.

A soil sample from pit 306245 (fill 306123) contained a small quantity of charred plant remains – two fragments of hazelnut shell (*Corylus avellana*), three cereal grains (one *Triticum* sp. and two unidentifiable) and a single seed of *Vicia/Lathyrus* sp. (vetch/pea) (Stevens, in archive). There was also a small and highly fragmentary charcoal assemblage – oak and a lesser proportion of ash – which included several pieces that were glassy and vitrified, indicating a high temperature (Barnett, in archive).

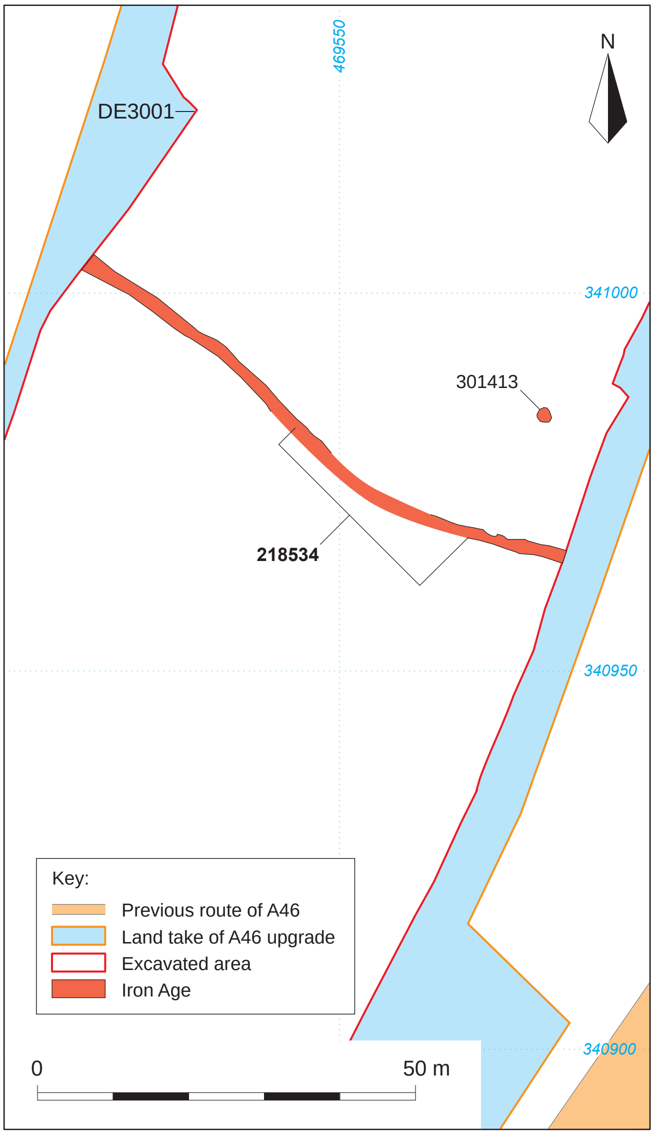
The only other probable Neolithic feature was a fairly substantial pit (301374), with slightly undercutting sides and a flat base, in DE3001. It appears to have silted naturally, although one of its four fills (301375) is clearly a dump layer, comprising a mixed deposit containing charcoal, from which a single sherd of Peterborough Ware pottery was recovered. This sherd was the only Neolithic pot from this section of the route, strongly suggesting that the immediate vicinity was not settled in the Neolithic, and that the small quantities of worked flint and stone represent occasional opportunistic activity in the landscape, such as hunting and gathering. The charcoal assemblage was dominated by ash at 60%, with oak and Pomoideae (the subfamily that includes apple, plum, hawthorn and blackthorn) roundwood also important at 18% and 14% respectively, the remainder being hazel (Barnett, in archive).

Late Bronze Age and Iron Age (*c.* 1100–100 BC)

There was no evidence for any activity on the site in the Early or Middle Bronze Age. However, nearly 1 kg of late prehistoric pottery was recovered, mainly from DE3001 (see McSloy, below). It includes a few diagnostically Late Bronze Age–Early Iron Age transitional sherds as well as material likely to be later. Although most of it was residual in later features, its presence does suggest a more pronounced later prehistoric occupation on the site than the few surviving dated features, below, indicate.

Late Prehistoric Landscape Division

A small quantity of the late prehistoric pottery may be associated with the earliest evidence for enclosure or division of the landscape along this section of the route, as represented by a trackway and a boundary ditch excavated in the southern half of the site. Further to the north there was a pit alignment running broadly west–east, of probable Middle or Late Iron Age date, while two palaeochannels are also likely to date to the Iron Age.



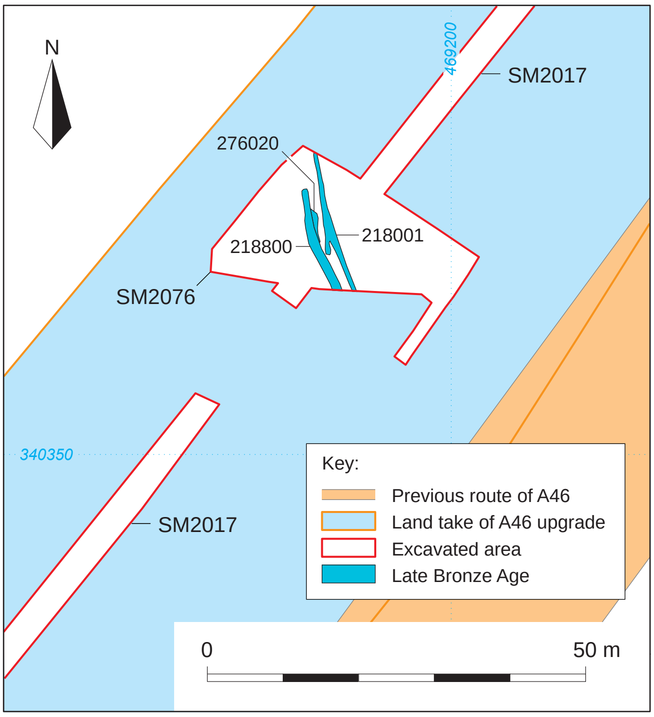


Fig. 3.6 Late Bronze Age and Iron Age ditches in the southern part of Bingham Basin Environs

Ditches and associated features

A double-ditched boundary or trackway (initially recorded in SM 2017 and further investigated in SM2076) comprised a pair of broadly parallel but meandering ditches (218800 and 218801), *c.* 1.6 m apart, aligned approximately NNW–SSE (Fig. 3.6). Both were fairly substantial, with relatively regular steep V-shaped profiles and flat bases. The western ditch (218800) showed evidence for a cleaning or recutting episode, but traces of the original cut (276020) were identified and a small quantity of later prehistoric pottery, not closely datable, was recovered from the early fills.

Further to the north, in the southern half of DE3001, was another boundary ditch (218534), aligned roughly NW–SE and extending for *c.* 75 m across the excavation area (Fig. 3.6). This also had a V-shaped profile, with steep slightly irregular sides and a concave base. It had completely silted up before the construction of two enclosures in the Late Iron Age/early Romano-British period. Quantities of sandy-tempered pottery recovered from the fills of the ditch are broadly Iron Age in date. Also recovered were cereal remains (grain and glume fragments of hulled wheat) and weed seeds, suggesting arable farming in the vicinity (Stevens, in archive).

To the north of ditch 218534 (and possibly contemporary with it) was a large Iron Age pit (301413) with slightly undercut sides and a flat base. Its single backfill deposit contained sherds of undiagnostic Iron Age pottery, fragments of animal bone and an iron ring of uncertain function (ON 696).

Pit alignment

A slightly irregular east–west line of small pits (or possibly postholes) extended for *c.* 100 m across almost the full width of DE3001, crossing the infilled palaeochannel (Fig. 3.7). The line comprised 126 pits, in three rows (Fig. 3.8). For much of its length its form was clear, although at the eastern edge of the excavation the line was heavily truncated by later palaeochannels and features, and its form was harder to determine.

The northern row of 55 pits was the most complete. They were roughly circular and of generally similar dimensions, measuring 0.6–1 m in diameter, with most falling in the 0.75–0.9 m range. Twenty-seven of them were excavated, with the majority having steep or moderately steep sides, and flat or slightly concave bases. Some had slightly irregular profiles, including one with undercut sides, and two with slightly stepped profiles, but this probably reflected the unstable nature of the alluvium into which they were dug, rather than specific differences in their form (Fig. 3.9). None contained any evidence for post-pipes or post-packing that might support their

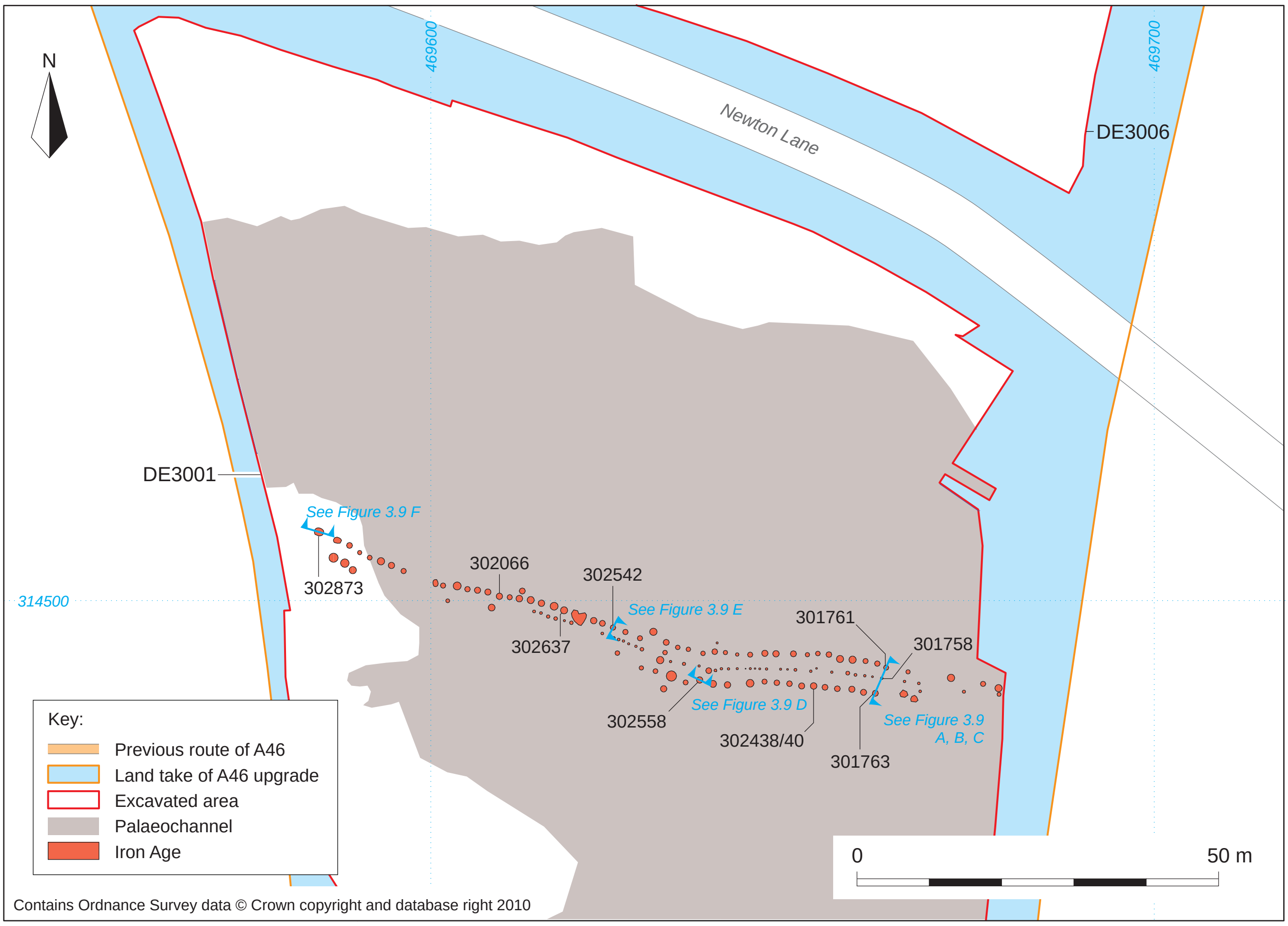


Fig.3.7 Iron Age pit alignment across the central palaeochannel

Fig.3.8 Iron Age pit alignment viewed from the east

interpretation as postholes. The only artefact of note was an assemblage of animal bone – predominantly cattle, but with single bones of horse and pig and a fragment of antler – from pit 302666 (see Higbee, in archive). The cattle bones are all from the left-hand side of the carcass and may belong to a single animal, but there is no evidence that they were articulated at the time of deposition, and nothing to indicate that these represented a structured or placed deposit.

The central row comprised a discontinuous line of 42 smaller and more closely spaced pits, generally 0.25–0.5 m in diameter. These too show regularity in form, most of the 23 excavated pits being circular or sub-circular in plan, with steep or moderately steep sides, and approximately half having flat bases and half slightly concave bases. As with the northern row, there was no strong evidence to suggest that they held posts.

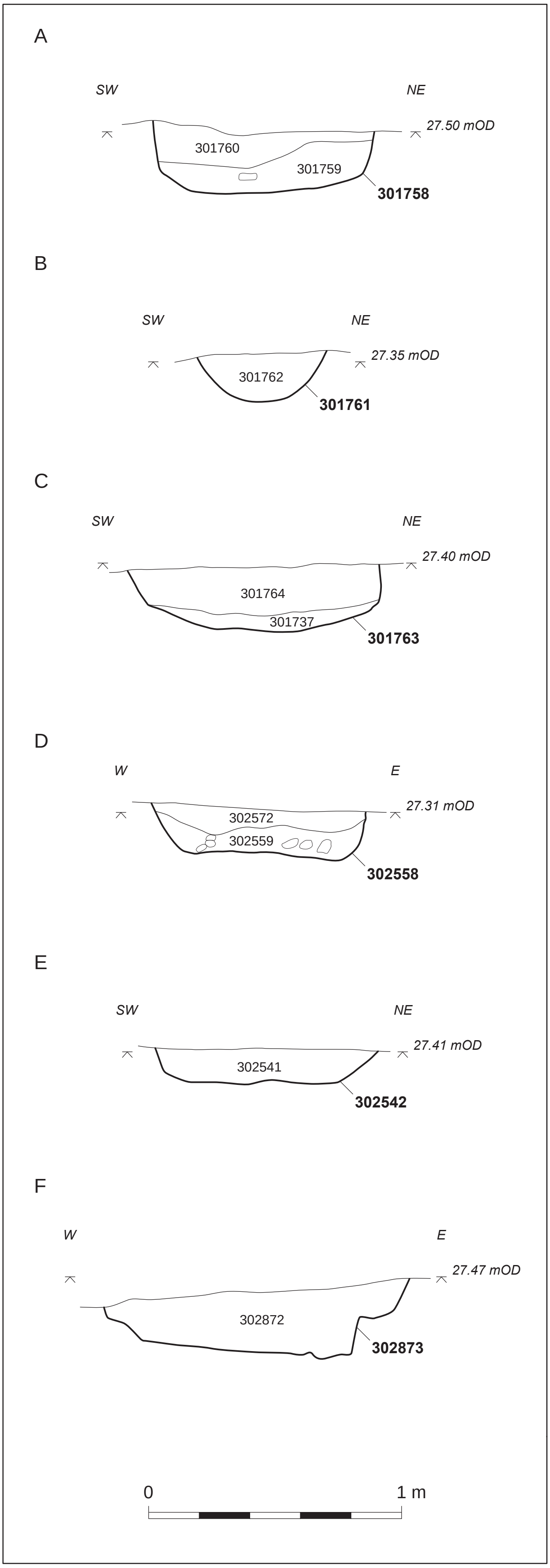
The southern row was the least complete, comprising 27 subcircular pits, of which most lay in the eastern half of the excavation area, although three lay close to the western edge. Many appear to have been paired with pits in the northern row, to which they were similar in form, being 0.7–1.2 m in diameter, and most having steep sides and flat or slightly concave bases. Again, none displayed evidence for having contained posts. One pit (302438) had completely silted before its eastern edge was cut by a second, much smaller pit (302440). The size and form of the latter was more similar to the pits of the central row, and may not even belong to the alignment, although it does have a similar profile to many of the pits excavated.

A further three small pits or postholes lay outside the rows but may have been associated with the alignment.

No datable artefacts were recovered from the pit alignment, and beyond the two intercutting pits, it is very difficult to establish a chronology for its creation or to determine which row, if any, was laid out first. It is clear that the three rows must be broadly contemporaneous, as they follow very similar lines, and the possible pairing of some of the pits suggests that they were a unified undertaking. Attempts to date the alignment scientifically met with limited success – an OSL date from pit 302637 suggests that they were excavated between the Middle Iron Age and early Romano-British period (321 BC–AD 159) (Table 3.1; see Chapter 2 for OSL dating

Table 3.1 Bingham Basin Environs: Optically stimulated luminescence (OSL) dating results. Information pertaining to measurements of radioisotopes (K, Th and U), field water, *in situ* external γ-dose rate and cosmic dose rate was not made available by the laboratory

Lab code	*Trench*	*Context*	*Palaeodose (Gy; ± 1σ)*	*Total dose rate (Gy ka^{-1}; ± 1σ)*	*OSL age (years before 2009 ± 1σ)*	*Age span*
X3748	302637	302638	4.15 ± 0.43	1.99 ± 0.09	2090 ± 240	321 BC–AD 159
X3796	Ditch 304077 (group 304118)	304078/304131	4.89 ± 0.33	2.27 ± 0.12	2155 ± 185	331 BC–AD 39



methodology). However, given that the alignment lay close to the main focus of Late Iron Age/early Romano-British settlement on the site (see Chapter 4), the almost complete absence of any finds from the alignment strongly suggests that the silting of the pits pre-dated the establishment of the settlement, probably in the 1st century BC.

As noted above, it was not possible from the fills of these pits to establish whether or not they were dug to contain posts, nor whether they silted naturally or had been deliberately backfilled. Soil samples were taken from a number of them for the recovery of both artefactual and ecofactual evidence, but apart from the animal bone in 302666, very few finds were present. Small quantities of cereal remains were recovered, of which hulled wheat (emmer or spelt) was the only identifiable element, which is consistent with an Iron Age date for these features.

Pit alignments such as these, both locally and regionally, are considered to be a feature of the 1st millennium BC (Willis 2006, 122–3; Brown *et al.* 2005, 179–80). They appear to have acted as linear boundaries, often associated with earlier monuments or landscape features including rivers. It is tempting to link the pit alignment to the earlier channel in the same location, although this is impossible to confirm without knowing the full extents of both features.

Iron Age Palaeochannels

A broad shallow palaeochannel (304509), aligned roughly NW–SE, was excavated at the southern end of DE3004 and is likely to be Iron Age or possibly earlier in date (Figs 3.1 and 3.10). It had shallow concave sides and a largely flat base, and had silted naturally with a sequence of waterlain deposits. Very few datable artefacts were recovered, although early Romano-British pottery was amongst the small amount of material from the upper fills, which were also cut by several late Romano-British features (Chapter 4).

A narrow ditch or channel (304118) ran north-east to south-west on the western side of DE3004. It appears to have originated within the site as a relatively narrow, shallow feature, but increased in size towards the south-west, to a maximum width of *c.* 4.6 m and a depth of *c.* 1 m. To the south-west it was obscured by later deposits and features. Although no datable finds were recovered, its upper fills were cut by late Romano-British features. The silty nature of its fills suggest that they too were waterlain, and it is possible that this channel was cut by fast-flowing water running down the slope, perhaps fed by a small periodic spring at its north-eastern end. OSL dating of the fills provided a date of 331 BC–AD 39 (X3796) suggesting that it was silting up before the Romano-British period (see Table 3.1).

Fig. 3.9 Selected sections of pits in the Iron Age pit alignment

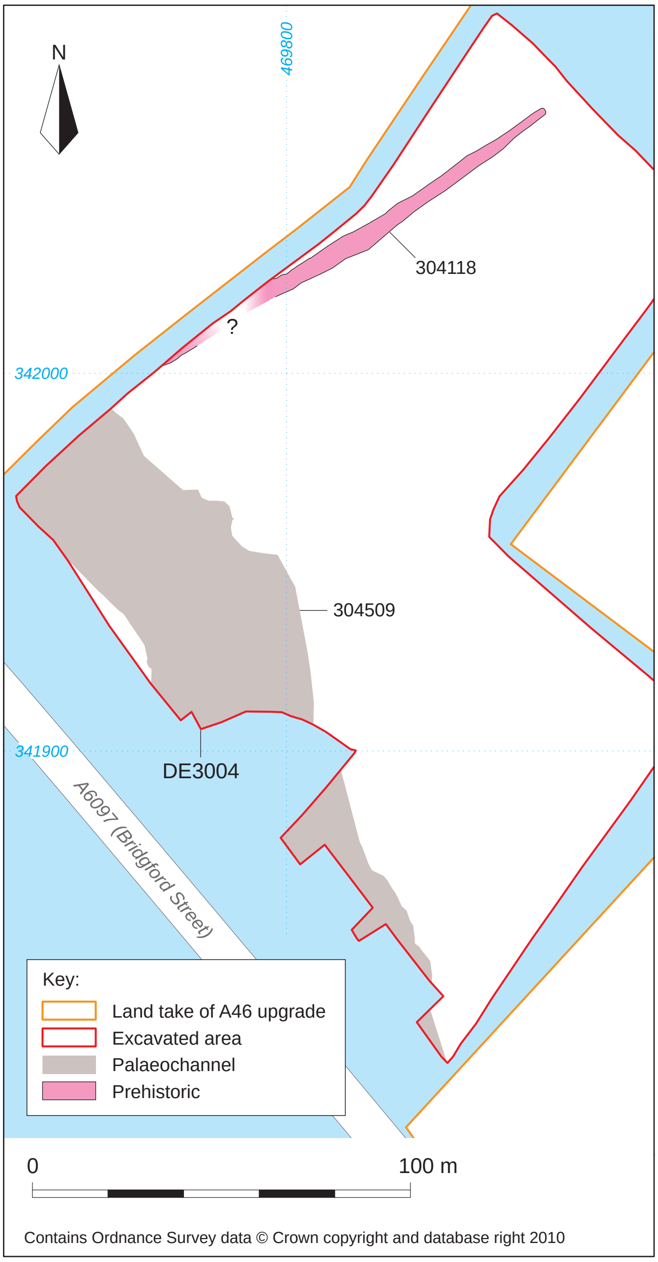


Fig. 3.10 Prehistoric channels 304509 and 304118 in DE3004

Table 3.2 Bingham Basin Environs: worked flint, the composition of the assemblage

Type	*Count*	*Group %*	*Total %*
Tools			
Scrapers	5	17.86	0.92
Burins	1	3.57	0.18
Projectiles	1	3.57	0.18
Microliths	4	14.29	0.74
Other tools	2	7.14	0.37
Misc. retouch	15	53.57	2.77
(subtotal)	28	100	5.16
Cores			
Flake cores & fragments	27	79.41	4.98
Blade(let) cores & fragments	5	14.71	0.92
Rejuvenation tablets	1	2.94	0.18
Crested pieces	1	2.94	0.18
(subtotal)	34	100	6.26
Debitage			
Blades & bladelets	28	5.83	5.16
Flakes	372	77.50	68.63
Chips	60	12.50	11.07
Irregular	20	4.17	3.69
(subtotal)	480	100	88.55
Total	542		99.97

Finds

Worked Flint

by Matt Leivers

A total of 542 pieces of worked flint was recovered from the site, including groups of Mesolithic and Neolithic date. They were visually scanned and recorded by type and number. Data was recorded on a site-specific Access database, following Wessex Archaeology's established methods of analysis. Table 3.2 gives the breakdown of the assemblage by type.

Raw materials were mostly small good quality pieces of grey/brown translucent, Wolds type (opaque mottled grey/white) or spotted grey flint. Surviving cortex is worn and abraded, suggesting a river deposit source (some of the smaller bladelet cores are obviously pebbles derived from the local drift geology). Indicators are consistent with other local assemblages, considered to derive from the gravels of the Trent and the associated drift (Henson 1989, 11).

Many pieces were redeposited, recovered from Late Iron Age and Romano-British features. The condition of some of the material (heavily patinated and/or edge damaged) is typical of redeposited assemblages. Taken as a whole, the material represents a low-level scatter of Late Mesolithic and later pieces. Within this general background, however, a number of patterns can be observed.

Late Mesolithic

A significant group of Late Mesolithic material lay on a slight rise on the edge of the broad alluvial palaeochannel (in DE3001) (Fig. 3.3). This group included several blades and bladelets, trimming flakes from bladelet cores, cores with two opposed platforms and cortical backs, and a truncated blade. Small quantities of struck flint from adjacent excavations (SM2018) included a bladelet core with two opposed platforms and a cortical back, and a core on a flake, indicating a continuation of Late Mesolithic activity in this area.

A second group of Mesolithic material came from DE3006 to the immediate north. This included blade and bladelet cores, a large chert blade, a notched blade and microliths (three of type A1a, one of type D1bii (Clark 1934)). The type D microliths came from tree-throw hole 306652, along with 15 small chips (some burnt), five core trimming flakes and three blade fragments. The group could be Late Mesolithic. One of the Ala microliths came from an undated pit (306091) which also contained eight pieces of debitage and one burnt flint fragment; the other two came from Romano-British ditches. While none of the other flint is especially distinctive, most of it is small and would not be out of place in a Mesolithic assemblage. The type A microliths are of particular interest as they provide one of the very few suggestions of an earlier Mesolithic presence anywhere along the road scheme. There is, however, no distinction in raw material or technology between these and the Late Mesolithic pieces identified elsewhere, and no indication of manufacture using the microburin technique.

Smaller groups of similar material came from DE3002 (including blades and bladelets and trimming flakes from bladelet cores) and DE3003 (including a canted burin and a bladelet core).

With the exception of a small number of pieces from DE3002, which are an opaque mottled grey/white flint that may be of Wolds type, the Late Mesolithic assemblage is almost exclusively made on grey/brown translucent flint, a type of material which is widespread in the valley of the Nottinghamshire Trent, and derives from the river gravels and related drift (Henson 1989, 11). Technological traits indicate the use of soft hammers to remove blades and bladelets from carefully maintained single platform (in the case of a few cores on small gravel pebbles) or bi-polar cores.

Neolithic

Among the material is a proportion of well-made but broader flakes which have the characteristics of Neolithic flint working. For the most part it is not possible to place these more accurately within the Neolithic, but in two instances the date is more definite.

The first of these is a group of knapping waste that probably derives from the manufacture of a flint axe, from tree-throw hole 304449 (in DE 3004). The 116 pieces (all flakes and small fragments) derive from a single nodule of opaque spotted grey flint. Only five pieces retain any cortex, which is very thin, sandy brown and pitted, suggesting a derived source. Refits are present. Four flakes have the thin curving profiles and multi-directional dorsal scars typical of axe thinning flakes. Although the flint appears to be of good quality, it may not have been especially conducive to knapping: at least 16 flakes (the vast majority of the larger pieces) removed flaking errors or rejuvenated crushed or otherwise unworkable platforms. It is probable that this group derives from an intermediate stage in axe manufacture: the absence of primary flakes and the near absence of secondary removals suggest that initial roughing-out had occurred elsewhere, and that this episode was one of final shaping prior to polishing or finishing.

Intercutting pits 306241 and 306245 (in DE3006) (Fig. 3.5) together contained an assemblage of 80 pieces, 12 of which are burnt. Four cores are present (three multi-platform flake cores and a 'levallois' type). Each core is of a different type of flint: opaque pale grey/white with cherty inclusions and a water-worn sandy brown cortex over a band of white cortication of varying thickness; translucent grey/brown with yellowish-brown cherty inclusions and very worn (in places) 'polished' cortex; translucent brown without apparent inclusions and a water-worn sandy brown cortex over a thin band of white cortication; and translucent dark grey flint with some pale cherty inclusions and a thin water-worn sandy brown cortex (the 'levallois' type core). All of the debitage could be assigned to one or other of these cores. Two retouched tools are present: an unfinished willow-leaf arrowhead, and an end and side scraper on a long tablet, both from the 'levallois' core. A later Neolithic date seems probable for this group.

Discussion

Locally, a general background scatter of later Mesolithic flintwork is punctuated by concentrations on the Mercia Mudstone ridge at Cropwell Bishop, in the Bingham Basin environs, and on river terrace deposits south of Thorpe. Concentrations of Late Mesolithic flint were found during fieldwalking at *Margidunum* (field 220) in 1991/2, including bladelet cores, a truncation, and a scraper on a blade; a backed blade is probably earlier (Kinsley 1993a).

Significant concentrations of Early Neolithic material are also known from the area, with a concentration of knapping debris encountered during fieldwalking, including blade cores, a leaf arrowhead and possibly a fragmentary second example (Kinsley 1993a, 7). Stray finds of polished stone axes from the area have been sourced to the Group VI (Langdale, Cumbria) and VII (Graig Lwyd, Caernarfon) factories (TPA 1992, 44).

Neolithic Stone Axe Heads

by Fiona Roe

Two fragments of Neolithic polished stone axe head, found in adjacent pits 306245 and 306242, have been examined macroscopically and both appear to consist of Langdale tuff (Group VI) from the Lake District. Each fragment has an area of very finely striated surface where the polishing was carried out. The larger of the two fragments appears to be a flake from an axe head that has been battered at the thicker end, perhaps intentionally, while it also seems to have been slightly burnt. It came from pit 306242 (fill 306125) along with a single broken flint flake (see Leivers, above). This pit was adjacent to pit 306245, the fill of which (306123) contained a small chip from a Langdale axe head; it could just possibly be a fragment from the battered piece of axe head in pit 306242. Pit 306245 (and pit 306241 which it cut) also produced flints that are later Neolithic in character (see Leivers, above) but there was no pottery in either pit. Langdale tuff was found to be the most frequently used stone for axe heads both in Nottinghamshire (Cummins and Moore 1973, 243) and in the East Midlands generally (Clough and Cummins 1988, 47). Unfortunately this is an area for which good associated finds are uncommon, but in any case this was an axe head material with a very long period of use, likely to encompass virtually the whole of the Neolithic.

Late Prehistoric Pottery

by E.R. McSloy

A total of 180 sherds (920 g) of late prehistoric pottery was recovered, almost all coming from DE3001. It has been recorded in a similar manner to the larger groups from High Thorpe (Chapter 6) and Cropwell Wolds (Chapter 8), however, no thin-section analysis was undertaken.

Fifty-two sherds derived from Late Bronze Age/Iron Age contexts. A further 17 sherds, recovered from Late Iron Age/early Romano-British deposits, are dissimilar in character to the Late Iron Age material described elsewhere (see Chapter 4) and is considered to be residual. The remainder of the assemblage was residual in Romano-British deposits or from unphased/unstratified contexts.

Pottery fabrics are described below, and the overall range is presented for the stratified and redeposited material shown in Table 3.3. Most abundant are vesicular types, representing leached (fossil) shell or possibly mudstone-tempered fabrics. The remaining fabrics are mainly quartz and metasandstone-bearing types similar in character to those described from among the Middle Iron Age groups from High Thorpe and Cropwell Wolds (below). Quartzite-tempered fabrics are also recorded which are basically similar to the material from a Late Bronze Age–Early Iron Age group from Thorpe (Chapter 9).

The stratified and redeposited groups occur in a similar range of fabrics (Table 3.3). Identifiable vessel forms and decorated sherds are, however, only present among the redeposited group. The small number of 'featured' vessels, including impressed fingernail/fingertip rim decoration (Fig. 3.11.1–3) and at least one carinated vessel, are factors suggestive of dating in the transitional Late Bronze Age/Early Iron Age. Only one sherd (residual in a Romano-British pit) features repeated vertical/oblique-angled scoring, characteristic of the Middle Iron Age 'Scored ware' tradition (Elsdon 1992).

Table 3.3 Bingham Basin Environs: prehistoric pottery, summary quantification by fabric/nature of context from which recovered

	Stratified		*Redeposited*		*Total*	
Fabric	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*
FL	1	14	2	8	3	22
MS	1	41	3	20	4	61
QT	6	49	2	7	8	56
QZ	17	121	41	151	58	272
VES1	21	98	65	293	86	391
VES2	6	13	14	89	20	102
SH1	-	-	1	16	1	16
Total	52	336	128	584	180	920

Composition

Summary fabric descriptions

FL Flint: dark grey with red-brown exterior surface. Soft with harsh feel. Common or abundant rounded, well-sorted quartz/quartzite; common to sparse angular (calcined) flint in range 1–3 mm.

MS Meta sandstone: grey-brown throughout; Soft with sandy or harsh feel. Common subrounded sand-sized quartz in range *c.* 0.3–0.5 mm and moderately sorted polycrystalline sandstone/metasandstone in range 1.5–3 mm.

QT Quartzite: dark grey, typically with light brown exterior surface; Soft with smooth feel. Silty matrix with sparse, moderately sorted sub-angular quartzite in range 1.5–3 mm; some sparse fine, subrounded quartz and rounded clay pellet.

QZ Quartz: grey throughout or with red-brown exterior surface. Soft sandy or harsh feel. Common or abundant moderately sorted rounded, quartz/quartzite with some quartzite up to 0.5 mm. May contain sparse rounded clay pellet (up to 2 mm).

VES1 Vesicular (finer): soft with smooth/soapy feel. Orange-brown throughout or with grey core and inner margin. Silty matrix with common plate-like vesicles in range 1–2 mm; sparse rounded clay pellet 1–2 mm.

VES2 Vesicular (coarser): soft with soapy feel. Orange-brown to light brown throughout. Laminated fracture with abundant plate-like vesicles 2–4 mm.

SH Shell/limestone: soft with harsh feel. Grey-brown throughout. Common, poorly sorted fossil shell and shelly limestone in range 1–4 mm.

List of illustrated sherds (Fig. 3.11)

1 Round-bodied jar? with complex everted rim and fingertip decoration. Context 301407, ditch 301406 (RB), DE3002.

2 Jar? with upright rim and fingertip decoration. Context 301512, grave 301510(RB), DE3001.

3 Jar with simple everted rim. Context 301405, cut 301404, ditch 218524 (RB), DE3002.

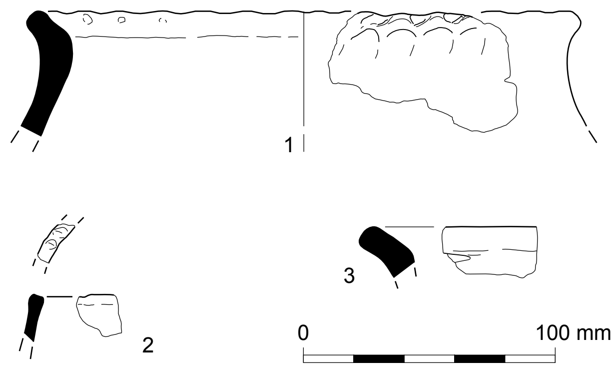


Fig. 3.11 Prehistoric pottery (1–3). See catalogue for description

Environmental Remains

Sediments and Soil Micromorphology

by David Norcott and Richard Macphail

Three monolith samples associated with the Early Holocene deposits in the Bingham Basin environs were investigated: monolith 176 (TT1327) in DE3001 (Fig. 3.3) and 114001 (TT1140) and 114101 (TT1141) to the south on the eastern side of the Fosse Way (Fig. 3.1). The samples were described according to Hodgson (1997), and interpretations made regarding mode of deposition, formation processes, likely environments represented and potential for palaeoenvironmental analysis. Monolith 176 was also subject to micromorphological analysis.

Monolith 176

The sediments sampled by monolith 176 (Fig. 3.4A) were deposited in a shallow still body of water fed by calcareous-rich springwater (Table 3.4). The presence of freshwater ostracods throughout the sequence indicates at least intermittent presence of water. The numbers of terrestrial as well as freshwater snails throughout indicates regular drying out of the water body and reversion to a terrestrial environment. A buried soil (302913) represents an extended stable period, with little input of sediment. The base of this soil coincides with a change in the mollusc assemblage, suggesting that the soil layer may represent a sizeable period of time, although the possibility exists that the abrupt faunal change may be due to a section of the sequence being eroded away at that point (between contexts 302914 and 302913).

Micromorphological analysis found that the marl developed upwards over a non-calcareous coarse sandy and gravelly alluvium (302916) which has a bioworked boundary with the overlying calcareous marl (302915) (Figs 3.12A and 3.13A). The alluvium 302916 was found to be very similar to alluvium investigated by soil micromorphology at Farndon Fields to the north (see Geoarchaeological Investigations, Chapter 2). The marl extended upwards through contexts 302915–302912 and essentially is a silt and sand clast-free micritic calcite deposit. The marl formation within this sequence is the result of calcium carbonate deposition from calcium carbonate ($CaCO_3$)-charged groundwater/springs, and

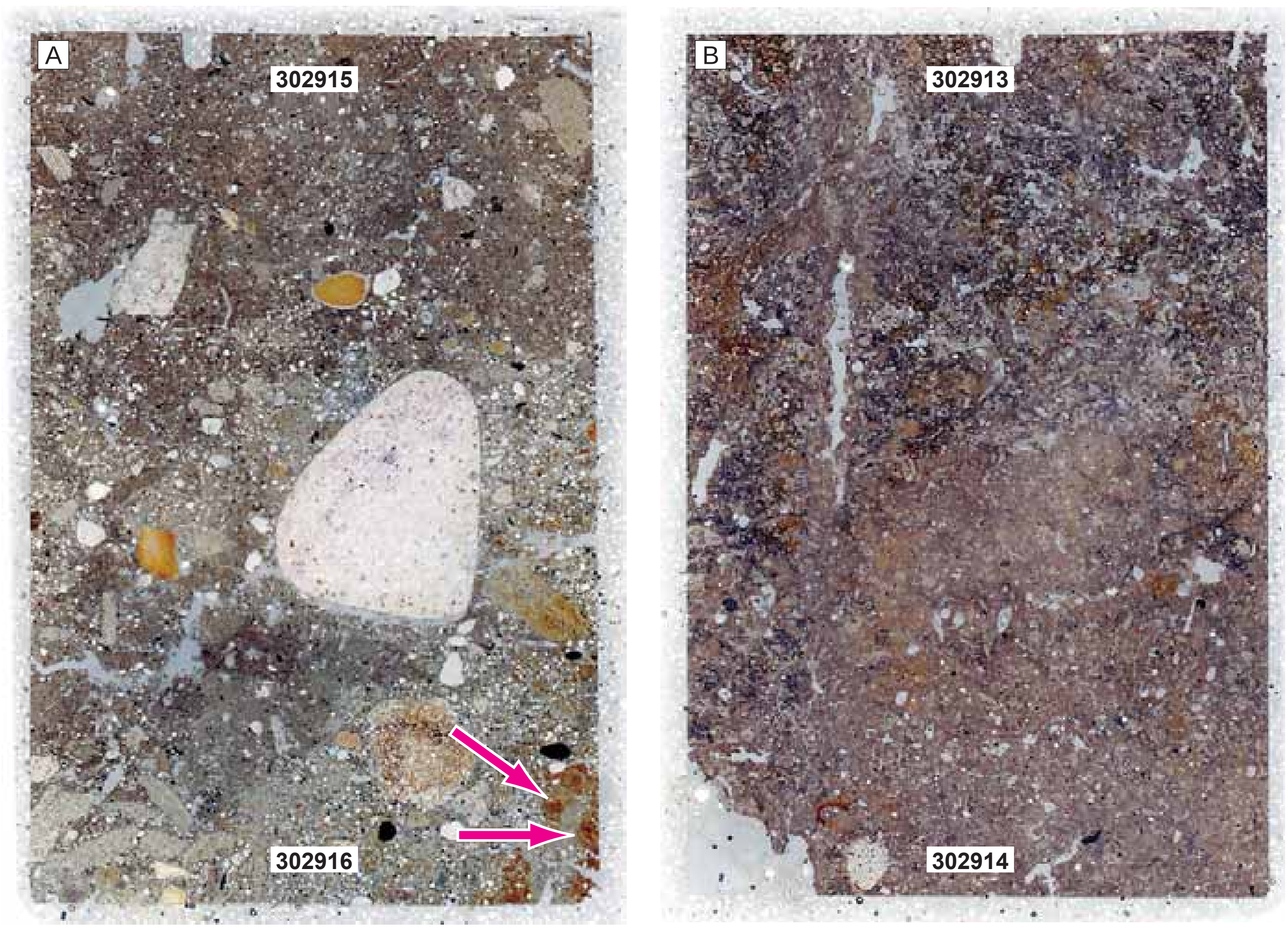


Fig. 3.12 Sediment photomicrographs: A) marl 302915 over coarse alluvium 302916, showing burrow-mixed boundary; anomalous decalcified soil has also been burrowed-in (arrows); width is c. *50 mm; B) burrowed boundary between fine charcoal-rich 302913 and less humic 302914; width is* c. *50 mm*

Table 3.4 Bingham Basin Environs: monolith 176 sediment descriptions

Depth (m)	*Context*	*Sediment description*	*Interpretation*
0.00–0.15	302912	10YR 7/3 very pale brown friable gritty silt (technically loamy sand via finger testing). Large vertical wormholes with darker grey material (presumably overlying soil). Highly calcareous (vigorous reaction with 10% HCl). Land snails noted (*Oxychilus*). 10% fine macropores, clear to abrupt boundary	Marl/tufaceous marl
0.15–0.27	302913	10YR 4/2 dark greyish brown friable gritty silt (as above technically loamy sand). Highly calcareous (vigorous reaction with 10% HCl). Rodent's tooth noted (?vole) + shell frags. *c*. 1% fine to very fine macropores. Clear boundary	Buried land surface/ soil A-horizon
0.27–0.35	302914	10YR 5/3 brown gritty silt (loamy sand), highly calcareous (vigorous reaction with 10% HCl). Shells present again, small calcareous lumps *c*. 1mm visible in sediment. 1–2% very fine macropores. Clear boundary	Marl/B-horizon of soil
0.35–0.45	302914/302915	10YR 5/3 brown – as above context but slightly paler and without calcareous lumps visible. Still very calcareous. Clear boundary	Marl
0.45–0.63	302915	10YR 5/2 greyish brown sandy silt loam, calcareous, occasional very small sub-angular stones, few macropores. Sharp/abrupt boundary	Alluvium
0.63–0.68	302916	Gley 1 5/1 greenish grey clay to silty clay, non-calcareous	Alluvium/geology

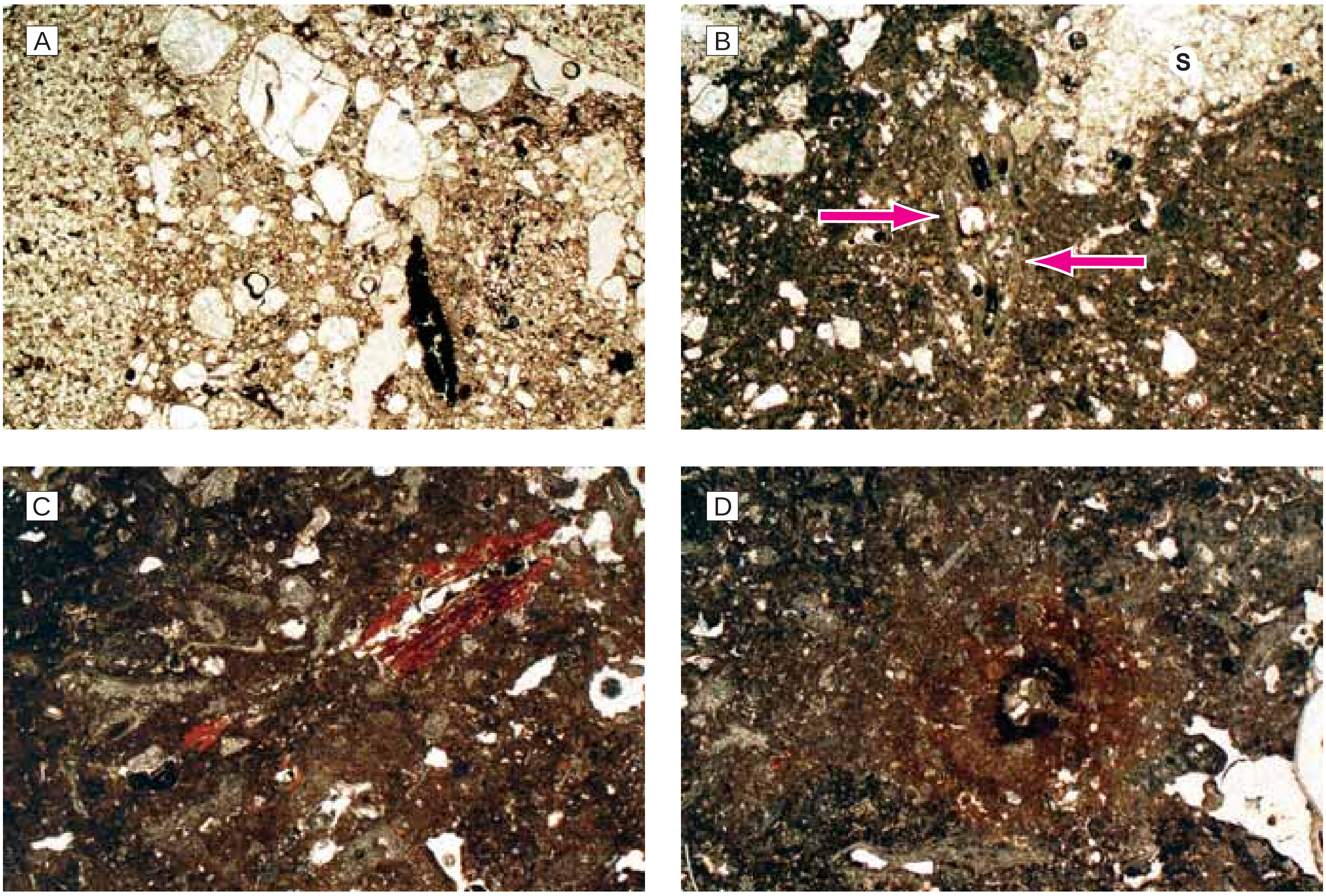


Fig. 3.13 Sediment photomicrographs: A) coarse alluvium 302916, showing the presence of charcoal; plane polarised light (PPL); frame width is c. *4.62 mm; B) marl 302915; calcitic root pseudomorphs have developed within the marl (arrows), which has also been affected by burrow-mixed sands and silts; PPL; frame width is* c. *4.62 mm; C) contexts 302913–4 showing* in situ *preserved remains of brown lignin of woody plants, possibly indicating the local development of fen carr vegetation; PPL; frame width is* c. *4.62 mm; D) context 302912 showing iron staining and iron channel hypocoating (centre), recording fluctuating water tables; PPL; frame width is* c. *4.62 mm*

an upward change from grey to pale brownish grey reflects increasing staining by humus and inputs of detrital amorphous organic matter. The later process may be a response to climatic warming through time. The marl contains evidence of extensive rooting, possibly sometimes by woody vegetation (there is the possibility of local fen carr development within contexts 302913–302914; Fig. 3.13C), and burrowing of an often muddy marl sediment by small invertebrate mesofauna including earthworms (Fig. 3.13B). Fluctuating water tables are indicated by some localised decalcification along root channels, and secondary microsparite infilling of these voids (Fig. 3.13D). With the exception of some clayey traces at the top of context 302912, the process of alluviation is negligible throughout much of the sequence. Contexts 302913 and 302914 did contain some very fine charcoal-rich layers (Figs 3.12B and 3.13A) which may indicate local burning, possibly attributable to human activity during the Mesolithic.

Monoliths 114001 and 114101

The sequences from TT1140 and TT1141 (Fig. 3.1) were *c.* 70 m apart, and were sampled at their base by monoliths 114001 and 114101 respectively, in order to examine alluvial deposits which were interpreted on site to have contained deposits associated with the Bingham Basin mapped by Knight *et al.* (1999). Both sequences were dominated by quite well-sorted silts with horizontal laminations. These were deposited in slow-moving or still water, and have been affected somewhat by post-depositional soil formation (from land surfaces higher in the profile). The sediments were non-calcareous, and although examined for mollusc content none was found. The sequences represent silts deposited in slow-moving or lacustrine water conditions, and although unphased are likely to be of broadly Mesolithic date and associated with the Basin itself.

Ostracods

by John Russell

Six samples were investigated from soil monolith 176 for ostracods (Fig. 3.4A). Samples of approximately 20 cm^3 were treated with a weak solution of hydrogen peroxide and wet sieved through a 63 μm sieve. The sediment was dried and sieved to fractions of 500 μm, 250 μm and 125 μm. Ostracods were picked out under 10–60x magnification with transmitted and incident light using a Vickers microscope. Specimens were picked out and kept in card slides and some semi-quantitative counting undertaken (Table 3.5). Identification and interpretation of ecology of non-marine taxa follows Meisch (2000).

All six samples yielded ostracods of predominantly Candoniid form, dominated by *Paracandona euplectella*. Other species recorded include *Candona neglecta* and *Cyclocypris ovum*, both tolerant of a wide range of freshwater bodies. The dessication resistance of the eggs of *Candona neglecta* make them notably suitable for pioneer colonisation of Early Holocene small European water bodies (Absolon 1970; 1973; Boomer 2002).

Paracandona euplectella is presently known across northern Europe (Meisch 2000), but is rarely recorded in the British Isles, although Henderson (1990) suggests it may be more widespread than the distribution data implies. It is also uncommon in fossil assemblages, with the only other British Isles Holocene records being at Breydon in East Anglia (Boomer and Godwin 1993) and Early Holocene lake marl deposits in Ireland (eg, McKenzie 2010; Tibert *et al.* 2007; Griffiths 1998). The species usually occurs in small water bodies, swamps, bogs, temporary pools and the littoral zone of lakes. The presence of the species in this context is likely to relate to the edges of the shallower parts of a vegetated calcareous lake. McKenzie (2010, 23) suggested at

Table 3.5 Bingham Basin Environs: ostracod assemblage from monolith 176

Context no.	*302916*	*302916*	*302915*	*302914*	*302913*	*302912*
Depth (m)	*0.58–0.60*	*0.47–0.50*	*0.39–0.41*	*0.29–0.31*	*0.18–0.21*	*0.07–0.10*
Candona sp.					x	
Candona neglecta	•	x	x	•	xx	xx
Candoniid	x	x	•			
Cryptocandona sp.	x					
Cyclocypris ovum		x	x		x	x
Cypridopsis sp.				x		
Fabaeformiscandona sp.	x			x	x	
Ilyocypris gibba						
Paracandona euplectella	xx	xx	xxx	xx	xxx	xxx
Potamocypris sp.					•	
Pseudocandona sp.					x	

KEY: • = 1 specimen; x = 1–9 specimens; xx = 10–50 specimens; xxx = over 50 specimens

Lough Monreagh that the dominance of *Paracandona euplectella* could be related to its ability to cope with rapid variations in local conditions and also not being entirely dependent upon one food source.

Radiocarbon Dating

by Michael J. Grant

Introduction

Successful radiocarbon dating strategies often focus upon the dating of short-lived remains where the sources of carbon are well understood. These can take the form of seeds or wood fragments from terrestrial settings, or marine shells where the local carbon source (reservoir effect) is well understood. However, when suitable material is absent (including phasing material such as pottery) and the chronology of the sequence needs to be established, material considered less optimal may be considered.

This could be in the form of charcoal fragments where the age of the tree they derived from is unknown (some trees live hundreds of years) or animals that derive their carbon source from a number of different environments. The latter is a particular problem as terrestrial molluscs ingest calcium carbonate, which is digested to carbon dioxide (CO_2), dissolved in the body fluids and subsequently incorporated into their shells. Since the carbonate available to land snails is generally old (depleted in radiocarbon (^{14}C)), it confers an age anomaly to the shell carbonate which can be a maximum of *c.* 3000 ^{14}C yrs (Goodfriend and Stipp 1983). For this reason the dating of terrestrial molluscs has often been avoided. However, some studies have shown that the size of the age anomaly correlates positively with snail body size (Goodfriend and Hood 1983; Goodfriend 1987). It is also known that molluscs that derive the majority of their carbon from atmospheric and plant sources, as opposed to carbon sources such as limestone, will provide more meaningful date estimates. Fossil shell material can also be contaminated after burial by recrystallization, carbonate overgrowths and encrustations, and by isotopic exchange with the atmosphere or soil water (Brennan and Quade 1997). Molluscs that do not ingest limestone thus have the potential to yield reliable radiocarbon ages and, therefore, can provide age constraints for a wide range of Quaternary deposits, as long as they remain a closed system with respect to carbon after burial. Careful selection of the taxon based upon its habitat can also minimise the incorporation of ancient carbon, such as the selection of detritus-feeders.

The dating of mollusc shells, when compared to dated plant material, has produced encouraging results (Goodfriend and Stipp 1983; Yates 1986; Preece 1991; Preece and Day 1994; Pigati *et al.* 2004; 2010; Xu *et al.* 2011). At Holywell Coombe, Kent (Preece and Bridgland 1999), Sidlings Copse, Oxfordshire (Preece and Day 1994) and Courteenhall, Northamptonshire (Meyrick and Preece 2001) dated mollusc shells provided internally consistent and, at times, only marginally greater than the expected dates. However, dating terrestrial molluscs is not always successful, as at Weston Favell, Northamptonshire where little stratigraphic consistency within the sequence of dates could be found (Meyrick and Preece 2001).

Notwithstanding difficulties with applying the technique, recent advances in understanding the sequestration of old carbon into molluscs have demonstrated the potential that radiocarbon dating of molluscs can yield reliable dates within acceptable limits, particularly with minute molluscs, although this is dependent upon careful sample selection (notably for identifying digenesis) and consideration of taphonomy (Pigati *et al.* 2010).

Methodology and sample selection

Attempts to date the Bingham Basin Environs sequence were in the first instance limited to a single *Cervus elaphus* right metatarsus within the stratified sequence (302026) (Fig. 3.4B), with no other suitable material available for dating such as seeds, bone or charcoal. As a result, additional radiocarbon dating has been obtained from the direct dating of some of the molluscs themselves. Given the results of previous studies on terrestrial molluscs (notably Pigati *et al.* 2004; 2010; Preece and Bridgland 1999; Preece and Day 1994), it was decided to date a series of carefully selected minute terrestrial molluscs that had not been subject to post-depositional diagenesis (cf. Yates 1986). Dating was conducted at three stratified locations within the sequence where a pair of dates from the shells of different species of minute land snail was obtained. The molluscs selected (a) were relatively frequent within the sequence, (b) had an ecology suggesting that they were most likely to be derived from the local terrestrial locations, and (c) derived their carbon from predominantly organic and atmospheric sources.

The broad ecological preferences of the three molluscs are given below (taken from Kerney 1999):

Vallonia costata (Müller); size 2.0–2.7 mm: inhabits dry, open places, mainly on chalk or limestone but also on shell-sands and other base-rich soils such as alluvial silts. It is typical of short-tufted grassland, natural cliffs and screes. It can tolerate light shading in dry, scrubby places. Pigati *et al.* (2010) found in America that *Vallonia cyclophorella* and *V. perspectiva* can provide dates that deviate from the true age by up to 4%, while Brennan and Quade (1997) found comparable dates between *Vallonia* sp. and organic matter.

Punctum pygmaeum (Draparnaud); size 1.2–1.5 mm; catholic species found in a wide variety of well-vegetated places, avoiding only the driest and most exposed habitats and commonest on base-rich soils. It is particularly characteristic of leaf litter in deciduous woods, but also lives in marshes, hedge banks and stable grassland.

Acanthinula aculeata (Müller); size 2.0–2.2 mm: mainly found in deciduous woodland, commonest on base-rich soils and typical of leaf litter and fallen timber in shady places. Occasionally it may live in more open situations, such as hedge banks, undisturbed scrubby waste ground or at the base of moist vegetation in stable grassland or at the edges of marshes.

Samples were taken from contexts 302916 (sample 178),

Table 3.6 Bingham Basin Environs: radiocarbon dates from Early Holocene palaeochannel deposits

Context/sample	*Material identification*	*Laboratory code*	*δ¹³C (‰)*	*Radiocarbon age (BP)*	*Calibrated date range (95% confidence) cal BC*
(302913) <182>	44 * *Vallonia costata*	SUERC-41038	-3.5	6840±35	5800–5640
(302913) <182>	80 * *Acanthinula aculeata*	SUERC-41045	-7.9	6840±35	5800–5640
(302914) <181>	24 * *Vallonia costata*	SUERC-41039	-8.3	8265±35	7460–7170
(302914) <181>	50 * *Acanthinula aculeata*	SUERC-41044	-8.5	7555±35	6470–6370
(302026)	cf. *Cervus elaphus* right metatarsus	Beta-260721	-23.9	7410±50	6420–6100
(302916) <178>	27 * *Vallonia costata*	SUERC-41037	-3.6	9380±35	8750–8560
(302916) <178>	105 * *Punctum pygmaeum*	SUERC-41040	-8.4	9180±35	8540–8290

302914 (sample 181) and 302913 (sample 182) (Fig. 3.4A) and each mollusc selected was carefully inspected under a Kyowa ME-LUX2 bifocal epi-illuminated microscope to check for signs of post-depositional diagenesis following the methodology of Yates (1986). Only shells not exhibiting such signs were selected for dating and subsequently processed by SUERC for aliquot preparation, including an ultrasonic bath to remove external calcareous concretions. Radiocarbon dates have been calibrated against the IntCal09 Northern Hemisphere radiocarbon curve (Reimer *et al.* 2009) using the program OxCal 4.1 (Bronk Ramsey 1995; 2001). Calibrated dates are quoted as calibrated years BC using the 2σ calibrated range (95%) and rounded to the nearest 10 years.

Results

The radiocarbon dating results are shown in Table 3.6 and illustrated in Fig. 3.14, along with the date derived from the *Cervus elaphus* right metatarsus from context 302026. An attempt was made to obtain a second date from this bone but insufficient carbon could be extracted for dating.

The basal deposit (302916) contains two dates (SUERC-41040 and SUERC-41037), which are not in agreement, with the latter considerably older. This disparity is also found in the two dates from context 302914 (SUERC-41039 and SUERC-41044) and in both cases the older date derived from *Vallonia costata*. This could suggest that *V. costata* is ingesting higher quantities of inert carbon. In the lowermost sample the offset between the two dates is within the 4% deviation limit identified by Pigati *et al.* (2004) for *Vallonia cyclophorella* and *Vallonia perpectiva*, so the degree of offset is not unexpected. In the dates from context 302914 the degree of offset is greater, implying that *V. costata* is obtaining higher quantities of old carbon, possibly from inhabiting the surface of the calcareous deposits.

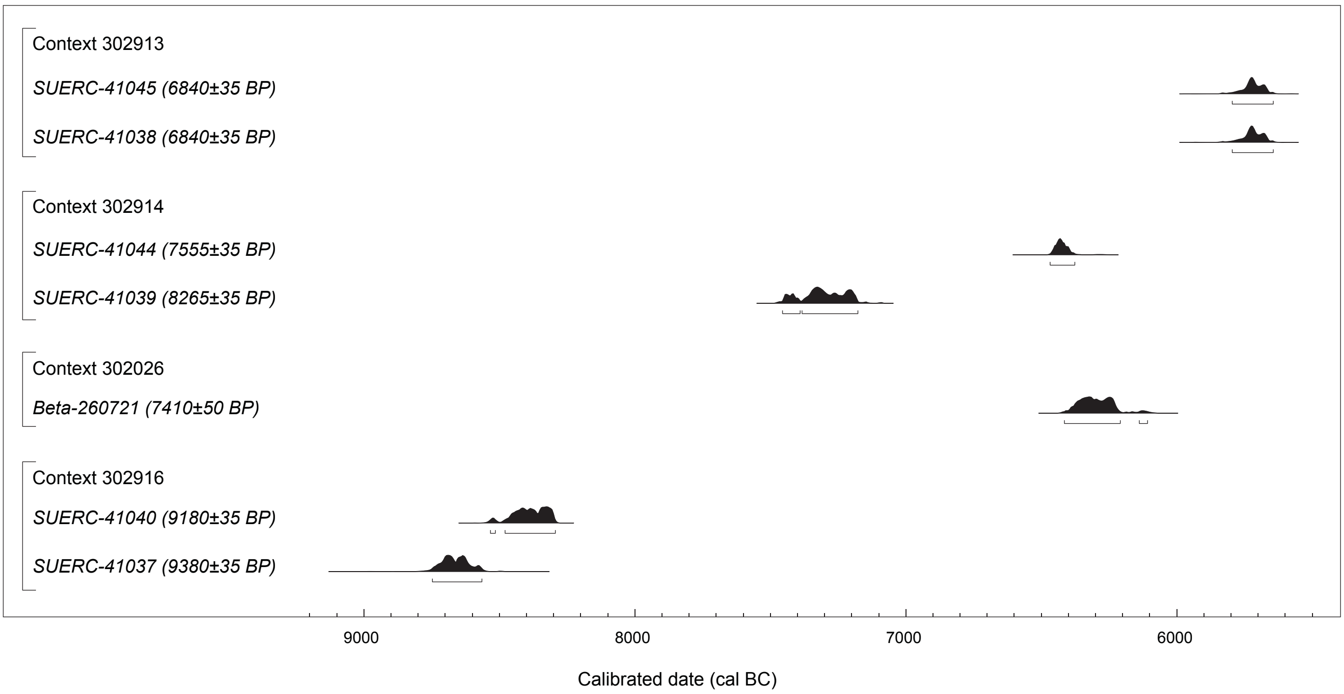


Fig. 3.14 Calibrated distributions (95% confidence) for radiocarbon dated mollusc shells

The stratigraphical relationship between the bone in context 302026 and context 302914 was uncertain but it is most likely that context 302026 pre-dates 302914. The date from *V. costata* of 7460–7170 cal BC (SUERC-41039) clearly pre-dates the bone date of 6420–6100 cal BC by *c.* 1000 years. However, the date derived from *Acanthinula aculeata* of 6470–6370 cal BC (SUERC-41044) provides a much closer agreement with the bone date, albeit immediately preceding it.

The two dates from near the top of the sequence in context 302913 have provided identical dates from both *V. costata* (SUERC-41038) and *A. aculeata* (SUERC-41045) of 5800–5640 cal BC.

The pairs of mollusc-dated aliquots show some disagreement in the lower part of the sequence with *V. costata* yielding older dates in two instances (SUERC-41039, SUERC-41037). However, the ecology of the three moll-uscs dated would suggest that *V. costata* would have been the most liable to have higher quantities of old carbon in its diet. If the two older *V. costata* dates are rejected, then the remaining dates can be used to provide a chronology for the sequence and therefore suitable *termini post quos (TPQ)* for each context dated – ie, the date is the maximum likely age for the context but it could be younger. The following dates can be used to phase the sequence:

Context 302913: *TPQ* of 5800–5640 cal BC

Context 302914: *TPQ* of 6470–6370 cal BC

Context 302916: *TPQ* of 8540–8290 cal BC

Discussion

The radiocarbon dates obtained from the molluscs have clearly provided a useful chronology for the phasing of this sequence and show good general correlations with other dated sequences within the British Isles (see below). The radiocarbon dates from the molluscs themselves should not necessarily be taken as absolute and accurate dates, but they do provide useful *termini post quem* and those accepted are unlikely to have errors greater than a few hundred years. Although the radiocarbon date for *V. costata* matched those of *A. aculeata* in context 302913, this was not the case within the lower contexts and there was no consistent offset between the different paired aliquots. Although it is not possible to clarify the reliability of the dates obtained upon *P. pygmaeum* and *A. aculeata*, they appear to be consistent when compared to other dated mollusc sequences. Further investigations into the reliability of dating British mollusc faunas, similar to the studies undertaken by Pigati *et al.* (2004; 2010) in North America, should be undertaken to quantify the likely error offsets. However, from this study it seems apparent that *V. costata* is unlikely to provide consistent reliable dates.

Molluscs

by Sarah F. Wyles and Richard Preece

A series of seven standard (1.5 kg) and three bulk samples (20 litres) were selected for molluscan analysis from highly calcareous marl/tufaceous deposits within the Early Holocene palaeochannel; a further spot (1500 g) sample was obtained from one of the pits (302456) in the Iron Age pit alignment.

The palaeochannel samples included a series of six standard mollusc samples through section 475 (Fig. 3.4A), together with an accompanying bulk sample from the basal deposit, two bulk samples from section 267 (Fig. 3.4B) and a standard mollusc sample from section 261. Section 267 is located 3.7 m to the south of section 475, whereas section 261 is 41 m to the south of section 475 (Fig. 3.3). All of the analysed samples can be stratigraphically related to the sequence of six mollusc samples taken through section 475. The bulk sample 184 (context 302916) in section 475 corresponds to mollusc samples 178 and 179 (context 302916). Within section 267, sample 89 (context 302028) relates to samples 178 and 179 (context 302916), while sample 88 (context 302026) falls between sample 180 (context 302915) and sample 181 (context 302914) in the stratigraphic sequence. Sample 85 (context 301944) in section 261 corresponds stratigraphically to sample 181 (context 302914).

Methodology

The samples were processed following the methods described by Evans (1972). Identification of apical and diagnostic mollusc fragments > 0.5 mm was made using a x10–x40 stereo-binocular microscope. Nomenclature follows Anderson (2005) and Kerney (1999). *Pisidium* are recorded as numbers of individual valves (halved before calculation of percentage values). The results from the palaeochannel samples are tabulated in Table 3.7 and a histogram (Fig. 3.15) produced using the program Tilia 1.7.16 (Grimm 1991); the results from the Iron Age pit alignment are tabulated, along with the results from Romano-British features, in Table 4.29.

To facilitate discussion and inter-site comparisons, some species have been assigned to a number of ecological groups.

The freshwater species include *Valvata cristata*, *Planorbis planorbis*, *Radix balthica*, *Gyraulus crista*, *Galba truncatula* and *Anisus leucostoma*, *Pisidium personatum* and *Pisidium obtusale*. The marsh species include *Succinea/Oxyloma*, *Carychium minimum*, *Zonitoides nitidus* and *Vertigo antivertigo*, *Vertigo angustior*, *Vertigo genesii*, *Vertigo geyeri* and *Vertigo moulinsiana*.

The Terrestrial 'A' group include species that have a wide ecological tolerance, occurring in open ground, marshes and coniferous and deciduous woods. They include *Cochlicopa lubrica*, *Cochlicopa lubricella*, *Columella edentula*, *Punctum pygmaeum*, *Vitrina pellucida*, *Vitrea contracta*, *Vitrea crystallina*, *Nesovitrea hammonis*, *Euconulus fulvus* agg., *Deroceras/Limax* and *Cepaea/Arianta*.

The Terrestrial 'B' group include species more critical in their requirements than group 'A' and are most frequent in

Table 3.7 Bingham Basin Environs: mollusc assemblages from Early Holocene palaeochannel deposits

Feature type	*Tufaceous/marl deposits*									
Section	*261*	*267*		*475*	*475*					
Series	-	-	-	-	*177*					
Context	*301944*	*302028*	*302026*	*302916*	*302916*	*302916*	*302915*	*302914*	*302913*	*302912*
Sample	*85*	*89*	*88*	*184*	*178*	*179*	*180*	*181*	*182*	*183*
Depth (m)	*spot*	*spot*	*spot*	*spot*	*0.54–0.67*	*0.46–0.54*	*0.37–0.46*	*0.28–0.37*	*0.19–0.28*	*0.08–0.19*
Weight (g) or volume	*1500*	*20 litres*	*20 litres*	*20 litres*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
Land snails										
Carychium cf. *minimum* (Müller)	150	114	305	130	29	62	71	72	108	225
Carychium tridentatum (Risso)	1851	668	1734	1076	278	601	503	625	810	1337
Carychium spp.	1156	498	515	418	304	501	345	284	424	954
Succinea/Oxyloma spp.	-	80	12	93	16	5	4	-	-	2
Cochlicopa lubrica (Müller)	9	2	15	17	2	6	4	3	12	9
Cochlicopa lubricella (Rossmässler)	4	-	3	6	2	2	1	1	1	4
Cochlicopa nitens (Gallenstein)	-	6	10	7	3	2	3	-	-	-
Cochlicopa spp.	183	105	146	114	78	107	65	70	160	169
Columella edentula (Draparnaud)	41	1	2	3	-	1	8	22	31	86
Vertigo pusilla Müller	44	45	181	95	43	59	65	22	9	41
Vertigo antivertigo (Draparnaud)	-	101	63	130	6	12	11	4	-	-
Vertigo substriata (Jeffreys)	22	44	81	57	16	34	43	9	1	7
Vertigo pygmaea (Draparnaud)	2	40	38	22	6	7	2	1	18	2
Vertigo moulinsiana (Dupuy)	3	-	-	-	-	-	-	-	-	-
Vertigo genesii (Gredler)	-	43	-	50	1	2	-	-	-	-
Vertigo geyeri Lindholm	-	-	-	1	-	-	-	-	-	-
Vertigo alpestris Alder	4	-	-	-	-	-	-	-	-	3
Vertigo angustior Jeffreys	12	70	195	107	40	123	118	21	6	17
Vertigo spp.	28	207	54	115	14	13	10	-	-	8
Pupilla muscorum (Linnaeus)	20	126	20	101	7	11	4	1	-	31
Lauria cylindracea (da Costa)	4	-	3	-	-	-	-	-	1	20
Vallonia costata (Müller)	378	174	286	248	113	193	94	43	99	251
Vallonia pulchella/excentrica	6	1298	1071	634	88	97	46	48	214	43
Acanthinula aculeata (Müller)	165	31	79	43	6	4	29	80	146	189

Table 3.7 (cont.) Bingham Basin Environs: mollusc assemblages from Early Holocene palaeochannel deposits

Feature type	*Tufaceous/marl deposits*									
Section	*261*	*267*		*475*	*475*					
Series	-	-	-	-	*177*					
Context	*301944*	*302028*	*302026*	*302916*	*302916*	*302916*	*302915*	*302914*	*302913*	*302912*
Sample	*85*	*89*	*88*	*184*	*178*	*179*	*180*	*181*	*182*	*183*
Depth (m)	*spot*	*spot*	*spot*	*spot*	*0.54–0.67*	*0.46–0.54*	*0.37–0.46*	*0.28–0.37*	*0.19–0.28*	*0.08–0.19*
Weight (g) or volume	*1500*	*20 litres*	*20 litres*	*20 litres*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
Land snails (cont.)										
Spermodea lamellata (Jeffreys)	91	1	3	2	-	-	-	2	3	55
Merdigera obscura (Müller)	4	-	6	1	-	-	-	4	-	1
Punctum pygmaeum (Draparnaud)	159	382	477	248	175	315	180	72	117	222
Discus ruderatus (Férussac)	1	2	7	10	4	18	71	4	2	-
Discus rotundatus (Müller)	724	22	102	122	12	4	22	150	221	804
Vitrina pellucida (Müller)	1	15	8	5	10	19	5	1	2	2
Vitrea crystallina (Müller)	522	68	199	147	79	125	61	134	219	360
Vitrea contracta (Westerlund)	3	3	6	3	8	4	5	62	46	127
Vitrea sp.	8	2	6	3	10	9	5	14	13	10
Nesovitrea hammonis (Ström)	41	147	352	138	28	43	16	23	68	46
Aegopinella pura (Alder)	57	66	105	43	2	2	11	51	48	123
Aegopinella nitidula (Draparnaud)	131	75	145	36	3	2	33	42	26	130
Oxychilus cellarius (Müller)	70	5	16	10	-	-	3	2	15	70
Zonitoides nitidus (Müller)	41	58	122	180	100	134	86	18	9	46
Deroceras/Limax	72	4	-	8	21	26	9	8	41	51
Euconulus fulvus (Müller)	65	68	166	73	69	128	50	10	23	42
Cochlodina laminata (Montagu)	5	-	1	-	-	1	2	2	-	7
Clausilia bidentata (Ström)	69	16	57	29	2	2	42	42	39	85
Balea heydeni Von Maltzan	5	-	-	-	-	-	-	-	-	6
Trochulus hispidus (Linnaeus)	29	22	38	38	22	41	52	30	29	26
Helicigona lapicida (Linnaeus)	1	-	-	-	-	-	-	-	-	-
Cepaea nemoralis (Linnaeus)	-	-	1	-	-	-	-	-	2	-
Cepaea hortensis (Müller)	4	-	2	-	-	1	1	-	-	1
Cepaea/Arianta sp.	14	3	1	3	-	2	3	4	12	8

Feature type	*Tufaceous/marl deposits*									
Section	*261*	*267*		*475*	*475*					
Series	-	-	-	-	*177*					
Context	*301944*	*302028*	*302026*	*302916*	*302916*	*302916*	*302915*	*302914*	*302913*	*302912*
Sample	*85*	*89*	*88*	*184*	*178*	*179*	*180*	*181*	*182*	*183*
Depth (m)	*spot*	*spot*	*spot*	*spot*	*0.54–0.67*	*0.46–0.54*	*0.37–0.46*	*0.28–0.37*	*0.19–0.28*	*0.08–0.19*
Weight (g) or volume	*1500*	*20 litres*	*20 litres*	*20 litres*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
Aquatic snails										
Valvata cristata (Müller)	-	-	-	3	-	-	-	-	-	-
Aplexa hypnorum (Linnaeus)	44	26	25	94	30	41	10	3	7	40
Galba truncatula (Müller)	76	821	410	2089	414	576	143	19	56	157
Radix balthica (Linnaeus)	3	8	7	86	19	7	3	-	2	4
Planorbis planorbis (Linnaeus)	2	-	16	15	-	-	-	-	-	-
Anisus leucostoma (Millet)	72	1092	116	1819	174	189	33	9	10	90
Gyraulus crista (Linnaeus)	2	-	-	-	-	-	-	-	-	-
Pisidium personatum Malm	13	-	-	2	1	-	-	-	6	43
Pisidium obtusale (Lamarck)	5	-	-	2	-	-	-	-	2	2
Pisidium spp.	50	-	-	2	-	-	-	-	-	-
Taxa	45	37	41	44	35	37	37	36	36	41
Total	6466	6559	7208	8678	2235	3531	2272	2010	3058	5956

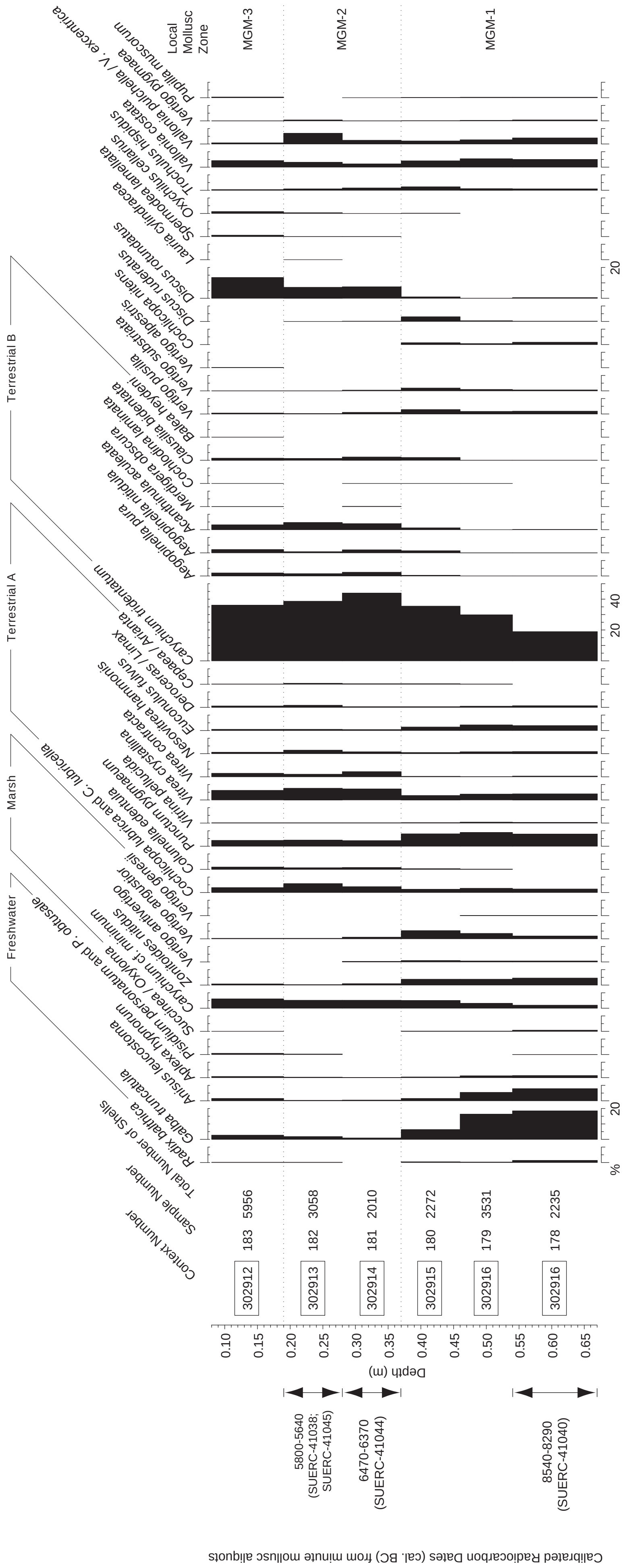


Fig. 3.15 Mollusc histogram for palaeochannel (radiocarbon dates quoted in cal BC)

deciduous woods and similar well-shaded places. They include *Carychium tridentatum*, *Aegopinella pura*, *Aegopinella nitidula*, *Acanthinula aculeata*, *Merdigera obscura*, *Helicigona lapicida*, *Cochlodina laminata*, *Clausilia bidentata* and *Balea heydeni*.

Details of the ecological preferences of the species follow Evans (1972), Kerney (1999) and Davies (2008).

Early Holocene palaeochannel

Shell numbers were very high in all samples, with the terrestrial species outnumbering freshwater species in all of the assemblages.

Section 475 (Fig. 3.4A)

The six mollusc samples from this sequence can be divided into three broad groups in terms of assemblage composition:

1. Local mollusc zone MGM-1: samples 178, 179 and 180, 0.37–0.67 m

Molluscs from sample 178 produced a *terminus post quem* of 8540–8290 cal BC (SUERC-41040, 9180±35 BP).

The mollusc assemblages from these samples were characterised by freshwater species, such as *Galba truncatula* and *Anisus leucostoma*, typical of damp ground and/or small, ephemeral water bodies. Land snails included some shade-demanding taxa belonging to Terrestrial group 'B' (*Carychium tridentatum* and *Aegopinella* spp.), as well as others suggestive of more open (*Vallonia* spp. and *Pupilla muscorum*) and/or marshy conditions (Succineidae, *Zonitoides nitidus* and *Vertigo antivertigo*). The co-occurrence of *Vertigo angustior* and *Vertigo genesii* is noteworthy, since this is not a common association in British Holocene sequences. *Discus ruderatus* occurred in unusually high numbers (71 shells at 0.37–0.46 m), reaching a peak of 3.1% of the assemblage. *Cochlicopa nitens*, which represented 0.7–1.6% of the assemblage, occurred as an associate, as it did in some of the Lincolnshire tufas (Preece 1992). These assemblages are indicative of an area of a richly vegetated marsh surrounded by open woodland.

2. Local mollusc zone MGM-2: samples 181 and 182, 0.19–0.28 m

Molluscs from sample 181 produced a *terminus post quem* of 6470–6370 cal BC (SUERC-41044, 7555±35 BP) and molluscs from sample 182 a *terminus post quem* of 5800–5640 cal BC (SUERC-41045, 6840±35 BP).

This zone is characterised by a marked decrease in aquatic and marsh species with the exception of *Carychium minimum*, which maintains values of ~5%. *Vertigo genesii* and *Cochlicopa nitens* disappear and there is marked decrease in *Discus ruderatus*. Terrestrial 'A' group represented 21–24% of the assemblage, with increases in *Cochlicopa* spp. and *Vitrea* spp., and a corresponding decline in *Punctum pygmaeum*. The frequency of *Carychium tridentatum* increases to values above 30% (peaking at 44% in sample 181), *Discus rotundatus* rises to represent ~5%, *Acanthinula aculeata* increases and *Spermodea lamellata* first appears. There is an overall increase in species included in Terrestrial 'B', which reaches a peak of 55%. There was also a marked increase in *Vallonia pulchella/excentrica* in the upper sample.

The local environment clearly became more closed, with some deciduous woodland, as the area of marsh declined. However, some open areas persisted, as reflected by the moderately high values of *Vallonia pulchella/excentrica* in the upper sample.

3. Local mollusc zone MGM-3: sample 183, 0.08–0.19 m

The mollusc assemblage is characterised by the predominance of *Carychium tridentatum* and *Discus rotundatus*, the presence of *Vertigo alpestris*, *Spermodea lamellata* and *Balea heydeni* and the disappearance of *Discus ruderatus*. The Terrestrial 'A' group decreased slightly to 19% and the Terrestrial 'B' group attained values of about 45%. *Discus rotundatus* increased to a peak of 13%, while *Vallonia pulchella/excentrica* declined.

There seems to have been a slight increase in the area of marshy ground within the more closed deciduous woodland at this stage, as indicated by slight increases in the frequency of *Galba truncatula* and *Anisus leucostoma*.

Sample 184, 0.46–0.67 m (not shown on section, Fig. 3.4A)

The molluscan assemblage from this bulk sample is comparable with those recorded within the basal samples in the sequence (local mollusc zone MGM-1). Again it is characterised by the presence of aquatic species together with *Carychium tridentatum*, *Discus ruderatus*, *Cochlicopa nitens*, *Vertigo angustior* and *Vertigo genesii*. A single specimen of *Vertigo geyeri* was also recovered.

Section 267 (Fig. 3.4B)

Sample 89, context 302028

There are again similarities between this molluscan assemblage and that from the lower samples in section 475, with the same species characteristic of local mollusc zone MGM-1. These include an aquatic element of mainly *Galba truncatula* and *Anisus leucostoma* together with *Carychium tridentatum*, *Discus ruderatus*, *Cochlicopa nitens*, *Vertigo angustior* and *Vertigo genesii*. *Vallonia pulchella/excentrica*, however, represented 20% of the assemblage.

Sample 88, context 302026

The deer bone from this context produced a date of 6420–6100 cal BC (Beta-260721, 7410±50 BP).

The mollusc assemblage from the bulk sample is characterised by the presence of an aquatic element together with *Carychium tridentatum*, *Discus ruderatus*, *Cochlicopa nitens*, *Vertigo angustior* and *Spermodea lamellata*. The aquatic element declined to 8% while the Terrestrial 'A' and Terrestrial 'B' groups increased to 19 and 36% respectively. *Vallonia pulchella/excentrica* decreased to 15%. The co-occurrence of *Discus ruderatus*, *Cochlicopa nitens* and *Spermodea lamellata* is most unusual, although *Discus ruderatus* and *Spermodea lamellata* occurred together in a number of samples from Castlethorpe sites 1 and 3 in the Ancholme Valley, Lincolnshire (Preece and Robinson 1984).

The molluscs indicate more closed-canopy deciduous woodland, although marshy conditions persisted.

Section 261 (not illustrated)

Sample 85, context 301944 (Fig. 3.3)

This mollusc assemblage is characterised by the predominance of *Carychium tridentatum*, occurrences of *Discus rotundatus*, *Spermodea lamellata*, *Vertigo alpestris*, *Lauria cylindracea*, *Balea heydeni* and *Discus ruderatus* and the absence of *Cochlicopa nitens* and *Vertigo genesii*. This is comparable with the assemblages from samples 181 and 182 in the sequence from section 475 (Local mollusc zone MGM-2).

Rare, unusual or extinct species

A number of rare, unusual or locally extinct mollusc species were encountered, which deserve some individual discussion.

Cochlicopa nitens
This is an extinct species in Britain, although it still occurs, albeit rarely, in calcareous swamps and occasionally marshy, calcareous woodland in continental Europe (Kerney *et al.* 1983). It has been recovered as a fossil in low numbers from marsh deposits at few sites in the British Isles (Preece 1992; 1998; Kerney 1999; Davies 2006). In Britain, this species was present during the early part of the Devensian Late Glacial and during the Early Holocene (Preece 1992), but there were no previous records of it surviving beyond the expansion of deciduous woodland during forest optimum. At this site it occurred in assemblages with *Vertigo genesii*, as it did in the Devensian Late Glacial assemblages from Holywell Coombe (Preece 1998). However, these assemblages did not survive into the Early Holocene at Holywell Coombe, as they clearly did here. Moreover, the evidence at this site indicates that *C. nitens* (but not *V. genesii*) persisted somewhat later to co-occur with *Discus rotundatus*, rather than *D. ruderatus*. These levels have been dated to 6420–6100 cal BC (Beta-260721, 7410±50 BP).

Discus ruderatus
This boreo-montane species, which is found in woodland (mainly of birch and conifers), marshes and more rarely moist grassland, is thought to have become extinct in Britain by about 8000 yr BP, after which it is replaced by *Discus rotundatus* (Kerney *et al.* 1980; Preece and Day 1994; Preece 1998; Preece and Bridgland 1999; Meyrick and Preece 2001). At most Holocene tufa sites in Britain it is generally present at low frequency, unlike the situation at this site.

Vertigo genesii
This species is rare today in Britain, where it is restricted to marshy ground and around calcareous spring flushes, but it appears to have been relatively common in lowland England during the Devensian Late Glacial. It survived into the Early Holocene but rapidly declined with the spread of woodland (Preece 1998). At this site it was present in the lower deposits but had disappeared by levels dated to 6420–6100 cal BC (Beta-260721, 7410±50 BP).

Vertigo geyeri
This is a scarce species found in calcareous marshes and fens, although it was more widely distributed in lowland Britain during the Devensian Late Glacial and Early Holocene (Preece 1998).

Vertigo alpestris
In fossil contexts this species, which now has a very restricted British distribution, was more widespread, and was associated with purely woodland mollusc faunas at this site.

Vertigo angustior
This scarce species, unknown from the Devensian Late Glacial, is characteristic of open wet meadows with a rich grassy vegetation (Preece 1998). It was common in the open habitats of lowland Britain at the beginning of the Holocene but it disappeared from many sites as woodland encroached and as the result of fenland drainage (Kerney 1999).

Spermodea lamellata
This is a 'very local snail of old deciduous woodland' (Kerney 1999). At this site it mainly occurred in the upper part of the sequence after *Cochlicopa nitens* had disappeared and *Discus ruderatus* had declined. A few specimens were recovered with both *Cochlicopa nitens* and *D. ruderatus* from the lower part of the sequence.

Balea heydeni
This species has been previously overlooked or regarded as a synonym of *Balea perversa* but it is widely distributed across Britain and Europe (Gittenberger *et al.* 2006). It appears to be found in similar habitats to those of *B. perversa*, such as rocks, stone walls and trees, rarely living on the ground (Gittenberger *et al.* 2006). *B. heydeni* can occur with *B. perversa*, but the few specimens of *Balea* recovered from this site were all *B. heydeni*.

Iron Age pit alignment
This very large mollusc assemblage of nearly 7700 shells is dominated by the terrestrial species, with the aquatic component representing 38% of the assemblage (Table 4.29). There is a high species diversity index. The predominant aquatic species are the amphibious species *Galba truncatula* and *Anisus leucostoma*.

Carychium tridentatum and *Vallonia pulchella/excentrica* are the dominant terrestrial species at 24% and 12% respectively. The presence of *Vertigo angustior* is noteworthy, as this is a species 'which is restricted to moist places which are affected neither by periodic desiccation nor by flooding' (Kerney 1999, 101). *Vertigo antivertigo* also 'avoids places where the water-level fluctuates markedly' (Kerney 1999, 92). The possible presence of a small woodland environment, such as an area of scrub or even a single tree, in the vicinity, is indicated by the occurrence, although in small numbers, of *Clausilia bidentata, Cochlodina laminata* and *Acanthinula aculeata*, all species typical of woodland environments.

The mollusc assemblage appears to reflect a generally open environment of long damp grass in the immediate vicinity of the pit alignment.

Discussion

by Sarah F. Wyles, Richard Preece and Michael J. Grant

The mollusc assemblages from the palaeochannel reflect a transition from initially light open woodland to more closed-canopy deciduous woodland during the Early Holocene; areas of marsh persisted but these appear to have become generally drier through the sequence. The assemblage from the pit alignment indicates that by the Middle Iron Age there was a generally well-established open landscape at the site, which continued into the Romano-British period (see Chapter 4).

The regional Mollusc Zones, defined at the type-site of Holywell Coombe, Kent can also be seen in mollusc assemblages from other Devensian Late Glacial and Holocene sites over much of southern Britain, although faunal histories of individual sites are never likely to be identical (Preece and Bridgland 1999).

The assemblages from local mollusc zone MGM-1 show strong similarities to those of Zone b at Holywell Coombe, dated to slightly before 9240–8350 cal BC (OxA-2088, 9460±140 BP) until 8200–7480 cal BC (OxA-2157, 8630±120 BP), which is comparable with the date of 8540–8290 cal BC (SUERC-41040) derived from context 302916. This is a woodland fauna, characterised by an expansion of *Carychium tridentatum* and *Aegopinella* and with *Discus ruderatus* present at low frequency (Kerney *et al.* 1980; Preece and Bridgland 1999).

At Holywell Coombe, Zone c, dated from 8200–7480 cal BC (OxA-2157, 8630±120 BP) until just before 6650–6380 cal BC (Q-2716, 7650±80 BP), is characterised by a woodland fauna. Its lower boundary is defined by the expansion of *Discus rotundatus*. Zone d, dated 6650–6380 cal BC (Q-2716, 7650±80 BP until sometime before 4690–4330 cal BC (OxA-2091, 5620±90 BP), is another woodland assemblage in which *Oxychilus cellarius*, *Spermodea*, *Leiostyla* and *Acicula* are typically present (Kerney *et al.* 1980; Preece and Bridgland 1999). At this site, both *Oxychilus cellarius* and *Spermodea lamellata* occur in levels coinciding with the expansion of *D. rotundatus*, so the distinction between zones c and d is not clear. However, this may result, in part, from the coarser sampling strategy at this site in comparison to Holywell Coombe.

The palaeochannel sequence at the Bingham Basin margin has many similarities to the molluscan assemblages described from tufas in the Ancholme Valley, Lincolnshire (Preece and Robinson 1984). The stratigraphical ranges of *Discus ruderatus* and *D. rotundatus* overlap but there is clear evidence for replacement of the former by the latter in both regions. *Cochlicopa nitens* is known from Holocene tufas at Scawby and Castlethorpe, Lincolnshire, where it was associated with assemblages containing *D. ruderatus* and *Nesovitrea petronella* (Preece and Robinson 1984; Preece 1992). At the current site it was similarly associated with assemblages containing *D. ruderatus*, although it also overlapped with *D. rotundatus* but had disappeared before the expansion of this species. As at some of the Lincolnshire sites, the first appearance of both *Oxychilus cellarius* and *Spermodea lamellata* broadly coincides with the expansion of *D. rotundatus*, but neither *Leiostyla anglica* nor *Acicula fusca* occurred at this site. These differences make it difficult to use the zonation scheme defined in Kent.

The mollusc assemblages from these deposits are from a dated Early Holocene sequence. They contain some notable molluscs, especially the rare species *Cochlicopa nitens* and *Discus ruderatus* and their unusual association with *Spermodea lamellata*. Although these assemblages appear to broadly conform to the Mollusc Zones defined at Holywell Coombe, Zone c occurred later at this site, as it did at Courteenhall, Northamptonshire (Meyrick and Preece 2001). *Cochlicopa nitens* seems to have survived later into the Holocene than previously thought, with a date of 6420–6100 cal BC (Beta-260721) provided by an associated red deer metatarsal epiphysis.

Summary

The excavations in the Bingham Basin Environs revealed unexpected and important evidence for the Early Holocene landscape in the form of a shallow channel taking water from local calcareous springs to feed the Basin to the south-east. Detailed micromorphology suggests that a calcareous marl developed and became increasingly organic in content over time, possibly as a response to increased climatic warming. Towards the top of the sequence there is increased evidence for rooting, perhaps indicative of a fen carr environment. There is also some evidence that the water table fluctuated from time to time within this channel. The ostracods from the channel sequence include relatively rare species typically found in small bodies of water and on shorelines of lakes, entirely consistent with the suggested depositional environment. The mollusc assemblage from the site also includes a number of rare species, and suggests that there was a transition from a relatively open woodland landscape to a denser deciduous woodland. Gradual drying out of the sequence is indicated, although some periodic episodes of increased wetness continued. A series of radiocarbon dates obtained from a deer bone and from molluscs indicate that the lowest deposit in the channel sequence has a *terminus post quem* of 8540–8290 cal BC, whilst a *terminus post quem* of 5800–5640 cal BC can be advanced for the most recent datable deposit.

The presence of small quantities of Mesolithic flint on the banks of this shallow channel indicates that it was a focus of human activity, probably because it afforded an opportunity to exploit a number of different resources, not least the water itself. However, the only likely Mesolithic feature is a tree throw in DE 3006, a little to the north of the channel. This feature was probably created by the fall of a substantial tree, creating a clearing in the surrounding woodland which may then have become a focus for activity. A scatter of flints in the broader landscape points to more widespread activity, an unusual concentration of Mesolithic material in the context of this project. The deposits associated with the Bingham Basin and valleys draining into it may have been the main focus for Mesolithic activity in this area.

There seems to have been little significant change in the Neolithic, with much of the Neolithic material coming from later features. The small number of features which could be ascribed a Neolithic date generally contained diagnostic worked flint – only a single sherd of Neolithic pottery was recovered. Such a dearth of material can tell us little about Neolithic activity in the area, although what little evidence there is suggests that gathered foods remained important, whilst the fragments of Langdale polished axe hints at wider networks of trade or exchange. There is some evidence for tool manufacture on the site, including the manufacture of an axe, possibly indicating some woodland clearance. Unfortunately, there were no well-preserved Neolithic deposits to allow us to characterise the surrounding landscape.

There was only limited Bronze Age activity identified in the area, and it is only in the Late Bronze Age or Early Iron Age that there is any evidence for division or enclosure of the landscape. This took the form of ditches and a trackway on a similar alignment. These seem to have defined large landscape divisions rather than individual fields – in a similar fashion to the large ditches recorded on the excavations at High Thorpe and Cropwell Wolds further to the south. The trackway suggests that there was a need to control movement across the site, perhaps indicating an arable landscape. The later pit alignment further to the north may also have acted as a boundary, perhaps associated with the course of the earlier, by now infilled, channel. The wider landscape appears to have been sparsely populated, and relatively unenclosed, in stark contrast to the subdivided and heavily populated landscape of the Late Iron Age/ early Romano-British period.

Chapter 4
Margidunum Hinterland: Late Iron Age and Romano-British Settlement and Burial, and Early Anglo-Saxon Activity

Nicholas Cooke

Introduction

This chapter describes the same area as that covered in Chapter 3, but presents the evidence for activity dating from the Late Iron Age, Romano-British and post-Romano-British periods. The site lies to the west and south-west of the Roman small town of *Margidunum*, which is a Scheduled Monument (SM No. 321885) (Fig. 4.1). The town lay on the Roman road (Fosse Way) between Lincoln and Leicester (the line of which was subsequently followed by the A46). The topography and geology of the site are as previously described in Chapter 3.

Previous Work at Margidunum

Elements of the late Roman defences for the town are still visible as low earthworks on either side of the former A46 in the fields to the north-east of the *Margidunum* roundabout (Fig. 4.1). Excavations undertaken by Felix Oswald (between 1910 and 1936) and by Malcolm Todd (between 1966 and 1968), together with fieldwork undertaken in connection with the current scheme, have revealed that settlement extended along the Fosse Way north and south of *Margidunum*, while to the south-west of the town further archaeological remains appear to be associated with a villa estate centred on a large complex east of Newton. The Roman site of *Margidunum* is, then, an extensive and disparate one.

The existence of the Roman secondary town at *Margidunum* is recorded as early as 1722, when William Stukeley wrote of a visit to the site, although he believed it to be the town mentioned as *Ad Pontem* in the Antonine Itinerary (Stukeley 1724, 105–6). At the time the site was being heavily robbed, and he describes foundations of stones set on edge in clay and covered in mortar, and wooden piles, some of which he removed himself. This robbing seems to have been undertaken to provide building stone for local villages, although he does also mention that building stone was taken from a 'great building' in a pasture known as Castle Hill Close for re-use as far afield as Newark. As well as this, he describes a 'most famous pavement near the Foss Way', which presumably must refer to a mosaic floor, and talks of urns, coins, bricks and clay pipes being found – the latter probably the remains of a water supply system.

The earliest formal excavations on the site of *Margidunum* were undertaken by Felix Oswald between 1910 and 1936, initially with the aid of T. Davies Pryce. They investigated a considerable portion of the interior of the defended area, in particular to the west of the Fosse Way, as well as examining the nature of the defences. Oswald also recorded the marshy nature of much of the ground to the south and south-east of *Margidunum* (Oswald 1941). The excavations were published in a series of articles and pamphlets, although later Malcolm Todd was pointed in his criticisms of both the excavation recording and subsequent publications (Todd 1969, 14–17). A second series of excavations was undertaken by Todd between 1966 and 1968 in advance of the construction of a roundabout on the A46 and associated works. This investigated the southern limits of the town and defences, a small area of an extra-mural cemetery, some areas previously investigated by Oswald and several other areas, both east of the Fosse Way and close to the northern edge of the town. The results were published in 1969 (Todd 1969) and contained a significant reappraisal of Oswald's work and conclusions. Subsequent fieldwork has largely been restricted to investigations undertaken during small-scale construction work within the area of the Scheduled Monument and in advance of the proposed improvements to the A46 trunk road, the latter comprising some of the excavation works published here. These preparatory investigations included programmes of fieldwalking, walkover survey, geophysical survey and archaeological evaluation within the corridor of the proposed road (summarised in Leary and Baker 2004). The results of these presented substantial new evidence for the inhabitation of the landscape surrounding the Roman town.

The location of a villa some 500 m to the south-west of *Margidunum* had been suspected for some time – both Oswald and Todd record its probable existence. Fieldwalking undertaken by the Trent and Peak Archaeological Unit (now Trent and Peak Archaeology) as part of the preparatory work for this project identified a concentration of building material and Romano-British pottery, whilst subsequent geophysical survey indicated a substantial building complex, comparable

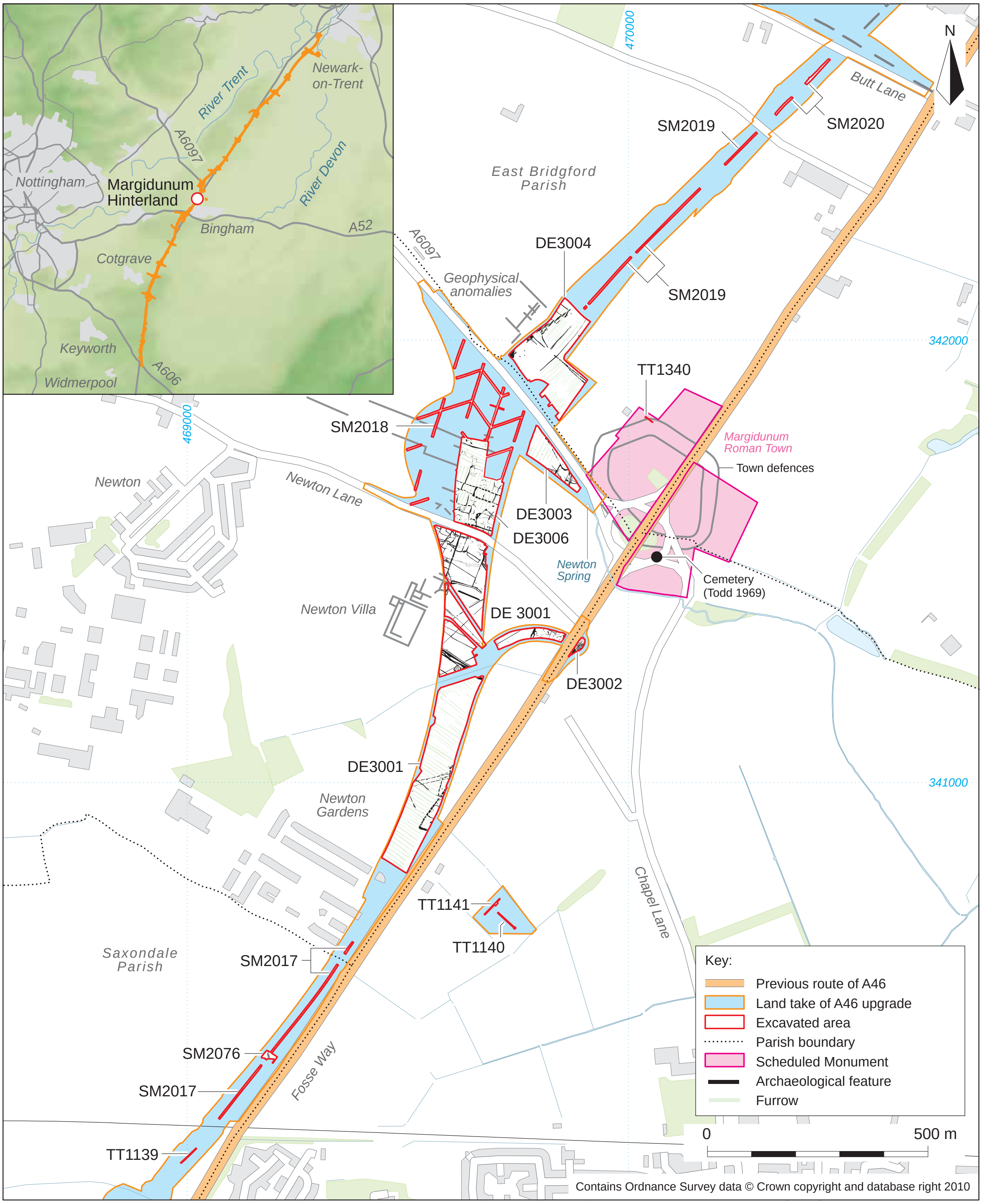


Fig. 4.1 The location of Margidunum *Hinterland excavations*

with some of the largest known courtyard villas in the East Midlands (Fig. 4.1; Leary and Baker 2004). It is clear that this villa occupied a favourable spot, on slightly elevated dry ground, with former palaeochannels, likely to be prone to periodic flooding, along its northern and south-eastern edge (see Fig. 3.1).

Surface finds and geophysical survey also indicated a complex of enclosures and trackways to the north-west of *Margidunum*, partially within the area of the 2009 excavations (DE 3004) described below (Fig. 4.1). Fieldwalking material indicated a Romano-British date for the complex, and this has now been confirmed by excavation. Preparatory works also identified a broad swathe of Romano-British material extending for a considerable distance to the north-east and south-west of the town along the line of the Fosse Way, suggesting that the settlement outside the defences was considerably more extensive than that which lay within it.

The 2009 Excavations

The results of the 2009 excavations show that occupation in the area began at least as early as the Iron Age (see Chapter 3). An elaborate alignment of pits and possible postholes in DE3001 is not closely dated but appears to be a Middle to Late Iron Age boundary feature (Fig. 3.7). This was succeeded perhaps as early as 100 BC by subrectangular or less regular agricultural enclosures further north in DE3003 and DE3006 (Fig. 4.2). Associated settlement does not appear to have been dense. By the early Romano-British period this farming system seems to have largely gone out of use, and there is substantial evidence for new occupation on both sides of the Fosse Way (DE3001 and DE3002) associated with buildings of circular or partly circular form. This settlement underwent a reorganisation in the mid-2nd century and there was evidence of buildings of different form associated, in particular, with metalworking and the repair of samian vessels. There were also a number of infant burials of this phase in DE3002. This roadside settlement was modified in the 3rd century when a new metalled road was laid out running to the south-east, but occupation continued probably into the 5th century. Further south, in DE3001, a roadside cemetery was dated to the 3rd–4th centuries AD. In the late Romano-British period stone buildings were constructed to the north-west of *Margidunum* (DE3004) associated with the poorly defined complex identified by earlier geophysical survey. This area also contained an isolated early Anglo-Saxon sunken featured building. Two pits containing early Anglo-Saxon material came from DE3001, but there was no good evidence for continuity of occupation across the late Romano-British/Anglo-Saxon transition.

A large number of undated features were recorded during the course of the excavations. Many of these were discrete features, both anthropogenic and natural in origin, which could not be phased because of the absence of finds and their unclear relationship to phased features.

Late Iron Age and Early Romano-British (*c.* 100 BC–AD 150)

The Late Iron Age saw significant developments in the landscape. There was evidence for fairly extensive settlement, involving the establishment of a number of irregular enclosures, some of which contained structures and other evidence for settlement. In particular, the northern part of DE3001 and the southern part of DE3006 became the focus of a substantial settlement and enclosure complex (Fig. 4.2). The southern boundary of this appears to be approximately defined by the line of the shallow former palaeochannel, which may have continued to flood periodically, and which appears to have been formally established as a boundary by the Iron Age pit alignment. Further Late Iron Age enclosures lay to the south of the channel, whilst boundary ditches in DE3002 and DE3003 were also dated to the Late Iron Age (Figs 4.9 and 4.14). Because of the nature of the

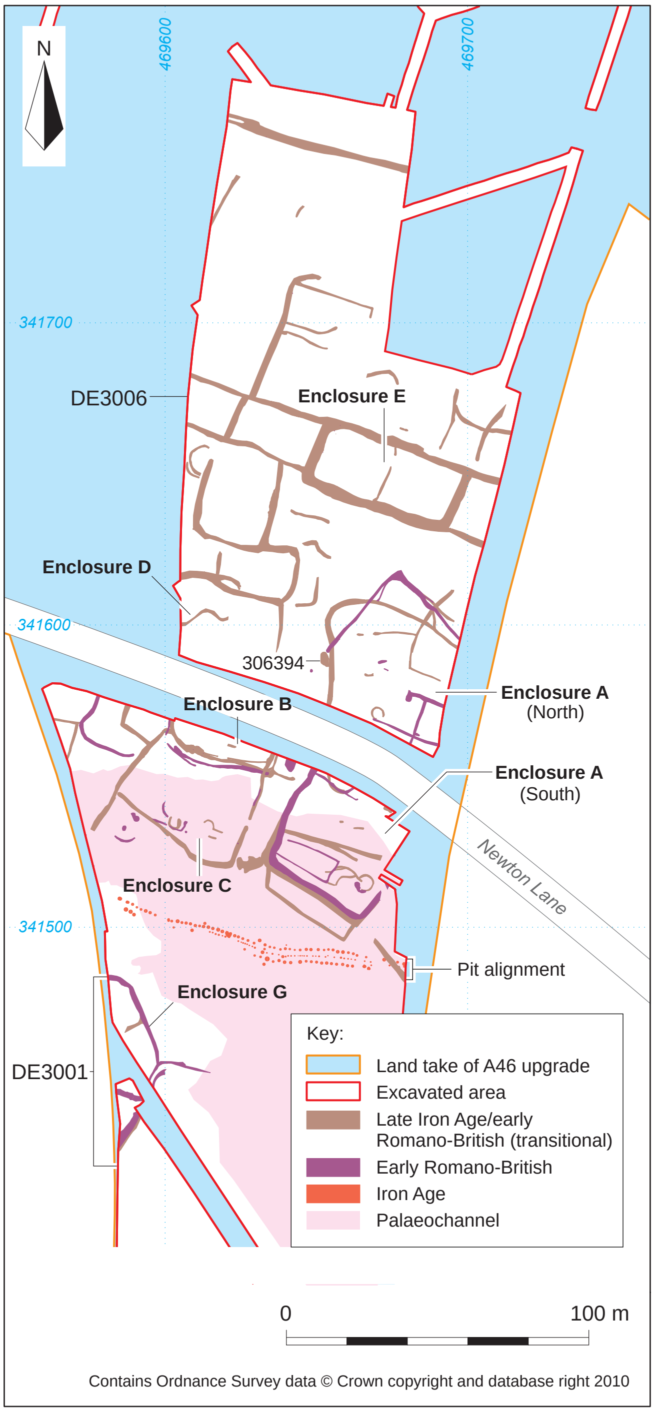


Fig. 4.2 Late Iron Age/early Romano-British enclosures (Enclosures A–E and G)

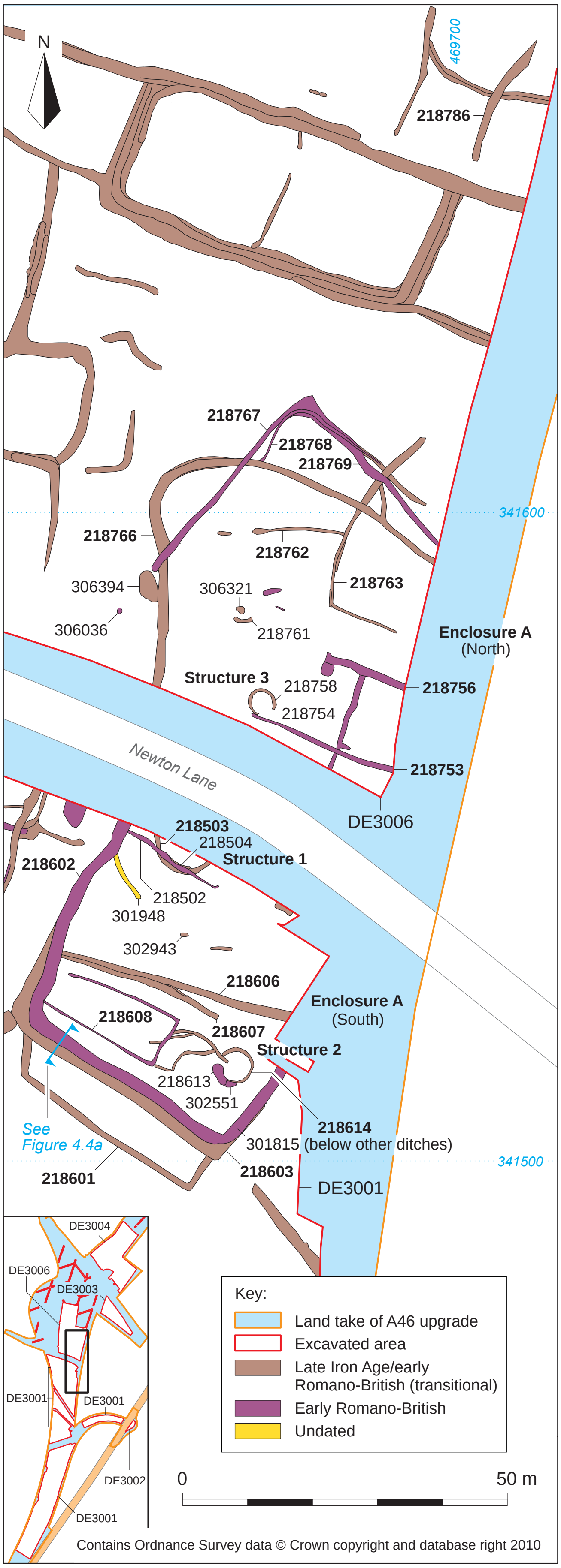


Fig. 4.3 Late Iron Age/early Romano-British Enclosure A

alluvial soils through which these ditches and other features were cut, they silted rapidly, and most ditches were recut at least once.

The focus of the activity to the north of the palaeo-channel and pit alignment appears to have centred on three enclosures in DE3001– enclosures A, B and C (Fig. 4.2). The finds from this area suggests that the enclosures housed a small agricultural settlement. Fewer finds came from the northern enclosure complexes in DE3006, to the north of Newton Lane, suggesting that these may have been used for agricultural purposes peripheral to the settlement. The pottery assemblage from both the settlement and the peripheral enclosures suggest that these date to the late 1st century BC and early 1st century AD, with the presence of early Romano-British pottery in the fills of some of the recuts indicating that they continued in use into the later 1st century AD.

Enclosure A

This enclosure lay on both sides of Newton Lane in DE3001 and DE3006 (Fig. 4.3). The roughly rectangular enclosure contained three probable Late Iron Age structures, defined by penannular gullies. As with many of the enclosures of this date, the enclosure ditches showed signs of significant recutting after fairly rapid silting episodes. In the case of this enclosure, the later ditch cut (218603) enclosed a smaller area than the initial enclosure ditch (218601). Ditch 218603 was a more substantial ditch, being both broader and deeper, with moderately sloping concave sides and a concave base (Fig. 4.4A). This ditch was also evident to the north of Newton Lane, where the enclosure clearly extended into the southern half of DE3006. Here the ditch (218766) almost completely truncated the evidence for the earlier cut. A Colchester brooch recovered from this recut is likely to date to the second or third quarter of the 1st century AD (see Schuster, below).

Three structures defined by penannular gullies lay within this enclosure. The largest of these (in DE3001 and partially beneath the line of Newton Lane) appears to have been least 8 m in diameter, and may well have defined a roundhouse (Structure 1) (Fig. 4.5). A curving feature excavated just inside this (218504) had very steep sides and a flat base, and closely followed the southern arc of the outer gully (218503) and may represent the remains of an interior wall slot (see Fig 4.5). A smaller gully (218614, Structure 2) lay in the southernmost corner of the enclosure. At only 4.6 m diameter internally, this is unlikely to have defined a roundhouse, but may mark the site of an ancillary structure; a series of curvilinear gullies to its west, and a small Late Iron Age pit (not shown on Fig. 4.3), appear to have been associated with it. Structure 3 (in DE3006) was the smallest of the three, its gully (218758) enclosing an area no more than 3.4 m across. The gully contained significant quantities of burnt stone, possibly the debris from heating water, with further quantities coming from a nearby cluster of small pits and gullies.

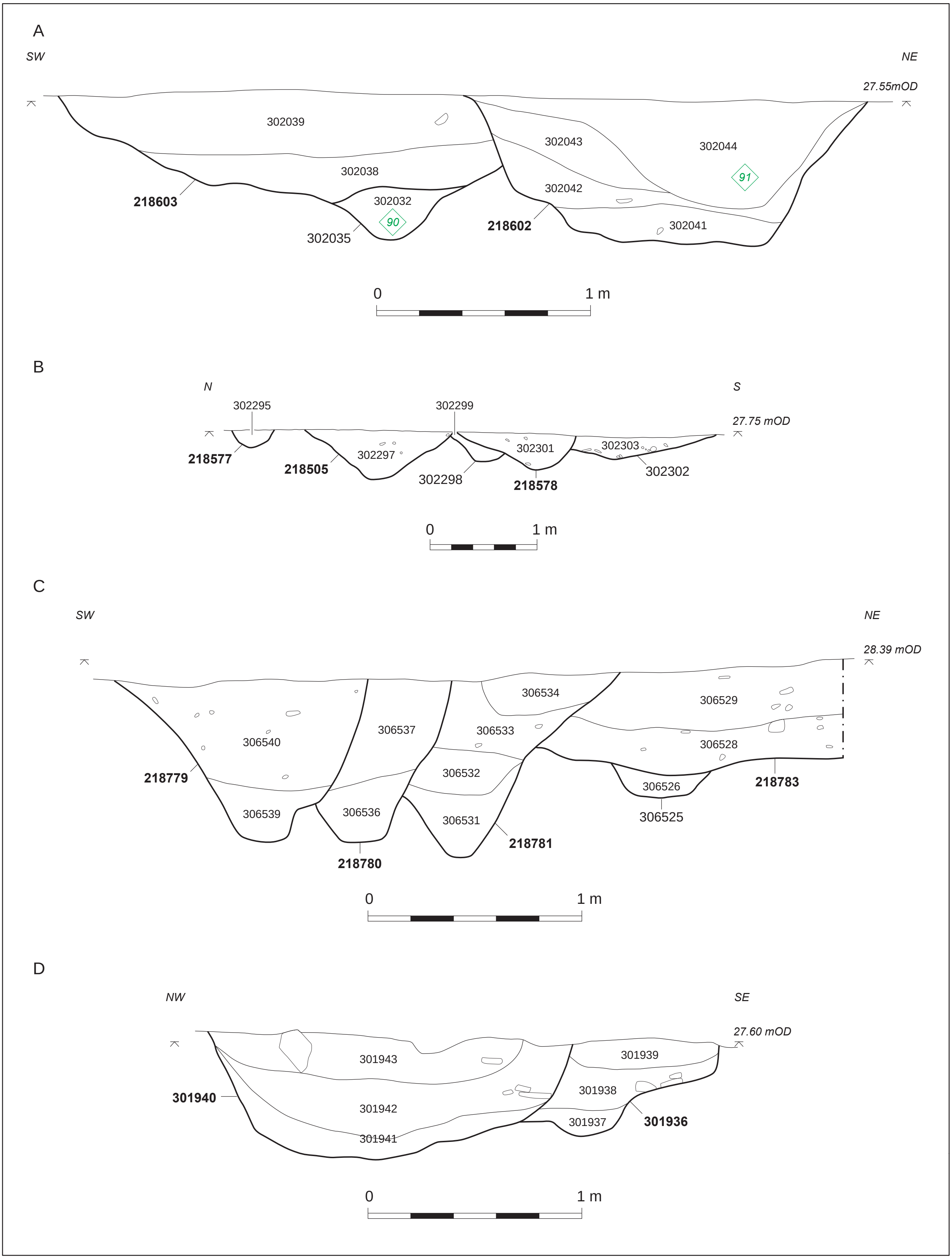


Fig. 4.4 Enclosure ditch sections: A) Enclosure A; B) Enclosure B; C) Enclosure E; D) Enclosure G

Fig. 4.5 Late Iron Age/early Romano-British Structure 1 (Enclosure A) viewed from the north-west

There were a number of other gullies and ditches inside Enclosure A, some of which may represent internal subdivisions, notably ditches 218606–7 (in DE3001) and 218762–3 (in DE3006). Other internal features include pits and shallow gullies, not all of which were well dated, but little evidence survives for any small structural features such as postholes. Immediately outside the enclosure ditch on the west side was a substantial waterhole (306394), which may have provided a convenient source of water, succeeded by a pit complex.

Enclosure A continued in use after the Roman conquest, with its ditch (in DE3001) redug in this period (218602, Fig. 4.4A). The pattern was not as clear in DE3006, where a number of ditches containing Romano-British pottery were recorded. These included ditch 218767, which defined a similar area to the earlier enclosure ditch, but with a different orientation and without fully completing the circuit. Internally, gully 218754 is also likely to date to the early Romano-British period.

Some of the internal gullies in Enclosure A seem to demarcate three small rectangular areas, all with similar NW–SE orientations. Gully 218608 (in DE3001) defined a roughly rectangular area *c.* 7 m by 18 m internally, whilst gullies 218753 and 218756 (in DE3006) enclosed a roughly rectangular area *c.* 12 m by 20 m (Fig. 4.3). Gully 218502 (in DE3001), which curved slightly to the north-east at its south-eastern end, probably partially defined a third rectangular area *c.* 16 m long. It seems likely that these areas were the sites of three early Romano-British rectangular structures. Their functions are unclear, the gully fills contained few finds, and they may not have been domestic buildings. There were very few contemporary discrete features within Enclosure A, although a reasonable-sized assemblage of pottery and animal bone was recovered from elongated pit 218613 near its southern corner. This pit cut through the terminal of the gully encircling structure 2 and, while there is little remarkable about the assemblage of finds recovered from its fills, the possibility that the pit was dug and filled as part a ritual associated with the demise of the structure cannot be discounted.

The Romano-British pottery associated with Enclosure A dates predominantly to the second half of the 1st century AD and into the 2nd century. After this period, it seems likely that the enclosure, like many of those surrounding it, was abandoned as part of a reorganisation of the landscape.

Enclosure B

Enclosure B lay to the north-west of Enclosure A (in DE3001 but not extending as far north as DE3006). It appears to have been a small ovoid enclosure, defined initially by a single bank and ditch (Fig. 4.6). As with Enclosure A, the initial enclosure ditch (218505 and 218584), in places recut (218574 and 218575), contained pre-conquest Late Iron Age pottery. The ditch was wide, with moderately sloping sides and a concave base (Fig. 4.4B). Most of the enclosure interior appears to lie beneath Newton Lane, and there was no significant evidence for settlement or other activity inside it, although a loomweight was recovered from the fills of ditch recut 218574.

The enclosure continued in use into the post-conquest period, with the earlier silted ditch being replaced by new ditches just outside the previous line (218578, 218579 and 218580) (Fig. 4.4B); these ditches contained post-conquest pottery. An area of crudely metalled surface (301024) to the east of the enclosure is interpreted as a possible trackway. Numerous sherds of pottery, including samian, were recovered from this surface, suggesting that the trackway continued in use into the early 2nd century AD.

Enclosure C and Associated Features

Enclosure C, which was subrectangular in form, appears to abut Enclosure B on its south side, while its south-eastern side lay parallel to the north-western side of Enclosure A, separated from it by a *c.* 8 m wide path or trackway (Fig. 4.6). A gap in the Enclosure C ditch (218586) afforded access from the trackway. In the earliest recorded phase of the enclosure, its ditches (218585, 301974 and 302679) were wide, but relatively shallow, rarely over 0.6 m deep, with moderately steep irregular sides and a concave base. As with the other ditches in the area, these were recut with a similar profile. The small quantity of pottery recovered from enclosure ditches (and their recuts) was exclusively Late Iron Age.

In the Late Iron Age there was a small rectangular annexe, defined by ditch 218571, at the enclosure's

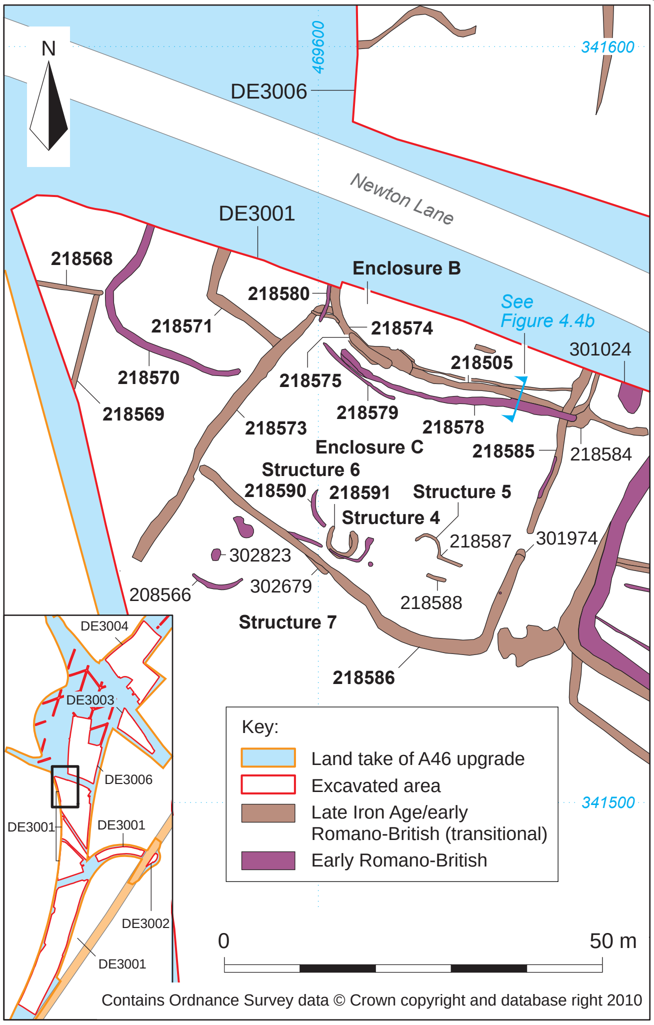


Fig. 4.6 Late Iron Age/early Romano-British Enclosures B and C

north-western corner; this was probably replaced by a slightly larger enclosure, defined by ditch 218570, early in the Romano-British period.

Three possible structures lay within Enclosure C. The most complete (Structure 4) was a very small penannular gully (218591) defining an area only *c.* 3 m in diameter (Fig. 4.7). This was a broad, relatively deep gully, with an entrance causeway to the north. Although its size suggests this is unlikely to have enclosed a domestic structure, quantities of Late Iron Age pottery were recovered from its fills.

A second, less substantial, curvilinear gully associated with a pair of parallel gullies (218587 and 218588) lay a short distance to the east. This may mark the site of a similar structure (Structure 5). A short length of a third curvilinear gully (218590) lay immediately to the north-west of 218591, its curvature suggesting a larger structure, possibly a roundhouse (Structure 6). Neither this stretch of gully, nor a similar gully (218566) just outside the enclosure at the south-west, was closely dated, but both are likely to be early Romano-British. The latter almost certainly encircled a roundhouse (Structure 7) at least 8 m in diameter, as it had a central hearth (302823).

Fig. 4.7 Late Iron Age/early Romano-British Structure 4 (Enclosure C) viewed from the west

A number of other ditches lay in the vicinity of Enclosure C, with ditches 218568 and 218569 probably representing another Late Iron Age enclosure on the north-western edge of the excavations.

Enclosure D

Enclosure D (in DE3006) (Fig. 4.8) may have been closely associated with Enclosure B to its south (in DE3001). Its roughly rectangular area was defined by Late Iron Age ditch 218771, subsequently recut (218770), probably also in the Late Iron Age. A single meandering gully was the only internal feature.

Enclosure E, the Ladder Enclosure and Associated Features

Enclosure E (in DE3006), enclosing an area of *c.* 830m², lay to the north of Enclosure A (Fig. 4.8). It was rectangular, aligned WNW–ESE, and defined by a wide steep-sided, flat-bottomed ditch showing a number of recuts (ditches 218778–218781, Fig. 4.4C), but with no apparent entrance gap. It was divided into two roughly equal parts by gully 218783, which had a 4 m-wide break near its northern end, but no other internal features were identified. Only small quantities of finds were recovered from the ditch, and it seems unlikely that it enclosed a settlement.

Enclosure E lay at the centre of a 'ladder' enclosure on the same alignment (and also parallel to the earlier pit alignment to their south (Fig. 4.2, and Chapter 3)), defined to the north by ditches 218777 and 218778 and to the south by ditches 218776 and 218782, and subdivided at the west by internal ditch 306620; no other well-dated internal features were identified. The pottery suggests a Late Iron Age date broadly contemporary with Enclosure E, whilst the stratigraphy suggests that it represents a development of Enclosure E. Some of the ditches forming Enclosure E and the ladder enclosure had been recut on as many as four or five occasions (Fig. 4.4C), indicating a degree of longevity, although the paucity of internal features and finds suggests an association with agriculture rather than settlement.

Further ditched enclosures abutted the ladder complex to the north and south, representing an extensive linked system. To the south, ditches 218773, 306423 and 306635 defined two small sub rectangular enclosures, the southern abutting Enclosure D. To the north, a further series of ditches (218786, 218787, 218788, 218790 and 218793) define further fields and enclosures.

The finds assemblage from this enclosure complex is

Fig. 4.8 Detail of late Iron Age/early Romano-British Enclosures D and E

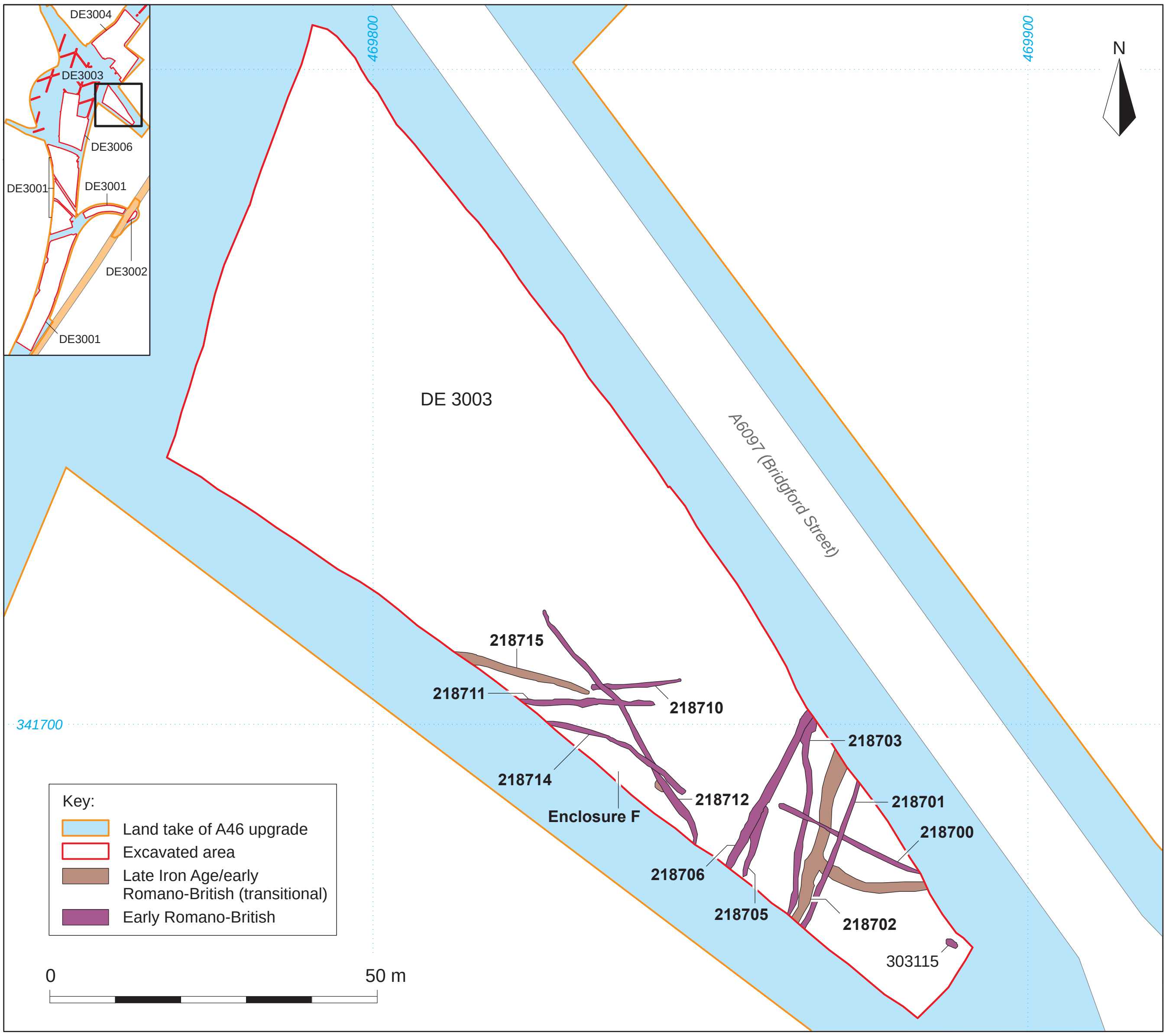


Fig. 4.9 Early Romano-British Enclosure F

small, and the possible structures within it may pre-date it. A pair of concentric gullies (218775 and 306641) close to the western edge of DE3006 may indicate a single structure (Structure 8), possibly rebuilt on the same spot. The structure contained no internal features and, if a roundhouse, it was not contemporary with ditch 218773, but probably pre-dated the establishment of the enclosure complex in this area. Its ditch had been cut away by a furrow on the eastern side. Three curvilinear gullies (218785, 218789 and 306702) to the north of the ladder enclosure complex may represent fragmentary drainage features partly defining further Late Iron Age structures.

The northern extent of Late Iron Age activity in DE3006 appears to be defined by a ditch (218795, recut as 218794), which runs parallel to the ladder enclosure and appears to have extended as far east as the excavations in DE3003, where it was recorded as ditch 218715 (Fig. 4.9).

Interestingly, there is very little evidence for many of the Late Iron Age ditches in DE3006 being redug in the early Romano-British period, although this does not preclude the enclosure system continuing in use after the conquest; any banks and hedges associated with these enclosures could have remained in use for a considerable period of time afterwards. However, the fact that none of the ditches were recut, when other ditches elsewhere on the site were, suggests that this part of the landscape saw less activity in the post-conquest period, perhaps supporting the suggestion that these were agricultural rather than settlement enclosures.

Enclosure F and Associated Boundary Features

Only the north-eastern edge of a possible enclosure (Enclosure F), defined by ditches 218711 and 218712, was exposed in DE3003 (Fig. 4.9). Unfortunately the relationship between them was obscured by a later feature. The ditches were of modest size, with moderately steep sides and concave bases, and their relatively small finds assemblages suggest that they were in use in the early Romano-British period. No significant internal features were identified. A length of ditch (218710) running parallel to 218711 for a short distance may define a section of trackway on the possible enclosure's north side, while ditch 218714 may represent a later phase of this enclosure.

A series of boundary ditches lay to the south-east of Enclosure F, the earliest of which (218702), probably dating to the 1st century AD, may represent either the edge of a subdivided enclosure or a field system. This was replaced by an early Romano-British field system comprising ditches 218703 and 218706–8, almost certainly associated with ditches 218700 and 218701 which were less well dated.

The only discrete feature of note in DE3003 an ovoid pit (303115), which contained a substantial pottery assemblage (135 sherds), diagnostic elements of which suggest a date in the last third of the 1st century AD.

Enclosure G and Associated Boundary

A Late Iron Age/early Romano-British subcircular enclosure (Enclosure G) was partly exposed on the western side of DE3001, south of the pit alignment and the former palaeochannel (Fig. 4.10). It lay on an area of slightly higher ground, suggesting that the channel may have been prone to sporadic flooding.

Only the eastern edge of the enclosure (defined by ditches 218558, 218562, 301936 and 301940) was revealed in excavation. Whilst it is clear that this enclosure has its origins in the Late Iron Age, much of the circuit was heavily recut in the early Romano-British period. The only substantial survival of the initial circuit (301936) had moderately steep irregular sides and a concave base, whilst the recut (301940) was more regular with steep sides and a concave base (Fig. 4.4D). As with many of the Iron Age enclosures on this site, the early phase of Enclosure G appears to have been abandoned towards the end of the 1st century AD, with the ditches allowed to silt, although the subsequent reworking of elements of it in the early Romano-British period suggests it remained visible.

The enclosure was internally divided, at the north by a steep-sided gully with a flat base (218557), and at the south by two shallow gullies with more rounded profiles (302917 and 302919). Pottery from gully 218557 suggests a Late Iron Age date, whilst the latter two were open in the early Romano-British period. Apart from these gullies, however, there was no evidence for contemporary internal features, and the enclosure's function is unclear. It lay within 50 m of the Newton Villa complex and may have had some association with the villa's development.

A double ditched boundary (218562 and 302487), probably with a central bank, appeared to extend east from the enclosure towards the Fosse Way, although its full extent was not established as it was heavily recut in the late Romano-British period.

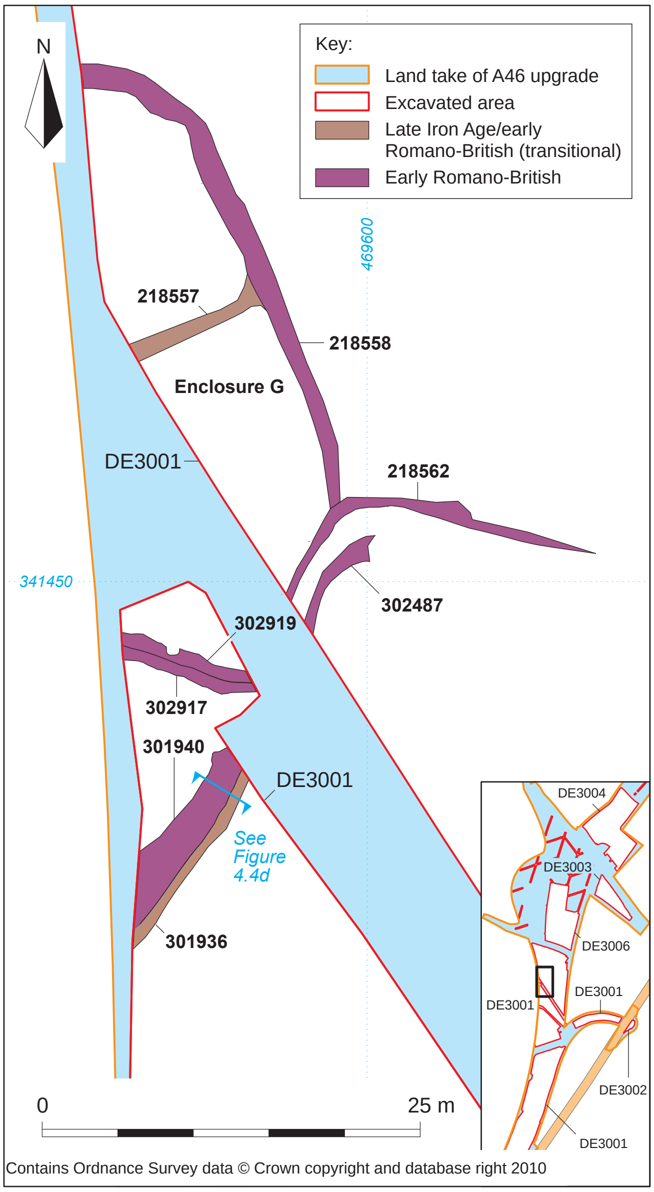


Fig. 4.10 Detail of early Romano-British Enclosure G

Enclosures H, J and K

The western edges of two adjacent irregular enclosures (Enclosures H and J) were revealed at the southern end of DE3001 (Fig. 4.11), neither with evidence for internal features. Enclosure H, apparently the earlier of the two, was initially defined by a deep, steep-sided and flat-bottomed ditch (218522) containing Late Iron Age pottery, and later by a shallow concave recut (218552) containing early Romano-British pottery (Fig. 4.11, section). Its southern side followed the line of an earlier Iron Age boundary ditch (218534) (see Chapter 3), probably still visible, perhaps as a bank or hedge. A short length of ditch (218537) running parallel to the enclosure's north-western side may mark a heavily truncated trackway in this area. A second, possibly smaller enclosure (Enclosure J), defined by ditch 218538, was added to the north in the early Romano-British period (Fig. 4.11).

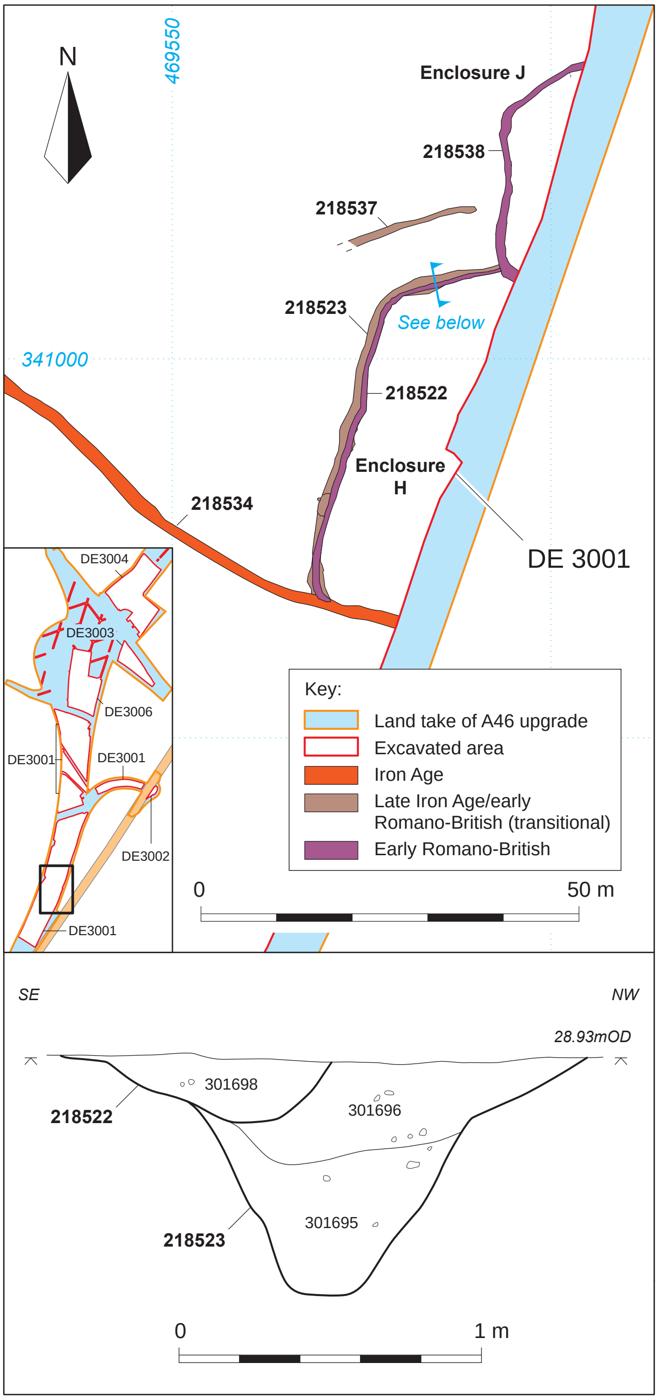


Fig. 4.11 Enclosures H and J and section of ditch 218523 (Enclosure H)

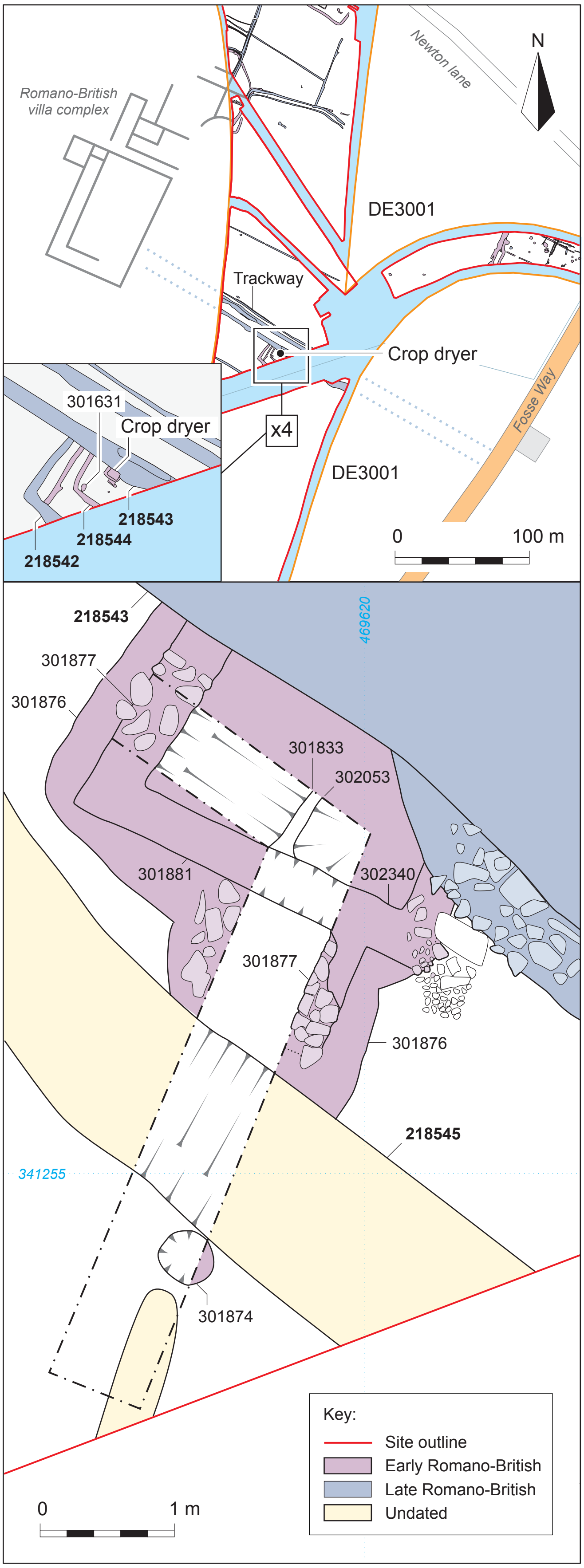


Fig. 4.12 Early Romano-British crop dryer 301876

Crop Dryer

A crop dryer lay within an area partly defined by gullies 218542 and 218544 (in DE3001) (Fig. 4.12), but was cut to the north-east by a later roadway, while its south-eastern side lay beyond the edge of excavation. Ditch 218544 may mark the extent of a structure to the south-east and south-west, although only a single posthole (301874) was identified.

The crop dryer (in construction cut 301876) had suffered significant truncation, and had been heavily robbed (robber trenches 301881 and 302340), making its exact form difficult to reconstruct with any confidence, although traces of its stone-lined flue (301876) were identified. The base of the dryer's chamber varied noticeably in depth, being deeper to the west (301883) than it was closer to the flue (302053).

Samples from charcoal-rich deposits within the flue contained large amounts of charred cereal remains, including grain fragments, glumes, rachis, awns and coleoptiles of hulled wheat and barley, confirming that it was used in processing crops, with some evidence of malting (see Stevens, Charred Plant Remains, below). A shallow pit (301631) to the south-west, in the corner formed by gully 218544, was also filled with charcoal-rich material containing a similar proportion of grain, other cereal remains and weeds as in the crop dryer, presumably raked out of the dryer.

Although the bulk of the pottery and other material recovered in associated features support an early Romano-British date for this complex, it was subsequently re-enclosed in the mid-Romano-British period (see 218541 below). This might suggest construction early in the 2nd century AD, with activity perhaps continuing into the mid-Romano-British period. Such a date would make it broadly contemporary with the first activity associated with Newton Villa a short distance to the north-west (Fig. 4.12), which appears to have had a significant influence on the development of the land to the west of the Fosse Way from the 2nd century AD onwards.

Roadside Activity on the Fosse Way

The construction of the Roman road (Fosse Way) in the post-conquest period appears to have provided a new focus for activity in the late 1st and early 2nd centuries AD, with features recorded on either side of the road (in DE3001 and DE3002). To the west of the road, a series of gullies and ditches defined a rectangular enclosure system perpendicular to its line.

Activity on the west side of the road

One rectangular enclosure, *c.* 21 m wide, aligned WNW–ESE and defined by a series of shallow gullies (218513, 218517 and 218520) was recorded here (Fig. 4.13). This, together with the other features of this phase, may relate to a single plot fronting onto the Fosse Way. The western extent of this activity appears to coincide with ditches 218515 and 218516; only a single early Romano-British pit (301313, not illustrated on Fig. 4.13) lay to the west. These broad irregular ditches probably channelled away water from nearby springs and were clearly filled with waterlain deposits. At least two phases of ditch were identified, but it is probable that these were intermittently cut and recut as new springs arose. Pottery and other material was recovered from the fills of these ditches, and included Roman material. They appear to have been an important feature of the Roman and possibly even the post-Roman landscape.

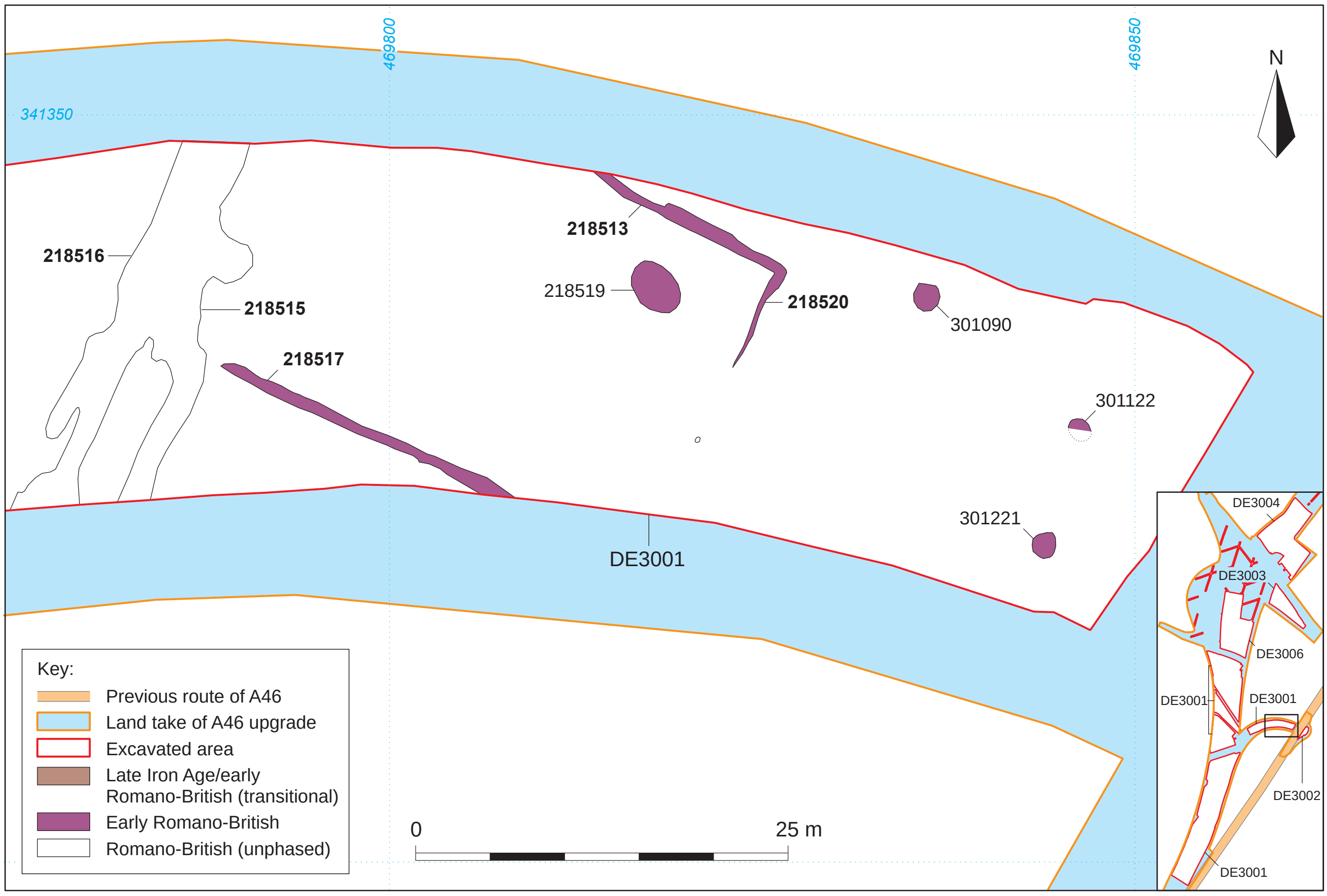


Fig. 4.13 Early Romano-British features on the west side of the Fosse Way (DE3001)

The enclosure had a large early Romano-British waterhole in its easternmost corner (218519), perhaps indicating its use for corralling stock, although samples taken from one of its upper fills were rich in charred plant remains indicative of domestic occupation. These were dominated by grains of spelt wheat with smaller quantities of barley. Quantities of heather and grasses from this deposit may have been used as fuel. There were three contemporary pits (301090, 301122 and 301221) just east of the plot; waterlogged material from the lower fills of pit 301122 was dominated by cereal processing waste; there were smaller quantities of grasses and wild species such as arable weeds, and seeds of damp ground species such as sedges, spike-rush and rushes possibly growing on its edge.

Activity on the east side of the road

In contrast to the pattern on the west side of the Fosse Way, there was strong evidence for settlement on the eastern side (in DE3002) (Figs 4.14 and 4.15). The earliest feature was a ditch (218650), aligned NW–SE, which contained no well-dated pottery, but was cut by several early Romano-British features, and may be Late Iron Age in date. This area saw significant roadside settlement in the post-conquest period, with ditch 218650 being replaced by shallow ditch 218651. This appears to have marked the boundary between two plots, each containing a pair of circular structures (Fig. 4.14). A second ditch (303956) *c.* 20 m to the south-west may mark the boundary for a third roadside plot, making

Fig. 4.14 Early Romano-British features on the east side of the Fosse Way (DE3002)

Fig. 4.15 DE3002, on the east side of the Fosse Way, under excavation

the central plot of comparable width to the rectangular enclosure on the opposite side of the road (*c.* 21 m, see above). These divisions may relate to the properties of individuals or households. A similar pattern of land division was noted within *Margidunum* itself (Todd 1969).

Structures 9 and 10

Two early Romano-British structures (Structures 9 and 10) lay to the north of ditch 218651. A length of curvilinear gully (218654) probably acted as a drainage feature for a roundhouse (Structure 9) enclosing area of *c.* 8 m diameter; two postholes in this area (303965 and 303981) may have formed part of this structure. Structure 10 was smaller, defined by a wide penannular ditch (218652) enclosing an oval area *c.* 5.1 m wide (NE–SW) by 4.6 m. There was a *c.* 1.1 m wide entrance facing south-east, while two postholes (303908 and 303926) towards the rear corners suggest an internal structure. Other short lengths of straight gully in this area (303972, 303990 and 303997) may hint at other structures. The only other features were a subrectangular pit (303923), perhaps within Structure 9 but of uncertain purpose, and the terminus of a ditch (303913, recut as 303878) running to the south-east.

Structures 11, 12 and 13

Two principal early Romano-British structural phases were recorded in the central plot. The earliest phase comprised a pair of roughly circular structures defined by curving gullies (Structures 11 and 12) each *c.* 7–8 m in internal diameter. Structure 11 was defined by gully (218653), probably a roundhouse drainage gully, while Structure 12 was defined by two lengths of wider, although heavily truncated ditch (218290 and 303622) probably with a south-facing entrance. Although within the same broad phase, the proximity of these two structures suggests that they were not in contemporary use.

At some point in the early Romano-British period Structure 11 was replaced by a rectilinear structure, *c.* 6 m wide and at least 9 m long aligned on the Roman road, which was defined by shallow gullies 218661, 218662 and 218275, possibly beamslots (Structure 13). A number of internal postholes (218180, 218227, 218231, 218237 and 218257) may have held structural posts, although they form no coherent pattern. The form and position of another gully (218663) hints at a second rectangular structure on a similar alignment immediately to the south-east.

Structure 14

Only limited investigation of the third plot, to the south of ditch 303956, was possible. However, two beamslots (303632 and 303643) and an associated posthole (303641) indicate another early Romano-British structure (Structure 14). Numerous patches of poorly dated clay floor were recorded in this area, and a number of these (303516, 303518, 303519, 303520 and 303527) may relate to the use of this building whose overall form and size are not possible to determine.

Mid-Romano-British (*c.* AD 150–250)

There was a marked change in land use on the site during the 2nd century AD. The Late Iron Age and early Romano-British enclosure complexes to the west of the Fosse Way (enclosures A–F) were abandoned and allowed to silt up, with a marked shift in activity to the edges of the Roman road, in DE3001 and DE3002. The few features further west probably relate to the development of Newton Villa and its estate.

Boundary Ditches and Burial

As earlier enclosure ditches silted up, or were backfilled, new field boundaries were established, and although many of those to the west of the Roman road were extensively recut in the late Romano-British period, some were clearly of mid-Romano-British date. In particular, ditches 218561, 218552, 218553 and 301471 (Fig. 4.16) appear to represent the first establishment of a rectilinear field system, although only ditches 218553 and 301471 can be dated artefactually – by a late 1st or 2nd-century brooch and a small assemblage of pottery, respectively. The field system was possibly associated with the villa further to the west, or with land allotment emanating from the town of *Margidunum*. Within this field system, the site of the earlier crop dryer (above) was enclosed by a ditch (218541), in places over 1 m wide and with shallow sides and an irregular concave base, the single fill of which contained mid-Romano-British pottery, suggesting the dryer's continued use into this period. It is possible that the adjacent trackway leading to the villa, which was metalled in the late Romano-British period, was established in this period, although there is no direct evidence to support this.

In addition, there was an inhumation grave (302809) adjacent to ditch 218552 (Figs 4.16 and 4.37). It contained the uncoffined and unaccompanied burial of a possible male aged over 55 years, radiocarbon dated to *cal AD 120–260 (SUERC-39047, 1840±30 BP at 94.3% probability)*, ie, of broadly mid-Romano-British date (see Table 4.47 below).

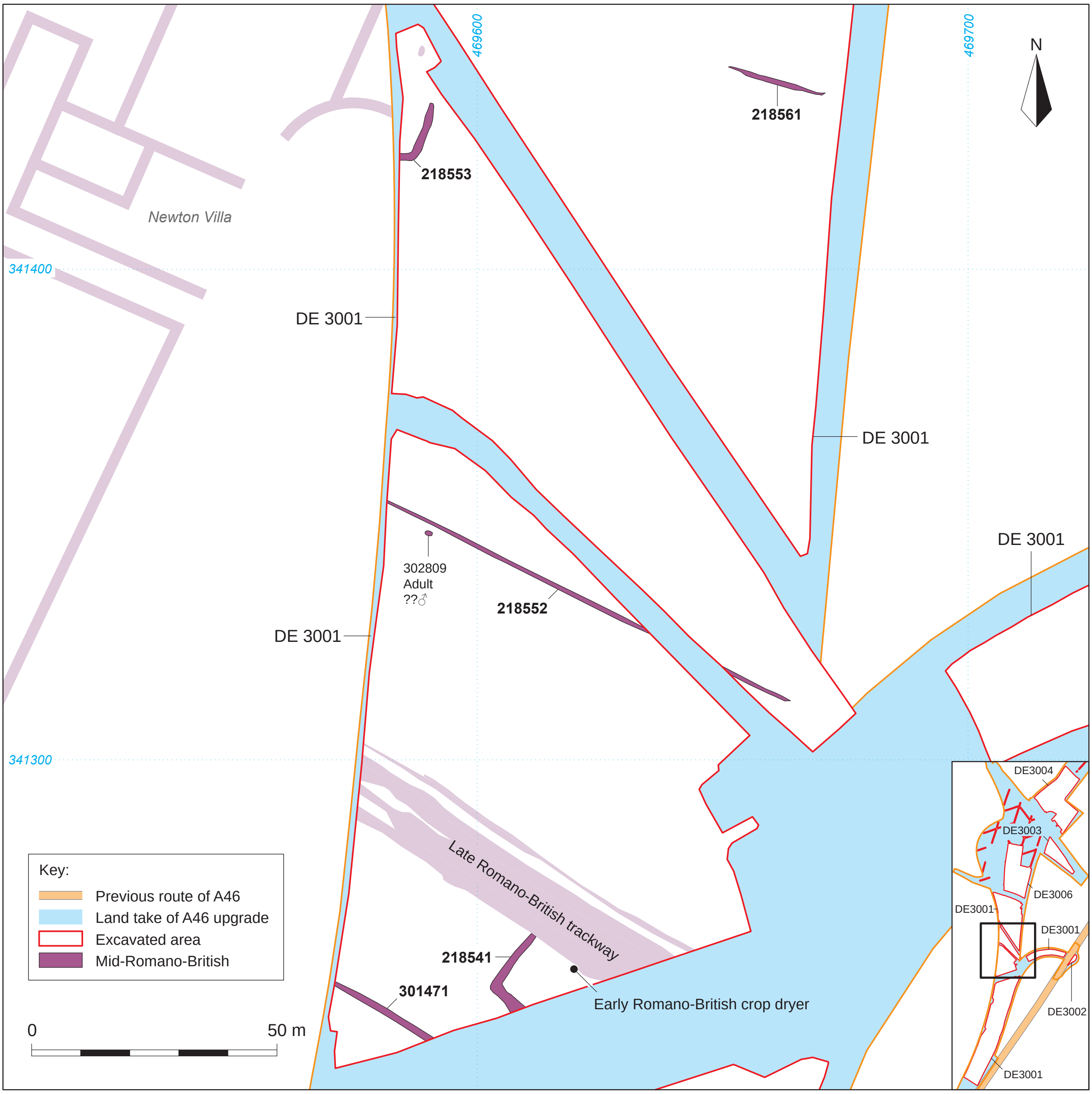


Fig. 4.16 Mid-Romano-British features between the Fosse Way and Newton Roman villa (DE3001)

Further south, a *c.* 8 m wide trackway running ENE–WSW may date to this period, its northern side marked by ditch 218521 (which cut the silted up ditch of Enclosure J) and its southern side by ditch 218536 (which cut Enclosure H) (Fig. 4.17). A large poorly dated ditch (218530) running approximately perpendicular to this trackway on its south side may be of a similar date.

Also to the south of the trackway, a new large sub-rectangular enclosure (Enclosure K) was created (Fig. 4.17), probably in the 3rd century AD. Only the western edge and south-western corner of this enclosure, aligned NNE–SSW, parallel to the Fosse Way, were within the excavation area. Although heavily recut in the late Romano-British period, some elements of the original enclosure survived (ditches 218527, 301366, 301408, 301449, 301527, 301548 and 301653), whilst the alignment and location of gully 218533 appears to indicate that the enclosure was originally divided into two or more plots.

Roadside Activity on the Fosse Way

The most significant evidence for mid-Romano-British activity was recorded immediately adjacent to the line of the Roman road – in DE3002 and part of DE3001. Although limited in area, these excavations revealed settlement on both sides of the road, with post-built structures and well-defined plot boundaries.

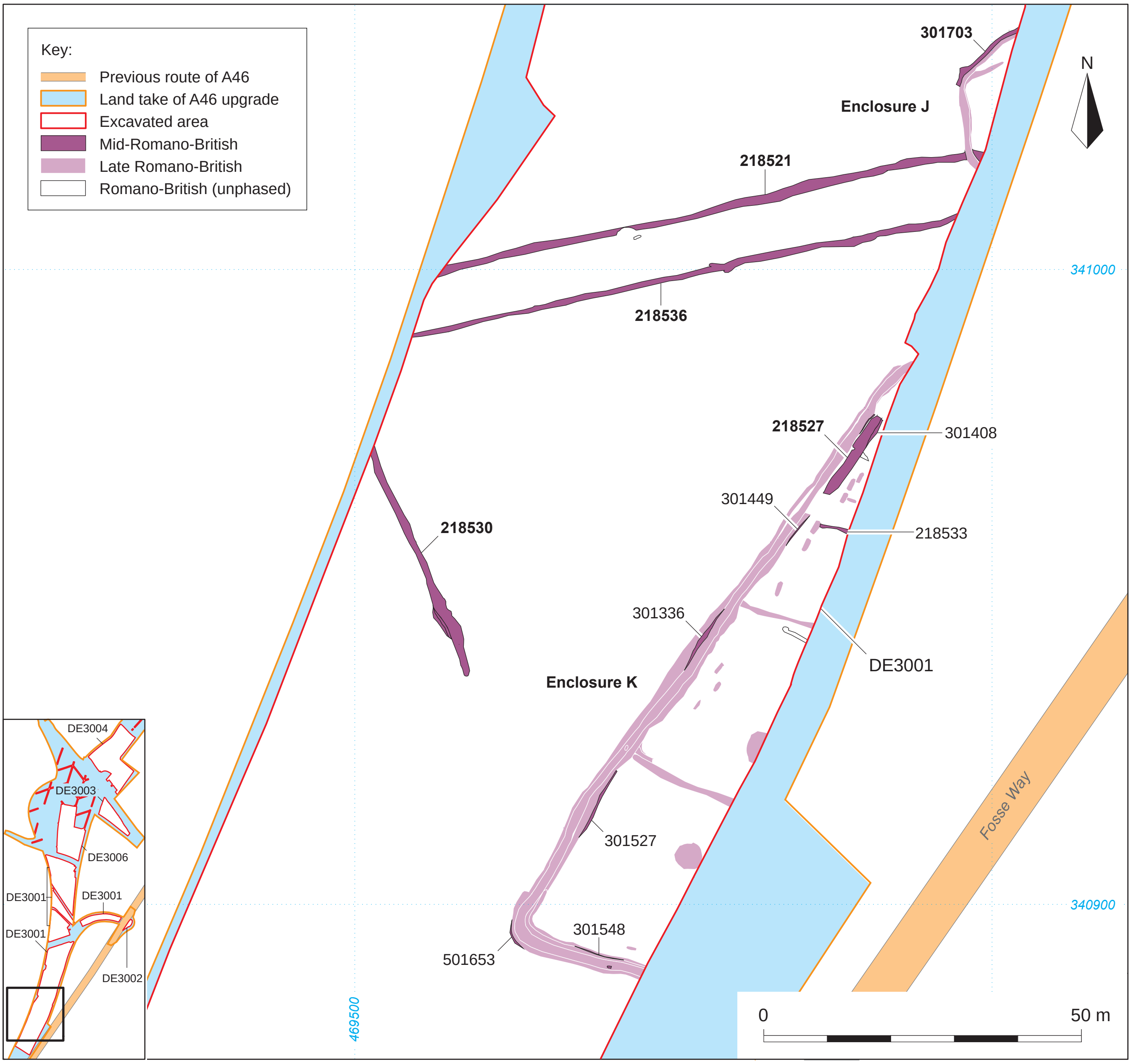


Fig. 4.17 Mid-Romano-British features at the south end of the site (DE3001), including Enclosure K

Activity on the west side of the road

In DE3001 the activity was largely confined to the environs of the road frontage, and comprised ditches perhaps dividing two plots of land provided with waterholes. There were several pits and the remains of at least one building (Fig. 4.18). These features were bounded to the north-west by the line of a recut ditch (218515/218516) running parallel to and *c.* 70 m from the road. While irregular in form, examination of the sediments in ditch 218516 by David Norcott (report in archive) established that it was unlikely to have been a natural feature. Some degraded pollen in the lower part of the ditch (monolith 40) indicate a largely open environment (see Grant, below; Table 4.45) and this is confirmed by the mollusca (see Wyles, below; Table 4.30), although the presence of some shade/woodland species might suggest the presence of a hedgerow. Small quantities of mid–late Romano-British material were recovered, although its form suggests that this boundary may well have been extant for much of the Romano-British period.

Traces of a building (Structure 15) fronting onto the road comprised a well-defined area of clay flooring (301050), associated with two sub-oval postholes (301040 and 301047) which appear to define the rear of the building; posthole 301040 had a clearly defined post-pipe surrounded by packing stones, suggesting that the post had rotted *in situ* rather than been removed when the structure fell into disuse. A shallow steep-sided and flat-bottomed gully (301194) running along the rear of this building may have been a beamslot, although its proximity to the postholes is difficult to understand

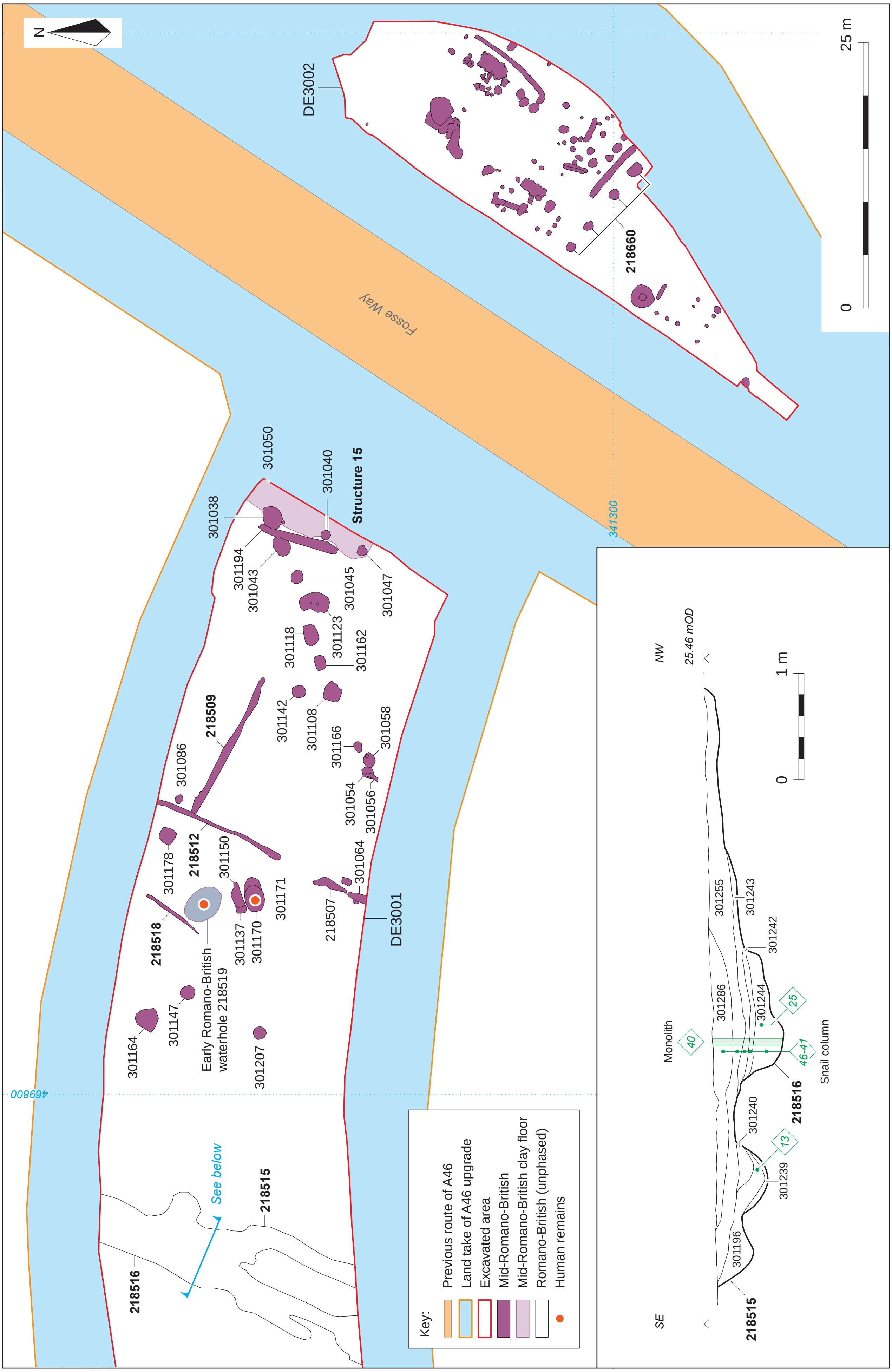


Fig. 4.18 Mid-Romano-British features on the west side of the Fosse Way (DE3001)

in structural terms. There was no evidence as to the function of this building, although the range of finds recovered from nearby features indicates that it may well have been a domestic structure.

A number of features lay close to the rear of Structure 15, in particular, a line of eight pits and two waterholes/wells running roughly west-east. The eastern three pits (301038, 301043, 301045) were all very similar, oval in plan and relatively shallow with moderately steep sides and a concave base. Waterhole 301123, which almost completely truncated early Romano-British pit 301122 (Fig. 4.13), was much more substantial, with steep, irregular sides and a stepped, irregular base. Its lower fills were waterlain, but it does not appear to have been lined and, when it fell into disuse, it appears to have been deliberately backfilled. The remaining pits in the line were similar to the easternmost three, apart from pit 301058 which was much deeper and steep sided, possibly a well although with no traces of any lining, filled with a series of dumped deposits containing rubbish. Like 301123, this appears to be slightly later, cutting the eastern edge of the fill of pit 301054.

The orientation of this line of pits is at odds with the other boundaries on this part of the site, but may nevertheless represent a boundary of sorts. Most of the pits are well dated to the 2nd or 3rd centuries AD by their pottery, although the easternmost three (301038, 301043 and 301045) were less well dated. Crucially, 301038 cut the clay floor of Structure 15, but cannot provide a good date for the end of this structure's occupation. However, it does suggest that the pits post-date the building and presumably its associated boundaries. It may be that they indicate a change in land ownership or use – although the material recovered from them is largely domestic in nature, including charred cereals from the well-like features 301123 and 301058 (see Stevens, Charred Plant Remains, below; Table 4.35), and suggests a continuity of domestic occupation. The only other mid-Romano-British features near Structure 15 were two small pits, 301086 and 301142, the latter clearly a rubbish pit, containing a number of deliberate dumps of waste material, including pottery, animal bone, fired clay and ceramic building material, one of these layers rich in charred plants and containing small amounts of charcoal (Table 4.35). The assemblage of charred plants is dominated by wheat, probably spelt, and probably represents processing waste.

Further west, gullies 218507, 218509, 218512 and 301064 appear to represent contemporary boundaries, dividing the land closest to the road into two plots, with the gap between gullies 218507 and 218512 allowing access into a third enclosed area between these plots and the western boundary ditch. These two plots are not reflected in the location of Structure 15, nor the later diagonal alignment of pits, so may have preceded both. A number of mid-Romano-British features lay in this third area: pits 301164, 301207, 301137 (recut as 301150), 301170 and 301178, two probable waterholes (301147 and 301170/301171) and a length of gully (218518) possibly marking a further boundary. The pits were relatively shallow, with moderately steep sides and flat bases, and all contained dumps of material incorporating domestic waste. Notable amongst this material was a substantial fragment of the base of a pottery vessel, recovered upright from the basal fill of pit 301178. This occupied a shallow scoop in the base of the pit, although it is not certain that it was deliberately placed because of its incompleteness and the presence of numerous (36) other unrelated sherds from the feature. A number of hobnails were also recovered from this pit, as was evidence for ironworking in the form of two hearth bottoms and some hammerscale, indicating that there is likely to have been a smithy in the vicinity.

Waterhole 301171, a large oval pit, contained a number of lower waterlain silts which were sealed by deliberate dumps of material incorporating rubbish, presumably used to backfill the pit once it had served its purpose. It was later recut as a second waterhole, 301170, which truncated much of the earlier fills. This was steep sided, and could not be fully excavated safely. Amongst the material recovered from the upper fills, however was a small assemblage of disarticulated human bone. The deposition of this bone is likely to be broadly contemporary with the burial of disarticulated human remains in the top of nearby early Romano-British waterhole 218519 that continued in use into the mid–late Romano-British period. Of the remaining waterholes, 301147 was oval in plan and very steep sided, suggesting that it may originally have been lined. It contained two thick, slowly accumulated secondary fills, but could not be excavated to its full depth because of the rising water table.

An interesting series of deposits was also recorded within this plot. Human bone, comprising the disarticulated remains of a woman aged 25–35 years, and fragments from a second woman aged over 18 years, was recovered from the upper fills of waterhole 218519 (Table 4.1, context 301284a and b). The bones had been placed in a fairly neat pile (Fig. 4.19). Further,

Fig. 4.19 Stack of human bone (context 301284) from upper fill of waterhole 218519

Fig. 4.20 Mid-Romano-British features on the east side of the Fosse Way (DE3002)

disarticulated human remains (Table 4.1, context 301159) were recovered from the latest fills in a series of intercutting mid-Romano-British pits only 5 m to the south (Fig. 4.18, pit 301170). A radiocarbon date was obtained on the disarticulated remains from waterhole 218519 (*AD 210–360 cal AD (91.1%) at 95% probability*: SUERC-39052, 1760±30 BP). The pottery recovered from this deposit included sherds datable to the mid-2nd to 3rd centuries AD, and thus broadly contemporary. There is no evidence for any truncated inhumation burials in the vicinity of these features, and the remains from the waterhole (comprising most of the skull, mandible and pelvis together with long bones) were disarticulated when buried. This deposit may represent the reburial of human remains found in antiquity.

Activity on the east side of the road

Considerable evidence for mid-Romano-British activity was also revealed to the east of the Fosse Way (in DE3002) (Fig. 4.20). This area of early Romano-British settlement saw significant changes from the mid-2nd century, with the construction of a number of post-built and stone structures possibly reflecting a change in land use towards an industrial as well as a domestic focus. There were also a number of infant burials during this period.

The majority of the mid-Romano-British features were cut into the earlier occupation layers that had accumulated in this area, and similar patterns of deposition continued into this period, with layers containing substantial quantities of mid-Romano-British pottery and, in particular, samian. There is little evidence, however, that the earlier plot boundaries (see Fig. 4.14) continued in use into the later 2nd century AD. Instead, there appear to have been two main foci of activity, in the north-east and the south-west halves of the area, the apparent boundary between them marked by a line of four substantial postholes (218142, 218282, 303591 and 303596), all *c.* 1 m across; two of them (303591 and 303596) contained stone packing and evidence for post-pipes, indicating that their posts had probably rotted *in situ*.

The northern group of structures

The area to the north of the alignment of large postholes was characterised by the build up of quite substantial deposits of soil incorporating both domestic and industrial waste. Five structures (Structures 16–20) were recorded in this area, and although they had suffered significant truncation, it is possible to suggest that they were used for different purposes, Structure 16, for instance, housing a crop-drying oven, while Structure 17 appears to have been a smithy.

Structure 16

The northernmost structure in this plot (Structure 16) survived only as a patch of truncated clay floor associated with a stone-lined well (303819) (Fig. 4.21) and an oven (303779) (Fig. 4.22). It cannot be determined whether there was a superstructure associated with the floor, or what form this might have taken. It is conceivable that it lay within a larger structure represented by features described under Structure 20. The well was constructed in a large deep circular pit (303819) dug through the alluvium into the underlying clays and mudstones. The circular stone lining (303848) was then built, using shaped stones bedded in a clay matrix – probably derived from the initial excavation of the well, with the space behind the stone lining backfilled with a mix of rubble, unshaped limestone blocks and clay. The well was not fully excavated but augering established that it was *c.* 2.7 m deep. The lower excavated deposits contained numerous sherds of pottery and hobnails associated with two very small fragments of leather. Environmental samples contained both charred and waterlogged plant remains, the charred remains being dominated by spelt wheat, with smaller quantities of barley and weed seeds, while the waterlogged remains included a similar assemblage of plant remains to that recovered from well 303715 further to the south and suggestive of nitrogen-enriched soils (see below).

Although no good evidence was recovered for any superstructure above or around the well, some of the clay from its construction had been used to create a clay floor (303783) which extended up to the well's stone lining, and which in places appears to have formed the basis for a crude cobbled surface. To the south-west, this floor had an oven (303779) set into it, comprising an oval-shaped chamber linked to two flues on a NW–SE alignment. There was evidence that the longer flue to the NW was used as a stoke-hole, with evidence in the form of both charcoal and *in situ* heat reddening of the sides and base. The shorter flue to the SE had no similar evidence, and may have been acted to draw air through the oval chamber. Both the chamber and flues had steep sides and a concave base, with a number of stones set into the edges, probably to support a wooden floor. With the exception of the charcoal rich deposit at the NW end of the longer flue, the oven and flues were filled with a uniform ashy deposit. Samples taken from this were extremely rich in wheat grain, including germinated grains, suggesting that the oven was being used in the

Fig. 4.21 Stone-lined well 303819, associated with Structure 16

Fig. 4.22 Oven 303779 viewed from the south-west

Fig. 4.23 Mid-Romano-British spreads on the east side of the Fosse Way (DE3002)

early stages of malting. This may indicate that brewing was also taking place in this area, a process giving added significance to the proximity of the well.

There is strong evidence that the northern plot was also used for metalworking, in the form of both specific finds and significant quantities of debris from both copper and ironworking (some found in the well itself). Most of this material was recovered unstratified or in later features, but some was found within the spreads of occupation debris which built up during this period. The finds included a trapezoidal-section iron bar for smithing, other iron bars or billets, a copper alloy casting sprue and a repaired fragment of copper sheet (see Schuster, below); a battered quartzite block recovered from occupation spread 303677 may have acted as an anvil (see Roe, below). Small quantities of copperworking debris, in the form of clay mould fragments, were also recovered, as were numerous fragments of lead waste and offcuts, the majority again recovered unstratified (see Jones, Lead Objects, below). Evidence for ironsmithing took the form of 24 smithing hearth bottoms and hammerscale recovered from spreads 303677, 303678, 303691 and 303814 (Fig. 4.23).

Structure 17

In themselves the finds of slag and hammerscale mostly indicate metalworking generally across this plot, but a small number were recovered from the fills of features relating to Structure 17 – including beamslot 218661, and postholes 218248, 303740 and 303767 (Fig. 4.20). Although the precise form of this building is not clear, its outer postholes (303740, 303773, 303730, 218320, 218248, 303784, 303794, 218308), many with stone packing and almost certainly associated with beamslot 218661 (which perhaps related to some sort of screen), formed a rough rectangle orientated NW–SE, suggesting a structure, 5 m wide and over 5 m long, extending south-east beyond the limit of excavation. The possible quartzite anvil was recovered from layer 303677 some 15 m NW of this building, which probably housed a smithy, working with iron, copper and possibly lead.

Structure 17 appears directly related to the earliest substantial mid-Romano-British layer (303814) in this area (Fig. 4.23). This was a mixed deposit incorporating both domestic and industrial waste – animal bone, ceramic building material, pottery, fired clay, slag, glass and a small number of iron and copper alloy objects, including a 2nd-century trumpet-headed brooch (see Schuster, below). Amongst the pottery were seven sherds of samian bearing evidence for repair; samian vessels were normally repaired using small lead plugs or rivets set into drilled holes to hold clean breaks together. This may have been one of the metal-related crafts undertaken in the building. A lead plug was recovered unstratified and it seems likely that, as well as undertaking small-scale smithing and copper alloy working (see Starley, below), the smithy had a sideline in repairing cracked and broken samian pottery.

Layer 303814 was sealed by a further substantial deposit (contexts 303677, 303678 and 303691) containing mixed domestic and industrial waste, which covered most of the northern half of the area (Fig. 4.23). This deposit was assigned three different numbers in order to maintain some spatial integrity to the finds recovered from it. Further samian, some sherds showing evidence for repair, was recovered from these deposits: context 303678 – 112 sherds (14 with repairs), 303677 – 45 sherds (five with repairs) and 303691 – 66 sherds (four with repairs). Overall, significantly higher quantities of samian were recovered from the DE3002 excavation than anywhere elsewhere on the site, much of it dating to the 2nd century AD and likely therefore to have been associated with these structures (see Monteil, below).

Three shallow gullies (218286, 218288 and 218663) cutting layer 303678 in the immediate vicinity of Structure 17 post-date its abandonment. They are on a different alignment to Structure 17 and follow the same alignment as Structure 19 (below).

Structure 18

A second rectangular post-built structure (Structure 18), with a similar orientation and of uncertain function, was exposed north-west of Structure 17, closer to the road

Fig. 4.24 Stone footing 303580 in Structure 18 under excavation

(Fig. 4.20). Nine postholes (including 218154, 218229, 218235, 218239 and 303629) appeared to define a structure measuring *c.* 5 m by 7 m, with a wide possible entrance gap in its roadside frontage; the absence of postholes at its southern corner of the structure is almost certainly due to truncation by a late Romano-British ditch (shown on Fig. 4.46). Centrally within the north-eastern half of the building was an unusual, roughly rectangular stone footing (303580), *c.* 2.4 m long (NE–SW) and 1.1 m wide, made of yellow sandstone blocks, shaped externally to give the footing relatively even faces (Fig. 4.24). The yellow sandstone is noticeably different from the white limestone used elsewhere on the site. A mid-Romano-British occupation deposit (303513) within the building contained domestic material such as pottery and animal bone, but no repaired sherds of samian. Two broadly contemporary pits (218170 and 303597) inside the building cut through this layer, and appear to have been used for rubbish disposal, although their original functions are unclear.

At some point, probably late in the 2nd or early in the 3rd century AD, Structures 16–18 went out of use and the well was deliberately backfilled. In their place two structures with stone footings were built.

Structure 19

The first of these, Structure 19, which was heavily truncated, partially overlay Structure 18, but lay at a slight angle to this structure and to the road. It comprised short lengths of mortared foundation (303578), one of which truncated stone setting 303580, and a length of robbed foundation (303577) (Fig. 4.20). These defined the western corners of a square or rectangular structure *c.* 3.6 m north–south, but of which less than 2 m east–west dimension survived. The foundations, in straight-sided and flat-bottomed trenches, comprised loosely mortared and irregularly shaped limestone blocks, and it is unclear whether these would have supported a masonry or a timber superstructure although, given their scale, the latter is perhaps more likely. North-east of the foundations, a patch of flat stones probably laid as a coarse cobbled surface (303761) was almost certainly related to Structure 19. The function of this building, as with its predecessor, is uncertain, although a single infant burial (grave 303859) was made inside it, and a possible placed deposit made in a stone-lined cist (pit 303611) dug close to its southern wall (see below). There is therefore, perhaps, the suggestion that it was a shrine.

Structure 20

The second structure, Structure 20, lay to the north-east, and included a roughly rectangular platform or footing (303876) made of unshaped limestone blocks bedded into a shallow foundation trench. Despite heavy truncation, more than one course of stones was discerned, although no bonding was identified. A series of smaller footings may represent associated structural elements, such as post-pads or low walls (218134, 303957, 303993 and 303994), as may postholes 218323, 218325, 303871 and 303942 to the north and north-west. It is likely that this structure was associated with a slightly curving gully (218655), possibly a beamslot, which ran for *c.* 9 m NE–SW, turning to the north-west at its southern end. This concentration of structural features lay within an approximately rectangular area about 10 m long by 5 m wide and, whether strictly contemporaneous or not, is difficult to interpret in constructional or functional

Fig. 4.25 Infant burials and placed deposits on the east side of the Fosse Way (DE3002)

terms. Nearby features, notably pits 218201, 218206 and 218284, and ditch terminal 218112, may also be related although these have no discernible structural function.

Infant burials and placed deposits in the northern plot

The remains of a minimum of 18 neonatal burials and one slightly older infant burial were excavated in the northern plot (see Grave Catalogue and Table 4.1). Most of the graves were dug into the extensive mid-Romano-British spreads (303677, 303678, 303691) which had built up across this area of the site (Fig. 4.23), which made them very difficult to recognise and define. While most burials could be assigned grave cuts (Fig. 4.25), the remains of three burials were recovered during the removal of layer 303814, and disarticulated neonate bones were recovered during the removal of contemporary spreads of occupation debris (303677 and 303691, as well as 303814), suggesting the presence of further disturbed inhumations or burials. There were two marked concentrations of burials, both associated with Structure 20.

The first group, of five graves (218128, 218138, 218153, 218185 and 218268), lay directly to the north-west of Structure 20's stone footing (303876), and were placed so closely together that a number of the grave cuts overlapped. These comprised the burials of two neonates aged up to one month old (in graves 218128 and 218138), two possibly female neonates, one aged 0–2 weeks (grave 218153; Fig. 4.26) and another probably buried at birth (grave 218185), and a possibly male neonate (grave 218268) (Fig. 4.26), also possibly buried at birth (see Grave Catalogue). Because some of these graves intercut and were subsequently disturbed by animal burrowing, the presence of disarticulated bones in some of the grave fills is unsurprising.

In three of these graves (218138, 218153 and 218185) the body was placed in a foetal position on its left side, whilst in grave 218268 the burial was in the foetal position on its right side (Fig. 4.26). This means that the possible male neonate was placed on its right side, and the two possible female neonates on their left, but the sample size is too small, and the sexing sufficiently uncertain, to say whether this was significant. The remains of the fifth burial were too disturbed for the body position to be established with confidence. The alignment of these graves does not appear to have been a significant factor in the burial rite. Grave 218138 was aligned SE–NW (head to SE), grave 218153 west–east, grave 218185 east–west, and grave 218268 SW–NE (Fig. 4.26). It seems likely that the place of burial, in close proximity to the stone foundation of Structure 20, was more important. All five of these graves were simple shallow scoops in the ground. There is no evidence to suggest that any of the burials were provided with a coffin or any other container, although this does not preclude the possibility

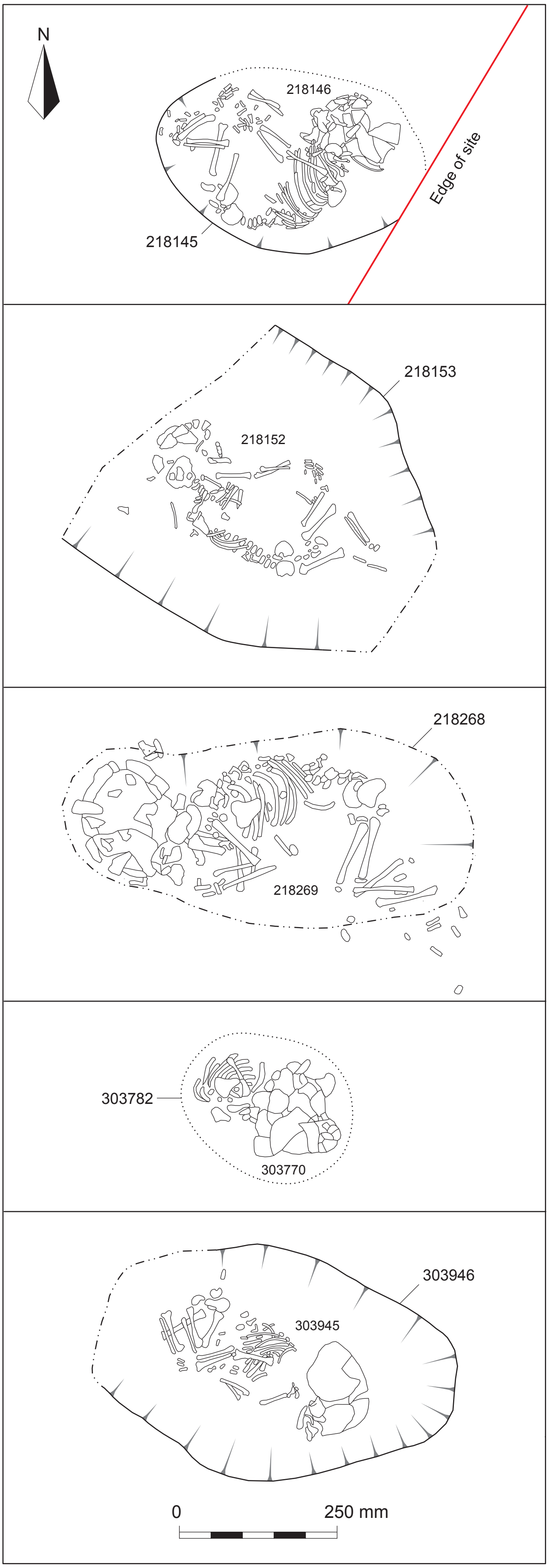


Fig. 4.26 Selected infant burial plans, graves 218145, 218153, 218268, 303782 and 303946

that they may have been shrouded at burial. None of these five burials appeared to have accompanying grave goods.

The second group of graves (303888 and 303946) lay close to the northern corner of stone footing 303876 in Structure 20. Grave 303888 contained the burial of an unsexed infant *c.* 7–9 months old, while grave 303946 (Fig. 4.26), contained a neonate, both buried in a foetal position on their left side. Both of these graves were truncated by the insertion of feature 303921, a shallow subrectangular pit on a NE-SW alignment. Two concentrations of human bone (303920 and 303939) comprised disarticulated remains disturbed from 303888 (see Grave Catalogue).

Graves 303888 and 303946 were both aligned SE–NW, and comprised shallow irregular scoops barely large enough to contain the burial; neither contained any evidence of a coffin. The shaft of a single iron nail was recovered from 303921 but as its location in the feature is not known (it was from a soil sample associated with the human bones) its significance is unclear. It may have derived from the burial, perhaps fastening a shroud. Alternatively, it may have served as an apotropaic offering; the use of single nails as magic amulets has been recorded elsewhere in Britain (see Schuster, below), but here the evidence is at best ambiguous. No other grave goods were recorded.

The burials of a further three neonates were encountered during the removal of spread 303814 (Fig. 4.23). No graves were distinguishable and all three burials (numbered 303814 a–c in the Grave Catalogue) were too badly disturbed during their discovery for any detailed excavation, other than the recovery of the bone. They comprised two neonates and one perinatal baby, all unsexed.

The remaining eight burials (in graves 218106, 218145, 303782, 303851, 303854, 303855, 303859 and 303863), are more widely dispersed with no apparent pattern to their distribution, although it is possible that some of them were associated with structural remains – grave 303859 lay close to Structure 19, whilst graves 303851, 303854 and 303855 lay close to Structure 17. They too show a degree of care, with the bodies often placed carefully on one side, either flexed or crouched, in shallow graves. None had any grave goods.

Four of these eight neonates (graves 218106, 218145, 303782 and 303863) were probably female, all deceased shortly after birth. Three unsexed neonates died at birth (graves 303851, 303854, 303855), and one unsexed neonate at about one month old (grave 303859). Their burial positions varied, with no apparent patterning by age or sex. Six were buried in a foetal position, two on their left sides (in graves 218106 and 303863) and four on their right sides (graves 218145 (Fig. 4.27), 303851, 303854 and 303859). One neonate was buried supine on its right side (grave 303855), while there appears to have been an effort to place the neonate in grave 303782 in an upright sitting position, although the body later slumped forwards and to the right (Fig. 4.26). There is little patterning to the alignments of these eight graves, with three aligned NE–SW (218106, 303854, 303855), one east–west (218145), one west–east (303851), one SW–NE (303859) and one SE–NW (303863). The unusual burial in 303782 appears to have been buried facing north. Stratigraphic analysis clearly indicates a mid-Romano-British date for these burials. This was broadly confirmed by a radiocarbon date of *cal AD 80–240 (at 95% probability)* (SUERC-39053, 1880±30 BP) obtained on bone from infant burial 303814a (see Table 4.47).

Fig. 4.27 Infant grave 218145 under excavation, viewed from the north-east

Infants are commonly under-represented in formal cemeteries in Roman Britain, and often occur on settlement sites. There are a number of similarities between these burials and those found within the settlement area at Springhead, Kent (McKinley 2011, 3–9), where excavation revealed a similar extended roadside settlement and industrial area, peripheral to the secondary Roman town of *Vagniacis*, on Watling Street, within which a number of infants had been buried. The group of neonate and infant burials in DE3002 provides a direct contrast to the cemetery excavated to the west of the Roman road, which contained only adult inhumations (see below).

Three further features in this area, each containing a placed deposit, may be directly related to these burials. A small pit (303611), immediately south of Structure 19 (and partly cutting the western corner of the sandstone setting in Structure 18), contained a stone and clay-lined cist (Fig. 4.28). A smashed globular jar in grog-tempered fabric, which had been placed between the cist and the edge of the pit prior to its backfilling, contained a burnt resinous material, which may have been derived from human or animal fat (see Stevens, Charred Plant

Fig. 4.28 Stone cist 303611 under excavation

Remains, below). In addition, the neck of a glass flagon of 1st or 2nd-century AD date (ON 3020) had been placed within the centre of the cist. It is clear that there is some significance both to this form of the feature and the items placed in it, and it has been suggested that these may form part of a cenotaph (McKinley, pers. comm.).

Two adjacent pits (303672 and 303674) cutting spread 303678 contained placed deposits of animal bone (Fig. 4.25). Pit 303672 contained the articulated remains of a partial cattle spinal column, whilst pit 303674 contained the articulated remains of a raven; the bird skeleton was not complete, with some evidence that the flight feathers had been removed. Burials of both crows and ravens are known from elsewhere in Roman Britain – often from pits, wells and shafts, and commonly in towns and in shrines – possibly reflecting the fact that corvids were ascribed supernatural powers by the Celts and Romans (see Higbee, below). These two pit deposits certainly represent deliberate ritual deposits; the fact that they lie within the smithy (Structure 17) strongly suggests that they relate to offerings associated with the smithy itself, although they could also relate to the possible cenotaph and the infant burials.

Disarticulated human bone

One further mid-Romano-British find is worth discussing in association with these burials. Small quantities of disarticulated human remains were recovered from spread 303691, the deposit covering the north-eastern part of the excavation area. These comprised a modified human femur which bore chop, saw and cut marks consistent with the removal of muscle attachments, as well as signs of gnawing by a dog; a tibia shaft, which had been chopped and split, and a frontal bone (from a skull) bearing a number of cuts suggestive of scalping (see Egging Dinwiddy, below). Whilst these may not necessarily be associated with each other, all three occurred in the same deposit, and all three saw modification whilst the bone was still fresh. A radiocarbon date obtained on the frontal bone returned a Late Iron Age date of 100 cal BC–cal AD 30 (at 95% confidence) (SUERC-44287, 2030±16 BP) (see Table 4.47), indicating that that this bone, at least, was residual in the context from which it was recovered, and implying that it had been redeposited. Finds of disarticulated human bone are not uncommon on Romano-British sites, but to find three humanly modified human bones, at least two of which bear signs of defleshing, is worthy of comment. At least one of these bones (the skull) would have been recognisably human and presumably not casually acquired as a raw material (McKinley, pers. comm.). Although there is no indication of other Late Iron Age burial here, it seems likely that these remains had been buried not far away and were disturbed in the 2nd century AD. There is no indication that they were deliberately curated and introduced into the infant burial ground.

The southern structure (Structure 21)

Only one building lay south of the line of four large postholes and, at a distance of *c.* 10 m from the northern structures, it is likely that this represented a separate property. This was a rectangular timber structure (Structure 21), closely associated with a stone-lined well (Fig. 4.20). The building, measuring *c.* 6 m by 3 m, was defined by a series of postholes (218110, 218303, 218305, 218311 and 303963) and a probable beamslot (218293). Of its two small internal features, one (218295) appears to have been a small hearth, consisting of a shallow scoop containing a charcoal-rich deposit. Reddening of the alluvium into which it was cut indicates *in situ* burning.

The well (303715) was similar to well 303819 (Fig. 4.21) in the northern plot, with a slightly tapering stone lining of shaped blocks built within a deep pit, and with clay packing behind (Fig. 4.29). Pottery recovered from this packing indicates a construction date in the 2nd century AD. A range of waterlogged and charred plant remains was recovered from the well's lower fills. The waterlogged material is dominated by wild species, such as nettles, nightshade, henbane, chickweed and elder, indicative of highly disturbed nitrogen-rich soils and

Fig. 4.29 Stone-lined well 303715, associated with Structure 21, viewed from north-west

the presence of people and animals immediately around the well. The charred remains are dominated by hulled wheats, predominantly spelt, along with grasses, heather and a number of weed species (see Stevens, Charred and Waterlogged Plant Remains, below). There is therefore clear evidence of an agricultural setting to this building, which contrasts with the more industrial character of the adjacent plot to the north. The abandonment of the well is indicated by late 3rd-century finds recovered from backfill deposits in the top of the well; in the late 3rd century a metalled road was constructed over the top of the well (see below).

The only other contemporary feature in the southern plot was a large posthole (303530) possibly forming part of a boundary similar to that dividing the northern and southern plots, *c.* 20 m to the north-east.

Late Romano-British (*c.* AD 250–410)

The late Romano-British period saw the establishment of field systems probably associated with the Newton Villa complex to the west of the Fosse Way, the construction of three buildings forming part of a second possible villa or farm complex to the west of *Margidunum* (in DE3004) and continued activity on both sides of the Roman road. Further south, the ditches of Enclosure J were redug, as were those of Enclosure K to its south, the latter with an inhumation cemetery along its western edge and with one burial in the enclosure ditch itself.

Fields and Burials Associated with the Newton Villa

Most of the enclosures in use in the early Romano-British period were abandoned and replaced by a much more regular system of fields and associated droveways. It is not clear when this new system was established because many ditches were recut in the late Romano-British period, although (as noted above) evidence survives for some having a mid-Romano-British origin – notably ditches 218553 and 301471 (Fig. 4.17). The field system was largely confined to the area (in the northern part of DE3001 and the southern edge of DE3006) to the north of a double-ditched boundary (and possible droveway) formed by ditches 218559 and 218560 (Fig. 4.30), where the landscape was divided into a series of irregular rectilinear fields by ditches 218564, 218554 and 218751 (the latter two recut by ditches 218555 and 218752 respectively). A spread of late Romano-British material (302109; Fig. 4.30) was recorded filling a hollow in the underlying alluvium. This is a mixed deposit and may represent an area of animal trample or deliberate dumping.

A poorly dated crop dryer (302781) lay within these fields, and is likely to date to the mid- or late Romano-British period (Figs 4.30, 4.31). This was aligned NW–SE and comprised a long linear flue with a stoke hole at its south-eastern end. The whole complex was 3.63 m long. The stoke hole was roughly circular, some 1.4 m

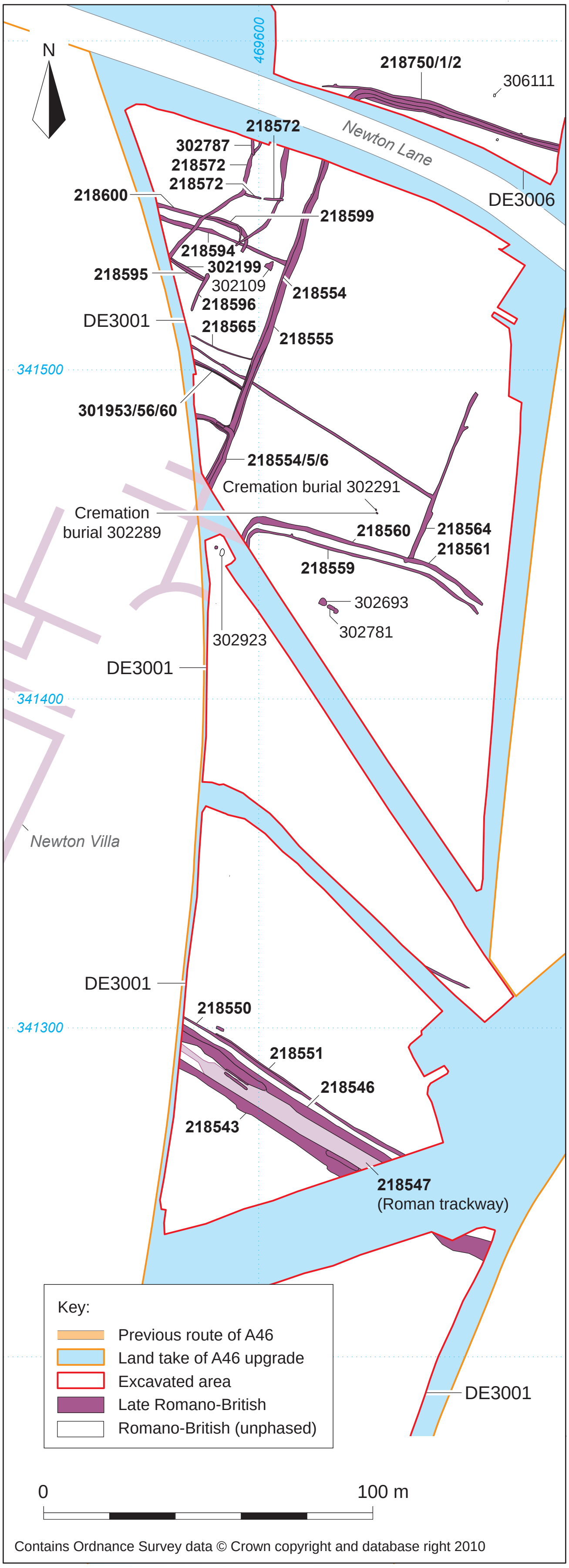


Fig. 4.30 Late Romano-British features associated with Newton Roman villa (DE3001)

Fig. 4.31 Crop dryer 302781 viewed from the north-west

in diameter, with steep sides and a flat base. The clay against its north-western edge was baked red and bore dark sooting marks, indicating the location of a fire. From here hot air would have been drawn up and along the flue, which was some 2.2 m long and over 1 m wide, with shallow slightly concave sides and a flattish base. This was presumably covered by a suspended drying floor, no traces of which survived.

The lower fills of this crop dryer contained evidence of its use. The lowest fill of the stoke hole, a mixed layer containing some charcoal, was probably a trample layer which formed during the use of the pit. This was sealed by layer 302783, a charcoal-rich deposit which represented the last use of the crop dryer. Charcoal from this deposit was dominated by alder, with smaller quantities of oak, but also included hazel, ash and Pomoideae (see Barnett, below). This in turn was sealed by two deliberate dumps of material that must have been made after the feature had fallen into disuse. The flue contained two fills, both containing charcoal, with the upper (302086) the more mixed of the two, and possibly containing material incorporated during demolition or the collapse of the superstructure. The charcoal from this upper deposit is also likely to be derived from the use of the feature, and it too is dominated by alder, with smaller quantities of oak and a single piece of hornbeam. No finds were recovered from the crop dryer apart from a few fragments of animal bone from the upper fills of both the stoke hole and the flue.

To the north-west of this crop dryer lay a shallow scoop (303693). Despite being relatively slight, this sub-oval feature was clearly contemporary and associated with the use of the crop dryer immediately to the south-east. It had shallow slightly concave sides and a concave base and contained a single charcoal-rich fill from which a few fragments of animal bone were recovered. It may represent a hollow worn in front of a doorway allowing access to the suspended drying floor of the crop dryer.

Unfortunately, this crop dryer is not well dated. It bears a number of similarities to the late Romano-British crop dryer in DE3004 (see below), but few to the early and mid-Romano-British crop dryer complex further to the south (see above). It is possible that crop dryer 302781 may have replaced the latter, given its proximity to the villa to the west, but unfortunately the absence of any reliable dating means that any such a suggestion is tentative.

Two cremation graves (302289 and 302291) lay immediately north of the double-ditched boundary (formed by ditches 218560 and 218559). These graves, comprising subcircular scoops cut into the natural, contained the burials of a woman aged *c.* 25–35 years (in 302289) and man aged *c.* 30–40 years (in 302291) (Fig. 4.30). The former contained numerous small fragments of iron, including some identified as hobnails (see Schuster, below). In both graves, which were excavated in quadrants, more bone was recovered from the south-eastern quadrant, rather than being evenly distributed, suggesting that the cremated remains may have been placed in the grave in an organic container. All elements of the skeleton were represented indicating no significant bias in selection of bone for burial. However, neither burial contained the expected amount of bone from an adult cremation, possibly as a result of the post-depositional truncation that both had clearly suffered. In both cases the bone was not thoroughly cremated, but showed differential colouring as a result of incomplete oxidation. This may indicate that the pyre was poorly designed, or perhaps that insufficient wood was available or used. Because late Romano-British rural cremation burials of this nature are rare, a sample of the bone from burial 302289 was submitted for radiocarbon dating and returned a date of *cal AD 140–330 (at 95% probability)* (SUERC-39054, 1780±30 BP), spanning the mid–late Romano-British period (see Table 4.47). The presence in this grave of hobnails (Fig. 4.97.2), often found in late Romano-British graves, supports a late Roman date.

There were numerous small ditched fields or enclosures to the west of boundary ditch 218554–6, a relatively substantial and frequently recut ditch which may have defined the eastern edge of the villa enclosure itself in this area (Fig. 4.30). This suggests that the villa continued in use into the late Romano-British period. Very little work has been done on the villa itself apart from surface collection and geophysical survey, although finds of both fine and coarse pottery, plaster, *opus signinum* and hypocaust and other tiles all point to a relatively opulent and substantial complex which may have been in use throughout the Romano-British period (Leary and Baker 2004, 15–24)

The earliest phase of the small fields or enclosures, to the north of and probably associated with the villa, was suggested by ditches 218565 and 218594, and twice recut ditch 301953/56/60. A second phase of fields or enclosures, on roughly the same alignment,

Fig. 4.32 Metalled trackway 218547 viewed from the south-east

was represented by ditches 218595, 218596, 218599, 218600 and 302199. The final phase, comprising ditches 218572, 218597, 218598 and 302787, was less coherent in form, although all of the evidence appears to indicate a late Romano-British date. The northern limit of this activity was defined by ditch 218750–2 (in DE3006), and there was nothing else south of the modern A6097 road approximately 300 m further north (Fig. 4.1).

To the south, a metalled trackway (218547) flanked by a pair of drainage ditches (218543 and 218546) ran north-west from the Fosse Way towards Newton Villa (Figs 4.30 and 4.32). A number of coins recovered both from within and on top of its metalled surface suggest that it was in use from the late 3rd century AD and into the 4th century. Both ditches had moderately steep sides and rounded bases. Another ditch (218550, recut as 218551), immediately north of the trackway, appears to mark the southern edge of a large field.

Roadside Enclosures and Burials West of the Fosse Way

Further to the south on the west side of the Fosse Way, Enclosure J (established in the early Romano-British period) remained in use (Fig. 4.33), its ditch being recut twice (218539 and 218540) in the late Romano-British period. As before, little of its interior and no internal features were exposed, making it difficult to ascertain its function. Only small quantities of finds (a few sherds of pottery and a small number of coins) were recovered from these ditches.

To its south, the ditches of the mid-Romano-British Enclosure K were repeatedly recut during the late Romano-British period (218524, 218525, 218526 and 218528) (Figs 4.33 and 4.34), and two new internal subdividing ditches (218529 and 218531) dug, possibly defining the back-plots of structures fronting onto the road. Two waterholes were partly exposed, in the southern (301594) and central (301507) subdivisions.

Inhumation cemetery

Enclosure K became the focus for small groups of 3rd- and 4th-century inhumation graves (Figs 4.35–4.37), the majority of them close to, and having the same orientation as the rear (western) ditch of the enclosure (and the road). In total, 14 inhumation burials in 13 graves were excavated, comprising graves 301131, 301132, 301133, 301134, 301135, 301245, 301263,

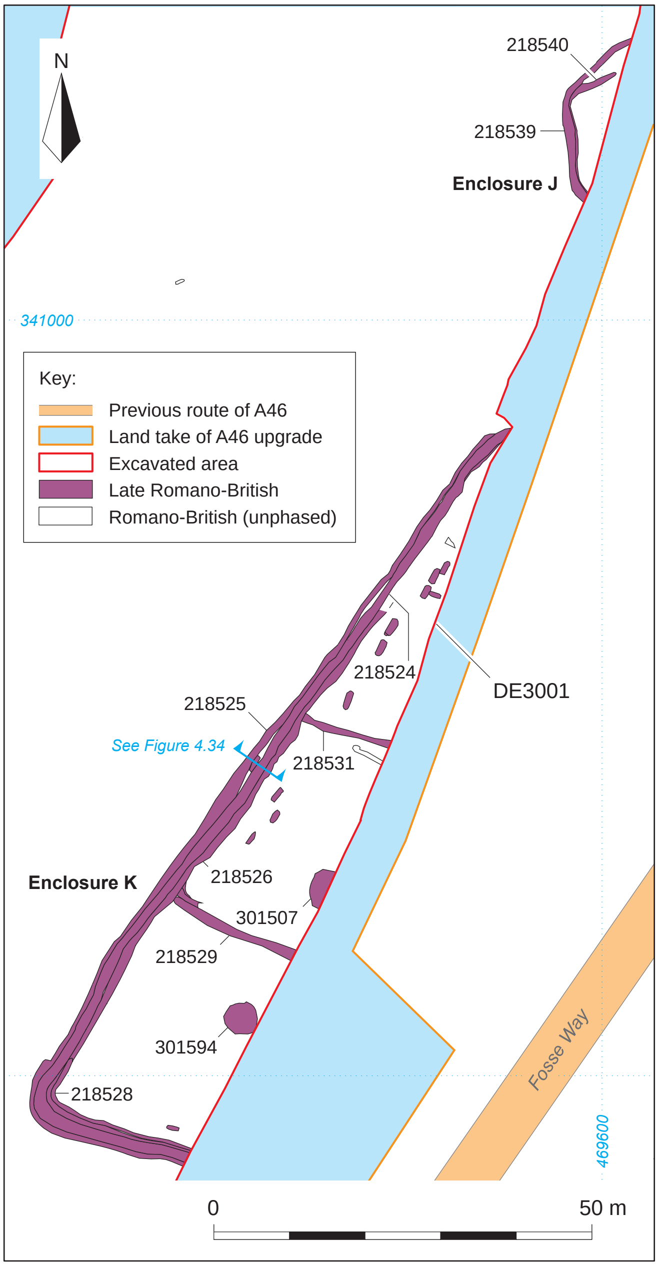


Fig. 4.33 Late Romano-British Enclosures J and K

301328, 301370, 301510, 301572, 301750 and 301850. Grave 301131 contained the remains of two individuals, one disarticulated. All of the burials were extended and supine (see Grave Catalogue, below).

Orientation

All but two of the graves (301750 and 301245) took their orientation from the adjacent western boundary ditch, whilst 301245 took its alignment from the southern boundary close to which it lay. One other grave (301750) at the north was aligned at 90° to the others, and apparently respected adjacent grave 301850. Of the burials in graves lying parallel to the western boundary all but two were orientated with the head to NNE, the other two (301134 and 301370) had the head to the SSW. Grave 301370 cut the fills one of the earlier, mid-Romano-British enclosure ditches (301336) but was truncated by a later recut.

Grave form

Most of the graves were shallow and subrectangular, usually with subrounded corners. Nine of the 13 graves (69%) contained evidence for wooden coffins (see Grave Catalogue). In one grave (301263) the body appeared to have been tightly wrapped in a shroud, laid on a floor of stone slabs and subsequently covered with a further set of slabs (Fig. 4.36).

The plan of grave 301131, containing the coffined skeleton of a young man, suggests that it had truncated a narrow and shallow earlier grave, of which only the foot end survived. The disarticulated long bones and skull from the earlier burial (of an individual aged over 18 years) were arranged outside and at the foot of the later coffin, while the pelvis, with an arrangement of five stones perhaps in imitation of a spinal column, was placed on the right hand side of the coffin (Fig. 4.36). Also from grave 301131 were a tooth from an individual aged 33–55, and very small quantities of bone from another, aged 20–30, these remains possibly buried along with the disarticulated burial as a way of disposing of charnel from other disturbed graves. The locations of

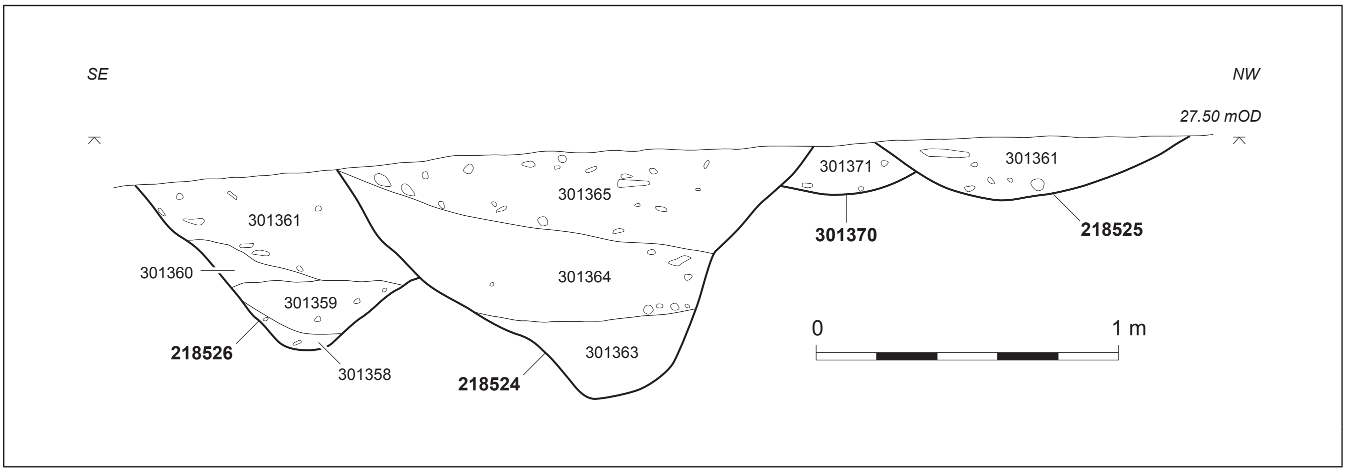


Fig. 4.34 Enclosure K ditches section

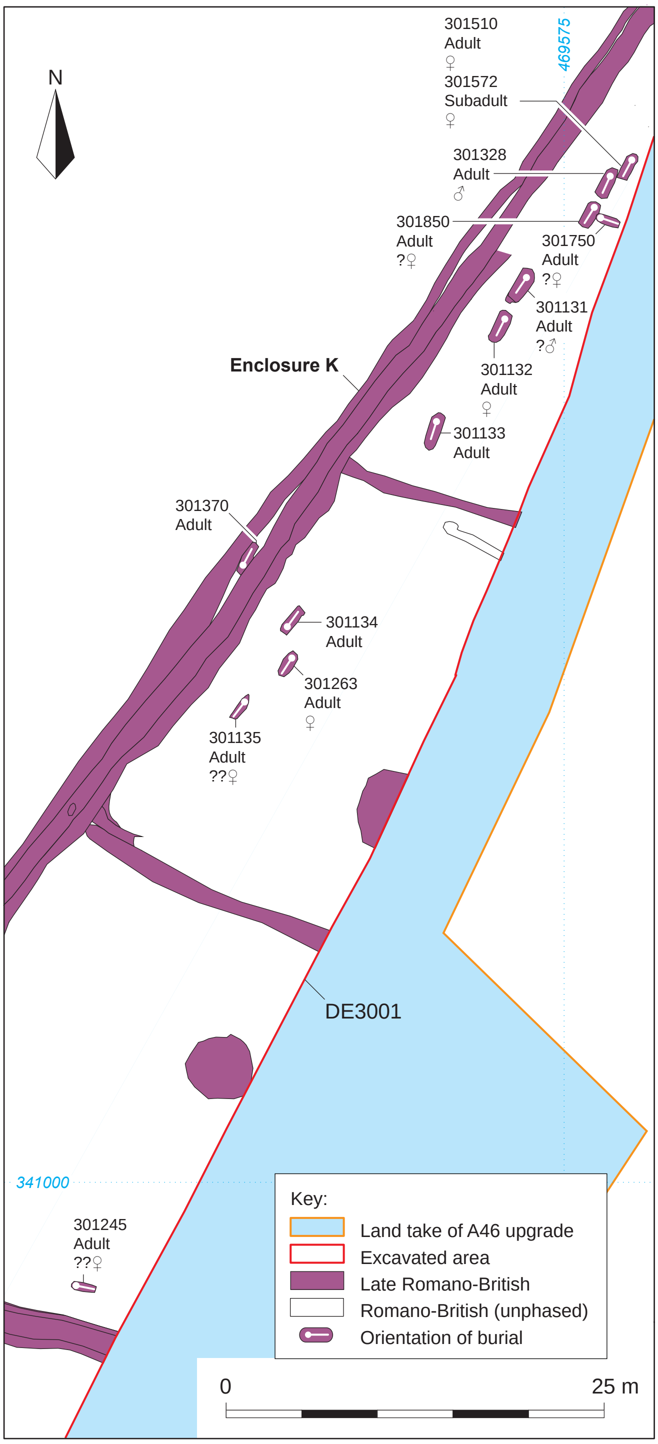


Fig. 4.35 Late Romano-British inhumation cemetery in Enclosure K

the graves would, therefore, appear to have been tightly constrained and perhaps not marked.

Grave 301510, the burial of a woman aged 35–45, was cut into the backfill of grave 301572 but did not disturb the original inhumation, that of a girl aged 15–17. Both burials were in coffins, perhaps ensuring that there was no significant truncation of the earlier burial. The later grave was considerably shallower, and the burial in it had suffered significant truncation (Fig. 4.37).

Demography

With the exception of the girl aged 15–17 in grave 301572, all the graves contained adults. Female/possible female burials (8) outnumbered male burials (2), but this may not be significant as the sample is small, and four of the burials could not be sexed. The cemetery probably served a small population, with the absence of infants or children indicating their burial elsewhere. Although there was evidence for trauma, infection and joint disease, in general, as far as osteological examination can determine, those buried in the cemetery appear to have enjoyed a relatively healthy lifestyle (see Egging Dinwiddy, below)

Grave goods

The graves were generally unfurnished, although a copper alloy finger-ring was found in grave 301132, a coin in grave 301134 and hobnails in five graves. The finger-ring (ON 663; Fig. 4.97.1), which accompanied the burial of a woman aged 25–40, seems to have been broken prior to its deposition (see Schuster, below), and was not worn, being recovered from the foot of the grave. The coin (in the grave of an individual aged 18–35) was a 'Constantinopolis' issue of the House of Constantine, struck between AD 330 and 335 (ON 679); it was found in the centre of the grave, approximately in the waist or pelvis region, although insufficient bone survived to allow this to be determined with certainty.

In four of the graves containing hobnails (301132, 301133, 301245 and 301510) the inhumations were probably accompanied by hobnailed footwear, but only a single hobnail was recovered from grave 301132, where the foot end of the grave was disturbed. In grave 301131 it is not clear whether the hobnails belonged to the coffined burial in that grave or the truncated remains of the earlier grave. Neither of the hobnailed shoes in graves 301245 and 303510 appear to have been worn by the deceased, as they had been placed away from the feet, at the foot of the grave and by the right femur, respectively. In grave 301133 the hobnails were recovered from the correct position for the shoes to have been worn, although bone preservation was poor and none of the foot bones survived. Hobnailed shoes were introduced during the Roman period and are relatively common finds in late Romano-British burials, where they were sometimes worn and sometimes not (see Schuster, below).

Chronology

Although not well dated artefactually, there can be little doubt that this small inhumation cemetery is late Romano-British in date, lying as it does in relation to enclosure ditches dating from the 3rd and 4th centuries. Inhumations accompanied by hobnailed footwear are also generally a feature of late Romano-British cemeteries (Philpott 1991, 167–8), while the coin in grave 301134 dates the burial to the mid-4th century or later. Small quantities of residual mid–late Romano-British pottery were recovered from the fills of some of these graves. Inhumation burial became increasingly common in

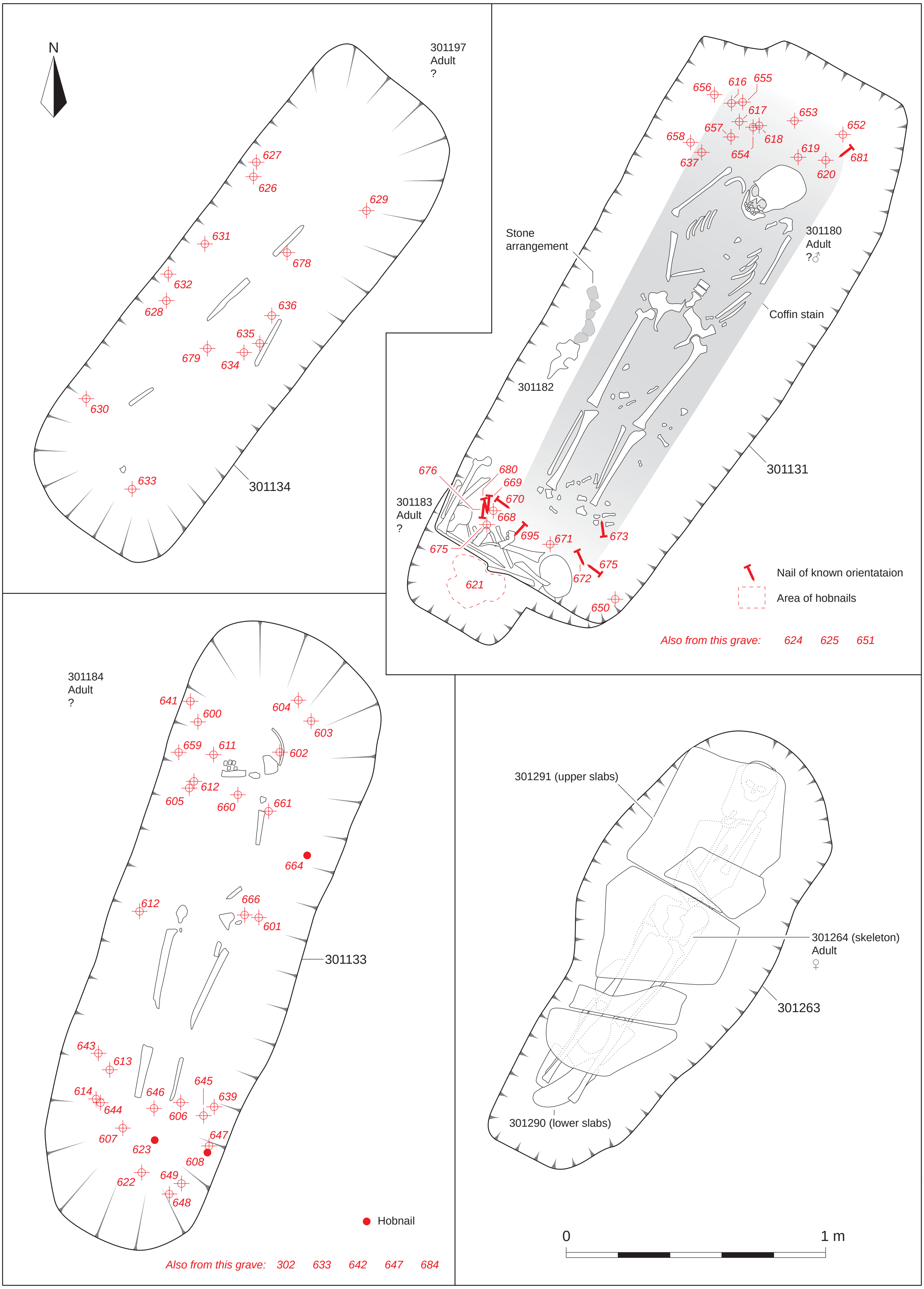


Fig. 4.36 Enclosure K cemetery selected grave plans, graves 301134, 301131, 301133, 301263

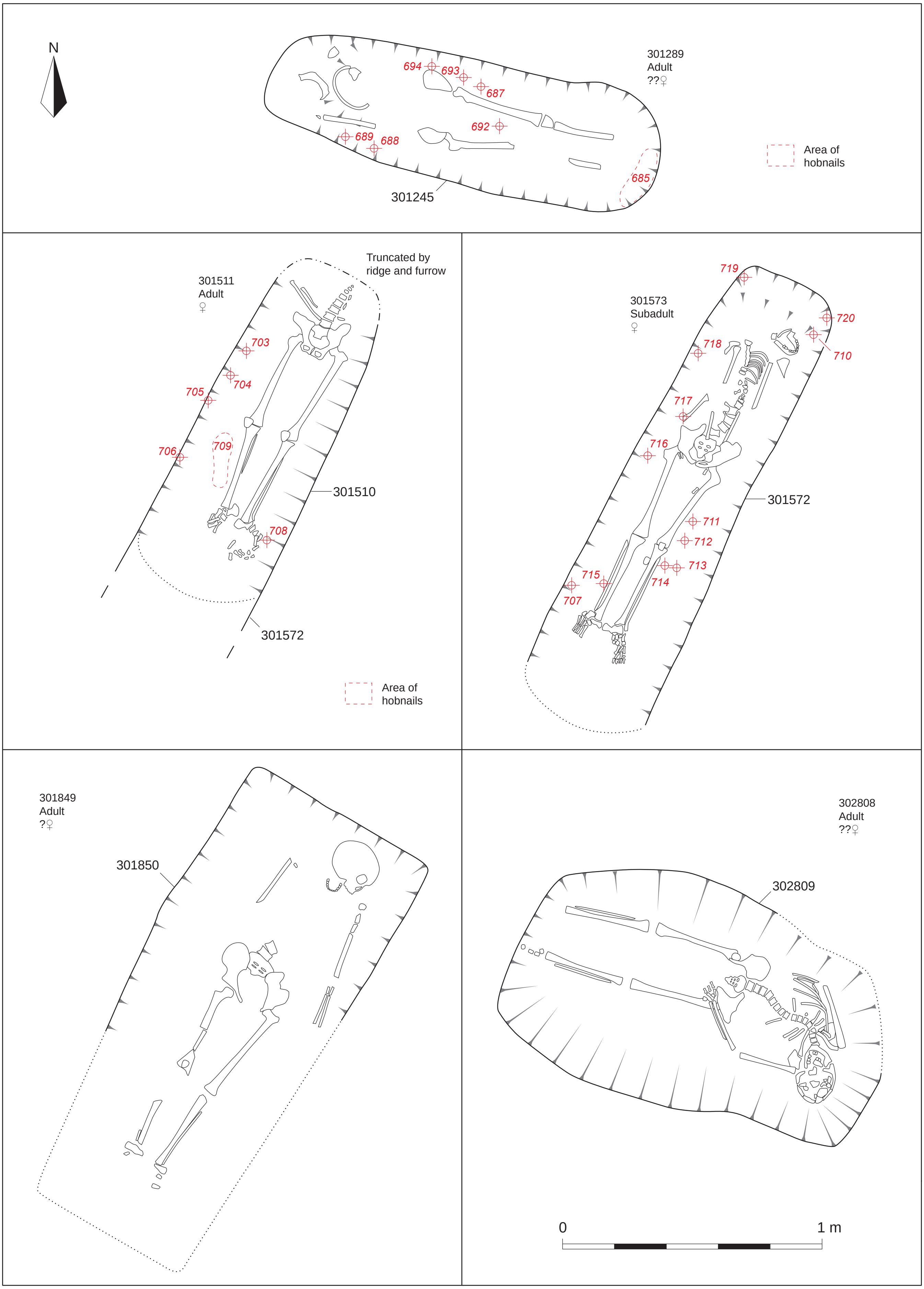


Fig. 4.37 Enclosure K cemetery selected grave plans (continued), graves 301245, 301510, 301572, 301850, 302809

the 2nd and 3rd centuries AD, before becoming the predominant rite towards the end of the 3rd century.

Small late Romano-British rural and semi-rural cemeteries are relatively common, with a number being associated with villa estates. Within such cemeteries, particularly those with their origins in the late 3rd century, it is fairly common for graves to be aligned on features in the local landscape – rural and extra-urban cemeteries at Alington Avenue (Davies *et al.* 2002), Poundbury (Farwell and Molleson 1993) and Lankhills (Clarke 1979) all have early burials aligned on adjacent boundary features. Given the location of this cemetery, it could either have served the nearby villa, or may represent burials associated with the ribbon development along the Fosse Way – apparently lying to the rear of plots fronting onto the road. Similarly, a group of late inhumation graves excavated by Todd (1969) to the south-east of the *Margidunum* defences could represent part of a small extra-mural cemetery for the town itself, or burials within back-plots of extra-mural properties.

Farm Buildings North-west of Margidunum

The excavations in DE3004, to the north-west of *Margidunum*, revealed the eastern extent of a probable late Romano-British farmstead (Fig. 4.38). This had

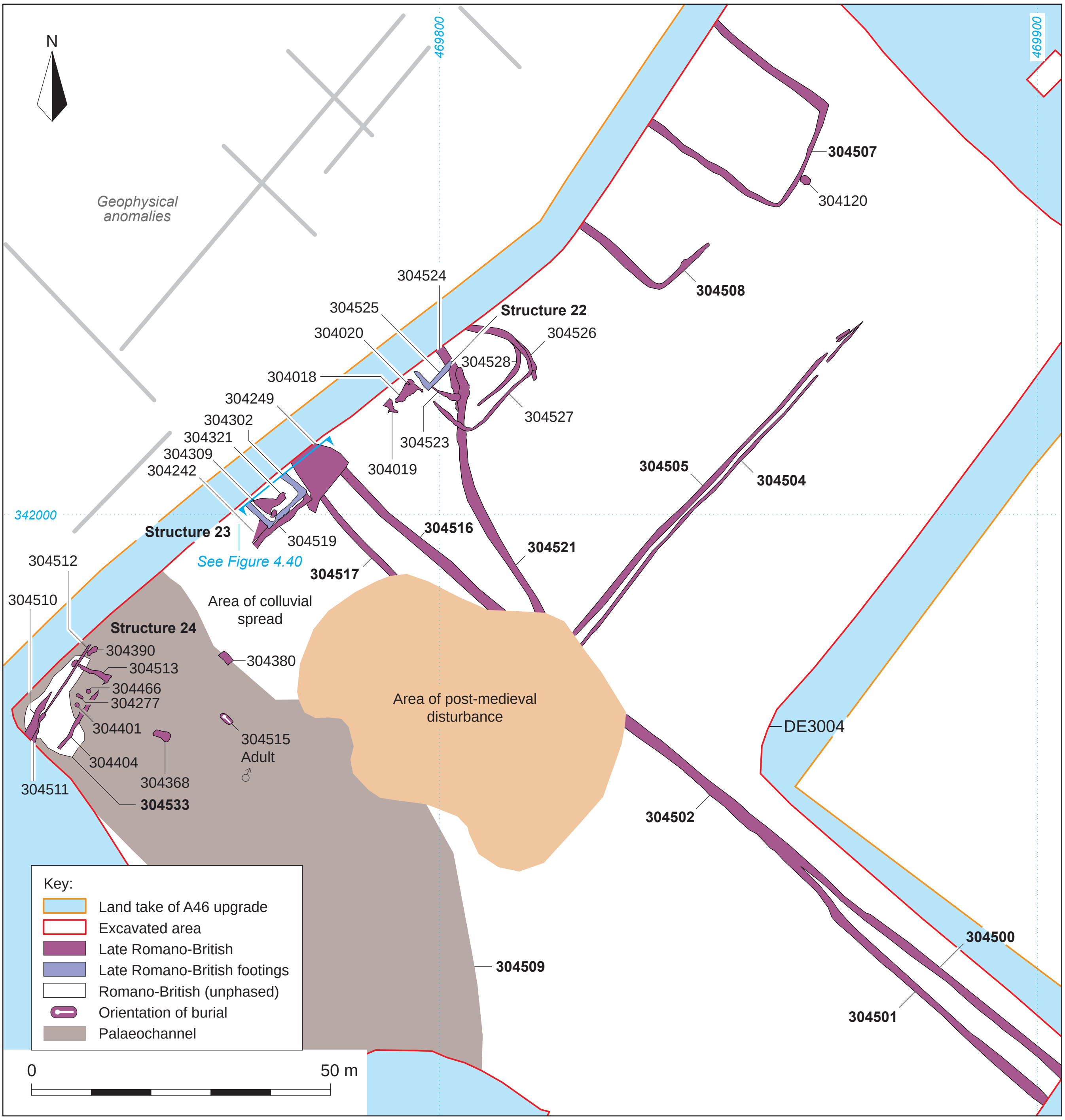


Fig. 4.38 Late Romano-British features in DE3004

previously been identified through geophysical survey (Appleton *et al.* 2004), although the main elements of the complex lie further to the north-west, outside the construction corridor. The geophysical survey had identified a number of linear anomalies, interpreted as belonging to an enclosure and trackway system, whilst fieldwalking in the area identified spreads of Romano-British material. Parts of three buildings lay within the excavation area, along with a number of enclosures and field boundary ditches, all apparently orientated with reference to the Roman road; a single burial and a crop dryer were also excavated. The bulk of the Romano-British material, and in particular the pottery and coins, suggests that activity in this area was confined to the late 3rd and 4th centuries, although, interestingly, no coins of the second half of the 4th century were recovered. Indeed, the absence of any coins of the 330s to 360s in the assemblage might indicate that coin use had ceased in this area by this time. The other finds all suggest a relatively low-status settlement, and there is good evidence from the charred plant remains for its agricultural character.

Structural remains

The remains of three buildings were identified on this site (Structures 22, 23 and 24). Two of these had stone footings (Structures 22 and 23), whilst the third appears to have been built on beams laid in shallow beamslots (Structure 24).

Structure 22

The northernmost building, Structure 22, had been heavily robbed of stone, although some foundations remained *in situ* (304525) (Fig. 4.38). Only the southern corner of the probably rectangular building was exposed, comprising partially robbed stone foundations in an L-shaped foundation trench, suggesting that the building was at least 6 m wide (Fig. 4.39). These foundations were constructed of undressed local limestone blocks bedded in a dark brown silty sand matrix. These foundations were generally some 0.6 m deep, but in the NE corner they were deeper, at some 0.8 m deep, perhaps to compensate for the softer soils of the backfilled ditch in this area. No bonding agent was identified, suggesting a dry wall construction, although any clay bonding may have weathered out completely. It is unclear whether these foundations supported a half-timbered or stone superstructure. There were no internal features.

The backfill of the robber trench contained fragments of daub, perhaps from the superstructure. Quantities of relatively poor quality stone tiles were also recovered, suggesting that this is unlikely to have been a high-status building. A spread of demolition material (304018) to the south-west contained numerous structural elements, including plain, roofing and box-flue tiles, as well as quantities of late Romano-British pottery, amongst which lay a small setting of three tiles (304020) of uncertain function, apparently laid as a foundation. This spread seems to have partially formed in the hollow in the top of the largely silted Iron Age channel 304118 (Fig. 3.10).

Structure 23

Structure 23 lay 26 m to the south-west of Structure 22, their south-east sides on the same line (Fig. 4.38). It was of similar construction, but better preserved, perhaps because it lay further down-slope with greater protection from later disturbances, and its full 7.5 m width was exposed. Its foundation trenches (304302) comprised steep-sided, flat-bottomed cuts tightly packed with broken stones laid in regular courses of overlapping rows, particularly at the southern corner. The foundation along the north-east side was markedly deeper, in places 0.8m deep, probably to compensate for the softer fills of an earlier gully (304519, see below). The southern foundation was considerably shallower, at some 0.35 m deep. There had been considerably less robbing of the foundations than in Structure 22, and the north-eastern wall survived partially above foundation level (Fig. 4.40). The south-eastern wall, however, appears to have been robbed of all but its lowest foundation course. The low walls were faced with roughly dressed limestone

Fig. 4.39 Structure 22 viewed from the east

Fig. 4.40 Structure 23 viewed from the north-west

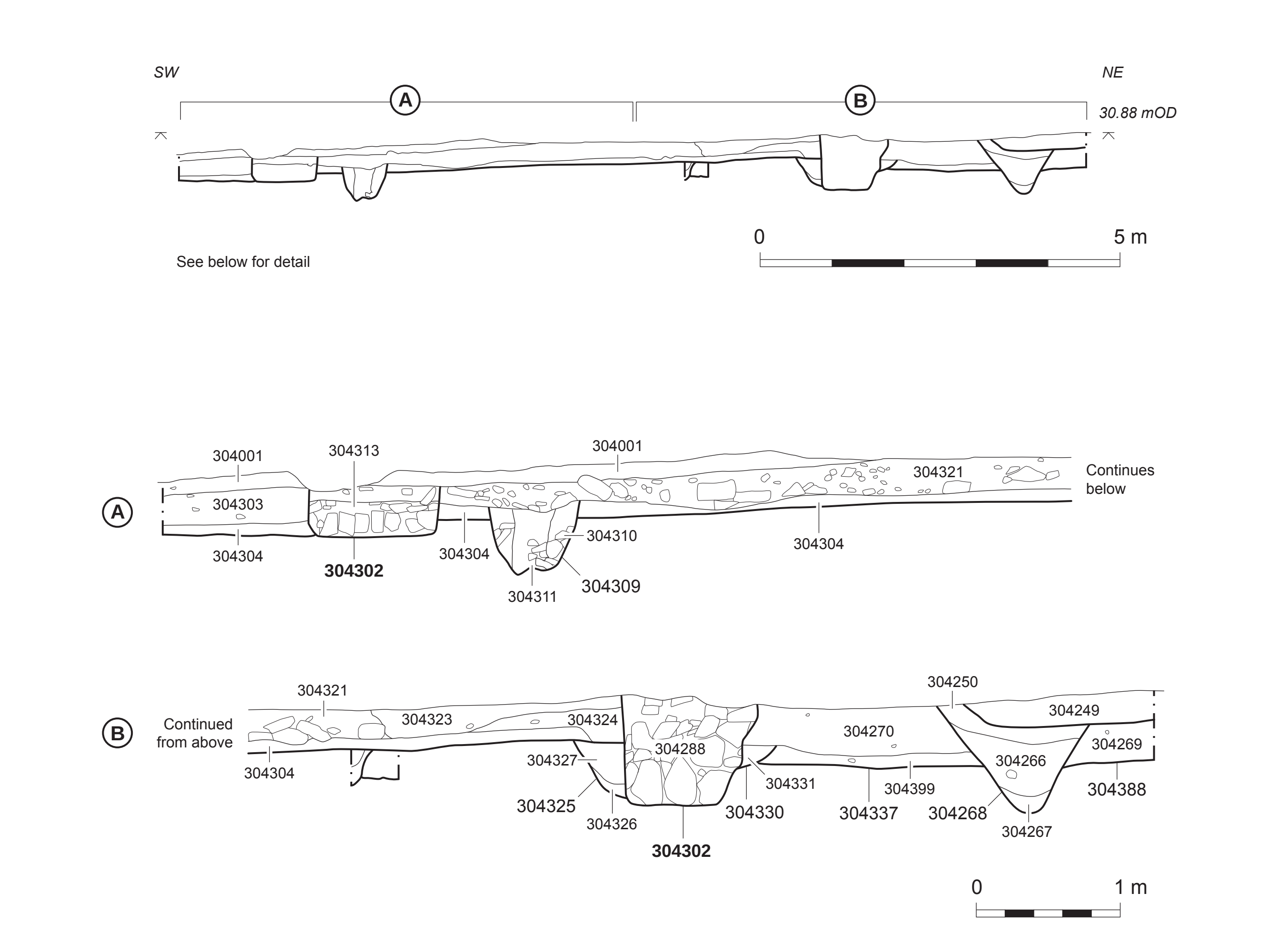


Fig. 4.41 Structure 23 and adjacent features, section

blocks, with an internal core comprising limestone rubble and as no traces of any bonding agent were identified they probably supported a half-timbered superstructure. A slot excavated across the building revealed a layer of levelling or make up for its floor (layer 304304 on Fig. 4.41).

A number of spreads of demolition rubble in a dark charcoal-rich silty matrix (notably 304531, variously recorded as 304249 and 304321) were identified both within and to the north and south of the foundations of Structure 23. These contained numerous roughly hewn stone roof tiles, again suggesting a relatively low-status building, along with other limestone rubble, ceramic building material and sherds of late Romano-British pottery. These spreads also sealed a number of late Romano-British features, and probably represent the latest Romano-British activity on the site.

Structure 23 may have replaced an earlier building, as its foundation cut an L-shaped gully (304519), on a similar line, which may either have acted as a drainage gully for a building or held a sleeper beam. This gully ran for at least 12 m but was masked to the south by a series of colluvial spreads. Here it cut a short length of a steep-sided, flat-bottomed gully (304242) on the same alignment, possibly the beamslot of an even earlier building. A stone-packed posthole (304309), against the edge of the site, clearly pre-dated Structure 23, and may also have belonged to an earlier building, although its visible post-pipe indicated that the post had rotted *in situ*, rather than being removed during demolition (Fig. 4.41).

The alignment of these two masonry structures (Structure 22 and 23) and the similarity of their dimensions and construction suggest that they were contemporary and probably formed part of the same complex of buildings.

Structure 24

A third building, Structure 24, lay in the westernmost corner of the site and on a slightly different alignment (Fig. 4.38). It comprised a series of beamslots and postholes cut into a Romano-British subsoil sealing the fills of a prehistoric palaeochannel (304509) (see Chapter 3). Its long walls, aligned NNE–SSW, were defined by a pair of beamslots *c.* 5 m apart (Fig. 4.42). The western beamslot (304512) had a regular steep-sided flat-based profile consistent with a beamslot, whilst the eastern beamslot (304404) had a slightly more rounded profile. These indicate that the building was at least 13 m long. No remains of the northern or southern

Fig. 4.42 Structure 24 under excavation, viewed from the south-west

walls were identified. A shallow gully (304513) running perpendicular to these beamslots may represent the remains of an internal division, although the relationship between the three could not be determined.

Internal features in this building included two keyhole-shaped ovens. One (304390), in the northern corner, was roughly lined with undressed limestone blocks, and its edges reddened by heat (although the limestone lining itself seemed little affected). Samples from the oven contained large quantities of charred barley grains, with weed seeds also present. A second oven (304277) lay further south, also heat-reddened and with the clay lining to the stoke-hole partially fired. This contained fewer remains, but spelt wheat and vetches were relatively abundant. Two subcircular pits (304401 and 304466), one on either side of oven 304277, also contained charcoal-rich fills, and are likely to have been directly associated with it, perhaps acting as rubbish pits for burnt waste. Oats or brome were particularly common in 304466 (see Table 4.38). There is therefore the suggestion that the building was a crop-drying and storage barn, with the ovens perhaps used to dry different crops in different areas of the building.

A substantial crop dryer (304368) lay to the east of Structure 24. It was aligned WNW–ESE, with a clay-lined stoke-hole at its eastern end. It had a central flue, lined with unworked and unmortared tabular limestone blocks bedded in clay, surviving in places up to three courses high. Further stone blocks and fragments of fired clay were recovered from the flue, perhaps deriving from the collapse of its superstructure. The flue and stoke-hole contained significant quantities of charcoal and charred plant remains, the latter dominated by beans, probably burnt accidentally while the crop was being dried (Table 4.38).

Burial (Grave 304515)

A shallow late Romano-British inhumation grave (304515) cut the earlier palaeochannel 10 m east of the crop dryer. It contained the burial of a man aged over 20, lain in an extended supine position with the head to the north-west, and with his arms by his sides (see Grave Catalogue). There were no grave goods. Bone preservation was generally poor and insufficient material was recovered to obtain a radiocarbon date. The stratigraphy of this burial (cutting a layer containing Romano-British pottery) indicates that it post-dates the early Romano-British period, and it is most likely a late Romano-British singleton associated with the adjacent agricultural settlement.

Ditches and fields

A small number of late Romano-British ditches was directly associated with Structures 22 and 23 (Fig. 4.38). Structure 22 cut the fills of ditch 304524, a meandering ditch aligned broadly NW–SE. Much of this ditch was then recut, as 304521, which terminated close to the building's south-eastern wall, suggesting that it acted as a drain for the building. A later irregular gully (304523) partially cut through the upper fills of ditch 304521, was part of the series of enclosures linked to the buildings.

More widely, this group of buildings was associated with an irregular rectilinear field system (Fig. 4.38). A prominent series of large boundary ditches (304500, 304501, 304502 and 304516), aligned NW–SE, ran the full width of the excavation. Two late 3rd-century *antoniniani* were recovered from ditch 304516. At the north-west, ditch 304517 lay parallel to and *c.* 5.3 m south-west of ditch 303516 probably defining a trackway leading to the north-west (Fig. 4.41). The south-eastern extents of both ditches were obscured by an area of post-medieval disturbance. A short, truncated, length of parallel ditch (304380) was also recorded on the edge of the palaeochannel to the south-west. Its original extent is unclear. To the north a pair of close parallel ditches (304504 and 304505) ran perpendicular to the large ditches, possibly marking a hedged boundary, flanked by ditches, between two fields.

To the north-east of Structures 22–24 were the south-eastern extents of three enclosures that continued beyond the excavation area. The north-eastern enclosure, which had no entrance within the site, was defined by a single relatively shallow ditch (304507). Immediately to its south was a smaller enclosure, defined by ditch 304508, which could have been accessed by a wide entrance at its eastern corner. Both ditches contained sherds of late

Romano-British pottery, but neither enclosure had any internal features. Pit 304120, outside enclosure ditch 304507, contained a large number of charred grains of spelt wheat, a number of them germinated, which might suggest malting waste (Table 4.38).

A third, smaller, enclosure surrounded Structure 22. In its earliest phase it comprised three curvilinear ditches (304523, 304526 and 304528), with ditch 304523 clearly pre-dating the construction of the building. Its second phase consisted of a single continuous ditch (304527) probably contemporary with the building. This terminated close to the southern corner of the building, leaving *c.* 2 m wide possible entrance gap. Pottery from the second phase ditch dated it to the late Romano-British period; that from the earlier phase ditches was insufficiently diagnostic for them to be dated with precision.

The Roman Road from Margidunum *to the River Trent*

A number of authors have postulated a road leading from *Margidunum* north-west to a ford on the River Trent below East Bridgford. Oswald initially suggested that this led out of a gate in the north-western defences (1956, fig. 4). Todd later suggested that it lay further to the south, probably underneath the line of the modern A6097 (see Fig. 4.43), meeting the Fosse Way to the south of the town's late Roman defences (Todd 1969, 13).

The 2009 excavations gives some support to the latter view, as no traces of a Roman road were found in DE3004 which lay directly over the route suggested by Oswald. It seems likely that the two ditches Oswald identified as flanking his possible Roman road were continuations of ditches 304500 and 304501, but these clearly do not represent a Roman road.

However, a watching brief on the current A6097 (GW 4036) revealed a metalled or cobbled surface apparently edged with larger stones (Figs 4.43 and 4.44). This was recorded in a very limited area, and no material was recovered to confirm a Romano-British date, but the form of construction appears Roman, and the possibility that this represented the remains of a Roman road surface cannot be discounted.

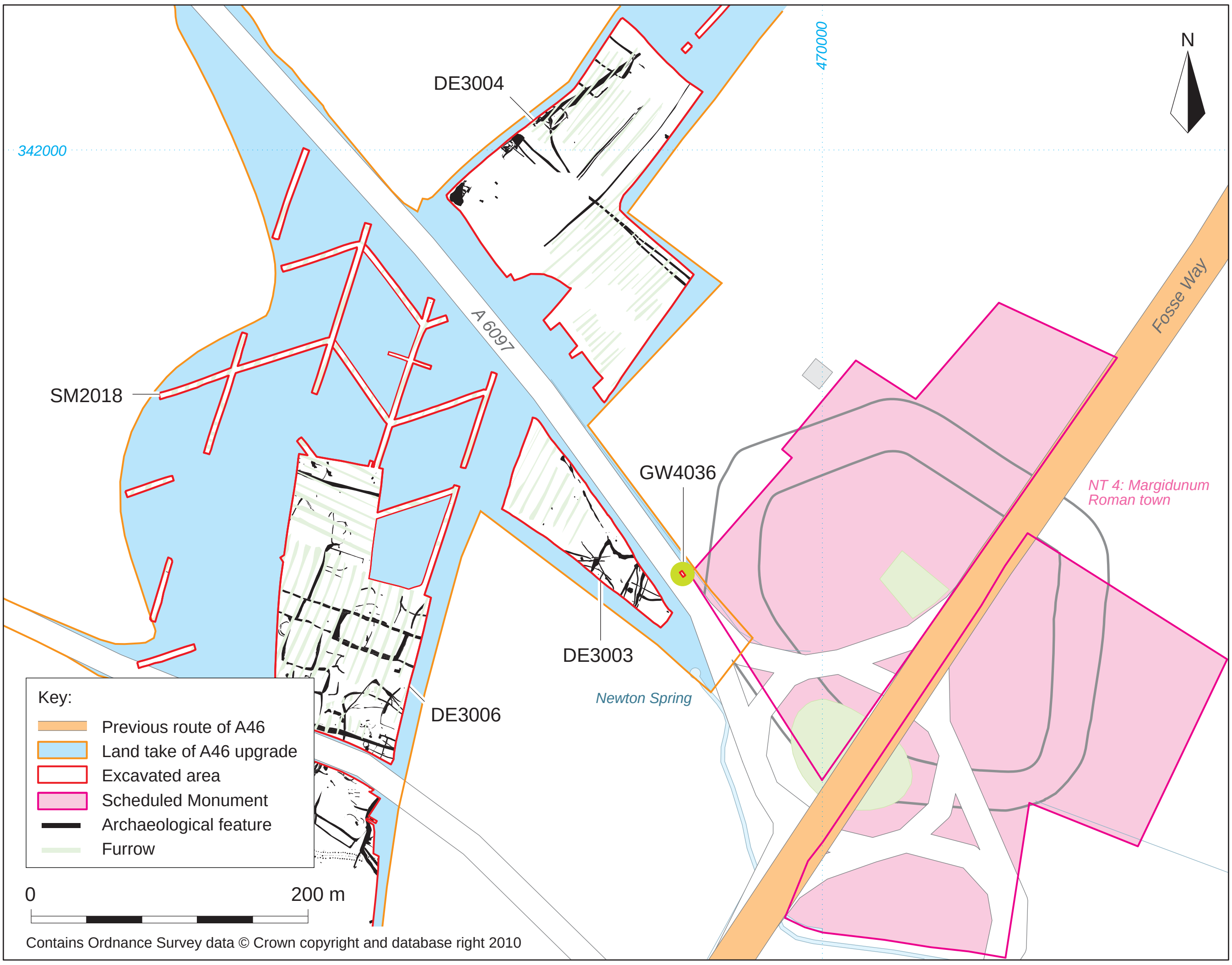


Fig. 4.43 Location of watching brief trench; evidence for the north-west road from Margidunum

Fig. 4.44 The possible edge of the north-west road from Margidunum *observed during the watching brief (GW4036)*

Land Use Change West of the Fosse Way

Roadside activity to the west of the Fosse Way (in DE3001) continued to be less intense than that to the east (Fig. 4.45). The mid-Romano-British building (Structure 15; Fig. 4.18) appears to have gone out of use in the 3rd century AD, after which the area reverted to fields. The dearth of new pits suggests that this part of the site was no longer a focus of domestic activity. Instead, the late Romano-British period saw a minor reorganisation of the fields in this area, with ditches 218508, 218510, 218514 and 301234 replacing earlier divisions. Ditches 218510, 218514 and 301234 appear to at least partially define a small enclosure or field, while 218508, running parallel to 218510, may define a trackway *c.* 1.7m wide; the role of ditch 218511 is uncertain. Further to the west, close to the earlier palaeochannel, there was a single small pit (301309) which had been allowed to silt naturally. These small fields were probably used for keeping stock, with the trackway possibly controlling movement between fields and the waterhole.

Settlement East of the Fosse Way

In contrast to the western side, the eastern side of the Fosse Way showed continued settlement (Fig. 4.46). A new metalled road or substantial trackway (303505) leading from the Fosse Way, probably to a settlement or farmstead to the south-east, was laid in the southern half of the site, sealing Structure 21 and its well. Its northern edge was defined by a roadside ditch, beyond which lay two plots, both containing single buildings laid out perpendicular to the Fosse Way. Finds from the buildings indicate that they were in use into the late 4th century AD, and possibly into the early 5th century. One of the last events in this area appears to have been the digging of a shallow grave, in the early 5th century, into the silted

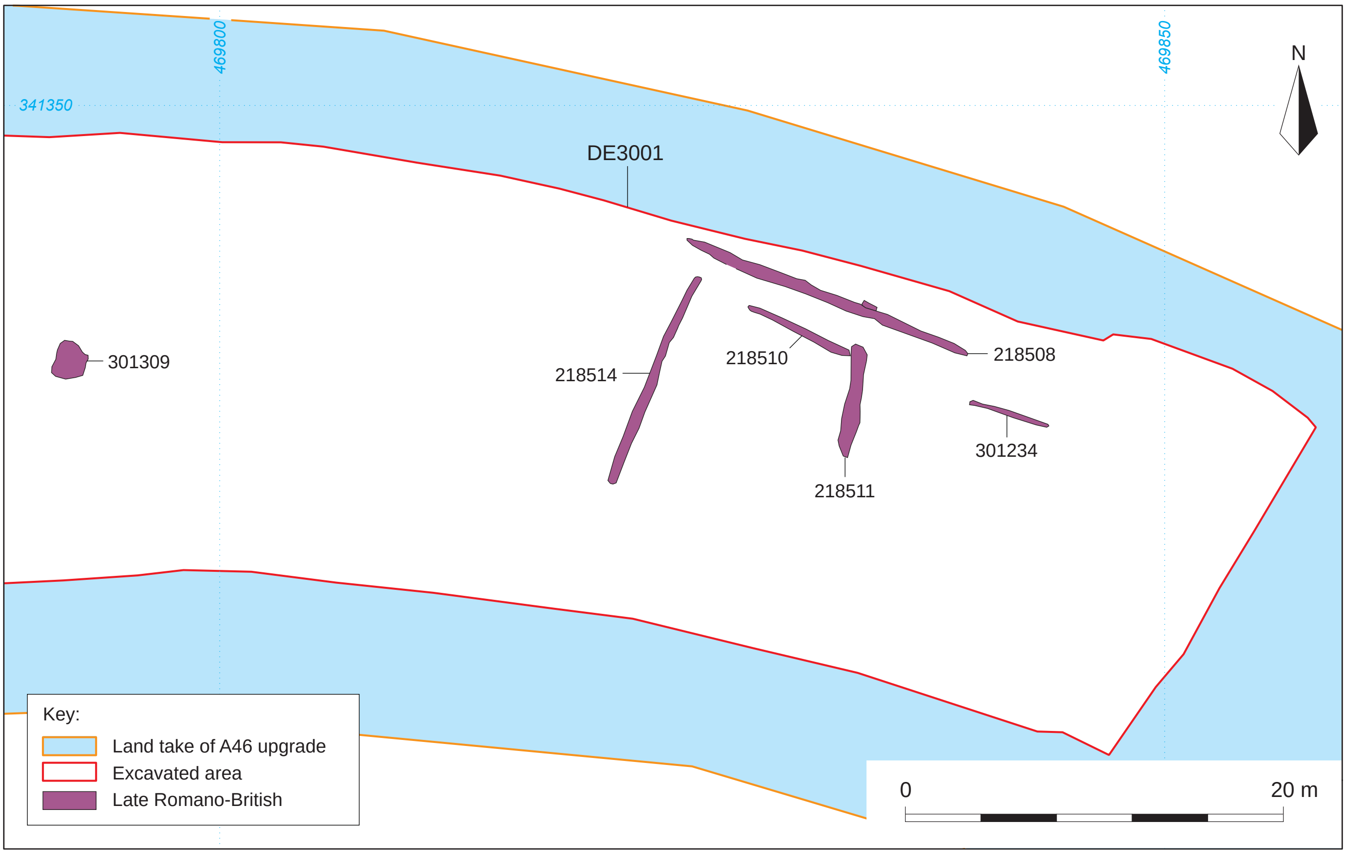


Fig. 4.45 Late Romano-British features on the west side of the Fosse Way (DE3001)

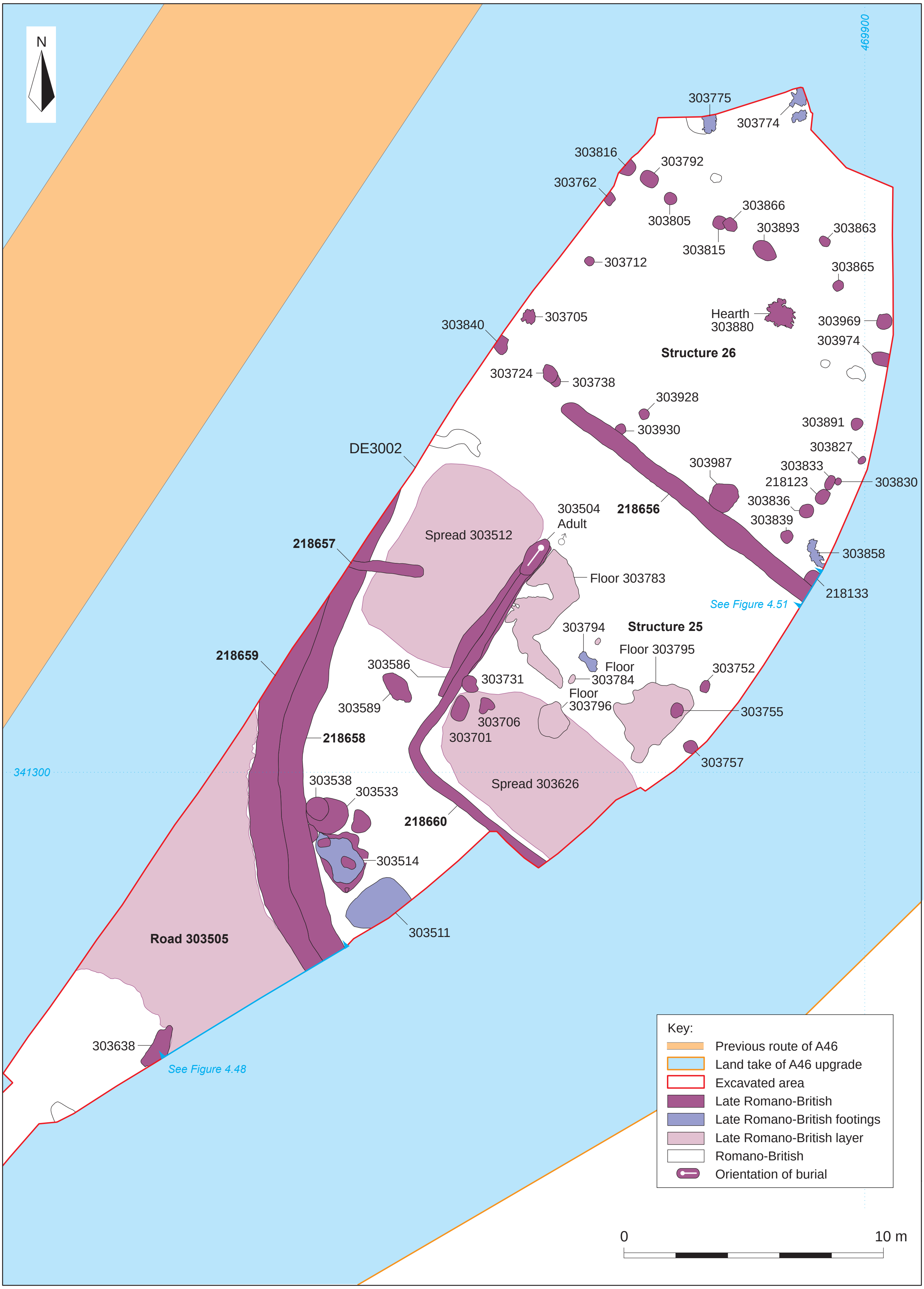


Fig. 4.46 Late Romano-British features on the east side of the Fosse Way (DE3002)

Fig. 4.47 Road 303505 under excavation, viewed from the south

fills of a gully defining one of the buildings. After this, the site seems to have been abandoned.

Road 303505

A metalled surface *c.* 6 m wide (303505; Figs 4.47 and 4.48), at the south-western end of the site, appears to represent a small branch road leading south-east from the Fosse Way (in the direction of the modern village of Bingham, perhaps to the known Roman settlement at Carnarvon Primary School). The metalling consisted of a relatively thick layer of small and medium sized cobbles, with an area of heavier cobbling close to its southern edge. It was clearly used for some time as it showed signs of having been patched.

The road's north-eastern edge was defined by a curving roadside ditch (218658, subsequently recut as 218659). Ditch 218658 was steep-sided with a concave base, and appeared to have silted naturally with a homogenous fill. Recut 218659, which was similar in profile, contained a sequence of primary, secondary and tertiary fills, with much of the early deposition apparently comprising material washed off or eroded from the road surface. Its upper fills probably formed after the road fell into disuse. Artefacts recovered from the cobbling

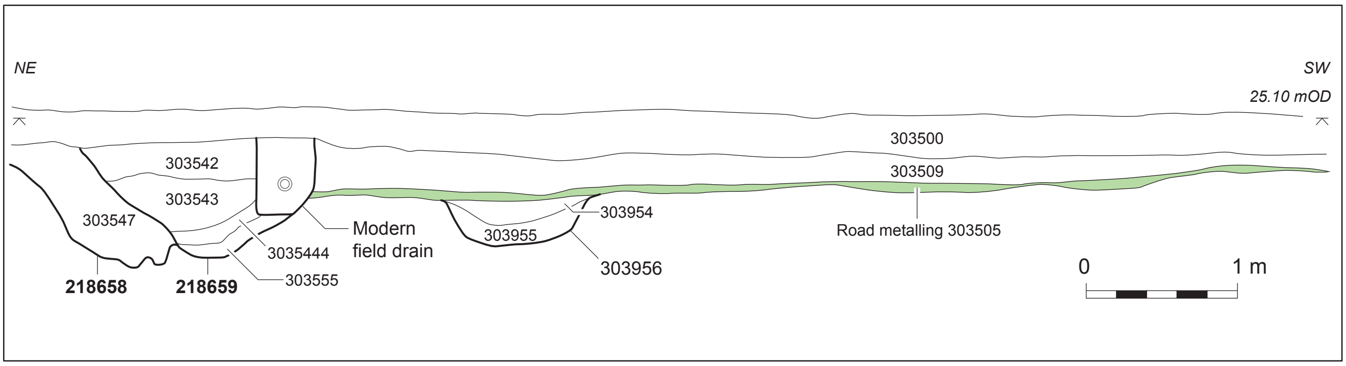


Fig. 4.48 Road 303505 and associated features, section

Fig. 4.49 Stone platforms 303511 (left) and 303514 (right) viewed from the north-east

and ditches suggest that the road was constructed in the late 3rd century AD, with its use continuing through the 4th century.

Only one late Romano-British feature, a shallow irregular pit (303638), was recorded south of the road, although a number of the undated features in this area may also belong to this period.

Southern plot

Immediately north-east of the roadside ditches were two stone 'platforms' (303511 and 303514) – shallow cuts packed with unshaped limestone blocks – both measuring *c.* 1.5 m by 2.5 m (Figs 4.46 and 4.49), the latter with a clay surface or floor around it. They are thought likely to have been stone footings or foundations for small stone or timber structures, and although it is not clear what function they may have performed, their roadside location might suggest that they supported small funerary or similar monuments. A nearby large stone packed posthole (303533, recut as 303538) may well have been associated with the platforms. Posthole 303533 was roughly circular, some 1.20 m wide and 0.46 m deep. Traces of the post-pipe were recorded, surrounded by stone packing which would have held the post. The base of this post-pipe was some 0.25 m wide, although in places the post-pipe was up to 0.50 m wide. Posthole 303538, dug to replace it, was smaller (at some 0.9 m wide) but deeper (0.54 m). The post-pipe was not identified.

Structure 25

Further to the north, an L-shaped gully (218660) defined a late Romano-British building (Structure 25) (Fig. 4.46). The gully partly recut an earlier broader gully (303586), which probably served a similar purpose, probably for eaves drainage. A *siliqua* of Arcadius, minted between AD 395 and 402, recovered from its fills indicates that gully 218660 was still silting in the late 4th century AD and probably into the 5th.

The extent of the building enclosed by the gully was indicated by a number of patches of surviving clay floor (303783, 303784, 303795, 303796), which suggest that it measured at least 4 m by 8 m internally. Associated features include a small setting of stones (303794), three postholes (303752, 303755 and 303757) on the eastern side of the clay flooring and another three (303701, 303706 and 303731) further to the west.

Also associated with this structure were two spreads of late Romano-British material (Fig. 4.46), which (like the similar mid-Romano-British spreads) reflect activity on the site in this period – although containing much residual material derived from earlier features and layers. To the south, layer 303626 contained late Romano-British pottery and animal bone, with smaller amounts of tile, worked bone and worked stone (a broken quern reused for sharpening points ON 2042). Spread 303512, which lay outside gully 218660 to the west, contained similar material, again much of it residual and deriving from the demolition of mid-Romano-British Structure 18 (see Fig. 4.20) which it overlay. This deposit was cut by a shallow east–west gully (218657) which terminated within the spread at the east and also cut the fills of the roadside ditch; although late Romano-British pottery was recovered from its only fill the gully may well be a later feature.

Spread 303512 was also cut by the edge of a very late inhumation grave (303504) cut into the northern terminal of gully 218660. The grave had been heavily truncated by later ploughing, with only the lower legs of the burial remaining, but it appears to have contained the extended burial (303503) of a man aged *c.* 23–30 years (Fig. 4.50). No grave goods were recovered. A sample of bone returned a radiocarbon date of *cal AD 250–310 (45.4%) and 310-420 (50%)(at 95% probability)* (SUERC-39051, 1675±30 BP), indicating burial probably in the 4th or early 5th century AD, which accords with its stratigraphic position.

Fig. 4.50 Inhumation burial 303503 in grave 303504

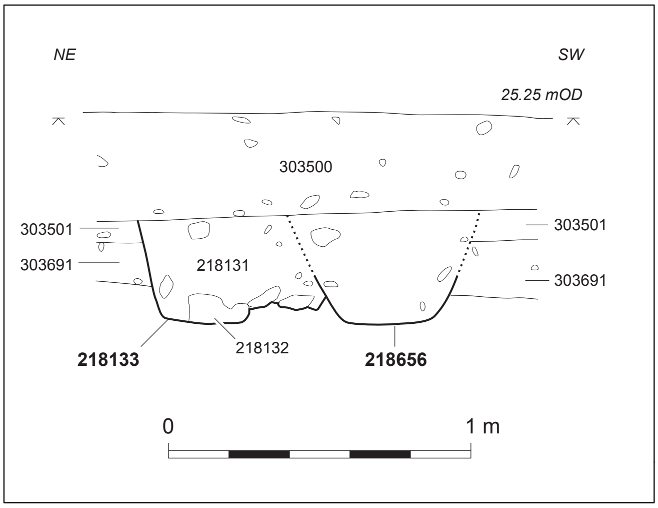


Fig. 4.51 Structure 26, section of posthole 218133 and beamslot 218656

Fig. 4.53 Stone footing 303775 viewed from the north

Northern plot

To the north-east of Structure 25 was a plot boundary marked by ditch 218656, in places over 1 m wide with moderately steep sides and a flattish base (Fig. 4.46). Like gully 218660 to the south, it seems to have been one of the latest features in this area, as it cut the southern edges of a number of the postholes forming the south-west side of Structure 26 to its immediate north-east (Fig. 4.51). Ditch 218656 produced sherds of late Romano-British pottery, animal bone, ceramic tile and slag, some of it undoubtedly residual.

Structure 26

Post-built Structure 26, which appeared to extend across the full width of the excavation area (Fig. 4.46), was represented by at least 27 postholes, two or more of which (303724 and 303815) were replacements. The postholes appear to define a rectangular building, over 13 m long (NW–SE) and *c.* 8 m wide. There was no clear evidence for a doorway, although there was a *c.* 3 m wide gap between postholes 303865 and 303893 on the north-eastern side. The only internal feature recorded was a stone-lined hearth (303880; Fig. 4.52) close to this putative entrance.

Fig. 4.52 Hearth 303880 in Structure 26, viewed from the south

Other features in the vicinity of Structure 26 might hint at further buildings, including a loose stone footing (303858) close to the eastern edge of the excavation, and two short sections of more substantial robbed stone footings (303774 and 303775; Fig. 4.53) at the north, aligned north–south, broadly parallel and *c.* 3.4 m apart but of uncertain function or association.

Activity in this area appears to have ended at some point in the 5th century, with the burial in grave 303504 being perhaps one of the last acts undertaken before it was abandoned or turned over to agriculture. Thick colluvial deposits resulting from later agricultural activities buried the area to the east of the Fosse Way, while truncating features and archaeological deposits elsewhere in the *Margidunum* hinterland.

The town defences

The opportunity arose to investigate the defences of the Roman town (in TT1340; Fig. 4.54) during the construction of a land drain. This revealed (below the topsoil) a low mound of redeposited clay (134006), likely to represent the remains of the rampart, sealing a buried land surface (134007) overlying the natural geology. No traces were found of a cut for the late stone wall defence for the town, or of any of the associated ditches, encountered by Todd and Oswald during their excavations (Todd 1969, 42–55), although the trial trench was very narrow and could not be excavated below the *in situ* drain. A monolith sample was taken through the probable rampart material and the buried land surface, the latter containing small quantities of charred wheat and hazelnut shell, and a few weed seeds (see Stevens, Charred Plant Remains, below).

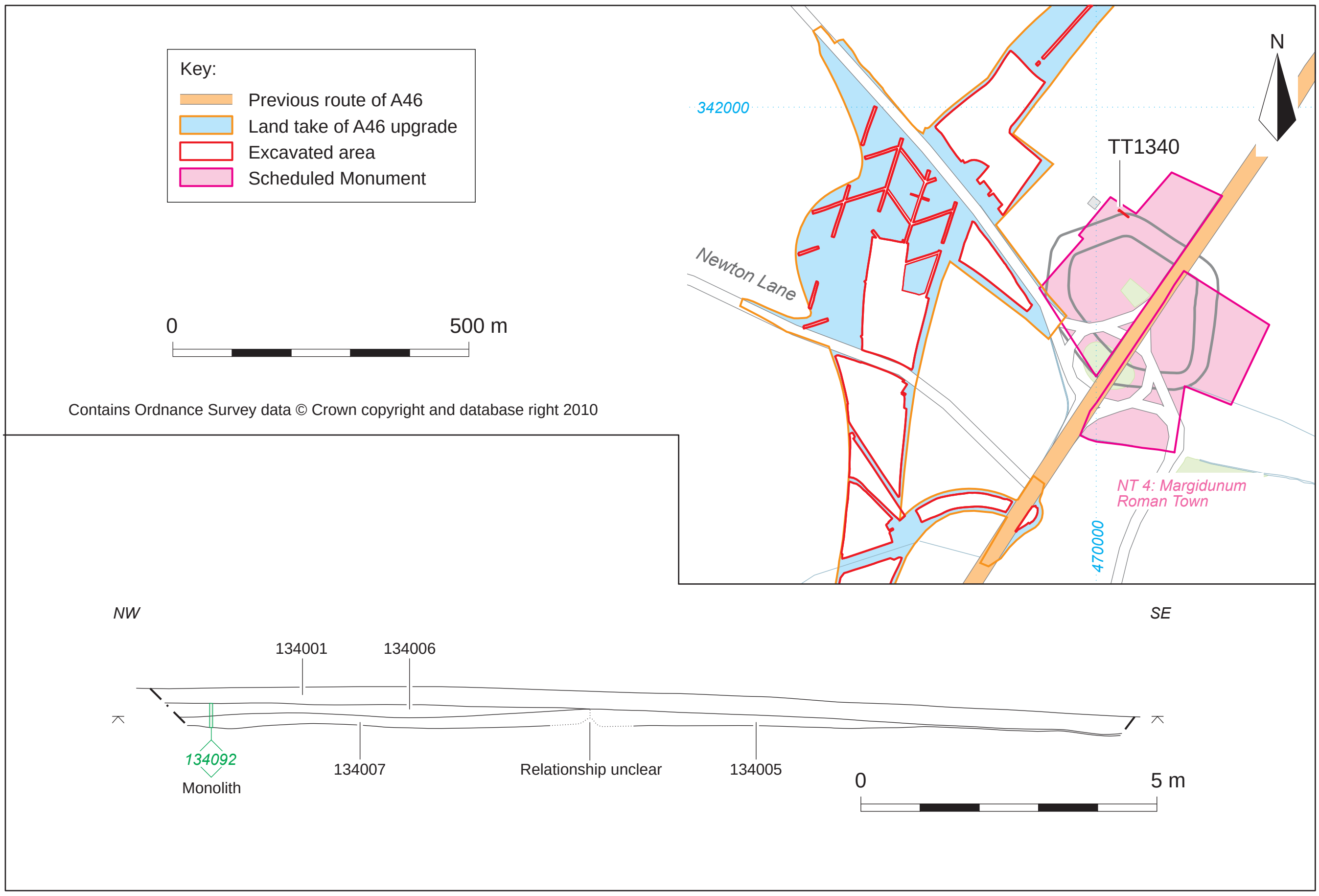


Fig. 4.54 Trench (TT1340) through Margidunum *defences, and section*

Mid- and Late Romano-British Grave Catalogue

by Kirsten Egging Dinwiddy

Inhumation Grave Catalogue

Grave catalogues follow a standard descriptive formula: grave (and burial) numbers; grave description; grave dimensions; fill descriptions and relationships; type and position of human remains; age, sex and bones represented; accompanying materials (grave goods) where they appear to be intentional aspects of the funerary rite.

KEY: s. a. u. l. = skull, axial, upper limb and lower limb (where not all regions are represented); R = redeposited; ON = Object No.; SN = Soil Sample No.; rpd = redeposited pyre debris. *N.B. 'birth' = c. 40 weeks gestation.*

Inhumation graves in Enclosure K (DE3001)

Grave 301131 (burials 301180a & b, 301182, 301183) (Fig. 4.36)
NE–SW, subrectangular, shallow shelf south-west end (0.45 x 0.3 m) – 2.30 x 1.1 x 0.24 m deep (base at 27.56 m aOD). Fill 301181: dark greyish-brown silty clay with small-medium pebbles; subrectangular coffin stain.
Human remains:
a) coffined inh. burial, extended, supine, arms flexed at elbow, hands in lap: *c.* 8% adult *c.* 18–25 yr. ?male
b) R. 1 tooth. adult *c.* 35–55 yr.
placed on shelf – disarticulated, arranged around the foot end and right side of the coffin: 301182; R: frag. a. adult >18 yr. 301183; R: *c.* 2% adult *c.* 20–30 yr.
Grave goods:
Beside right femur: 2 pebbles & 3 angular stones in a curvilinear arrangement projecting from redeposited pelvis (301182) as if representing a spine.
W end of grave:
ON 621: Iron hobnails: 48 hobnails (head diam. 7–10 mm), 4 hobnail shanks, shanks square-sectioned where discernible; 1 nail shank.
ONs 673, 681, 695: iron nails, all Manning (1985) type 1b. L 115 mm (ON 681), context 301181.
ONs 625, 651, 669–72, 675, 680: iron nails, Manning type 1b where identifiable. L 95 mm (ON 625), 97 mm (ON 670), 110 mm (ON 680); context 31182.
ON 668, 675: iron lumps; context 31182.
W-centre of grave:
ON 674: iron nail, Manning type 1b; context 301181.
E end of grave (all context 301182):
ONs 616, 619: iron nail shank frags.
ONs 617–8, 620, 637, 650, 652, 654–5, 657–8: iron nails, Manning type 1b where identifiable. L 98 mm (ON 637), 94 mm (ON 650), 90 mm (ON 654), 70 mm (ON 655).
Not on grave plan:
ON 624: iron, small lump.
ON 653: iron nail, Manning type 1b.
ON 656: iron nail, Manning type 1b. L 80 mm. 2 shaft frags., 3 sheet frags./lumps.
Phase: late Romano-British

Grave 301132 (burial 301187)
NE–SW, rectangular, rounded corner one end; moderate (foot end) and vertical sides, flat base – 2.2 x 0.78 x 0.32 m deep (base at 27.48 m aOD). Fill 301188 mixed mid-grey-brown and mid-red-brown sandy clay, mottled with blue-grey clay; occasional stones, charcoal flecks & fired clay.
Human remains:
coffined inh. burial, extended, supine, left arm extended *c.* 45 degrees from body: *c.* 20% adult *c.* 25–40 yr. female
Grave goods:
ON 663: copper alloy, finger-ring with pronounced oval bezel socket (8–10 mm) set at right angles above line of hoop with pronounced shoulders. Bezel fragmented, hoop squashed and broken, not clear whether complete. Guiraud (1989) type 3a. Found at disturbed foot (SW) end of grave cut. (Fig. 4.97.1)
ONs 638, 683: iron nails, Manning type 1b.
ONs 640, 665, 667, 677, 684, 690–1: iron nail shanks.
ON 662: iron hobnail head.
Phase: late Romano-British

Grave 301133 (burial 301184) (Fig. 4.36)
NE–SW, rectangular, rounded ends, shallow ends, steep sides – 2.47 x 0.78 x 0.16 m deep (base at 27.46 m aOD). Fill 301185: dark brownish-black clay silt with redeposited lumps of clay & occasional stones, charcoal flecks.
Human remains:
coffined inh. burial, extended, supine: *c.* 1% adult *c.* 20–30 yr.
Grave goods:
N end of grave:
ON 600: iron, small lump.
ONs 602, 605: iron nail shanks.
ON 603: iron nail, Manning type 3. L 78 mm.
ONs 604, 611, 641, 642, 659, 660, 661, 664: iron nails, Manning type 1b. L 52 mm (ON 641), 76 mm (ON 642), 61 mm (ON 661).
ON 664: iron, small tack/hobnail. L 21 mm.
Centre of grave:
ONs 601, 612: iron nails, Manning type 1b.
ON 666: iron nail shank with mineral preserved wood, from burial 301184.
S end of grave:
ONs 606–7, 613–4, 622, 639, 643–7, 649: iron nails, Manning type 1b where identifiable. L 77 mm (ON 614).
ON 608: 2 iron hobnails.
ON 623: approximately 128 iron hobnails (head diam 8–12 mm, most 11 mm), 6 shank frags.
ON 648: iron nail shank.
Not on grave plan
ON 302: iron nail frags.
Phase: late Romano-British

Grave 301134 (burial 301197) (Fig. 4.36)
SW–NE, subrectangular, with subrounded ends, shallow ends, steep-vertical sides, undulating base – 1.86 x 0.67 x 0.14 m deep (base at 27.07 m aOD). Fill 301161: dark greyish brown silty clay fill, occasional small pebbles.
Human remains:
coffined inh. burial, extended, supine: *c.* 1% s.l. adult *c.* 18–35 yr.
Grave goods:
NW side of grave:
ONs 626–8, 632: iron nail shanks.
ONs 630–1: iron nail (ON 631 x2), all Manning type 1b.
SE side of grave:
ONs 629, 633–6: iron nail shanks.
Centre of grave (near right tibia)
ON 678: iron nail frag., Manning type 1b.
ON 679: copper alloy coin. 'Constantinopolis' issue of the House of Constantine, struck AD 330–5. Mint unknown.
Phase: late Romano-British

Grave 301135 (burial 301186)
NE–SW, subrectangular, with rounded ends, shallow concave sides, undulating base – 1.85 x 0.45 x 0.12 m deep (base at 27.01 m aOD). Fill 301160: dark greyish brown silty clay fill, occasional small pebbles.
Human remains:
coffined inh. burial, probably extended or slightly flexed:<1% s.l. adult *c.* 18–25 yr. ??female
Grave goods:
ONs 609–10: iron coffin nails (>32–>94mm), Manning type 1b.
ON 615: iron lump.
Phase: late Romano-British

Grave 301245 (burial 301289) (Fig. 4.37)
WNW–ESE, oval, irregular steep sides, undulating base – 1.55 x 0.50 x 0.15 m deep (base at 26.19 m aOD). Fill 301246: mid-greyish-brown silty sand, occasional pebbles.
Human remains:
coffined inh. burial, extended, supine: *c.* 2% s.u.l. adult *c.* 30–45 yr. ??female
Grave goods:
E end of grave:
ON 685: iron, 38 hobnails, head diams 6–8 mm, 2 shank frags.
N side of grave:
ON 687: iron nail, Manning type 1b. L 28 mm.
ON 693: iron, ?nail head.
ON 694: iron nail shank frag.
S side of grave:
ON 688: iron hobnail.
ON 689: Iron nail, Manning type 1b.
Centre of grave, between femurs:
ON 692: iron nail shank frags.
Phase: late Romano-British

Grave 301263 (burial 301264) (Fig. 4.36)
NNE–SSW, subrectangular; steep-vertical sides, flat base – 0.8 x 0.7 x 0.36 m deep (base at 26.90 m aOD). Stone slabs directly above & below corpse. Fill 301265: mid-pinkish-red with mid-grey-brown mottling, clay with sandy silt patches, few stones. Stone slab cap 301290: 1.38 x 0.5 x 0.13 m, slabs up to 500 x 550 mm. Stone slab base 301291: 1.59 x 0.25 x 0.05 m – approx. of corpse dimensions, slabs range from 180 x 70 mm to 690 x 230 mm.
Human remains:
inh. burial, extended, supine, hands across abdomen; tightly shrouded; mandible displaced – right shoulder: *c.* 50% adult *c.* 30–40 yr. female
Phase: late Romano-British

Grave 301328 (burial 301329)
NE–SW, subrectangular, moderate sides & flat base sloping down to SW – 2.2 x 0.6 x 0.08 m deep (base at 27.95 m aOD). Fill 301330: mid-brown silty clay, occasional rounded stones. Cut fill of ditch 301402 (group 218534); backfill cut by modern drain.

Human remains:
inh. burial, extended, supine, right hand on hip: *c*. 25% adult *c*. 35–45 yr. male
Phase: late Romano-British

Grave 301370 (burial 301448)
NE–SW, rectangular, rounded corners, steep concave sides & flat base – 2.2 x 0.59 x 0.39 m deep (base at 26.90 m aOD). Fill 301371: mid-greyish-brown silty clay with orange mottling, occasional stones. Cut by ditch 301366.
Human remains:
inh. burial, extended, supine, elbows bent with hands raised to shoulder level either side: *c*. 1% s.u.l. adult >18 yr.
Phase: late Romano-British (radiocarbon date failed)

Grave 301510 (burial 301511) (Fig. 4.37)
NE–SW, subrectangular, vertical sides, flat base – at least 1.3 x 0.5 x 0.15 m deep (base at 27.95 m aOD); cut fill of grave 301572. Fill 301511: mid-brown silty clay with clay patches, occasional stones. Truncated by furrow 301508 & drain 301513.
Human remains:
coffined inh. burial, extended, supine, right hand on abdomen: *c*. 10% a.u.l. adult *c*. 30–45 yr. female, 301514 R: 3 frags. u. = 301511
Grave goods:
NW side of grave:
ONs 703–4, 706: iron coffin nail shanks.
ON 705: iron coffin nail.
SE side of grave:
ON 708: 2 iron coffin nail shank frags.
Next to right tibia:
ON 709: iron. 57 hobnails (head diams 8–10 mm), 7 shank frags and frags of mineral-preserved ?leather (?shoe).
Phase: late Romano-British

Grave 301572 (burial 301573) (Fig. 4.37)
NE–SW, rectangular, vertical sides & flat base – 1.65 x 0.5 x 0.32 m deep (base at 27.72 m aOD); cut pit 301622. Fill 301574: mid- & dark brown silty clay with orange clay mottling, occasional charcoal fleck & stones. Cut by grave 301510 & drain 301513.
Human remains:
coffined inh. burial, extended, supine, hands at abdomen:
c. 45% subadult *c*. 15–17 yr. female
Grave goods:
SE side of grave:
ONs 710, 713: iron coffin nail shank frags.
ONs 711–2, 714, 720: iron coffin nails, Manning type 1b. L 56 mm (ON 711), 55 mm (ON 712).
NW side of grave:
ONs 715–8: iron coffin nails, Manning type 1b. L 56 mm (ON 715), 51 mm (ON 717).
ON 707: iron coffin nail (?L-headed Manning type 4).
ON 719: iron coffin nail shank.
Phase: late Romano-British

Grave 301750 (burial 301749)
NW–SE, subrectangular with rounded corners, steep sides & flat base – at least 1.78 x 0.49 x 0.26 m deep (base at 27.81 m aOD). Cut end of grave 301850. Fill 301751: mid-greyish-brown sandy clay with reddish-brown clay mottling & occasional stones.
Human remains:
inh. burial, extended, supine with left leg v. slightly flexed to right, left hand on hip: *c*. 2% a.u.l. adult *c*. 18–35 yr. ?female
Phase: late Romano-British

Grave 301850 (burial 301849) (Fig. 4.37)
NE–SW, rectangular, steep sides & flat base – at least 1.18 x 0.83 x 0.12 m deep (base at 27.82 m aOD).
Fill 301851: mid-greyish-brown sandy clay with frequent small stones. Truncated by grave 301750.
Human remains:
coffined inh. burial, extended, supine with right hand on abdomen: *c*. 8% adult *c*. 25–35 yr. ?female
Grave goods:
ON 726, 728–32: 6 iron coffin nails/shanks (ONs 726, 731 Manning type 1b)
One iron nail associated with the skull; stone near mandible.
Phase: late Romano-British (radiocarbon date failed)

Isolated grave east of Newton Villa (DE 3001)

Grave 302809 (burial 302808) (Fig. 4.37)
SE–NW, subrectangular, rounded corners, moderate–shallow & concave sides and base – 1.48 x 0.83 x 0.19 m deep (base at 26.95 m aOD). Fill 302807: mid-grey-brown silty loam with occasional small sandstone pieces.
Human remains:
inh. burial, extended, supine, upper body slightly raised and tilted to left, head more so; left hand on hip: *c*. 30% adult >55 yr. ??male
Phase: mid-Romano-British. *cal AD 120–260 (94.3% probability)* (SUERC-39047; 1840±30 BP)

Neonate/Infant inhumation graves in DE3002

Grave 218106 (burial 218107)
N–S, cut not seen; at least 0.31 x 0.13 x 0.04 m deep (base at 24.95 m aOD); cut fill of Structure 10 penannular gully 218652. Fill 218115: brownish grey silt, with grey and black silt; grey calcareous precipitate.
Human remains:
inh. burial, foetal position left side: *c*. 50% neonate *c*. 0–1 mth. ??female. 218115 R: 3 frag. s.a.u. = 218107
Phase: mid-Romano-British

Grave 218128 (burial 218127)
?Subrectangular, rounded corners, steep irregular sides and base – 0.65 x 0.43 x 0.09 m deep (base at 25.01 m aOD). Fill 218126: mid-grey-brown sandy loam; grey calcareous precipitate. Below layer 303876; cut dark layer 303804.
Human remains:
inh. burial: *c*. 28% neonate *c*. 0–1 mth.
Phase: mid-Romano-British

Grave 218138 (burials 218137a & b)
SE–NW, irregular plan, sides and base – 0.55 x 0.3 x 0.13 m deep (base at 24.96 m aOD). Fill 218136: mid-brownish-grey silty sand with small pebbles; grey calcareous precipitate. Below layer 303876; cut dark layer 303804.
Human remains:
inh. burials, foetal position on left side: a) *c*. 40% neonate *c*. 0–1 mth.
b) *?*R frag. s. neonate *c*. 0–1 mth.
Phase: mid-Romano-British

Grave 218145 (burial 218146–7) (Figs 4.26 & 4.27)
NE–SW, ?oval, possibly steep sided, flat base – ?0.45 x ?0.25 x <0.05 deep. Fill 218174: brown, grey & white silt. Below layer 30378; cut layer 303814.
Human remains:
inh. burial, foetal position on right side: *c.* 90% neonate *c.* 2–6 wks. ??female
Phase: mid-Romano-British

Grave 218153 (burials 218152a & b) (Fig. 4.26)
W–E, oval, moderate to steep sides, irregular base – 0.55 x 0.5 x 0.09 m deep (base at 25.01 m aOD). Fill 218151: mid-brownish-grey silty sand with small pebbles. Cut layer 303816. Below layer 303876.
Human remains:
a) inh. burial, foetal position on left side: *c.* 85% neonate *c.* 0–2 wks. ??female.
b) R: 2 bones u.l. neonate *c.* 1–2 mth.
Phase: mid-Romano-British

Grave 218185 (burial 218184)
?E–W, unclear, flat base – 0.47 x *c.*0.35 x 0.12 m deep (base at 24.92 m aOD); cut grave 218268. Fill 218183: mid-grey silty sand. Below layer 303876.
Human remains:
inh. burial, foetal position left side: *c.* 35% neonate *c.* birth ?female
218183 R: 9 frag. s.a.l. = 218184
Phase: mid-Romano-British

Grave 218268 (burial 218169) (Fig. 4.26)
EN–SW, oval, sloping base (head higher) – 0.45 x 0.25 x 0.1 m deep (base at 24.91 m aOD). Fill 218270: dark grey-brown and pale grey silt. Slight disturbance. Cut by grave 218185, cut layer 303814.
Human remains:
inh. burial, foetal position on right side: *c.* 95%; neonate *c.* birth ?male
218312 R.: 8 frag. neonate *c.* 2 mth.
Phase: mid-Romano-British

Grave 303782 (burial 303770) (Fig. 4.26)
Cut not seen; ? at least 0.3 m deep (base at 25.25 m aOD). Disturbed during excavation of occupation deposit 303677. Fill: dark greyish-brown sandy silt. Cut 303677.
Human remains:
a) inh. burial, sitting upright facing N, later slumped forwards & to right: *c.* 55% neonate *c.* 0–2 wks. ??female
b) R: 3 frag. s. neonate *c.* birth
303677 R: *c.* 20% s.u.l. = 303770a.
Phase: mid-Romano-British

Grave 303851 (burial 303850)
W–E, oval, moderately sloping straight sides, irregular base – 0.55 x 0.45 x 0.05 m deep (base at 25.00 m aOD). Fill 303849: dark brownish-grey sandy loam with occasional small pebbles. Cut gully 218286.
Human remains:
inh. burial, foetal position on right side, disturbed: *c.* 20% neonate *c.* birth
Phase: mid-Romano-British

Grave 303854 (burial 303853)
N–S, subrectangular, moderately sloping sides, irregular base – 0.8 x 0.41 x 0.07 m deep (base at 24.93 m aOD). Fill 303852: dark brownish-grey sandy loam with occasional small pebbles and residual pot. Disturbed. Cut alluvium.
Human remains:
inh. burial, foetal position on right side: *c.* 35% neonate *c.* birth
Grave goods:
ON 2122: copper alloy, small lump.
SN 511: iron, curved sheet frag. W >33 mm.
Phase: mid-Romano-British

Grave 303855 (burial 303856)
N–S, unclear; burial 0.13 x 0.1 x 0.02 m deep (base at 25.00 m aOD). Fill 303857: mixed brown, black and grey silt.
Human remains:
inh. burial, ?foetal position, supine or right side: *c.* 30% neonate *c.* birth
Phase: mid-Romano-British

Grave 303859 (burial 303860)
S–N, unclear; burial at least 0.2 x 0.15 x 0.05 m deep (base at 25.04 m aOD). Fill 303868: pale grey silt containing patches of black mottling. Heavily disturbed by burrowing animals.
Human remains:
inh. burial, foetal position on right side: *c.* 25% a.u.l. neonate *c.* 0–1 mth.
Phase: mid-Romano-British

Grave 303863 (burial 303862)
W–E, subcircular, flat base – 0.45 x 0.35 x 0.05 m deep (base at 25.09 m aOD). Fill 303861: mid-brownish-grey sandy loam. Cut layer 303804. Disturbed.
Human remains:
inh. burial, foetal position on left side: *c.* 40% neonate *c.* birth ?female
Phase: mid-Romano-British

Grave 303888/303921 (burial 303887)
S–N, subrectangular, moderate-steep sides, flat base; stone slabs (303970: 0.56 x 0.45 x 0.13 m) at southern end side & base – 1.02 x 0.65 x 0.06 m deep (base at 24.90 m aOD). Fills 303886, 303919–20, 303939, 303970: dark brownish-grey sandy loam occasional small pebbles; stone slab in base. Cut dark layer 303804. Disturbed & excavated in several parts perpendicular to 303946, slight intercutting but relationship lost.
Human remains:
inh. burial, foetal position on left side: *c.* 58% infant *c.* 7–9 mth.
303886, 303919–20, 30393 &, 30370 R/?R*: c.* 40% = 303887
Grave goods:
SN 520 (303920): iron, nail with short square-sectioned shank and ?conical/pyramidal head. L 25 mm. Apotropaic?
Phase: mid-Romano-British

Grave 303946 (burial 303945) (Fig. 4.26)
NE–SW, sub-apsidal, rounded corners, shallow-moderate straight-concave sides, irregular sloping base (NE high) – 0.58 x 0.38 x 0.05 m deep (base at 24.89 m aOD). Fill 303944: mid-grey silty sand, occasional pebbles. Cut dark layer 303804; perpendicular to feature 303921, slight intercutting but relationship lost.
Human remains:
inh. burial, foetal position on left side: *c.* 85% perinatal *c.* 39 wks.–birth
Phase: mid-Romano-British

Burials from layer 303814 (no grave numbers)

Three inhumation burials, recovered during the excavation of spread 303814, were not assigned context numbers, and are identified within the catalogue as burials 303814a–c.

Layer 303814a
Human remains:
inh. burial, *c.* 45% neonate *c.* 1–2 mth.
Phase: mid-Romano-British. *cal AD 80–240 (at 95% probability)* (SUERC-39053; 1880±30)

Layer 303814b
Human remains:
inh. burial, *c.* 30% perinatal *c.* 38 wks.–birth
Phase: mid-Romano-British

Layer 303814c
Human remains:
inh. burial, *c.* 20% neonate c. 1–2 mth
Phase: mid-Romano-British

Inhumation grave in DE 3002

Grave 303504 (burial 303502)
N–S, cut not seen; burial 1.6 x 0.4 x <0.05 m deep (base at 25.12 m aOD). Fill 303501: mid-brownish-grey sandy silt with occasional small stones.
Human remains:
inh. burial, extended, supine: *c.* 35% a.l. adult *c.* 23–30 yr. male.
Phase: late Romano-British. *cal AD 250–420 (at 95% probability)* (SUERC-39051; 1675±30)

Inhumation grave in DE3004

Grave 304515 (burial 304240)
NW–SE, cut not seen; burial 1.33 x 0.87 x *c.* 0.18 m deep (base at 28.56 m aOD). Fill 304514: unknown.
Human remains:
inh. burial, extended, supine, arms by sides: *c.* 10% s.a.u. adult >20 yr. male
Phase: late Romano-British (radiocarbon date failed)

Cremation graves in DE3001

Grave 302289 (burial 302288)
Oval plan, steep sides and undulating base with deeper concave section to north – 0.7 x 0.45 x 0.25 m deep (base at 27.22 m aOD). Fill 302339 (?bioturbation): 0.45 x 0.30 x 0.12 m deep. Deposit 302288: dark brown with reddish-brown mottling; charcoal-rich (incl. oak roundwood) with patches of redeposited fired clay; bone observed in upper 0.05 m. Fill 302339: paler.
Human remains:
unurned burial + rpd: 252.4 g, adult *c.* 25–35 yr. ?female
302339 R: 4.8 g = 302288
Pyre goods:
SNs 117–122, 2 nails/shanks & 4 hobnails (SN 119: iron hobnail, conical head with shallow rim on underside, square shank; plus further corroded frags) (Fig. 4.97.2)
Phase: mid–late Romano-British. cal AD 140–330 (at 95% probability) (SUERC-39054; 1780±30 BP)

Grave 302291 (burial 302290)
Irregular plan, concave based scoop with moderately steep sides; 0.45 x 0.43 x 0.11 m deep (base at 27.35 m aOD). Deposit dark brown with reddish-brown mottling; charcoal-rich (incl. oak roundwood, hazel & willow) with patches of redeposited fired clay and fuel ash. Bone evident at surface. Mixed and truncated.
Human remains:
unurned burial + rpd: 657.6 g, adult *c.* 30–40 yr. male
Phase: mid–late Romano-British.

Post-Romano-British

*Anglo-Saxon (*c. *AD 410–1066)*

There appears to have been a significant decline in activity in and around *Margidunum* from the 5th century onwards. There is very little evidence for Anglo-Saxon activity from the earlier excavations within *Margidunum* itself, and both Oswald and Todd argue for the abandonment of the town in the post-Romano-British period, with no significant continuity into the Anglo-Saxon period. Only small quantities of Anglo-Saxon pottery were recovered from these earlier excavations (Todd 1969, 77–80). Indeed, Todd suggests that stone was robbed from the site in the late Anglo-Saxon and medieval periods to build local churches (*ibid.*, 80). Some Anglo-Saxon pottery was recovered during the fieldwalking undertaken as part of the advance works for the current project (Leary and Baker 2004, 34), and it has been suggested that some of the late burials excavated at *Margidunum* by Todd, which were cut into the late Roman rampart, might be of late Romano-British or Anglo-Saxon date (*ibid.*, 21).

There is very little evidence from the site for activity in the 5th century, and the late Romano-British features encountered on most of the excavation areas effectively mark the end of significant activity. Only three features – a sunken-featured building (304064, Structure 27) in DE3004, and two pits in DE3001 (301116 and 301501) – and a palaeochannel in DE3003 (218716), could be assigned Anglo-Saxon dates with any degree of confidence (Fig. 4.55).

Structure 27
The sunken-featured building (304064, Structure 27) lay on a gentle south-facing slope, and took the form of a large shallow hollow, slightly irregular in plan with rounded corners, measuring a maximum of 3.45 m long (NW–SE) and 2.5 m wide. It had generally gently sloping sides and a slightly undulating base, and may originally have been subrectangular, as there is some evidence that its north-western corner had suffered slight truncation, perhaps as a result of later ploughing (Fig. 4.56). A small circular scoop (304098) had been cut into the north-eastern corner, from which was recovered a glass bead (ON 1504; Fig. 4.88) of late Romano-British or Anglo-Saxon date (see Shepherd, below), and further pottery.

A substantial assemblage of pottery, in several fabrics, was recovered from the sunken-featured building, with

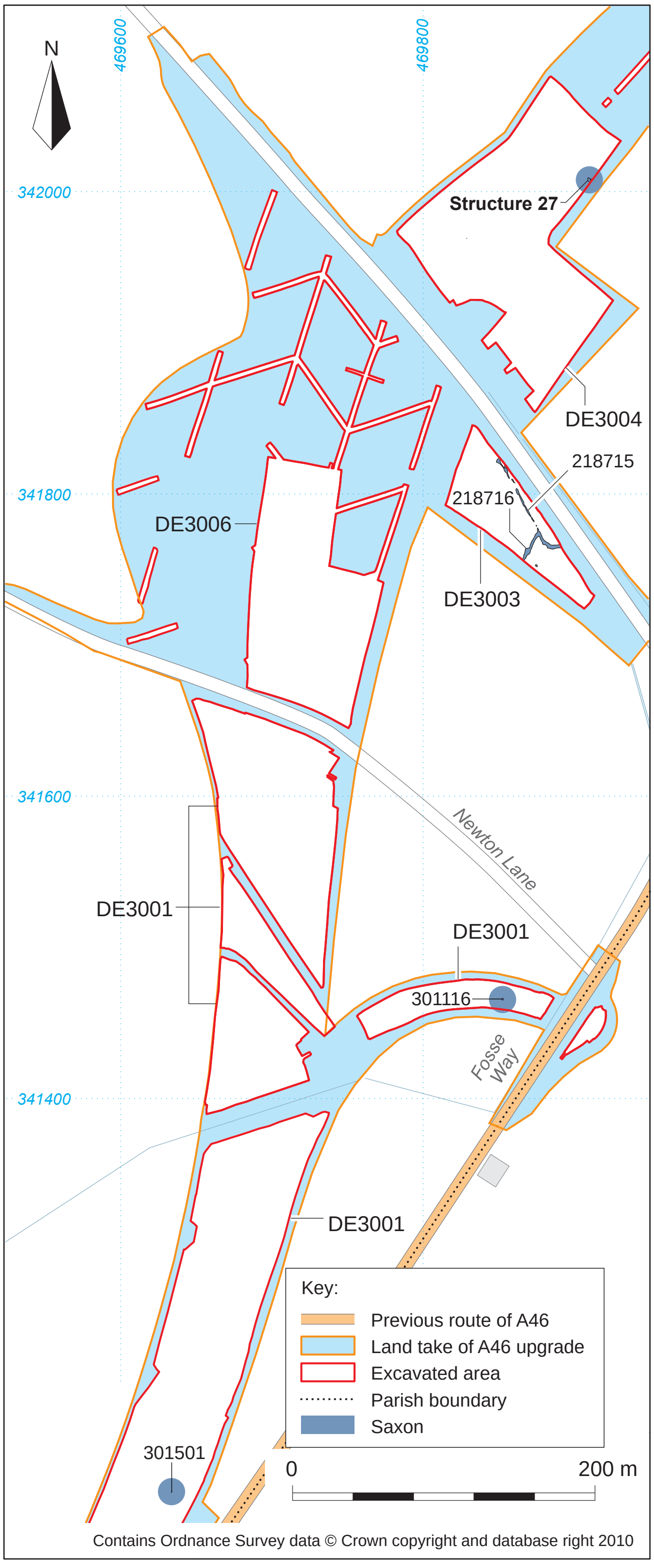


Fig. 4.55 Locations of Anglo-Saxon features at Margidunum *Hinterland*

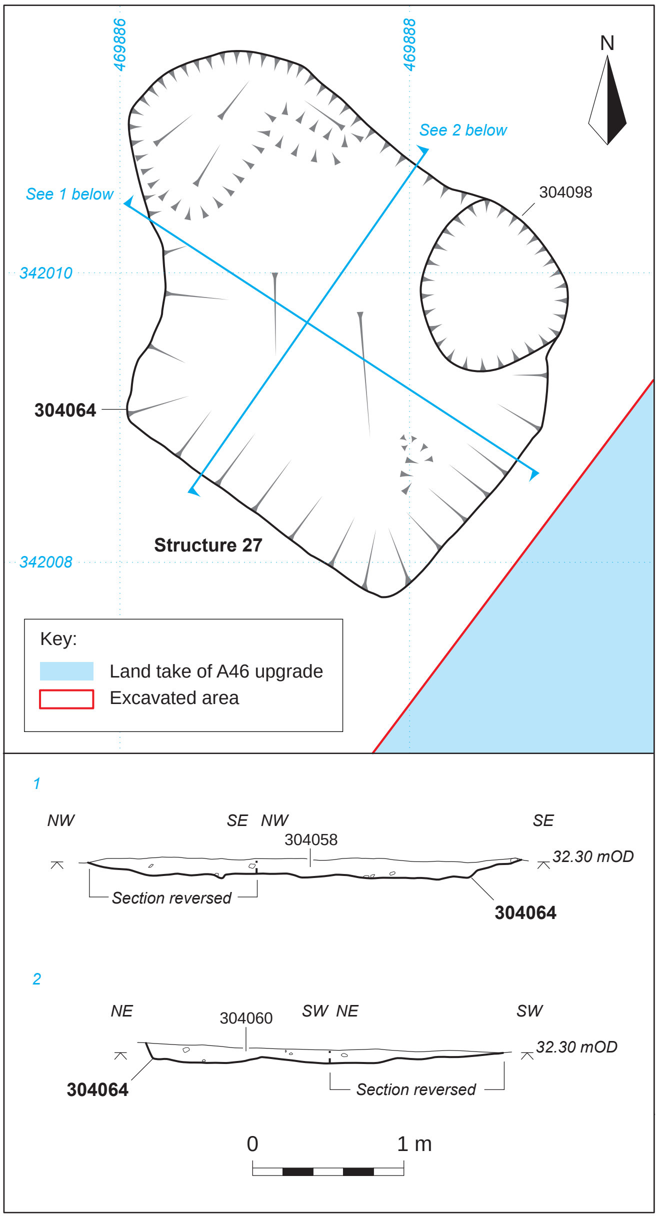


Fig. 4.56 Anglo-Saxon sunken-featured building, Structure 27, plan and sections

the majority of the identifiable forms being jars (see Young and Perry, below). No significant distributions of artefacts were identified, although more pottery was recovered from the western and southern quadrants than the northern and eastern ones. Other finds included numerous fragments of animal bone, fired clay and a copper alloy cruciform brooch (ON 1500; Fig. 4.98) dating to the 5th or 6th century (see Schuster, below). A series of soil samples taken from the fill of the building contained high numbers of grain fragments, predominantly barley, with smaller quantities of free-threshing wheat.

Sunken-featured buildings are common on early Anglo-Saxon sites across lowland Britain. The hollow itself is sometimes interpreted as lying beneath a suspended floor. Often there were a pair of postholes, centrally placed at either end of the hollow, dug to house posts supporting a ridge pole along the long axis of the building. Occasionally examples with more postholes have been recorded, while others, such as Structure 27, do not appear to be directly associated with any postholes (Tipper 2004). These buildings seem to have been used for a number of different purposes, including as domestic structures and for craft and light industrial activities. The finds assemblage from Structure 27 is perhaps more suggestive of a domestic structure than one used exclusively for a specialised craft function. Both the pottery and the brooch suggest that the structure was in use during the 5th or 6th century.

The two Anglo-Saxon pits recorded were widely spaced in DE3001. Pit 301116 was irregular in form and very shallow, with a flat base, and contained a single sherd of probably early Anglo-Saxon pottery in its single fill. Pit 301501, further to the south, cut the upper fills of the late Romano-British ditch of Enclosure K. It was oval and shallow, with steep sides and a flat base, and its single fill contained 31 Anglo-Saxon sherds, from two vessels; its purpose and the origin of the pottery within it are unclear.

A small quantity of Anglo-Saxon pottery was also recovered from the upper fills of an undated palaeochannel (218715) recorded on the north-eastern edge of DE3003 (Fig. 4.55). Like other channels in the area, this is likely to have developed naturally through the action of the numerous springs which sporadically rise in the vicinity. There was no evidence that the watercourse had been humanly modified, and the pottery is likely to represent some undefined activity in the vicinity at a time when the channel was open.

High Medieval (c. AD 1066–1499)

The remains of medieval ridge and furrow were recorded across much of the site, although none was recorded in DE3001 between Newton Lane and the stream which crosses the site to the south (Fig. 4.57). At least one palaeochannel here was shown to contain post-Romano-British material and a small part of the area remained subject to periodic flooding until the late 20th century. It is likely, therefore, that because this area was low-lying and damp it was excluded from medieval arable cultivation. No other medieval (or post-medieval) features were present on the site, and very little medieval pottery has been recovered from the immediate area.

The ridge and furrow in DE3001 was predominantly aligned perpendicular to the Fosse Way, although different alignments were recorded in DE3003, DE3004 and DE3006, to the north of Newton Lane, the latter aligned perpendicular to the modern A6097, lending support to the suggestion that it follows the lines of a Roman and medieval road, although topographic factors may have been equally important. The palaeochannel (218715) containing Anglo-Saxon pottery (along the north-east edge of DE3003) was respected by the ridge and furrow, suggesting that it may have remained extant as a landscape feature and the area subject to flooding. Ploughing headlands were responsible for a cropmark in DE3006 previously tentatively interpreted as a possible prehistoric cursus monument, and also for the slight

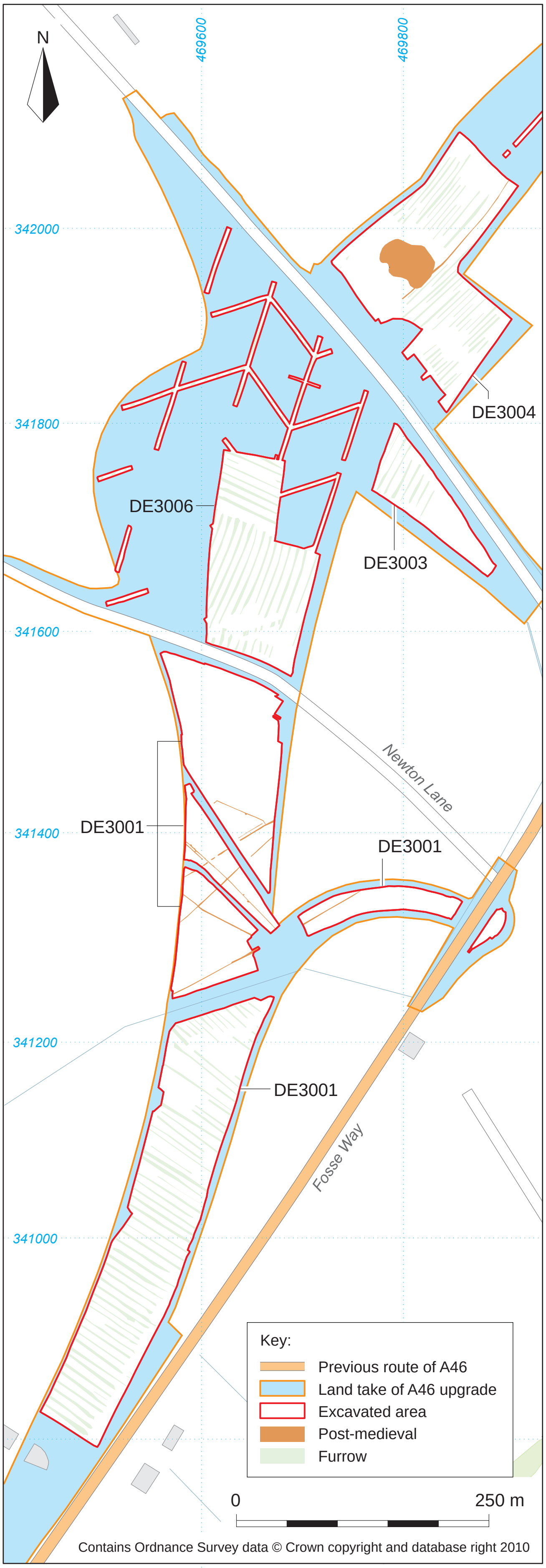


Fig. 4.57 Ridge and furrow and post-medieval features at Margidunum *Hinterland*

bank on the north-east side of the A6097 (DE3004), initially thought possibly to be the *agger* of a Roman road (Appleton *et al.* 2004).

*Post-medieval and Modern (*c. *AD 1499–Present)*

A small number of post-medieval and modern features were revealed during the excavations. The majority were field boundaries or land drains. There was a particular concentration of land drains in DE3001, in the damp area left untouched by medieval ploughing, suggesting that drainage of this area was not undertaken until the post-medieval and modern periods. Elsewhere, a large area of waterlain silt that had accumulated in the western corner of DE3004, masking the course of a number of late Romano-British ditches, is likely to be post-medieval or modern in date.

Finds

Unburnt Human Bone

by Kirsten Egging Dinwiddy and Jacqueline I. McKinley

Unburnt human bone from 54 contexts was subject to analysis (Table 4.1). The material predominantly derives from two distinct areas of mortuary activity. Neonatal and infant remains were recovered from 28 mid-Romano-British contexts in DE3002, situated to the east of the Fosse Way, south-west of *Margidunum* (Fig. 4.25). The area had been one of domestic and industrial occupation in the early and mid-Romano-British period and many of the neonatal/infant graves (minimum 18 identified) had been cut into or through a relatively deep (*c.* 0.15–0.3 m) accumulation of occupation debris. The area continued as one of settlement activity in the late Romano-British phase. A slightly later inhumation cemetery lay *c.* 450 m to the south-west in Enclosure K (DE3001) on the west side of the Fosse Way (Fig. 4.35). Here bone was recovered from the remains of 13 inhumation burials (nine made coffined; see Grave Catalogue) sparsely distributed within what appear to have been four enclosed plots – either fields with burials made along the margins or an incipient roadside cemetery – along an 86 m length of the west side of the road. One of these burials had been made in a grave (301370) that cut through the enclosure ditch, suggesting a later date.

Other human remains not forming part of either group were also recovered from three areas. A mid-Romano-British singleton inhumation burial (grave 302809) was found in DE3001, close to boundary ditch 218552 (Fig. 4.16), and the heavily truncated remains of a late Romano-British burial (grave 303504) lay within the area of the earlier neonatal mortuary activity in DE3002 (Fig. 4.46). A probable late Romano-British singleton (grave 304515) was found adjacent to the Fosse Way in DE3004 (Fig. 4.38), and was possibly associated with the Romano-British farmstead.

Fragments of redeposited bone were recovered from Late Iron Age and Romano-British pits and ditches including a 'placed' deposit of disarticulated bone in the top of early Romano-British waterhole 218519 (intervention 301257, context 301284a) in DE3001 (Table 4.1; Fig. 4.13). The latter was radiocarbon dated to *cal AD 210–360 (91%) (at 95% probability)* (SUERC-39052, 1760±30 BP) (Table 4.47).

Methodology

The degree of erosion to the bone was recorded using McKinley's system of grading (2004a, figs. 7.1–7). Age was assessed from the stage of tooth and skeletal development (Beek 1983; Scheuer and Black 2000), and the patterns and degree of age-related changes (Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Bass 1987; Buikstra and Ubelaker 1994; Mays and Cox 2000, 121–3; Schutkowski 1993): where the quantity and quality of the sexing criteria were compromised, the sex indicated may be qualified (probable/possible). Measurements were taken and where possible various skeletal indices were calculated (Brothwell and Zakrzewski 2004; Trotter and Gleser 1952; 1958; Bass 1987). Non-metric traits were recorded in accordance with Berry and Berry (1967) and Finnegan (1978).

Results

The results are summarised in the Grave Catalogue and Table 4.1. Full details are in the archive.

Taphonomy: Disturbance and condition

Many of the neonatal burial remains in DE3002 had suffered some level of disturbance due to animal burrowing, probable truncation by late Roman activity and/or, since their presence was initially unexpected in this part of the site and the graves difficult to detect in the occupation layers, during archaeological removal of the overlying material. The recorded grave depths ranged from 0.01 to 0.12 m, but most are likely to have originally been within the upper part of the range. Despite frequent disturbance, the bone is generally in good condition (grade scale 1–2) and percentage skeletal recovery is relatively good with several over 40%, and one or two more than 85% (maximum *c.* 95%).

In contrast, the – mostly adult – remains from the cemetery within Enclosure K (DE3001) are poorly represented, much of the bone observed in excavation disintegrating on lifting. There is over 20% skeletal recovery from only a few graves, with a maximum of 50%. Here truncation and disturbance was limited, grave depths varying between 0.08 m and 0.36 m, but the compact silty clay natural geology and resultant grave backfills were highly detrimental to bone survival (grade scores 4–5+) and that which did survive is generally heavily fragmented.

The redeposited remains from the central areas of the site are generally in quite good condition (grade scores 1–2), suggesting original deposition in a different burial

Table 4.1 *Margidunum* Hinterland: unburnt human bone – summary of results of analysis

Context	*Grave/cut*	*Deposit type*	*Date*	*Quantification*	*Age/sex*	*Pathology*
DE3002						
218107	218106	inh. burial	MRB	*c.* 50%	neonate *c.* 0–1 mth. ??female	enamel hypoplasia; new bone – endo- & exocranial; poor mineralisation – innominates, scapulae, femora & tibiae shafts; plastic change – rib ends
218115	218106	R = 218107	MRB	3 frags s.a.u.	neonate *c.* 0–1 mth.	
218127	218128	inh. burial	MRB	*c.* 28%	neonate *c.* 0–1 mth.	poor mineralisation – temporal, sphenoid, arms; hyper-porosity – maxilla, palate; striated bone - ribs
218137 a & b	218138	inh. burials	MRB	a) *c.* 40% b) 1 frag s.	2 x neonate *c.* 0–1 mth.	thickening & hyperporosity – sphenoid; poor mineral-isation – exocranial, orbits; striated bone – ribs
218146	218145	inh. burial	MRB	*c.* 90%	neonate *c.* 2–6 wks. ??female	new bone – endocranial; striated bone – ribs; mv – wormian bones
218152 a & b	218153	a) inh. burial b) R	MRB	a) *c.* 85% b) 2 bones u.l.	a) neonate *c.* 0–2 wks. ??female b) neonate *c.* 1–2 mth.	striated bone – ribs; plastic change – rib ends
218184	218185	inh. burial	MRB	c. 35%	neonate c. birth ?female	-
218183	218185	R = 218184	MRB	9 frags s.a.l.	neonate *c.* birth	-
218249	218251	R (gully 218662)	LIA	1 bone l.	perinatel *c.* 38 wks.–birth	-
218269	218268	inh. burial (disturbed)	MRB	*c.* 95%	neonate *c.* birth ?male	-
218312	218268	R	MRB	8 frags	neonate *c.* 2 mth.	-
DE3001						
301180 a & b	301131	a) inh. burial (coffined) b) R	LRB	a) *c.* 8% b) 1 tooth crown	a) adult *c.* 18–25 yr. ?male b) adult *c.* 35–55 yr.	a) calculus; dental caries; mv – occasional facet – 1st MtT b) calculus
301183	301131	R (?placed)	LRB	*c.* 2%	adult *c.* 20–30 yr.	calculus; hypoplasia
301182	301131	R ?= 301183	LRB	frags a.	adult >18 yr.	-
301187	301132	inh. burial (coffined)	LRB	*c.* 20%	adult *c.* 25–40 yr. female	*ante mortem* tooth loss; apical void; calculus; dental abscess; dental caries; enamel hypoplasia; mv – worm-ian bones, mandibular tori, congenital absence M3
301184	301133	inh. burial (coffined)	LRB	*c.* 1%	adult *c.* 20–30 yr.	enamel hypoplasia
301197	301134	inh. burial (coffined)	LRB	*c.* 1% s.l.	adult *c.* 18–35 yr.	calculus
301186	301135	inh. burial (coffined)	LRB	<1% s.l.	adult *c.* 18–25 yr. ??female	calculus; dental caries
301159	301170	R (pit)	MRB	*c.* 50 frags s.l.	adult *c.* 25–45 yr.	calculus; enamel hypoplasia

Table 4.1 (cont.) *Margidunum* Hinterland: unburnt human bone – summary of results of analysis

Context	*Grave/cut*	*Deposit type*	*Date*	*Quantification*	*Age/sex*	*Pathology*
301289	301245	inh. burial (coffined)	LRB	*c.* 2% s.u.l.	adult *c.* 30–45 yr. ??female	apical void; calculus
301284 a & b	301257 (218519)	a) R/?placed (top of waterhole) b) R/?placed	M/ LRB*	a) *c.* 65% b) 7 frags s.	a) adult *c.* 25–35 yr. female b) adult >18 yr. ?female	a) *ante mortem* tooth loss; calculus; dental caries; periodontal disease; rotation; *cribra orbitalia* (*l.*); *hyperostosis frontalis interna*; pnb – r. tibia; mv – wormian bones, variant I2, mandibular tori, mylohyoid bridge, odd TMJ, accessory sacral facet
301258	301257	R = 301284a	M/ LRB	2 frags	adult *c.* 25–35 yr. female	mv – accessory sacral facet
301264	301263	inh. burial	LRB	*c.* 50%	adult *c.* 30–40 yr. female	calculus; *cribra orbitalia* (r); Schmorl's nodes – 2T; osteophytes – C1 (af), 2 ribs, l. knee; pitting – l. acetabulum, l. ankle; enthesophytes – phalanx (r. foot); cortical defect – 1st proximal phalanx (r. foot); mv – lateral squatting facet, occasional facet – navicular
301283	301281	R (palaeochannel 218515)	MRB	11 frags s.u.l.	adult >35 yr.	mv – metopic suture
301329	301328	inh. burial	LRB	*c.* 25%	adult *c.* 35–45 yr. male	calculus; dental caries; enamel hypoplasia; osteophytes – l. hip & knee (femur); mv – small teeth; chipped teeth
301448	301370	inh. burial	LRB*[f]	*c.* 1% s.u.l.	adult >18 yr.	-
301511	301510	inh. burial (coffined)	LRB	*c.* 10% a.u.l.	adult *c.* 30–45 yr. female	osteophytes – 1T (bsm)
301514	301513	R = 301511	LRB	3 frags u.	adult >18 yr.	-
301573	301572	inh. burial (coffined)	LRB	*c.* 45%	subadult *c.* 15–17 yr. female	calculus; dental caries; enamel hypoplasia
301749	301750	inh. burial	LRB	*c.* 2% a.u.l.	adult *c.* 18–35 yr. ?female	-
301849	301850	inh. burial (coffined)	LRB*[f]	*c.* 8%	adult *c.* 25–35 yr. ?female	calculus; dental caries; enamel hypoplasia; mv – shovelled Is
301930	301936	R	LIA/ ERB	6 frags s.	adult *c.* 20–45 yr.	exocranial hypervascularity
301977	301976	R (ditch)	LIA/ ERB	1 frag. l.	adult >18 yr.	-
302808	302809	inh. burial	MRB*	*c.* 30%	adult >55 yr. ??male	calculus; dental caries; destructive lesions – r. humerus head, l. femur head; degenerative disc disease – 3C, 3T, L, S1; osteoarthritis – C1 & 2 (af), 6T, 5L & S1 (apj), r. wrist (ulna); osteophytes – 3C, 3T, 1L & S1 (bsm); pitting – r. sternoclavicular, l. sacroiliac, l. hip (femur); enthesophytes – phalanges (hands)

Context	*Grave/cut*	*Deposit type*	*Date*	*Quantification*	*Age/sex*	*Pathology*
DE3002						
303502	303504	inh. burial	LRB*	35% a.l.	adult *c.* 23–30 yr. male	fracture – l. talus; cortical defect – 1st proximal phalanx (r. foot); mv – lateral squatting facets
303686	303685	R	MRB	9 frags a.u.	neonate *c.* birth	-
303770	303782	a) inh. burial b) R	MRB	a) *c.* 55% b) 3 frags s.	2 x neonates *c.* birth	a) new bone – endocranial; porosity & thickening – sphenoid, temporal, maxilla & mandible; poor mineralisation – orbits; striated bone – ribs
303817	303816	R (posthole)	MRB	3 frags s.a.u.	neonate *c.* birth	-
303850	303851	inh. burial	MRB	*c.* 20%	neonate *c.* birth	-
303853	303854	inh. burial	MRB	*c.* 35%	neonate *c.* birth	new bone – exocranial; poor mineralisation – orbits
303856	303855	inh. burial	MRB	*c.* 30%	neonate *c.* birth	-
303860	303859	inh. burial	MRB	*c.* 25% a.u.l.	neonate *c.* 0–1 mth.	-
303862	303863	inh. burial	MRB	*c.* 40%	neonate *c.* birth ?female	-
303887 303919 303920 303939	303888 303921	inh. burial (disturbed)	MRB	*c.* 98%	infant *c.* 7–9 mth.	periosteal new bone – mandible, sphenoid; new bone – endocranial; cortical defect – l. humerus, radii; plastic changes – ulnae shafts (?rickets)
303945	303946	inh. burial	MRB	*c.* 85%	perinatel *c.* 39 wks.–birth	new bone – endocranial
303677	-	R ?= 303770a	MRB	*c.* 20% s.u.l.	neonate *c.* 0–2 wks. ??female	-
303678	-	R (layer)	MRB	a) 2 frags s.u. b) 3 bones l.	a) min. 1 adult >18 yr. b) neonate *c.* birth	- b) tibiae mismatched, ?further neonate
303691	-	R (MRB occup. debris)	LIA*	a) 3 frags s.l. b) 1 bone l.	a) adult *c.* >18 yr. female (MNI 1) b) neonate *c.* 0–1 mth.	a) fracture – frontal ?post-mortem; sharp tool cuts/chops – frontal, l. femur, r. tibia; *taphonomy* – canid gnawing – l. femur
303814	-	a–c) 3 inh. burials d) R	MRB*	a) *c.* 45% b) *c.* 30% c) *c.* 20% d) 1 bone u.	a) neonate *c.* 1–2 mth.* b) perinatel *c.* 38 wks.–birth c) neonate *c.* 1–2 mth. d) neonate *c.* birth	-
unstratified	-	R	?RB	1 tooth crown	adult *c.* 18–45 yr.	calculus
DE3004						-
304240	304515	inh. burial	?LR-B*[f]	*c.* 10% s.a.u.	adult >20 yr. male	new bone – temporal vault; thickening – frontal; osteophytes – TMJ, wrists (pisiforms)

KEY: R – redeposited; * C14 dated, [f] date failed; s. a. u. l. – skull, axial, upper limb and lower limb (where not all regions are represented); C, T, L, S – cervical, thoracic, lumbar & sacral vertebrae; af – articular facet; apj – articular process joint; bsm – body surface margin; I – incisor; M – molars; l. – left; r. – right; TMJ – temporo-mandibular joint; mv – morphological variation; N.B. 'birth' = c. *40 weeks gestation* environment to that experienced in the cemetery to the south, much of this part of the site overlying alluvial deposits.

Taphonomy: human and animal manipulation

The three fragments of redeposited adult human bone from the mid-Romano-British occupation layer 303691 had all been subject to some form of post- or, in one case, possibly peri-mortem manipulation. Two of the three fragments were identified in post-excavation amongst the large quantity of animal bone also found in this layer, only the skull fragment being identified as human bone in excavation. A sample of the latter was subject to radiocarbon dating and proved to be Late Iron Age (see Table 4.47). Although not conclusive, this does suggest that the other fragments of adult human bone are likely to be of commensurate date (possibly all derived from the same individual) and that some of the animal remains from this deposit may also be residual.

The almost complete frontal bone has several small, fine, vertical and horizontal cuts, consistent in appearance with 'filleting' marks made with a small sharp knife (Binford 1981, 129–31), across the centre of the bone (the forehead area), which are suggestive of scalping (Fig. 4.58) (Larsen 1999, 120–5; Mays and Steele 1996; Prufer *et al.* 2001, 126, fig. 1b). Although probably unrelated to the cut-marks, the appearance of the broken left side and associated fracturing suggest the bone was damaged whilst still relatively green/fresh (see below). Aldhouse-Green (2001, 97–109) discusses the historical and archaeological evidence for recurrent patterns of ritualised or special treatment of the human head across parts of Iron Age and Roman Europe and Britain. Osteological evidence specific to scalping in Britain is rare; a few fragments of skull with cut-marks above the brow ridges were recovered from destruction layers in the vicinity of the Romano-British sanctuary in Wroxeter, Shropshire (Barker 1986, 107; Aldhouse-Green 2001, 107) but, as here, these fragments could have been residual. Although scalping may be undertaken *ante mortem* and the victim may survive (there is no sign of healing in the *Margidunum* example), it is generally a peri- or post-mortem event commonly viewed as 'trophy' taking. The potential case seen here is not classic in the form and location of the cuts, nor are the cuts extensive, and their execution may have formed part of a ritual aimed at augmenting the transformation process (defleshing) rather than an act of aggressive mutilation.

There are a number (minimum three) of longitudinal chop- or, probably more accurately, shave-marks on the anterior-lateral sides of the fragment of proximal femur shaft (Fig. 4.59). These preceded this distal end of the bone being sawn off the rest of the shaft. Such manipulation is indicative of bone working rather than butchery; saws were not employed in the latter until the late 18th century AD but were commonly used in bone working (MacGregor 1985, 55; Seetah 2006), and the shaving was probably an initial attempt to create a flat surface. The fragment probably represents a discarded off-cut. There is also evidence for canid gnawing of

Fig. 4.58 Human skull from layer 303691, frontal bone of an adult female with cut-marks (indicated), fractures and breakage; it was radiocarbon dated to 100 cal BC–30 cal AD (SUERC-44287 2030±16 at 95% confidence) but was found in a later deposit

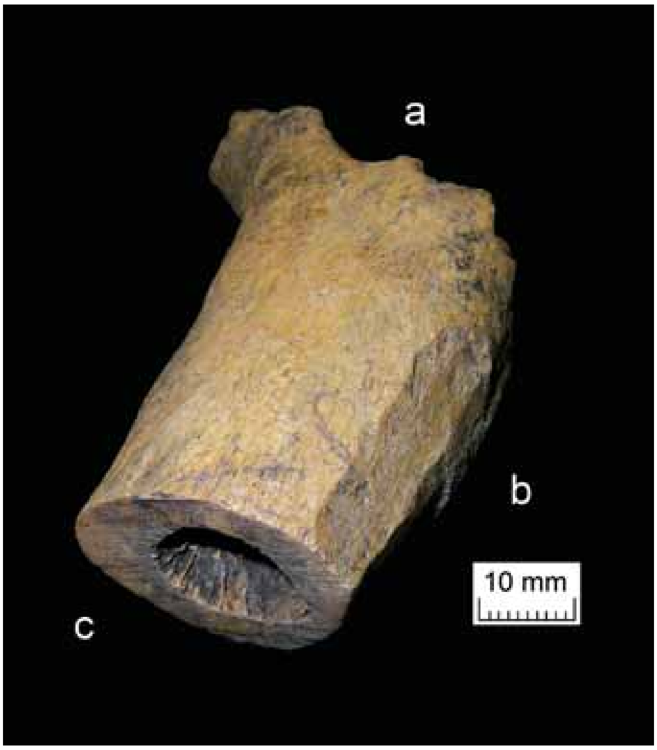


Fig. 4.59 Modified human bone: left adult femur with a) canid gnawing, b) chopping, and c) sawing modification from layer 303691

the proximal end of the bone (removing the trabecular component favoured by scavengers), but it is unclear whether this occurred before or after the working of the bone. A fragment of tibia shaft from the same context had been chopped in the distal third of the shaft, and probably split longitudinally, also while semi-green, and probably for the same purpose of working. Again, the proximal end of the bone shows evidence of canid gnawing, in this case apparently in advance of the human manipulation.

Given its condition and provenance it is likely that the human remains had already been subject to at least one other episode of redeposition prior to this final use and incorporation within the occupation layer. This may have included some form of excarnation (eg, burial with subsequent exhumation of the partially or fully skeletalised remains, deposition within midden material or exposure) resulting in their eventual exposure to the attention of canids and 'dehumanisation' of the bones which, mixed with those of other species, led – unintentionally – to its working. The Iron Age date of the remains renders a variety of mortuary rites and subsequent treatments a possibility (Cunliffe 1992; McKinley 2008a; Whimster 1981); though by the latter part of the period more 'normative' methods of disposal were more common and they may simply have derived from a disturbed grave. Although none of the animal bone from 303691 appeared to have been worked, evidence for the latter was recorded in material recovered from early–late Romano-British deposits elsewhere on the site (see Higbee, below).

Demography

A minimum of 38 individuals (MNI) are represented in the assemblage; the majority are mid- (52.6%) or late Romano-British (39.5%) but a small number of earlier individuals are represented (Table 4.2). At least 18 neonates and a young infant were identified amongst the mid-Romano-British remains from DE3002. The majority of these individuals had achieved full term but died within the week following birth, the rest having survived for several weeks (most up to *c.* 4 weeks, some up to *c.* 8 weeks). Though the sexing of neonatal remains cannot be undertaken routinely with confidence, the osteological evidence in this assemblage indicates that both males and females are represented.

The exclusion of neonates from cemeteries and the recovery of their remains in association with domestic buildings and properties is a common feature in the Romano-British period (Philpott 1991, 97–102; Mays 1993; Scott 1999, 115; Struck 1993). The factors influencing both the cause of death and place of burial of these young individuals may be numerous and have been subject to general and site-specific discussion elsewhere (Mays 1993; McKinley 2011; Philpott 1991, 101; Riddle 1997, 85–6; Scott 1999, 30–2, 70 and 115–8). Common features, however, include their being subject to special treatment, often being buried together at a distance from the community's other dead (as still occurs in some modern cemeteries: Scott 1999, figs 13 and 14) and generally closer to the spaces used by the living. Large numbers of neonatal burial remains have been found in association with some late Romano-British villa

Table 4.2 Margidunum Hinterland: unburnt human bone – summary of demographic data

Age	*LIA*	*LIA/ERB*	*MRB*	*LRB*
Immature				
neonate *c.* 0–0.5 yr.	-	1 (U)	18 (1?F; 4??F; 1?M; 12U)	-
infant *c.* 0.5–4 yr.	-	-	1 (U)	-
juvenile *c.* 5–12 yr.	-	-	-	-
subadult *c.* 13–17 yr.	-	-	-	1 (F)
Subtotal	-	*1 (U)*	*19 (1?F; 4??F; 1?M; 13U)*	*1 (F)*
Adult				
> 18 yr.	1 (F)	1(U)	-	4 (1?F; 1M; 2U)
c. 18–25 yr.	-	-	-	2 (1??F; 1?M)
>25 yr.	-	-	-	1(F)
c. 20–30 yr.	-	-	-	2 (1M; 1U)
c. 25–35 yr.	-	-	-	2 (1F – 1)
c. 30–40 yr.	-	-	-	3 (2F; 1??F)
c. 35–45 yr.	-	-	-	1 (M)
>35 yr.	-	-	-	-
>55 yr.	-	-	1 (??M)	-
Subtotal	*1 (F)*	*1 (U)*	*1 (1??M)*	*14 (4F; 1?F; 2??F; 3M; 1?M; 3U)*
Total	1 (F)	2 (U)	20 (5F; 2M; 13U)	15 (8F; 4M; 3U)

KEY: F – female; M – male; U – unsexed; LIA – late Iron Age; ERB – early Romano-British; MRB – mid-Romano-British; LRB – late Romano-British complexes (Scott 1999, 110–13). At Springhead, Kent, a substantial proportion of the 49 neonates recovered were found in the immediate vicinity of the spring in the area subsequently to form the mid-Romano-British sanctuary (most appearing to predate it by a decade or so) and later temple. Others were found as singletons or within small groups of up to six burials made within individual properties – domestic or possibly small-scale 'industrial' in nature – within the adjacent settlement area (McKinley 2011, 3–9, fig. 2). It is with the latter that the cemetery at *Margidunum* Hinterland appears to have closest similarities. The two or three properties with which the burial group is associated appear to comprise buildings peripheral to the main settlement area including a probable smithy and other small-scale 'industrial' units (see above).

A minimum of 13 late Romano-British individuals (12 adults and a subadult) were recovered from Enclosure K on the west side of the Fosse Way (DE3001). The demographic form of this late Romano-British cemetery group suggests that the cemetery served a small rural population, who were either devoid of children (perhaps being a migrant group) or who disposed of their deceased younger members elsewhere. One other young adult male of this date had been buried in the area formerly used exclusively for the disposal of neonates (DE3002).

The remains of a minimum of six other individuals, mostly adults including both sexes, are represented by singleton burials (mid- and late Romano-British) and bone redeposited in a variety of Late Iron Age/early Romano-British and Romano-British features/deposits. The latter includes one female whose disarticulated partial remains were recovered from a mid-Romano-British occupation deposit and dated to the mid- to late Romano-British period by radiocarbon analysis.

Skeletal indices and non-metric variation

Stature was calculated for one late Romano-British adult male (303502) who, at 1.64 m (*c.* 5′4″), was a little shorter than the average (1.69 m *c.* 5′6¼″) for the period as presented by Roberts and Cox (2003, 163).

The platymeric index reflects the degree of antero-posterior flattening of the proximal femur. Both femora of the late Romano-British adult female 301284a (waterhole 218519) are platymeric (flattened): 81.8 (left) and 77.9 (right).

It was possible to calculate the platycnemic index (reflecting the degree of anteroposterior flattening of the tibia shaft) for one ?Late Iron Age/early Romano-British unsexed adult, two females and one male of late Romano-British date. The right tibia (60.9) of female 301264 and both tibiae (56.2 and 58.7) of male 303502 are very flat (platycnemic). In contrast both tibiae of female 301284a (right: 79.7 and left: 77.6), and the left tibia of the unsexed adult (76.7; from pit 301170) are eurycnemic (broad/wide).

The recording of morphological variations was fairly limited due to poor preservation. Details are in the archive.

Pathology

The poor condition of the adult bone limited the potential for observation of lesions in most of the skeleton and the majority observed affected the dentition. The restricted nature of the evidence for pathological conditions precludes anything more than a broad comment regarding the health status of a few individuals rather than the inhumed population in general. A summary of the lesions and their location is presented in Table 4.1.

Dental disease

All or parts of 14 permanent dentitions were recovered. The single Late Iron Age/early Romano-British dentition is in very poor condition, and identifiable only to broad tooth type. It was possible to identify some dental conditions but rates could not be calculated. The mid-Romano-British dental assemblage comprises 15 erupted permanent teeth (five maxillary, 10 mandibular) and one maxillary tooth socket, all from male 302808 (grave 302809). There are also 17 deciduous dentitions from 16 neonates (unerupted) and one infant (part erupted), the latter of which also has two unerupted permanent tooth crowns (not included in calculations). The late Romano-British assemblage includes 11 dentitions from two males, six females and three unsexed individuals (Tables 4.3 and 4.4).

Calculus deposits (calcified plaque/tartar linked to a diet rich in soft carbohydrates, Hillson 1986, 278) were seen on several unidentifiable tooth fragments from LIA/ERB pit 301170 (rate not calculable). The single mid-Romano-British dentition has slight to moderate build-up on four mandibular teeth (26.7%) manifest as slight tidemarks at the gumline (Brothwell 1972, fig. 58b). In

Table 4.3 *Margidunum* Hinterland: unburnt human bone – summary of late Romano-British dentitions (permanent erupted dentition)

	Max. teeth	*Man. teeth*	*Total teeth*	*Max. tooth positions*	*Man. tooth positions*	*Total tooth positions*
Female (secure sexing only)	22	21	43	7	29	36
Female (all levels confidence)	50	49	99	25	32	57
Male (secure sexing only)	13	9	22	11	1	12
??Male (all levels confidence)	22	20	42	11	1	12
Unsexed	9	21	30	14	16	30
Total	81	90	171	50	49	99

Table 4.4 *Margidunum* Hinterland: unburnt human bone, summary late Romano-British dental pathology (permanent erupted dentitions)

	Calculus	*Periodontal disease*	Ante mortem *tooth loss*	*Caries*	*Apical void*	*Hypoplasia*
Female (secure sexing only)	45 (19 max.) (26 man.)	6 (3 max.) (3 man.)	5 (3 max.) (2 man.)	5 (1 max.) (4 man.)	1 (0 max.) (1 man.)	7 (3 max.) (4 man.)
Female (all levels confidence)	66 (27 max.) (39 man.)	6 (3 max.) (3 man.)	5 (3 max.) (2 man.)	7 (2 max.) (5 man.)	2 (0 max.) (2 man.)	18 (11 max.) (7 man.)
Male (secure sexing only)	22 (13 max.) (9 man.)	-	-	2 (1 max.) (1 man.)	-	2 (1 max.) (1 man.)
Male (all levels confidence)	30 (17 max.) (13 man.)	-	-	2 (1 max.) (1 man.)	-	2 (1 max.) (1 man.)
Unsexed	9 (1 max.) (8 man.)	-	-	-	-	6 (1 max.) (5 man.)
Total	105 (45 max.) (60 man.)	6 (3 max.) (3 man.)	5 (3 max.) (1 man.)	9 (3 max.) (6 man.)	2 (0 max.) (2 man.)	26 (13 max.) (13 man.)

the late Romano-British dentitions 61.4% of teeth have a slight to moderate lesions, with the *c.* 25–35-year-old female from waterhole 218519 having the most prolific examples. Mandibular teeth were more frequently affected than the maxillary (66.7% compared with 55.6%); deposits occur most often on molars. The rate is higher than the average 43.4% presented for the period by Roberts and Cox (2003, 132, table 3.11), though deposits are liable to flake-off, potentially leading to an underestimation in rates.

Periodontal disease (gingivitis; Ogden 2005) is often linked to calculus build-up and can lead to alveolar bone resorption and tooth loss. The condition was observed in the dentitions of two young adult females within the late Romano-British assemblage, affecting 6.1% of tooth sockets. Molar and premolar positions are slightly to moderately affected, the former most frequently. However, this rate is likely to be misleadingly low due to the poor condition of the tooth-socket margins.

Ante mortem loss of between one and four teeth was noted in two female dentitions (301187, and 301284a). Molars were most often affected. In the former the loss had clearly occurred a substantial time prior to death, whereas the socket of 301284a was in the process of infilling at time of death. The overall rate (5.2%) is below the Romano-British average of 14.1% presented by Roberts and Cox (2003, table 3.12); however, the small size of the current sample may have skewed the results obtained here.

Dental caries (destruction of the tooth by acids produced by oral bacteria present in plaque) are evident in one mid-Romano-British and seven late Romano-British dentitions. Four teeth (26.7%) were affected in the mid-Romano-British dentition (302808: molars and premolars), and between one and seven teeth (molars and a premolar) in the late Romano-British dentitions (66.7% mandibular and 33.3% maxillary teeth). The overall late Romano-British rate of 5.3% is slightly below the 7.5% average suggested by Roberts and Cox for the period (2003, 131–2, table 3.10). Lesions are more frequent in the female teeth (7.2%) compared to those of the males (4.8%). The origin of the lesions is split evenly between cervical (interdental and buccal) and occlusal fissures (mainly 'pinhole'-size).

Apical voids were observed in the sockets of two late Romano-British female dentitions (overall rate 2%). No changes associated with chronic or active infection were observed in the sockets, nor were other dental lesions noted in the one observable tooth. Possible causes include granuloma (Soames and Southam 2005, 65–84) and, less convincingly, dental abscess.

Dental enamel hypoplasia is represented by defects (generally linear) in the tooth enamel, and is thought to be associated with growth arrest in the immature individual due to prolonged periods of illness or nutritional stress (Hillson 1986, 376; Lewis and Roberts 1997, 581). Lesions are present in teeth from all three phases. Those in the one Late Iron Age/early Romano-British and six late Romano-British permanent dentitions (three female, one male and two unsexed) indicate episodes of problems encountered around the fourth and fifth years. Defects were also seen in two unerupted deciduous maxillary incisor crowns in a mid-Romano-British dentition (218107, Fig. 4.60). This neonate also has pathological lesions indicative of chronic metabolic deficiency or disease (see below) that commenced *in utero* and probably related to the health status of the mother. Though the 14% *Margidunum* rate is higher than Roberts and Cox's average for the period (9.1%), it falls well within their given range 5.6–29.0% (2003, table 3.16).

Dental attrition is largely determined by diet, however, the use of the teeth and jaws as a 'third hand' for tasks other than mastication (eg, grasping or processing fibres/materials) can result in unusual wear patterns (Hillson 1986, 184–7; Egging Dinwiddy 2011a, 103–4). A late Romano-British adult female (grave 301850) has distinct polishing on the palatal surface of the maxillary incisors, and on a mandibular canine, while a mid-Romano-British older adult male has some extreme, occasionally oblique, wear and a greater degree of wear on the anterior teeth. Both may represent examples of 'occupational' wear.

Trauma

Evidence for traumatic injury comprises a hairline compression fracture seen in the left talus (ankle) of late Romano-British young adult male 303502. Such an injury may occur with forceful inversion of the foot, possibly from a fall or trip (Adams 1987, 281; Calais-Germain 2007, 261), as may result from traversing over uneven ground.

Infection and inflammation

Chronic infection and inflammation (from various sources) can leave a trace on the bone in the form of deposits of new bone, erosive lesions, or a combination of the two. It is seldom possible to detect the cause of such lesions in individual cases, thus most are classified as non-specific.

New bone deposits were noted on one or both surfaces of the skulls of four neonates and an infant from the mid-Romano-British assemblage, and on the endocranial surface of the skull of a probably late Romano-British adult male (grave 304515). Potential factors include nutritional deficiencies, haemorrhage (eg, birth trauma in neonates) and infection.

Destructive lesions of unclear aetiology were seen at the articular surface margins of the heads of a humerus and femur of an elderly adult male (mid-Romano-British; grave 302809). A small patch of lamellar (healing) new bone on the distal tibia shaft of a mid-Romano-British adult female (waterhole 218519) may be associated with soft tissue damage or localised infection.

Metabolic conditions

Vitamin and mineral deficiencies can lead to chronic conditions such as anaemia (iron), rickets/osteomalacia (vitamin D) and scurvy (vitamin C). Their aetiologies are complex, especially as affected individuals can suffer a combination of conditions. Contributing factors can include dietary inadequacy, disease, parasitic infestation, chronic blood loss, poor maternal health/nutrition; with vitamin D deficiency, the lack of sufficient exposure to sunlight is an additional problem (Roberts and Manchester 1997, 173–4; Lewis and Roberts 1997, 583).

Three of the mid-Romano-British neonates (from graves 218106, 218128 and 218138) have generalised poor mineralisation of the most recent bone deposits, sometimes associated with hyperporosity and/or thickening of various skull elements (Fig. 4.60). Similar observations have been discussed elsewhere (Egging Dinwiddy 2011a, 129–131, plates 6.4 and 6.5). Plastic changes to the rib ends in 218107 and 218152, and bowing and enthesopathies in the upper limb bones of infant 303939, might be due to a deficiency in minerals and/or vitamins associated with bone formation (eg, vitamin D), probably due to a maternal deficiency and a lack of exposure to sunlight.

Cribra orbitalia – manifest as pitting in the orbital roof – is believed to be the result of iron deficiency anaemia in childhood, though lesions can persist (Roberts and Manchester 1995, 166–9). Pitting was seen in two orbits (66.7% all late Romano-British orbits) from two late Romano-British adult females, 301264 and 301284a. No lesions were seen in the 11 mid-Romano-British orbits.

Joint disease

Joint diseases are among the most frequently recorded conditions in osteoarchaeological assemblages. Osteophytes and other new bone formations, as well as micro- and macro-pitting can form as a result of a number of disease processes or as lone lesions reflective of age-related degeneration. Though increasing age is important in many conditions other factors are frequently involved, consequently, their aetiology is not always clearly understood.

All or parts of seven adult spines were recovered comprising one mid-Romano-British (male) and six late Romano-British (two male, four female). Only three of the 17 mid-Romano-British and five of the late Romano-British vertebrae could be assigned to vertebral number as well as area. There are 19 mid-Romano-British (all male) and 192 (106 male, 86 female) late Romano-British extra-spinal joints.

Schmorl's nodes result from the extrusion of intervertebral disc contents into the vertebral body, causing a pressure defect (Rogers and Waldron 1995, 27). These lesions mostly occur as a result of stress-related trauma eg, back strain from heavy lifting in young adulthood (Roberts and Manchester 1997, 107). Moderate lesions are present in two thoracic vertebrae of one late Romano-British adult female. The overall Romano-British rate of 8.3% (12.9% late Romano-British) is lower than the average of 17.7% for the period presented by Roberts and Cox (2003, 147, table 3.21).

Degenerative disc disease (the breakdown of the intervertebral disc) commonly reflects age-related degeneration, and is evident as coarse pitting and osteophytes on the vertebral body surfaces and margins (Rogers and Waldron 1995, 27). Lesions of moderate to severe manifestation were recorded in the spine of the mid-Romano-British male, affecting nine vertebrae from all spinal regions. The overall rate of lesions in the mid-Romano-British assemblage is 52.9%, and 18.8% of all Romano-British vertebrae.

Lesions consistent with advanced osteoarthritis (Rogers and Waldron 1995, 43–4) were seen in nine spinal and one extra-spinal joint, all in mid-Romano-British elderly male 302808. The overall spinal rate

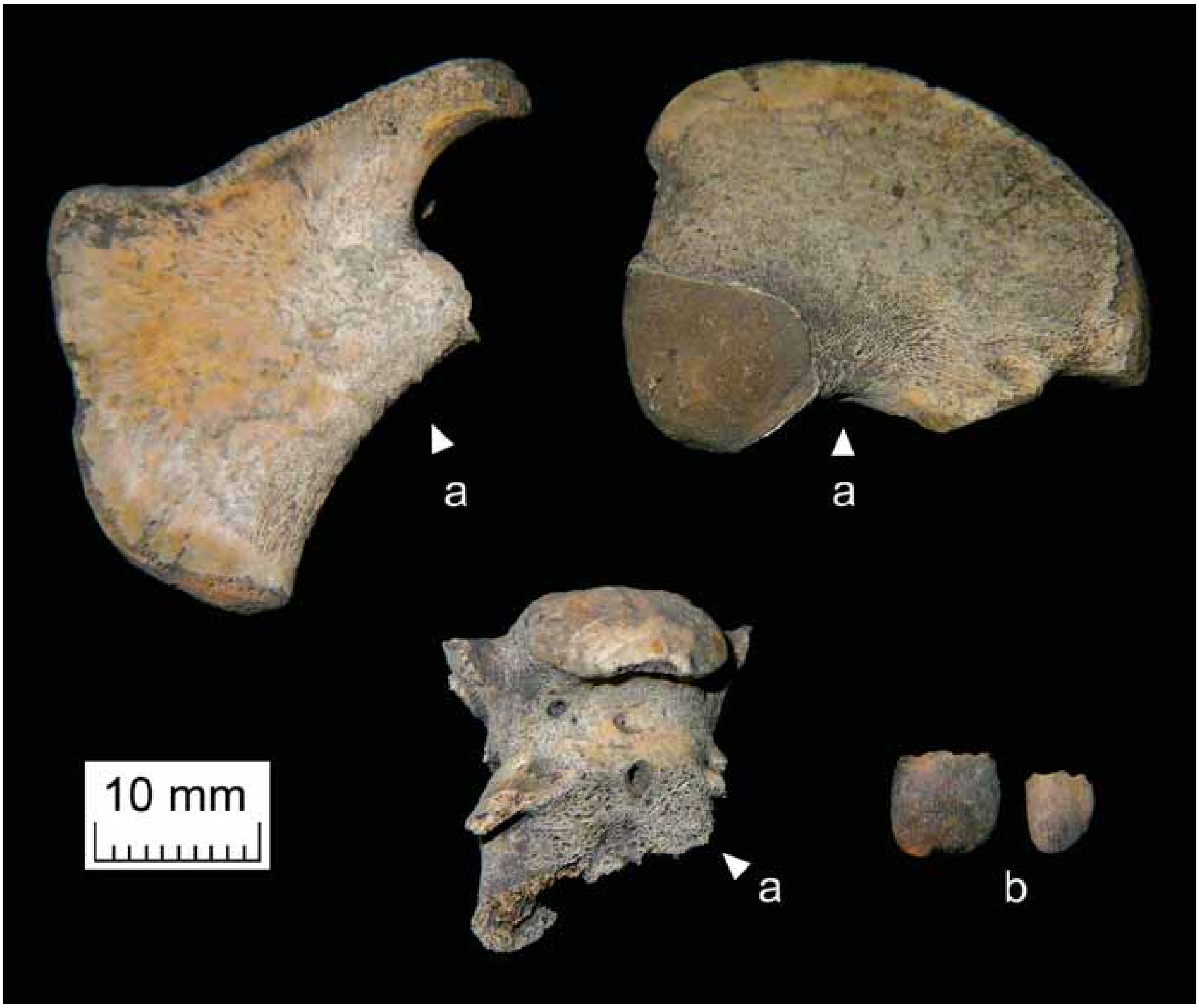


Fig. 4.60 Changes in neonatal bone: neonatal right scapula, left ilium, skull base (sphenoid) fragment and left maxillary incisors showing a) poor mineralisation of most recent bone deposits, and, b) enamel hypoplasia (context 218107)

is 82.4% of mid-Romano-British and 29.2% of all Romano-British vertebrae. The single case of extra-spinal osteoarthritis was in a wrist (ulna), giving a rate of 11.1% of mid-Romano-British and 0.5% of all Romano-British extra-spinal joints.

Osteophytes (marginal bony growths) may be associated with a number of disease processes or age-related changes (Rogers and Waldron 1995, 25–6). Lesions were recorded on the body surface margins of eight (88.9%) mid-Romano-British and one (5.9%) late Romano-British vertebrae. Lone lesions were observed in 10 late Romano-British extra-spinal joints from two males and a female. The overall rates are 5.1% of late Romano-British joints and 4.7% of all Romano-British joints. Though the lower limb appears most commonly affected, only the wrists (pisiforms) and a temporo-mandibular joint of the adult male 304515 have osteophytes.

Lone pitting was observed in three mid-Romano-British (15.8% mid- and 1.4% all Romano-British) and two late Romano-British (1.0% late and 0.9% all Romano-British) extra-spinal joints. In the earlier material three joints were affected (elderly male 302808), whilst later Romano-British female 301264 has pitting in two joints (Table 4.1).

Miscellaneous

Enthesophytes (bony growths) and cortical defects (deep surface imperfections) at the muscle attachment sites – can be an indication of strenuous repeated physical activity, though advancing age and some disease process, as well as a natural predisposition to hyperostosis, may be involved. Defects in the joint surfaces are generally of morphological origin.

Slight *hyperostosis frontalis interna*, normally associated with older females, was observed in the remains of the mid-Romano-British female from waterhole 218519. The condition is thought to be linked to a pituitary disorder, and in modern clinical studies it is seen in only *c.* 10% of women under 30 years of age (Aufderheide and Rodriguez 1998, 419).

Pitting in the exocranial surface of the occipital and parietal bones is likely to be the result of hypervascularity caused by irritation of the scalp, eg, scratching due to lice infestation or various itch-causing scalp conditions. Lesions were noted in one Late Iron Age/early Romano-British adult (301930, grave 301936).

Concluding remark

The data suggest that those burying their dead in these locations at *Margidunum* Hinterland, if they survived early childhood, enjoyed a relatively healthy lifestyle comparable to that enjoyed by many similarly situated (rural/semi-rural) Romano-British populations, without excessive stress or extreme physical exertion.

Cremated Human Bone

by Jacqueline I. McKinley

Introduction

Cremated human bone from three contexts relating to two graves was subject to analysis. The remains, representing those of unurned burials with redeposited pyre debris, derived from two adjacent features (graves 302289 and 302291), *c.* 0.5 m apart, situated to the north of the late Romano-British double ditches 218559/218560 in DE3001 (Fig. 4.30). In the absence of any dating evidence a sample of cremated bone from one of the deposits (302288, grave 302289) was submitted for radiocarbon analysis and returned a date of *cal AD 140–330 (at 95% probability)* (SUERC-39054; 1780±30 BP) (see Table 4.47).

Methodology

The fills of both graves (fills 302288, 302339 and 302290) were excavated in quadrants to enable the formation processes of the deposits to be analysed in greater detail in post-excavation. These context subdivisions were maintained throughout the osteological analysis, the overall results for each context being presented in the Grave Catalogue (above). The osteological methodology is presented in Chapter 5 (Saxondale) to which the reader is referred.

Results and discussion

Taphonomy

The surviving depths of the features were 0.11 m and 0.25 m. In both cases, however, all the archaeological components (cremated bone and redeposited pyre debris in the form of fuel ash and fired earth) were evident at surface level, demonstrating the deposits had been subject to an unknown level of truncation. In the case of grave 303289, most of the burnt material appears to have lain in the surviving upper 0.05 m of the cut. Consequently, an unspecified quantity of bone is likely to have been lost from both deposits.

Some of the bone is slightly worn and chalky in appearance, particularly that which is less well oxidised (see below). Although some trabecular bone (subject to preferential loss in acidic soil conditions; McKinley 2004a, 285; Nielsen-Marsh *et al.* 2000) was recovered from both deposits, the proportion is not substantial and it is probable that some will have been lost due to post-depositional degradation and disintegration (including during excavation). Small quantities of a calcium-based precipitate was recovered from both features (maximum 13.6 g, grave 302289) suggesting the free drainage of the contexts may occasionally have been inhibited which could have contributed to the condition of the bone. The features lay at the southern edge of an area subject to periodic flooding since the early prehistoric period and the local springs are noted for their high calcium content (Chapter 3).

Demography

The remains represent those of two mature adults, one probably female (grave 302289) and one male (grave 302291). Their singular location and proximity to each other suggests that, if not dug at the same time, the graves contained individuals who were probably close contemporaries, and that the location of the earlier grave was marked allowing the second burial to be consciously made adjacent to it. Given the age and sex of the individuals there is the inevitable intimation that they were closely related.

Pathology

Pathological lesions were observed in the remains of the adult male. The rare recovery of shattered fragments of tooth enamel enabled the observation of two faint lines of dental hypoplasia in one canine crown. The predominant causes of dental hypoplasia, represented by developmental defects in the tooth enamel formed in response to growth arrest in the immature individual, are believed to include periods of illness or nutritional stress (Hillson 1979). The location of the lines indicates the individual was adversely affected between the ages of *c.* 5–6 yr.

The nature of the second lesion is inconclusive. The relatively large left zygomatic arch (lateral cheek area) has a 4.3 mm linear lesion, lying midway along the arch in the superior-lateral aspect (Fig. 4.61). There is recent damage to the edges of the lesion but the dorsal edge appears very slightly sharper than the anterior, and there is a polished, largely U-shaped base to the feature. Although not conclusive, this appears to represent a peri-mortem cut, made almost vertical across the bone but with a very slight dorsal angulation in the superior aspect. This bone lies close to the surface and the cut, if such it is, could have been made by a right-handed assailant slashing down across the man's face from in front. There is little or no sign of healing, suggesting the possibility of a violent end to this man's life.

Pyre technology and mortuary rite

Although the majority of the bone is white in colour, indicating a high level of oxidation (Holden *et al.* 1995a

Fig. 4.61 Peri-mortem cut observed on cremated human bone from grave 302291

and b), some colour variations reflecting incomplete oxidation (*ibid.*) were observed in a few bone fragments from grave 302289 and in a substantial proportion of the bone from grave 302291. Discrepancies of varying frequency and degree were recorded in one or more fragments of numerous skeletal elements, but an entire element was never affected. In the case of the adult female, a few elements from all four skeletal areas are involved, the skull vault and larger long bones being most commonly affected (blue/grey colouration). One cervical vertebra is largely unburnt. The adult male was more substantially affected, some parts of most elements from all across the skeleton showing blue/grey and occasionally black (charred: upper limb elements only) coloration.

The pattern of involvement in both cases suggests a general shortfall resulting either from insufficient fuel used in pyre construction, thereby restricting the length of time for cremation, or the influence of some other mechanisms which would have curtailed the process (eg, the use of damp wood or a downpour during cremation). The predominant involvement of the female's skull may suggest it was placed too close to the pyre's periphery, which would be cooler than a more central location (possibly poor placement on the pyre or a short pyre), or that she wore some form of head-covering which 'muffled' the head from the heat for part of the process. The relatively regular employment of a fuel supply inadequate to successfully undertake the full oxidation of the remains of robust adult males was implicated in a survey of levels of oxidation within Romano-British cremation burials undertaken by the writer (McKinley 2008b, table 2). It was postulated that a pyre of customary size was generally constructed with insufficient adjustment made to allow for the size of the deceased.

The maximum weight of bone recovered (from grave 302291) represents *c.* 41.1% of that expected from an average adult cremation (McKinley 1993a), and falls within the median–upper range of average weights from undisturbed adult cremation burials of this date (McKinley 2004b, table 6.5). The clearly truncated status of both burials from *Margidunum*, with the implicated loss of bone, precludes further comparisons and comment.

The majority of the bone from grave 302291 was recovered from the 10 mm sieve fraction (*c.* 49%), while in the case of grave 302289 most was in the 5 mm fraction (*c.* 52%) with only *c.* 30% in the 10 mm. There was a similar disparity in the size of the maximum bone fragments at 53 mm and 42 mm, respectively. Cremated bone is very brittle, and repeated manipulation and disturbance of deposits inevitably increases fragmentation, breakage occurring along the dehydration fissures formed in cremation. In this instance there had clearly been truncation of these relatively shallow surviving deposits and the burial environment, with its implied tendency to waterlogging, may have been a factor in increasing the levels of post-depositional fragmentation. There is no evidence to indicate deliberate post-cremation fragmentation of the bone prior to burial.

Most cremation burials of any period will include fragments of elements from all four skeletal areas (skull, axial skeleton, upper and lower limb). The identifiable proportions from each are often skewed from what may be referred to as a 'normal' distribution due to the ease with which even very small fragments of skull may be recognised and the taphonomic loss of trabecular bone reducing the proportion of the axial skeleton (mostly trabecular) identified (McKinley 1994a, 6). The proportion (by weight) of the bone identifiable to individual skeletal elements from the graves is around average at 38–45%. All areas of the skeleton are represented in both cases but there is the commonly observed paucity of axial skeleton (*c.* 4–8%), with an over-representation of skull and, to a lesser extent, lower limb elements. There is no evidence to suggest deliberate selection of specific skeletal elements for deposition.

Tooth roots and the small bones of the hands and feet are commonly recovered from the remains of cremation burials of all periods, and the writer believes their frequency of occurrence may provide some indication of the manner in which bone was collected from the pyre site for burial (McKinley 2000a; 2004b, 299–301). Some of these elements (6–18 hand/foot bones, 13 tooth crowns/roots) were identified amongst the remains from each grave, the recovery of a relatively substantial amount of shattered tooth enamel being particularly noteworthy (the mineral tooth enamel shatters as it expands in the heat of the pyre and is rarely recognisable/recovered in archaeological burial contexts). These observations suggest that the bone may have been recovered from the pyre site by *en masse* raking-off and winnowing (rather than hand-picking of individual bones), thereby enhancing the recovery of elements of all sizes rather than creating a bias towards the collection of larger ones.

The presence of redeposited pyre debris within grave fills (generally deposited over/around the materials representing the formal 'burial') is a common feature of the rite within the Romano-British period (McKinley 2004b, 304–306; 2000b; forthcoming a). Since the same archaeological components may be found in a variety of cremation-related deposits, the relative distribution of the materials (frequently not apparent at time of excavation) is often key to understanding the formation process and interpretation of the deposit type. The quadranted excavation of the grave fills at *Margidunum* allowed the distribution of the cremated bone within the fills to be monitored. In both cases the bone was concentrated in the south-east quadrants (*c.* 35–39%), with a disproportionate quantity in the southern half of grave 302289 and the eastern half of 302291; in at least the latter case there was particularly common fuel ash in the north-west quadrant.

Concluding remark

Late Romano-British cremation burials have been found in some large urban cemeteries and growing numbers are now coming to light in rural settings (Birbeck and Moore 2004; Egging Dinwiddy and Bradley 2011; Burleigh and Fitzpatrick-Matthews 2010; Lovell 2005; McKinley 2003; Molleson 1993, 30). Their occurrence is most frequent, however, in the cemeteries of the northern frontier forts (Cool 2004). This, it is believed, may be linked to the place of origin of those using these cemeteries; cremation remaining the predominant rite amongst the northern Germanic peoples, particularly in the Saxon coastlands around the Elbe and Weser basins (Todd 1980, 147–51; Topal 1981, 75). The military in Britain are known to have included non-native personnel (Jarrett 1994) and the link between the persistence of the cremation rite in such a confined area of Britain and the northern, particularly Saxon, Germanic regions is probably significant (Cool 2004; McKinley 2004b). The date of the two burials from *Margidunum* Hinterland is not, however, conclusively late and they may have been made as early as AD 130. Cremation burials recorded to the mid-Romano-British period are equally if not more scarce; though, again, the numbers are on the increase (eg, a large proportion of the Romano-British cremation burials from the East Kent Access Road have been dated to this phase by radiocarbon analysis: Barclay forthcoming). Growing numbers of such burials would signal the retention of the cremation rite by at least parts of a population in areas previously believed to have abandoned it in favour of the more popular ('fashionable'?) inhumation rite.

Scheme-wide Romano-British Pottery Fabric Descriptions

by E.R. McSloy

A common system of coding was used for Romano-British pottery types across all sites along the road scheme, and brief descriptions are presented below. Where possible, fabric codes of the national fabric reference collection (Tomber and Dore 1998) are used. Those in *italics* are non-local.

A pragmatic approach has been taken with the recording of pottery coarsewares, which has been done primarily macroscopically or with the use of a hand lens at x3 magnification. Descriptions reflect broad divisions made according to main inclusion type and/or characteristics of firing; an attempt has also been made to separate local/unsourced types from regional and other imports. It is accepted that separation of types primarily by macroscopic examination can never satisfactorily encompass all valid distinctions or permit attribution to known kiln sources. However, a programme of thin-section or chemical analysis of a scale sufficient to examine the source for the major coarseware types was not considered appropriate for the assemblage considered here.

Early quartz-tempered wares

Such fabrics are largely confined to Late Iron Age/early Romano-British deposits at *Margidunum* Hinterland and are representative of an early wheel-thrown tradition with 'Belgic'/Aylesford/Swarling associations.

BS1 Medium/coarse sandy. Dark grey to black throughout. Common ill-sorted medium/coarse quartz. May also include sparse grog/argillaceous and/or sparse calcareous inclusions.

BS2 Medium/coarse sandy with shell and flint. Dark grey to black throughout. As BS1 but with common to sparse medium/coarse fossil shell and sparse (unburnt) flint.

BS3 Medium/coarse sandy with limestone and fossil shell. Dark grey to black throughout. As BS1 but with sparse subrounded limestone and medium/coarse fossil shell.

Sandy reduced wares

Greywares make up the largest element among all of the principal Romano-British site groups. Types GW1, 6 and 10 make up the large majority among the major assemblages from *Margidunum* Hinterland and Saxondale. The majority of defined types describe variations among locally derived material and are representative of production in the Trent Valley, including the known kilns at Newton on Trent, Torksey, Knaith and Lea (Field and Palmer-Brown 1991). Greyware sherd samples from the Lea and Little London kilns were examined as part of the analysis and there are similarities of firing/hardness and inclusion sorting/morphology common in greyware type GW1.

On the basis of dated groups from *Margidunum* Hinterland and elsewhere it is apparent that the local type greywares extend across the mid-/later 1st into the

4th centuries. The later Romano-British 'East Midlands burnished wares' as described by Todd (1968b) are not apparent within a single defined type. Similarly, though late forms or styles of decoration occur at *Margidunum* Hinterland which compare with 4th-century dated kiln groups from Swanpool (Webster 1947), these occur across fabric types and cannot be directly associated with this source.

Local/unsourced

GW1 'Standard' medium sandy greyware. Mid-/darker grey throughout. Common to abundant rounded/subrounded quartz. Hard, with sandy feel.

GW2 Fine, soft and sparsely sandy. Pale grey or buff-coloured exterior surfaces and darker grey core. Soft with slightly sandy feel. Sparse subrounded quartz and sparse organic content.

GW3 'Open' textured medium/coarser sandy greyware with harsh feel. Mid- or pale grey throughout or with darker surfaces. Soft, with common subrounded quartz and some organic inclusions as voids. Commonly with surface loss.

GW4 Coarser quartz-tempered greyware: as GW3 with sparse larger quartz/quartzite (1–2 mm).

GW5 Medium/coarser sandy greyware with sparse flint. Dark grey surfaces with buff-coloured margins. Hard with sparse or common granule-sized quartz/quartzite (1–2 mm) and sparse flint up to 4 mm.

GW6 Medium/fine greyware. Light to mid-/bluish-grey throughout. Tends to denser texture and more even firing compared to 'standard' type GW1 and can have smooth surfaces. Hard, with sparse or common rounded/subrounded quartz.

GW7 Coarse sandy with common detrital flint, 1–3 mm. Grey-brown throughout, harsh feel; abundant rounded/subrounded quartz and common sub-angular (unburnt) grey or brown flint.

GW8 Medium sandy with buff/orange core. Common or sparse fine subrounded quartz. Soft fabric, typically with surfaces fully eroded to reveal a buff/orange core. Dark grey surfaces where present.

GW9 Greyware with sandstone. Medium grey throughout. Sandy feel with common subrounded quartz and sparse fine sandstone inclusions.

GW10 Black sandy. Dark grey throughout or with lighter grey core. Sandy feel with common subrounded quartz. A similar fabric was produced at Little London (Leary, pers. comm.).

GW11 Coarse, gritty grey. Mid-grey throughout with abundant coarser rounded/subrounded quartz.

GW12 Fine greyware including 'Parisian' ware (Elsdon 1982). Mid- or darker grey throughout and may have darker exterior slip. Soft, with smooth feel. Sparse fine quartz and sparse organic inclusions.

GW13 Medium/fine greyware with dark grey exterior surface. Hard, with sandy feel. Common to abundant rounded/subrounded quartz.

GW14 Dark blue grey sandy greyware. Dark blue-grey exterior surface. Hard, with sandy feel. Common to abundant rounded/subrounded quartz.

GW15 Medium/fine greyware with pale grey margins. Medium grey surfaces and core with pale grey margins. Hard, with smooth or slightly sandy feel. Common to abundant rounded/subrounded quartz.

GW16 Light grey fine greyware. Light grey throughout or with darker core. Hard, with smooth feel. Sparse rounded/subrounded quartz.

GW17 Coarse black sandy/Black-burnished imitations. Dark grey-brown throughout. Hard, with slightly sandy or smooth feel where burnished. Coarse subrounded quartz and sparse grog or argillaceous inclusions. Occurs as BB1-derived bowl and dish forms.

GW18 Coarse black sandy/Black-burnished imitations with mudstone inclusions. This may be a variant of GW17, distinguished by common to sparse subrounded mudstone inclusions up to 3 mm and sometimes protruding from sherd surfaces. Occurs as BB1-derived bowl and dish forms from *Margidunum* Hinterland DE3006.

GW19 Reduced sandy with sparse grog or clay pellet. Dark grey with brown margins. Hard with sandy or harsh feel. Common or abundant medium sub-angular quartz; sparse and poorly sorted, subrounded grog or argillaceous material (this type was recorded only at Moor Lane).

Regional types

Distinctively pale-bodied products of the Nene Valley are sparsely represented from Saxondale and *Margidunum* Hinterland, principally from 2nd or earlier 3rd-century groups. Upper Nene type wares are known to be produced in the area close to Northampton, including kiln sites close to Ecton, Northants (Johnston 1969). The type would seem to be moderately well-represented at Leicester (Pollard 1994, 114).

Black-burnished ware, all it seems products of the south-east Dorset industry, occurs in modest quantities, *c.* 2% of sherd count total, at *Margidunum* Hinterland, primarily from early–mid-Romano-British deposits. Derbyshire ware (DER CO) is here grouped with the reduced types, although the majority of sherds from Saxondale and *Margidunum* Hinterland are fired to a patchy buff/orange. The type is moderately rare, with most stratified material present in early–mid-Romano-British deposits at *Margidunum* Hinterland.

UNV GW Upper Nene Valley type greywares. Smooth, mid- or darker grey surfaces and pale grey core. This fabric exhibits characteristics of greywares. The type is relatively common at Leicester (Pollard 1994, 114) and production appears to span the late 1st–3rd centuries (McSloy forthcoming).

LNV GW Upper Nene Valley type greywares. Smooth, mid-grey surfaces and pale grey or white core (Perrin 1996, 116–9).

DOR BB1 Dorset Black-burnished wares (Tomber and Dore 1998, 127).

DER CO Derbyshire ware: distinctive hard-fired 'pimply' fabric (Tomber and Dore 1998, 125)

Grogged/clay pellet

Types GRT1 and GRT5–7 are softer, less evenly fired fabrics representative of early grogged wares, seemingly precursive to the 'Trent Valley' series described below. Such types are confined mainly to Late Iron Age/early Romano-British deposits at *Margidunum* Hinterland. They may overlap with the early sandy wares (BS1–3), which can contain sparse quantities of grog and other inclusions. Fabric GRT9 contains very little grog or other coarse inclusions. The type compares to early/mid-1st century fine grogged fabrics from Leicester (Pollard 1994, 114), but also to silty wares from Leicester and also further south (Woods and Hastings 1984). As such they may be a regional import.

Harder grogged types GTA2–4 belong to a similar local tradition, more or less corresponding with Todd's 'Trent Valley wares' with reference to material from *Margidunum* (Todd 1968a; 1969). Type GTA2 is closest to Todd's wares, which he considered a mid-/later 1st century type. Continuation, at least into the mid-/later 2nd century is evidenced from dated groups at Saxondale and *Margidunum* Hinterland. Types GTA3/4, which can be harder fired and close to greyware types, are probably a later development. It is likely that the clay pellet inclusions which are a feature of the developed types are naturally present in the potting clays and were perhaps selected for this quality.

Oxidised grogged type GTA8 is moderately common at *Margidunum* Hinterland, mainly from mid-Romano-British deposits. It is distinct from the regional import PNK GT and may be a late expression of the developed grog-tempered/'Trent Valley' series and of local manufacture. Type PNK GT is sporadically present at *Margidunum* Hinterland from late Romano-British and unphased deposits. The type is common from the Towcester/Milton Keynes area and kilns making this type are known from Stow, Bucks (Booth 1999).

GTA1 Soft grogged type. Dark grey throughout or with patchy grey-brown surfaces. Soft with soapy or slightly sandy feel. Common self-coloured, angular grog, typically in range 1–2 mm.

GTA2 Grogged greyware. Medium or darker grey throughout, occasionally with red margins. Hard, with sandy feel. Common grey-coloured grog; sparse medium/coarse quartz and sparse organic inclusions.

GTA3 Coarse grey sandy with clay pellet. Pale to mid-grey throughout. Hard with sandy or harsh feel. Common rounded or subrounded, typically buff-coloured, clay pellet. May also contain sparse red-brown iron oxide, flint and quartzite.

GTA4 Coarse, darker-firing sandy with sparse grog or clay pellet. Dark grey with mid- or lighter grey core, sometimes with red-brown margins. Common subrounded quartz and sparse to common sub-angular grog or clay pellet.

GTA5 Soft grogged type with fossil shell and limestone. Dark grey throughout with patchy grey/brown surfaces. Soft with soapy feel. Common self-coloured, medium to coarse angular grog; common to sparse sub-angular limestone and/or shell up to 3 mm.

GTA6 Grog and quartz type with fossil shell. Dark grey throughout with patchy grey/brown surfaces. Soft with sandy feel. Common medium subrounded quartz and common to sparse self-coloured, medium to coarse angular grog; sparse fossil shell up to 2 mm.

GTA7 Fine grog and fossil shell. Dark grey-brown throughout. Soft with soapy feel. Common to sparse, fine, self-coloured angular grog; common, fine, well-sorted shell up to 1 mm.

GTA8 Hard oxidised grogged. Yellow/brown or pale orange surfaces, sometimes with grey core. Hard with smooth surfaces. Common medium-coarse, self-coloured angular grog. May contain sparse fossil shell 1–3 mm.

GTA9 'Silty wares'. Dark grey with orange-brown surfaces. Hard with smooth feel. Very fine-textured with sparse fine, dark-coloured grog and sparse fine quartz.

Regional wares

PNK GT Pink grog-tempered ware (Tomber and Dore 1998, 210).

Oxidised wares

The source(s) for all oxidised types is uncertain; there are, however, hints from some distinctive vessel forms/decoration and similarity to vessels from Northamptonshire and Leicester, that an origin for some material lies to the south. Probable Upper Nene valley Type UNV OX1 is relatively common at *Margidunum* Hinterland, in particular from mid-Romano-British groups (see discussion), and occurs with less frequency at Saxondale. Fabric OX5 is recorded only from *Margidunum* Hinterland (late Romano-British) and as a distinctive bowl (Fig. 4.65.80). The form (CAM 306) and fabric are close to vessels from Leicester (Clark 1999, fig. 71, 195). From the remainder, fabrics or forms are insufficiently distinctive for identification of origin and the Upper Nene, Derby, Leicester or Lincoln are all possibilities.

OX1 Fine oxidised, red/orange-firing. Red-orange throughout. Very soft; invariably with surfaces fully eroded. Smooth, powdery feel. Contains sparse, fine quartz.

OX2 Medium sandy oxidised. Pale orange or orange-brown throughout. Hard, with slightly sandy feel. Common subrounded quartz and sparse red iron.

OX3 Finer sandy oxidised. Orange-brown throughout or with grey core. Hard, with slightly sandy feel. Common to sparse subrounded quartz.

OX4 Fine, buff flagon fabric. Pale orange or yellow-buff throughout or with grey core. Sooth feel. Sparse fine quartz; sparse buff clay pellet and sparse voids from organics.

OX5 Buff gritty fabric. Yellow-buff throughout. Hard, with sandy/rough feel. Common coarse, rounded quartz, well sorted in range 0.3–0.5 mm. May be equivalent to Leicester type OW5 (Pollard 1994, 114).

Oxidised/white-slipped wares (flagons)

This group was recognised only from *Margidunum* Hinterland where it represents <1% of the total. It is possible that further material was unrecognised, as the result of weathering of sherd surfaces. The majority or perhaps all derive from flagons.

OWS1 Fine orange/brown sandy. Orange/brown with thin cream slip. Soft with slightly sandy feel. Abundant fine quartz and common rounded voids.

OWS1 Pale orange medium sandy. Pale orange or cream with thin white slip. Soft with slightly sandy feel. Common fine sub-angular quartz and sparse black iron oxide.

OWS1 Hard red fabric. Dark orange with grey core and good cream slip. Hard with slightly sandy feel. Common fine quartz.

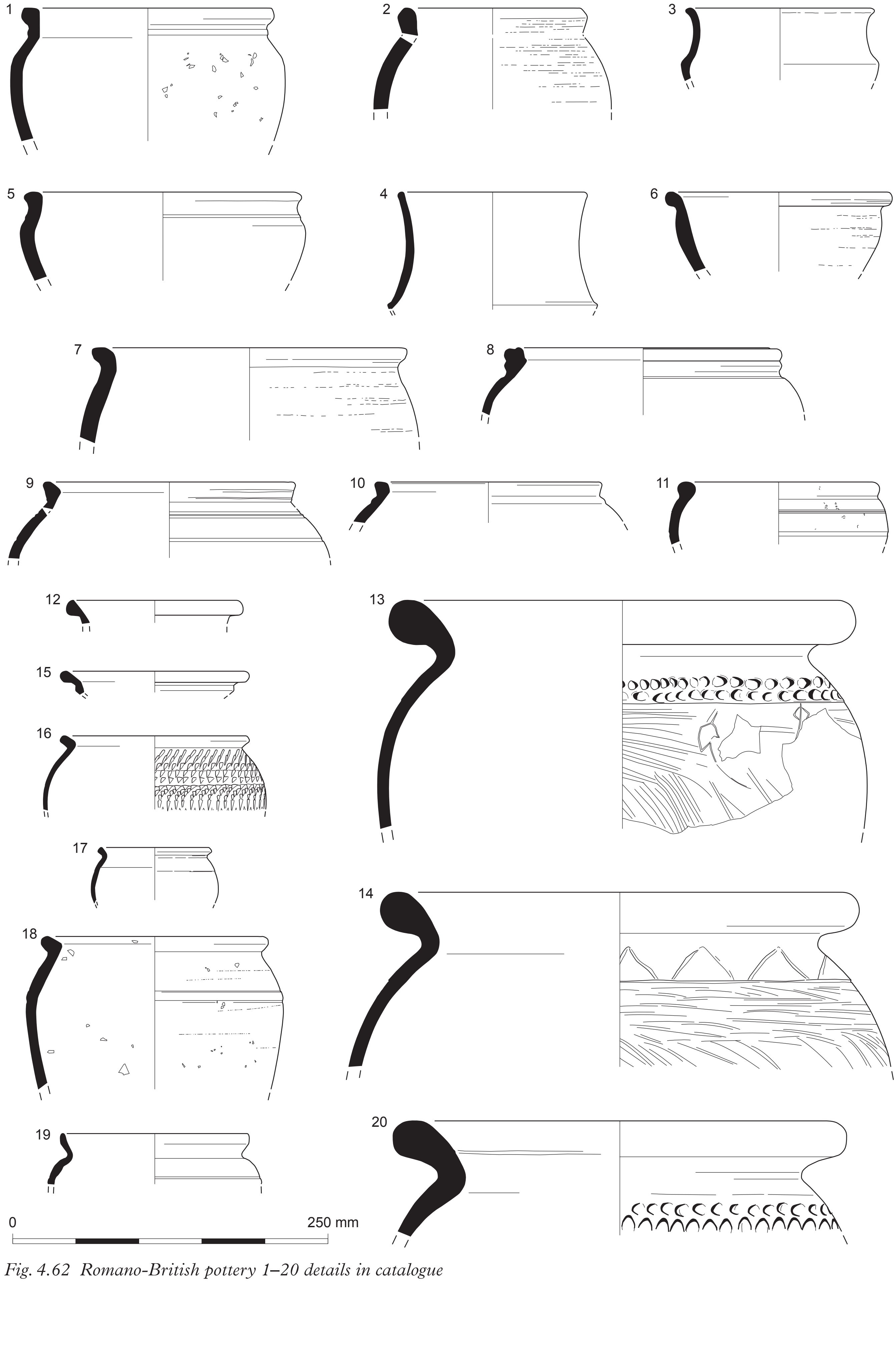


Fig. 4.62 Romano-British pottery 1–20 details in catalogue

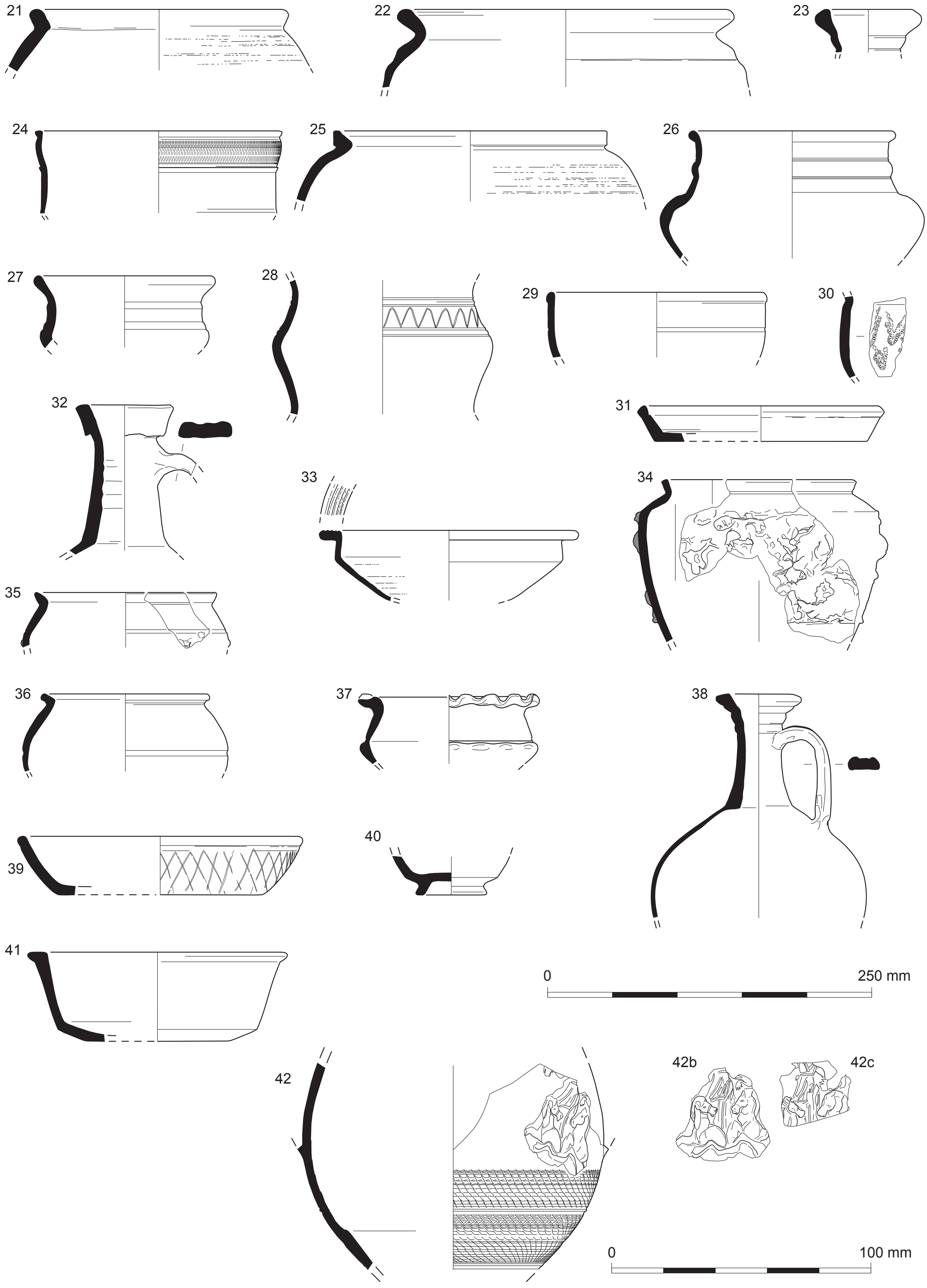


Fig. 4.63 Romano-British pottery 21–42. See catalogue for description

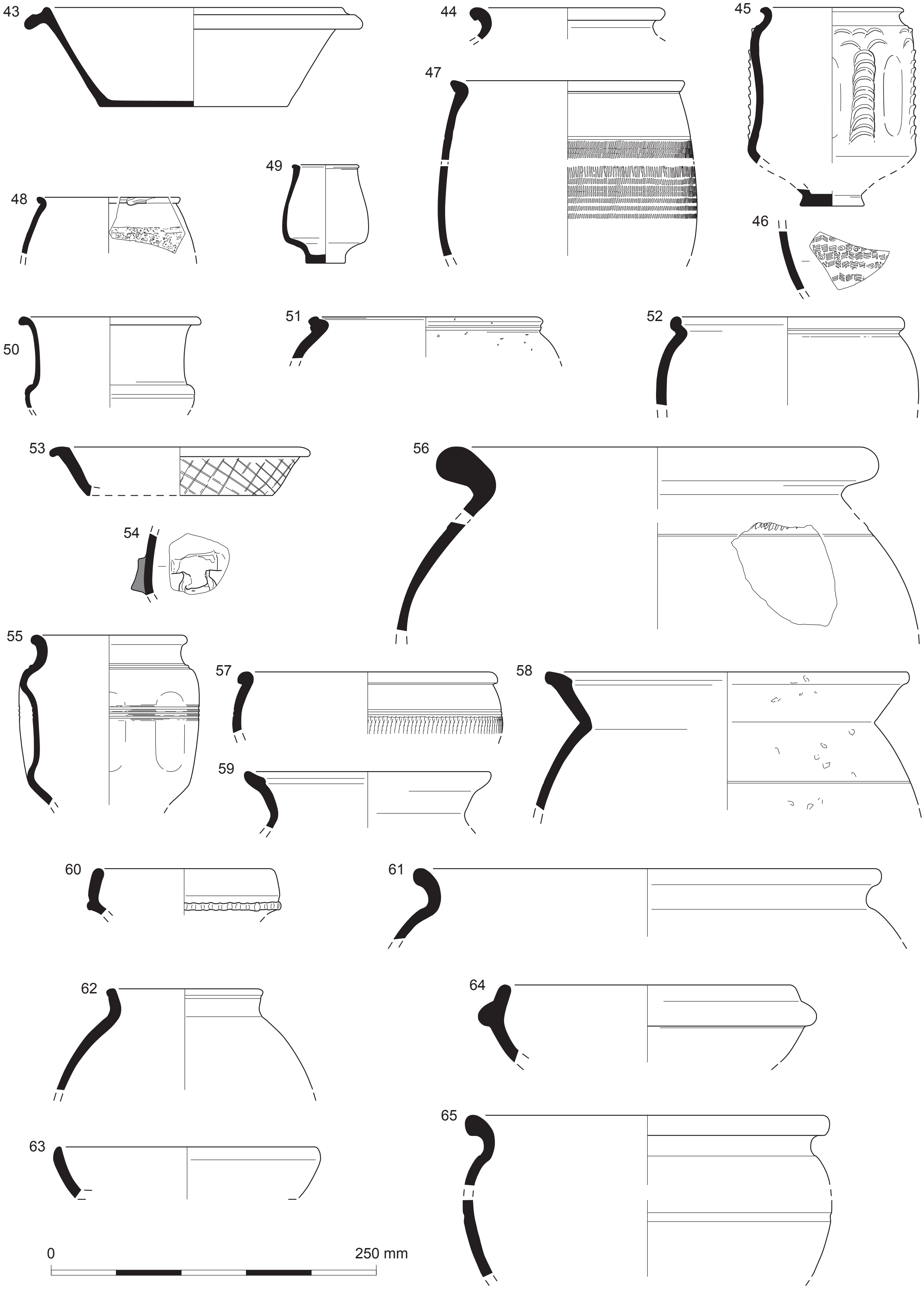


Fig. 4.64 Romano-British pottery 43–65. See catalogue for description

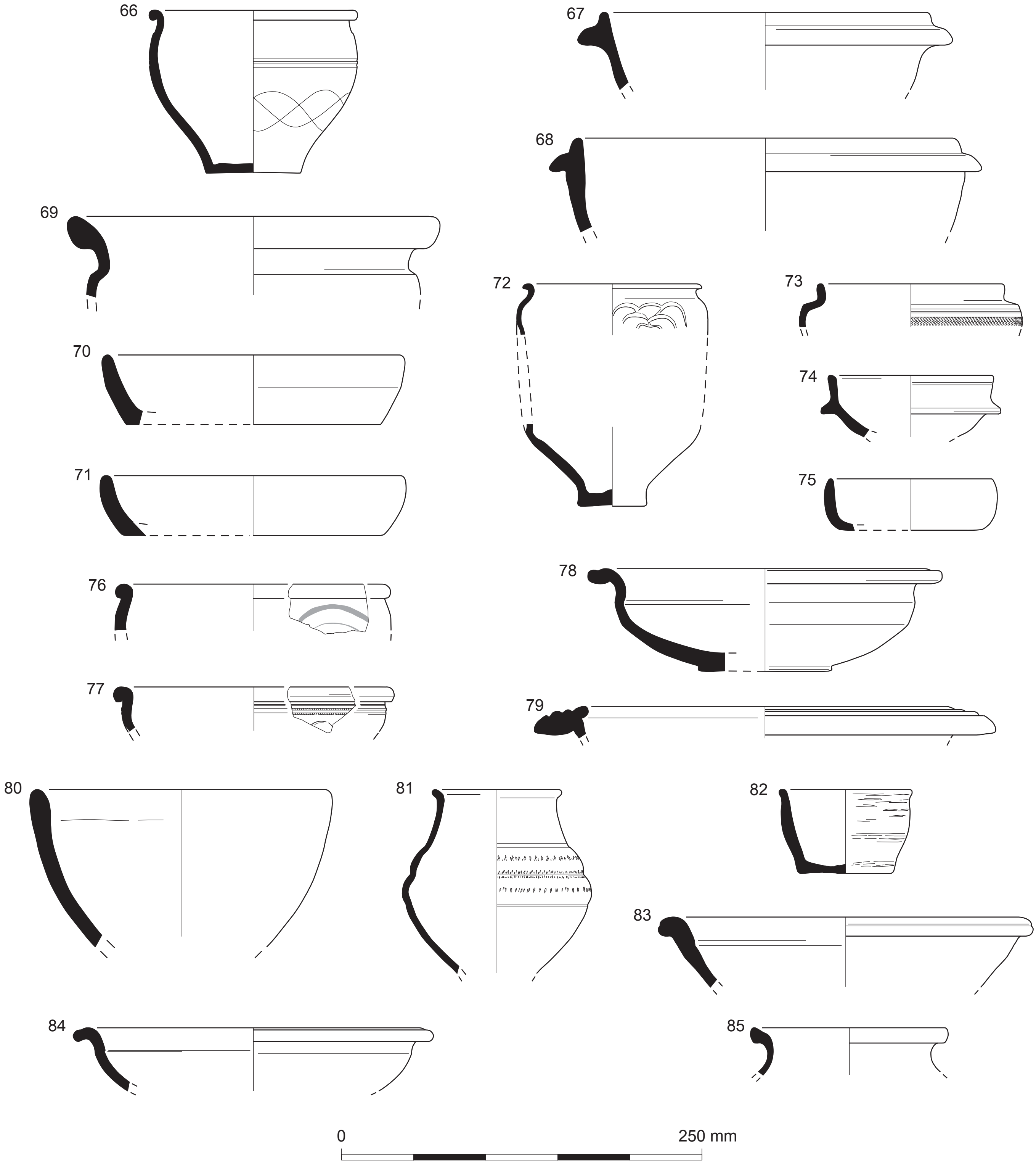


Fig. 4.65 Romano-British pottery 66–85. See catalogue for description

Regional imports?

UNV OX Pale yellow orange beakers. Hard, with smooth or slightly sandy feel. Contains sparse rounded quartz (cf. Woods 1970, 22). NB Type UNV OXrc refers to a single clay rough-cast vessel from *Margidunum* (Fig. 4.64.48).

Shell-tempered

At some sites, including Saxondale, shell inclusions survive poorly and in most instances can be inferred from plate-like vesicles. Type SH1 is a generic classification and probably encompasses material from several sources. Some of the Trent Valley kilns are known to have produced vessels in shell-tempered fabrics and a few vessels of distinctive form (Field and Palmer-Brown 1991, fig. 16, no. 38).

Coarse shelly type SH2 is common from Late Iron Age/early Romano-British deposits at *Margidunum*

Hinterland and has roots in the Late Iron Age. Origin from calcareous clays further north is suggested by the closest analogues which are among similarly dated groups from Bantycock Farm (Leary forthcoming a) and Gallows Nooking Common (Darling forthcoming), both near Newark.

The shelly wares certainly include a number of 'imported' types from sources well to the south and south-east. Among the latter are small quantities of Bourne/Greatham type BOG SH, mainly from unphased *Margidunum* Hinterland deposits. Previous analysis of shell-tempered vessels from *Margidunum* (Vince 2008) has supported a source in the Northamptonshire area. A Northamptonshire or north Bedfordshire source or sources is certainly possible for the large early Romano-British storage jars mostly in fabric SH3 (see *Margidunum* Hinterland early Romano-British discussion, below). A north Bedfordshire source can be asserted for the dist-inctively late Harrold-type shell-tempered wares which occur, if rarely, from *Margidunum* Hinterland (late Romano-British).

The most abundant non-local shelly type is Dales ware (DAL SH), the source for which is well to the north, probably the lower Trent in north Lincolnshire (Tomber and Dore 1998, 157). Dales wares are well represented among late Romano-British deposits at *Margidunum* Hinterland, and less so from Saxondale.

Local/unsourced

SH1 Medium shell-tempered. Dark grey-brown throughout or with patchy red-brown/grey-brown surfaces. Soft with smooth surfaces. Where not leached out, there are abundant, moderately sorted, fossil shell platelets in range 1–4 mm.

SH2 Coarser shell-tempered. Patchy dark grey-brown surfaces or red-brown surfaces and dark grey core. Soft with smooth surfaces. Coarse poorly sorted fossil shell in range 1–5 mm. May also contain shelly limestone lumps up to 5 mm.

SH3 Coarser shell and limestone-tempered. Typically evenly fired with pale orange or buff surfaces and mid-grey core. Soft with smooth surfaces. Medium/coarse, moderately sorted fossil shell in range 2–4 mm; shelly limestone lumps up to 3 mm.

Regional imports

BOG SH Bourne/Greatham (Lincolnshire) shell-tempered ware (Tomber and Dore 1998, 156).

DAL SH Dales shelly ware (Tomber and Dore 1998, 157).

HAR SH Harrold (Bedfordshire) shell-tempered ware (Tomber and Dore 1998, 115).

Colour-coated (and red-slipped)

Lower Nene Valley colour-coated ware is common at *Margidunum* Hinterland from mid–late Romano-British deposits (5% rising to 7%). The type is, however, rare elsewhere, including at Saxondale, and this may reflect the elevated status and/or distributory role of the *Margidunum* settlement. Sources of British colour-coated wares other than the Lower Nene include Great Casterton, Leicestershire (Tomber and Dore 1998, 169) and Swanpool, near Lincoln (*ibid.*, 163). None could be identified among the miscellaneous category sherds (CCm) and this group is probably made up mainly of untypical Lower Nene products. Oxford red-slipped ware is also present only at *Margidunum* Hinterland, where stratified sherds are confined to late Romano-British and probably to 4th-century deposits.

The continental ware types are rare in general and confined to *Margidunum* Hinterland.

Unsourced

CCm Miscellaneous/unsourced colour-coated ware. Mainly buff or yellow/grey body with few coarse inclusions. Red-brown or dark grey slip.

Regional imports

LNV CC Lower Nene Valley colour-coated ware (Tomber and Dore 1998, 118).

OXF RSm Oxford red-slipped ware (Tomber and Dore 1998, 174).

Continental wares (excluding samian: see Monteil, below)

CNG BS Central Gaulish Black-slipped (Tomber and Dore 1998, 49).

MOS BS Moselkeramik Black-slipped ware (Tomber and Dore 1998, 60).

KOL CC Cologne colour-coated ware (Tomber and Dore 1998, 57).

Whitewares

Whiteware types WH1 and WH2 probably contain elements from more than one (non-local) source, the most likely of which are Mancetter/Hartshill and Upper and Lower Nene Valley. Both types were used primarily for flagons, which are mainly ring-necked vessels (Fig. 4.63. 38), where dating can be expected to be across the late 1st and 2nd centuries.

Unsourced

WH1 Sandy whitewares. White or pale buff throughout. Hard with sandy feel. Common or sparse fine quartz.

WH2 Fine, soft whitewares. White or cream-coloured throughout. Soft with smooth feel; powdery in some burial conditions (Saxondale). Largely inclusionless or with sparse fine quartz or sparse red iron. Probably Lower Nene Valley or Midlands.

WH3 Fine buff with self-slip. Yellowish-buff throughout. Soft with smooth feel (slipped surface). Sparse fine quartz.

WH4 Fine buff. Buff/off-white with blue-grey core. Soft with smooth feel. Sparse fine quartz, voids from organic inclusions and dark brown iron oxide.

Regional imports

VRW WH *Verulamium* region whitewares (Tomber and Dore 1998, 154).

LNV WH Lower Nene valley: self-coloured/'creamwares' (Tomber and Dore 1998, 119; also Perrin 1999, 108–12).

Continental wares

NOGWH North Gaulish sandy whitewares (CAM 113 butt-beakers) (Tomber and Dore 1998, 24; Rigby 1989).

For samian ware see Monteil (below).

'Specialist wares': mortaria

By far the dominant type among the more significant site assemblages (*Margidunum* Hinterland and Saxondale) are products of the Mancetter-Hartshill industry. At *Margidunum* Hinterland mortaria of all types (including eight samian sherds) amount to 176 sherds or 1.7% of the total. A small number of *Verulamium* region vessels occur from earlier deposits at *Margidunum* Hinterland. Mancetter/Hartshill vessels account for the vast majority (147 sherds) and this source appears dominant to the exclusion of all other sources over much of the 2nd and 3rd centuries. The sparse Lower Nene and Oxford vessels present in late Romano-British contexts at *Margidunum* Hinterland and Saxondale may reflect the decline of the Midlands industry after the early to mid-4th century (Hartley 1973, 42).

LNVWHm Lower Nene valley: White/cream-firing mortaria (Tomber and Dore 1998, 119).
MAHWHm Mancetter/Hartshill: Whiteware mortaria (Tomber and Dore 1998, 189).
MAHWSm Mancetter/Hartshill: White-slipped mortaria (Tomber and Dore 1998, 190).
OXFWHm Oxford whiteware mortaria (Tomber and Dore 1998, 174; Young 1977, 56–79).
OXF RSm Oxford red-slipped ware mortaria (Tomber and Dore 1998, 174; Young 1977, 173–4).
VRWWHm *Verulamium* region whitewares (Tomber and Dore 1998, 154).
UNIDWHm This fabric coding is used for a small number (4) of sherds from *Margidunum* Hinterland in white/cream-coloured fabrics for which identification was uncertain.

Amphorae

Amphora sherds were identified only from *Margidunum* Hinterland, where they amount to 202 sherds or 1.9% of the total. The large majority comprises Baetican types associated with globular Dressel 20 forms, typically made to contain olive oil, and Gaulish flat-based wine amphora types (Gauloise 4). The small number of sherds (Table 4.6) from other types occur as unfeatured sherds. Of these, the Campanian black-sanded sherds (CAM AM) are identifiable with certainty. The Campanian sherds, together with sherds in a finer fabric with cream-coloured wash which are tentatively identified as of Cadiz type (CAD AM), derive from unphased deposits in DE3002. Sherds from an early to mid-1st century context are heavily weathered but characterised by feldspar and gold mica inclusions suggestive of a Catalan source and most likely of Dressel 2-4 form.

BAT AM2 Baetican (south Spanish) amphorae (Tomber and Dore 1998, 61–2).
CAD AM Cadiz amphorae (Tomber and Dore 1998, 87).
CAM AM Campanian black-sand amphorae (Tomber and Dore 1998, 88).
CAT AM Catalan amphorae (Tomber and Dore 1998, 88).
GAL AM Gaulish amphorae (Tomber and Dore 1998, 93–4).

Late Iron Age to Romano-British Pottery from Margidunum *Hinterland*

by E.R. McSloy (incorporating *mortarium stamps*, by Kay Hartley and s*amian*, by G. Monteil)

Romano-British coarse pottery (here defined as all Romano-British material except the samian) recorded from *Margidunum* Hinterland amounted to 9954 sherds weighing 151.3 kg (Table 4.5). The rim EVEs (estimated vessel equivalents) total, based on rim percentage values, is 125 vessels. The large bulk of the assemblage was hand-recovered, with 274 sherds (1272 g) retrieved from bulk soil samples. Quantities of unstratified Romano-British pottery which were scanned as part of the assessment (approximately 120 sherds) have been omitted from this analysis.

Table 4.5 *Margidunum* Hinterland: summary quantification of Romano-British coarse pottery by area (quantities as sherd count, weight and rim EVEs)

Area	*Count*	*Weight (g)*	*EVEs*
DE3001	2735	32513	21.12
DE3002	5162	88810	82.22
DE3003	255	5355	2.94
DE3004	1318	20703	16.59
DE3006	484	3902	2.42
Total	9954	151283	125.29

Specialist wares, comprising mortaria and amphora types, were recorded as part of the overall assemblage, although mortaria stamps are discussed in full elsewhere (see Hartley, below). The samian (688 sherds, weighing 9142 g) is described in detail separately (see Monteil, below), although consideration is given to this material as a component of the assemblage and quantities incorporated in period and selected groups (below).

The assemblage was recorded directly to an MS Access database. Quantification is by sherd count, weight and Rim EVEs per fabric/by context. The assemblage was sorted into fabrics macroscopically or with the aid of a binocular microscope at x 20 magnification. Recording of pottery form, possible in most instances only from rim sherds, is by 'generic' form class and secondarily by profile and rim morphology. Quantities for form classes or individual vessels are given in the report as EVEs totals. Evidence for vessel function in the form of carbonised or other residues was also recorded.

Provenance

Quantities from each of the detailed excavation areas are set out in Table 4.6. The greatest abundance of pottery relates to DE3002, the only intervention to the east of the Fosse Way and among the more archaeologically complex. A sizeable proportion of material from DE3002

Table 4.6 *Margidunum* Hinterland: Romano-British coarse pottery summary quantification (by sherd count, weight and rim EVEs)

Fabric group	*Fabric**	*Count*	*Weight (g)*	*EVEs*
Quartz (LIA/C1)	BS1	45	222	.67
	BS2	20	248	.12
	BS3	80	561	.40
Grog/clay pellet	GRT1	138	1095	.53
	GRT2	283	6649	3.29
	GRT3	213	6028	2.26
	GRT4	117	3096	2.46
	GRT5	293	2352	.45
	GRT6	76	1315	.73
	GRT7	14	60	.17
	GRT8	85	2842	.67
	GRT9	11	33	.07
	PNK GT	3	152	-
Shell	SH1	497	5346	3.99
	SH2	634	7570	1.66
	SH3	62	5498	1.20
	BOG SH	7	235	.57
	DAL SH	324	3473	4.41
	HER SH	12	170	.83
Sandy reduced (RB)	GW1	1539	23043	22.76
	GW1R	24	204	-
	GW2	89	326	1.17
	GW2r	11	65	-
	GW3	118	2525	1.97
	GW4	31	597	.55
	GW5	287	4433	3.57
	GW5r	2	22	-
	GW6	1158	19680	20.19
	GW6r	22	160	7
	GW8	134	1442	2.30
	GW8r	7	53	-
	GW9	1	88	-
	GW10	783	8489	9.85
	GW10r	19	306	-
	GW11	86	2872	.91
	GW11r	1	7	-
	GW12	23	199	.03
	GW13	160	2534	3.31
	GW14	81	1305	.41
	GW14r	4	44	-
	GW15	93	1354	1.93
	GW16	97	1268	1.80
	GW16r	2	7	-
	GW17	48	694	.72
	GW18	4	141	.29
	LNV GW	4	36	.04
	UNV GW	8	90	.18
	DER CO	89	1243	1.63
Black-burnished	BB1	170	1952	3.07
Oxidised	OX1	45	188	.05
	OX1rc	4	22	-
	OX2	148	932	1.04
	OX3	15	111	.38
	OX4	10	39	.14
	OX5	9	357	.41
	OX6	4	112	-
	UNV OX	246	1761	2.39
Oxidised (white-slipped)	OWS1	11	64	.05
	OWS2	2	9	-
	OWS3	6	91	-
Colour-coated/slipped	CCm	28	237	.63
	LNV CC	572	4794	8.19
	OXF RS	14	139	.17
	CNG BS†	14	62	-
	KOL CC†	1	3	-
	MOS KER†	1	1	-
Whitewares	WH1	93	764	1.80
	WH2	264	2114	1.23
	WH3	23	133	.08
	WH4	23	150	.35
	LNV CW	29	453	.80
	VRW WH	1	284	1.00
	NOG WH†	13	53	.07
Mortaria	*LNV CW*	10	423	.43
	MAH WH	147	5980	4.35
	OXF WH	1	6	-
	VRW WH	4	129	.21
	MAH WS	1	181	-
	OXF RS	1	4	-
	WHM	3	173	-
Amphorae	*AMPH†*	5	105	-
	BAT AM†	153	8345	.25
	CAD AM†	2	276	-
	CAM AM†	2	135	-
	CAT AM†	11	109	-
	GAL AM†	29	420	.12
Totals		9954	151283	125.29

KEY: * types in italics are non-local and those marked '†' are continental imports

Table 4.7 *Margidunum* Hinterland: Romano-British vessel form, quantities by phase shown as rim EVEs totals

	Late Iron Age			*Early Romano-British*				*Mid-Romano-British*				*Late Romano-British*			
Form	**CP*	*Tot.*	*%tot.*	*CP*	*Sam.*	*Tot.*	*%tot.*	*CP*	*Sam.*	*Tot.*	*%tot.*	*CP*	*Sam.*	*Tot.*	*%tot.*
Flagon	-	-	-	.35	-	0.35	*3.6*	3.29	-	3.29	*5.2*	1.34	-	1.34	*4.2*
Beaker	-	-	-	1.52	-	1.52	*15.6*	5.22	-	5.22	*8.3*	1.93	0.20	2.13	*6.7*
Cup	-	-	-	-	-	-	-	.47	3.17	3.64	*5.8*	-	0.43	0.43	*1.4*
Jar	1.79	*1.79*	*69.6*	6.14	-	6.14	*63.2*	28.46	-	28.46	*45.0*	16.71	-	16.71	*52.8*
Bowl	.78	*0.78*	*30.4*	1.31	-	1.31	*13.5*	11.36	1.23	12.59	*19.9*	8.02	0.20	8.22	*26*
Dish/platter	-	-	-	0.05	0.10	.15	*1.5*	4.43	3.50	7.93	*12.5*	2.21	0.35	2.56	*8.1*
Tazza	-	-	-	-	-	-	-	.15	-	0.15	*0.2*	-	-	-	-
Mortarium	-	-	-	-	-	-	-	1.99	-	1.99	*3.1*	1.45	0.03	1.48	*4.7*
Amphora	-	-	-	0.25	-	0.25	*2.6*	-	-	-	-	-	-	-	-
Totals	2.57	2.57		9.62	0.10	9.72		55.37	7.90	63.27		31.66	1.21	32.87	

KEY: * CP = coarse pottery; Sam. = samian

(22% by sherd count) was derived from unphased deposits comprising topsoil, cleaning layers and dumped deposits or spreads within a natural hollow.

Condition

The condition of the hand-recovered material varies; surface survival and preservation of calcareous and other inclusions can be poor, the result of burial conditions. Despite the quantities of material from unphased deposits, the DE3002 assemblage was less prone to factors affecting surface and inclusion preservation. Mean sherd weight for this area was highest at 17 g, comparing to only 12 g for the next largest group, that from DE3001.

Vessel form

A dual-level system of recording vessel form was applied across the assemblage, the coding describing vessel class (jar, bowl, dish etc) and, secondarily, details of profile and rim morphology. Where appropriate, recording of traded or specialist ware types follows previously published schema, including for Mancetter/Hartshill mortaria (Hartley in Evans 1996) and Lower Nene valley colour-coated wares (Howe *et al.* 1980; Perrin 1999).

With the samian component included, the assemblage overall is dominated by jars: 47.2% of EVEs total, and open forms (bowls and dishes/platters): 32.9%. Drinking vessels (beakers and cups) make up 10.2% of the total and flagons a further 3.6%. Mortaria make up 3.7% of EVEs total (rather more than the <2%, based on sherd count for mortaria 'fabrics') (Table 4.7). A single tazza (Fig. 4.63.37) was identified and vessel classes such as lids (primarily from 'castor boxes' in LNV CC) and strainers occur as body or base sherds. One greyware vessel (Fig. 4.64.54) appears to be a much-stylised face pot, the only such vessel from this assemblage.

Examination of generic form occurrence across the Late Iron Age and Romano-British period reveals broad trends, most obviously increasing diversity beyond the Late Iron Age (Table 4.7). Dominance of jars, a constant across Romano-British pottery assemblages of all site types, is highest in the Late Iron Age/early Romano-British period; the slight decline thereafter probably reflecting increased adoption of wide-mouthed and other utilitarian bowl classes. Jars dominate among coarse reduced wares, shelly types and grogged wares, with types such as Dales and Derbyshire wares only occurring as jars of distinctive type. Medium-mouthed forms are most common, probably reflecting the suitability of such forms for kitchen/storage related uses.

Evidence for use for cooking or heating occurs as carbonised and other residues (Table 4.8). For some types such as the grogged wares of the Trent Valley tradition and coarse shelly type SH3 there is a tendency to larger, rounded or barrel-shaped jars suited to dry storage (Fig. 4.62.13, 14 and 20). External influences are apparent among jars in reduced sandy wares common from Ceramic Phase 3 and later, which resemble Black-burnished ware cooking pots of characteristic neckless everted-rim form. The influence of this southern British type is also evident with utilitarian dish and bowl forms (below).

Bowls and other open vessel forms encompass a

Table 4.8 *Margidunum* Hinterland: Romano-British pottery, evidence for use (quantities shown as sherd count per vessel form)

Form	*External carbonised*	*Internal carbonised*	*Internal limey*
Beaker	3	2	2
Bowl	16	-	-
Dish	12	1	1
Jar	98	10	4
Indet.	103	29	138
Totals	232	42	145

wide variety of profiles reflecting differing use and the chronological development of forms as the result of external influences. The regional tradition is evident in high-necked/'shouldered' classes (Fig. 4.64.50). This form developed from carinated vessel bowls/cups with pre-conquest ancestry but surviving into the mid-/later 2nd century and current among some Trent Valley kiln groups of this period (Field and Palmer-Brown 1991, fig. 15, nos 13–16). The increase in dishes/bowls in the mid-Romano-British period is to a large extent the result of the emergence of utilitarian moulded-rim or plain dishes and bowls based on southern British Black-burnished ware series, which increasingly feature in assemblages from the earlier 2nd century AD and after.

Open forms for table or display use include samian dishes and bowls (mainly plain classes Drag. 31/31R). The numbers of such vessels in the early–mid-Romano-British period are low, with representation actually increasing in the late Romano-British period when most or all can be expected to be residual.

The influence of samian remains following cessation of imports towards the mid-3rd century, as seen most strongly among the (Lower Nene) colour-coated bowls in late Romano-British groups (below). Drinking vessels include beakers of various types and cups which are almost exclusively composed of samian vessels. Cups of form 33 were a significant feature of the mid-/later 2nd-century samian (see Monteil, below) and these account for the majority of drinking vessels from mid-Romano-British deposits. Flagons are rare throughout the assemblage; the EVEs total is certainly inflated as the result of single sherds preserving the full rim circumference. When measured as a count of attributable rim sherds, flagons make up well under <1% of the total.

In consideration of vessel forms for specialist use, only the mortaria are moderately well represented and are confined to mid–late Romano-British deposits. Strainers or vessels converted for this purpose are very rare. The single tazza (Fig. 4.63.37), a vessel class for which 'ritual' associations (use as incense burners) are claimed, came from mid-Romano-British gully 301064 in DE3001 (Fig. 4.18).

Discussion by period

The Ceramic Phasing referred to below and in the drawing catalogue groups material according to common typological and/or compositional factors. It is independent of the site's structural sequence though, as might be expected, there is considerable overlap.

Late Iron Age/early Romano-British: c. *50/25 BC–AD 40/60 (Ceramic Phase 1)*

The pottery relating to this phase represents a distinctive group, quite different from the East Midlands Middle Iron Age tradition as seen, for example, at Cropwell Wolds. Some influences are apparent from a continental-inspired Aylesford Swarling tradition, current in south-eastern Britain for a period of perhaps a century before the Claudian invasion. In its mix of handmade 'native' style vessels and wheel-thrown vessels the group compares with the assemblages from Gamston, Notts (Knight 1992, 39–64) and at Gallows Nooking Common, Notts (Darling forthcoming). A small number of continental imports are present and are evidence for activity of the 1st century AD. The evidence for continuation into the Claudian period or later is, however, equivocal and no material, the imports included, need date later than *c.* AD 40.

Most pottery from Late Iron Age/early Romano-British phased deposits (695 sherds/6.0 kg/2.57 EVEs) (Table 4.9) relates to features concentrating to the north and south of Newton Lane, principally within DE3006, but also incorporating material from DE3001 and DE3003. Most relates to rectilinear Enclosure E (ditches 218778–81) or boundary ditch 218794 (Fig. 4.8). There are no substantial context groups within this period, and those of over 30 sherds (Enclosure C ditch 218585 (Fig. 4.6), and Enclosure A gully 218761 (Fig. 4.3)) comprise bodysherds only. Similarly, few groups include multiple identifiable vessels.

Romano-British types are present as grey and oxidised wares and single sherds of Mancetter-Hartshill mortaria and Central Gaulish samian. Quantities are small (23 sherds or 3.5%) and such material is probably intrusive. The larger part of the Late Iron Age/early Romano-British group comprises shell-tempered fabrics among which the coarse type SH2 is most common (386 sherds or 60%). Grogged (GTA1/5/6/7) and coarse sandy types (BS1–3) make up the remainder. Most of the (30) sherds identifiable to form belong to jars (1.79 EVEs), and the remainder (0.78 EVEs) to carinated plain (without cordons) bowls of late La Tène type (Fig. 4.62, 3–4). A proportion of vessels are hand made, including a jar in limestone-tempered type LI (Fig. 4.62, 2), which is closer to Middle Iron Age styles. A wheel-thrown cordoned-neck jar from Enclosure A pit 302943 (Fig. 4.62.1; Fig. 4.3) is of a type which is seemingly common from Nottinghamshire (Leary 1987). The form's abundance within assemblages with no demonstrable post-conquest finds, including Bantycock Farm, near Newark, Notts (Leary forthcoming a) and Tiln, Notts (Leary forthcoming b), is seen as evidence for dating before the 40s AD. The remaining jars exhibit a significant degree of variation of rim form, with everted, groove-topped, bead, triangular and 'complex' forms recorded (Fig. 4.62.6–11). All, however, exhibit rounded-body profiles which are possibly ancestral to those of the Trent Valley ware series (below). Neck cordons occur with a vessel with triangular rim (Fig. 4.62.9–10) and a probable deep bowl (Fig. 4.62.5).

A notable element within the Late Iron Age/early Romano-British groups is the quantities of north Gaulish fine whitewares NOG WH (ditches 306786 and 218794) and bodysherds of an amphora, probably of Dr 2–4 type (Enclosure E ditch 218778) (Fig. 4.8). Further sherds of type NOG WH occur residually (Fig. 4.62.12), making a total of 12 sherds from DE3006. All are sherds from CAM 113 butt-beakers, the dating for which is conventionally seen as Tiberian to Claudian (*c.* AD 14–54), but with a high likelihood of a pre-conquest date (Rigby 1989, 137).

Table 4.9 *Margidunum* Hinterland: Romano-British pottery totals by fabric, quantities as sherd count and EVEs for Ceramic Phases 1–4

Period>		*LIA/ERB*		*ERB*		*MRB*		*LRB*	
Fabric group	*Fabric**	*Ct.*	*EVE*	*Ct.*	*EVE*	*Ct.*	*EVE*	*Ct.*	*EVE*
Quartz (LIA/C1)	BS1	14	0.05	8	0.12	14	0.42	6	0.03
	BS2	13	-	2	0.12	-	-	4	-
	BS3	35	0.40	22	-	3	-	17	-
Grog/clay pellet	GRT1	41	-	40	0.39	28	0.12	9	-
	GRT2	-	-	57	0.56	170	2.23	21	0.22
	GRT3	-	-	33	0.92	114	1.06	27	0.03
	GRT4	-	-	11	0.35	58	1.57	14	-
	GRT5	55	0.09	18	0.03	6	0.03	204	0.15
	GRT6	38	0.16	8	0.14	2	0.12	24	0.31
	GRT7	12	0.10	1	0.07	-	-	-	-
	GRT8	-	-	16	-	46	0.67	12	-
	GRT9	-	-	10	0.07	-	-	-	-
	PNK GT	-	-	-	-	1	-	1	-
Shell	SH1	57	0.29	143	1.33	126	1.51	86	0.34
	SH2	386	1.15	120	0.14	18	0.15	91	0.18
	SH3	1	-	37	0.60	10	0.33	6	0.19
	BOG SH	-	-	-	-	5	0.32	-	-
	DAL SH	-	-	5	0.14	29	1.10	245	2.63
	HER SH	-	-	-	-	2	0.49	8	0.11
Sandy reduced (RB)	GW1	1	-	60	1.15	613	12.66	542	5.12
	GW1R	-	-	-	-	20	-	4	0
	GW2	-	-	74	0.93	4	0.13	9	0
	GW2r	-	-	9	-	1	-	1	0
	GW3	-	-	16	-	24	0.27	74	1.70
	GW4	-	-	4	0.17	11	0.13	8	0.03
	GW5	9	0.11	22	0.05	117	1.51	73	0.43
	GW5r	-	-	1	-	1	-	-	-
	GW6	1	0.07	26	0.39	466	6.71	419	8.41
	GW6r	-	-	1	-	17	0.07	2	-
	GW8	1	-	14	0.36	53	1.01	37	0.25
	GW8r	-	-	5	-	1	-	1	-
	GW9	-	-	-	-	-	-	1	-
	GW10	4	0.15	104	0.55	323	4.02	221	2.49
	GW10r	-	-	2	-	15	-	-	-
	GW11	-	-	-	-	56	0.70	19	-
	GW11r	-	-	1	-	-	-	-	-
	GW12	-	-	2	-	14	0.03	5	-
	GW13	-	-	7	0.05	73	2.15	52	0.55
	GW14	1	-	2	-	32	-	28	0.41
	GW14r	-	-	-	-	4	-	-	-
	GW15	-	-	3	-	40	0.99	10	0.32
	GW16	-	-	5	-	26	0.39	24	0.18
	GW16r	-	-	-	-	2	-	-	-
	GW17	-	-	-	-	30	0.41	5	0.06
	GW18	-	-	-	-	-	-	4	0.29

Table 4.9 (cont.) *Margidunum* Hinterland: Romano-British pottery totals by fabric, quantities as sherd count and EVEs for Ceramic Phases 1–4

Period>		*LIA/ERB*		*ERB*		*MRB*		*LRB*	
Fabric group	*Fabric**	*Ct.*	*EVE*	*Ct.*	*EVE*	*Ct.*	*EVE*	*Ct.*	*EVE*
	LNV GW	-	-	-	-	2	-	1	0.04
	UNV GW	-	-	-	-	7	0.18	1	-
	DER CO	-	-	1	-	58	1.14	8	0.25
Black-burnished	*DOR BB1*	-	-			63	1.38	59	0.51
Oxidised	OX1	1	-	10	-	12	0.05	13	-
	OX1rc	-	-	-	-	1	-	-	-
	OX2	3	-	32	0.16	41	0.62	31	0.06
	OX3	-	-	4	-	4	0.24	4	-
	OX4	-	-	-	-	10	0.14	-	-
	OX5	-	-	1	0.06	4	-	4	0.35
	OX6	-	-	-	-	4	-	-	-
	UNV OX	-	-	11	0.10	139	1.41	38	0.04
Oxidised (white-slipped)	OWS1	-	-	4	-	4	0.05	2	-
	OWS3	-	-	3	-	2	-	1	-
Colour-coated/slipped	CCm	-	-	1	-	10	0.29	4	0.10
	CCmm	-	-	-	-	3	0.07	-	-
	CNG BS†	-	-	-	-	13	-	-	-
	KOL CC†	-	-	-	-	1	-	-	-
	LNV CC	-	-	9	-	200	3.03	208	3.51
	MOS KER†	-	-	-	-	1	-	-	-
	OXF RS	-	-	-	-	3	-	4	0.17
Whitewares	LNV CW	-	-	-	-	1	0.07	24	0.26
	NOG WH†	9	-	1	0.07	2	-	-	-
	VRW WH	-	-	-	-	-	-	-	-
	WH1	-	-	15	0.35	56	1.30	11	0.10
	WH2	-	-	19	-	153	0.68	39	0.39
	WH3	-	-	3	-	17	0.08	2	-
	WH4	-	-	-	-	18	0.35	4	-
Mortaria	*LNV CW*	-	-	-	-	2	0.05	5	0.20
	MAH WH	1	-	3	-	61	1.94	28	1.04
	MAH WS	-	-	-	-	1	-	-	-
	VRW WH	-	-	1	-	1	1.00	3	0.21
	WHM1	-	-	-	-	-	-	3	-
	OXF RS	-	-	-	-	-	-	1	-
Samian	*LEZ SA†*	1	-	9	0.05	238	5.71	37	0.80
	LMV SA†	-	-	3	-	9	0.32	2	0.01
	MON SA†	-	-	1	-	1	-	-	-
	LGF SA†	-	-	9	0.05	32	0.82	9	0.28
	EG SA†	-	-	2	-	41	1.05	10	0.12
Amphorae	*AMPH†*	-	-	-	-	3	-	1	-
	BAT AM†	-	-	14	0.25	101	-	21	-
	CAT AM†	11	-	-	-	-	-	-	-
	GAL AM†	-	-	4	-	16	-	3	-
Totals		695	2.57	1049	9.72	3910	63.27	2895	32.87

KEY: * types in italics are non-local and those marked '†' are continental imports

Early Romano-British: c. *AD 50/70–130/50 (Ceramic Phase 2)*

Ceramic Phase 2 marks a transition towards the use of Romanised fabrics and, to a lesser extent, the adoption of new vessel forms. Selected larger and discretely dated context groups (below) relate to the earlier part of the given range and are probably Flavian (*c.* AD 69–96). Larger groups of the Trajanic/Hadrianic period are absent, though pottery clearly of this date occurs from among smaller context groups and residually among mid-Romano-British groups from DE3002 (Fig. 4.63.28–31). The absence of well-dated earlier 2nd-century groups blurs the distinction across the early and mid-Romano-British periods. This is most apparent from pit groups located in the easternmost extension of DE3001, where activity probably spans the last decades of the 1st and the first half of the 2nd century (below).

The early Romano-British phased assemblage (1049 sherds; 14.58 kg; 9.72 EVEs) (Table 4.9) well illustrates the increased range of fabrics characterising Ceramic Phase 2, although the continued use of shell-tempered and grogged fabrics reflects a degree of continuity. Proportionally the largest element is reduced wares (63.3% by sherd count), most if not all originating from local/Trent Valley sources. The greywares exhibit some diversity of form, though with jars (6.14 EVEs or 63.2%), bowls (1.31 EVEs or 13.5%) and beakers (1.52 EVEs or 15.6%) predominating. Jars (mainly necked forms) and carinated bowls (as Fig. 4.63.26–28) reflect established pre-Romano-British traditions. The beakers are primarily of ovoid form, probably current from the late 1st century (Fig. 4.62.17). These together with wide-mouthed/S-profile bowls (Fig. 4.62.15) reflect new Romanised/continental traditions.

Small quantities of fine reduced fabrics GW16 and GW12 occur from this period. 'Parisian' style decoration, characteristic of a tradition commonly from Lincolnshire and dating in the range *c.* AD 75–140 (Elsdon 1982, 14), however, was recorded only among sherds in mid-Romano-British deposits (Fig. 4.63.30). The use of clay rustication, typically a trait of the early Romano-British period, is uncommon in the assemblage as a whole (93 sherds in all fabrics). Incidence is highest among greywares in this period at 5.2% (by count), dropping to 3.1% in the mid-Romano-British and 0.3% in the late Romano-British periods. It occurs as all-over 'knobbed' treatments (Fig. 4.63.34), possibly applied as a means of facilitating handling or as insulation. More commonly it is present on beaker sherds with zoned decoration (Fig. 4.63.35). In this guise the technique survives into the Antonine period as would be suggested by vessels from some Trent Valley kiln groups (Field and Palmer-Brown 1991, fig. 17, 5).

The developed grogged wares of the Trent Valley ware tradition (principally) amount to 154 sherds among the early Romano-British groups (15% by count). Identifiable vessel forms in fabrics GRT2–4 are jars (a maximum 18 vessels or 1.83 EVEs). All conform to Todd's Trent Valley series (Todd 1968a, 39, fig. 1), with barrel or rounded-profile everted/bevelled rim forms (Fig. 4.63.21) most typical (1.58 EVEs total), over 'furrowed' vessels with wide-flaring rims (Fig. 4.63.22).

Shell-tempered wares remain well represented in this period (305 sherds or 29%). All identifiable vessels are jars; a cordoned vessel (Fig. 4.62.18) closely resembles an example illustrated as part of Todd's Trent Valley series (1968a, no. 24) and would suggest a local origin. Most abundant are large storage jars, mainly occurring in fabric SH3. These are necked vessels which feature a zone of tooled decoration at the shoulder, comprising impressed (Fig. 4.62.13) or scored geometric motifs (Fig. 4.62.14), below which the surface can be roughened by combing. Vessels of this type appear to be among Oswald's Neronian/Vespasianic groups (Oswald 1941, 49, fig. 10, nos. 25/26). This tradition has its roots in the Late Iron Age in south-east England (cf Stead and Rigby 1986, fig. 105, 4) and comparable vessels are common from early to middle 1st century AD deposits in Leicester (Pollard 1994, fig. 50). Dating beyond the conquest period continuing to *c.* AD 100 is probable for the *Margidunum* vessels. Support for an origin in the south-east Midlands, most likely in Northamptonshire, comes from previous fabric analyses (Vince 2008). There is abundant evidence for production of similar storage jars in this tradition from this area and southwards into Bedfordshire (Brown 1994, 52–7; Slowikowski 200, 61–86).

The reduced wares, grogged and shelly types together make up 85% of the total for the early Romano-British groups and 76% by EVEs. Elements among the remainder, including quantities of colour-coated wares, Mancetter/Hartshill mortaria and Dales wares, are certainly intrusive, with a significant proportion from 'disuse' fills in waterhole and large pit features in DE3001 (below). Quantities of fine oxidised and whitewares are low overall in Ceramic Phase 2. The whitewares incorporate *Verulamium* region products including a number of flagons and a single mortarium sherd from enclosure 218558 (fill 302235, see Fig. 4.10). Further *Verulamium* mortaria sherds are present among unphased groups in DE3002 and from among the historic *Margidunum* excavations (Oswald 1944, figs. 1, 2 and 5). Dating well before *c.* AD 150 can be expected; mortaria from this source are common from Leicester in the period *c.* 50–100 AD (Pollard 1994, 68). Sherds of Mancetter/Hartshill mortaria are thought to be intrusive; none exhibit the 'mixed' trituration grits often typical of the earliest products (from *c.* 80 AD). The small oxidised/white-slipped component is nonetheless substantially greater than for later periods. Identifiable forms in such types are all flagons. Forms among the larger oxidised group comprise a few bowls, including carinated and S-shaped profiles. To this group should be added a bowl (Fig. 4.63.24) from palaeochannel 304509 (Fig. 4.38), which is seemingly a samian form 29 copy. An apparently similar vessel is illustrated by Oswald (1941, fig. 10, 9).

Samian from early Romano-British contexts amounts to 24 sherds (2.3% by count). A proportion, including East Gaulish sherds and some Central Gaulish forms of later Antonine type, are intrusive. Most of the Central and East Gaulish sherds come from DE3002, where large quantities of samian relate to mid-Romano-British and unphased deposits. Of the remainder, nine sherds are South Gaulish, dating before AD 110, and three are (Central Gaulish) Les Martres-de-Veyre of the period *c*. AD 100–20. The south Gaulish vessels are principally Flavian and the few earlier vessels redeposited (see Monteil, below). Five Central Gaulish sherds and one East Gaulish carry dating after *c*. AD 120, in some instances after *c*. AD 140 and *c*. AD 150.

Distribution and stratification

The early Romano-British assemblage is significantly larger than the earlier phased groups, and more widely dispersed, although seemingly now concentrated closer to the line of the Fosse Way. There is limited evidence for continuation of activity across the north portion of DE3001 and DE3006.

Spatially, there is a detectable and pronounced shift away from the area either side of Newton Lane (DE3001/3006): only 59 sherds from DE3006 and similarly small quantities from the north portion of DE3001 were derived from deposits belonging to the later phase. Largest groups are from easterly clusters of features, notably from the eastern extension of DE3001, west of the line of the Fosse Way, and from DE3003 (see selected groups, below). Moderately large quantities (284 sherds) also now occur from DE3002, east of the Fosse Way.

Quantities of pottery from the northern part of DE3001 (Fig. 4.2) are small, the largest coming from Enclosure G ditch 218558 (40 sherds) (Fig. 4.10) and Enclosure A ditch 218602 (49 sherds) (Fig. 4.3). Dating from this material is broad with neither group containing samian. Grogged, reduced and shelly types predominate; the more specific date markers provided by the rare traded wares: a *Verulamium* region mortarium sherd from Enclosure G (fill 302235, ditch 218558) dates as early as the AD 50s; and a possible girth beaker from the same enclosure (Fig. 4.62.19) probably before *c*. AD 70. The latter vessel occurs in a fabric reminiscent of 'silty wares', more common from the south-east (Woods and Hastings 1984; Stead and Rigby 1989), but present for example at Leicester (Pollard 1994, 71).

Clusters of features from the eastern extension of DE3001 (Fig. 4.13) produced approximately 300 sherds, the majority from pit 301090 (70 sherds) and waterhole 218519 (see Selected Group below). The more productive early Romano-British features in this area (waterhole 218519, pits 301090, 301221 and gully 218517) are similar compositionally and reflect trends outlined above. 'Featured' sherds are for the most part jar forms in grogged and shell-tempered fabrics. A South Gaulish form 15/17 platter from pit 301090 supports dating *c*. AD 40–85. A very worn Central Gaulish form 33 cup from the same feature is regarded as an intrusion, as is a Dales ware jar from the same feature.

Mid-Romano-British features near the eastern limits of DE3001 (Fig. 4.18) including pits 301122, 301118, 301162, 301108, 301142, 301166 and 301058, produced small or moderate-sized pottery groups containing elements consistent with a date before *c*. AD 150. Their ascription to the succeeding phase is based on stratigraphic associations and *termini post quem* provided variously from sherds of later Antonine samian, Lower Nene colour-coated ware and Central Gaulish Black slipped ware. The 'early' elements include a collared flagon, almost certainly of pre- or early Flavian type from pit 301122 (Fig. 4.63.32). Other forms including. from the same feature (pit 301122), beakers in greyware GW6r (Fig. 4.63.35) and fine oxidised fabric OX1 (Fig. 4.63.36) and a carinated bowl in fine whiteware WH4 (Fig. 4.63.33), which resembles *Verulamium* region vessels of Trajanic to Antonine currency (Davies *et al.* 1994, 47), suggests that this phase of activity may belong in part to the first half of the 2nd century AD. Further indications of this are from fineware imports including sherds of Les Martres samian (pit 301108 on Fig. 4.18) and Cologne roughcast beaker (pit 301162 on Fig. 4.18). Of potentially comparable date and of individual interest is a tazza in whiteware fabric WH4 from gully 301064 (Fig. 4.63.37).

Coarse pottery from DE3002 (Fig. 4.14) amounts to 286 sherds, including from structure-related penannular ditches 218652 and 218653. Larger groups of more than 30 sherds are from ditches 218652 (82 sherds) and 218653 (33 sherds) and ditch 218662 (cut 218178, 42 sherds). The range of fabrics is consistent with what has already been outlined, however, specific dating indicators are few: a South Gaulish samian sherd from beamslot 303632 (Fig. 4.14) dates *c*. AD 40–100; the remaining six (Central and East Gaulish) sherds may include intrusions, although les Martres sherds from ditch 218651 and penannular ditch 218652, both from 37 bowl sherds dating *c*. AD 100–20, would reflect dating for Ceramic Phase 2 overall. Compared with groups from DE3001 and DE3003, the range of ware types is narrower and utilitarian in character; vessel forms are mainly jars (globular/barrel-shaped) in grogged fabrics (Fig. 4.63.21) and large storage jars in shelly fabrics (Fig. 4.62.20). A single platter and ovoid beakers are among the few 'tablewares' recorded.

Vessels datable before *c*. AD 150 occur from mid-Romano-British deposits and may be residual or represent survivals in use. Of note is a substantially complete rusticated jar (Fig. 4.63.34) from pit 218218 (Fig. 4.20).

Selected groups

Pit 303115, DE3003 (115 sherds, 4461g, 2.71 EVEs; Figs 4.62.13–18; 4.66)

Pit 303115 was among the closest features to the core *Margidunum* settlement, though still 70 m outside the defensive circuit (Fig. 4.9). Flavian/Trajanic dating for the group is suggested by a single south Gaulish (probably Montans) samian vessel; a base sherd of a form 18/31 dish, considered to date *c*. AD 70–110.

The range of fabrics, which includes Romanised reduced types as well as samian (albeit as a single sherd), marks this group as distinct than those from Ceramic Phase 1.

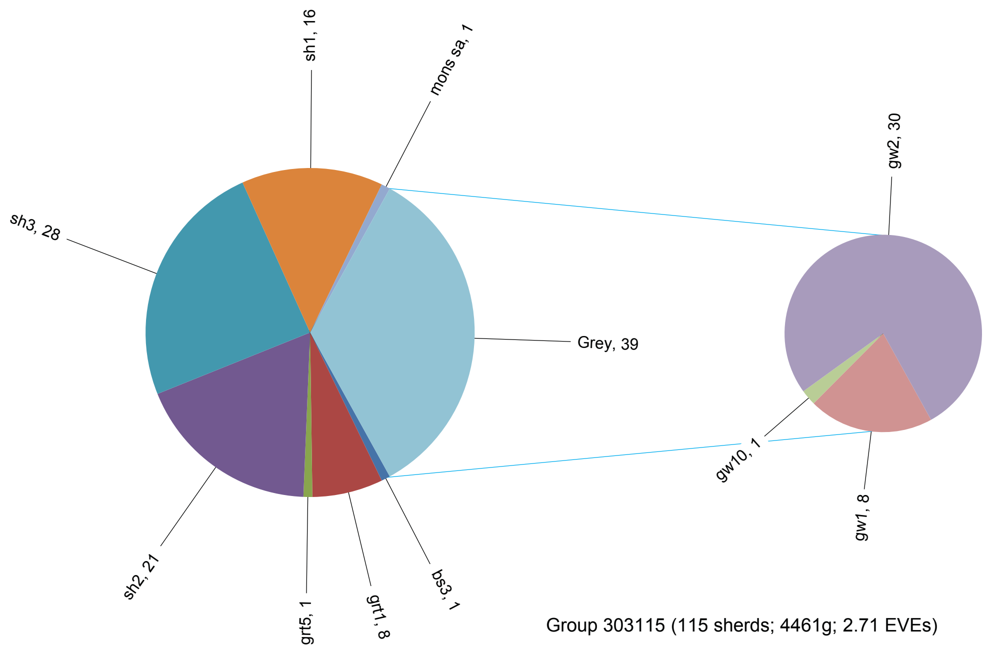


Fig. 4.66 Romano-British pottery: composition of Group 303115

Comparisons can be made with vessels among Oswald's 'Claudian' groups (Oswald 1941, 53, fig. 12) and Todd's Phase 1 (Todd 1969, figs 9–12). The coarse pottery is a mix of shell-tempered (65 sherds or 57%), reduced wares (40 sherds or 35%), with the remainder grogged types (8 sherds or 7%). Some vessels, such as a cordoned jar (Fig. 4.62.18) reflect styles present in Ceramic Phase 1. The fine greywares (types GW1 and GW2) belong to new Romanising traditions. Ovoid beakers (Fig. 4.62.17) and S-shaped bowl forms (Fig. 4.62.15) can be paralleled among Todd's Period 1 and indeed Oswald's 1st century AD groups. A fine greyware vessel (Fig. 4.62.16) is more unusual, although possibly part of a comparable tradition of rouletted fine greywares more common from the south-east, for example as CAM 108 beakers from Colchester (Hawkes and Hull 1947) and comparable vessels from London (Davies *et al.* 1994, 161–4).

The large storage jars which are a feature of this group (Fig. 4.62.13–14) as elsewhere from early Romano-British deposits (Fig. 4.62.20), are distinct from material from earlier deposits. The post-firing 'pictogram' type graffiti seen on vessel 13 is unusual. Closest parallels, of broadly similar date, are from Needham, Norfolk (Frere 1941, 46, fig. 4.16) and from Bagendon, Gloucestershire (Clifford 1961, fig. 69, 175 and fig. 57, 15). Hull suggested that such marks indicated ownership, although the complex character here (Fig. 4.62.13) may imply something more.

Waterhole 218519, DE3001 (81 sherds, 1827 g, 0.86 EVEs; Figs 4.63.23; 4.67)

Waterhole 218519 lay *c.* 50 m from the line of the Fosse Way (Fig. 4.13). Its latest fills extend dating into the second half of the 2nd century or later and are omitted. Compared with pit 303115, the composition of this group is significantly more diverse. Dating *c.* AD 80–110 can be applied based on sherds from three decorated south Gaulish (La Graufesenque) samian vessels of forms 29 and 37. Coarse pottery from primary and use fills are consistent with this dating; fabrics are primarily a mix of shell-tempered (30 sherds or 37%), reduced wares (25 sherds or 30.8%) and grogged types (11 sherds or 13.6%). The group also included a sherd of Baetican (BAT AM) type amphora. Whitewares and white-slipped fine oxidised wares are small, though notable presences (11 sherds or 13.6%). Identifiable vessel forms include large-necked storage jars in shelly (SH1 and SH3) fabrics and globular/barrel-shaped jars in developed grogged fabric (GRT3) of the kind previously described. Notable also, given the general scarcity of such forms overall, is a minimum of four flagons (fabrics WH1, WH3, OWS3 and GW3). One example among these (Fig. 4.63.23) is, tentatively, a *Verulamium* region vessel of ring-necked form and as such probably dates in the Flavian to early 2nd century AD (Davies *et al.* 1994, 41–2).

The uppermost fill of the waterhole (301258) contained demonstrably later material including Lower Nene colour-coated and other ware types dating after *c.* AD 150. Material from this deposit which may represent accumulations within the slumped surface of the backfilled feature is omitted from Figure 4.67, although it is included within the total for the early Romano-British period.

Mid-Romano-British: c. *AD 130/50–230/50 (Ceramic Phase 3)*

There is broad correspondence across the mid-Romano-British period (*c.* AD 150–250) and Ceramic Phase 3, which makes use of the increasingly more abundant ceramic dating indicators including samian and British traded wares.

The phased mid-Romano-British assemblage (3910 sherds; 67.06 kg; 63.27 EVEs) includes some substantial and well-preserved groups derived from layers on the western side of DE3002 (deposits 303677, 303678, 303691 and 303814; Fig. 4.23. In total the pottery from these deposits amounts to 2541 sherds, weighing 457 kg (44 EVEs), to which can be added 255 sherds of

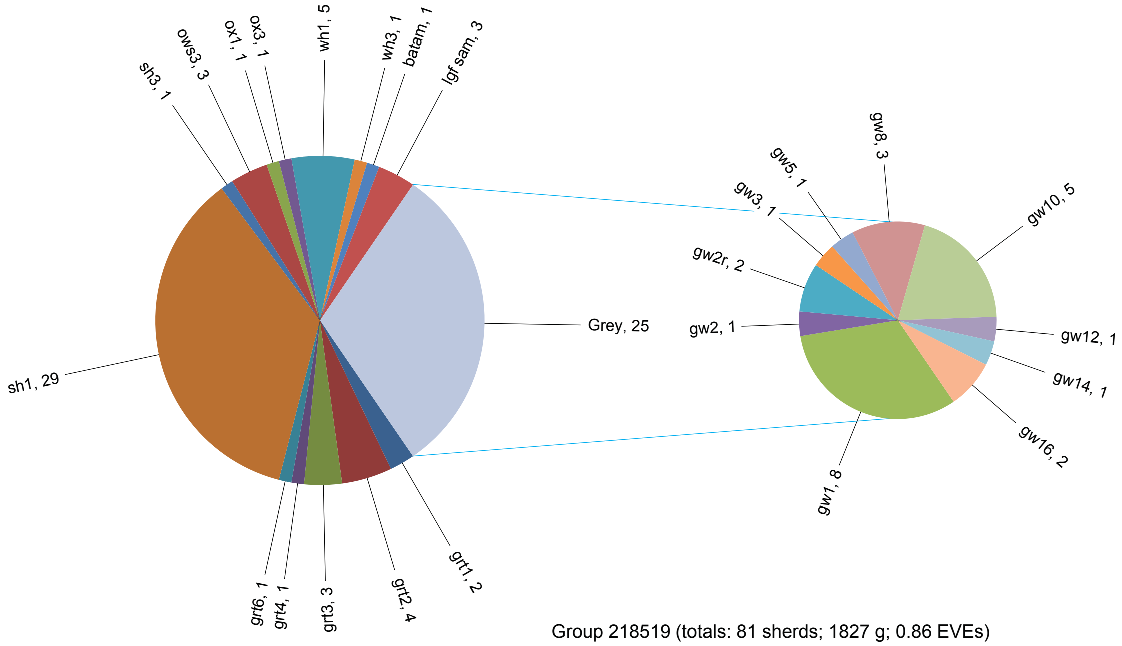


Fig. 4.67 Romano-British pottery: composition of Group 218519

samian (6.4 EVEs). A proportion, including quantities of South Gaulish samian, probably dates to the later 1st century AD. Most, however, belongs within the range encompassed by Ceramic Phase 3. Significantly it is among these groups that the majority of the maker-stamped mortaria (see Hartley, below), together with one stamped amphora (see Fig. 4.73) derive; all of which belong to the mid-/later 2nd or early 3rd centuries AD.

Composition

A number of supply trends are at once evident, comparing the assemblage with that from the early Romano-British period (Table 4.9). Representation of grogged wares is reduced from 14.6% to 10.8%. More dramatic is the decrease of shelly types from 29% to just 4.9% (by sherd count). A corresponding rise in reduced wares (51.8% by count) is probably reflective of the expansion of production locally at sites in the Trent Valley such as Newton on Trent, Knaith, Lea and Torksey (Field and Palmer-Brown 1991, 54). Comparisons of such types with the preceding ceramic phase reveals reduced dominance of jars (18.27 EVEs or 55.5%) and utilitarian 'open' forms increasing, these comprising plain or moulded-rim classes derived from BB1 classes (10.94 EVEs from a total of 15.47 EVEs for dishes/bowls). Greyware beaker forms are now poorly represented at 2.8% (0.94 EVEs) of the total, possibly a response to the availability of fineware cups (principally samian form 33) and Lower Nene beakers in this period. The overall character of the CP3 reduced ware group is reflected in the repertoire of Trent Valley kilns such as those from Lea, Notts (*ibid.*, fig. 15), in the mix of jar and utilitarian open forms, some clearly derived from the expanding Black-burnished ware series, and carinated bowl forms with local native ancestry. There are some observable changes in the representation of greyware fabrics over the previous periods (Table 4.9) which may relate to fluctuating supply from individual kilns or groups of kilns. Given that the defined fabrics cannot be identified with a specific source, the fluctuations reveal little substantive evidence for supply changes across the period represented.

The reduced representation of grogged wares in this period is in keeping with a fall-off of such types elsewhere in the region (Leary forthcoming a). Todd considered the *floruit* of his 'Trent Valley ware' series to be *c.* AD 50–100 (Todd 1969); there is, however, evidence to suggest that the grog/clay pellet-tempered tradition continued in use in the region throughout the 2nd century and probably beyond (Leary forthcoming a). Based on the still relatively high representation of such types here among mid-Romano-British groups, and also within the well-dated and discrete ditch groups from Saxondale (see Chapter 5), there is likely to be a continuation to *c.* AD 150 or a little beyond. Distinct from this series are oxidised grogged types GRT8, which make their appearance among mid-Romano-British groups. These appear not to be the soft pink grogged wares from the north Buckinghamshire area (Booth and Green 1989), although there is overlap both in technology and dating. Forms in this type are large storage jars, some of which are rilled.

The scarcity of shelly wares may be a reflection of the dominance of local greyware suppliers and follows a pattern seen from the region, northwards to Lincoln (Leary forthcoming a). The small quantities present include Bourne/Greatham products (Fig. 4.64.44). Dales ware sherds amount to only six sherds from groups of this period, a quantity insufficient to be convincing evidence for introduction before *c.* AD 250.

The dominance of Trent Valley coarseware suppliers is not complete and there are small contributions from non-local producers: the province-wide phenomenon of Dorset Black-burnished ware expansion from the Hadrianic period is evidenced, although the type makes up only 1.6% of the total for this period (by count). Identifiable BB1 vessel forms comprise the expected mix of moulded-rim dishes/bowls (Figs 4.64.43, 53) and a small number of jars. Derbyshire wares are also now present, occurring as the characteristic jars (Fig. 4.64.52). Quantities are small: 1.5% of the sherd count total for this period.

A number of new types are apparent from this period, reflecting the expansion of several production centres at this time. It is the Antonine period which sees the growth of the Lower Nene Valley and Mancetter/Hartshill potteries, as well as a substantial importation of (Central Gaulish) samian. The quantity of samian from this period is 321 sherds or 8.2% of the total.

Representation of Lower Nene colour-coated wares from this period is 5.1% by count. The scarcity of bag-shaped beakers with well-formed cornice rims suggests that these earliest products are not present and that most material might date after *c.* AD 170/80. Oxidised fineware types are moderately common in this period. Among the more distinctive are beakers in fabric UNV OX of devolved bag-shaped form with characteristic roller-stamped decoration (Fig. 4.64.46–7). The best parallels are among material from Brixworth, Northamptonshire (Woods 1970, fig. 21, nos 149–50) and from Milton Keynes, which are ascribed a similar (Upper Nene Valley) source (Marney 1989, no. 12). Bag-shaped roughcast vessels in fabric OX5 (Fig. 4.64.48) can also be paralleled from Brixworth and might be from the same source (Woods 1970 fig. 23, 154–9).

Mortaria are represented almost exclusively as Mancetter/Hartshill products (61 sherds/3.21 EVEs from a total of 64 sherds/3.26 EVEs). Dating centring on the mid-/later 2nd century AD is indicated both by maker-stamped vessels (see Hartley, below; Fig. 4.74.1–8) and by the breakdown of forms. These are mainly hooked-rim classes m1/m2 (1.38 EVEs), with fewer collared m3/m4 (0.32 EVEs) and wall-sided (0.22 EVE) vessels.

Amphora types from this period amount to 117 sherds (1.7%). Types present are Baetican (101 sherds) and Gaulish flat-based types (16 sherds), all occurring as bodysherds. The range of amphora fabrics is increased when the unphased material is considered, with two bodysherds of Campanian (fabric CAM AM) and two of Cadiz (CAD AM). Among the Baetican material is a handle fragment from the topsoil (303500) with a stamp reading 'DFF' (see Fig. 4.73). The same stamp is listed in Funari's catalogue of British finds as an unpublished example from Caerleon (Funari 1996, no. 95). Funari's given date of *c.* AD 218–22 is based on examples from Monte Testaccio in Rome.

Distribution and stratification

The mid-Romano-British assemblage continues the spatial trends seen in the early Romano-British period, with the mass of material now confined to the eastern extension of DE3001 and DE3002.

The largest pottery groups from this period are those from layers 303677, 303678 and 303691 in DE3002 (Fig. 4.23), each producing more than 600 sherds. Some contamination is apparent with most of these larger context groups, though the largest, from layer 303678, is discrete in its composition and described below. Of material from features, most was derived from pits and from wells 303715 and 303819 (Fig. 4.21). Well 303819 (Structure 16) produced the only moderately large group (85 sherds), with a further 11 sherds of samian. This material relates to deliberate backfilling rather than losses in use from its primary fills. The group from this feature is unexceptional within the overall character of Ceramic Phase 3. Central and East Gaulish samian (forms 31 and 31R), suggest dating after *c.* AD 160 and similar dating is prompted by sherds in fabrics LNV CC and DER CO.

Well 303715 (Structure 21) was fully excavated, though only very small quantities (18 sherds) were derived from its primary fills. A small Moselkeramik sherd gives a *terminus post quem* of *c.* AD 180. Pottery from the upper fills includes Lower Nene forms (Fig. 4.64.57) suggestive of dating after *c.* AD 250, which means that final 'disuse' could extend into the late Romano-British period.

The remaining features produced small groups to a maximum of 30 sherds. The smaller pit groups are of consistent character, dominated by reduced coarsewares, but with Lower Nene Valley, Derbyshire, Black-burnished ware and samian routinely present. The samian comprises mainly plain forms (commonly forms 33; 31 and 31R) from Central and East Gaulish sources. The samian typically provides *termini post quem* of *c.* AD 150 or *c.* 160 for a number of features (pit 218201 of Structure 20 and foundation 303578 of Structure 19). The mix of coarsewares and absence of late vessel forms (see CP4) are factors encouraging dating before *c.* AD 250, however, the assemblage is typical of many in that there are few firm and specific indicators of dating within the first half of the 3rd century. Hints of continued activity into this period are a BB1 jar sherd with obtuse-angled lattice decoration from gully 218661 associated with Structure 17 (Fig. 4.20), which should date after *c.* AD 220 (Holbrook and Bidwell 1991, 96), and a copy of a form 33 cup (Fig. 4.63.40) in an unidentified colour-coated fabric, probably a Lower Nene variant. The latter vessel is a rarity, and can be expected to date after *c.* AD 200/20, when samian importation was diminishing.

Selected group

Spread 303678, DE3002 (801 sherds, 14543 g, 15.62 EVEs; Figs 4.63.42; 4.64.43–7; 4.68).

This pottery group was the single largest from the site (Fig. 4.23). Surface preservation is good, mean sherd weight is moderately high (18 g) and some substantially complete vessels are present. The group presents consistent dating (below), with considerable overlap compositionally with the rest of the mid-Romano-British assemblage. A small number of intrusive

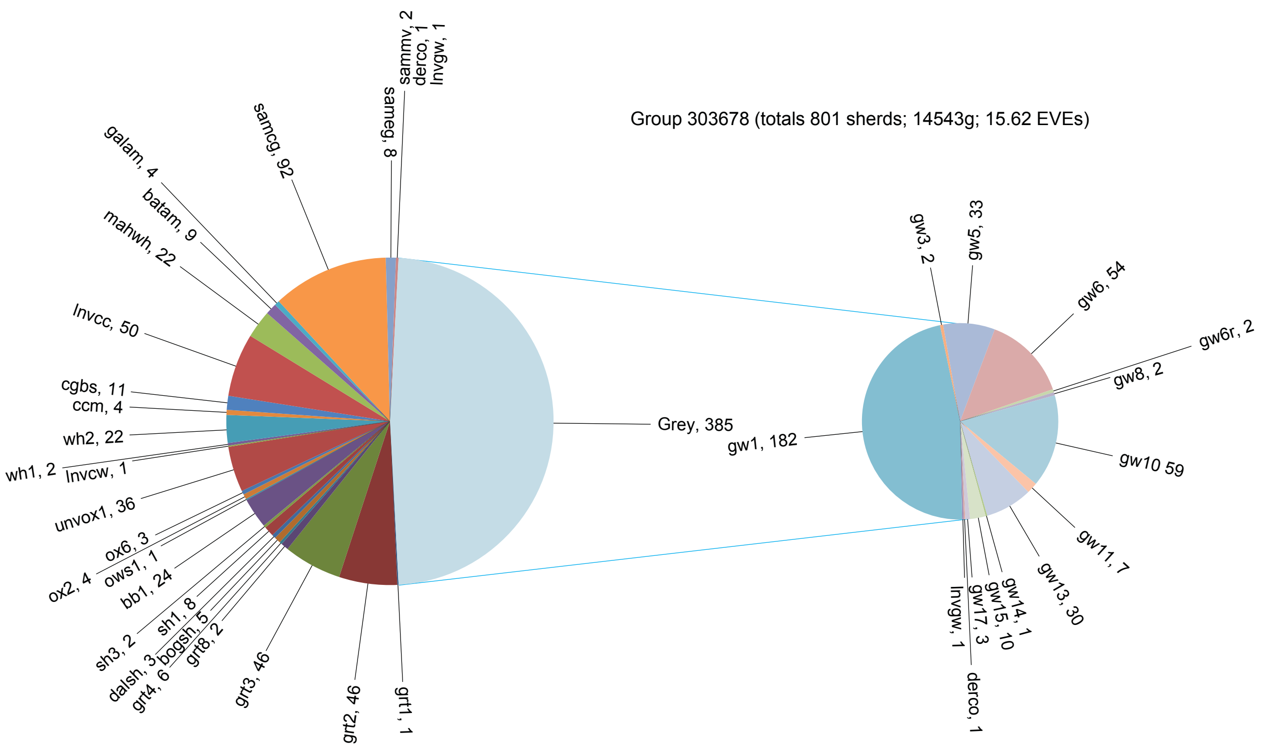


Fig. 4.68 Romano-British pottery: composition of Group 303678

elements occur among the pottery, and a coin of 4th-century type (ON 2042) is similarly regarded as intrusive.

The samian is a substantial and significant group (12.7% of the total by count) and is described elsewhere (see Monteil, below). The clear emphasis in terms of dating is the period after AD 150/60; with some East Gaulish forms belonging to the period *c.* AD 170–250. There are in addition stamped Mancetter/Hartshill mortaria vessels of the potters *Sarrius* (*c.* AD 140–70) and *Icotasgus* (*c.* AD 125–55) (see Hartley, below). Given the lack of evidence for a gradual accumulation, it is considered that the group dates largely to the period *c.* AD 170–200/25.

As in the wider mid-Romano-British assemblage, greywares are dominant at over 50% (by count), and the decline of grogged and shelly types from earlier levels is also evident. Shell-tempered wares are present as products from the regionally burgeoning Bourne/Greatham kilns (Fig. 4.64.44). The group provides further evidence for oxidised grogged types GRT8/9 used as large storage jars in a role formerly performed by shelly or grogged greyware types. Vessel forms among the greywares are mainly jars (3.91 EVEs/48.9%); and plain or moulded-rim dishes (1.74 EVEs/21.7%) and flat-rim bowls (1.44 EVEs/18%). The utilitarian forms provide abundant evidence for the influence of Black-burnished ware at this time. The same cavetto jars in imitation of BB1 cooking pots were also present among Oswald's Antonine groups (1941, fig. 14; nos 10 and 11). Black-burnished wares themselves are also now present (Fig. 4.64.43). The forms represented would each be consistent with the later Antonine date suggested for the group as a whole (Holbrook and Bidwell 1991, 98–9).

Derbyshire wares occur in small quantities as the characteristic jar forms (Kay 1962, type A). Whitewares, other than mortaria types, are poorly represented, the only identifiable forms being flagons which occur as detached handles. Whiteware mortaria comprise Mancetter/Hartshill types, primarily curved flanged forms (M1 and M2).

Lower Nene Valley colour-coated wares amount to 5.5% of the group total by count. Excepting a solitary (and intrusive) jar rim, the forms comprise a flagon of indeterminate type and beakers of types (bag-shaped and indented) which characterise early production. One indented and applied scale-decorated beaker with curving rim is substantially complete (Fig. 4.64.45). The same form is also among vessels shown in Antonine groups recorded by Oswald (1941, fig. 14, 14). Perrin has suggested dating for some forms in the mid-later 2nd to early 3rd centuries on the basis of evidence from the production sites (Perrin 1999, 94, nos. 158–62). Fineware beakers are also present as an oxidised type considered to be a regional import from the Upper Nene Valley (type UNV OX). Forms in this type are distinctive (Fig. 4.64.46–7), and comparable vessels are illustrated by Oswald among his Antonine groups (1941, fig. 13, 2; fig. 14, 14)

Continental wares other than sigillata types are poorly represented. A notable incidence, from the same Central Gaulish source as much of the group's samian, is a black-slipped (CNG BS) vessel (Fig. 4.63.42), an example of a relatively uncommon vessel class with moulded appliqué decoration. The form is a variant of the samian Déchelette 74 handled beaker. Two appliqués of identical design are in place, neither of which is complete. The designs show a two-horsed chariot, with winged(?) victory behind. The style is classical and well executed. Black-slipped vessels of this type from Britain are the subject of two articles by Dr Grace Simpson (1957 and 1973), who demonstrates origin at Lezoux and dates the class to the Hadrianic or Antonine period. Simpson's articles list 32 examples (a further example is described by Simpson from Towcester (in Lambrick 1980, 75).

Late Romano-British: c. 250/70–400 AD
(Ceramic Phase 4)

Material from late Romano-British deposits (2895 sherds; 37.53 kg; 32.87 EVEs) represents the second largest stratified element from the site. Some refinement within the indicated range is possible and is described below by area.

Changes in supply visible across the mid- and late Romano-British periods are less obvious than for earlier material (Table 4.9). In part this reflects some conservatism in the period, but may also be the result of accumulated residuality. The reduced wares remain the largest single component, with representation increased to 54.5% by count. Form classes among the reduced ware types are comparable with the previous phase with most comprising jars (12.27 EVEs or 59.7%), and 'utilitarian' bowls (5.51 EVEs or 26.7%) and dishes (1.39 EVEs or 6.8%). There is, however, an increase in representation of beakers (0.97 EVEs or 4.7%), some of which resemble colour-coated ware vessels in circulation (Fig. 4.65.81). Other distinctively 'late' vessel forms are identifiable among the greywares, including conical or curved-sided flanged bowls (Fig. 4.65.67–8), as well as necked/wide-mouthed forms (Figs 4.65.66, 69) and some distinctive jars (Fig. 4.64.60–62). Certain vessels (Fig. 4.64.60, 62) invite comparisons with material from Swanpool (Webster 1947), however attribution to this source is avoided and most belong to a more widespread tradition. That the 'late' greywares are difficult to isolate on the basis of fabric alone, the common types GW1 and GW6 remaining dominant, is taken as evidence for the continued operation of kilns in the Trent Valley into this period.

An unexpectedly high representation of grogged wares types (312 sherds or 10.7%) stems to a large extent from redeposited material, particularly from selected features in DE3001 (ditch 218594; Fig. 4.30). Significantly, in areas which have seen only limited earlier activity, such as DE3004, grogged types are virtually absent (9 sherds or <1%), including Type PNK GT, a regional import from the Buckinghamshire area (Booth 1999). The sherds present are thick-walled and probably from the large storage jar vessels which are seemingly widely distributed in the late 3rd–4th centuries (Booth and Green 1989, 82). Three sherds in this type are recorded from DE3002, although only one from a late Romano-British deposit (the remaining two are unphased but occur with other late material).

The most marked change evident in this period is the increased abundance of shell-tempered wares (436 sherds or 15%). The problems of identification from unfeatured sherds notwithstanding, it is clear that the majority of the increase is as the result of Dales wares (245 sherds or 8.6% of the total). Self-evidently, vessel forms are the characteristic lid-seated jars (Fig. 4.64.58–9). Only very small quantities of Harrold-type shell-tempered wares (fabric HAR SH) were recorded; the only forms present are jars of hooked-rim type (Fig. 4.65.85). The majority come from the southern part of DE3001 or DE3002.

There is marked disparity in the representation of Dales wares relative to area in this period. The type is abundant from northern DE3004, where it makes up 20% of the total sherd count. By contrast, the type is virtually absent from Enclosure K and associated features in the southern part of DE3001. Whilst it is possible that a function or process-related bias lies behind the greater abundance of Dales wares from the northern area (DE3004), the internal dating in the two areas suggests that the principal factors are chronological and relate to trends in supply: on current evidence from Lincoln (Darling 1977, 28–30; 1999, 87) and unpublished sites in Nottinghamshire (Leary forthcoming a and b), Dales wares are common after *c.* AD 250 and continue throughout the 4th century. There is evidence from the northern frontier that use does not extend past *c.* AD 340 (Bidwell 1985) and the scarcity of the type from mid-later 4th century groups at *Margidunum* Hinterland may be evidence for a more generalised contraction at this time.

Samian from late Romano-British deposits declines to 2% of the total. There may be present some survivals in use beyond *c.* AD 250, and the slight increase in the proportion of East Gaulish sherds (22% count compared to 11%) is perhaps an indication of this. The large bulk of the samian, as well as the amphorae (<1% by count) is, however, probably residual. There is no evidence for the replacement of samian by 'home-grown' ware types, there being no surge in drinking vessels (beakers or cups) to compensate for the large number of form 33 cups no longer in circulation. Some bowl forms adapted from samian styles are, however, present among Lower Nene and other ware types (below). Oxford red-slipped wares are scarcely present (five sherds) and almost certainly are reflective of expansion of this ware type in the 4th century. Identifiable forms comprise a mortarium sherd and a bowl in imitation of samian form 38 (Young C71).

Dorset Black-burnished wares occur in similar levels (59 sherds or 2%) as in the earlier phase. Forms comprise mainly jars and dishes (0.28 and 0.18 EVEs) with only one conical flanged bowl (0.05 EVEs from deposit 303735, fill of ditch 218656 on Fig. 4.46).

There is a small increase in Lower Nene colour-coated wares in this period (from 5% to 7.2%) and the type appears to be most common among groups from the southern end of DE3001 (Enclosures J and K) dating to the middle or late 4th century (see below). A widening in form classes in colour-coated wares reflects an expansion in the Lower Nene Valley repertoire in the later 3rd and 4th centuries to include bowl forms in imitation of samian types and a range of jars and open forms (Howe *et al.* 1980, 25, fig. 7). Bowls are now most abundant (1.28 EVEs or 39%), made up mostly of 'castor boxes' (Fig. 4.65.73) and samian-derived vessels, including forms 31, 36, 37 and 38 (Fig. 4.65.74–6, 83–4). 'Coarseware type' vessels of the kind which make up a considerable part of 4th-century production in the Lower Nene Valley are by comparison poorly represented; wide-mouthed necked forms and conical flanged bowls present as one and two vessels respectively (0.30 EVEs).

Plain-rim dishes are a little better represented (5 vessels or 0.35 EVEs). Further 'coarseware' vessel forms occur among the unphased groups from DE3002. Also from these deposits and of individual note are a small number of sherds representative of the ultimate Lower Nene production phases in the later 4th or 5th centuries: these comprise a small sherd with 'Romano-Saxon' style bossed decoration (as Howe *et al.* 1980, fig. 7, 74) and an indented bowl (Fig. 4.65.77). The latter vessel is difficult to parallel among known Nene Valley products, but corresponds to forms in Oxford red-slipped ware (Young C79), which in this guise is considered to date after *c.* AD 340 (Young 1977, 166). Beakers are proportionally less common (0.82 EVEs); forms include later 3rd-century styles including indented/scale decorated (funnel-necked) styles, and some 4th-century rouletted styles. Flagons are present as disc-necked and pinch-necked vessels. The Lower Nene is also represented among whiteware fabrics (LNVCW) and probably accounts for the bulk of unsourced whiteware type WH2 in this period. Certainly from this source are a face flagon/vase and bowls copying samian forms (Fig. 4.65.78).

Mortaria types are less abundant (1.3% by sherd count) compared with the preceding phase. Mancetter/Hartshill remains strongly dominant, but the Lower Nene and Oxford also contribute small numbers of vessels. The Mancetter/Hartshill vessels (1.04 EVEs) include hooked rimmed (m1/m2) and collared (m3 and m6) forms which date no later than the early 3rd century and are very likely residual. The majority (0.75 EVEs or 72%) comprise collared/grooved (m4) or wall-sided (m7 and m8) forms for which 3rd to mid-4th-century dating can be asserted (Hartley in Evans 1996).

Activity in the late Romano-British period is widely dispersed compared with the preceding phase. It continues in DE3002 but is in evidence also across DE3001, including the southernmost section, and in northern DE3004. Appreciation of dating in this period is aided by a number of coin finds, hitherto absent from phased deposits.

DE3001/3006

Pottery from the southernmost part of DE3001 (Fig. 4.33), south of trackway 218547, amounts to some 305 sherds weighing 1884 g (1.08 EVEs). There are indications from the pottery, and also from coins recorded from this area (ONs 679, 700, 702 and 722), that much of the activity dates to the 4th century and probably after *c.* AD 330. The largest group, from waterhole 301594 in Enclosure K, amounted to 122 sherds and is described in full below.

Enclosure J produced only a modest quantity of pottery (17 sherds), together with coin of AD 330–5 (ON 722). Ditch group 218540 included nine sherds in Harrold type shell-tempered ware (HAR SH). A jar with hooked rim in this fabric (Fig. 4.65, 85) compares to examples from the production site from supposed second half of the 4th century groups (Brown 1994, fig. 37).

Pottery from Enclosure K ditches (principally 218524 and 218526) produced approximately 70 sherds. An illegible, broadly 4th-century coin was also recorded (ON 700). The pottery comprises mainly reduced (42 sherds) and Lower Nene colour-coated types (12 sherds). Forms among the latter are consistent with a 4th-century date (Howe *et al.* 1980, 9), and include examples of a pinch-necked flagon, conical flanged bowl and 'pentice-moulded' beaker (*ibid.*, nos. 55, 64/65 and 79).

Pottery from the inhumation graves in Enclosure K consists of small and abraded sherds. None appears to have been deposited as grave goods, although a coin of AD 330–5 from grave 301134 may have been. Among more closely datable pieces are a Lower Nene colour-coated scale-decorated/funnel-necked beaker from grave 301510 (cf. Howe *et al.* 1980, fig. 4, 39) and a bowl in imitation of a samian form 36 from grave 301133 (*ibid.*, fig. 7, 81), both of which are no earlier than the mid-later 3rd century.

Pottery from the north part of DE3001 (Fig. 4.30), including a group from trackway 218547, amounts to *c.* 730 sherds. As noted above, ditch 218594 among the northern group of enclosures, incorporates a significant quantity of apparently redeposited pottery (types GRT5 and SH2). Dating in the late Romano-British period is supported by a number of coins including four radiates of *c.* AD 270–96 from ditch 218600 (ON 775) and trackway 218547 (ONs 740, 741 and 747). The trackway also produced a *nummus* issued AD 317–24 (ON 751).

Pottery from trackway 218547 amounts to 226 sherds, of which 207 sherds are of reduced coarseware types. Three sherds of Dales ware give a mid-3rd century *terminus post quem*, in broad agreement with the evidence from the coins. The scarcity of colour-coated ware (one sherd) and absence of 'late' forms suggests that dating may not extend (far) into the 4th century.

With the redeposited elements discounted, pottery amounts from groups north of the trackway are small, with only ditches 218594 and 218596 producing in excess of 20 sherds. Compositionally, these groups are similar, the bulk comprising reduced coarsewares. Dales ware sherds (ditch groups 218594, 218596, 218600 and 301593) are indications of dating after *c.* AD 250. A disc-neck flagon in Lower Nene colour-coated ware from ditch 218554 (cf. Perrin 1999, nos 188 and 189) supports mid-later 3rd century dating; a funnel-neck/bead rim beaker from ditch 218564 and conical flanged bowl from ditch 218596 in the same fabric suggest dating into the 4th century (Howe *et al.* 1980, 9). Some individual greyware forms from this area are occasionally indicative of dating in the later 3rd or 4th centuries; examples of this are a wide-mouthed/necked bowl from a posthole with burnished intersecting wave decoration (Fig. 4.65.66), and a globular jar (Fig. 4.64.62) which resembles Swanpool products (Webster 1947).

DE3002

Pottery from late Romano-British deposits in this area (Fig. 4.46) amounts to 640 sherds. Late Romano-British material is also present among unphased groups, including the topsoil (303500). Groups from gullies 218660 and 303586 (Structure 25) and ditch 218656

(Structure 26) are the most substantial (46–270 sherds); the largest, from ditch 218656, is described below.

Stratified coins from deposits of this period consist of a *nummi* of AD 330–5 (ON 2027) from gully 218660 and a radiate of AD 270–96 (ON 2021) from feature 303840.

The larger groups from gullies 303586 (76 sherds) and 218660 (46 sherds) are compositionally similar, each comprising mainly greywares, with Lower Nene wares and Dales ware present in modest quantities. Forms in Lower Nene colour-coated ware are 'castor boxes' of later style and, from gully 218660, bowls imitating samian forms 38 and 31; as with gully 218656, there are no types or forms which need date later than AD 350. The smaller groups, including pits/postholes 303827, 303757, 303589, roadside ditch 218658 and pit 303638, south of the road (each 20–40 sherds), are a comparable mix of fabrics, though are lacking forms or fabrics providing specific dating after *c.* AD 250. The same is true of small groups, although Dales ware sherds (gully 303586, posthole 303755) and an Oxford red-slipped bowl of Young C51 form (feature 303840) support the given phasing.

DE3004

The large bulk of coarse pottery from this area (Fig. 4.38), 916 sherds weighing 14138 g (12.88 EVEs), is late Romano-British. The assemblage includes some moderately large pottery groups, 11 of 30 sherds or more. The focus of activity is along the north-western limits of the excavated area, and includes stone-built structures in addition to ditched enclosures and boundary features.

The largest groups, from ditches 304521 and 304516, are described fully below. Consistent dating spans the mid-/later 3rd century, perhaps not extending far into the 4th, as was seen from the largest groups (below). Dales wares make up 24% of the total sherd count from late Romano-British deposits. The type provides *termini post quem c.* AD 250 for most of the larger groups (ditches 304521, 304380 and 304510, ovens 304277 and 304390 and Structure 24 gully 304511). Broadly later Romano-British dating is also indicated by forms in greywares including conical and curved-sided flanged bowls and wide-mouthed/necked forms (ditches 304508, 304516 and 304521 and oven 304390). Ditch 304508 included sherds from an Oxford red-slipped ware vessel, a bowl of Young's C51 type. Young's dating for this form is broad, after *c.* AD 240 (1977, 160); however, the main 'export' period for the Oxford finewares is the 4th century, supported, for example, by the scarcity of such products before *c.* 300 AD from Leicester (Clark 1999, 136).

Lower Nene colour-coated wares make up 5.4% of the total by sherd count from DE3004. Only one late style 'coarseware' vessel is recorded, a dish from ditch 304516, and the focus for dating from the remaining forms is prior to the 4th century. Otherwise 'castor boxes' and beakers predominate, the latter including funnel-necked forms of mid-/later 3rd century type (gully 304513, oven 304277 and ditch 304380). A substantially complete scale-decorated/indented vessel with curved rim from oven 304390 (Fig. 4.65.72) should date no later than the early 3rd century. It occurs with Dales ware sherds and may have been old when deposited.

Dorset Black-burnished ware is a consistent presence from among DE3004 groups (ovens 304277 and 304390, pit 304466, gully 304511, grave 304515, ditches 304516, 304517, 304521 and 304524 and deposit 304531, the demolition deposits associated with Structure 23). The type is significantly more abundant here than elsewhere (35 sherds or 3.8% of the total), a factor further encouraging dating in the range *c.* AD 275–325 (Gillam 1976, 59).

Selected groups

Waterhole 301507, DE3001 (122 sherds, 968 g, 1.20 EVEs; Figs 4.64.64–5; 4.65, 73, 75; 4.69)

Waterhole 301507, in Enclosure K, was located *c.* 30 m from the line of the Fosse Way (Fig. 4.33). All of the pottery derives from a thick deliberate backfill. A coin (ON 702) from the same deposit was issued *c.* 348–50 AD and aspects of the associated pottery encourage dating to the mid- or later 4th century.

The largest element (55 sherds or 45%) is made up of greywares, among which standard types GW1 and GW6 are most common. Forms are neckless, everted-rim jars (Fig. 4.64.64), wide-mouthed/necked bowls (Fig. 4.65.69) and a curved-sided/flanged bowl (Fig. 4.64.65). Parallels can be found among Midlands greywares from the region (Todd 1968b, fig. 1), including the 4th-century Swanpool kiln groups (Webster 1947). There are indications from late pottery groups at Lincoln that curved-sided flanged bowls (Fig. 4.64.65) become common only in the mid-later 4th century (Darling 1977).

A total of 38 sherds or 31% comprise Lower Nene colour-coated ware with two further sherds of self-coloured type LNV CW. Forms among the colour-coated ware include examples of 'coarseware' type vessels common to the 4th century (Howe *et al.* 1980, 9), including a wide-mouthed necked bowl/jar and plain-rimmed dish (Fig. 4.65.75). A 'castor box' (Fig. 4.65.73) exhibits characteristics of profile and rouletting consistent with later 3rd- or 4th-century date, as does a small sherd from a pinch-neck flagon (cf. Howe *et al.* 1980, nos 64 and 65)

There are nine (body) sherds in shelly fabrics, none of which could be ascribed to source. These appear not to be of Dales ware, and the absence of this type from the area of Enclosure K is striking. Other types, including the residual material, make up 24% of the group. Mortaria are present as a single Mancetter/Hartshill sherd of uncertain form. Dorset BB1 occurs as two sherds including a jar with late-style flaring rim. One further regional import, rare elsewhere from the site, is a small Oxford red-slipped sherd of indeterminate form.

Ditch 218656, DE3002 (270 sherds, 4088 g, 3.76 EVEs; Figs 4.64.63; 4.65.74, 79; 4.70)

Ditch 218656 was approximately perpendicular to the Fosse Way, cutting a number of mid-Romano-British features (Fig. 4.46). Some residual material is present, including 14 sherds of mainly Central Gaulish samian. A number of factors demonstrate dating after *c.* AD 270/300. An absence of specifically mid-later 4th-century fabrics or vessel forms, and perhaps the relative scarcity of Lower Nene colour-coated ware, are taken as indications for dating in the first half of the 4th century.

Reduced coarsewares make up the largest component

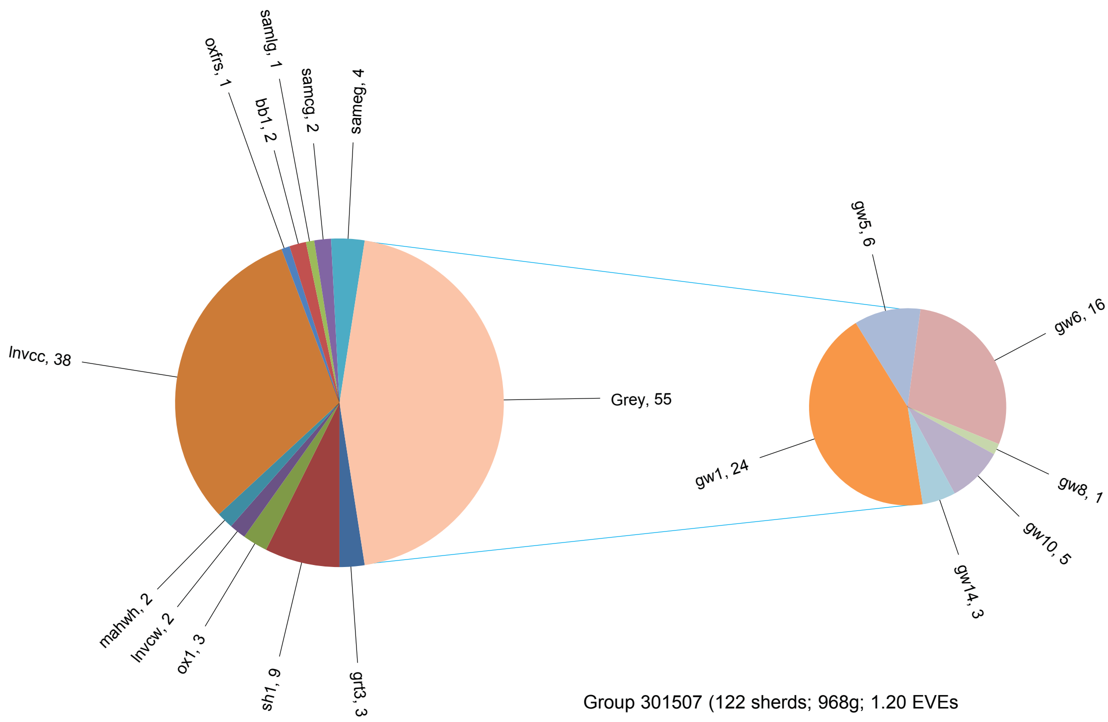


Fig. 4.69 Romano-British pottery: composition of Group 301507

(140 sherds or 52%), mainly standard types GW1 and GW6. Jars include necked/medium-mouthed classes and neckless, everted-rim forms. Among the latter is a rebated example (Fig. 4.64.63), comparable to vessels among the 4th-century Swanpool kiln groups (Webster 1947, fig. 5, H1–19). Bowls comprise straight-sided flat-rim or flanged forms, but none of the wide-mouthed/necked forms found in other late groups. Dishes are all of plain-rimmed form.

Shell-tempered types make up approximately 8% of the group (by count) and include six Dales sherds, prompting

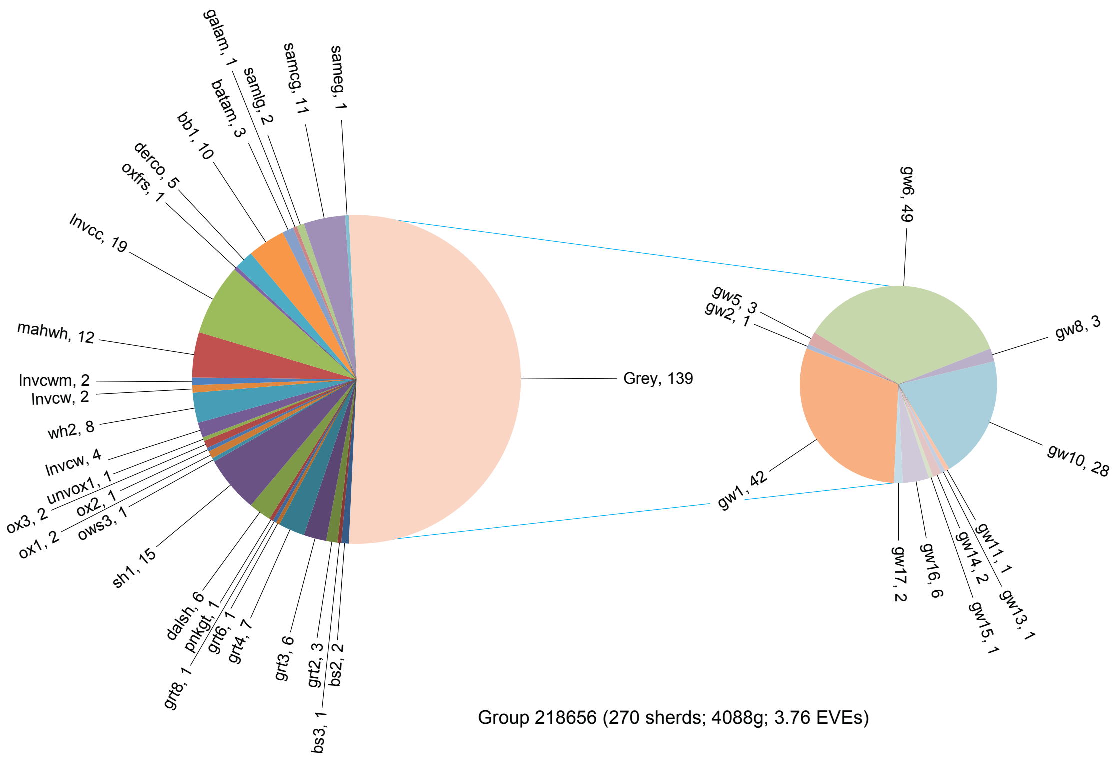


Fig. 4.70 Romano-British pottery: composition of Group 218656

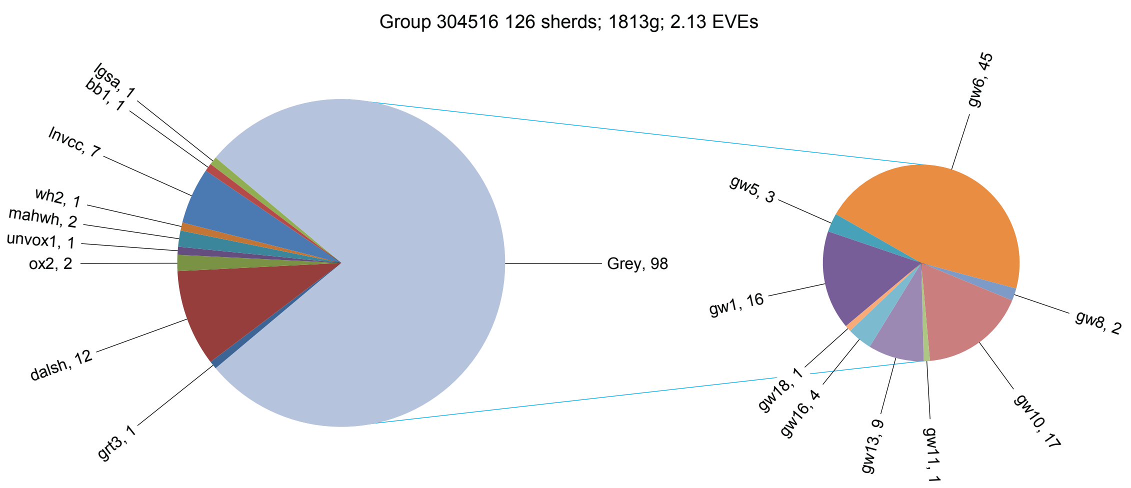


Fig. 4.71 Romano-British pottery: composition of Group 304516

dating after *c.* AD 250. Some material, including a large medium-mouthed storage jar which is reminiscent of 1st- or 2nd-century forms, is probably residual. A total of 18 sherds in grogged types GRT 2/3/4 are also likely to be redeposited. A single sherd occurs in pink-grogged type PNK GT, which would accord with the 4th-century date for the group.

Mortaria are represented as 10 sherds from a minimum of seven vessels (0.78 EVEs), mainly of Mancetter/Hartshill type. Single examples of hooked rim (m1) and collared forms (m4) are probably redeposited. Five vessels (0.45 EVEs) are wall-sided vessels, including one example of form m9, which is suggestive of dating into the early or mid-4th century. Mortaria from other sources include a sherd of Oxford red-slipped ware and two of Lower Nene type. The latter are of reeded rim form (Fig. 4.65.79), typical of production across the late 3rd or 4th centuries (Hartley and Perrin 1999, 129–32).

A total of 19 sherds or 7% comprise Lower Nene colour-coated ware, with a further six 'self-coloured' and two mortaria sherds considered to be from the same source. Identifiable forms among the colour-coated ware include a 'castor box', bowls based on samian forms 31 and 38 (Fig. 4.65.74), a beaker of funnel-necked/bead-rim form and a dish with plain rim. Dating for all forms extends from the late 3rd to 4th centuries (Perrin 1999, 96–104). The 'self-coloured' Lower Nene forms include sherds from a face-necked flagon or 'vase'. Comparable examples include a vessel from Stibbington for which a 4th-century date has been tentatively suggested (Howe *et al.* 1980, fig. 8, 96).

Boundary ditch 304516, DE3004 (126 sherds; 1813 g; 2.13 EVEs; Figs 4.64.60–1; 4.65.67, 70–1; 4.71)

Boundary 304516 extended south-eastwards of the north-western site boundary, running close to stone-built Structure 23 (Fig. 4.38). Two coins, radiates dating *c.* AD 270–96 (ONs 1511 and 1512), are associated with this feature. A single sherd of South Gaulish samian is clearly residual.

Reduced coarsewares make up the majority (98 sherds or 78%). Forms include jars of neckless/everted-rim (Fig. 4.64.61) and 'cup-rim' form (Fig. 4.64.60). Open forms are of the typical late Romano-British/BB1-derived type (Fig. 4.64.67, 70) and wide-mouthed, necked classes. The jars, particularly Fig. 4.64.60, compare to vessels from Swanpool, Lincoln (Webster 1947, fig. 3, C40–48), and present from 4th-century groups from the city (Darling 1977, nos 54–55).

Dales ware makes up a smaller component compared to ditch 301507 (9.5% by count) and there are no Dales type jars among the reduced types. Mortaria are present in the group as two Mancetter/Hartshill sherds, including the rim of a collared (m5) vessel which typologically probably dates to the 3rd century. Lower Nene wares are present only as colour-coated ware (7 sherds or 5.6%). Included are a plain-rimmed dish, of later 3rd- or 4th-century type (Perrin 1999, 101), and a small sherd from a 'castor box' lid.

The *terminus post quem* of *c.* AD 270 provided by the coins is consistent with evidence from the pottery. Dating past *c.* AD 300 is hinted at by greyware jars resembling Swanpool products and probably by the Lower Nene colour-coated dish. The quantity of colour-coated ware is lower than for mid-later groups and there are no specific indicators of such dating.

Ditch 304521, DE3004 (174 sherds, 3225 g, 2.03 EVEs; igs 4.64.58–9; 4.65.66, 78; 4.72)

Boundary 304521 was located close to the north-western limit of the site, approximately 20 m east of stone-built Structure 23 (Fig. 4.38). The pottery comprises material from six excavated sections and includes 16 sherds from bulk soil samples. All appears consistent in composition and is considered to date to the mid-later 3rd or perhaps the early 4th century. Six sherds of samian are present in the group. Although all may be residual, the higher East Gaulish count is of note.

Reduced coarsewares are the largest element (81 sherds or 47%). Forms comprise jars of neckless/everted-rim and necked/medium-mouth type. Of note is a 'Dales type' jar (Fig. 4.64.59). Bowls are present as conical flanged vessels and dishes as plain-rim form. Dales ware

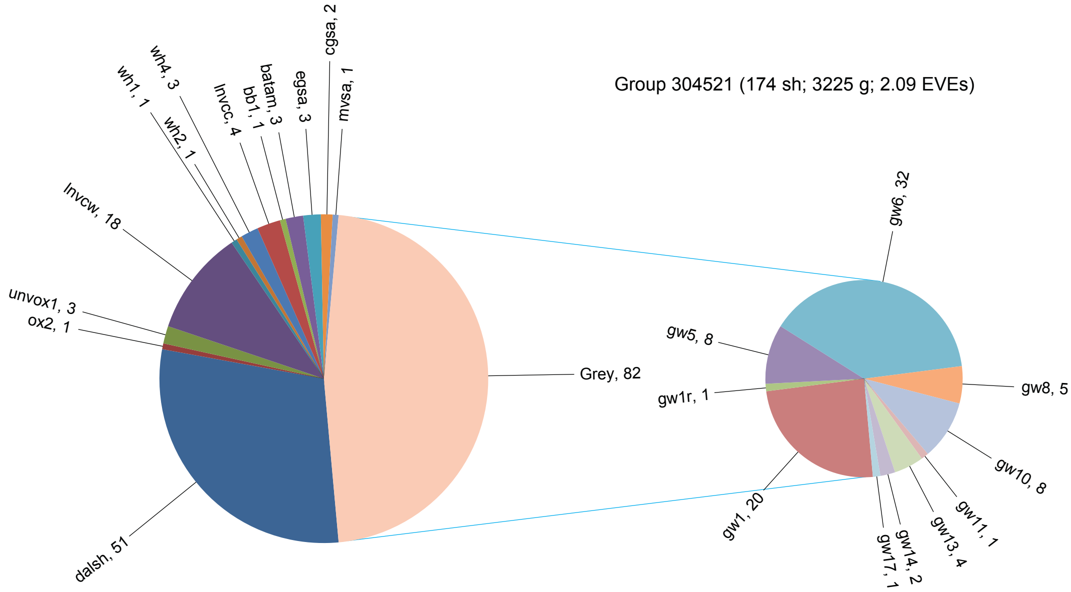


Fig. 4.72 Romano-British pottery: composition of Group 304521

(jars) make up 29% of the group (according to sherd count) occurring, self-evidently, as jars of distinctive type (Fig. 4.64.58).

Lower Nene colour-coated ware occurs in small quantities and no forms were identifiable. A bowl imitating samian form 36 (Fig. 4.65.78) is, however, from this source and matches vessels from Stibbington for which tentative 4th-century dating is given (Howe *et al.* 1980, fig. 8, no 97; Perrin 1999, fig. 67, 353). Dorset Black-burnished ware occurs as a single sherd of indeterminate form. Of note is a dish in mudstone-bearing fabric GW18, a poorly represented type but present also in nearby ditch 304516, also as a BB1-derived form.

Termini post-quo are provided in this group by Dales wares and other coarseware vessels such as a conical flanged bowl in fabric GW6. With one possible exception (Fig. 4.65.78), there are no vessels present which need date after *c.* AD 300. The substantial Dales ware component and low representation of colour-coated ware contrast with mid-later 4th century groups such as 301507 (below) and dating before *c.* AD 325 is favoured.

Summary discussion

Dating and supply

The archaeological work undertaken in 2009 was peripheral to the main settlement of *Margidunum* and the assemblage cannot claim to be fully reflective of ceramic supply across the entire period of activity at the Roman small town. The assemblage does, however, address the question of pre-Romano-British activity, with deposits in DE3001/3004 providing clear evidence for Late Iron Age occupation possibly continuing up to the conquest period. The associated pottery assemblage is small, the coarsewares reflective of pottery use as understood from contemporary groups from the region. The inclusion of North Gaulish whitewares and amphora sherds (Fig.4.73) is a hint of higher status, and perhaps also of contacts with the large regional centres such as *Ratae*, where equivalent types are common. These few continental types present are not 'military' in character and there are ample parallels to suggest a wholly pre-invasion date.

There is little evidence specifically relating to the period of the supposed military occupation, considered by Todd (1969, 40) to date to the period *c.* AD 50/55–75. The limited evidence for early Romano-British activity in DE3001/3004 might conceivably relate to this period, though this too is devoid of clearly military associations and of the Neronian or early Flavian samian recorded from the earlier excavations. It seems likely that activity of the military phase may be largely confined to the areas astride the Fosse Way (*ibid.*, 22). What evidence there

Fig. 4.73 Stamp on amphora sherd from mid-Romano-British pottery assemblage

is for this period from the current work appears to be redeposited, limited to sparse quantities of pre-/early Flavian samian from eastern extension of DE3001 (see Monteil, below) and from selected coarseware forms from the same area (Fig. 4.63.32). The earliest sizeable stratified groups (waterhole 218519 in DE3001 close to the Fosse Way, and pit 303115 in DE3003) are later Flavian, probably then post-dating the military activity.

In its composition the early Romano-British assemblage comprises mainly unsourced, though probably local, types, with few imports and specialist types. Although direct comparisons with previous (unquantified) assemblages from *Margidunum* are not possible, a discordant aspect appears to be with the relatively modest quantities (15% by count) of grogged wares thought equivalent to Todd's 'Trent Valley wares'. By contrast Todd remarked that such types made up 'an enormously high proportion' of the 1st-century AD 'greywares'. The *Margidunum* pottery studied by Todd included material from Oswald's excavations, and may not have been a representative sample. Even so Todd's remark is striking and hints further that the assemblage associated with the settlement core of the town is compositionally different and likely to be earlier (Neronian/early Flavian) in emphasis.

The assemblage relating to the mid-Romano-British period is considerably larger, focused on DE3002 and the eastern arm of DE3001. Analysis indicates that specialist and continental wares are by now significant elements, as are traded wares including finewares from the Nene Valley. By contrast, the supply of utilitarian reduced wares is primarily from the north, with greywares largely derived from Trent Valley kilns at or northwards of Newton on Trent (Field and Palmer-Brown 1991). It seems likely that transport of these wares and subsequently of Dales wares from the lower Trent may have been primarily riverine.

Pottery from the late Romano-British period is moderately large and well dispersed, perhaps reflecting an extra-mural expansion of the site. The evidence from the stratified pottery and coins is that activity is focused in the period before *c.* AD 350. Only for stray sherds from DE3002, unphased layers and selected groups from roadside enclosures in the southern portion of DE3001, can a strong case be made for activity into the mid-later 4th century. Overall, the late Romano-British assemblage reflects already established patterns in supply, with coarsewares still provided primarily by kilns along the Trent. The supply of Dales wares may have been relatively short-lived, it being largely absent in the latest (mid-4th-century) groups. The few groups dating to the mid-/later 4th century hint that the Lower Nene becomes increasingly important, supplying a range of vessels including mortaria.

'Status'

A number of aspects in the assemblage can be seen as reflecting the status of *Margidunum* as a secondary town or minor civilian centre. The elevated levels of fine and specialist wares, typically seen with urban or semi-urban centres (Willis 2005), may as much reflect ready access to such types along a major routeway as higher levels of wealth/'sophistication' of inhabitants and indulgence in Roman-influenced dining habits or cuisine.

Samian representation rises to its highest level in mid-Romano-British deposits: 321 sherds or 8.2%. This figure is within the range expected for smaller civilian centres across the province (Willis 2005), albeit that aspects of the samian composition are closer to rural groups (see Monteil, below). Comparisons with other assemblages from the region, based on analysis by Leary (forthcoming, figs 1–2) using a mix of roadside settlement and rural farmsteads, indicates that the representation is significantly higher than for most of the 13 site groups examined. The figure is also considerably in excess of the Saxondale group, where samian was poorly represented (<1%), even from the main mid-/later 2nd-century elements of the assemblage. For most of the sites examined by Leary, samian levels are in the range 1–5%. Only the assemblages from the site at Newark Northgate (Kinsley 1994) and from Lincoln (Darling 1999) included proportionally larger samian components than does *Margidunum* Hinterland.

Utilising the same comparanda (Leary forthcoming a, figs 1–2), occurrence of mortaria from *Margidunum* Hinterland and Saxondale (1.7% and 1.5% by sherd count respectively) are each consistent with rates from sites of all types. Amphorae were entirely absent from Saxondale; in contrast representation at *Margidunum* Hinterland (1.9% by count) is higher than for all sites other than Lincoln (Darling 1999).

Inter-site comparisons using samian and amphorae are most valid for the period before *c.* AD 250/300. As an index of status in the late Romano-British period, Leary looked at colour-coated wares (primarily Lower Nene and Swanpool wares) and, although it is unclear the extent to which chronology, intra-site variability and proximity to source (particularly to the Swanpool kilns) are influencing factors, her analysis shows a distinct correlation between site type and abundance. This ranged from over 25% at Lincoln to below 1% for some rural groups. The equivalent figure for late Romano-British *Margidunum* Hinterland is 7.3% (by count), which is similar to the Fosse Way sites including Willoughby-on-the-Wolds and Newark Trent Lane, but lower than those at Brough and one group from Newark Northgate.

List of illustrated pottery

Ceramic Phase 1 (Late Iron Age/early Romano-British contexts, unless stated)

(Fig. 4.62)

1 Necked jar with cordon. Fabric sh2. Context 302945, pit 302943, DE3001.

2 Handmade jar; upright simple rim. Fabric SH2. Context 306066, cut 306065, Enclosure A ditch 218756, DE3006.

3 Carinated bowl. Fabric BS3. Context 306038, posthole 306036, DE3006.

4 Carinated bowl. Fabric BS1. Context 306744, cut 306760, Enclosure E 218779, DE3006.

5 Necked jar/deep bowl with cordon. Fabric SH2. Context 306347, cut 306343, Enclosure E ditch 218778, DE3006.
6 Necked bowl. Fabric BS2. Context 306371, cut 306370, Enclosure A ditch 218768, DE3006.
7 Neckless globular jar (rilled). Fabric BS2. Context 306280, cut 306278, Enclosure E ditch 218778, DE3006.
8 Neckless globular jar with complex rim. Fabric BS3. Context 306080, cut 306076, Enclosure A ditch 218766, DE3006.
9 Neckless jar with triangular rim. Fabric GTA5. Context 306540, cut 306538, Enclosure E ditch 218779, DE3006.
10 Neckless jar with triangular rim and cordon. Fabric GTA5. Context 306122, cut 306121, Enclosure A ditch 218762, DE3006.
11 Jar or bowl; bead rim. Fabric SH2. Context 306304, ditch 306301, DE3006.
12 Butt-beaker (CAM 113). Fabric NOG WH. Context 306062, cut 306061 (early Romano-British), Enclosure A ditch 218756, DE3006.

Ceramic Phase 2 (early Romano-British contexts, unless stated)

13 Large, necked storage jar with post-firing grafitto. Fabric SH3. Context 303136, pit 303115, DE3003.
14 Large, necked storage jar. Fabric SH3. Context 303118, pit 303115, DE3003.
15 Wide-mouth/S-profile bowl. Fabric GW2. Context 303136, pit 303115, DE3003.
16 Ovoid beaker/everted rim with internal groove (cf CAM 108). Deep roller stamped decoration. Fabric GW2. Context 303136, pit 303115, DE3003.
17 Ovoid beaker; short everted rim. Fabric GW2. Context 303136, pit 303115, DE3003.
18 Bi-conical jar with girth cordon and triangular rim. Fabric SH2. Context 303136, pit 303115, DE3003.
19 Girth beaker; cupped rim. Fabric GTA10. Context 302185, cut 302185, Enclosure G ditch 218558, DE3001.
20 Fabric SH3; Large, necked storage jar. Context 218259, feature 218260, DE3002.

(Fig. 4.63)

21 Rounded jar; bevelled rim with internal bevel. Fabric GTA3. Context 303980, cut 303979, Structure 10 penannular ditch 218652, DE3002.
22 Jar with furrowed shoulder and everted rim. Fabric GTA2. Context 302593, pit 218613, DE3001.
23 Ring-necked flagon. Fabric WH2. Context 30130, waterhole 2185198, DE3001.
24 Fineware bowl; in imitation of samian form 29? (cf. Oswald 1941, no. 9). Fabric OX3. Context 304385, (Romano-British), palaeochannel 304509, DE3004.
25 Channel-rim jar; rilled. Fabric SH1. Context 304385 (Romano-British), palaeochannel 304509, DE3004.
26 Carinated/cordoned bowl. Fabric GW6. Spread 303814 (mid-Romano-British), DE3002.
27 Carinated bowl with girth cordons and burnished lattice. Fabric GW6. Spread 303677 (mid-Romano-British), DE3002.
28 Carinated bowl with girth cordons and burnished wave. Fabric GW14. Spread 303677 (mid-Romano-British), DE3002.
29 Bowl in imitation of samian form 37. Fabric GW12. Spread 303677 (mid-Romano-British), DE3002.
30 Sherd with Parisian style decoration. Fabric GW16. Spread 303691 (mid-Romano-British), DE3002.
31 Platter (cf. Hawkes and Hull 1947: CAM26b). Fabric GW6. Spread 303691 (mid-Romano-British), DE3002.
32 Collared (Hoffheim) flagon. Fabric VRWWH. Context 301279, pit 301122 (mid-Romano-British), DE3001.
33 Fabric WH4; carinated bowl with reeded rim. Context 301279, pit 301122 (mid-Romano-British), DE3001.
34 Carinated jar/everted rim. Fabric GW10r. Context 218217, pit 218218 (mid-Romano-British), DE3002.
35 Ovoid beaker; triangular rim. Fabric GW6r. Context 301280, pit 301122 (mid-Romano-British), DE3001.
36 Ovoid or globular beaker/short everted rim. Fabric OX1. Context 301280, pit 301122 (mid-Romano-British), DE3001.
37 Tazza. Fabric WH4. Context 301065, gully 301064 (mid-Romano-British), DE3001.
38 Ring-necked flagon. Fabric WH1. Context 301179, pit 301178 (mid-Romano-British), DE3001.

Ceramic Phase 3 (mid-Romano-British contexts, unless stated)

39 Dish; plain rim with groove; burnished lattice (cf. Holbrook and Bidwell 1991, fig. 32, 57.1). Fabric DOR BB1. Context 303739, posthole 303740, DE3002.
40 Cup in imitation of samian form 33. Fabric CCM, posthole 303629, DE3002.
41 Dish with flat rim and base chamfer. Fabric GW1. Context 303739, posthole 303740, DE3002.
42 Beaker/samian form Déchelette 74 with appliqué moulded decoration. Fabric CNG BS. Spread 303678, DE3002.

(Fig. 4.64)

43 Bowl/flat rim with groove (cf. Holbrook and Bidwell 1991, fig. 31, 43.1). Fabric DOR BB1. Spread 303678, DE3002.
44 Necked jar/out-curved rim. Fabric BOG SH. Spread 303678, DE3002.
45 Indented beaker/curved rim and applied scale pads. Fabric LNV CC. Spread 303678, DE3002.
46 Beaker sherd with complex roller-stamped decoration. Fabric UNV OX. Spread 303678, DE3002.
47 Beaker/simplified cornice rim and zoned roller-stamped decoration. Fabric UNV OX. Spread 303678, DE3002.
48 Bag-shaped beaker/cornice rim; clay roughcasting. Fabric UNV OXrc. Spread 303677, DE3002.
49 Small bag-shaped beaker/cornice rim. Fabric LNV CC. Spread 303677, DE3002.
50 Shouldered bowl/out-curved rim. Fabric GW15. Spread 303677, DE3002.
51 Bifid-rim jar with rebate. Fabric SH1. Spread 303677, DE3002.
52 Jar with deep lid-seating. Fabric DER CO. Spread 303677, DE3002.
53 Dish/flat rim; burnished lattice decoration (cf. Holbrook and Bidwell 1991, fig. 32, 52.2). Fabric DOR BB1. Spread 303677, DE3002.
54 Face pot sherd? Fabric GW1. Topsoil 303500, DE3002.
55 Indented beaker. Fabric GW1. Spread 303626, DE3002.
56 Large storage jar. Fabric GTA8. Spread 303691, DE3002.
57 Bowl in imitation of samian form 37. Fabric LNV CC. Context 303736, well 303715, DE3002.

Ceramic Phase 4 (late Romano-British contexts, unless stated)

58 Dales ware jar. Fabric DAL SH. Context 304069, cut 304049, ditch 304521, DE3004.
59 Dales type jar. Fabric GW1. Context 304168, cut 304167, ditch 304521, DE3004.
60 Narrow-mouth/cup-rimmed jar; frilled cordon. Fabric GW6. Context 304320, cut 304316, ditch 304516, DE3004.
61 Fabric GW6; globular jar/everted rim. Context 304320, cut 304316, ditch 304516, DE3004.
62 Globular jar/everted rim with groove. Fabric GW6. Context 302200, ditch 302199, DE3004.
63 Dish; angular profile, plain rim. Fabric GW1. Context 303735, ditch 218656, DE3002.
64 Curved profile flanged bowl. Fabric GW6. Context 301504, waterhole 301507, DE3001.
65 Jar/everted rim. Fabric GW14. Context 301504, waterhole 301507, DE3001.

(Fig. 4.65)

66 Wide-mouthed necked bowl; burnished intersecting wave to lower girth. Fabric GW6. Context 302922, posthole 302921, DE3001.
67 Conical flanged bowl. Fabric GW6. Context 304320, cut 304316, ditch 304516, DE3004.
68 Curved-sided flanged bowl. Fabric GW6. Context 304287, deposit 304531, DE3004.
69 Wide-mouthed bowl. Fabric GW6. Context 301504, waterhole 301507, DE3001.
70 Straight-sided dish/plain rim. Fabric GW6. Context 304320, cut 304316, ditch 304516, DE3004.
71 Curved-sided dish/plain rim. Fabric GW6. Context 304320, cut 304316, ditch 304516, DE3004.
72 Indented beaker/curved rim; applied scale decoration. Fabric LNV CC. Context 304458, cut 304457, gully 304513, DE3004.
73 'Castor box' (late style). Fabric LNV CC. Context 301504, waterhole 301507, DE3001.
74 Bowl in imitation of samian form 38. Fabric LNV CC. Context 303735, ditch 218656, DE3001.
75 Curved-sided dish/plain rim. Fabric LNV CC. Context 301504, waterhole 301507, DE3001.
76 Bowl with white-painted arcs. Fabric LNV CC. Context 303662, cut 302663, gully 218660, DE3002.
77 Necked bowl with indents (as Oxford form C79: Young 1977, 166). Fabric LNV CC. Topsoil 303500, DE3002.
78 Bowl in imitation of samian form 36. Fabric LNV WH. Context 304073, cut 304070, ditch 304521, DE3004.
79 Reeded-rim mortarium. Fabric LNV WHm. Context 303735, ditch 218656, DE3002.
80 Large simple bowl (CAM 306). Fabric OX5. Context 304250, cut 304268, ditch 304517, DE3004.
81 Funnel-necked beaker/everted rim. Fabric GW16. Context 303507 (east of grave 303504), DE3002.
82 Cup/dish; plain rim. Fabric GW8. Context 305814 (not known), DE3002.
83 Bowl in imitation of samian form 36. Fabric OX2. Context 305507 (not known), DE3002.
84 Bowl in imitation of samian form 36. Fabric WH2. Context 304375 (not known), DE3004.
85 Necked jar; everted/hooked over rim. Fabric HAR SH. Spread 303626 (mid-Romano-British), DE3002.

Mortarium stamps

by Kay Hartley

NB 'right-facing' and 'left-facing' when applied to stamps indicates the relation of the stamp to the spout looking at the mortarium from the outside. In the term Mancetter/Hartshill, 'Mancetter' refers to the extensive pottery-making area in Mancetter parish, Warwickshire, which is immediately south-west of *Manduessedum*. The full extent of the production area is unknown, but it extends well into all the fields surrounding the large one immediately outside *Manduessedum* which is known as 'Broadclose'. The area to the north of *Manduessedum* (in the parish of Witherley, Leicestershire) has never been explored.

DE3001, topsoil 301000 (Fig. 4.74.1)

The retrograde left-facing stamp is not crisply impressed, but is almost complete, reading MOSSIV(s). This stamp is from one of six dies used by Mossius who worked in the Mancetter-Hartshill potteries; a die of his was found at Hartshill. There is no doubt that he was active in the Antonine period, but his work is uncommon in Scotland. His spout-types suggest that he started later than potters like Icotasgus, Gratinus and Sarrius (see below for all three), who are common on Antonine sites in Scotland, and that he was still working when later spout-types began to be used by potters like Iunius 2, Cicur(o/us) and Sennius. The Castle Nick Milecastle mortarium has the earlier kind of spout while the few others recorded including this example has a later type. A date within the period AD 145–75 should cover his activity.

DE3002, topsoil 303500 (Fig. 4.74.2)

The incomplete and retrograde potter's stamp reads [.]RVSC from right to left. It is by Bruscius, who used at least seven dies. A kiln apparently shared by Bruscius and Iunius was excavated in a quarry face at Hartshill in 1963 (unpublished), while 40 stamps of Bruscius found at Mancetter (*Manduessedum*) attest his activity there also. The Hartshill kiln (above) contained stamps from two dies of Bruscius and three dies of Iunius 2. This stamp is from one of his two dies represented at this kiln which he was presumably using with Iunius. His work and distribution are typical for an Antonine potter working in these potteries in the early to mid-Antonine period.

There is reason to place the Hartshill kiln in the latter part of the activity of Bruscius, partly because his associate there, Iunius, was a marginally later potter, but also because some rim-profiles associated with the two Bruscius dies represented at this kiln are of a near wall-sided type likely to belong to the latter part of his activity, and more common in the work of potters like Iunius. A date of AD 140–70 should cover his activity and this mortarium is unlikely to be early in this period.

DE3002, topsoil 303500 (Fig. 4.74.3)

A flange fragment with a broken stamp which had not

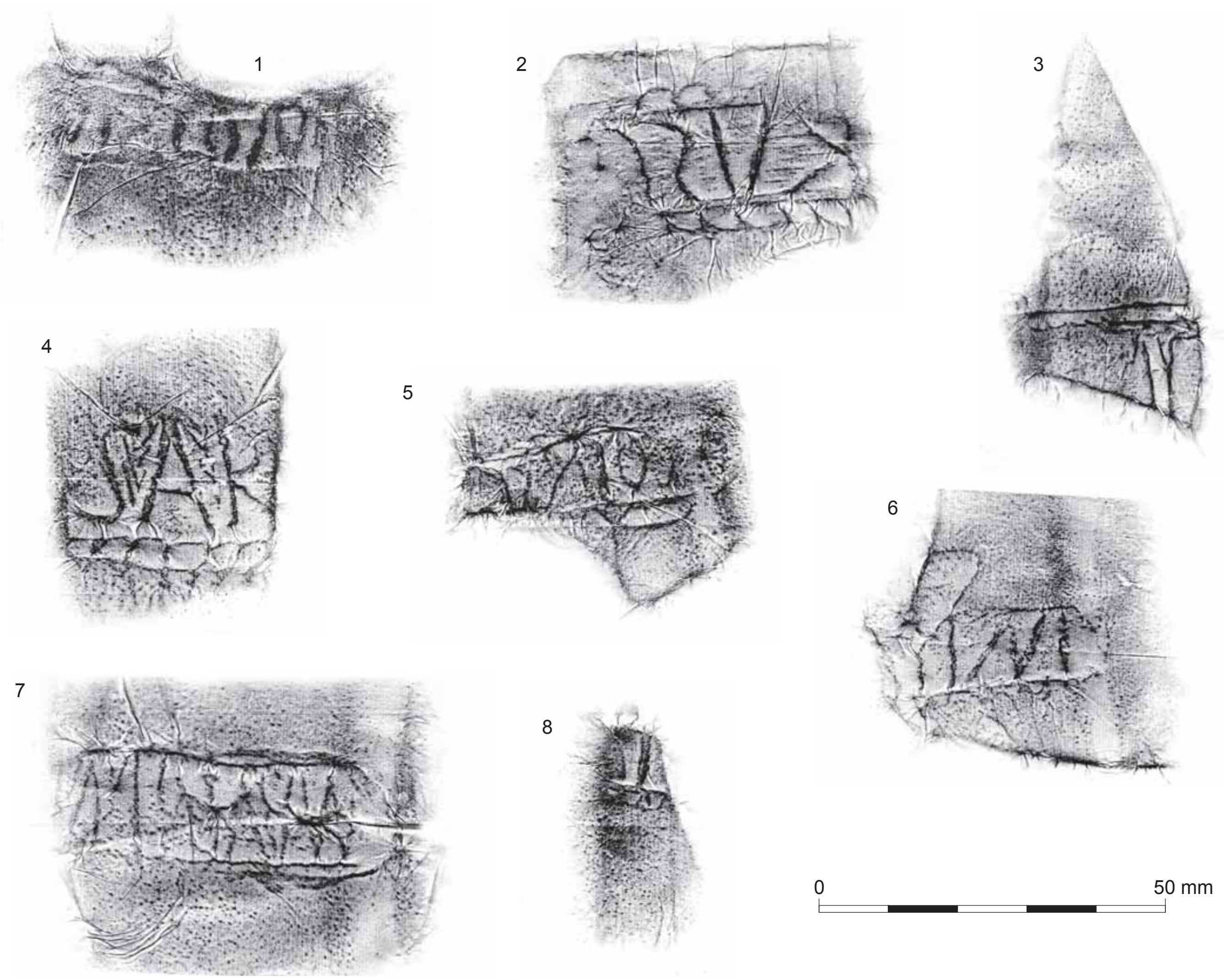


Fig. 4.74 Mortarium stamps (1–8). See catalogue for identifications

been fully impressed. Two attempts have been made to use the die resulting in the border being impressed twice. The fine diagonal border would best fit the work of the potter who stamped MAVRIIM or Iunius because the use of such fine diagonal borders was virtually confined to them. Some other potters like Bruscius and Sarrius used larger versions of this type of border but Maurem and Iunius are the only known Mancetter-Hartshill potters to use the smallest and finest versions. Enough survives for the stamp to be identifiable in the future when either new dies are known or more complete impressions are available for the dies which are known. The fragment is not from the same mortarium as from spread 303691 (Maurem), but it can be regarded as the same date, within the period *c.* AD 140–70.

DE3002, mid-Romano-British spread 303678
(Fig. 4.74.4)
One flange fragment with the stamp, SAR[..]. This is a fragmentary stamp of Sarrius. A second fragment has the top of an 'I' followed by the first half of a column of chevrons which marks the end of stamps from the same die of Sarrius. When complete such stamps read SARRI with SA and AR separated by decorative motifs composed of neat, inverted chevrons. These two fragmentary stamps could be parts of the same stamp or the second one could be from the complementary stamp which would have been on the other side of the same vessel. This stamp has lower and upper borders made up of diagonal bars. As sometimes happens, the upper border was not impressed. This is from the most commonly used of his seven dies. More mortaria are known for Sarrius than for any other 2nd-century potter. His main workshops were in the Mancetter-Hartshill potteries but he was also involved in production at three other workshops: at Rossington Bridge, near Doncaster, at Bearsden, near Glasgow, on the Antonine Wall and at an unknown location in north-east England. For further details of his work see Hartley (forthcoming) and Buckland *et al.* (2001, 45–7). His production was within the period AD 140–70 and could have ended slightly earlier than AD 170.

DE3002, mid-Romano-British spread 303678 (Fig. 4.74.5)

This incompletely impressed, right-facing stamp is retrograde, and reads, from right to left, [.]COTASG[.], with the second stroke of the blind A joining the S. This stamp is from one of at least nine dies of the potter Icotasgus and complete examples read ICOTASGI, the genitive form of Icotasgus. At least 95 mortaria of Icotasgus are now known from sites in Britain, including at least five from Scotland and excluding 20 stamps from the kiln-site outside *Manduessdum*. He has a typical distribution for a Mancetter-Hartshill potter active in the Antonine period, but many of his mortaria show pre-Antonine characteristics in the rim-form and spout, and he sometimes used a range of trituration grit which changed at the Mancetter-Hartshill potteries during the decade AD 130–40. The optimum date for his production is probably within the period AD 125–55. For some other details of this potter's activity see Hartley (2000, 33, 4).

This fragment has an area of red-brown slip on the upper surface of the flange which is so unusual for this fabric at these potteries that only one other example is known, on a mortarium of Imemituobon found at Bearsden. Some potters at these potteries did sometimes paint their stamps red-brown, but in those instances the paint is clearly limited to the stamps, whereas in these two mortaria the red-brown slip is more dispersed and there is evidence with the mortarium of Imemituobon at least that the slip covered the whole of the vessel including the inside.

DE3002, mid-Romano-British spread 303691 (Fig. 4.74.6)

The broken stamp is from the most commonly used of the nine dies used by Gratinus; it reads [....]INI with N sloping to the right, but the lower parts of the preceding letters AT survive. More than 80 of his mortaria are known from occupation sites including 10 from sites in Scotland. One kiln of his has been excavated at Hartshill (unpublished) and he was involved at another kiln there, while mortaria found on the kiln-site outside *Manduessedum* would fit with activity there also. Such evidence as is provided by his distribution, rim profiles, spout-types and his activity at Hartshill suggest that he was an exact contemporary of Icotasgus. AD 125–55 should cover his production period.

DE3002, mid-Romano-British spread 303691 (Fig. 4.74.7)

Two joining rimsherds broken in antiquity, one preserving the upper half of the potter's stamp, the other the lower half. Together they provide a complete stamp reading MAVRIIM; the A has a diagonal dash instead of a bar; all the letters are thin, even slightly spindly. There are at least three other dies with exactly the same reading and, if he followed a common practice of dropping the final]VS, one would expect his name to be Mauremus, the two verticals 'II' representing E, a simple contraction of the nominative form that was a common but far from universal practice.

The importance of this potter's precise name lies in the fact that there are two other dies which give the complete reading MAVRI and seven for which the readings are incomplete, giving MAVR[.. or MAV.., most of which probably belong to the potter stamping MAVRI. The basic question is whether we are dealing with one potter, Maurus or Maurius, and a second potter called Mauremus, or whether all the dies belonged to a single potter, called Mauremus or Maurius.

MAVRI is a normal contraction for MAVRVS (in the genitive case) or MAVRIVS (in the nominative case). It would not be anticipated as a contraction for MAVREMVS though it is not entirely impossible – stamps reading 'MINOM' belong to Minomelus. The more obvious possibility is that the M in MAVRIIM could represent '*manu*', 'by the hand of', preceded by the genitive form of Maurius, 'MAVRII'. Unfortunately only one British mortarium potter, Austinus of Wilderspool, Walton-le-Dale and Carlisle, is known to have used *manu* in this way and none is recorded using M alone. There is also no example of this ever happening in the Mancetter-Hartshill potteries and in every other respect MAVRIIM is normal for these potteries. Finally it is conceivable that the similarity in name was because that they were related.

Thus, while the stamps MAVRIIM and MAVRI may have belonged to a single potter or 'firm', they have always been treated separately and it is reasonable to continue to do this unless future finds resolve the difficulty. With very few exceptions the mortaria stamped MAVRIIM have, like this example a wide shallow flange, in contrast to the mortaria stamped MAVRI which all have narrower deeper flanges. There are also potentially valuable differences in spout-types in the few examples available to study. It is virtually certain that the mortaria stamped MAVRIIM predate those stamped MAVRI. The latter belong to the latest potters to stamp mortaria in these potteries.

Up to 18 mortaria of the potter who stamped MAVRI were associated with one kiln at Mancetter (Hartley 1959, 8–11 and fig. 6); this total includes some from what appeared to have been its stoke-hole, excavated in 1964 (unpublished); it was clear in this excavation that the kiln drawn in the 1959 report was the one associated with the stamps (MAVRI and others); there were several other stamps not counted here because only the first two letters for the die, MA[...] are known. No stamps from dies giving MAVRIIM were recorded from this kiln or its stoke-hole. The other major potter associated with the MAVRI mortaria at this kiln was Sennius, 17 of whose mortaria are recorded from the Wroxeter gutter, dated AD 150–70 (Atkinson 1942, 279–80). There is good reason to place these two potters among those who were the latest to stamp mortaria in these potteries. A date of AD 150–80 is indicated for them.

Five mortaria stamped MAVRIIM were associated with a kiln not far distant, used primarily by Sarrius (kiln 1, excavated 1964, unpublished), who was a marginally earlier potter, *c.* AD 140–70 (see above). For what it is worth, the MAVRIIM mortaria associated with that kiln are the only recorded exceptions to his normal wide shallow profile; they have more in common with the mortaria of Maurus/ius. The kilns concerned were sufficiently isolated to support the assumption that the stamped mortaria associated with them were likely to have been fired in them rather than being amongst material transported from elsewhere to fill the kilns and stoke-holes after they fell into disuse. In general the incidence of finds fell off rapidly away from kilns. A date within the period AD 140–70 would certainly cover MAVRIIM's work, but a date beginning *c.* AD 150 could be more realistic.

DE 3002, mid-Romano-British ditch 218652, cut 303901, fill 303903 (Fig. 4.74.8)
A flange fragment with a broken stamp. The fragmentary stamp surviving is most likely to be from a die of Similis 1, which has an unusual border similar to this, but until further examples are found this identification cannot be verified. To date only this die-type has a border which could be identical. Similis 1 was active within the period AD 130–60.

Samian

by G. Monteil

Introduction
Only the samian from areas DE3001 and DE3002 is reported on in detail here (Tables 4.10 and 4.11); details of the samian from other areas are incorporated into the reports for the Romano-British assemblages as a whole. In total, the excavations in DE3001 and DE3002 produced 637 sherds of samian ware, weighing 8.6 kg, and with a rim EVEs (Estimated Vessel Equivalents) figure of 13.5 (Table 4.12), though only 437 sherds are from Romano-British contexts. Most of the samian material reported on comes from the small excavation to the east of the Fosse Way (DE3002), which produced 558 out of the 637 sherds. Ten sherds are unstratified.

The analysis of the samian was undertaken in two phases. The whole assemblage was first catalogued and quantified following the methodology and codes used at Museum of London Archaeology (Symonds 1999). The fabric of each sherd was examined, after taking a small fresh break, under a x 20 binocular microscope.

Table 4.10 *Margidunum* Hinterland: samian fabrics represented in DE3001

Fabric	*Count*	*% sh*	*EVE*	*% EVE*	*MNV*	*%MNV*
La Graufesenque	25	36.2%	0.06	7.7%	24	36.4%
Les Martres-de-Veyre	2	2.9%	-	-	2	3.0%
Lezoux	30	43.5%	0.41	52.6%	28	42.4%
East Gaulish	12	17.4%	0.31	39.7%	12	18.2%
Total	69	100%	0.78	100%	66	100%

Table 4.11 *Margidunum* Hinterland: samian fabrics represented in DE3002

Fabric	*Count*	*% sh*	*EVE*	*% EVE*	*MNV*	*%MNV*
La Graufesenque	35	6.3%	1.14	9.1%	34	7.1%
Montans	1	0.2%	-	-	1	0.2%
Les Martres-de-Veyre	17	3.0%	0.33	2.6%	13	2.7%
Lezoux	416	74.6%	9.34	74.7%	361	75.1%
East Gaulish	89	15.9%	1.69	13.5%	72	15.0%
Total	558	100%	12.5	100%	481	100%

Table 4.12 *Margidunum* Hinterland: combined samian data for DE3001 and DE3002 with unstratified vessels listed for information

Fabric	*Unstratified*		*Total DE3001 and DE3002*					
	Count	*EVE*	*Count*	*% sh*	*EVE*	*% EVE*	*MNV*	*%MNV*
La Graufesenque	-	-	60	9.4%	1.2	8.9%	58	10.4%
Montans	-	-	1	0.2%	-	0.0%	1	0.2%
Les Martres-de-Veyre	-	-	19	3.0%	0.33	2.5%	15	2.7%
Lezoux	10	0.185	456	71.6%	9.93	73.8%	398	71.6%
East Gaulish	-	-	101	15.9%	2	14.9%	84	15.1%
Total	10	0.185	637	100%	13.5	100%	556	100%

Each archive entry consists of a context number, fabric, form and decoration identification, condition, sherd count, rim EVEs, rim diameter, weight, notes and a date range. The presence of wear, repair and graffiti was also systematically recorded.

In the light of the recommendations made in the assessment report (Monteil 2011a, 140), the decorated and stamped samian became the subject of further analysis. Some 85 sherds (1.5 EVEs) of decorated samian and 18 vessels with stamps were identified, where possible, to individual potters or groups of potters. Catalogues of the decorated ware (D1–D22) and potters' stamps (S1–S17) were then compiled. The original dataset was then updated, refining the fabric identifications and dating.

Using EVEs data, graphs were produced to reflect the range of forms present in each of the main samian fabric groups. More general functional profiles for each phase were attempted but these proved difficult to produce and interpret. The EVEs figure for the early Romano-British phase is low and a number of intrusive vessels had to be removed from the analysis. Much of the samian ware was recovered residually in the late Romano-British phases or modern layers and the resulting graphs proved meaningless. Histograms by fabric group were therefore favoured as they enabled a broad chronological overview of the samian material. The evidence from the stamps suggests that the vessels from Central and East Gaul are contemporary; data for both of these fabric groups were therefore combined to try and assess the functional profile of the 2nd-century AD samian assemblage from DE3002. Broad functional categories comparable to the ones used in Willis 2005 were favoured and both EVEs and number of vessels are exploited.

Attempts were made to compare this samian group with the samian assemblage recovered from Oswald's excavation at *Margidunum* and published in 1948. Recent recording of the Felix Oswald samian collection at the University of Nottingham Museum has updated the catalogue of the stamped and decorated material from *Margidunum* and provides some quantified data with which to compare the current group.

Condition

A significant proportion of the stratified assemblage comes from large spreads found in DE3002 and assigned to the mid-Romano-British phase: 303677 with 44 sherds, 303678 with 112 sherds, 303691 with 66 sherds and 303814 with 18 sherds (Fig. 4.23). In the late Romano-British phase, spread 303626 (Fig. 4.46) accounts for 25 out of 90 sherds. All the stamps are from spreads and the topsoil (303500).

The assemblage is, on the whole, in good condition. The average sherd weight is *c.* 19 g, though it is higher for the samian group from DE3002 (*c.* 21 g) than for that from DE3001 (*c.* 8 g). The largest and better preserved subgroup of samian ware (139 sherds with an average weight of *c.* 31 g) was recovered during machining of the topsoil (303500). Little of this material joins with fragments from more stratified groups: there are joining sherds from 303500 and grave 303504 and spread 303512 (both late Romano-British) and from 303500 and spread 303678.

A few sherds of late 2nd-century AD samian were found in contexts assigned to the early Romano-British phase and have been catalogued as intrusive, including a rim sherd from a mortarium (Dr.45) in spread 303804 (not illus.). There was also a redeposited rim sherd from a Dr.31 dish in large late Romano-British spread 302109 (shown on Fig. 4.30).

Chronology

With regards to the chronology of samian vessels recovered from the two areas, it is clear that quantities of South Gaulish samian are low, particularly in DE3002, where between AD 50 and 100 they barely make up 1% of the group. The picture is slightly different in DE3001 where South Gaulish samian plays a larger role within the overall group.

It is only in the second half of the 2nd century AD that more significant quantities of samian ware arrived on site (Fig. 4.75), particularly in the settlement east of the Fosse Way (DE3002). There is a sharp increase from the Hadrianic period, with a maximum loss reached in the Antonine period.

The fact that South Gaulish material appears to play a larger role in the group from DE3001 than DE3002 might be related to the change in occupation over most of DE3001 to a formal system of fields and associated droveways in the middle period (Cooke, mid-Romano-British activity, above) which would explain the smaller quantities of 2nd-century material recovered from the area east of the Fosse Way.

When compared to the data provided by the stamps from the earlier excavations within the central part of *Margidunum*, the chronology of the samian is broadly similar, though the samian from Oswald's excavations starts earlier (Fig. 4.76).

The assemblage composition

South Gaulish

There are 61 sherds of South Gaulish samian in this assemblage, most of which are from La Graufesenque. A single fragment, found in layer 303677 (Fig. 4.23) and comprising a flake from a Dr.37 bowl, could originate from Montans. Much of the South Gaulish material is abraded with an average weight of *c.* 6 g, the lowest value for any of the fabrics, and was found mixed with later material. Very little of it can clearly be identified as early. There are no South Gaulish stamps and the decorated material that can be attributed to a potter's style is late (Fig. 4.82.D1, D2 and D22).

The earliest fragment was recovered from the primary fill of the large waterhole 218519 in DE3001 (fill 301301) (Fig. 4.13). Though very little of the decoration remains, with gadroons in the lower frieze, the curve of the wall does not suggest a particularly late example of the form, which could make it a Neronian-early Flavian piece. Other examples of this bowl form (Dr.29) were found in

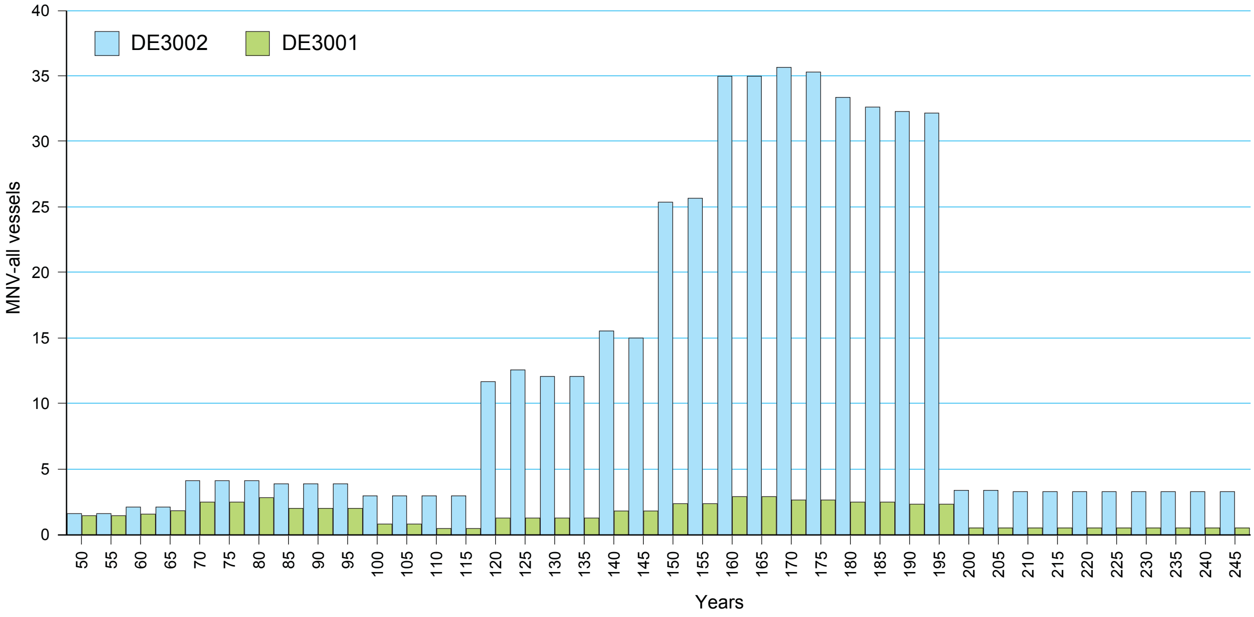


Fig. 4.75 Samian ware: quantities of vessels by date of manufacture (5-year spans)

posthole 301047 (DE3001, Structure 15, fill 301049), in the final layer of late phase ditch 218511 (DE3001, cut 301270, fill 301272), in the large boundary ditch in DE3001 (fill 301917) and in spreads of late phase occupation debris 303626 (Fig. 4.46) and 303804 (not illus.) (DE3002). Very few of the Dr.29s have decoration present and need not be early.

The only other potentially early sherds are mostly from DE3001 and include fragments of two dishes form Dr.15/17 recovered respectively from the final fill of early Romano-British pit 301090 (fill 301093) (Fig. 4.13) and from gully 218507 (cut 301070, fill 301098) (Fig. 4.18). A cup form (Rt.9) was found residual in an occupation spread (303626) in DE3002 (Fig. 4.46) and clearly there is a far smaller range of pre- and early Flavian forms and potters than those identified and illustrated by Oswald (1948, pls II–VI).

Most of the South Gaulish material is Flavian in nature and this is particularly apparent from Fig. 4.77, where Flavian types dominate the functional profile because of their relative freshness (Dé.67, Dr.35, Dr.37). Typically Flavian forms are well represented: 14 examples of Dr.37 bowls, a decorated beaker form, Dé.67, in ditch 218656 (fill 303735), a Dr.36 dish, a Dr.35 cup and two sherds from dish form Dr.42, one of which has part of the handle remaining, in spread 303626 (Fig. 4.46). Dr.37s outnumber Dr.29s at a ratio of 1.84:1, a figure that is almost identical to the one based on the collection

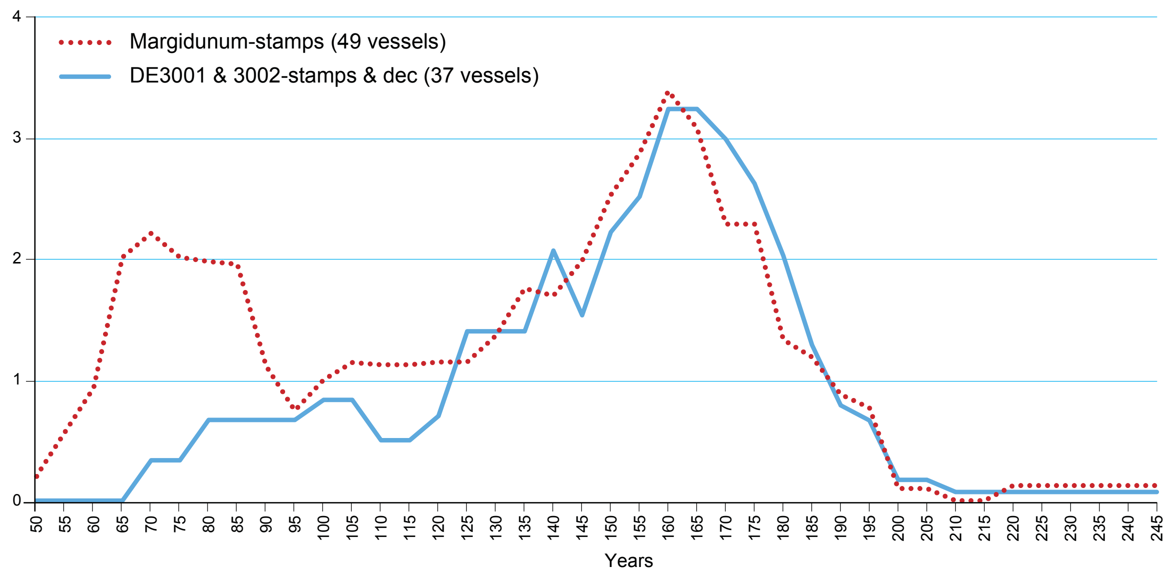


Fig. 4.76 Samian ware: date of stamped sherds from Margidunum *Hinterland and* Margidunum *town*

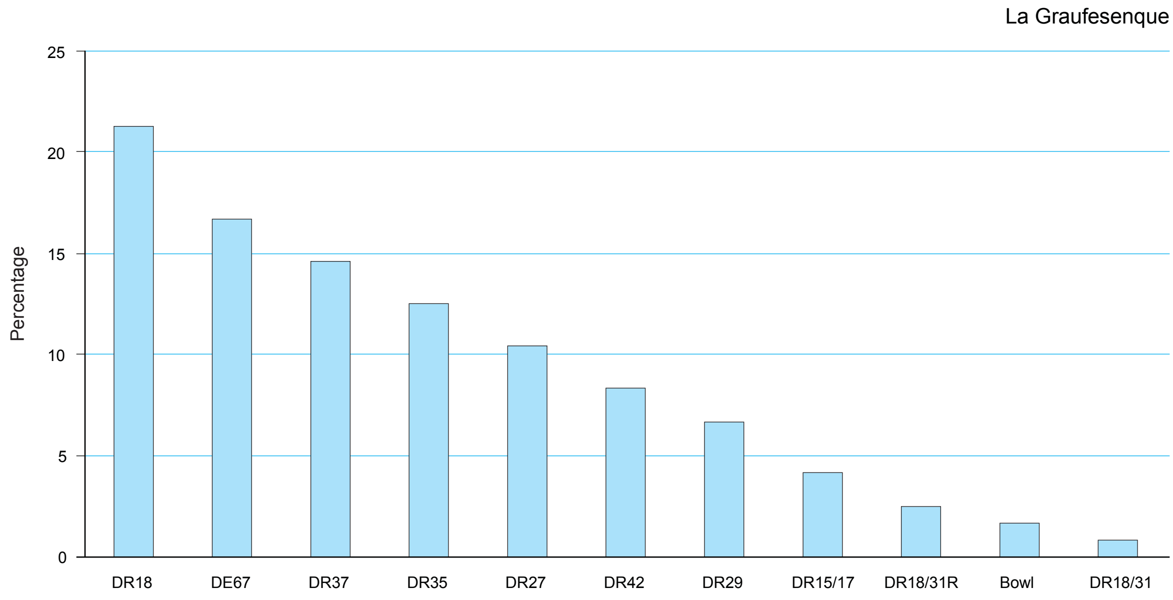


Fig. 4.77 Samian ware: quantities of South Gaulish (La Graufesenque) vessels by form

from *Margidunum* for which the decorated vessels have recently been reassessed (Monteil and Faber 2009).

Amongst the few stratified South Gaulish decorated vessels from DE3002, the secondary fill (301302) of waterhole 218519 contained a Dr.37 whose decoration suggests a date in the late Flavian or early Trajanic period (see Fig. 4.82.D1) and in DE3001, another late Flavian South Gaulish piece (Fig. 4.82.D22), was recovered from pit 301150, a recut of 301137 (Fig. 4.18).

Central Gaulish-Les Martres-de-Veyre

Nineteen sherds were identified as originating from the Trajanic Central Gaulish industry of Les Martres-de-Veyre. Very few forms were identified: several examples of dish Dr.18/31 and at least seven examples of decorated bowl Dr.37, two of which could be attributed to specific potters' styles (Fig. 4.83.D3 and 4).

Central Gaulish-Lezoux

By far the largest group (with 456 sherds), Central Gaulish samian vessels dominate the samian assemblage. The range of forms is limited and quantitatively dominated by two forms, dish Dr.31 and cup Dr.33, with a particularly high percentage of the latter (Fig. 4.78).

The Central Gaulish samian form profile stands out in its relatively high proportion of form Dr.33, making up 40% of the rim EVEs. This represents a much higher percentage of cups than the British trend for smaller civilian centres or rural sites, though there the calculations are based on number of vessels (Willis 2005, charts 16 and 17). The relative frequency of samian types at smaller civil centres in the year AD 160 shows that, when based on number of vessels, Dr.33 makes up *c.* 12% of the Central Gaulish group (*ibid.*, table 48). The dominance of the Dr.33 in the Central

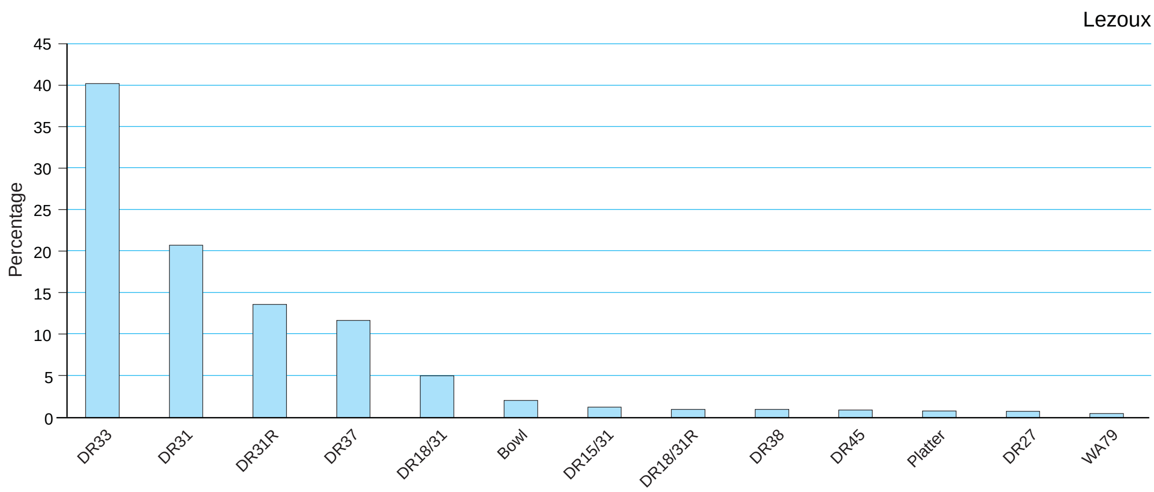


Fig. 4.78 Samian ware: quantities of Central Gaulish (Lezoux) vessels by form

Gaulish profile from *Margidunum* might be explained by the use of rim EVEs which can at times lead to a slight over-representation of smaller forms. However, a similar profile where Dr.33 made up a large percentage of the total rim EVEs was found at the roadside settlement of Navenby, Lincolnshire (Monteil 2011b, 84), and it remains a possibility that the trait is typical of such sites.

Decorated vessels rank fourth in the group, but the relative quantities remain quite low (*c.* 12% of the total CG EVEs and *c.* 13% of the total CG sherds) and are in keeping with evidence from contemporary comparable sites (Willis 2005, tables 35 and 42).

The Central Gaulish group dates to the entire period of import though characteristically Hadrianic forms are limited in this group to two Dr.27 cups, and a number of Dr.18/31 dishes are present. Some of the decorated pieces belong to this period (Fig. 4.83.D5–D9; Fig. 4.84.D21). One of the few stratified decorated Hadrianic Dr.37s comes from the primary fill of ditch terminal 218112, Structure 20 (Fig. 4.83.D7). As illustrated by the chronological graph, Antonine material dominates, however, with several potters dating to this period (Figs 4.83–4.84.D10–D20; Fig. 4.85.S1–S4 and S6–S8). Some forms illustrate that Central Gaulish products were reaching the site until the latter part of the 2nd century and possibly the beginning of the 3rd century AD: there are three examples of the mortarium form Dr.45 and a Central Gaulish beaker form Dé72 with cut-glass decoration from spread 303513 (Fig. 4.23) around Structures 18 and 19. These plain forms are among the latest being produced at Lezoux (Bet and Delor 2000; Delage 2003).

There are a few rarer forms worth mentioning: a dish with a flat-topped rim and hanging bead in the topsoil (303500). The form is known in Lezoux and listed there as a product of phase 7, dated to the second half of the 2nd century and the beginning of the 3rd century AD (Bet and Delor 2000, form 49). A rouletted variant of the bowl Dr.30 was recovered (layer 303691; Fig. 4.23); the form is relatively rare in Britain but not unknown and an example is recorded from Oswald's excavations (1948, pl. XXXVII, 13). Two examples of the slightly rarer variant of dish form Dr.15/31 (Webster 1996) were found, but they both derive from cleaning or machining layers (303500 and 303507). This form is also known from Oswald's excavations at *Margidunum* (1948, pl. XXXVIII, 1).

A body sherd from a possible inkwell was recovered from a fill in one of the ditches of Enclosure J, ditch 218538 (Fig. 4.11); the sherd is without slip on its internal surface and too thick-walled to belong to a beaker. The presence of a single samian inkwell from the group is in agreement with the few other groups available from smaller centres (Willis 2006, 126, table 2). The group from *Margidunum* itself yielded two samian inkwells (Oswald 1948, pl. XX, 6 and pl. XL, 5).

East Gaulish

East Gaulish samian is well represented with 101 sherds and an EVE of two. Very little of it is decorated or stamped, with only two stamps and two decorated forms identified: bowls Dr.30 in spread 303678 and Dr.37 in spread 303626, the latter with a little decoration surviving but not enough for a full identification. The two stamps on plain ware recovered from this group (Fig. 4.85.S5, S9) suggest that Rheinzabern was the main source of East Gaulish ware.

The shortfall in decorated bowls is partly made up by late plain samian bowls such as the Dr.38 (Fig. 4.79). Dishes and platters dominate the form profile (Fig. 4.80), with Dr.31 and Dr.32 making up slightly more than half of the East Gaulish group. Several examples of the platter form Dr.32 were also recovered by Oswald during his *Margidunum* excavations (1948, 105). The

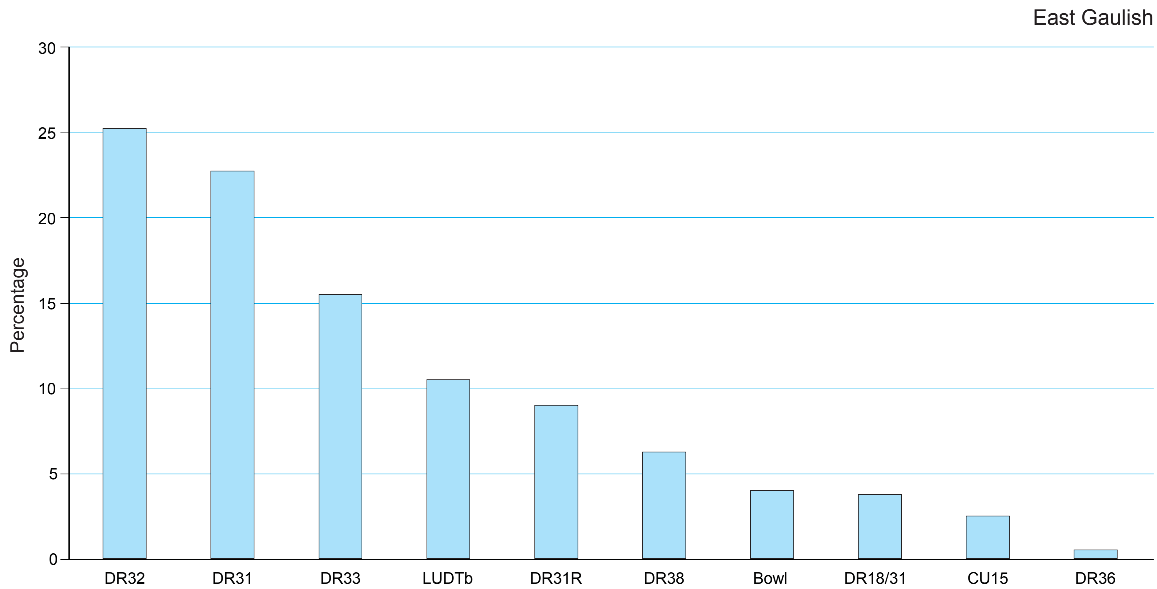


Fig. 4.79 Samian ware: quantities of East Gaulish vessels by form

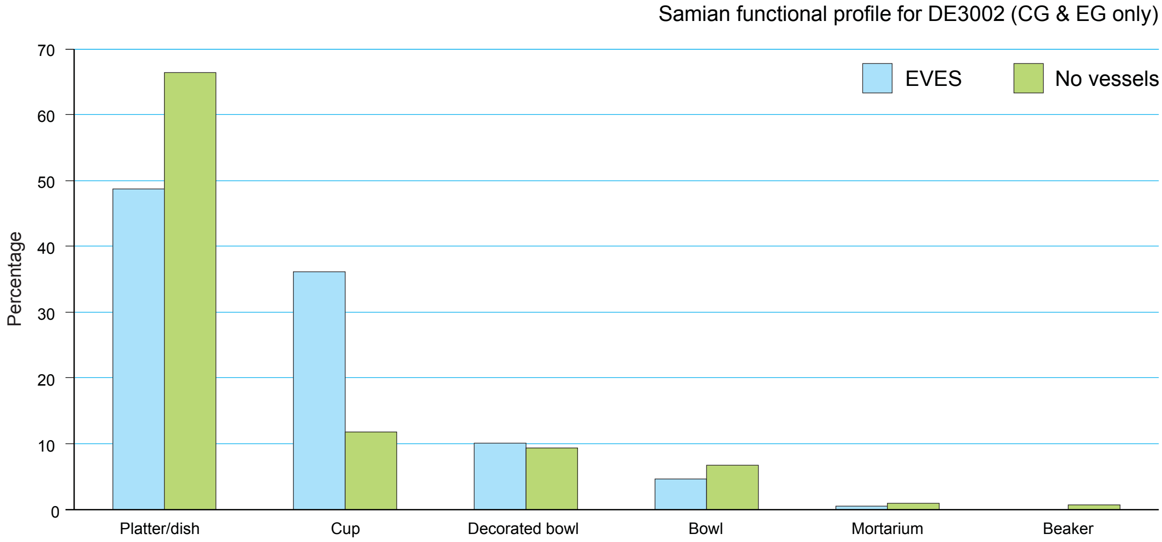


Fig. 4.80 Samian ware: functional profile of Central and East Gaulish vessels showing dominance of dishes and platters

range of forms is typical of the second half of the 2nd century AD, including Dr.32, Dr.38 and LudTg. Five sherds from the same unusual dish were recovered from the topsoil (303500) and spread 303678 in DE3002. The dish is typologically close to a LudTb (Oswald and Pryce 1920, pl. LIX, 3–4) but the top of the rim here is rouletted (Fig. 4.81). The dish was repaired in antiquity with at least two drilled holes.

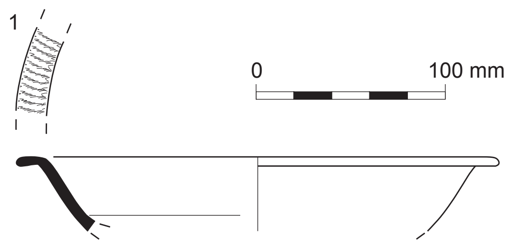


Fig. 4.81 Samian dish with rouletted rim from spread 303678 and topsoil

Use wear and repair

Nine vessels display signs of internal wear, often very idiosyncratic, particularly on 'cups'. Biddulph (2008) has studied form-specific wear, and the evidence from this group fits with his findings. A number of Dr.33 cups display wear concentrated in a thin band at the internal junction of the wall and base (pit 301170, machining layer 303500 and spread 303678). More open forms display a different type of internal wear, concentrating on an inner patch, and here Dr.32 and 36 dishes seem to have been used in this way for mixing and grinding (unstratified and from spread 303513). The Dr.32 platter has clear internal wear and what looks like a possible dark residue. It is possible that the platter was broken when used for grinding or mixing – the form is shallow and not adapted to stirring ingredients; the presence of wear so high on the wall would also suggest that it was tipped on its side during such use.

A total of 53 vessels (9.53% of the MNV) had been mended or prepared for repair; four come from DE3001, the rest from DE3002. Five South Gaulish vessels showed evidence of repair, but most of the repaired material is 2nd century in date, with 44 Lezoux vessels, three from Les Martres-de-Veyre and one East Gaulish dish. This reflects the predominance of Central Gaulish vessels in the samian group (Table 4.13). The percentage of repaired vessels appears relatively high when compared to other available evidence from a range of sites in Britain (Willis 2005, table 73). The data gathered by Willis suggest that the percentage of repaired samian ware is higher at smaller centres and roadside settlements (*ibid.*) and though here the percentage is still higher, the evidence from the present group fits within the overall trend for such sites. The range of forms with evidence of repair (Table 4.14) also fits with the evidence from other sites in Roman Britain (*ibid.*, table 75) and no particular selection of types seems to have taken place.

High quantities of repairs are often interpreted as symptomatic of difficulties in obtaining replacements, either because supply is difficult to access or dwindling, or because of a lack of wealth. Here more than half of

Table 4.13 *Margidunum* Hinterland: samian ware fabrics with evidence of repair in each phase (number of vessels)

Context phase	*Lezoux*	*East Gaulish*	*La Grauf*	*Les Martres*	*Total*
Early Romano-British	2	-	-	3	5
Mid-Romano-British	25	-	3	-	28
Late Romano-British	5	-	1	-	6
Modern	12	1	1	-	14
Total	44	1	5	3	53

Table 4.14 *Margidunum* Hinterland: samian ware forms with evidence of repair in each structural phase (number of vessels)

Context phase	*Decorated bowls*	*Bowl*	*Cup*	*Dish*	*Rouletted dish*	*Unid*	*Total*
Early Romano-British	3	-	-	-	1	1	5
Mid-Romano-British	5	3	5	8	5	2	28
Late Romano-British	2	1	1	1	1	-	6
Modern	1	1	1	8	3	-	14
Total	11	5	7	17	10	3	53

Table 4.15 *Margidunum* Hinterland: type of repair catalogued on the samian ware in each structural phase (number of vessels)

Context phase	*Drilled hole*	*Dove-tail*	*Rivet*	*Total*
Early Romano-British	3	2		5
Mid-Romano-British	22	5	1	28
Late Romano-British	5		1	6
Modern	9	3	2	14
Total	39	10	4	53

the repaired vessels were found in contexts attributed to the mid-Romano-British phase (Table 4.15) and could potentially be interpreted as an attempt to fill a gap in the dwindling samian supply to Britain after AD 200. There are, however, several arguments against such an explanation. Though the mid-Romano-British phase is admittedly long and some of the repair could of course date to the latter part of the phase, it is partly contemporary with a fairly constant samian supply to Britain (from AD 120 to at least AD 200). In addition the Central Gaulish vessels with evidence of repair that can be dated more precisely are not intrinsically very late: Fig. 4.84.D12, D13, D16, D17 and Fig. 4.85.S1. Moreover, inhabitants of this site might be expected to have had easier access to samian since they were located on a major route.

From the site of *Margidunum* itself Oswald recorded several repaired 1st- and 2nd-century samian vessels (1948, pl. IV, 6; pl. VII, 5; pl. XIII, 2; pl. XIV, 2; pl. XX1, nos. 1, 13; pl. XXIII, 10; pl. XXIV, 5, 11; pl. XXXV, no. 3; pl. XXXVI, 12; pl. XLI, 4, 12; pl. XLIV, 1). It is less than straightforward to estimate what proportion of the assemblage these represent – if one focuses solely on the fully reassessed decorated material, repaired vessels make up *c.* 7 % of the total number of 330 decorated bowls recorded in the museum collection. Out of the 85 Lezoux decorated bowls recorded at *Margidunum*, only eight present evidence of repair while for DE3002 five of the 29 vessels are repaired, suggesting a much higher proportion of repaired vessels in this group, almost twice as many.

Only four examples have lead rivets left *in situ*, while the others have remains of drilled holes (39 vessels) or filed/dove-tail slots (10 vessels). There is no clear chronological patterning in the type of repair occurring in each context phase (Table 4.15), though most of the dove-tailed examples occur on Central Gaulish vessels (Table 4.13), which fits with other evidence that suggests that this type of repair is more common on 2nd-century vessels than on 1st-century ones (Willis 2005, section 11.3).

For the early Romano-British period the number of repaired vessels seems low (five sherds representing five vessels), but the total number of vessels for the phase is only 35 and the repairs therefore represent a relatively high proportion of the group. Spatially, one comes from posthole 218214, one from late Iron Age/early Romano-British Enclosure C ditch 218586 (sherd dated AD 100–20), one from metalled surface 301024 outside Enclosure B (Les Martres-de-Veyre, Fig. 4.83.D3), and one from Structure 10 penannular ditch 218652 (Les Martres-de-Veyre, Fig. 4.83.D4). Interestingly three out of five of these sherds are decorated fragments from Les Martres-de-Veyre, perhaps an attempt to fill a gap in the Trajanic decrease in supply.

More than half of the repaired vessels were found in contexts attributed to the mid-Romano-British phase (Tables 4.13–15), in particular the spreads identified in DE3002 (Figs 4.20 and 4.23). Twenty-eight vessels present evidence of repair in the mid-Romano-British period which represents more than 10% of the total number of samian vessels for the phase. Spatially, spread 303678 seems to have yielded a good proportion of the repaired sherds (14 out of 28 repaired sherds for the period), 303691 has four repaired sherds (out of 66 samian sherds), 303677 has five, four of which are South Gaulish, the earliest repaired vessels for this phase and perhaps an attempt to curate them. Layer 303814 only yielded 18 samian sherds but, out of these, seven are repaired. Overall, it seems that there is more repaired samian in the spreads in the southern section of DE3002 than the northern one, in the area of the probable smithy (Structure 17). There are also repaired samian sherds in the secondary fill of well 303819 (Structure 16), in stone footing 303578 (Structure 19) and beamslot 218293 (Structure 21).

Four graffiti were identified, all from DE3002 – two come from spread 303678, one from 303500 and one from spread 303691. The graffiti from spread 303678 are of the 'X' variety and were found on the underside of two bases (a Dr.33 and a Dr.31). The other two are possibly literate, the one from spread 303691 is probably an owner's mark of which a possible reading is]VI; the example from 303500 is in the shape of what seems to be a large 'T' scratched on the external surface of a *mortarium* base.

Two vessels were trimmed for secondary use, both from spread 303678. The first vessel is a bowl Dr.30 with internal wear visible in the middle of the base and trimmed walls. The second example is a dish form Dr.31 whose base looks trimmed around its edge.

Conclusion

Although mostly residual, the South Gaulish material attests to occupation on site, particularly in DE3001 in the latter part of the 1st century AD. Samian quantities increase from the Hadrianic period, particularly in DE3002 with a maximum loss reached in the Antonine period. Most of the samian material is therefore Central and East Gaulish in origin and the emphasis is on the 2nd and early 3rd century AD.

The functional profile of the 2nd-century AD samian group shows high quantities of dishes and cups, though in slightly different proportions depending on the quantification method used (Fig. 4.80). Decorated vessels come third in the group whether using EVEs or number of vessels, a trait again more typical of rural sites. The fact that decorated bowls are generally less common by the later 2nd century (Darling 1998, p.172; Willis 2005) might influence their position on the graph. Plain bowls partly make up the shortfall in decorated ones but the quantities remain low. Finally, the last two categories – mortaria and beakers – are poorly represented (Fig. 4.80). Overall both quantification methods suggest that the range of forms, particularly the high quantities of dishes, is more typical of rural sites than roadside settlements (Willis 2005, chart 17).

The number of repaired samian vessels is high and could suggest the presence of a repair workshop in DE3002. The range of forms presenting evidence of repair is in keeping with the assemblage's profile with dishes taking up a large proportion of the group. The location of the site near a main road would prove an ideal situation for such workshops.

Catalogue of illustrated decorated samian ware (Figs 4.82–4.84)

The following catalogue lists and identifies the more diagnostic and better-preserved decorated pieces recovered from the site. The Inventory Numbers (Inv. No.) quoted for the South Gaulish vessels are taken from *European intake of Roman Samian ceramics:* http://www2.rgzm.de/samian/home/frames.htm.

The letter and number codes used for the non-figured types on the Central Gaulish material – such as B223, C281, etc. are the ones created by Rogers (1974). The figured-types referred to as Os. *** are the ones illustrated by Felix Oswald in his Index of figure-types on terra sigillata (1936–7).

South Gaul – La Graufesenque

(Fig. 4.82)

D1 Dr.37, scroll and basal wreath, the four-pronged motif in the wreath is the same as the one in the scroll and is close to the one used as a frond on a Dr.37 attributed to

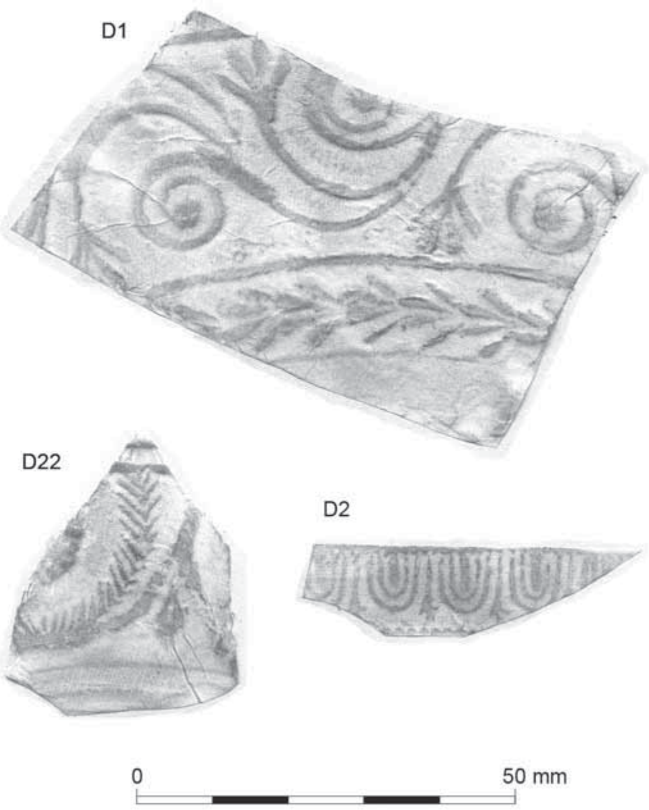


Fig. 4.82 Samian decoration rubbings (D1–2 and D22). See catalogue for details

Sulpicius/Sabinus iv (Dannell 1999, no. 541). The wreath is similar to the one on a signed Dr.37 by *Sulpicius* from Fos-sur-Mer (Mees 1995, Taf. 194, 5) and the scroll is close to one on a stamped Dr.37 by *Sulpicius* recovered from Tabard Square in London (Inv. No. 2006637 and Mills forthcoming). AD 80–110. Context 301302, waterhole 218519, DE3001.

D2 Dr.37, only the ovolo remains, it is close to the one on a stamped Dr.30 by *Mommo* from la Graufesenque (Inv. No. 1002034) and Winchester (Inv. No. 0005224, Mees 1995, Taf. 144, 8). AD 70–90. Spread 303677, DE3002.

D22 Dr.37 with a little decoration remaining. The chevron festoon is close to the one on a stamped example by *L. Cosius Virilis* (Inv No. 0005523) from Martigny (Mees 1995, Taf. 195, 3). AD 80–110. Context 301138, pit 301150, DE3001.

Central Gaul – Les Martres-de-Veyre

(Fig. 4.83)

D3 Dr.37 with a repair hole through the decoration. The ovolo, B29 and the wavy line are typical of *Igocatus* (Stanfield and Simpson 1990, pl. 17). The motif below is rather indistinct and impinges on the line, a trait typical of *Igocatus*. AD 100–20. Context 301025, trackway 301024, DE3001.

D4 Dr.37 with a repair hole just below the decoration. Very little of the decoration remains but a rosette that is probably C280 used by several potters from Les Martres-de-Veyre, X-13 in particular. AD 100–20. Context 30395, cut 3039491, penannular ditch 218652, Structure 10, DE3002.

Fig. 4.83 Samian decoration rubbings (D3–10). See catalogue for details

Central Gaul – Lezoux

D5 Dr.37, abraded, the ovolo is B32 used by potters X-5 and X-6B. The head of a figured type is visible and could be part of Os.569 used by X-5. The motif to the right is more difficult to identify with certainty. AD 120–45. Context 303507 (east of grave 303504), DE3002.

D6 Dr.37, little of the decoration remains but a small panel defined by wavy lines one of which is terminated by a small rosette (C281?) surrounding a little beaded circle, probably C6. *Quintilianus* group, AD 125–50. Spread 303691, DE3002.

D7 Dr.37, burnt, little of the decoration remains but both motifs, the rosette in medallion C20 and the little beaded circle C6 are used by the *Quintilianus* group in particular by *Ianvaris I* (Stanfield and Simpson 1990, pl. 71, 30 for a very similar arrangement). The little rosette used as filler (C281?) is also amongst their repertoire (Rogers 1999, pl. 94, 35; pl. 95, 53). AD 125–50. Context 218111, Ditch 218112, DE3002.

D8 Dr.37, the ovolo looks like B7, the *Attianus* ovolo. AD 120–45. Ditch 218656, Context 303735, ditch 218656, DE3002.

D9 Dr.37, the ovolo looks like B7, the *Attianus* ovolo. AD 120–45. Spread 303677, DE3002.

D10 Dr.37, the ovolo is B231, one of *Cinnamus*' ovolos and more typical of his middle style (Rogers 1999). Below is a freestyle decoration organized in two horizontal chases, one at the top with large animals running to the right and another one below with smaller animals running to the left. In the top chase are a large lion (Os. 1379), a large stag (Os. 1720 though the antlers are rather indistinct here) and a leopard (Os. 1507 though the spots are only visible on the back leg here). In the lower chase are a small lion (Os. 1421), a small stag (Os. 1781) and a little dog (Os. 1976?). All of these figures are attested in the work of *Cinnamus* (Rogers 1999). AD 140–60+. Joining sherds from topsoil 303500 (7 sherds); context 303503, grave 303504 (1 sherd); spread 303512 (2 sherds), and unstratified (1 sherd); DE3002.

(Fig. 4.84)

D11 Dr.37, the ovolo is B105 was used by several potters but *Albucius*, *Laxtucissa* and *Paternus II* in particular. The beaded line is more typical of *Paternus II* than *Albucius* who favours an astragalus one with B105. The bear (Os. 1578), the beaded line and the ovolo are on a stamped Dr.37 by *Paternus* II from the Felix Oswald Collection (University of Nottingham Museum accession number U.33.21) and on another bowl from the Museum of Wels (Rogers 1999, pl. 79, 32). The space filler in the shape of a half leaf is not a good match for J146, its edges are sharper, but a stamped bowl by *Paternus* II seems to have a similar motif (Rogers 1999, pl. 79, 38). The tail may be the lion on Stanfield and Simpson 1990 pl. 106, 20. AD 150–85. Context 301095, cut 301094, ditch 218508, DE3001.

D12 Dr.37 with half of a repair hole visible on the band below rim; the ovolo is B223 used by several potters but *Pugnus* often uses it with a guide line as here (Stanfield and Simpson 1990, pl. 154, 16; pl. 155, 21). AD 150–70. Context 301095, cut 301094, ditch 218508, DE3001.

D13 Dr.37 with two dove-tail repair slots, two joining sherds; ovolo B105 with fine beaded border and a panel decoration with motifs all appearing in the work of *Laxtucissa* and *Paternus II*. The decoration consists of two panels with a festoon, F15, containing a dolphin (Os.2392) on the left and a cupid (Os. 450) on the right. The cupid and festoon are on a stamped Dr.37 by *Laxtucissa* (Stanfield and Simpson 1990, pl. 97, 7) but with an astragalus border, the festoon and dolphin are present on another stamped Dr.37 by *Laxtucissa* (*ibid.*, pl. 97, 4). The cupid is on a stamped Dr.37 by *Paternus II* (University of Nottingham Museum accession number U.33.33-A), the dolphin on stamped bowls by *Paternus II* (Stanfield and Simpson 1990, pl. 104, 4 in the same festoon, pl. 105, 16). AD 150–85. Layer 303507 (east of grave 303504), DE3002.

D14 Dr.37, panel decoration separated by a beaded line with bottom half of a caryatide, erotic group Os B in a medallion and little astragalus filler. All of the motifs are on a *Divixtus* bowl (Stanfield and Simpson 1990, pl. 116, 8). AD 140–60. Context 303735, ditch 218656, DE3002.

D15 Dr.37 with an intra-decorative stamp by *Paternus II* (who is listed as *Paternus v* in Hartley and Dickinson 2011a, see S6). The extant decoration is limited and consists of the lower part of two panels. One has the feet of a figured type, the other part of a large medallion and a small circle. AD 150–85. Two joining sherds, spread 303678, DE3002.

D16 Dr.37, two sherds each with a repair hole, not joining but probably part of the same vessel. One sherd has ovolo B105, with a fine beaded line and the top of a scroll. The second sherd contains an infilled scroll, a decorative style much favoured by *Paternus II* (Stanfield and Simpson 1990, pl. 107). Here the scroll is filled with a medallion containing a seated cupid, Os. 444. The cupid and medallion are on a stamped Dr.37 by *Paternus II* (University of Nottingham Museum accession number U.33.8). AD 150–85. Spread 303678, DE3002.

D17 Dr.37, one sherd with a repair hole through the decoration. The decoration consists of two panels separated by a roped line (A36?) with a large medallion containing two animals, a bear (Os.1578) and what appear to be the legs of a horseman (Os.246 or 247) on the left. The bear is known in the work of *Iustus* but especially on bowls by *Paternus II* (Rogers 1999, pl. 79, 32; Stanfield and Simpson 1990, pl. 106, 22, 25) but not *Mercator ii* (Rogers 1999, 152). The horseman is unknown for both *Iustus* and *Mercator ii* but *Paternus II* used such motifs (Rogers 1999, pl. 79, 36, Stanfield and Simpson 1990, pl. 106, 22). On the right is a little leaf, H129, which is on a bowl attributed to *Iustus* or *Mercator ii* from Colchester (Bird 1999, no. 973) and on a stamped bowl by *Mercator ii* from Alcester (Monteil forthcoming). An unstamped Dr.37 from the University of Nottingham Museum Collection has the bear and horseman in the medallion and a similar roped line (accession number U.33.41-A). AD 160–90. Spread 303678, DE3002.

D18 Dr.37, large square ovolo B156 used by *Iullinus* and *Mercator ii*. *Mercator ii* also used the beaded line and the rosette (Rogers 1999, pl.74, 13). AD 160–80. Spread 303691.

D19 Dr.37, the ovolo is probably B17 used by *Cinnamus*, *Paternus III* and *Servus III*. Not much of the decoration remains but a festoon containing the tip of a leaf next to the head and arms of a Venus (Os.278 or 281?). A Venus appears in the work of *Cinnamus* (Rogers 1999, pl. 31, 39), *Paternus III* (*ibid.*, pl. 80, 7) and *Servus III* (*ibid.*, pl. 110, 1). The leaf is difficult to identify with certainty, it

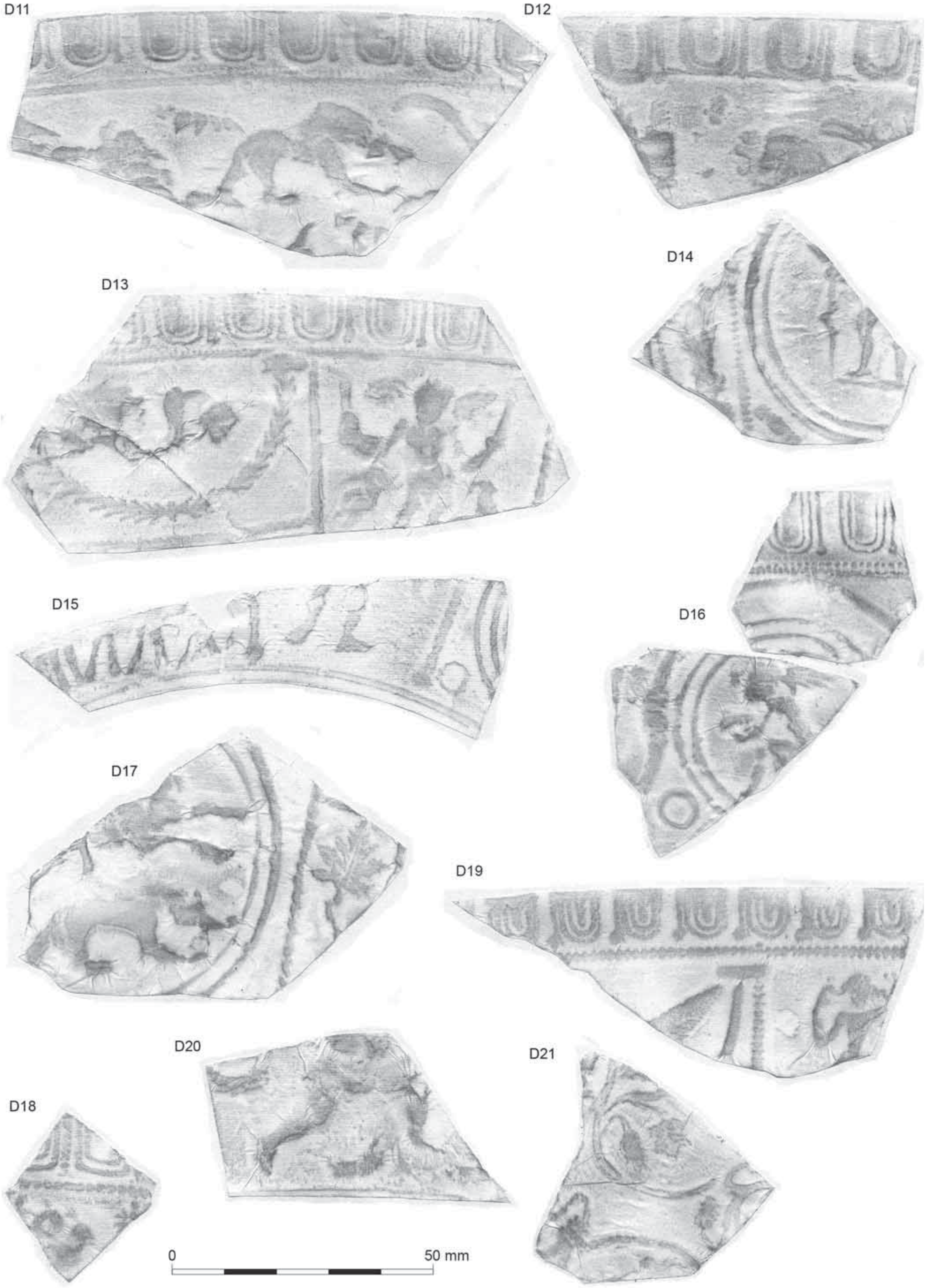


Fig. 4.84 Samian decoration rubbings (D11–21). See catalogue for details

bears a resemblance to J33 but the tip is finer. Though not strictly contemporary, *Paternus III*, *Cinnamus* and *Servus III* shared many motifs (Rogers 1999, 237). The vertical thick beaded line is closer to the one used by *Cinnamus* and *Servus III*. Antonine. Spread 303691, DE3002.

D20 Dr.30, lower part of the decoration with feet of putto Os.382 and two examples of little leaf H167, both used by *Casurius* (Rogers 1999, 87). AD 160–80. Topsoil 303500, DE3002.

D21 Dr.37. The fabric is quite orange and could be from Les Martres-de-Veyre as opposed to Lezoux. The decoration is partial and abraded but seems to consist of a scroll made out of several examples of the vine motif M13. M13 was used by several Hadrianic potters, *Arcanus*, *Secundinus I*, *Geminus* and *Condollus*. AD 120–50. Unstratified.

Catalogue of illustrated samian potters' stamps (Fig. 4.85)

The following catalogue lists the potters identified in alphabetical order. Each entry gives the excavation context number; potter (i, ii etc, where homonyms are involved); die form; reading; form type, pottery of origin, reference to published drawing (where available) and date. Ligatured letters are underlined. The greatest number of stamped vessels came from Central Gaul, most probably from the Lezoux kilns.

S1 *Aestivus*, die uncertain, two joining sherds from a Dr.38 with a partial stamp with a rivet hole at the top of second letter, **ΛE (?) T (?V)[**, Lezoux (Hartley and Dickinson 2008a, 87), AD 155–95. Topsoil 303500, DE3002.

S2 *Briccus*, die 6a, Dr.18/31, **] CC [**, Lezoux (Hartley and Dickinson 2008b, 118), AD 150–75. Spread 303678, DE3002.

S3 *Macrinus iii*, die 8a, Dr.31R, Central Gaulish, **MAC[**, Lezoux (Hartley and Dickinson 2009), 198, AD 150–85. Topsoil 303500, DE3002.

S4 *Marcus v*, die 5c, four joining sherds of a Dr.33 base with a complete stamp, **ΛΛARCIM**, Lezoux (Hartley and Dickinson 2009), 280, AD 160–210. Spread 303678, DE3002.

S5 *Nivalis*, die 1b, Dr.33 base, Heiligenberg and Rheinzabern but 1b is a Rheinzabern die (Hartley and Dickinson 2010, 254). The stamp has been applied twice in slightly different places which means the first two letters appear twice: **NI NIVALISF**. Hartley and Dickinson 2010, 255, AD 150–75 (see University of Nottingham Museum accession number U.33.115 II-C for the same stamp by Nivalis). Topsoil 303500, DE3002.

S6 *Paternus v*, die 7a, two joining sherds from a Dr.37, **]ΛTERNFE** retrograde in the decoration, Lezoux (Hartley and Dickinson 2011a, 58), AD 150–85. See **D15**. Spread 303678, DE3002.

S7 *Privatus iii*, die 1a, Dr.33 base, **PRIV [**, Lezoux (Hartley and Dickinson 2011a, 266), AD 160–85. The same die was found on a Dr.33 in *Margidunum* (University of Nottingham Museum accession number M33.728-A). Spread 303626, DE3002.

S8 *Sextus v*, die 2c, eight joining sherds from a Dr.33 base, large X graffito on underside of base, **SEXTI. MN**, Lezoux (Dickinson 1999, S.769, 135; Hartley and Dickinson 2011b, 286), AD 155–200. Spread 303678, DE3002.

S9 *Venicarus ii*, die 2b, three joining sherds from a Dr.31 base, Rheinzabern, **VENICARUS·F**. AD 155–85. Topsoil 303500, DE3002.

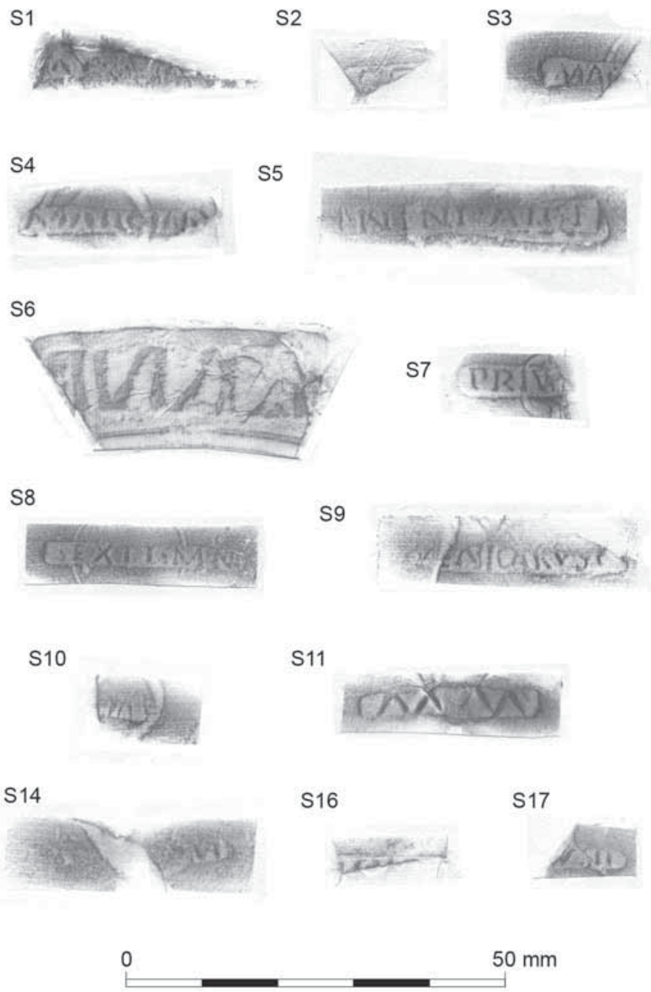


Fig. 4.85 Samian stamp rubbings (S1–11, S14 and S16–17)

Illiterate stamps

S10 Dr.27, **IIIF**, South Gaul, Flavian. Topsoil 303500, DE3002.

S11 Dr.31, **ΛΛ ΛΛ**, Central Gaulish, Antonine. Spread 303691, DE3002.

S12 (not illustrated) Dr.31R, **XXXX**, Central Gaulish, Antonine. Unstratified (303696 void context), DE3002.

Unidentified

S13 (not illustrated) Dish probably LudSa, **]F** deeply impressed, East Gaulish, Antonine. Layer 303507 (east of grave 303504), DE3002.

S14 Dr.31 with two holes with lead rivet in situ near the stamp. Partial stamp, quite abraded. **II [...] VI**, Central Gaulish, Antonine. Three joining sherds from Spread 303678, DE3002.

S15 (not illustrated) Dr.38, very partial stamp, **V[**, Central Gaulish, Antonine. Spread 303678, DE3002.

S16 Dish probably a Dr.18/31,**] C (?) [**, Central Gaulish, Hadrianic–early Antonine. Topsoil 303500, DE3002.

S17 Dr.18/31R with a lead rivet in situ just below stamp, **] V S (FE?)**, the frame is quite small and is probably from one of the earlier East Gaulish industries (B. Dickinson, pers. comm.). Hadrianic–early Antonine. Four joining sherds from Topsoil 303500, DE3002.

Scheme-wide Anglo-Saxon Pottery Descriptions

by Jane Young and Gareth Perry

A total of 2616 sherds of Anglo-Saxon pottery, representing *c.* 125 vessels, was recovered from the sites on the road scheme, with the largest proportion, *c.* 45.6% (57 vessels), coming from the excavation at *Margidunum* Hinterland. A slightly smaller number (50 vessels; 40%) came from Saxondale (Chapter 5) and most of the remainder from Moor Lane (Chapter 9), and a few sherds from High Thorpe (Chapter 6). The following report includes a description of the methodology and results of the analyses undertaken relevant to the whole scheme. Further discussions of the findings related to the other sites are to be found in the appropriate chapters.

Methodology

The material was recorded at archive level in accordance with the Medieval Pottery Research Group's Guidelines (Slowikowski *et al.* 2001) and the City of Nottingham Type Series (Nailor and Young 2001). Quantification was by three measures: number of sherds, weight and estimated vessel count within each context (data retained in project archive). Vessel count is based on all sherds obviously from the same vessel being counted as a single vessel. Sherds below 0.5 g were included in the total weight for a vessel but were not counted. Other relevant characteristics, such as condition, usage and decoration, were also noted. Fabric identification of the Anglo-Saxon and medieval pottery was undertaken by x20 binocular microscope. A selection of sherds was sent for petrological and chemical analyses to confirm fabric identifications and provide further information on their derivation (below). The ceramic data was entered on an MS Access database using the fabric codenames initially developed for the Lincoln Ceramic Type Series (Young *et al.* 2005) and expanded for use in Nottinghamshire (Nailor and Young 2001). Individual vessels were assigned a probable date range (information held in the project archive).

Petrological and chemical analyses

Fragments from two burial urns (ONs 277011 and 277013) from Saxondale, identified as Charnwood ware, were sent for thin-section and electron microprobe study to determine the geological source of their fabrics (see Chapter 5). The work was undertaken by John Carney of the British Geological Survey and Edward Faber of the Microanalysis Research Facility at the Department of Archaeology, University of Nottingham. Their analytical reports are retained in the project archive. The Charnwood ware fabrics were shown to contain inclusions of granodiorite of the Mountsorrel Complex from around Budden Wood, Leicestershire, the granitoid inclusions in the pottery being identical to the Mountsorrel granodiorite in terms of microstructural texture and chemical composition.

Other Anglo-Saxon fabric types were analysed by inductively coupled plasma emission spectrometry and mass spectrometry (ICP-ES-MS). The work was carried out at the Geochemistry Laboratory in the Earth Sciences Department, Royal Holloway University of London and analysed by Richard Jones (report in archive). This analysis has resulted in the positive identification of two new fabric types, the North Nottinghamshire erratic-tempered group (NNET) and the shell- and quartz-tempered fabric (NNSQ), and has also supported the distinction between wares identified microscopically (see fabrics, below).

Condition

The pottery is in a varied condition, although most sherds are at least slightly abraded with sherd size mainly falling into the small to medium size range (up to 30 g). Many of the vessels are extremely fragmentary and are represented by minute sherds, often well below 0.5 g. In total only 76 of the 125 vessels are represented by more than one sherd. A number of vessels have external soot residues showing that they have been used over an open fire, several of these appear to have broken during use as the soot is found to continue over the broken edges. Some vessels also have internal soot or carbonised deposits, suggesting that the contents of the vessel have burnt.

Early to mid-Anglo-Saxon fabric types (5th–9th centuries)

The date of much of the handmade Anglo-Saxon pottery in Nottinghamshire is often difficult to determine. Early work on Anglo-Saxon assemblages concentrated on form and decoration typologies and largely ignored fabric analysis (Myres 1977). This aspect is reflected in the publication of cemeteries such as that at Newark where the fabric of only a random sample of 53 vessels was examined in detail (Kinsley 1989). It has led to the failure, in much of the East Midlands, to identify distinct handmade mid-Anglo-Saxon types unless they are of obvious Ipswich or Maxey type. Traditionally, a date of 5th–7th centuries is given to early Anglo-Saxon vessels, however, there are indications on several sites in Leicestershire, Lincolnshire and Nottinghamshire that vessels of handmade Anglo-Saxon type continued to be used well into the mid-Anglo-Saxon period. In Nottinghamshire few sites that have evidence for 8th- to 9th-century occupation produce diagnostic mid-Anglo-Saxon pottery types. The undiagnostic isolated finds from along the scheme may therefore be of either early Anglo-Saxon or mid-Anglo-Saxon date.

Eleven Anglo-Saxon handmade pottery types occur on the scheme, the fabric of most of which can be paralleled by types elsewhere in Lincolnshire and north Nottinghamshire (Vince 2002; 2003; Young 2002). The quantities of each fabric type across the entire scheme are summarised in Table 4.16. Vessels were tempered with material containing a variety of inclusions, mostly comprising quartz sand and minor ingredients such as chaff, calcareous rock and other rock grains. The fabric classification is based upon the predominant or the distinctive inclusions.

Table 4.16 Scheme-wide: Anglo-Saxon pottery fabric types showing total quantities by vessel count

Site	CHARN	ECHAF	ESGS	FE	NNET	NNRQFE	NNSQ	RQCL	SST	SSTCL	SSTMG	Total
Ad Pontem Hinterland	-	-	-	-	-	-	-	-	-	1	0	1
Cropwell Wolds	-	-	-	-	-	-	-	-	-	1	1	2
High Thorpe	-	2	-	-	-	-	-	-	-	1	1	4
Margidunum Hinterland DE3001	-	-	-	-	-	-	-	-	-	-	3	3
Margidunum Hinterland DE3003	1	-	-	-	-	-	-	1	-	1	1	4
Margidunum Hinterland DE3006	-	1	-	-	-	-	-	-	-	-	-	1
Margidunum Hinterland DE3004	6	-	-	-	4	-	3	1	1	16	18	49
Moor Lane, East Stoke	-	-	-	-	-	-	1	-	1	4	5	11
Saxondale SM2067–70, SM2073	-	3	-	-	-	-	-	1	1	1	-	6
Saxondale SM2077	2	1	1	1	-	1	-	-	3	18	17	43
Total vessels	9	7	1	1	4	1	4	3	6	43	46	125

Fabric series

CHARN Charnwood type; with sparse to abundant coarse to fine acid igneous rock and other inclusions
ECHAF Carbonised vegetable remains and chaff-tempered; the organic material is predominant, sometimes burnt out and represented by voids
ESGS 'Greensand quartz-tempered'; with rounded Cretaceous sand grains up to 2 mm
FE Iron-tempered; with iron-rich minerals as the main tempering agent
NNET North Nottinghamshire erratic-tempered; a sandy ware with a distinctive chemical signature distinguishing it from the SST group
NNRQFE Quartz and iron-tempered; with rounded quartz and common large iron-rich grains
NNSQ Fossil shell-tempered; with partially leached shell and moderate to common quartz grains
RQCL Rounded quartz sand-tempered with sparse oolitic limestone; with sparse oolitic limestone grains and voids
SST Sandstone-tempered; partly tempered with coarse sandstone derived from the weathering of Millstone Grit
SSTCL Central Lincolnshire Sandstone-tempered
SSTMG Carboniferous Sandstone-tempered (with Millstone Grit)

Overall, the most common fabric type recovered is that of the Carboniferous Sandstone-tempered vessels (SSTMG) with 46 vessels. This type formed the most common grouping at *Margidunum* Hinterland. This was also the most common fabric type found at Brough, Nottinghamshire (Young 2002; Vince 2003).

With one exception, all identifiable vessel forms in this fabric type are jars with five large, 15 medium-sized and six small vessels occurring. Only four vessels are decorated; one, from High Thorpe, with vertical incised grooves (Fig. 6.9), one with plain finger grooves and one with both finger grooves and sets of small finger-tipped dimples. The only stamped sherd to be recovered occurs in this fabric. The stamp is a cross within a squashed square or circle. Only three jar rims occur; all are simple upright rounded types. One small rim sherd appears to be from a lid or dish. The surface of most of the vessels is left unfinished, although two vessel surfaces appear to have been grass-wiped. The use of this fabric in parts of Yorkshire and North Lincolnshire extends into the 9th century, although the manufacture of most of the vessels found on this project indicates that they are of early Anglo-Saxon date.

Sherds from five SSTMG vessels (from three different sites on the project) were submitted for chemical analysis in order to determine whether these vessels were likely to have come from the same source, and also whether they had a similar chemical composition to others recovered from the East Midlands (Jones 2011). Analysis showed that this group exhibited the best correlation with previously sampled material from a number of sites in the East Midlands and Yorkshire, but that the variations in chemical composition suggest a number of different sources. The correlation with some of Vince's samples from Brough and the low calcium content could suggest the use of local clays.

The second most common type present overall is Central Lincolnshire Sandstone-tempered (SSTCL) with 43 vessels, which is subdivided into two fabrics, fine and mixed. This type is mainly found in central Lincolnshire and has a variable inclusion mix but is mainly tempered with mixed sandstones. The coarser mixed fabric may include carboniferous sandstone, acid igneous rock fragments and variable amounts of biotite. In some extreme sherds no two broken edges exhibit the same inclusion pattern. Only two vessels, both jars with brushed external surfaces, are in the fine fabric. The more common coarser mixed fabric includes four small jars and five large jars. Three of the vessels are decorated with simple incised or grooved decoration. Several vessels have wiped, brushed or semi-burnished external surfaces. There is at present no definite evidence to suggest that this fabric extends into the mid-Anglo-Saxon period.

Two SSTCL sherds (from *Margidunum* Hinterland and Moor Lane respectively) were submitted for chemical analysis (Jones 2011). Both sherds were in mixed fabrics and visually (at x20 binocular magnification) appeared similar to material recovered from Brough (Young 2002; Vince 2003). The samples plot near to each other in multivariate chemical analysis diagrams, suggesting that they may have come from the same source, but have variable relationships to sampled material from Brough. Chemical analysis suggests that this fabric group was manufactured at more than one source, or that various clay beds were being exploited.

Four vessels are in various sandstone-tempered fabrics (SST). No two of these vessels share the same fabric type, but they appear to be similar to other isolated finds from the Trent Valley. These vessels include a bossed sherd from *Margidunum* Hinterland (DE3004).

Seven vessels, heavily tempered with fragments of granitic rock (CHARN), are likely to derive from the Mountsorrel area of Leicestershire. Two other vessels, from Saxondale, were confirmed as containing Mountsorrel granodiorite (Carney 2011; Faber 2011), although visually some examples are not typical and may have been manufactured elsewhere (Vince and Young 2009). Simple upright rims from one small bowl and one small bowl or dish came from *Margidunum*, together with a small jar sherd with an internal carbonised deposit. The remaining identifiable vessel forms are jars.

Organic carbonised vegetable matter including charred chaff remains was found as the main tempering agent in six vessels (ECHAF). The sherds are all low-fired and quite abraded with surface inclusions mainly leached out. This fabric type, although found in early Anglo-Saxon contexts, was commonly in use through to the mid-Anglo-Saxon period.

Two vessels tempered with grains of rounded quartz sand as the main inclusion type (RQCL) were recovered (DE3003 and DE3004). These vessels have some rounded voids or grains of rounded limestone/oolite and visually appear similar to vessels found mainly on central Lincolnshire sites. The sherds recovered along the scheme are small and undiagnostic.

Three new Nottinghamshire types were characterised as part of this analysis, one of which is a fabric tempered with common erratic rock fragments (NNET). All four vessels in this fabric were recovered from *Margidunum* Hinterland (DE3004). Three of the vessels are large jars, one of which has a burnished external surface. Visually these vessels look more like prehistoric pottery, but they are stratified with other Anglo-Saxon vessels and both the manufacture and shape of the vessels support an Anglo-Saxon date. Four samples of this fabric were examined by ICP-ES-MS analysis and the type was found to form a discrete compact group with a strong chemical signature (Jones 2011).

Four vessels, three from DE3004 of *Margidunum* Hinterland, appear to have been tempered with shell inclusions that have been partially leached out due to burial conditions (NNSQ). This fabric also contains moderate to common quartz grains. One tiny body sherd comes from a hollow-bossed jar or bowl, and a small flat-topped rim sherd is from a small bowl. The two other vessels are represented by small and undiagnostic sherds. Vessels of Anglo-Saxon date tempered with fossil shell inclusions are an uncommon find in Nottinghamshire and this is the first time this fabric grouping has been noted. The sherd in this fabric was found to be chemically distinctive (Jones 2011).

Margidunum *Hinterland: provenance of the Anglo-Saxon and later pottery*

by Jane Young and Gareth Perry

DE3001

A single sherd from a small, handmade Anglo-Saxon SSTMG jar was found in pit 301116 (Fig. 4.55). The vessel is undiagnostic and this fabric was in use from the 5th to 9th centuries, however, the internal wiped surface suggests an early Anglo-Saxon date.

Pit 301501 (Fig. 4.55) produced sherds from two handmade Anglo-Saxon SSTMG jars. A large jar with an internal carbonised deposit is represented by 30 sherds. The vessel appears to have broken during use as the carbonised deposit extends across some of the broken edges. The second jar is represented by a single basal sherd. This vessel also has an internal carbonised deposit. The external wiping and internal slurry on this sherd suggest an early Anglo-Saxon date.

DE3004

The largest group of Anglo-Saxon pottery from the site, representing a total of 49 vessels, came from this area. The overwhelming majority (156 sherds representing 48 vessels) came from the single fill of sunken featured building Structure 27 (304064) (Fig. 4.56). The feature was excavated in quadrants giving rise to four spatially distinct fills. No cross-joins were found between the four fills. The pottery included groups of sherds from three large jars tempered with fragments of erratic rock (NNET); 27 sherds from a single large jar came from fill 304058, 28 sherds from a similar jar from fill 304063, and 35 sherds of another jar from fill 304060. This fabric has not been characterised before and may either be a local product or a regional import so far only noted at this site. Seven other fabric types are represented in the group as a whole. The range of other fabrics includes SSTMG, CHARN, NNSQ and SSTCL and, while most are large to small-sized jars, the group also includes the rim from a dish or lid and a small NNSQ bowl. A single small, nearly vitrified, sherd could be either of Romano-British type (Derbyshire ware) or a Mayen ware import. An early Saxon date (5th or 6th centuries) for the material is confirmed by the presence of two vessels with hollow bosses.

Superficial deposits yielded a small handmade SSTMG sherd of general Saxon date and three sherds from a CHARN jar with internal attrition on the lower body. A single small CHARN sherd was recovered from ditch 304118 where it is assumed intrusive.

Discussion

It is unfortunately not possible to compare the material from this site to previous Anglo-Saxon pottery finds from *Margidunum* as no adequate published fabric description is available and it was beyond the scope of this project to re-examine the earlier material. *Margidunum* Hinterland provided the largest Anglo-Saxon group of pottery to be recovered from the interventions on the current project, although at 55 vessels this is still a small sample. Most of the fabrics found at *Margidunum* are visually similar to those recovered from excavations at Brough (Young 2002), but the presence of two newly characterised groups (NNET and NNSQ) possibly suggests other supply sources. These fabrics cluster as discrete groups chemically (Jones 2011) and can be interpreted as either suggesting a local production centre or the acquisition of regional imports from markets further afield.

Late Anglo-Saxon to Saxo-Norman (late 9th to late 12th centuries) and later pottery

Only one sherd of late Anglo-Saxon to Saxo-Norman type was identified from *Margidunum* Hinterland (area of superficial deposit in DE3002). This is from an internally and externally glazed Early Stamford ware (EST) pitcher of 10th–early 11th-century date. It is notable that this period was also poorly represented amongst the finds from the Bingham Heritage Project centred on the village of Bingham, about 2 km east of Saxondale. Here only 44 sherds of this date were recovered despite extensive fieldwalking over most of the parish, including part of *Margidunum* Hinterland (Allen *et al.* 2010). It is possible that all this material came from manuring scatters on arable fields and that the principal settlements in the 9th to 12th centuries underlie the modern villages. The small quantities of Saxo-Norman pottery from the present project may be attributed to the non-systematic retrieval of ceramic material from superficial deposits.

Similarly very little medieval pottery was recovered and most of the post-Romano-British ceramic material along the length of the scheme is early modern in date, typical of that found on other sites in north and central Nottinghamshire.

Ceramic Building Material

by Grace Perpetua Jones

A total of 2603 fragments of ceramic building material, weighing 258,213 g (258 kg), was recovered from the excavations at *Margidunum* Hinterland. With the exception of a single peg-tile fragment, all diagnostic pieces are Romano-British in date. The assemblage is very abraded and fragmentary.

Methods of analysis

The ceramic building material has been quantified (by count and weight) according to type for each context. A sample (49% of the total number, 57% of the weight) was assigned to broad fabric groups. The thickness of all fragments with two surfaces has been recorded, as well as the height of all *tegula* flanges and dimensions of any complete or nearly complete tiles. The presence of surface markings, such as combing and signatures, and the range of *tegula* cut-aways, were noted (Betts 1986; Warry 2006). The data were recorded using Microsoft Excel, and the spreadsheet is held in the project archive. Table 4.17 gives the totals by type and by site area.

Provenance

The ceramic building material came predominantly from DE3004 and DE3002, with smaller quantities from DE3001 and DE3003 (Table 4.17). A total of 278 contexts produced ceramic building material and, of these, 194 contexts produced less than 500 g, including 94 contexts with less than 100 g. The larger groups, of more than 5000 g, came from features in DE3004 (Fig. 4.20) pit 304120 next to enclosure 304507 and oven 304390 in Structure 24; from boundary ditches 304521, 304516 and ditch 304527 around Structure 22; from possible tree-throw hole 304464 (not illus.); and from

Table 4.17 *Margidunum* Hinterland: Romano-British ceramic building material, quantification of form, by area and type

Area	*DE3001*		*DE3002*		*DE3003*		*DE3004*		*U/S*		*Total*	
Type	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*
Tegula	25	5293	85	14278	-	-	73	26296	1	152	184	46019
Imbrex	20	1550	20	2089	-	-	76	13022	3	232	119	16893
Box-flue tile	20	3034	18	3742	-	-	81	15015	1	31	120	21822
Plain, flat tile <39 mm	68	8973	169	28711	4	487	261	48382	9	1014	511	87567
Brick	27	5847	77	27629	1	84	36	21073	5	945	146	55578
Peg tile	-	-	1	47	-	-	-	-	-	-	1	47
Fragment without surfaces	221	2794	525	15217	88	835	604	10847	84	594	1522	30287
Total	381	27491	895	91713	93	1406	1131	134635	103	2968	2603	258213

layers 304018, 304020 (Structure 22) and 304287 (part of demolition layer 304531 – Structure 23). Similar-sized groups came from DE3002; layers 303879 (not shown in plan, associated with Structure 20), and 303691, 303677 in the northern plot (Fig. 4.23); ditch 218656 (Structure 26) (Fig. 4.46); and from postholes 303987 (Structure 24) (Fig. 4.46) and 303629 (Structure 18) (Fig. 4.20).

Type of tile and brick

A wide range of ceramic building materials was present, including evidence for roofing, cavity walling and flooring.

Roofing

Fragments from *tegulae* and *imbrices* together make up 24% of the total weight of the assemblage. These were relatively evenly spread across DE3001, DE3002 and DE3004, with 25% of the ceramic building material from DE3001, 29% of the DE3004 assemblage and 18% of that from DE3002 comprising roofing tiles. No tiles from DE3003 were positively identified as *tegula* or *imbrex*. The *tegulae* range from 12 mm to 38 mm in thickness; however, most are between 20 mm and 30 mm. The height of the flange ranges from 37 mm to 80 mm, and most are within a range of 41 mm to 52 mm, with a peak at 49 mm to 52 mm. The height of the flange is often, although not always, related to the thickness of the tile. Brodribb (1987, 13) notes that the depth of the flange is usually double that of the body, and the average depth of the flange is 50 mm, 'almost exactly one-sixth of the Roman foot'. However, he also states that it is rare for the face to be less than 20 mm thick, yet one example from ditch 304316 has a face of only 12 mm and a flange height of 42 mm. A further three fragments are 17 mm thick with flanges of 42–45 mm in height. The upper cut-away is visible on ten *tegula* fragments, with between 40 mm and 50 mm of the flange removed prior to firing; knife marks were occasionally visible. Seven tiles have typical lower cut-away sections (Betts 1986, type B; Warry 2006, 137, type C, dated AD 160–260), and these cut-aways would have allowed the tiles to fit together. Between one and three signature rings are visible on 18 *tegulae*.

The thickness of the *imbrex* fragments ranges from 10 mm to 22 mm, with most falling between 17 mm and 20 mm. The average thickness of *imbrices* recorded in Brodribb's survey of Romano-British brick and tile in Britain was 20 mm (Brodribb 1987, 26), with a range of 14 mm to 30 mm, so again the *Margidunum* examples are quite small.

Cavity walling

Box-flue tiles were recovered from all areas of the site. No complete examples are present, but two plain fragments were rejoined to form a tile 190 mm wide and 22 mm thick (contexts 304168 and 304069, ditch 304521), and the widths or depths of another three are estimated at 116 mm, 125 mm and 140 mm respectively. The thickness of the tiles ranges from 11 mm to 29 mm, with most examples between 15 mm and 20 mm. Many of the fragments exhibit combing on their surfaces, and this would have acted as a key to aid the adherence of plaster and render. Occasionally this took the form of scored diagonal lines or lattice. Some fragments display remains of rectangular vents, and knife marks were recorded on several pieces. Eighteen fragments come from the corners of the tile. Six keyed fragments have pre-firing circular perforations, 21–40 mm in diameter, indicating a flue tile with a circular vent. A further three fragments without keyed surfaces also have circular perforations, 20–23 mm in diameter, suggesting that these too originate from flue tiles. Although less common than rectangular vents, circular vents through the sides of flue tiles are not unknown. Brodribb (1987, 75) notes 44 examples in his survey, and Pringle (2006) has also characterised a type of thin-walled flue tile with a circular vent through the plain, narrower side, recovered from sites around the City of London and Southwark (Pringle 2006, 125, type 2). The circular vents are smaller than the rectangular ones, and are sometimes of a greater diameter on the exterior than the interior. Of the nine fragments with circular vents, three came from late Romano-British ditch 304521 (DE3004), two from late Romano-British ditch 304524 (both DE3004), one from late Romano-British ditch 218658 (DE3002), one from late Romano-British demolition layer 304287 (DE3004), one from dump layer 304018 (DE3004) and one from the subsoil of DE3002.

Plain tiles and bricks

Plain flat fragments of ceramic building material were classified as tiles or bricks according to their thickness. This division is based on the principle that, on average, bricks are greater than 40 mm in thickness (Brodribb 1987, 142), although thinner examples of *bessalis, pedalis* and *lydion* are known. The plain flat tile fragments from *Margidunum* Hinterland range from 12 mm to 39 mm in thickness, and may have come from box-tiles or *tegulae,* floor tiles or slightly thinner bricks. Of note among this material is an example with a pre-firing nail hole of 12 mm diameter (context 304048, tile is 21 mm thick), three large finger smears on the face of a tile from context 304069, a finger smear on a tile from 304069, fingerprints at the edge of a tile from context 303500 and mortar adhering to the surface of two tiles. The complete length of three tiles was reconstructed: two from context 304020 measure 250 mm (35 mm thick) and 270 mm (37 mm thick) respectively, and one from context 303627 is 260 mm long and 37 mm thick. These may be small *pedales*.

Fragments recorded as bricks are often hard fired, and some have been overfired to vitrification. They range in thickness from 40 mm to 75 mm and may therefore have come from a number of brick types, including *bessalis*, *pedalis*, *lydion*, *sesquipedalis* or *bipedalis*. Such bricks were used for a wide range of purposes, including the construction of hypocaust *pilae* and bonding in walls or flooring. One brick has a post-firing hole chipped through from the surface to the underside, creating an opening 55 mm on the surface to 6 mm on the underside. The minimum measurements of 220 mm x 180 mm suggest that this may have been a *bessalis* or *pedalis*. A thick brick (54 mm) from context 304468 is slightly indented along its edge from the heel of a hand and the ball of the fingers, and shows the rear part of a footprint on the surface. The foot appears to have been quite small, at least 110 mm long and 55 mm wide across the widest part of the heel, perhaps a child or adolescent. A brick from context 304023 had been stepped on by someone wearing hobnailed boots, leaving the impression of part of the sole and heel (Fig. 4.86).

Fabric
Approximately half of the assemblage was divided into three broad fabric groups. The most commonly occurring is a coarse, sandy fabric, which usually fires to an orange/red colour (fabric 2, 74% by weight). A slightly finer fabric, with 15–20% rounded argillaceous inclusions, up to 6 mm in size and poor sorted, is also present (fabric 1, 22% by weight). This fabric tends to fire to a light pinkish-orange colour. Less common is another fine sandy fabric, characterised by its pink colour (fabric 3, 4%). Fabrics 1 and 2 were used for all tile types, with fabric 2 predominant in each group. The relative proportions of fabric 2 indicate slightly higher percentages for roofing material than flue-tiles or plain tiles, however, the sample is too small to draw any significant correlations.

Illustrated fragment (Fig. 4.86)
Brick with hobnail impressions. Late Romano-British ditch 304527, fill 304023.

Fig. 4.86 Brick with hobnail impressions from ditch 304527

Fired Clay

by Angela Aggujaro

The total assemblage of fired clay from *Margidunum* Hinterland amounts to 152 fragments (889 g), deriving from 33 archaeological deposits in all areas of the site; one fragment was unstratified. The majority of the material consists of formless fragments for which any particular function is difficult to ascribe.

A large fragment of a pyramidal form of loomweight, in a limestone- and organic-tempered fabric, was recovered from late Iron Age/early Roman Enclosure B ditch recut 218574 (DE3001). From mid-Romano-British spread 303814 (DE3002) 11 joining fragments, in a sandy fabric, are part of what could be a base and a side of another pyramidal loomweight. Pyramidal loomweights have a broad date range from the Middle Iron Age through to the Romano-British period. Two other fragments from an unphased pit within enclosure A north (pit 306321, not shown in plan) and Enclosure A ditch 218766 (Fig. 4.8), could have belonged to ceramic objects, as each exhibits a smooth face with a corner, but the precise form is unknown.

On the basis of associated pottery, almost all of the remaining fired clay belongs to the Romano-British period; only one fragment from Enclosure C ditch 218585 (DE 3001) and one from Enclosure D ditch 218771 (DE3006) were recovered in association with Late Iron Age/early Romano-British pottery.

Worked Stone

by Fiona Roe

A relatively large quantity of worked stone came from the *Margidunum* Hinterland excavations including, in particular, Romano-British roofing slates, paving stones and quernstones (Table 4.18).

Querns/millstones
Good equipment for grinding corn into flour was always essential, so that querns and/or millstones form a predictable component of any stone assemblage. The four excavated pieces are all relatively small fragments, all of Millstone Grit, and three have evidence for re-use, since

Table 4.18 *Margidunum* Hinterland: Romano-British worked stone summary

	Quartzite	*Triassic sandstone*	*Millstone Grit*	*Lias*	*Swithland slate*
Objects					
Anvil/mortar	1	-	-	-	-
Mortar	-	1	-	-	-
Rotary quern	-	-	3	-	-
Rotary quern or millstone	-	-	1	-	-
Building stone					
Paving stone	-	1	-	12+	-
Roofing tile	-	-	-	-	45
Structural stone	2	-	-	2	-
Tessera	-	-	-	1	-

broken stone objects tended not to be wasted if another purpose could be found for them. Similar re-use was noted for example at Dragonby, Lincolnshire (Wright 1996, 371). At *Margidunum* Hinterland a fragment from a small millstone about 600 mm in diameter (ON 2096, 303723) was used as packing in a posthole (303724, late Romano-British Structure 26; Fig. 4.46), as probably was one of the quern fragments (ON 2132, fill 218131, posthole 218133, DE3002; see Fig. 4.46). The broken millstone had also apparently been re-used as a shallow mortar, and another quern fragment (ON 2042, late Romano-British spread 303626; Fig. 4.46) also had secondary hollows and grooves from point sharpening. Just one quern fragment (ON 2103, mid-Romano-British spread 303677; Fig. 4.23) appears merely to have been discarded as rubbish. Romano-British querns made from Millstone Grit are altogether to be expected in the East Midlands, although no overall survey has been carried out. However, Millstone Grit was already in use for beehive querns during the Iron Age (see Chapter 6), so its employment during the Romano-British period was simply a continuation of earlier practices. Any available information for Millstone Grit querns of Romano-British date comes mainly from neighbouring counties, but examples were found in a well at Lound, Nottinghamshire (Garton and Salisbury 1995, 38 and fig. 10a).

Mortar
A piece of building stone was re-used as a shallow mortar hollowed on two surfaces (ON 2041, layer 303513; Fig. 4.23), and this object consists of Triassic sandstone, probably from a skerry bed in the Mercia Mudstone (Lamplugh *et al.* 1908, 50).

Anvil
A large block of quartzite, which could have come from the Trent river gravels or else from Boulder Clay, was utilised mainly as an anvil, with considerable damage to the top surface as well as a shallow, pecked concave area, which may also have served as a mortar (ON 2043, spread 303677; Fig. 4.23). This was found in an area with a spread of debris indicative of smithing, and the same general area produced smithing hearth bottoms and also hammerscale. David Starley has suggested in his report on metalworking debris (below) that a post-built workshop (Structure 17) probably existed in the southern part of this plot. Only three pieces of Swithland slate were recovered from this area, so it seems unlikely that such a workshop was covered with stone roofing tiles, despite the fire hazard of a thatched roof, although a ceramic-tiled roof is a possibility.

Building stone
In addition to the abundant roofing tiles, there is some evidence from *Margidunum* Hinterland both for structural and paving stone (listed in the archive catalogue), though any building stone with potential for re-use must long since have been removed from the site. A slab of Lias with a squared corner (ON 2044, spread 303677) has the appearance of a shaped building block, while other pieces of Lias and quartzite could also have been used for structural purposes, as could a slab of local Triassic sandstone, which was later re-used as an informal mortar (ON 2041, layer 303513). It was suggested that buildings in *Margidunum* itself probably had footings of local lithic materials with timber framing above (Todd 1969, 81), and it is possible that there were such buildings in the extra-mural area, although no such buildings were identified in the current excavations. Possible paving stone fragments were recovered from five contexts. A slab of the local Triassic sandstone (304121, pit 304120; Fig. 4.38) has a worn, flat surface and is a good candidate for paving, but any Lias slabs possibly used in this way have tended to fragment. Just one broken tessera of Lias was found, in mid-Romano-British pit 301164 (Fig. 4.18).

The 45 fragments of Romano-British roofing tile (archive catalogue) have been identified as being made from Swithland slate, a distinctive purple or green-grey slate of Cambrian date (Ambrose *et al.* 2007, 29), with a restricted source area in Charnwood Forest some 39 km from *Margidunum*, rather further than would be expected for the transport of heavy roofing material.

Romano-British workings have not been certainly located there, and any traces are likely to have been obscured by later quarrying, which took place at The Brand, Groby, Swithland Wood and Woodhouse Eaves (Ambrose, 44). It was not possible to assign these tiles definitely to a specific quarry area, though it was suggested that they were most likely to come from the Swithland quarries (David Ramsey, pers. comm.). Roofing tiles made from this slate are in general somewhat thick, since this is a material that does not split easily and the *Margidunum* Hinterland pieces measure up to 31 mm in thickness. Two of the fragments have the remains of an iron nail still in place (topsoil and ditch 304516), while the surviving nail holes, 14 in all, are small, as would be appropriate for an iron nail rather than a wooden peg. These slates are diamond shaped (302592, fill of Late Roman enclosure ditch 218650; Fig. 4.87) rather than the more typical hexagonal shape of Romano-British roofing tiles made from other materials. They were manufactured with a space cut back around the hole (as shown in Fig. 4.87), so that the tiles would lie flat over the fixing nails (Ramsey 2007, 15). David Ramsey (pers. comm.) is of the opinion that the tiles found at *Margidunum* Hinterland are somewhat thicker than is usual for ones made from Swithland slate, and also that they are not skilfully worked, retaining rough upper and lower surfaces. He considers that the assemblage from Vine Street, Leicester, where a substantial town house has been recently excavated, was of much better quality (Ramsey 2007). The majority of the roofing tiles from the present excavations came from DE3004, where they seem to have been used to roof two buildings with stone footings. Since they are not elegant roofing material it is possible that, rather than coming from a high-status building, they were used for a modest farmhouse or a workshop such as a forge or metalworking area where a thatched roof would have been a fire hazard. However, only one smithing hearth bottom was found in this area and there was little metalworking debris (David Starley, below), so an alternative industrial process may have been in operation.

Fig. 4.87 Diamond-shaped stone roof slate

Discussion

The late Alan McWhirr (1988) first drew attention to the widespread distribution of Romano-British roofing tiles made from Swithland slate, while David Ramsey (2007) has noted more recently recorded finds. One might expect to find roofing tiles on sites only up to 15–20 km distant from the quarries, and yet the Swithland roofing tiles were transported a good deal further. Sites with these roofing tiles are now known on the edges of the distribution area at Drayton, Leicestershire to the south-east, *c.* 35 km from the quarries (Ramsey 2007, 17), at Acton Trussell , Staffordshire, some 61 km distant to the north-west (*ibid.*, 16), and at Lincoln 80 km north up the Fosse Way (F. Roe, unpublished report). There are concentrations of finds along the Fosse Way, so that it appears as if the roofing tiles were being transported by cart along this route. However, the Trent north of Nottingham flows just west of the Fosse Way towards Lincoln, with a link back to the river Soar, which runs not far from the quarrying area. The Swithland Wood quarry area is *c.* 5.5 km from the river Soar, with a potential short cut along another small river, the Rothley Brook. Transport of the tiles by boat would have been a possibility and a good solution for what McWhirr called 'the heavy sector of the economy' (McWhirr 1988); it could explain the presence of Swithland slate at least at *Margidunum* and other sites on the Fosse Way on the route towards Lincoln. Rotary querns and millstones of Millstone Grit could have been brought southwards by the same route, while other merchandise such as pottery or iron ore may well also have been imported by boat. Commodities exported along the river system could have included manufactured iron goods, which David Starley (below) has suggested were part of the local economy, so that we could be looking here at a vibrant East Midlands transport network.

Glass Vessels and Objects

by John Shepherd

The assemblage of Roman glass from *Margidunum* Hinterland is made up of 36 vessel fragments, one window glass fragment and one rod; there is also one late Roman or Anglo-Saxon bead (Fig. 4.88). The vessel fragments date broadly from the late 1st to 3rd centuries AD, with an apparent emphasis on the 2nd century. No distinctive glass forms of the late Romano-British period, ie, late 3rd or 4th centuries, were recorded.

The following catalogue describes the glass, and is arranged according to vessel (1–32), window glass (33) and objects (34–5). Information on the post-medieval assemblage from all sites can be found in the site archive; the assemblage contains no diagnostic fragments.

Catalogue of glass objects

Vessel glass

1 Fragment from the neck of a small flask or bottle. Free-blown; colourless glass. Roman, probably late 1st–3rd century AD, ON 2133. Topsoil 303500, DE3002.

2 Fragment from the side of a small bowl or cup. Free-blown; good quality colourless glass. Decorated with a wheel-cut horizontal line. Mid-2nd century AD. Layer 303678, DE3002.

3–6 Four fragments of free-blown colourless glass from free-blown vessels of indeterminate form. Roman. Context 301148, pit 301147, DE3002; topsoil 303500, DE3002; ON 2070, context 303678, DE3002.

7 Fragment from the base of a ribbed bowl (Isings 1957, form 3a). Cast and sagged; natural green-blue glass. Parts of three ribs extant on this fragment. Mid- to late 1st century AD. Context 303772, posthole 303773 (Structure 17), DE3002.

8 Fragment from the side of a ribbed bowl (Isings 1957, form 3a). Cast and sagged; natural green-blue glass. Only one rib extant on this small fragment. Mid–late 1st century AD. ON 2133, topsoil 303500, DE3002.

9 Fragment of ribbed glass form the body of a bulbous body jar (Isings 1957, form 67c) or flask (Isings 1957, form 52 or 55). Free-blown and reinflated (optic); natural green glass. Decorated with a relief vertical rib of the same metal. Late 1st or early 2nd century AD. ON 2053, spread 303678, DE3002.

10 Fragment from the rim of a flask or bottle. Free-blown; natural green-blue glass. The lip of the rim has been folded inwards and flattened down. Late 1st or 2nd century AD. Subsoil 304001, DE3002.

11 Fragment from the neck of a flagon or flask (eg, Isings 1957, form 52 or 55). Free-blown; natural green-blue glass. Slight constriction at the base of the neck. Late 1st or early 2nd century AD. ON 3020, context 303609, cist 303611 (Structure 18), DE3002.

12 Fragment from the plain handle of a bottle or flask. Applied to a blown form; natural green-blue glass. Late 1st or 2nd century AD. ON 2131, topsoil 303500, DE3002.

13 Fragment from the ribbed handle of a bottle, probably a cylindrical, prismatic square or hexagonal shape. Applied to a blown form; natural green-blue glass. Late 1st or 2nd century AD. Topsoil 303500, DE3002.

14 Fragment from the ribbed handle of a bottle, probably a cylindrical, prismatic square or hexagonal shape. Applied to a blown form; natural green-blue glass. Late 1st or 2nd century AD. ON 2108, spread 303814, DE3002.

15 Fragment from the body of a hexagonal-sectioned prismatic bottle. Mould-blown; natural green-blue glass. Late 1st or early 2nd century AD. Topsoil 218058, SM2018

16–22 Seven fragments from the bodies of an indeterminate number of square-sectioned prismatic bottles (Isings 1957, form 50). All mould-blown; natural green-blue glass. Late 1st–3rd century AD. Context 301308, waterhole 218519, DE3001; context 302392, ditch 218572 (Fig. 4.30), DE3001; topsoil 303500, DE3002; layer 303513, DE3002; spread 303677, DE3002; ON 2105, spread 303678, DE3002; ON 2124, context 303869, posthole 303871(Structure 20), DE3002.

23 Fragment of natural green glass from a free-blown vessel of indeterminate form. Burnt. Roman. ON 2026, topsoil 303500, DE3002.

24–29 Seven fragments of natural green glass from free-blown vessels of indeterminate form. Roman. Topsoil 303500 (DE3002); layer 303508 (DE3002); 303598, pit 303597 (Structure 18), DE3002; ON 2098, 303734, gully 218660 (Structure 25), DE3002; feature 303921 (Structure 20), DE 3002.

30–32 Three fragments of natural green-blue glass from free-blown vessels of indeterminate form. Roman. Topsoil 303500, DE3002; ON 2127, layer 303718, DE 3002.

Window glass

33 Fragment of natural green-blue window glass of the cast matt/glossy variety. Late 1st or 2nd century AD. ON 2119, spread 303691 (Fig. 4.23), DE3002.

Glass objects

34 (Fig. 4.88) A complete long bead in natural green-blue glass, decorated with a blue spiral trail. The body of the bead has four equidistant vertical slashes made when the glass was hot, giving the bead a quatrefoil section. Late Romano-British or Anglo-Saxon. ON 1504, context 304097, pit 304098, in sunken featured building (Structure 27), DE3004.

35 The terminal end of a rod. Flattened. Natural green-blue glass. ON 2130, topsoil 303500, DE3002.

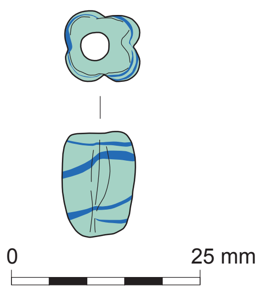


Fig. 4.88 Glass bead of late Romano-British or Anglo-Saxon date from sunken-featured building (Structure 27)

Discussion

Apart from the bead (no. 34), the items catalogued above are all very fragmentary and many may well be residual in their respective contexts. One small group from topsoil (303500, DE3002), comprising 12 fragments (nos 1, 4, 8, 12, 13, 18, 23–25, 30–31, 35). Six of these are from indeterminate forms, but there is one small colourless glass fragment from the neck of a delicate small bottle (no. 1) and the body of an early ribbed bowl (no. 4) while the remaining vessel fragments come from either flasks or bottles (nos. 12, 13 and 18), the latter being strong utilitarian vessels suitable for the storage of liquid food products. In addition, there is the terminal end of a rod, probably used for the stirring or mixing liquids (no. 35). Although it is unwise to emphasise the significance of this small group as a single assemblage indicative of a closed functional group, given that the context is not stratigraphically secure, it is still of importance to note the mixture of glass for tablewares as well as glass for utilitarian products. The presence also at *Margidunum* Hinterland of window glass demonstrates that glass was fulfilling an important role in buildings not far away from the excavated site, not only in their dining rooms and kitchens but also in their architecture and fittings.

Nevertheless, the total vessel assemblage contains a restricted repertoire. Ribbed bowls of the mid–late 1st century AD are present (nos 7 and 8). This type of bowl, which first appears earlier in the 1st century and was even imported, in very small numbers however, in the pre-Romano-British period, is a type fossil of 1st century Roman glass production. Early in the century, and perhaps up to the third quarter of the 1st century, it was made in multi-coloured or monochrome glass, but in the latter half of the 1st century the natural green-blue glass was preferred, probably as the gaudier colours went out of fashion. It is likely that such bowls continued to be used into the 2nd century, and they were found among the large cullet dump (broken glass for recycling) in the glass working area of *Londinium* adjacent to the amphitheatre (Perez-Sala and Shepherd 2008, 142–6) which dates from the second quarter of the century. They are the earliest identifiable vessels here, perhaps much treasured by their owners. It is most unlikely that such vessels were being made in the northern provinces of the empire.

Another very fine vessel is represented by the single colourless fragment (no. 2) which has been decorated with a horizontal wheel-cut line. The glass of this cup is of particularly high quality and probably indicates that it originates from one of the better quality working centres closer to the Mediterranean, perhaps Spain, southern France or Italy.

Among the more functional vessels is a fragment from a bulbous bodied jar or flask (no. 9). These vessels, decorated with vertical ribs which had been imparted onto the vessel while it was still a small ball of glass, but then become stretched in to low relief when it is inflated, are indistinguishable from one another from the body and base fragments. The jars had a wide, collared rim (Isings 1957, form 67c) whereas the flasks had tall, elongated necks with strap handles attached at the rim and extending down to the shoulder of the bulbous body. They were made in the Seine/Rhine region of the empire during the late 1st and early 2nd centuries. Again, they represent good quality tableware for use in the dining rooms of the buildings on the site.

By far the greatest number of fragments found here are bottle fragments, in particular fragments from the prismatic square-sectioned form (Isings 1957, form 50) (nos 16–22). Like the ribbed bowls of the first century, this predominantly late 1st and 2nd century vessel is a type fossil of that later period. They were also made in vast numbers and can be found on virtually every site that has a late 1st- or 2nd-century glass assemblage. They were used primarily as in transit containers, carrying liquid food products, especially oil and alcoholic beverages, and also semi-viscous commodities such as sauces from the continent. Their solid shape and sturdy design made them perfect as packages for such a purpose. They could be easily crated, their strong bodies and rims protecting them during travel. Not surprisingly, these bottles were used secondarily for all manner of storage functions, including use as cinerary urns. The Guildhall Yard cullet dump referred to above contained many thousands of fragments from these bottles, indicating that when broken they were a ready source of material for reworking. Their presence here at *Margidunum* Hinterland shows that glass was being used for storage as well as on the table.

The assemblage also contains one rarer type of bottle, the hexagonal-sectioned prismatic form (no. 15). An angle on this body fragment shows that it comes from a hexagonal-sectioned form. These shaped bottles, together with their rectangular and octagonal counterparts, were made during the late 1st and early 2nd centuries but were not produced further into the 2nd century. The reasons for this are unclear, but the late 1st century was a period with a large and diverse repertoire of glass shapes and forms, so it is possible that the survival of the square-sectioned form was a product of the natural rationalisation of this large repertoire.

The dating of the small quatrefoil bead, from an Anglo-Saxon context, is difficult. The body colour of the glass suggests that it has been made out of recycled Roman glass, however, this does not exclude a post-Romano-British manufacture date. Nevertheless, it could easily be a survival from an earlier period. Necklace strings could be often restrung and though the highly decorated beads were more visible, and more likely to indicate the tastes and cultural values of the wearer, small beads such as this could be reused as spacers.

Coins

by Nicholas Cooke

A total of 113 coins was recovered from the excavations at *Margidunum* Hinterland. These were recovered both from hand-excavation and from the use of metal detectors during and immediately subsequent to machine removal of the topsoil and subsoil on sites. As a result a high proportion of the coins come from modern topsoil or subsoil deposits.

The assemblage is dominated by copper alloy coins and tokens (107 coins and tokens) with only six silver coins. In general their condition is fair. A number of coins show evidence of post-depositional corrosion, but the assemblage shows little sign of serious corrosion. Many of the coins also show signs of pre-depositional wear. Despite this the majority were identifiable to period after gentle cleaning. The coins recovered range in date from the 1st century AD through to the 20th century and the majority are likely to represent accidental losses.

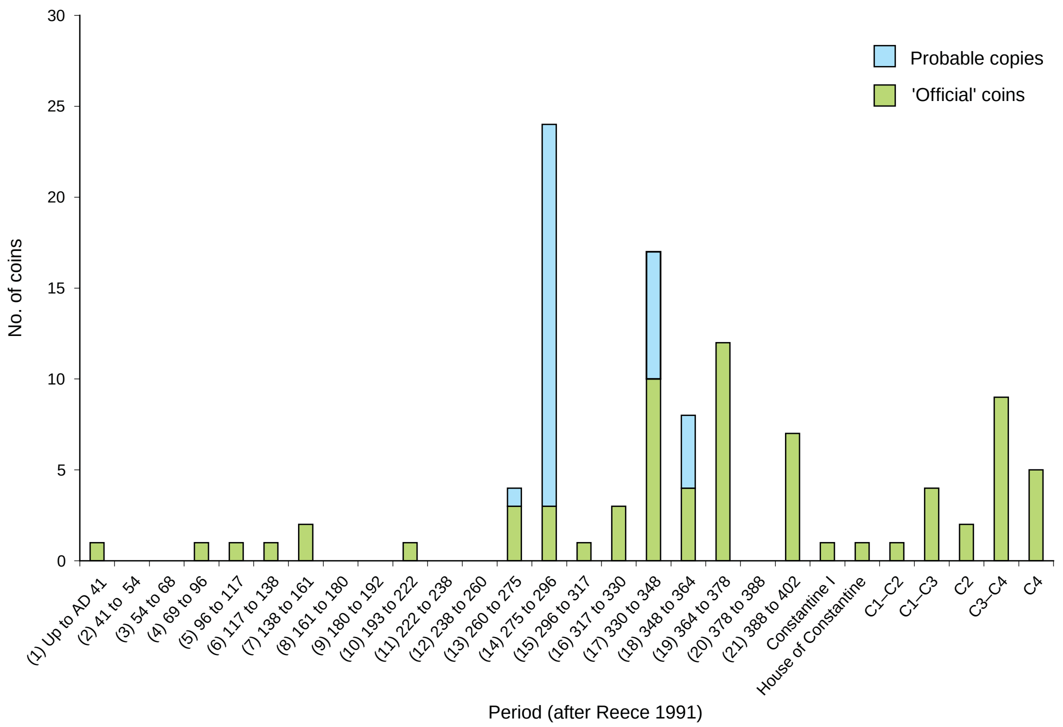


Fig. 4.89 Date distribution of Roman coins from Margidunum *Hinterland*

Description of the assemblage

The numbers of coins recovered from the different interventions can be seen in Table 4.19 (and the catalogue in Table 4.20). Most of the coins recovered (106 of the 113) date to the Romano-British period. Of the 106 Roman coins, 83 could be identified to period one of the 21 periods used by Reece (1991) (Fig. 4.89); the remaining 23 could only be assigned broad dates based on the size and shape of their flan. From this it is clear that the bulk of the coins recovered date to the late 3rd and 4th centuries AD. Although the 83 datable coins represent a fairly small assemblage, it is nevertheless possible to draw some conclusions on coin use and loss.

The earliest coin recovered is an early *As* (ON 1309) which bears a countermark stamped into the obverse (Fig. 4.90), recovered unstratified from DE3002. This mark appears to be the 'CAESAR' ligature probably used by Tiberius in the early decades of the 1st century

Table 4.19 *Margidunum* Hinterland: date of coins by area

Intervention	*Romano-British*	*Post-medieval*	*Modern*	*Total*
DE 3001	33	2	2	37
DE 3002	65	-	3	68
DE 3004	7	-	-	7
DE 3006	1	-	-	1
Total	106	2	5	113

Fig. 4.90 As *with stamped countermark on the obverse*

Table 4.20 *Margidunum* Hinterland: catalogue of coins (periods after Reece 1991)

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
Period 1: up to AD 41													
-	303500	1309	Cu alloy *As/Dupondius*	25	6.07	-	EW/EW	Unknown Emperor	Obv. Bust r barely visible Rev. Original reverse illegible. Centrally stamped with a stamp bearing the name CAESAR in ligature. In addition to this, it has been inscribed with four letters by hand – P S X and D	AD 14–37	-	-	Dished by the striking of the countermark on the reverse
Period 4: AD 69–96													
-	301000	779	Cu alloy *Dupondius*	28	12.40	6	C/C	Vespasian	Obv. Bust r, radiate. IMP- -VESPASIANAV-GCOSIIII. Small globe at point of bust Rev. Fortuna standing left, holding branch, rudder set on globe & cornucopiae. FOR-TUNAE REDVCI. S C on either side.	AD 72–3	Lyons	RIC II, Vespasian, 739	-
Period 5: AD 96–117													
-	-	771	Cu alloy *Sestertius*	32	24.15	6	VW/VW	Trajan	Obv. Bust r, laureate. (IMP CAES NERV) AE TRAIANO AVG GER D (AC P M TR P COS V PP) Rev. Trajan riding right spearing Dacian enemy before horse. S P Q R OPTIMO PRINCIPI type	AD 103–11	Rome	As RIC II, Trajan, 534	-
Period 6: AD 117–38													
218547	302016	742	Cu alloy *Sestertius*	26	11.27	6	C/C	Hadrian	Obv. Bust r, laureate. -AVGIM- Rev. standing figure	AD 117–38	Rome	-	Irregular flan
Period 7: AD 138–61													
-	303500	1441	Cu alloy *As*	25	10.60	12	W/W	Antoninus Pius	Obv. Bust r, laureate. ANTONINVS AVG PIVS P P (TR P XVIII) Rev. Britannia seated left on rock, resting head upon hand; shield and vexillum(?) in background before her. BRITANN IA COS IIII	AD 144–5	Rome	RIC III, Antoninus Pius, 934	-
-	303626	2031	Cu alloy *Sestertius*	26	12.54	12	W/W	Faustina I	Obv. Bust r, draped. DIVAAVGVS TAFA-VSTINA Rev. Pietas standing, head left, sacrificing over altar to left, holding box of incense. PIETASAVG. S C on either side	AD 138–61	Rome	RIC III, 1146a	-
Period 10: AD 193–222													
-	-	721	Silver *Denarius*	18	1.97	5	SW/SW	Septimius Severus	Obv. Bust r, laureate, bearded. SEVERVS AVG PART MAX. Rev. Septimius standing left, holding patera in right hand over tripod altar, & spear in left. RESTITVTOR (VRB) IS	AD 200–1	Rome	RIC IV, Septimius Severus, 167	-

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
Period 13: AD 260–75													
-	303500	1347	Cu alloy *Antoninianus*	16	2.63	7	C/C	Tetricus II	Obv. Bust r, radiate. -RICVS- Rev. Priestly implements	AD 270–3	-	As RIC V, Part II, Tetricus II, 254	-
-	303500	1351	Cu alloy *Antoninianus*	20	3.68	12	SW/SW	Gallienus	Obv. Radiate bust r, bearded. GALLIENVS AVG Rev. Goat standing or walking right, IOVI CONS AVG. Digamma in ex.	AD 267–8	Rome	RIC Va, Gallienus, 207	-
-	303500	1425	Cu alloy *Antoninianus*	16	2.13	7	C/C	Radiate copy	Obv. Bust r, radiate, bearded. Stylised -TRICVSP- Rev. Pax l, holding branch - VG	AD 270–96	-	-	Barbarous copy of coin of Tetricus I
303715	303717	2092	Cu alloy *Antoninianus*	19	1.96	6	SW/SW	Tetricus I	Obv. Bust r, radiate, bearded. IMPCTETRI- Rev. Soldier l with spear and shield. VIRT-VS-	AD 270–3	-	As RIC V, Part II, Tetricus I, 148	
Period 14: AD 275–96													
303715	218332	188	Cu alloy *Antoninianus*	13	0.98	8	VW/C	Radiate copy	Obv. Bust r, radiate. Stylised Rev. Pax l, transverse sceptre. C in l field.	AD 270–96	-	-	
218547	302016	740	Cu alloy *Antoninianus*	16	1.98	-	C/VW	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	
218547	302016	741	Cu alloy *Antoninianus*	15	1.16	6	VW/VW	Radiate copy	Obv. Bust r, radiate. V stylised Rev. female fig l with staff.	AD 270–96	-	-	
218547	302016	747	Cu alloy *Antoninianus*	15	1.52	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Slightly irregular flan
-	-	773	Cu alloy *Antoninianus*	18	1.40	12	VW/VW	Radiate copy	Obv. Bust r, radiate. Rev. Soldier standing l with spear, raising r arm.	AD 270–96	-	-	Slightly irregular flan
302850	302851	775	Cu alloy *Antoninianus*	18	1.82	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	-
301525	301526	776	Cu alloy *Antoninianus*	17	1.89	6	C/C	Radiate copy	Obv. Bust r, radiate. Stylised Rev. Soldier l, with spear and shield VIT (TVS AVG). Stylised	AD 270–96	-	-	Struck on irregular flan
301118	301119	781	Cu alloy *Antoninianus*	14	1.32	6	W/W	Radiate copy	Obv. Bust r, radiate. V stylised. Rev. Fig l (?Pax)	AD 270–96	-	-	-
-	301001	783	Cu alloy *Antoninianus*	18	1.28	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Irregular and damaged flan
-	306011	1032	Cu alloy *Antoninianus*	16	0.95	8	C/C	Radiate copy	Obv. Bust r, radiate Rev. Pax l with branch	AD 270–96	-	-	Small irregular flan
-	303500	1346	Cu alloy *Antoninianus*	14	0.76	10	W/W	Radiate copy	Obv. Bust r, radiate. Stylised Rev. V stylised figure r.	AD 270–96	-	-	Small irregular flan

Table 4.20 (cont.) *Margidunum* Hinterland: catalogue of coins (periods after Reece 1991)

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
-	303500	1348	Cu alloy *Antoninianus*	17	1.76	12	C/C	Radiate copy	Obv. Bust r, radiate. Stylised Rev. Pax l, raising branch	AD 270–96	-	-	Irregular, almost triangular flan
-	303500	1355	Cu alloy *Antoninianus*	16	1.46	12	W/W	Radiate copy	Obv. Bust r, radiate, bearded. Stylised Rev. Stylised fig l	AD 270–96	-	-	
-	303500	1430	Cu alloy *Antoninianus*	12	1.75	7	W/W	Radiate copy	Obv. Bust r, radiate. V stylised Rev. Stylised fig l	AD 270–96	-	-	-
-	303500	1453	Cu alloy *Antoninianus*	18	1.93	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Irregular flan
-	303500	1455	Cu alloy *Antoninianus*	18	2.03	6	C/C	Unknown Emperor	Obv. Bust r, radiate -VG Rev. Pax l, with sceptre, raising palm. -AVG. A in l field	AD 270–96	-	-	Struck on an irregular flan
-	303500	1457	Cu alloy *Antoninianus*	16	0.85	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Struck on a v. irregular flan
-	303500	1486	Cu alloy *Antoninianus*	12	0.74	10	C/C	Radiate copy	Obv. Bust r, radiate. Rev. Stylised figure	AD 270–96	-	-	Struck on small flan
-	304000	1507	Cu alloy *Antoninianus*	15	1.29	12	C/C	Radiate copy	Obv. Bust r, radiate. Rev. Spes l with flower. SP--	AD 270–96	-	-	
-	304001	1508	Cu alloy *Antoninianus*	18	1.38	7	C/C	Radiate copy	Obv. Bust r, radiate Rev. Pax standing l with transverse sceptre, raising branch in r hand. V F on either side	AD 270–96	-	-	Damaged flan
304516	304320	1511	Cu alloy *Antoninianus*	18	0.99	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Struck on a v irregular flan
304516	304320	1512	Cu alloy *Antoninianus*	19	2.31	-	C/C	Radiate copy	Obv. Bust r, radiate Rev. Illegible	AD 270–96	-	-	Corroded
-	304375	1513	Cu alloy *Antoninianus*	16	0.78	6	W/W	Radiate copy	Obv. Bust r, radiate, bearded. IMP- Rev. Fig standing l. PAX-	AD 270–96	-	-	
303840	303841	2121	Cu alloy *Antoninianus*	22	2.06	-	C/C	Radiate copy	Obv. Illegible Rev. Fig standing l, raising branch - Pax/ Spes?	AD 270–96	-	-	Broken into 3 pieces
Period 15: AD 296–317													
-	-	1503	Cu alloy AE 2	19	2.44	6	SW/SW	Constantine I	Obv. Bust r, laureate, cuirassed. IMPCON-STANTINVSPFAVG Rev. Sol standing left, chlamys across left shoulder, holding globe & raising right hand. Mint Mark: T | F / * | / TARL	AD 313	Arles	RIC VII, Arles, 80	-
Period 16: AD 317–30													
218547	302016	751	Cu alloy AE 2	20	3.19	-	C/C	Constantine II	Obv. Bust r, laureate. CONSTANTINV-SIVNNOBC Rev. Wreath	AD 317–24	-	-	-

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
301230	301231	780	Cu alloy AE 2	19	2.98	6	C/C	Crispus	Obv. Bust r, laureate. IVLCRIS PVSNOBC Rev. VOT / X within wreath. CAESARVM NOSTRORVM	AD 317–26	-	-	Mint uncertain, although poss. London (RIC 291)
-	303500	1349	Cu alloy AE 2	19	2.59	5	SW/SW	Constantine II	Obv. Bust l, pearl diadem, shield. CON-STANTINVSIVNNOBC Rev. Camp gate with 3 stars above. PROVID (EN TIAE) CAESS. Mint Mark:. P*AR	AD 324	Arles	LRBC I, 284	-
Period 17: AD 330–48													
301134	301161	679	Cu alloy AE 3	16	1.28	12	C/C	House of Constantine	Obv. Helmeted bust l. Probably a Constanti-nopolis issue Rev. Winged victory on prow. Constantino-polis issue	AD 330–5	-	As LRBC I, 52	-
301671	301672	722	Cu alloy AE 3	16	1.04	12	C/C	Constantine I	Obv. Bust r, laureate -TAN- -VSMAX- Rev. 2 soldiers, 2 standards. Gloria Exercitus type	AD 330–5	-	As LRBC I, 87	Irregular flan
-	-	769	Cu alloy AE 3	16	1.02	7	C/C	Helena	Obv. Female bust r, Rev. Pax facing, holding branch l and trans-verse sceptre. (PAX PV) BLIC (A)	AD 337–41	-	As LRBC I, 104	-
-	-	770	Cu alloy AE 4	12	0.57	6	VW/VW	House of Constantine	Obv. Bust r Rev. 2 soldiers w 2 standards. Gloria Exer-citus type	AD 330–45	-	Copy as LRBC I, 48	V. small oval flan. Obviously a copy
-	303500	1283	Cu alloy AE 4	14	1.42	6	C/C	Constantine II	Obv. Bust r, laureate. CONST- Rev. 2 soldiers, 2 standards, Chi-Rho within standard.	AD 335–45	-	? Copy as LRBC I, 239	Small flan
-	303500	1286	Cu alloy AE 3	15	1.20	12	SW/SW	House of Constantine	Obv. Bust l, helmeted. VRBS ROMA Rev. Wolf and Twins, 3 stars above. Mint Mark: TRS	AD 330–5	Trier	LRBC I, 51	-
-	303500	1305	Cu alloy AE 3	15	1.64	12	W/W	Constans	Obv. Bust r, pearl diadem,. CONSTAN- -AVG Rev. 2 facing victories with wreaths. Victori-aeddavggqnn type. Mint Mark: -ARL	AD 341–8	Arles	As LRBC I, 445	-
-	303500	1354	Cu alloy AE 3	16	1.74	4	SW/SW	Constans	Obv. Bust r, pearl diadem (pearls and rosettes), cuirassed in palud. CONSTANSP-FAVG Rev. 2 Soldiers, 1 standard. (GLORI) AEX-ER (CITVS). Mint Mark: M / TRSu	AD 340	Trier	LRBC I, 133	-
-	303500	1408	Cu alloy AE 3	17	1.54	12	C/C	Constantine II	Obv. Bust r, laureate. CONSTANTI-(NV-SIVNNG) Rev. 2 soldiers, 2 standards GLOR IAEX-ERC (ITVS). Mint mark: dot within wreath /-CONS-	AD 330–5	Arles	As LRBC I, 379	-

Table 4.20 (cont.) *Margidunum* Hinterland: catalogue of coins (periods after Reece 1991)

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
-	303500	1436	Cu alloy AE 3	15	1.48	6	SW/SW	Helena	Obv. Female bust r. FLIVLHE- (LE-NAAVG) Rev. Pax standing l holding a branch and transverse sceptre. PAXPV BLICA. Mint Mark: TR-	AD 337–41	Trier	As LRBC I, 104	-
-	303500	1446	Cu alloy AE 4	12	1.20	7	W/W	House of Constantine	Obv. Helmeted bust l, CONSTANTI- Rev. Winged victory l on prow. Mint Mark: PLG	AD 330–45	Lyons	Copy of LRBC I, 185	V. small flan
-	303500	1469	Cu alloy AE 4	14	1.27	12	SW/SW	Constantine II	Obv. Bust r, laureate, cuirassed. CON- -NOBC Rev. 2 soldiers, 1 standard. Gloria Exercitus type. Mint Mark: Palm SL-	AD 337–40	Lyons	? Copy as LRBC I, 231	-
-	303500	2019	Cu alloy AE 3	15	1.56	6	W/W	Constanti-us II	Obv. Bust r, laureate, cuirassed. FLIVL-CONSTANTIVSNOBC Rev. 2 soldiers, 1 standard. GLO- (RIA EXERC) -ITVS. Mint Mark: .TRP.	AD 336	Trier	LRBC I, 94	-
-	303500	2020	Cu alloy AE 4	10	1.55	12	C/VW	House of Constantine	Obv. Bust r Rev. 2 soldiers, 2 standards. Stylised	AD 330–45	-	Copy as LRBC I, 48	Copy, struck on v. small flan
303573	303572	2027	Cu alloy AE 3	18	1.83	6	SW/SW	House of Constantine	Obv. Bust l, helmeted. VRBS ROMA Rev. Wolf and twins. TR.S	AD 330–5	Trier	LRBC I, 65	-
-	303678	2042	Cu alloy AE 4	14	1.63	6	C/C	House of Constantine	Obv. Bust r, pearl diadem Rev. 2 soldiers, 1 standard. Gloria Exercitus type	AD 335–45	-	? Copy as LRBC I, 87	-
-	303677	2101	Cu alloy AE 3	15	0.61	6	VW/VW	House of Constantine	Obv. Bust r Rev. 2 soldiers, 1 standard. Gloria Exercitus type.	AD 335–45	-	Copy as LRBC I, 87	V. small, thin, irregular flan
Period 18: AD 348–64													
-	301000	523	Cu alloy AE 3	18	1.38	6	W/W	Constanti-us II	Obv. Bust r, -IVSPFAVG Rev. Soldier spearing fallen horseman. Fel Temp Reparatio. V stylised engraving	AD 350–60	-	Copy as LRBC II, 25	
301507	301504	702	Cu alloy AE 3	16	1.21	6	C/C	Constans	Obv. Bust r, pearl diadem, draped. DNC- -STAN S- Rev. Phoenix on globe. FEL (TEMP REPA-RATIO)	AD 348–50	-	As LRBC II, 30a	Damaged flan - in two pieces
218547	302016	750	Cu alloy AE 2	21	4.28	6	C/C	Magnentius/ Decentius	Obv. Bust r, bareheaded Rev. 2 facing victories holding shield. Victori-aeddnnavgetcae type. Mint Mark: TRS	AD 350–3	Trier	As LRBC II, 56	-

<table>
<tr><th>Cut</th><th>Context</th><th>ON</th><th>Denom.</th><th>Diam (mm)</th><th>Wt. (g)</th><th>Reverse axis</th><th>Condition obv./rev.</th><th>Issuer</th><th>Description</th><th>Issue date</th><th>Mint</th><th>Ref.</th><th>Notes</th></tr>
<tr><td>-</td><td>303500</td><td>1255</td><td>Cu alloy AE 2</td><td>21</td><td>3.25</td><td>6</td><td>W/W</td><td>Magnentius</td><td>Obv. Bust r, bareheaded -NTIVSNOBCAES
Rev. 2 facing victories holding shield inscribed VOT / V / MVLT / X. Victoriaeddnnaugetcae type. Mint Mark: *AMB(crescent)</td><td>AD 351–3</td><td>Amiens</td><td>LRBC II, 14</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1284</td><td>Cu alloy AE 4</td><td>11</td><td>0.67</td><td>10</td><td>W/W</td><td>House of Constantine</td><td>Obv. Bust r, pearl diadem
Rev. Soldier spearing fallen horseman. V stylised Fel Temp Reparatio type</td><td>AD 350–60</td><td>-</td><td>Copy as LRBC II, 25</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1312</td><td>Cu alloy AE 4</td><td>11</td><td>1.49</td><td>6</td><td>W/W</td><td>House of Constantine</td><td>Obv. Bust r, pearl diadem
Rev. Soldier spearing a fallen horseman. Fel Temp Reparatio type.</td><td>AD 350–60</td><td>-</td><td>Copy as LRBC II, 25</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1428</td><td>Cu alloy AE 4</td><td>13</td><td>0.88</td><td>12</td><td>C/C</td><td>House of Constantine</td><td>Obv. Bust r, v stylised
Rev. Soldier spearing a fallen horseman. Fel Temp Reparatio type</td><td>AD 350–60</td><td>-</td><td>Copy as LRBC II, 25</td><td>Struck on a v. small flan</td></tr>
<tr><td>-</td><td>303500</td><td>1462</td><td>Cu alloy AE 3</td><td>17</td><td>2.47</td><td>6</td><td>C/C</td><td>Constans</td><td>Obv. Bust r, pearl diadem. DNCONSTA-
Rev. Phoenix on globe. FEL (TEMP REPERATIO). Mint Mark: TRS</td><td>AD 348</td><td>Trier</td><td>LRBC II, 35</td><td>-</td></tr>
<tr><td colspan="14">Period 19: AD 364–78</td></tr>
<tr><td>-</td><td>u/s</td><td>-</td><td>Cu alloy AE 3</td><td>17</td><td>2.41</td><td>12</td><td>W/W</td><td>Valens</td><td>Obv. Bust r, pearl diadem. DNVALEN SP-
Rev. Winged victory l with wreath. SECVRITAS REI (PVBLICAE). Mint mark: OF| II/ ?</td><td>AD 364–78</td><td>-</td><td>As LRBC II, 276</td><td>-</td></tr>
<tr><td>-</td><td>302248</td><td>737</td><td>Cu alloy AE 3</td><td>16</td><td>1.17</td><td>12</td><td>C/C</td><td>House of Valentinian</td><td>Obv. Bust r
Rev. Emperor r with standard, dragging captive</td><td>AD 364–78</td><td>-</td><td>As LRBC II, 78</td><td>Badly damaged flan</td></tr>
<tr><td>-</td><td>303500</td><td>1298</td><td>Cu alloy AE 2</td><td>19</td><td>1.94</td><td>6</td><td>C/C</td><td>House of Valentinian</td><td>Obv. Bust r, pearl diadem.
Rev. Emperor r with standard, dragging captive (G) LORIARO (MANORVM)</td><td>AD 364–78</td><td>-</td><td>As LRBC II, 78</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1322</td><td>Cu alloy AE 3</td><td>16</td><td>1.62</td><td>12</td><td>C/C</td><td>House of Valentinian</td><td>Obv. Bust r, pearl diadem
Rev. Emperor r, with standard, dragging captive Gloria Romanorum type.</td><td>AD 364–78</td><td>-</td><td>As LRBC II, 78</td><td>Damaged flan</td></tr>
<tr><td>-</td><td>303500</td><td>1324</td><td>Cu alloy AE 3</td><td>17</td><td>2.09</td><td>6</td><td>VW/VW</td><td>House of Valentinian</td><td>Obv. Bust r, pearl diadem. -NVSPFAVG
Rev. Emperor r with standard, dragging captive.
-MANORVM. Mint Mark: OF | I / ?</td><td>AD 364–78</td><td>-</td><td>As LRBC II, 279</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1350</td><td>Cu alloy AE 3</td><td>18</td><td>1.79</td><td>12</td><td>SW/SW</td><td>Gratian</td><td>Obv. Bust r, pearl diadem. DNGRATIANVSPFAVG
Rev. Emperor r, with standard, dragging captive. GLORIARO MANORVM. Mint Mark: - R | F /ASISCA</td><td>AD 367–75</td><td>Siscia</td><td>As LRBC II, 1409</td><td>-</td></tr>
<tr><td>-</td><td>303500</td><td>1365</td><td>Cu alloy AE 2</td><td>19</td><td>1.91</td><td>12</td><td>W/W</td><td>Valens</td><td>Obv. Bust r, pearl diadem. DNVALEN SPFAVG
Rev. Winged victory l with wreath. SECVRITAS REIPVBLICAE. Mint Mark: OF | I / ?</td><td>AD 364–78</td><td>-</td><td>As LRBC II,280</td><td>-</td></tr>
</table>

Table 4.20 (cont.) *Margidunum* Hinterland: catalogue of coins (periods after Reece 1991)

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
-	303500	1377	Cu alloy AE 2	19	2.83	6	C/C	House of Valentinian	Obv. Bust r Rev. Winged victory l with wreath. Securitas Reipublicae type	AD 364–78	-	As LRBC II, 82	-
-	303500	1414	Cu alloy AE 3	18	2.51	1	SW/C	Valens	Obv. Bust r, pearl diadem. DNVALEN S- Rev. Winged victory l with wreath. Securitas Reipublicae type. Mint Mark: OF | I / -CON-	AD 364–75	Arles	As LRBC II, 483	-
-	303500	1419	Cu alloy AE 3	17	1.69	5	C/C	Valens	Obv. Bust r, pearl diadem, Rev. Winged victory l, with wreath. (SEC) VRITAS (REIPVBLICAE)	AD 364–78	-	As LRBC II, 82	Struck off-centre
-	303500	1460	Cu alloy AE 3	18	2.60	6	C/C	Valentinian I	Obv. Bust r, pearl diadem. DNVALENTIN IANVSPFAVG Rev. Emperor r with standard, dragging captive GLORIARO MANORVM. Mint Mark:SMRP	AD 364	Rome	LRBC II, 702	-
-	-	2017	Cu alloy AE 3	17	2.22	6	C/C	Valens	Obv. Bust r, pearl diadem. DNVALEN- Rev. Emperor r with standard, dragging captive GLORIARO- (MANORVM). Mint Mark: -TR	AD 364–78	Trier	As LRBC II, 92	-
Period 21: AD 388–402													
-	303500	1256	Cu alloy AE 4	13	0.92	6	C/W	House of Theodosius	Obv. Bust r, pearl diadem. Rev. Victory l, club on shoulder, dragging captive. Chi-Rho in l field. Salus Reipublicae type. Mint Mark: TES-	AD 388–402	Thes-salon-ica	As LRBC II, 1873	-
-	303500	1285	Silver *Siliqua*	13	0.74	12	W/W	Arcadius	Obv. Bust r, pearl diadem. (DN ARCADI) VS P F AVG Rev. Roma seated left on cuirass with Victory on globe & spear (VIR) TVSRO (MANOR-VM)	AD 395–402	Milan	RIC X, 1226	Edges appear to have been clipped
-	303500	1400	Cu alloy AE 4	12	0.72	12	SW/SW	House of Theodosius	Obv. Bust r, pearl diadem Rev. Victory l, club on shoulder, dragging captive. Salus Reipublicae type. Chi Rho in l field. Mint Mark: RS	AD 388–402	Rome	As LRBC II, 796	-
-	303500	1450	Cu alloy AE 4	12	1.24	12	W/W	House of Theodosius	Obv. Bust r, pearl diadem Rev. Victory walking l with club, dragging captive Salus Reipublicae type	AD 388–402	-	As LRBC II, 796	-
-	303500	1476	Cu alloy AE 4	13	0.76	6	SW/W	Theodosius	Obv. Bust r, pearl diadem. -HEO- Rev. Winged victory l with wreath. Victoria Auggg type. Mint Mark: LVGP	AD 388–402	Lyons	LRBC II, 391	-

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
303586	303587	2028	Silver *Siliqua*	17	1.31	6	SW/SW	Arcadius	Obv. Bust r, pearl diadem, cuirassed, draped. D N ARCADIVS P F AVG Rev. Roma seated left on cuirass with Victory on globe. VIRTVSRO MANORVM. Mint Mark: MDPS	AD 395–402	Milan	RIC X, 1226	-
-	303513	2036	Cu alloy AE 4	13	0.78	11	VW/VW	House of Theodosius	Obv. Bust r, pearl diadem Rev. Winged victory l with wreath (VICT) ORI A (VGGG)	AD 388–402	-	As LRBC II, 162	-
C1–C2													
302238	302239	736	Cu alloy *Dupondius*	24	3.98	-	VW/VW	Unknown Emperor	Obv. Bust r, radiate Rev. Illegible	C1–C2	-	-	Slightly dished on reverse
C1–C3													
303505	303505	1250	Cu alloy *Sestertius*	27	15.53	12	EW/VW	Unknown Emperor	Obv. Bust r Rev. Fig standing l	C1–C3	-	-	V. irregular sestertius
-	303500	1279	Cu alloy *As/Dupondius*	26	4.74	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C1–C3	-	-	Corroded. Dated by size alone
-	303500	1371	Cu alloy *Sestertius*	32	18.44	-	C/C	Unknown Emperor	Obv. Bust r Rev. Illegible	C1–C3	-	-	Irregular flan. Heavily corroded
-	303500	1418	Cu alloy *Sestertius*	32	17.03	0	EW/C	Unknown Emperor	Obv. Bust r (poss. Hadrian?) Rev. Illegible	C1–C3	-	-	Heavily worn and corroded
C2													
-	302248	735	Cu alloy *Sestertius*	30	21.02	-	C/C	Unknown Emperor	Obv. Female bust r Rev. Illegible	C2	Rome	-	Irregular flan, likely to date to first half of C2
-	303500	1454	Cu alloy *Sestertius*	28	20.22	-	C/C	Unknown Emperor	Obv. Bust r. Rev. Illegible	C2	Rome	-	2nd century *sestertius*. Sl. irregular flan
C3–C4													
301340	301333	698	Cu alloy AE 3	17	1.55	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
-	-	724	Cu alloy AE 3	16	2.09	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
218547	302016	743	Cu alloy AE 3	16	1.56	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
218547	302016	754	Cu alloy AE 3	18	2.02	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Corroded. Dated by size alone
-	303500	1317	Cu alloy AE 3	17	1.98	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
-	303500	1459	Cu alloy AE 4	14	1.24	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone

Table 4.20 (cont.) *Margidunum* Hinterland: catalogue of coins (periods after Reece 1991)

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
-	304000	1504	Cu alloy AE 3	16	0.83	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
-	303500	2021	Cu alloy AE 3	18	2.21	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
-	303500	2120	Cu alloy AE 3	16	1.26	-	C/C	Unknown Emperor	Obv. Illegible Rev. Illegible	C3–C4	-	-	Dated by size alone
C4													
-	-	725	Cu alloy AE 4	8	0.50	-	VW/VW	Unknown Emperor	Obv. Illegible Rev. Illegible	C4	-	-	V. small flan
301362	301364	700	Cu alloy AE 3	15	0.78	-	C/C	Unknown Emperor	Obv. Bust r Rev. Illegible	C4	-	-	-
-	301050	778	Cu alloy AE 3	17	1.28	-	C/C	Unknown Emperor	Obv. Bust r, pearl diadem Rev. Illegible	C4	-	-	V. irregular flan
-	303500	1325	Cu alloy AE 4	12	0.90	-	C/C	Unknown Emperor	Obv. Bust r. -PFAVG Rev. Illegible`	C4	-	-	Dated by size alone
-	303500	2011	Cu alloy AE 4	9	0.42	-	VW/VW	Unknown Emperor	Obv. Illegible Rev. Illegible	C4	-	-	An almost triangular flan
Constantine I													
-	302314	733	Cu alloy AE 2	20	2.61	-	C/C	Constantine I	Obv. Bust r, laureate. CONS- Rev. Illegible	AD 306–37	-	-	-
House of Constantine													
-	303500	2071	Cu alloy AE 4	11	1.17	-	VW/EW	House of Constantine	Obv. Bust r, pearl diadem Rev. Illegible	AD 330–60	-	-	C4 copy, almost certainly of the House of Constantine
Post-medieval													
302018	302017	755	Silver coin	20	1.86	-	EW/EW	Unknown	Obv. Illegible Rev. Illegible	Post-medieval	-	-	Badly damaged silver coin
302018	302017	764	Cu alloy Token	29	8.71	7	W/W	Unknown	Obv. Half facing bust of George IV as Prince of Wales. GEO PRINCE OF WALES HALFPENNY Rev. Royal arms. LONDON AND MIDDLESEX HALFPENNY	c. AD 1794/5	-	Seaby 1984, 953b	Pierced from front to back
Modern													
-	302314	734	Cu alloy Farthing	22	4.08	6	C/C	George IV	Obv. Bust l, laureate. GEORGIVS IIII DEI GRA- Rev. Britannia seated r. 182- below	AD 1821–6		Seaby 1989, 3822	First issue farthing

Cut	*Context*	*ON*	*Denom.*	*Diam (mm)*	*Wt. (g)*	*Reverse axis*	*Condition obv./rev.*	*Issuer*	*Description*	*Issue date*	*Mint*	*Ref.*	*Notes*
-	301000	507	Cu alloy Farthing	22	4.01	12	C/C	George IV	Obv. Bust l. laureate. GEORG- -DEI GRA-TIA 1828 Rev. Britannia seated r. BRI- -FID DEF	AD 1828	-	Seaby 1989, 3825	-
-	303500	1319	Cu alloy Farthing	20	2.75	12	SW/SW	George VI	Obv. Bust l. GEORGIVS VI D: G: BR. OMN: REX F: D: IND: IMP. Rev. Wren l. FARTHING. 1940 above.	AD 1940	Lon-don	Seaby, 1989, 4116	-
-	303500	1326	Silver Half crown	32	11.41	12	VW/VW	? George V	Obv. Bust illegible. GRA BRITT OMN REX Rev. Shield. FID DEF IND IMP HALF CROWN	C20		-	Badly damaged
-	303500	1427	Silver 10 Ore	15	1.34	12	SW/SW	Oscar II	Obv. II contained within stylised and crowned 'O' BRODERVOLKENES VEL Rev. Crowned shield of Norway. 18 82 on either side. 10 ORE above	AD 1882	-	-	10 Ore Norwe-gian coin

AD. Although examples of this countermark have been identified in Britain, these are predominantly found on the German frontier, along the Rhine (http://www.accla.org/actaaccla/baker2.html and see Mattingley 1923, xxxiii). They were probably countermarked to allow the coins to continue circulating as legal tender. It seems likely that this coin arrived in Britain with the one of the legions forming the invasion force, three of which had been drawn from Germany. The coin itself is too heavily worn to be identified closely. It also bears four inscribed letters, P S X D, suggesting it may have been used as a weight, although none of the obvious combinations of weights or numbers which might match these letters equate to the weight of the coin – some 6.07 g (R. Reece, pers. comm.).

With the exception of this coin, there are no Roman coins from *Margidunum* Hinterland pre-dating the Flavian period (period 4 in Fig. 4.89). This may be a reflection of the relatively small assemblage recovered, although the absence of any Claudian coinage in particular suggests that coins were not in use here in the two decades immediately after the conquest. The small quantities of coins recovered from periods 5, 6 and 7 all suggest that coin use was established by the end of the 1st century AD in the *Margidunum* Hinterland, and the absence of period 8 and 9 coins, whilst noteworthy, may not be significant given the small assemblage. Coins of the later 2nd century AD and early 3rd century AD are generally scarce on British sites, and this is reflected here, with only a single coin recovered of this period (ON 721, a *denarius* of Septimius Severus).

The major peak of coin loss in the late 3rd century (periods 13 and 14) is very much as expected, as are the high proportions of copies. Large quantities of these copies of the radiate *antoninianus* were in circulation in the late 3rd century AD. It seems likely that these copies, like the later episodes of copying in the 4th century, were at least tolerated by officialdom if not actually sanctioned. Most seem to have occurred as a response to irregularities in the supply of coinage to the province.

The pattern of 4th-century coin loss on the site is largely as expected. The coins minted in the decades following on from Diocletian's reform of the coinage (periods 15 and 16) are generally less well represented than coins of the House of Constantine (period 17). The smaller quantity of period 18 coins followed by a peak of coins of the House of Valentinian (period 19) coins also fits the expected pattern. The quantities of copies and probable copies identified are also fairly typical. The dearth of period 20 coins is not unexpected in so small an assemblage, as coin supply to the province at this time was patchy. The final group of coins – seven coins of the House of Theodosius (period 21) point to continued activity on the site into the late 4th and early 5th centuries AD. All of these coins were recovered from DE3002, the small site to the east of the Fosse Way. This suggests that this site in particular saw late activity.

The majority of the Roman coins recovered came from DE3001 and DE3002, with much smaller numbers recovered from DE3004 and DE3006 (see Table 4.19 and Fig. 4.91). There are subtle differences between the coins recovered in DE3001 and DE3002. Although the earliest coin from the site came from DE3002, the next earliest coins from that intervention are two mid-2nd century issues (ONs 1441 and 2031), with most of the coins recovered dating to after AD 260. In DE3001,

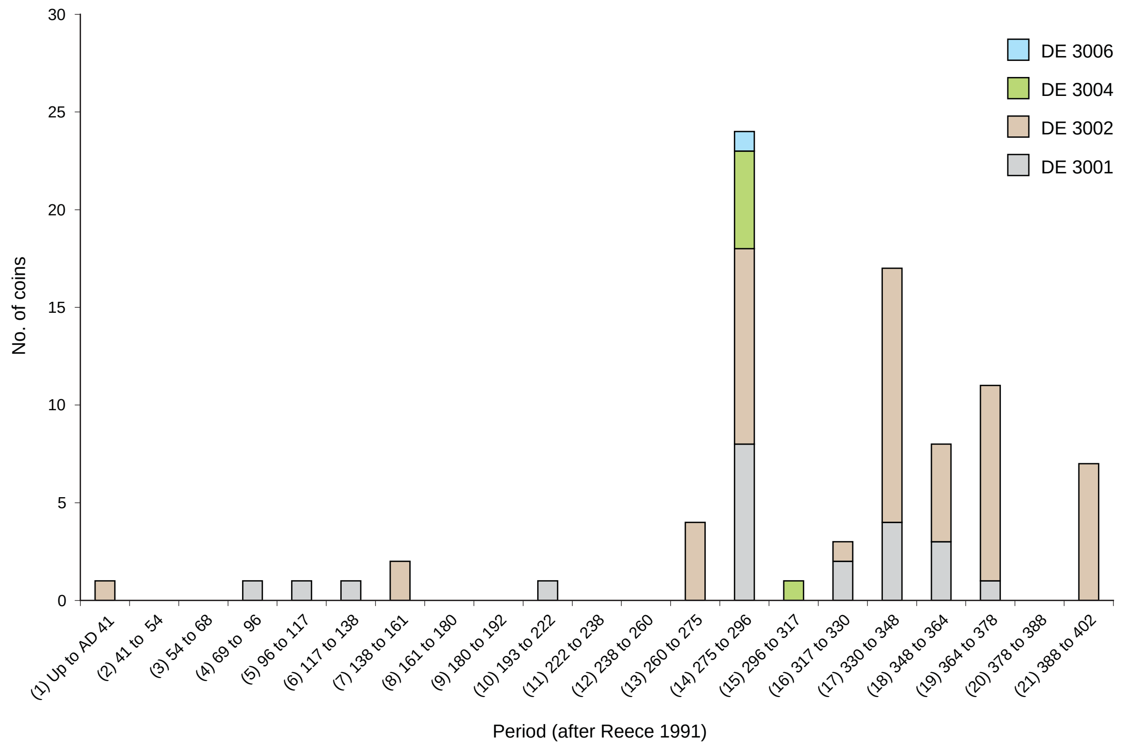


Fig. 4.91 Roman coins from Margidunum *Hinterland by area of the site*

however, there is good evidence for coin use and loss from the Flavian periods onwards. Interestingly, the assemblage suggests that coin use in DE3001 declined in the second half of the 4th century – two coins were recovered from period 18 but only one from period 19, suggesting that coin use here was in decline by the AD 360s. Although only small quantities of coins were recovered from DE3004 and DE3006, all date to the late 3rd or early 4th centuries AD.

Coins from earlier excavations

A small assemblage of coins was recovered from the earlier excavations at *Margidunum* (based on coin lists published by Oswald (1927a) and Todd (1969)). Forty-five of the coins recovered in Oswald's excavations could be dated to period, along with a further 54 from Todd's excavations. The coins from these excavations are shown in Figure 4.92. Both series of excavations largely concentrated on the town itself, and predominantly on the area within the later defences, although some of Todd's excavations in the vicinity of the *Margidunum* roundabout and further to the south identified a number of extra-mural burials. Essentially, however, the coins recovered from these excavations represent coin loss within the defended settlement itself.

Discussion

There are a number of clear contrasts between the coins recovered from the recent excavations in the *Margidunum* Hinterland and those from Oswald and Todd's excavations in the town itself. Figure 4.92 clearly shows significantly higher numbers of coins of the 1st and 2nd centuries were recovered from the excavations in the town. The numbers of Neronian and Flavian (period 2 and 3) coins recovered point to coin use at *Margidunum* early in the second half of the 1st century AD, whilst a continued pattern of coin loss into the early 3rd century AD points to regular coin use within the town.

In contrast, the picture from the more recent excavations suggests that coin use and loss in the immediate hinterland was considerably less, with considerably fewer coins of the 1st and 2nd centuries AD recovered, and with most of these coming from DE3001 and DE3002, on either side of the Fosse Way.

From Period 13 onwards, however, the pattern of coin loss from both the past excavations and the recent excavations is very similar (the differences evident in periods 13 and 14 are methodological rather than a genuine pattern). It is clear that coin use was widespread in the late 3rd century, with radiate *antoniniani* also recovered from DE3004 and DE3006. Coin use and loss in the 4th century AD differs little between DE3001 and DE3002 and *Margidunum* itself. It is evident, however, that coin loss was greater on the smaller DE3002 intervention to the east of the Fosse Way than in DE3001 to the west, and that activity continued on the site into the late 4th and probably into the 5th centuries. A small group of late coins from Oswald's and Todd's excavations indicates similar longevity of coin use and loss within the town. Overall, the patterns of coin loss from both within and outside *Margidunum* suggests that early coin use was focused on the fledgling town, with little coin use and loss in the hinterland until late in the 3rd century AD, despite the evidence for early settlement and activity in DE3001 and DE3002.

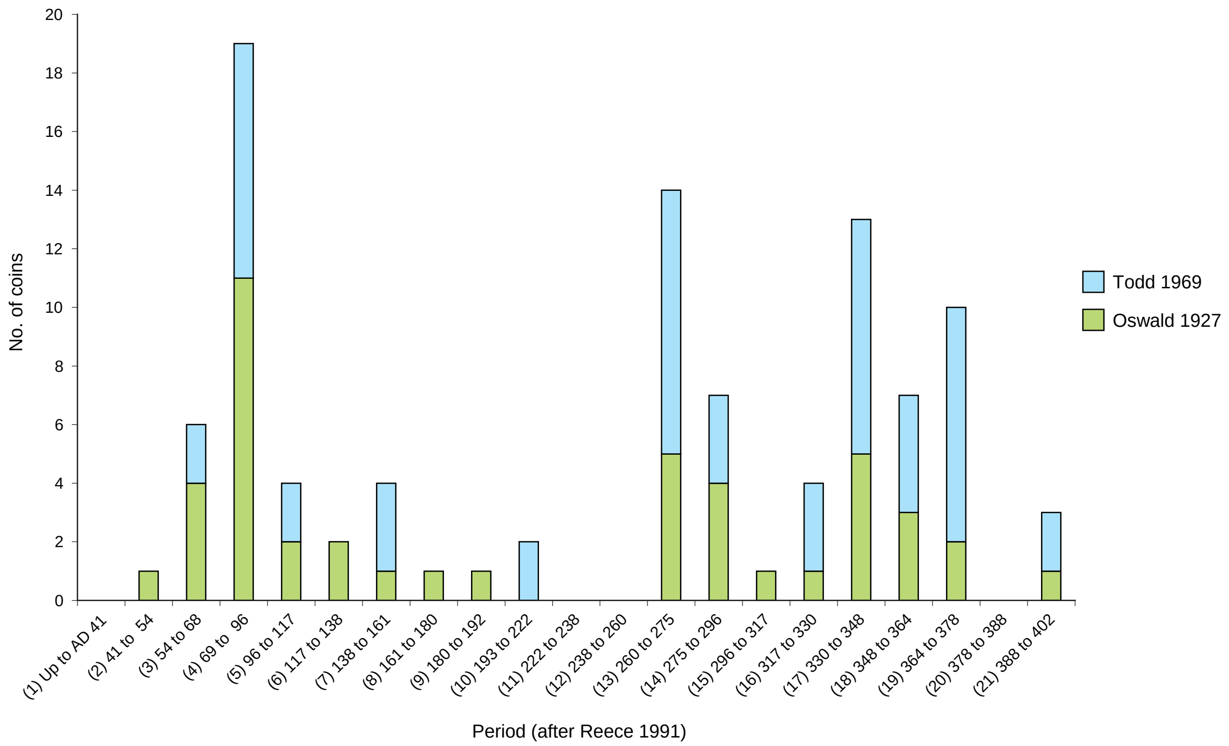


Fig. 4.92 Roman coins from the earlier excavations at Margidunum

Copper Alloy and Iron Finds

by Jörn Schuster

Most copper alloy and iron finds have been x-radiographed, and conservation was carried out on selected objects. Of the 458 recorded objects, 129 were recovered from inhumation or cremation graves and these are considered in a separate section below. The distribution of the remaining 329 objects by site subdivisions and metal type is shown in Table 4.21. Of these objects, 188 (57%) were found in modern or unphased contexts, mainly topsoil and subsoil. The objects have been grouped by functional category following Crummy (1983, 5–6). Apart from a cruciform brooch (see below), a nail shank from an Anglo-Saxon sunken-featured building in DE3004 and a nail shank from a Romano-British/Anglo-Saxon ditch in DE3003, the remaining objects (138) were retrieved from features dated Late Iron Age/early Romano-British to late Romano-British.

Table 4.21 *Margidunum* Hinterland: metal types per site subdivision

Event code	*Cu alloy*	*Iron*	*Total*
DE 3001	28	29	57
DE 3002	99	124	223
DE 3003	2	6	8
DE 3004	5	20	25
DE 3006	4	2	6
Unstrat.	2	8	10
Total	140	189	329

Table 4.22 shows a breakdown by functional category of the finds from Late Iron Age/early Romano-British to late Romano-British features. While only 12 items from Romano-British layers are intrinsically datable as Romano-British, another 14 Roman objects (mainly brooches but including a key, a vulva-shaped fitting, a stylus and a T-clamp) and one late medieval strap end (cf. Egan and Pritchard 2002, 140–1 fig. 92, 650–1) are not included in Table 4.22 as they have been found residually in modern layers. However, these finds are included in the typological discussion below.

Table 4.22 *Margidunum* Hinterland: copper alloy and iron objects from Romano-British phases (excluding graves), by functional category

Functional category	*Total*
Personal	21
Toilet	3
Household	1
Fitting	48
Agriculture	1
Metalworking	2
Uncertain	64
Total	138

Personal adornment or dress

Brooches

Of the 20 Roman or Romano-British brooches and brooch fragments found, only 10 came from Romano-British contexts while the remainder were found residually in the topsoil or unstratified contexts.

Two of the earliest brooches were found in Late Iron Age/early Romano-British boundary ditches in DE3006. One is a Colchester brooch (Fig. 4.93.1) with probably oval-sectioned bow, but since its catchplate is missing it can only be assigned broadly to Mackreth types C 2e or 3e which had their *floruit* in the second and third quarter of the 1st century AD (cf. Mackreth 2011, 37–9, pl. 22, 211, curve of bow more like pl. 23, 9717). The other is a Langton Down brooch (Fig. 4.93.2). A further example of the type was recovered from the topsoil in DE3001. Both have the rounded head, and the complete example (of Mackreth type LD 2.b2) also has the tapering bow with straight sides, of Riha's type 4.4.1 which starts in the Augustan-Tiberian period and with a *floruit* ending in the Claudio-Neronian period (Mackreth 2011, 34; Feugère 1985, 266; Schuster 2011, 198).

A fragmented Hod Hill brooch with triangular foot and rudimentary knob was found in a mid-Romano-British layer in well 303819 in DE3002 (Fig. 4.20). It belongs to Mackreth type Hod Hill 4.d1, Riha type 5.6 or 5.16, or Bayley and Butcher Hod Hill a, indicating a date in the later 1st century AD (for a summary of the dating evidence see Schuster 2011, 208).

Three brooches belong to the broad group of Colchester derivatives with hinged pins, and all come from topsoil contexts. In the example from DE3001 the original hinged pin had been replaced by a pin with remains of a spring which had been inserted into the widened slot for the original pin hinge (Fig. 4.93.3). The type dates to the second half of the 1st century AD (Mackreth 2011, 84–5). The head and beginning of the bow of a second example has completely plain wings indicative of Mackreth type CD H 5, probably of similar date. A hinged T-shaped brooch from the topsoil in DE3002 (Fig. 4.93.4; cf. Mackreth 2011, pl. 59, 2424) belongs to Mackreth's Nene group, essentially a later 1st-century AD type (*ibid.*, 89).

An extremely corroded trumpet-headed brooch, with remains of a head loop corroded onto the rim and the head with enamelled fields, was retrieved from layer 303678 in DE3002 (Fig. 4.23). It belongs to Mackreth type TR 1.2b1/7, essentially of the 2nd century AD; a close comparison for the *Margidunum* brooch comes from Corbridge (*ibid.*, 119–20, pl. 80, 4976).

Two headstud brooches include the bow only of a brooch found in the topsoil in DE3002 (Fig. 4.93.5). A rectangular socket, probably for the attachment of a dog figurine, suggests that it belongs to Mackreth type HDST 2b (cf. Mackreth 2011, pl. 71, 12442). The second brooch, from Romano-British ditch 218553 on the eastern side of DE3001 (Fig. 4.16), features the decorative scheme of brooches like Mackreth type HDST 11a (cf. *ibid.*, pl. 74, 7273), but instead of the

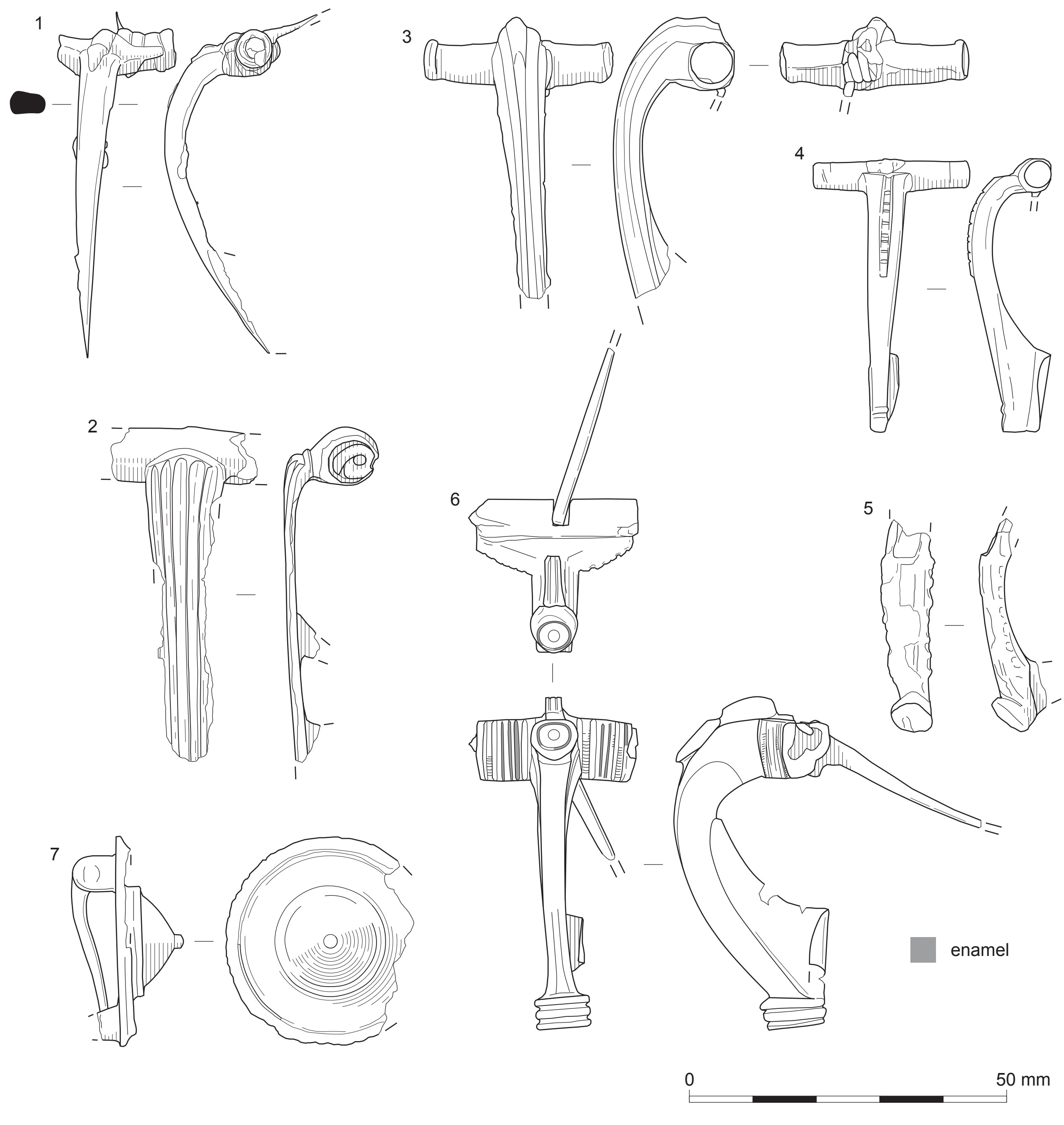


Fig. 4.93 Metal finds (1–7). See catalogue for description

spring construction of that type its pin is hinged into a slot in the head (Fig. 4.93.6). Both can broadly be dated to the late 1st and 2nd centuries.

Three different types of plate brooch were discovered, including a tutulus brooch from pit/waterhole 301171 (Fig. 4.93.7) and a probable umbonate brooch from the topsoil (Fig. 4.94.8), both in DE3001 (Fig. 4.18). The tutulus brooch belongs to Feugère's type 25a, on account of its cone ending in a small button (Feugère 1985, 351), which can be dated to the later 1st/early 2nd century. The identification of the umbonate brooch is owed to the enamelled fields in the example from *Margidunum*, which are shaped as proper triangles rather than the customary petalled shapes usually associated with such brooches (eg, Mackreth 2011, pl. 109, 12640; Bayley and Butcher 2004, fig. 99, 379). The third plate brooch (Fig. 4.94.9), from the topsoil in DE3002, appears to have lost its decorated repoussé sheet which had been soldered onto the front. Although the animal-headed lug above the catchplate is rather worn, a good comparison comes from the north suburb of *Durobrivae*, Cambridgeshire (Mackreth 2011, suppl. pl. 1, 10602). The scant dating evidence for the type points towards the 2nd century and onwards (*ibid.*, 155).

The three penannular brooches found all have terminals coiled back at right angles to the plane of the ring. Two can be classed as Mackreth type PEN c2.a on account of their circular ring and proper coils (*ibid.*, 207). One of the brooches was found in the topsoil in

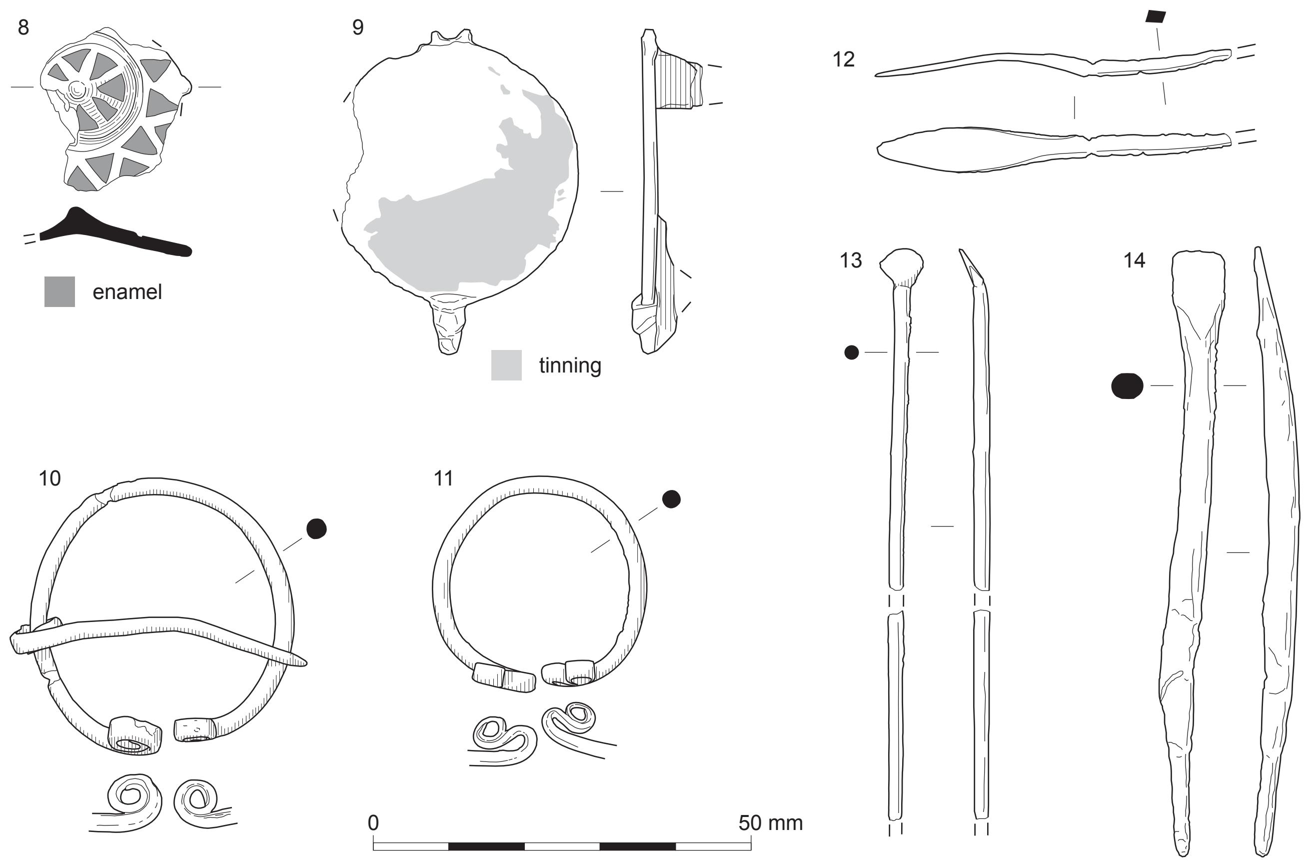


Fig. 4.94 Metal finds (8–14). See catalogue for description

DE3004 (Fig. 4.94.10), the other is unstratified. The type is common from the Late Iron Age into the 2nd/3rd century AD. The third brooch (Fig. 4.94.11), found in an Late Iron Age/early Romano-British layer 302287 in DE3001 (not shown in plan), is distinguished from the other two by the terminal with a recurved coil. The few dated examples belong to the mid-1st century AD with an outlier in the late 3rd/4th century (*ibid.*, 206–7).

A triangular catchplate fragment from the topsoil in DE3002 and the corroded head of a hinged brooch from a late Romano-British layer (303677) are likely to derive from early Roman brooches. Two brooch pin fragments from mid- and late Romano-British postholes in DE3002 provide no close dating.

Hobnails

Approximately 22 hobnails were recovered from settlement contexts, including nine from pit 301178 in DE3001 (Fig. 4.18) and at least six with mineral-preserved organic and leather remains from well 303819, associated with Structure 16 in DE3002 (Fig. 4.20).

Possible personal objects

A rectangular-sectioned rod fragment with flat lanceolate end was collected from the overburden in DE3002 (Fig. 4.94.12). The object appears to be unfinished and – if Roman – may have been intended to be either a snake-head bracelet or perhaps a spoon probe.

Two small wire fragments may have been fragments of chains or necklaces. A small U-curved fragment was found in early Romano-British Enclosure H ditch 218522 (Fig. 4.11) and a very fine wire – coiled into an eye at both ends, probably from jewellery, perhaps a necklace or earring – came from ditch recut 218524 of late Romano-British Enclosure K (Fig. 4.33).

Toilet equipment

Three items of toiletry were all found in DE3002: a ligula with flat spoon (Fig. 4.94.13) from mid-Romano-British layer 303677 can be compared to a similar example from Corbridge (Allason-Jones 1988, 169 fig. 80, 84, 86); a rectangular-sectioned strip with a fragmented loop at one end may be a toilet spoon or nail cleaner (cf. Crummy 1983, 58 fig. 62, 1869 or 60 fig. 64, 1900); and a bent strip with parallel sides and fragmented end loop may be what remains of a small pair of tweezers. The latter two came from mid-Romano-British layers.

Household utensils

A bucket handle from DE3002 (layer 303509, a mixed layer sealing Roman road surface 303505) is very similar to one found during earlier excavations at *Margidunum* (Oswald 1927b, pl. 11). A rectangular hinge plate with two square holes (Fig. 4.95.16) from mid-Romano-British layer 303678 may have been part of a box.

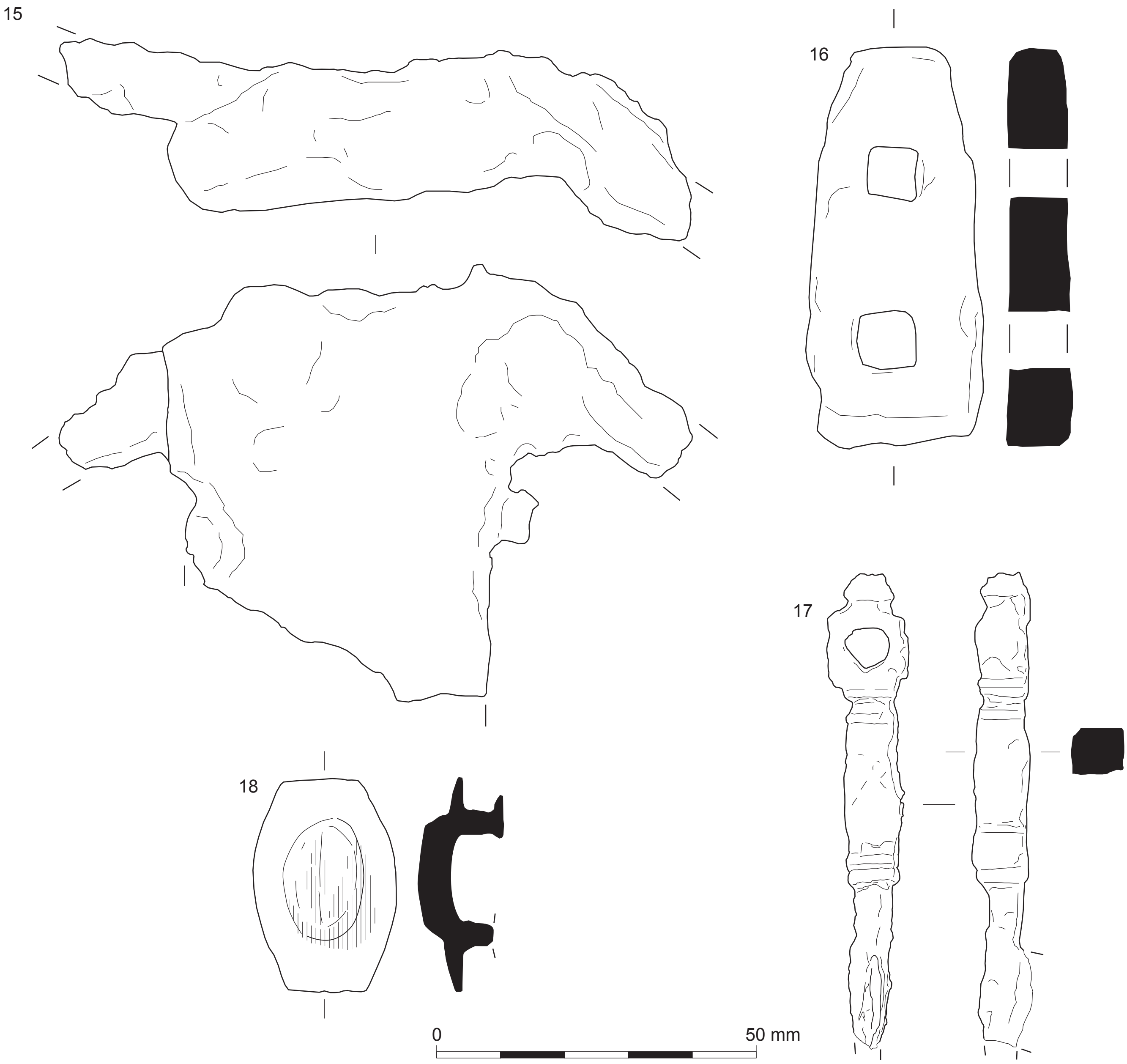


Fig. 4.95 Metal finds (15–18). See catalogue for description

Writing and written communication
A copper alloy stylus from the overburden at DE3002 is the only object in this category (Fig. 4.94.14). It can be compared to a stylus from Springhead, Kent (Schuster 2011, 251 SF 15898), which may be a copper alloy version of iron styli like Manning's type 1. During earlier excavations at *Margidunum* a square seal-box with an enamelled swash-N was found in ditch 9 (Oswald 1927b, fig. 2; 1952, pl. 5, 1B).

Fasteners and fittings
Of the 103 items in this category, 68 are either nails or nail shanks, 38 of which were retrieved from Romano-British contexts, including one small copper alloy nail with globular head (cf. Crummy 1983, 115 fig. 116, 2991) from layer 302016 (the upper layer of trackway 218547 in DE3001; Fig. 4.30). Two T-staples with relatively wide stems were recovered from mid-Romano-British layers 303678 (Fig. 4.95.15) and 303677 at DE3002 (cf. Crummy 1983, 120 fig. 128, 4073; Hawkes and Hull 1947, pl. 105, 20; Manning 1976, 58 fig. 25, 163). From the topsoil in the same area came a T-clamp with anchor-shaped head, comparable to similar objects from Aldborough (Bishop 1996, 86–7 fig. 46, 539–40), as well as a lever lock key with a profiled bow ending in a loop surmounted by a knob (Fig. 4.95.17; cf. Birley 1997, 19 fig. 6).

Objects associated with agriculture and horticulture
Late Romano-British posthole 303589 (Fig. 4.46) contained fragments of a U-profiled strip which might have

been part of a spade sheath, and the fragments of what might once have been a reaping hook were recovered from a later Romano-British fill of well 303715 (Structure 21) (Fig. 4.20).

Military equipment

The only object which may belong in this category is a vulva-shaped fitting from the overburden in DE3002 (Fig. 4.95.18), probably for attachment on a belt or horse harness strap where it would have served as a good-luck charm. While mainly found on late 2nd- to mid-3rd-century military sites (cf. Oldenstein 1976, 137–9, Taf. 34, 269; Allason-Jones and Miket 1984, 239 no. 870–1), these objects occasionally turn up in civilian contexts, for instance Brougham, grave 301 (Cool 2004, 242 fig. 4.245, 1).

Objects and waste material associated with metalworking

Evidence for both copper alloy and ironworking was mainly found in DE3002; a piece of copper alloy casting spill from the topsoil in DE3001 has to remain undated, whereas a trapezoidal-shaped block of iron (52 x 30 x 8 mm) from late Romano-British ditch 304521 (layer 304336, intervention 304335) in DE3004 is clearly a piece of bar iron for smithing. Nine of the 10 metal-working items found in DE3002 were recovered from the topsoil, including a copper alloy casting sprue and a sheet fragment with a repair attached by tubular rivets. An iron bar fragment weighing 329 g was retrieved from mid-Romano-British layer 303677 (Fig. 4.23), and a further four bars or billets, weighing between 12 g and 109 g, were found in the topsoil.

Discussion

The small number of finds noted in the various categories does not permit much further analysis beyond indicating the possibility that certain activities had been carried out, or certain types of equipment may have been used, at *Margidunum*. It is notable that no knives or any other tools have been recorded, even though there is clear evidence, in the form of both metalworking debris and slag (see Starley, below), that ironworking/smithing and – probably on a much smaller scale – casting of copper alloy objects took place at *Margidunum* Hinterland, especially at DE3002.

In contrast to this, it is possible to compare the brooches from the recent excavation, together with those found during earlier investigations at *Margidunum*, with the average brooch assemblage for the Midlands (Fig. 4.96). The groups shown in Figure 4.96 follow the definition by Plouviez, who did not include the various

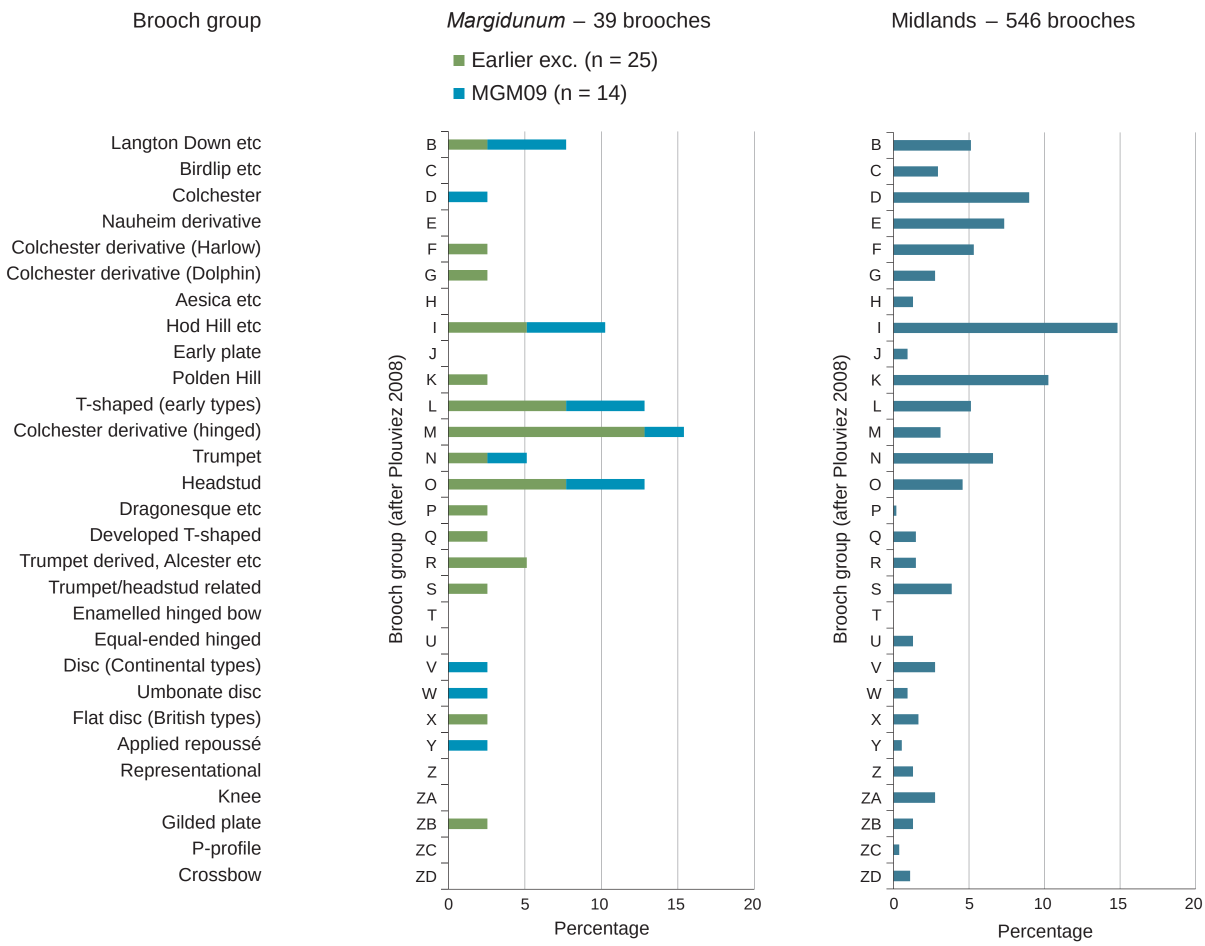


Fig. 4.96 Comparison of brooches from Margidunum *Hinterland with those from earlier* Margidunum *excavations by type (after Plouviez 2008)*

penannular types in her comparison because of the difficulty of separating earlier from later types (Plouviez 2008, 171–3, table 4.1.1 and fig. 4.1.1). While this task has now been rendered somewhat easier with the publication of Mackreth's book on Late Iron Age and Roman brooches (Mackreth 2011), it would have been beyond the scope of this study.

Of the 20 brooches from the *Margidunum* Hinterland excavation, 14 could be grouped following Plouviez's scheme, and this could be augmented by a further 25 brooches found during earlier excavations. What immediately becomes apparent is the under-representation of early types like Colchesters, Colchester derivatives of Harlow construction, and Nauheim derivatives, whereas Langton Down and Dolphin brooches are found in quantities comparable to the regional and national averages. The quantity of the ubiquitous, mainly post-conquest, Hod Hill types (group I) is slightly lower at *Margidunum*: with just over 10% it is comparable to the quantity in the neighbouring region of East Anglia, which also provides a better comparison for the number of hinged Colchester derivatives (group M). The amount of early T-shaped brooches, on the other hand, is closer to the trend in the south-western graph, and that of the Headstud brooches (group O) is more in keeping with the north (Plouviez 2008, 173, fig. 4.1.1). This pattern may be the product of the location of *Margidunum* on the Fosse Way and close to Ermine Street. The small numbers of brooches in groups P and below show the general decline in the use of brooches from the later 2nd century onwards and are thus in keeping with the national trend, but the small numbers (most of the bars in the *Margidunum* diagram merely represent a single brooch) caution against an over-interpretation of these trends.

Catalogue of illustrated metal finds

All copper alloy, unless otherwise stated.

(Fig. 4.93)

1 Colchester brooch; six spring coils, those on right more pronounced and extending beyond undecorated wings; hook with long triangular end; bow oval-sectioned; catchplate missing. Plouviez D. Mackreth C 2 or 3. ON 1008, context 306080, cut 306076, ditch 218766, DE3006.

2 Langton Down brooch with broad rounded head. Plain spring cover with remains of spring; damaged edges of bow tapering in gentle curve, bow with central groove accompanied by two longitudinal grooves either side, central and outer grooves with dark grey covering from ?tinning. Base of open catchplate remaining. Plouviez B. Mackreth LD 2.b2. Riha Typ 4.4.1. Cf. Springhead (Schuster 2011, fig. 84, 23; for tinning see fig. 84, 27). ON 1033, context 306636, cut 306637, ditch 218794, DE3006.

3 Colchester derivative brooch. Plain hinge tube with end reels; original hinged pin replaced by extending pin slot and insertion of spring fragment of which pin is missing. Profiled bow with central groove. Foot broken off just below beginning of catchplate wing. Plouviez M. Mackreth CD H 3.cd. ON 525, topsoil 301000, DE3001.

4 Colchester derivative brooch with hinged pin and iron axis. Hinge tube with groove near ends. Bow with short beaded crest, foot with half-profiled knob. Pin missing. Plouviez L. Mackreth CD H 6ad [Nene group]. ON 1382, topsoil 303500, DE3002.

5 Headstud brooch. Part of bow and foot of brooch with saw-tooth edges and stud at foot tip; only base of catchplate preserved. Remains of rectangular socket (?for dog figurine) at top of bow. Very corroded. Plouviez O. Mackreth HDST 2.b. ON 1321, topsoil 303500, DE3002.

6 Headstud brooch with hinged pin, remains of head loop acting as axis visible at side of hinge cover. Wings decorated with five reels and grooves, outer and innermost reels beaded, central with zigzag pattern. Hook continues into enamelled head stud; both appear to be cast on. High-rectangular sectioned bow prob. with central groove originally filled with white metal. Stud at foot end with three beaded reels, end with two concentric enamelled zones. Plouviez O. Mackreth HDST 11.a but lacks spring (cf. Mackreth 2011, pl. 74, 7273). ON 765, Context 301986, cut 301985, ditch 218553 (Fig. 4.16), DE3001.

7 Plate brooch with central hollow cone ending in tiny button, surrounded by flat zone margin which may contain residues of now corroded enamel; chamfered rim with small notches around edge preserved above double pin lug; trapezoidal catchplate, pin rest missing. Plouviez V. Mackreth PL CONT 16, Feugère 25a, Riha 7.11.1. ON 682, context 301176, waterhole 301171, DE3001.

(Fig. 4.94)

8 ?Umbonate brooch. Fragment of central cone. No remains of enamel. Central, slightly raised cone with eight triangular fields pointing to small central knob; separated by pronounced groove from wide flange with in- and outward facing triangles. Outer edge missing apart from one small projection. Cf. Bayley and Butcher 2004, fig. 99, 379 but this has petalled boss. Plouviez W. Mackreth Plate 7.a (*Petalled boss*) (eg, pl. 109, 12640). ON 505, topsoil 301000, DE3001.

9 Circular plate brooch. Disc with remains of small head loop and possibly an animal-headed or (more likely) a stepped lug extending above remains of catchplate on opposite side. Left side of plain disc damaged. There may have been a circular groove around the perimeter. Remains of white-metal coating on front and back. Double pin lug. Pin missing, only base of catchplate remains. Plouviez Y. Mackreth Plate 1x (cf. Mackreth 2011, suppl. pl. 1, 10602). ON 1266, topsoil 303500, DE3002.

10 Penannular brooch, terminals coiled back at right angles to plain, subcircular sectioned ring. Circular sectioned pin, bent down, flattened end coiled around ring. Mackreth PEN c2.a. Bayley and Butcher 2004 P3, Fowler 1960 type C. ON 1509, subsoil 304001, DE3004.

11 Penannular brooch, terminals coiled back at right angles to plain, circular sectioned ring (D 2.0–2.2mm) and ending in recurved coil. Pin, bent down, flattened end coiled around ring. Mackreth PEN c1.c (cf. Mackreth 23011, pl. 143, 13037). ON 767, layer 302287, DE3001.

12 Bracelet? Rectangular-sectioned rod fragment with flat, lanceolate end. ON 1448, topsoil 303500, DE3002.

13 Ligula. Small, flat prob. circular spoon with circular-sectioned shaft; opposite end missing. ON 2102, spread 303677, DE3002.

14 Stylus. Scriber separated from plain body by slight step, parallel-sided eraser (W. 7mm) grows out of body. Slight bend at either end. ON 1456, topsoil 303500, DE3002.

(Fig. 4.95)
15 Iron T-staple. Flat stem with curved arms. ON 2068, spread 303678, DE3002.
16 Iron rectangular hinge plate with two square holes. Spread 303678, DE3002.
17 Iron lever lock key with square-sectioned handle with transverse mouldings before shank and loop of bow. Bow surmounted by knob. Circular-sectioned shank, only base of bit remaining. ON 1434, topsoil 303500, DE3002.
18 Vulva-shaped fitting with hexagonal base. ON 1452, topsoil 303500, DE3002.

Metal finds from graves

Metal objects were recovered from 12 graves in DE3001, predominantly within Enclosure K (Fig. 4.35), and one late Romano-British cremation grave, and a further two graves in DE3002 (see Grave Catalogue above). Apart from a copper alloy finger-ring from grave 301132 and an unidentifiable small copper alloy lump from grave 303854, all other metal objects are made of iron. Where identifiable the iron objects are either nails or hobnails.

Finger-ring

The finger-ring (ON 66; Fig. 4.97.1) was found at the disturbed south-western end of grave 301132 in the area between the (missing) feet and the edge of the grave cut. The ring is very corroded and its original bezel missing, but its hoop had been bent and broken, probably by or at the time of deposition, prior to some more recent breaks. The ring is a variation of Guiraud's type 3a, on account of its slight shoulders and the setting for the bezel, but it is unusual in that the axis of the bezel is orthogonal to the axis of the hoop, a detail found in the more profiled type 3g. A Guiraud type 2a ring with this bezel orientation comes from Springhead (Schuster 2011, 237 fig. 103, 158). Shouldered finger-rings of Guiraud's type 3 mainly belong to the later 2nd to later 3rd centuries AD (Guiraud 1989, 185).

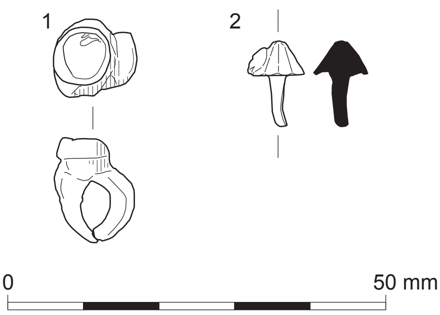


Fig. 4.97 Metal objects from graves (1–2)

Hobnails

Table 4.23 shows the minimum number of nails, nail shanks and hobnails identifiable from each grave. The numbers can only be an approximation as the preservation of most nails and hobnails was poor or very poor; only the four hobnails from cremation grave 302289 (Fig. 4.30) were in a better condition (Fig. 4.97.2), probably because they had been exposed to the heat of the funerary pyre (cf. Cool 2004, 41; 2006, 4).

Table 4.23 *Margidunum* Hinterland: minimum number of nails/shanks and hobnails per Romano-British grave

Grave	*Nails/shanks*	*Lengths of nails (mm)*	*Hobnails*
Inhumation			
301131	26	(n=22) >52–115	52
301132	8	(n=1) >21	1
301133	26	(n=13) 21–>84	136
301134	11	(n=4) >32–>94	-
301135	2	(n=2) >38–64	-
301245	4	(n=1) 28	41
301510	6	(n=1) 62	64
301572	11	(n=4) 51–56	-
301850	6	-	-
303921	1	(n=1) 25	-
Cremation			
302289	2	-	4

Six graves contained hobnails. One was cremation grave 302289 in the north of DE3001. The five inhumation graves with hobnails were all located along the inside of the ditch of Enclosure K. On the basis of the number of hobnails it is probably safe to assume that nailed footwear was present in four graves (Table 4.23). The situation is more ambiguous in grave 301132 where the single recorded nail may have ended up in its position near the right femur during the disturbance of the south-western end of the grave, which removed the feet and – had it been present – any footwear. The clearest evidence for shoes worn on the feet comes from grave 301133 (Fig. 4.36) where the hobnails were found in a compact area around the feet at the southern end of the grave. The hobnails in grave 301245 lay in a confined area at the eastern end of the grave, close to the edge of the grave cut (Fig. 4.37, ON 685). As in most graves at *Margidunum* Hinterland the bone preservation in grave 301245 was poor, and no bones were recorded below the lower tibia. The position of the hobnails is perhaps more indicative of the shoes having been placed next to the feet, unless the feet had been propped up against the edge of the grave. In grave 301131 the shoes had been placed outside the coffin for skeleton 301180, and it is uncertain whether they belong to this burial or to skeleton 301183 whose bones had been moved to the eastern end of the grave cut (Fig. 4.36, ON 621). A clear case of unworn footwear is present in grave 301510: the 64 hobnails, recorded in the shape of a shoe, were found outside the right tibia on the north-western side of the grave (Fig. 4.37, ON 709).

It was not possible to block-lift any of the concentrations of hobnails, which would have allowed x-radiography in order to analyse the nailing patterns of the soles. Equally, it is not always clear whether a single shoe, a pair or more shoes had been deposited, as the numbers of nails per shoe varied according to the type of shoe, ranging from as few as 25 to 160 (cf. Cool 2004, 4–5 table 1). For *Margidunum* Hinterland this could mean that graves 301131 and 301245, with at least 52 and 41 hobnails respectively, could have contained pairs of very lightly nailed shoes or a single, more heavily nailed shoe. The outline of a shoe from grave 301510 with 64 hobnails appears to belong to a shoe with a similar quantity of nails per sole as the pair worn by the individual in grave 301133 where at least 136 hobnails were found. A tile bearing the mark of a hobnailed boot was also recovered (context 304023, late Romano-British ditch 304527, DE3004 – see Jones, Ceramic Building Material, above).

Of the inhumation burials recorded during earlier excavations at *Margidunum* Southern Cemetery, outside the southern defences of the town, only one of the *c.* 16 inhumations had been buried wearing hobnailed footwear (grave 9; Todd 1969, 76), compared with five out of 13 burials in Enclosure K.

The strengthening of shoe soles with hobnails was a Roman introduction to Britain (Mould 2004, 392), but this need not imply that the custom of placing shoes in graves did not exist before when it was merely invisible due to use of unshod footwear. Furthermore, the scarcity of the rite in the Mediterranean 'makes it more likely to be a Celtic concept acquiring a Roman material expression' (Philpott 1991, 165, 171). The inclusion of hobnailed shoes in cremation burials is first found in the south-east of England in the mid-1st century AD, but had only become well established as a rite in the 2nd century, especially in rural settlements and small towns (*ibid.*, 165, 416–7). The practice of placing hobnailed shoes in inhumation graves had become widespread especially in south central England by the 4th century, and Philpott suggests that the occurrence of footwear in some contemporary cremation burials may by that time have been influenced by the common practice in inhumation burials. While earlier cremation burials containing hobnails tended to be rather richly furnished, the decline in the provision of grave goods in cremation burials during the 3rd and 4th centuries also extends to graves with hobnails (*ibid.*, 166, 458 fig. 28). The radiocarbon date of *cal AD 140–330 (at 95% probability)* (SUERC-39054) for cremation grave 302289 fits the outlined picture and, considered together with the lack of any other grave goods, may point to a date at the later end of the range.

The number of inhumation burials with hobnails from Roman Britain increased during the late 2nd and 3rd centuries, but most graves thus furnished date to the 4th century, although Philpott points out that the proportion of burials with hobnails is higher in cemeteries which started in the 2nd or 3rd centuries than in those not established until the 4th (*ibid.*, 167–8; 226). The practice appears especially prevalent among the middle ranks of the rural population but is scarce with richer burials, in lead or stone coffins or mausolea. This picture is supported by the evidence from *Margidunum*, where the two lead coffins discovered during earlier road works were devoid of any grave goods (Todd 1969, 77–8).

Nails

The number of nails recovered from graves at *Margidunum* ranged from none to 26 nails per grave (Table 4.23). Where identifiable, the nails are predominantly of the flat-headed Manning (1985) type 1b, although it is possible that ON 603 from grave 301133 is of the T-headed type 3 and ON 707 from grave 301510 an L-headed type 4. Due to the poor condition of the nails only a selection were measured and, although the emerging image is not very clear, it can be said that there is a tendency for the use of larger, sturdier nails in graves that contain a greater number of nails. Only grave 301572 appears to be an exception, in that the four measurable nails consistently range between 51 mm and 56 mm. In the two graves with 26 nails these were found in groups across the head and foot area, not the ends, and in grave 301133 there is an additional row of three nails across the middle of the grave. While no trace of the coffin had been observed in either case, the coffins appear to have been constructed out of individual boards held together by rafters nailed across. A second type of construction is represented by – sometimes very short – rows of nails along both sides of the grave as in graves 301132, 301134, 301510 and 301572, or only one side in the case of grave 301245. The small number of nails from grave 301135 may merely indicate that the lid had been nailed shut, while the remainder of the coffin had been constructed using wooden joints (O'Brien 1999, 13). It is equally possible, especially when considering the shallowness of the graves at *Margidunum*, that no coffin had been present and the nails found their way into the graves by some later disturbance.

Another possibility is that an individual nail may have been deposited in a grave for ritual or magic purposes, eg, as an apotropaic amulet, in order to protect the deceased (or the living?) from evil (Black 1986, 223; Dungworth 1998, 153). Such a use is difficult to prove, but could be considered if a single nail is deposited in a conspicuous position in the grave, as found in infant burials at West Thurrock, Essex, burial 17062, and Springhead, Kent, grave 12222 (Schuster 2009, fig. 10, 34; 2011, 278). The nail from feature 303921 at *Margidunum* Hinterland may be another example of this rite, but unfortunately the nail has clearly been disturbed.

Anglo-Saxon cruciform brooch

Catalogue description

ON 1500 (Fig. 4.98) Copper alloy and iron. Cruciform brooch. Profiled knob (flattened underside) at top cast in one with head plate which has slightly down-sloping wings set off from slightly thicker, mildly trapezoidal head plate. Lines along inner and lower edge of wing on near complete left wing, right wing almost completely broken off; single semi-circular lug to hold iron axis of iron spring, remains of which only preserved on left. Both fully profiled

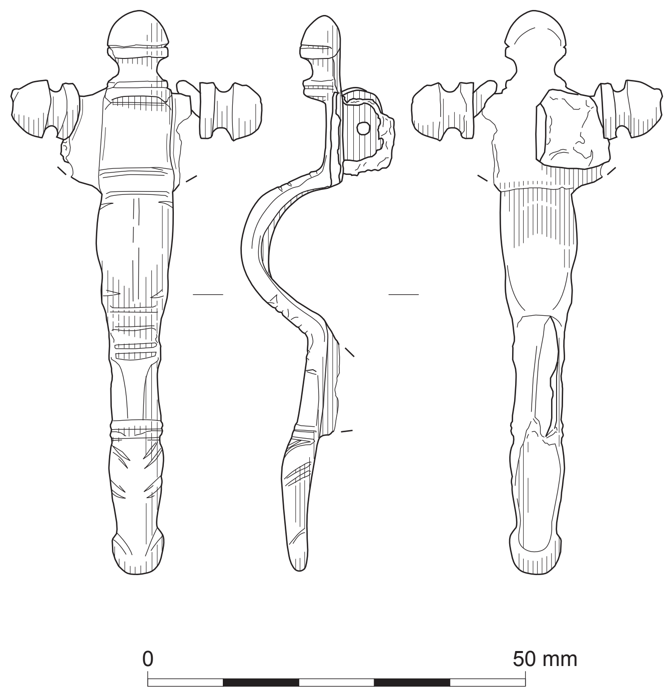


Fig. 4.98 Anglo-Saxon cruciform brooch from sunken-featured building (Structure 27)

side knobs preserved, left still in place; both knobs with cuts on inside where they would have been slid onto wings. Heavily worn bow (W 9 mm) with two transverse double lines at neck, upper double line set between heavily worn facets either side of it; the same repeated 3x at transition of D-shaped bow to foot. Bow has remains of heavily worn central line/groove accompanied by lateral lines. Foot with broad facets separated from zoomorphic terminal by two cast transverse ribs; groups of two lines above and below each eye, groups parallel to each other; pronounced nostrils, heavily worn; back of terminal hollow. Context 304060, sunken-featured building 304064 (Structure 27), DE3004.

Cruciform brooches are found around the entire North Sea basin, from northern Scandinavia, via Jutland and northern Germany to England, chronologically spanning the late 4th/5th and 6th centuries, and possibly extending to around AD 600 in Scandinavia and England (Bode 1998, 67–8; Sherlock and Welch 1992, 37–8; Hirst and Clark 2009, 489). Summaries of earlier studies of the typological and chronological development of cruciform brooches have, for instance, been provided by MacGregor and Bolick (1993, 95–6) and Scheschkewitz (2006, 95–7). Important typological studies of the type include those by Reichstein (1975), Bode (1998) and Mortimer's (1990) unpublished thesis which deals specifically with the English material (Mortimer's study was unfortunately not available to me during the study of the *Margidunum* Hinterland cruciform brooch).

While it was not possible to find a close comparison for brooch ON 1500 which combined all elements in a similar way, the details of headplate, bow and foot can be compared to some of the forms defined by Bode (1998, Abb. 7–10). Thus the headplate with its slightly raised, trapezoidal centre is Kopfplattenform 10, the bow with lines along the centre and the sides is Bügelform 2. The foot, however, is more difficult to place within her scheme but may perhaps best be described as an amalgam of Fußformen 38 and 48, although there are no raised eyes or ears, which have instead been indicated by the rare combination of double chevron lines angled towards the nose above and below the eyes as well as above the nostrils. There is as yet no direct comparison for the arrangement of the lines; however, on a brooch of Reichstein's Typ Trumpington from the eponymous site in Cambridgeshire (Reichstein 1975, Taf. 116, 9) the lines above and below the eyes appear as on the brooch from *Margidunum* Hinterland – as open chevrons pointing towards the tip – whereas the lines above the nostrils are part of a double saltire across the nostrils. Typ Trumpington is one of the types which Reichstein could not date precisely, and apart from the double lines their zoomorphic terminals are additionally distinguished from the *Margidunum* Hinterland brooch by pendants suspended from the tip of the nostrils (*ibid.*, 46). Other brooches with double lines pointing towards the nostrils can be found among Reichstein's Typ Midlum from Rudstone, Yorkshire (*ibid.*, Taf. 87, 3–4). However, the overall combination of the elements of the *Margidunum* Hinterland brooch most closely resemble a brooch of Reichstein's Typ Stratford from Girton, Cambridgeshire (Bode 1998, 179 Liste 1; Reichstein 1975, Taf. 92, 7).

Reichstein's Typen Stratford and Midlum belong to his late cruciform brooches, which he dates to the 5th century and especially its second half (*ibid.*, 95). This date range is not contradicted by Bode (1998, 68), whose Kopfplattenform 10 and Bügelform 2 are part of her third element group with a date range from the second half of 5th century to the beginning of the 6th, while Fußform 48 belongs to an even younger stage of element group 2 of the middle third and later half of the 5th century. In their recent study of Anglo-Saxon inhumation burials based on the four cemeteries of Morning Thorpe, Spong Hill, Bergh Apton and Westgarth Gardens in East Anglia, Penn and Brugmann (2007) devised a classification of cruciform brooches into three types. According to this scheme the *Margidunum* Hinterland brooch belongs to type X1 which 'covers all cruciform brooches of "classic" design with animal-shaped foot-terminals and without lappets or any other additional design to the head- or foot-plate' (*ibid.*, 24). Their correspondence analysis shows that these brooches belong to female combination phase FA1, dated to an earlier part of the second half of the 5th century (*ibid.*, 69–71 figs 5.20–21). Apart from the *Margidunum* Hinterland brooch, other brooches of type X1 found regionally include examples from Besthorpe (Nottingham Univ. Mus., G. Kinsley, pers. comm.) and Brough (Alvey 1980, 84) as well as an example of Reichstein's Typ Foldvik-Empingham with trapezoidal footplate from an unknown find spot at *Margidunum*, but presumed to come from a female grave (BHTA 2012).

The cruciform brooch from DE3004 was recovered from the fill of a sunken-featured building. Considering that the brooch was heavily worn, the brooch would have been used for at least 30 to 40 years (cf. Richthofen 1998, 256; 2000), suggesting a deposition no earlier than the late 5th or the first half of the 6th century.

Lead Objects

by Grace Perpetua Jones

A total of 166 pieces of lead was recorded from *Margidunum* Hinterland. Few were recorded from archaeological contexts, with only 15 from features of Romano-British date and two from Anglo-Saxon contexts. The remainder were recovered during metal detecting of the topsoil and subsoil. Each object was classified according to type and a summary description entered on the project database (MSAccess).

Summary of the assemblage

Romano-British
Romano-British spreads 303677 and 303678 (DE3002; Fig. 4.23) produced five waste/off-cut fragments (ONs 2056, 2065, 2089 and one unregistered); a lump of building dross (unregistered) and a folded sheet fragment, stamped XX (ON 2046; Fig. 4.99). The stamped piece is now broadly of rectangular shape, and appears to have been created by folding a larger sheet fragment. It may have had some loops or straps at the back, now flattened. The characters are set within a recessed rectangle. Other pieces of lead sheet are known with an XX stamp or similar (Frere and Tomlin 1991, 2436.8 and 11) but their purpose is not known. They may have been decorative, or perhaps represent the trial stamping of a punch (Roger Tomlin, pers. comm.). The example from spread 303678 probably served a utilitarian function of some description.

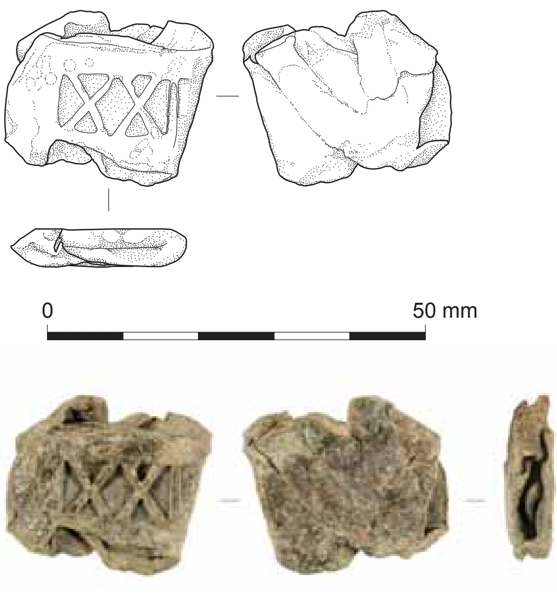


Fig. 4.99 Stamped lead object from spread 303678

Late Romano-British ditches 218660 (Structure 25) and 304508 (north of Structure 22) produced three sheet/strip waste fragments (ONs 739, 744, 796, 1251), a further four were associated with trackways 218547 in DE3001 (Fig. 4.30) (ONs 739, 744, 796) and 303505 in DE3002 (Fig. 4.46) (ON 1251). A rivet (ON 2069), probably used to mend a ceramic vessel (ON 2069), was recovered from posthole 303629 (Structure 18) in DE3002.

Anglo-Saxon
A disc-shaped fragment, perforated close to the edge (ON 1502), was recovered from sunken-featured building 304064. A disc of plano-convex section (ON 1501) was present in Anglo-Saxon feature 304061; measuring 14 mm in diameter and 4 mm thick; it may have been part of a late medieval/post-medieval cloth seal (and therefore intrusive), but the surfaces appear plain, with the exception of a possible central depression in the convex side, in which case it is not chronologically distinctive.

Unstratified
The metal-detected lead from the topsoil and subsoil, and those pieces that were unstratified, were dominated by waste fragments and offcuts, including folded sheet and twisted strip fragments (122 pieces). These could not be closely dated but many are likely relate to activity in the post-medieval and modern periods (details in the project archive). Only two objects can be identified as being earlier in date. A lead plug, 30 mm x 23 mm x 13 mm (ON 1358), would have been used to repair a ceramic vessel during the Romano-British period. Part of a cloth seal (ON 1366) is of late medieval or post-medieval date; it is circular, 16 mm in diameter, the mark on the seal is no longer clear, but was contained within two concentric incised rings. Lead seals were used as part of a system to regulate the production of commercially produced cloths (Egan 2001, 43).

Metalworking Debris

by David Starley

The material examined in this report derived from trial trenching, strip, map and sample excavation and detailed excavation along the entire length of the scheme. All bulk debris encountered was saved and the report is based on the interpretation of this debris.

Methodology
A total of 26.2 kg of bulk slag was visually examined; approximately 20 kg of this total came from *Margidunum* Hinterland. This material was classified into standard categories based on those used by the former English Heritage Ancient Monuments Laboratory. Visual observation of the exterior was backed up by examination of fresh fracture surfaces, the use of a geological streak plate and magnet.

Some forms of slag are visually diagnostic, providing unambiguous evidence for a specific metallurgical process. However, a high proportion of the material examined does did not correspond to these categories, with much material classified as undiagnostic ironworking debris, possible metalworking waste and non-metallurgical waste. The categories used and explanation of their origins are given below.

Explanation of classification terms (in italics)

Diagnostic – iron smithing

Evidence for iron smithing comes in two forms: bulk slags and micro slags. Of the bulk slags, the most easily recognisable are *smithing hearth bottoms* which normally have a characteristic plano-convex section, typically having a rough convex base and a vitrified upper surface which is flat or even slightly hollowed as a result of the downward pressure of air from the tuyère. Compositionally, smithing hearth bottoms are predominantly fayalitic (iron silicate) and form as a result of high temperature reactions between the iron, iron-scale and silica from either the clay hearth lining or possibly sand used as a flux by the smith.

In addition to bulk slags, iron smithing also produces micro slag of two types (Starley 1995): *Flake hammerscale* consists of fish-scale like fragments of the oxide/silicate skin of the iron dislodged during working. *Spheroidal hammerscale* results from the solidification of small droplets of liquid slag expelled during hot working, particularly when two objects are being fire-welded together or when the slag-rich bloom of iron is first worked into a billet or bar. Hammerscale is considered important in interpreting a site not only because it is highly diagnostic of smithing but, because it tends to build up in the immediate vicinity of the smithing hearth and anvil, it may give a more precise location of the activity than the bulk slags which may be transported elsewhere for disposal (Mills and McDonnell 1992). Ideally, hammerscale is collected by systematic sampling, or by recovery from routine environmental soil samples. No such material was available for analysis, and the hammerscale recorded during the assessment refers only to that which was transferred to the bags of bulk debris along with attached soil. Sometimes the material around the hearth becomes concreted into a mass known as *smithing pan*, in which individual flakes and spheres are visible. Three pieces from the A46 project contained a core of metallic iron, while these may be corroded artefact, they may also be bar ends or *off-cuts* from iron smithing.

Diagnostic – copper alloy working

The clearest evidence of copper working was recognised as three *clay mould fragments*. Two of these were typically orange externally with dark grey on the internal surface from contact with hot metal. However, one tongue-shaped fragment was dark grey over its entire surface and may well be the internal core from a mould. Two examples of *copper alloy waste* were identified, together with one possible *crucible fragment*, identified by vitrification on both sides and edge.

Undiagnostic – ferrous metalworking

The largest and most widespread category of material found was that recorded as *undiagnostic ironworking slag*. Such irregularly shaped fayalitic slags can be produced by both iron smelting and iron smithing processes. However, given the absence of diagnostic smelting evidence on any of the sites, this material can safely be assumed to derive from iron smithing. The same can also be said for a smaller quantity of *dense slag and iron-rich cinder*. The latter is distinguished by its significant content of iron not chemically combined as silicates, but visible as rust-orange coloured hydrated iron oxides and iron hydroxides.

Undiagnostic – metalworking or other high temperature process

Several of the categories of material can be produced by a wide range of high temperature activities and are of little help in distinguishing between these processes. In the absence of any colouration suggesting non-ferrous metal production, the material listed as *vitrified hearth/furnace lining* is likely to derive from ironworking although, with some other evidence for non-ferrous working on the sites, it may also derive from this activity. This material forms as a result of a high temperature reaction between the clay lining of the hearth/furnace and the alkali fuel ash or fayalitic slag. It often showed a compositional gradient from unmodified fired clay on one surface to an irregular cindery material on the other. A material associated with vitrified lining was classed as *cinder*. This comprises only the lighter portion of this, a porous, hard and brittle slag formed by the reaction between the alkali fuel ash and fragments of clay that had spalled away from the heath/furnace lining, or another source of silica, such as the sand sometimes used as a flux during smithing. The small amount of *fired clay* without any surface vitrification could have derived from structures associated with metallurgical purposes, or from those used for other high temperature activities. A single *burnt stone* may be the accidental product of numerous heating operations. Perhaps more significant were two different types of glassy material, one of which, due to its high density, might possibly derive from some sort of non-ferrous extraction, although chemical analysis would be needed to confirm this.

Non-metallurgical slag

A significant mass of debris was classified as *Iron Age Grey*, a material of lightweight porous nature, similar to fuel ash slag, but which suggests a process other than metalwork, possibly conflagration of daub-built structures. Such material has been recognised elsewhere at this period (Cowgill forthcoming).

Fuel

The only fuel recovered within the assemblage was a single fragment of coal. However, frequently impressions of charcoal were noted in the surface of the more flowed slags, showing that this was the usual fuel.

Non-slag

The *ferruginous concretion* may simply be iron-pan. Such material was examined for the presence of hammerscale; where this was found the material was classed as smithing pan, otherwise there is no reason to link it with ironworking. Some of the concretion was also attached to an unburnt *stone*.

Metalworking activity by area

DE3001 and DE3002

Supporting evidence of metalworking from these areas was provided by metal detector surveys which had located both lead and copper off-cuts in the topsoil prior to excavation. It may also be relevant that previous archaeological work in the vicinity by Malcolm Todd (1969) and by the Trent and Peak Archaeological Trust (eg, TPA 1992) had suggested a focus of metalworking

Table 4.24 *Margidunum* Hinterland (DE3001/DE3002): metallurgical debris, summary by activity, typology and phase (weight and number of contexts)

Activity	*Classification*	*ERB*		*MRB*		*LRB/RB*		*Modern*		*Unphased*	
		Wt. (g)	*Cxts*	*Wt. (g)*	*Cxts*	*Wt. (g)*	*Cxts*	*Wt. (g)*	*Cxts*	*Wt. (g)*	*Cxts*
Smithing	Flake hammerscale	-	-	nq	7	nq	4	nq	1	nq	1
	Spheroidal hammerscale	-	-	nq	1	-	-	-	-	-	-
	Smithing hearth bottoms	-	-	6042	8	721	3	766	2	-	-
	Smithing pan	-	-	110	1	-	-	-	-	-	-
	Iron object/off-cut	-	-	130	2	-	-	195	1	-	-
Undiagostic ironworking	Undiagnostic ironworking slag	60	3	5532	12	1692	10	424	1	303	1
	Iron-rich cinder	-	-	569	4	114	2	113	2	-	-
	Dense slag	-	-	86	1	-	-	-	-	-	-
Cu alloy casting	Clay mould fragment	-	-	10	1	8	1	-	-	-	-
	Copper alloy waste	-	-	8	1	-	-	53	1	-	-
	Possible crucible	-	-	-	-	-	-	6	1	-	-
Metalworking or other high-temperature process	Vitrified hearth/furnace lining	132	4	689	12	99	7	10	1	46	1
	Cinder	-	-	28	2	35	1	-	-	21	1
	Fired clay	-	-	-	-	62	1	-	-	-	-
	Burned stone	-	-	9	1	-	-	-	-	-	-
Non metallurgical	'Iron Age Grey'	41	2	25	1	74	1	-	-	-	-
Non-slag	Ferruginous concretion	50	1	865	4	440	2	-	-	590	1
	Stone	-	-	178	1	-	-	-	-	-	-
Total	20.336 kg	-	-	-	-	-	-	-	-	-	-

KEY: nq = not quantified

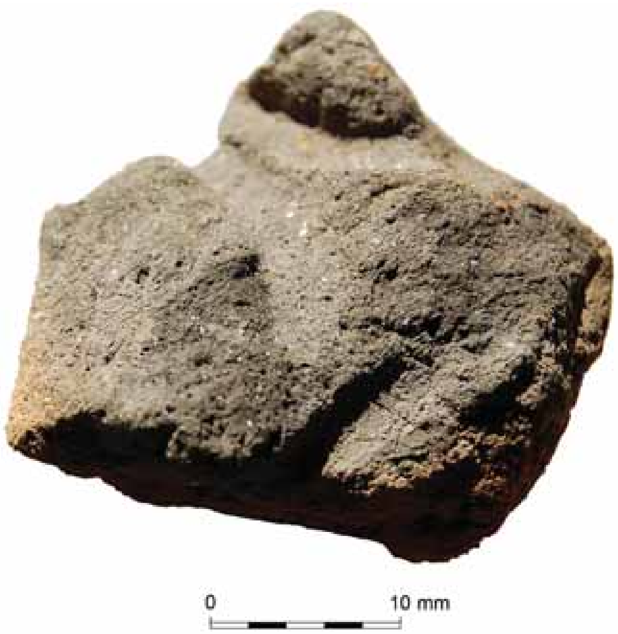


Fig. 4.100 Fragment of clay mould from well 303819, associated with Structure 16

activity at *Margidunum*. The current project identified a number of hearth/ovens, but none clearly associated with significant evidence of metalworking in the form of bulk micro-debris. No clearly identifiable metalworking tools were recovered from the site, although a battered quartzite block may have seen some use as an anvil.

Examination of the debris (Table 4.24) provided a small amount of evidence for copper alloy working most from DE3002, which took a number of forms. A single ceramic sherd was considered to be a crucible fragment due to the vitrification on both sides and the rim. However, the orange fabric is not typical of a refractory ceramic and no copper alloy corrosion remained attached. Unfortunately this and the largest piece of copper alloy waste were retrieved from the topsoil. A second piece of copper alloy waste was identified from 303824, the loose fill beneath stones of possible floor 303761, related to mid-Romano-British Structure 19 (Fig. 4.20). The best surviving clay mould fragment (Fig. 4.100) came from the mid-Romano-British fill 303823 of well 303819, associated with Structure 16 in the same area. Both these items were found in the northern area of the excavation, suggesting a different distribution pattern from the iron smithing waste. Such apparent separation may be genuine – it is unlikely that an iron smith would also be involved in the production of cast artefacts, although the use of copper alloy for brazing, coating and inlaying ferrous objects is a possibility. One further mould fragment came from the Late Iron Age/ early Romano-British fill 302675 of an enclosure ditch (302674, Enclosure B, DE3001; Fig. 4.6).

The diagnostic evidence for iron smithing was also strongly focused on DE3002 and to contexts of the mid-Romano-British period. Evidence within contexts associated with the earlier (Late Iron Age/early Romano-British) phase is meagre, less than 100 g and, given the likelihood for contamination from the slag-rich contexts above, may well be intrusive. The largest concentration of smithing hearth bottoms came from spreads 303678 and 303691 and to some extent 303677 and 303814 (Fig. 4.23). These totalled 24 individual blocks, together with important evidence in the form of hammerscale in the attached soil. These large spreads of debris do little to precisely locate the site of the craft. However, the fills of a number of features dated to this period do help to give us a more precise location. These appear to be associated with structural remains (Structure 17, see Fig. 4.20). The worn quartzite block, which might have functioned as an anvil, was also recovered from an occupational spread (layer 303677) in this area.

It should be noted that blacksmithing, in all but the most temporary circumstances, is an indoor, or at least undercover, activity, not solely to protect against inclement weather but, more importantly, to reduce light levels. A smith needs to judge the temperature of the metal being worked and his only means of doing this is through carefully observing the colour of the metal, which is problematic in daylight.

A discontinuity within the debris distribution is the finding of significant amounts of slag in the fill of well 303819, some metres to the north. Perhaps it became a convenient disposal point once it had fallen out of use.

Debris diagnostic of iron smithing in DE3002 is also evident in the late Romano-British period, although in smaller quantities (Fig. 4.46). Contexts include the fill below an inhumation burial (in grave 303504), posthole 303589 and the fill of ditch 218656. The focus, however, remains in the same part of the site, suggesting limited continuity into this later phase of occupation, unless the debris was residual in this phase.

On the larger DE3001 area, metalworking debris was far less common, totalling only 1 kg of the 20 kg total (Fig. 4.18). All diagnostic material came from mid-Romano-British pits. Single smithing hearth bottoms came from 301179 and 301212 and flake hammerscale from 301213, all three of which are fills of pit 301178. The excavations in DE3001 did also provide a very small amount of non-metallurgical 'Iron Age Grey' residue.

Statistical analysis of hearth bottom weights (Table 4.25) showed them to be small for their date, though with a tendency to increase in size in the late Romano-British period. This, together with the dominance of flake over spheroidal hammerscale, would tend to indicate the forging of smaller items, rather than the processing of blooms and bars or high temperature welding of composite artefacts.

Table 4.25 *Margidunum* Hinterland: smithing hearth bottom dimensions (n=38)

	Weight (g)	*Length (mm)*	*Width (mm)*	*Depth (mm)*
Range	60–440	50–115	20–90	15–50
Mean	201	80	62	32
Standard deviation	99	15	15	9

On balance it can be said that debris from DE3001 derived from both iron smithing and copper alloy casting. The low quantities and dispersed nature of the material may indicate that the area excavated was peripheral to the actual site of metalworking. There is also an apparently broad time span, from Late Iron Age copper alloy working, to mid- or even late Romano-British iron smithing. However, larger quantities of slag in DE3002 and the presence of hammerscale within the bulk debris bags suggest the location of a smithy in this area, probably associated with Structure 17. Although no hearth was found, these would have usually been raised from the ground and therefore rarely survive.

DE 3006

Although finds of industrial debris were limited (Table 4.26), the recovery of 0.5 kg of 'Iron Age Grey' from a number of layers, particularly 306791 (Late Iron Age/ early Romano-British ditch 218789, DE 3006, Fig. 4.8), may provide some support for the existence of Iron Age occupation in the area. Such material is not indicative of metalworking, and is probably no more than fiercely burned daub. There was also a very small amount of non-diagnostic ironworking material, from the ditches of late Iron Age/early Romano-British Enclosure D (306158, ditch 218771; 306057, ditch 218770), together with one early Romano-British gully fill (306062, gully 218756, in Enclosure A). Finally, some material came from the topsoil (303000). Such limited quantities may well be a dispersion of debris from known smithing activity within the Romano-British settlement.

Table 4.26 *Margidunum* Hinterland (DE3006): metallurgical debris, summary by activity and typology (weight and number of contexts)

Activity	*Classification*	*Wt. (g)*	*Cxts*
Undiagnostic ironworking	Undiagnostic ironworking slag	111	4
Non-metallurgical	'Iron Age Grey'	524	5
Total		635	

DE3004

A Romano-British layer, 304248, the upper fill of palaeochannel 304509 (Fig. 4.38) produced the only piece of diagnostic debris, a smithing hearth bottom,

Table 4.27 *Margidunum* Hinterland (DE3004): metallurgical debris, summary by activity and typology (weight and number of contexts)

Activity	*Classification*	*Wt. (g)*	*Cxts*
Undiagnostic ironworking	Undiagnostic ironworking slag	152	5
Metalworking or other high temp. process	Vitrified hearth/ furnace lining	32	2
Smithing	Smithing hearth bottom	90	1
Total		274	

indicative of iron forging. On the whole however, the amount of debris is very small (Table 4.27) and, like the pottery, may represent no more than a dispersal of material from a nearby occupation and working site.

Conclusions

Over the whole A46 corridor on the current project, 26 kg of industrial debris was examined. Given the large area involved, this is a relatively low total for a group of sites in close proximity to a major Roman road, with one site (*Margidunum* Hinterland) in close proximity to the Romano-British town. Furthermore, much of the material cannot be related to metalworking. The characteristic 'Iron Age Grey' is probably burned daub, which typically, but perhaps not exclusively, derives from structures of that period on the sites, whilst ferruginous concretions, where not associated with hammerscale, are natural formations.

With regard to metalworking debris proper, most of the sites show a thinly scattered distribution of debris, of which the diagnostic components suggest ironworking, in the form of blacksmithing, but much of which may have been dispersed some distance from the location of such activity. It is only within part of the *Margidunum* Hinterland site (DE3002) that a focus of such activity is found, with significant quantities of diagnostic material in the form of the large lumps of smithing hearth bottom and hammerscale deposits. The latter evidence is considered particularly important because it often remains in the close vicinity of the workshop. Examination of the distribution of the debris gives a strong hint that the smithing was carried out in a post-built structure (Structure 17) for which some negative features survive. The remains largely date to the mid-Romano-British period, but there is some suggestion that ironworking continued, to a lesser extent, during the late Romano-British occupation of the site. Very small amounts of debris indicative of copper alloy casting were also identified. Some of this might be associated with the ironworking during Romano-British occupation but, in DE3006, a single fragment of clay mould from a late Iron Age context may indicate a longer tradition of metalworking in the area.

The main fuel throughout the period was charcoal, as indicated by the dense nature of the slag and occasional charcoal impressions visible in its surface. A single fragment of coal (2 g) from a Romano-British ring ditch at Saxondale may indicate that coal was occasionally used as a fuel for other purposes at this time.

The scale of the metalworking industry, judged by the quantity of debris recovered, can only be said to be small. The nature of the waste products, particularly the hearth bottoms and hammerscale, suggests smaller, forged items or equipment repair, without much welding or composite construction.

The metalworking evidence in its regional context

Roger Finch Smith (1987), in his synthesis of roadside settlements in lowland Roman Britain, suggested that for a number of these food production was not the predominant activity. Previous metallurgical findings at East Bridgford/*Margidunum* have been summarised by Schrüfer-Kolb (2004, 150). These divide into two phases with substantial spreads of iron smelting debris and slag pits associated with a possible military works depot based there *c.* AD 50–70. Within the later civilian settlement a 2nd-century smithy, complete with tools, was identified.

During the current analysis, no clear examples of smelting slag were identified. However, the time scale for the production of the iron smithing slag would appear to broadly correspond to that of previous findings, suggesting that iron smithing may have been carried out at more than one location, and that it served more than local needs. Taken together, this evidence may well suggest what Schrüfer-Kolb terms 'professional' rather than 'domestic' ironworking. However, the small amount of debris reported on here, and the absence of dedicated hearths, do not allow this to be more than suggested; among her criteria are the presence of multiple hearths operating on a considerable scale. By contrast, 'domestic' smithing activities were often carried out in hearths also used for other purposes.

Iron production sites, to supply the iron in bar, billet or bloom form, would have been located in reasonable proximity to the east of *Margidunum*, exploiting the ore deposits of the Jurassic Ridge. Small bloomery furnaces, such as the row of three dated archaeologically to the 2nd century at Pickworth, Lincolnshire (Tylecote 1970) lie within *c.* 40 km of the site.

In summary, debris from the latest work at *Margidunum* Hinterland provides evidence of iron smithing which by itself might be only of local significance, supplying the needs of the immediate neighbourhood. However, when considered alongside previous evidence of smithing from the town itself, the settlement might be seen as a more significant outlet for manufactured iron objects. These would have benefited both from the availability of locally smelted iron and the settlement's position on the Fosse Way as a route for distribution of finished goods.

Worked Bone

by Grace Perpetua Jones, with species identifications by L. Higbee

The worked bone from *Margidunum* Hinterland consists of eight hairpins, five shank fragments that probably also derived from pins, a possible tool, two handles, a perforated bone and an off-cut. Apart from the two handles, one of which is from a modern toothbrush, while the second could be either Romano-British or medieval, all of these objects are dated as Romano-British, on the grounds of typology and/or provenance. All have been examined and catalogued, and the data were recorded on to the scheme-wide MS Access database.

Hairpins

The bone hairpins have been classified using Crummy's typology for the Colchester assemblage (Crummy 1983). Five belong to type 1 ('pins with a plain, conical head'); two to type 2 ('pins with 1–4 transverse grooves beneath a conical head') and one is unclassified. All are handmade with polished surfaces. It was not possible to ascertain the type of bone used to manufacture the pins, although most are probably from long bone shafts.

The type 1 pins (also encompassed by MacGregor's group of 'headless pins'; 1985, 116) have tapering, round-sectioned shafts with flat or slightly conical heads (Fig. 4.101.1, 2). As noted by Crummy for the Colchester examples, they are well made although the heads are 'comparatively crude, being the result of a few strokes of a knife' (Crummy 1983, 20). The upper shank of one is particularly crude, the surface is knobbly and small knife marks are still visible, yet the rest of the shank has been finely worked and the top of the head is similar to the other type 1 examples (ON 2107). The heads of four are 5 mm in diameter, while the fifth (ON 2085) is larger, 7 mm in diameter, perhaps indicating it was not a pin. Alternative interpretations for a group of similar objects from Colchester include pegs, *styli* or awls (Crummy 1983, 162). The date of the type 1 pins at Colchester is broad, potentially from the Flavian period through

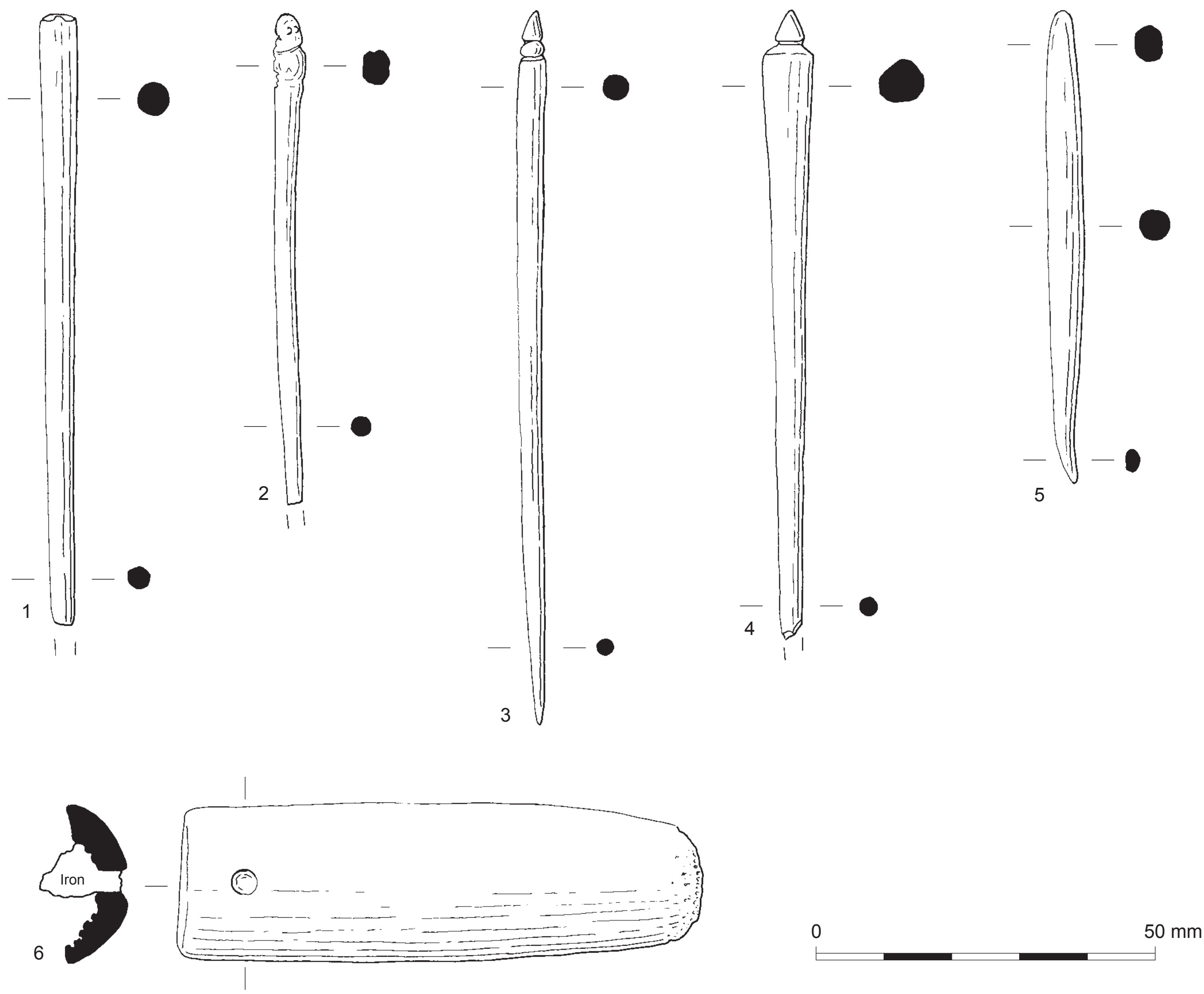


Fig. 4.101 Worked bone objects (1–6). See catalogue for description

to the 4th century AD. Those from *Margidunum* came from DE 3002 – mid-Romano-British layer 303678 (ON 2052, 2085) (Fig. 4.23), late Romano-British gully 303586, DE3002 (ON 2029) (Fig. 4.46), Structure 25, late Romano-British ditch 218656 (ON 2107) (Fig. 4.46, Structure 26) and the overburden (ON 1252).

The two pins of type 2 are each decorated with two grooves that extend around the top of the shaft, beneath a conical head (ON 1323, 2032; Fig. 4.101.3). One is complete, measuring 104 mm in length; both are narrow, the complete example (ON 1323) 4 mm in diameter at the top of the shaft, and the incomplete example only 3 mm at this point (ON 2032). The thin shaft of this type of pin made it prone to breakage and complete examples are therefore relatively rare (Crummy 1983, 21). The Colchester examples are dated from the mid-1st century AD through to *c.* AD 200; those from *Margidunum* came from a layer that produced pottery of mid-Romano-British date (layer 303626, DE 3002, ON 2032) and the overburden (ON 1323). Perhaps related to this type was an incomplete hairpin from overburden 303500 on DE3002 (ON 1488, Fig. 4.101.4), comprising a tapering shank with a narrower cone-shaped finial.

Crummy noted that despite the handmade nature of bone hairpins there is little variation in type, with six predominant types recorded against the 342 bone pins from Colchester. She suggests that this may represent a desire to replicate the less freely available metal and jet pins (Crummy 1983, 19–20).

Five round-sectioned shank fragments are also present, all in DE 3002. Three are mid-shank fragments (ON 2054, layer 303678; ON 2033, layer 303626 and ON 2134, overburden 303500), whilst two came from the tip (ON 1253, overburden, and ON 2123, layer 303677). These fragments may have come from hairpins or needles. One (ON 2033) is stained green.

Other objects

One object is very similar to the type 1 hairpins, but the tip is curved and the head tapers on one side (Fig. 4.101.5). The centre of the object swells slightly, perhaps a result of wear to the shaft above. The function of this object is not known but it probably functioned as a small household tool/awl, perhaps used in the working of textiles or as a stylus. It may have started life as a hairpin and then been reworked after breaking.

A sheep/goat metacarpus, recovered from mid-Romano-British gully 218509 in DE3001 (Fig. 4.18), has been perforated with a single circular hole of 4 mm, through the middle of the diaphysis. The object is broken at both ends and across the middle, but it may have been used as a toggle. Similar examples are found on sites ranging in date from the Iron Age through to the medieval period, and have been interpreted as fasteners (eg, for dress) or maybe as bobbins for winding wool (MacGregor 1985, 102).

Approximately half of a polished bone handle with iron rivet was recovered from late Roman layer 303512 in DE3002 (ON 2135; Figs 4.101.6, 4.46). Made from a metapodial shaft fragment of a large animal, possibly a horse, this is probably the handle from a knife or other small tool, of Romano-British or later date. A second bone handle was recorded from the overburden (303500, ON 1260), but this was much finer and probably functioned as the handle from a toothbrush or small knife of modern date. An offcut from a horse metapodial shaft fragment from layer 303678 (ON 2061) is not a finished object but is indicative of bone working.

Catalogue of illustrated objects (Fig. 4.101)

1 Bone hairpin, tapering shaft, slightly conical head, polished, tip missing. ON 2052, mid-Romano-British spread 303678.

2 Bone hairpin, tapering shaft, slightly conical head, ?unfinished upper shaft, knife marks, polished, tip missing. ON 2107, context 303735, late Romano-British ditch 218656.

3 Bone hairpin, two grooves beneath conical head, polished, complete. ON 1323, topsoil 303500.

4 Bone hairpin, conical head, polished, tip missing. ON 1488, topsoil 303500.

5 Bone tool/awl, round-sectioned, tapering and curved tip, head cut on one side, polished, swollen mid-shank. ON 2057, mid-Romano-British spread 303678.

6 Bone handle, polished metapodial shaft fragment, ?horse, one iron rivet survives. ON 2135, spread 303512.

Animal Bone

by L. Higbee

A total of 27,431 fragments (or 170.526 kg) of animal bone was recovered from nine sites along the route of the road improvement scheme. The largest and most significant assemblage comes from *Margidunum* Hinterland, which produced 24,737 fragments (164.516 kg, representing 96% of the total weight). Once conjoins are taken into account this figure falls to 10,250 fragments, of which 9450 fragments are from the periods described in this chapter: Late Iron Age/early Romano-British to Anglo-Saxon (Table 4.28). From those periods, most (86%) of the animal bone is from Romano-British contexts, with smaller amounts from LIA/ERB and Anglo-Saxon contexts.

Methods

All anatomical elements were identified to species where possible, with the exception of ribs, which were assigned to general size categories. Where appropriate the following information was recorded for each fragment: element, anatomical zone, anatomical position, fusion data, tooth ageing data, butchery marks, metrical data, gnawing, burning, surface condition, pathology and non-metric traits. This information was directly recorded into a relational database (in MS Access) and cross-referenced with relevant contextual information. The site archive includes the database and an archive version of this report complete with a detailed methods statement, and additional tables, figures and appendices of summary data.

Quantification methods applied to the assemblage include the number of identified specimens (NISP), minimum number of elements (MNE), and minimum number of individuals (MNI). As an additional means of assessing the relative importance of livestock species, meat weight estimates (MWE) were also calculated (after Boessneck *et al.* 1971 and following Bourdillon and Coy 1980; Bond and O'Connor 1999; and Dobney *et al.* 2007). The following live weight values were used; 275 kg for cattle, 37.5 kg for sheep and 85 kg for pig. These were then converted into MWE based upon the following average carcass yields: 56% for cattle, 50% for sheep and 75% for pig. The MWE values are therefore 154 kg for cattle, 18.75 kg for sheep and 63.75 kg for pig.

Late Iron Age/early Romano-British

A total of 1305 fragments of bone were recovered from securely dated Late Iron Age/early Romano-British contexts, although only 21% could be identified to species. The small size of the sample limits its viability for detailed analysis; furthermore the body part distribution indicates that the assemblage is affected by preservation biases, ie, only the more robust skeletal elements have survived (Brain 1981; Lyman 1994). However, it is possible to suggest that cattle and sheep were equally important and that they were locally slaughtered and consumed. The presence of at least one neonatal lamb bone also indicates that the breeding and rearing of sheep flocks took place in close proximity to the site (see Hambleton 1999, 70). The proportion of pig bones is slightly higher (at *c.* 12% NISP) than in later phases, however, the sample is extremely small therefore the difference is unlikely to be significant. Less common species include horse, dog, cat and possibly fox.

Romano-British

Most (92%) of the Romano-British assemblage is from securely dated and phased contexts, the rest is from a number of more broadly dated deposits, mostly ditch fills. Only the bones from securely dated Romano-British contexts are described in greater detail in the following sections. The early, mid- and late Romano-British assemblages are similar in size, and this makes inter-site and intra-site comparisons both feasible and valid.

Spatial distribution

Most (*c.* 56%) of the early Romano-British material is from ditch fills, while most (55–83%) of the mid- and late Romano-British material comes from layers, in particular spreads or midden deposits 303677, 303678, 303814 (Fig. 4.23), 303626 and 303735 (fill of ditch 218656) (Fig. 4.46) in DE3002. In terms of the distribution of bones from different species by phase, the only slight differences between early Romano-British ditches and pits is the higher proportion of sheep and pig bones from pits and the higher proportion of other domesticates (mostly horse) from ditch fills. This contrasts with species proportions noted from other types of deposits (ie, postholes and gullies), which generally include more sheep bones.

Only a small amount (*c.*18%) of bone was recovered from mid-Romano-British ditch and pit fills, and most of the identified bones are from sheep and cattle, while the slightly larger group recovered from pits is dominated by cattle. Species proportions for other types of context, again mostly midden deposits, are dominated by sheep bones (*c.* 51%).

The material from late Romano-British ditch fills contrasts with that from the previous two phases in that it is dominated by cattle bones (58%). It is also worth noting that most of the horse bones also come from ditch fills. The sample from pits is too small to assess, but the much larger assemblage from other deposits is dominated by sheep bones (*c.* 48%), similar to the mid-Romano-British midden deposits.

The overall spatial patterning indicates that most of the bones deposited at the site either went into ditches or midden deposits and very little bone waste ended up in pits. There is a noticeable difference in the distribution of bone from different sized mammals; most of the large mammal bones (ie, cattle/horse) were deposited into ditches, while midden deposits include more sheep bones and a slightly higher proportion of pig bones than ditches. Differences in the spatial segregation of bones from large and medium-sized domestic mammal have been noted at other sites. The majority of this work has been carried out by Wilson (1996) who has suggested that large animals such as cattle were generally slaughtered away from areas of domestic occupation, probably by someone skilled in the task, and that larger bones were generally removed from centres of occupation and activity to more peripheral areas where boundary/defensive ditches were present. Smaller bones, on the other hand were usually discarded in midden deposits located in close proximity to areas of occupation. At *Margidunum* Hinterland there is nothing to suggest that this is the primary reason for the distribution of cattle and sheep bones, indeed there is little difference in the types of waste recovered from ditch and midden deposits; both include mixed waste from different processes (ie, primary butchery, secondary reduction and domestic consumption).

Preservation condition

Bone preservation is generally fair to good, and mid- and late Romano-British midden deposits include the highest proportion (*c.* 51–56%) of fragments classified as in good condition (ie, little or no sign of physical weathering). This suggests that bones were directly deposited into midden heaps and that these deposits remained largely undisturbed. By way of contrast mid- and late Romano-British ditch fills include fewer well-preserved bones and a higher proportion of poorly preserved (ie, loss/erosion of cortical bone and/or edge abrasion) fragments (*c.* 12%), which suggests that the bones recovered from ditch fills have a more complex taphonomic history than those recovered from midden deposits. Indeed many of the ditch fills include bones in different preservation states; the well-preserved bones are likely to have been deposited directly into

Table 4.28 *Margidunum* Hinterland: animal bone, number of identified specimens present (or NISP) by phase
(Count includes two partial skeletons, a neonatal dog from LIA/ER Enclosure A ditch 218766 (=25 fragments) and a raven from phase MRB pit 303674 (=8 fragments)

Species	*LIA/ERB*	*RB*	*ERB*	*MRB*	*LRB*	*Anglo-Saxon*	*Total*
Cattle	112	50	175	284	295	2	918
Sheep/goat	110	30	207	374	218	1	940
Sheep	3	-	6	6	4	-	19
Goat	1	1	1	-	-	-	3
Pig	32	9	45	69	45	1	201
Horse	14	20	44	35	43	-	156
Dog	2	3	35	10	4	-	54
Dog/fox	2	-		-	-	-	2
Cat	1	-	1	-	1	-	3
Red deer	-	-		-	1	-	1
Roe deer	-	-	1	1	-	-	2
Deer	-	-		-	1	-	1
Hare	-	-	1	-	-	-	1
Domestic fowl	-	1		8	2	-	11
Goose	-	-	1	-	1	-	2
Crow/rook	-	-	1	1	2	-	4
Raven	-	-		8	-	-	8
Frog	-	-	1	-	-	-	1
Total identified	277	114	519	796	617	4	2327
Large mammal	308	181	665	873	559	-	2586
Medium mammal	83	45	280	361	209	-	978
Small mammal	-	-	-	3	1	-	4
Mammal	637	278	1246	426	914	28	3529
Bird	-	-	4	8	10	-	22
Fish	-	-	-	4	-	-	4
Total unid.	1028	504	2195	1675	1693	28	7123
Overall total	1305	618	2714	2746	2035	32	9450

the ditch, where they were rapidly buried and remained undisturbed, while the poorly preserved bones are likely to have been reworked (ie, they are residual) from earlier contexts and as a consequence have been re-exposed to the effects of physical weathering.

Gnaw marks made by scavenging carnivores (ie, dogs, foxes and cats) are relatively uncommon (2% overall) and the majority were recorded on the ends of long bones. However, this is likely to be a slight underestimate of the phenomenon since the bone-chewing habit of carnivores can completely obliterate bones from an assemblage. The late Romano-British assemblage has the greatest proportion of gnawed bones (*c*.5%), while the mid-Romano-British assemblage has the least (0.2%).

Species range (Table 4.28)

The animal bone assemblage from the Romano-British phases includes 2046 identified bones from 15 different species. Approximately 89% of identified fragments belong to livestock species (cattle, sheep and pig) and a further 9% to other domestic mammals (goat, horse, dog and cat), while the remaining 1% is split between wild mammals (red deer, roe deer and hare), birds (domestic fowl, goose, raven and crow/rook) and amphibians (common frog). This basic pattern is repeated for each of the Romano-British phases; the proportion of livestock ranges from 83% in the early Romano-British period to over 90% in the later phases. Similarly the proportion of other domestic mammals ranges from 6% (mid-Romano-British) to 16% (early Romano-British), while the proportion of wild mammals and birds is consistently low at between <1% to 2%.

Livestock species

Relative importance (Fig. 4.102)

Hambleton (1999, 39–40) has demonstrated that the minimum sample size required for a reliable assessment of the relative importance of livestock species is an

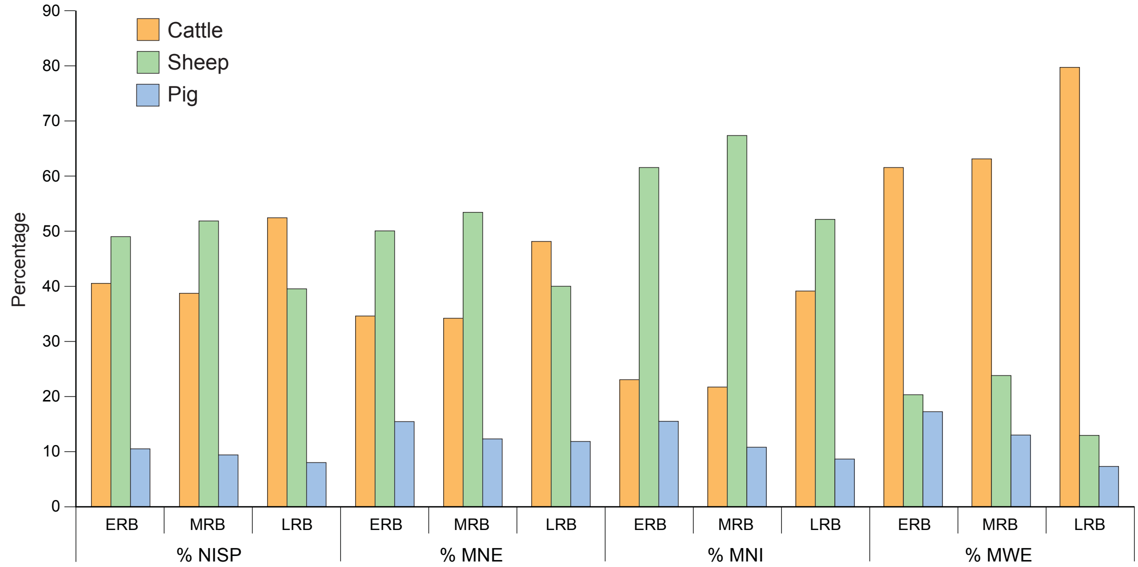


Fig. 4.102 Animal bone: relative importance of livestock species by NISP, MNE, MNI and MWE

NISP count over 300 and a MNI count over 30. Although all three Romano-British phases have NISP counts in excess of 300, only the mid-Romano-British has an MNI value of over 30. However, some analysts suggest that MNI is merely a count of body portions rather than individuals (Albarella *et al.* 2009, 21) and is therefore a less accurate quantification method than NISP, particularly when applied to relatively small assemblages. Any discrepancies between NISP and MNI values should therefore be treated with caution.

The NISP and MNE methods of quantification both show the same trend (Fig. 4.102); a slight dominance of sheep (49–52% NISP and 50–53% MNE) relative to cattle (39–40% NISP and 34–36% MNE) in the early and mid-Romano-British phases, and a reversal of this trend during the late phase when the proportion of cattle increases to 52% NISP and 48% MNE compared to 40% NISP and MNE for sheep. The MNI results suggest a dominance of sheep in all three phases, although in the late Romano-British phase this is less pronounced than in the earlier phases where sheep account for between 61–67% MNI compared to 52% in the late phase. Despite the apparent predominance of sheep in the earliest phases, it is clear that cattle, by virtue of their greater size, provided most (63–80% MWE) of the meat consumed during all three phases of occupation. The proportion of pig is consistently low in all phases, typically *c.* 7–17% depending upon the method of quantification.

Based on the above evidence it would seem that during the Romano-British period the pastoral economy of the site changed from one based primarily on sheep to one based primarily on cattle husbandry. Unfortunately it has not been possible to establish if the sheep-dominated economy of the early Romano-British phase represents a continuation or break with Late Iron Age practices because the Late Iron Age/early Romano-British assemblage is too small. However, animal bone evidence from contemporary sites indicates that there was little immediate change in the pastoral economy following the Roman conquest (King 1978, 211; 1984, 193; 1999; Thomas and Stallibrass 2008, 9; Thomas 2008, 44; Albarella 2007; Albarella *et al.* 2008). Initially the Roman army appears to have been reliant upon local produce, but once supply networks were established the army could obtain whatever provisions it required to provide appropriate victuals (especially beef) for its men (King 1984, 198; 1991, 17; Dobney 2001, 36–7; Davies 1971). Military and civilian sites can therefore be distinguished on the bases of differences in the relative proportions of livestock species; the former are characterised by higher proportions of cattle, and to a lesser extent pig, than rural civilian sites (King 1978, 1984 and 1999; Grant 1989; Dobney 2001). However, these differences are generally less apparent by the late Romano-British period due either to civilian emulation of a military diet (King 1984, 193) or to less choice resulting from constraints on production systems that were closely linked to the expansion and intensification of arable cultivation, and therefore the need to maintain larger numbers of cattle for traction (Thomas and Stallibrass 2008, 11).

The NISP results for the *Margidunum* Hinterland assemblages suggest a shift in the relative importance of sheep and cattle between the mid- and late Romano-British periods, and this seems to fit with the general trends noted above. If we assume that the local pastoral economy of the Late Iron Age was sheep-dominated, then this continued to be the case throughout much of the early and mid-Romano-British periods until Romanising influences on the production, supply and consumption of livestock were fully assimilated.

Comparison with other sites in the region (Fig. 4.103)

Using the information recorded from recent surveys of animal bone assemblages in the region, which is here taken as Central England (following Albarella and Pirnie 2008; Hambleton 1999), it has been possible to assess if

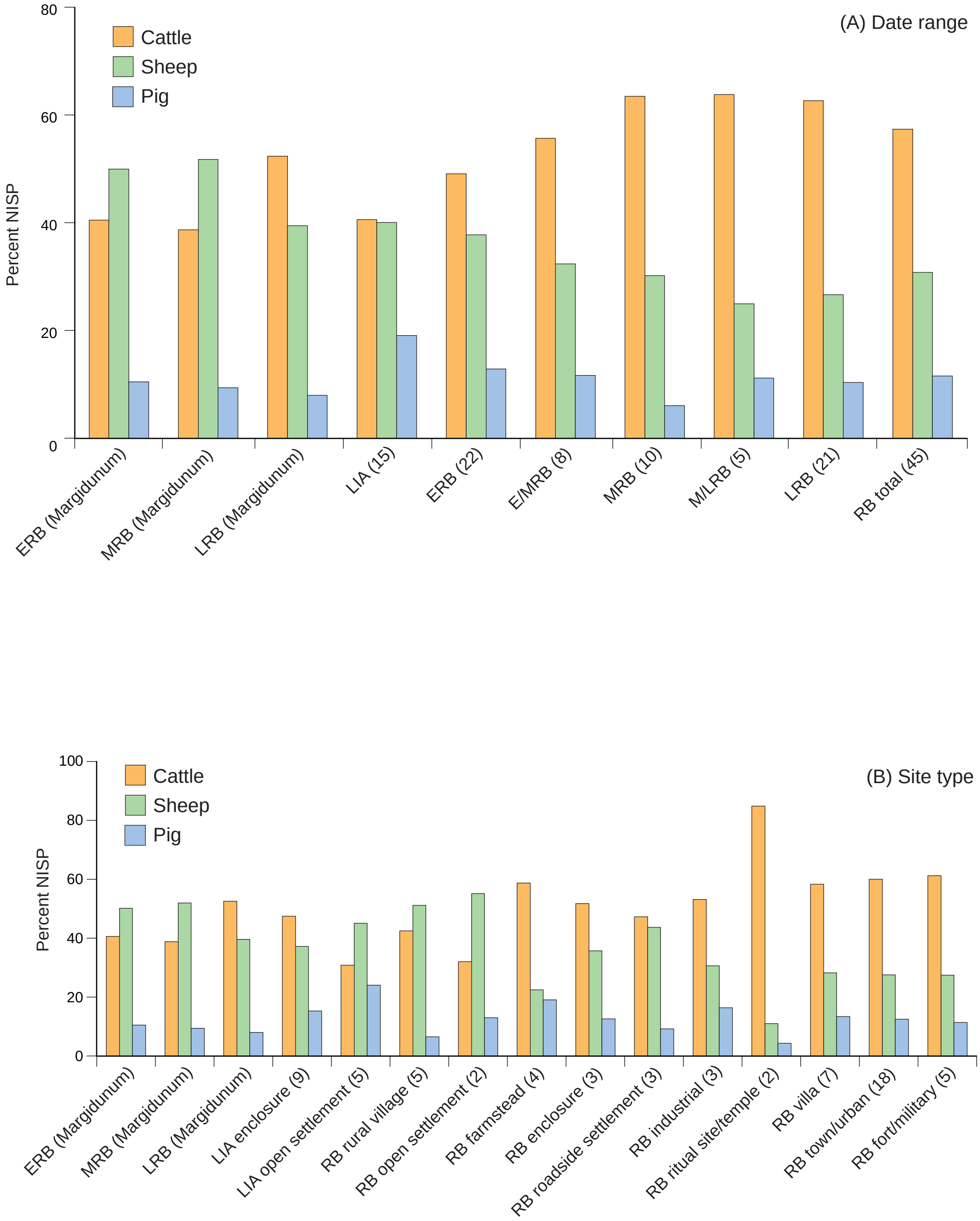


Fig. 4.103 Animal bone: relative frequency of livestock species from Late Iron Age and Romano-British sites in Central England by site type and date range (after Albarella and Pirnie 2008) expressed as a percentage of the average value

species proportions for the early Romano-British period are broadly similar to those recorded for Late Iron Age assemblages. The results of this analysis suggest that during the Late Iron Age period sheep and cattle were equally important to the regional economy, although greater emphasis appears to have been placed on sheep husbandry at open settlements. The early Romano-British assemblage from *Margidunum* Hinterland is, therefore, most similar to Late Iron Age open settlements in the region, such as Dragonby in Lincolnshire (Harman 1996), which was continuously occupied throughout the Late Iron Age and early Romano-British period, without the need to alter established husbandry strategies.

There are some differences in species proportions between the roadside areas of settlement (eg, DE3002) and the other areas of the site at *Margidunum* Hinterland, for instance sheep bones are three times more numerous in the assemblage from DE3002 than cattle bones, while in the other areas cattle bones are very slightly more common than sheep bones.

The results also suggest that there was a decline in the relative importance of pigs between the Late Iron

Age and early Romano-British period at *Margidunum* Hinterland. However, several of the Late Iron Age sites included in the survey have high pig bone frequencies, typically over 25% NISP, and this has undoubtedly skewed the average. King (1988) has suggested that the increase in pig at these sites, many of which are in the eastern part of the region, is due to early Romanising influences on Late Iron Age diet and animal husbandry strategies. By way of contrast, most of the Late Iron Age sites in the central and western part of the region have pig bone frequencies of less than 15% NISP, and this is closer to the 10% NISP value recorded for the early Romano-British assemblage from *Margidunum* Hinterland.

Looking at the broader picture for the region it would seem that cattle were of prime importance throughout the Romano-British period, typically accounting for over 50% NISP at most types of sites, with the exception of rural 'civilian' settlements where the emphasis remained on sheep husbandry (Fig. 4.103). At *Margidunum* Hinterland it is only in the late Romano-British period that species proportions come close to those recorded at other Romano-British sites in the region, and the closest parallels are with late Romano-British enclosed settlements such as Clay Lane and Weekley in Northamptonshire (Jones *et al.* 1985; Whatrup and Jones 1988) and Grove Farm in Leicestershire (Gouldwell 1992).

The above is of course just a broad overview of national and regional trends, however, what it does seem to illustrate is that the pastoral economy of the *Margidunum* Hinterland is likely to have continued to function as normal for a period following the Roman invasion but gradually changed with the construction of the Fosse Way and the Roman town. This resulted in a growth in the demand for beef, first from the military and then from an increasingly Romanised urban society.

Skeletal element representation (Figs 4.104–4.106)

Body part information for cattle suggests that all parts of the beef carcass are represented in the Romano-British assemblage, which in turn suggests local slaughter and consumption (Fig. 4.104). Scapulae and humeri are common in all phases, and this coupled with the butchery evidence indicates that cured shoulders of beef were a popular culinary option. The assemblages from the mid- and late Romano-British phases show a general under-representation of major meat-bearing bones, especially from the hindquarters and, while this could be the product of small sample size, it could equally indicate that leg joints were exported from the site. Major meat-bearing bones are well represented in the early Romano-British cattle bone assemblage, which would seem to suggest that initial demand from the Roman military was fairly limited, although it is likely that livestock were simply just taken by the military, as appears to be the case elsewhere (Davies 1971, 127; Thomas and Stallibrass 2008, 9).

Other common cattle bones include mandibles, distal tibiae and loose first and second molars. All of these elements are fairly robust and generally show good rates of survival and recovery in most animal bone assemblages, however, they are all waste elements from primary butchery. The abundance of waste elements relative to meat-bearing bones further supports the notion that beef joints were exported from the site. Most small bones (eg, phalanges) and teeth (eg, incisors) are under-represented in the assemblage, but this is probably due to a combination of factors including sample size and recovery methods.

The body part information for sheep (Fig. 4.105) indicates that although all parts of the carcass are present, there is a gross under-representation of major meat-bearing bones from the fore- and hindquarters. Mandibles and distal tibia are the most common sheep skeletal elements, followed by metacarpals, and these are all waste elements discarded at the primary butchery stage (Maltby 1985, 28). The evidence suggests that most of the meat from locally slaughtered sheep was consumed elsewhere. Again small skeletal elements are under-represented for the reasons outlined above.

While it is possible that the sheep bone assemblage merely represents a spatial restricted sample from an area of the site where the waste from certain processes (ie, primary butchery) were dumped, the same skeletal element bias for sheep (and cattle) was also noted from the Castle Hill area of the roadside settlement at *Margidunum* (Harman 1969). The most plausible explanation is, therefore, that mutton was exported from the site as dressed joints. Similar interpretations have been put forward to explain the high proportion of sheep heads and feet in the animal bone assemblage from Stonea Grange, a roadside settlement in Cambridgeshire (Stallibrass 1996, 593 and 605). If mutton was being exported from the site it is likely that it was sent to the same local market(s) as the exported beef and live cattle, and the most obvious destination for this is *Margidunum* itself.

Analysis of the body part data for pig is limited by small sample size (Fig. 4.106). However, all parts of the pork carcass are represented in the assemblage, indicating local slaughter and consumption. Mandibles and bones from the forequarters are common, and there are sufficient bones from the hindquarter to suggest that, in contrast to beef and mutton, the majority of pork was retained for local consumption. The abundance of bones from the forequarters also suggests that some pork might have been cured for long-term storage, although there is no butchery evidence to support this suggestion.

Mortality profiles (Figs 4.107–4.108)

There are only 23 complete cattle mandibles from phased Romano-British contexts, and this inevitably makes comparison between phases extremely difficult. The data from the mid-Romano-British contexts indicates that the majority (*c.* 46%) of cattle were slaughtered at 30–36 months of age, and a further 30% as adult animals (mandibular wear stages E and G after Halstead 1985). The younger cattle represent animals killed at the optimum age for prime beef production, while the adult animals are

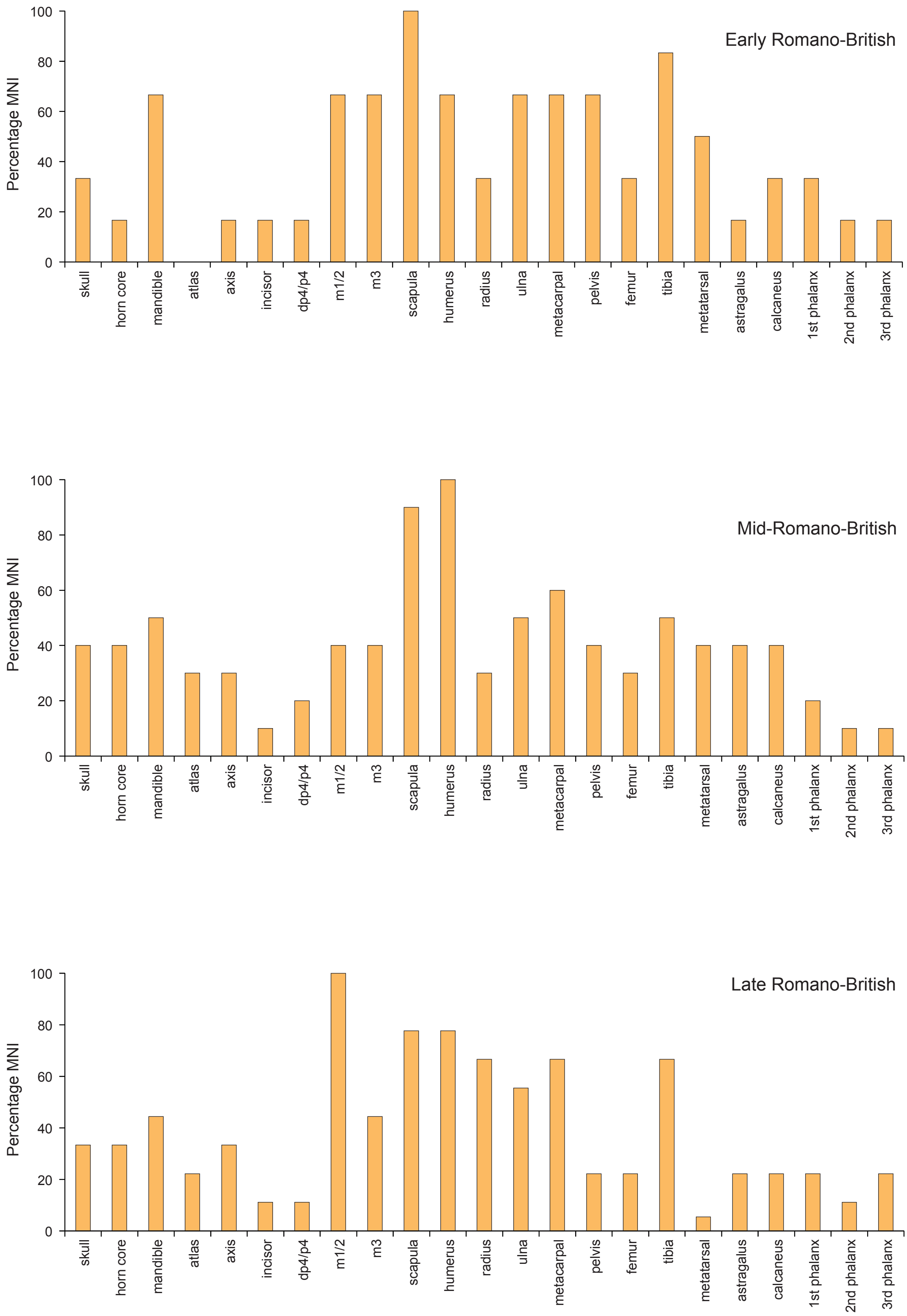


Fig. 4.104 Animal bone: cattle body part representation expressed as a percentage of MNI in relation to the most common element

probably those that have been maintained for breeding purposes as well as for secondary products (ie, milk and manure) and traction. The evidence tentatively suggests that cattle husbandry within the *Margidunum* Hinterland during the mid-Romano-British period was fairly mixed, but with a slight emphasis on meat production. The small sample of mandibles from early and late Romano-British contexts are spread across several age classes (wear stages C–I), however the late Romano-British sample does indicate a small peak of slaughter amongst younger animals aged 18–30 months (wear stage D).

To overcome the problem of sample size the data

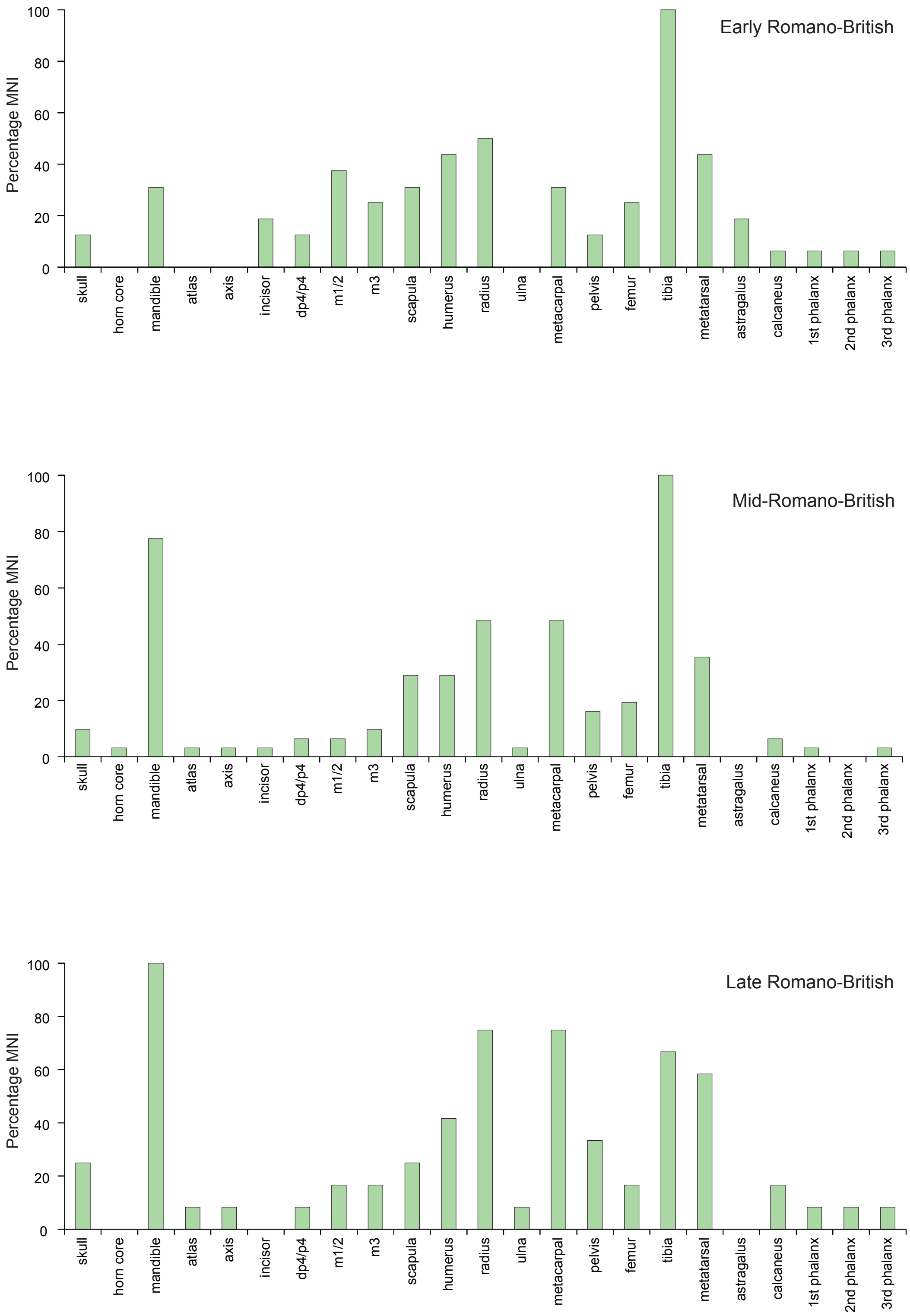


Fig. 4.105 Animal bone: sheep body part representation expressed as a percentage of MNI in relation to the most common element

from all three Romano-British phases were considered together (Fig. 4.107). Most of the mandibles are from cattle that were slaughtered at 18–30 months, 30–36 months, and as adult animals (wear stages D, E and G). The proportion of animals surviving beyond *c.* 3 years (wear stage E) is higher (46%) than was suggested by the mid-Romano-British sample of mandibles (39%), although the basic mortality pattern is similar to that outlined above and, if anything, emphasises that cattle husbandry in the local rural hinterland was primarily geared towards the production of prime beef. The presence of older cattle, including some senile animals (wear stages G–I) further indicates that milk, manure and traction were also of some importance.

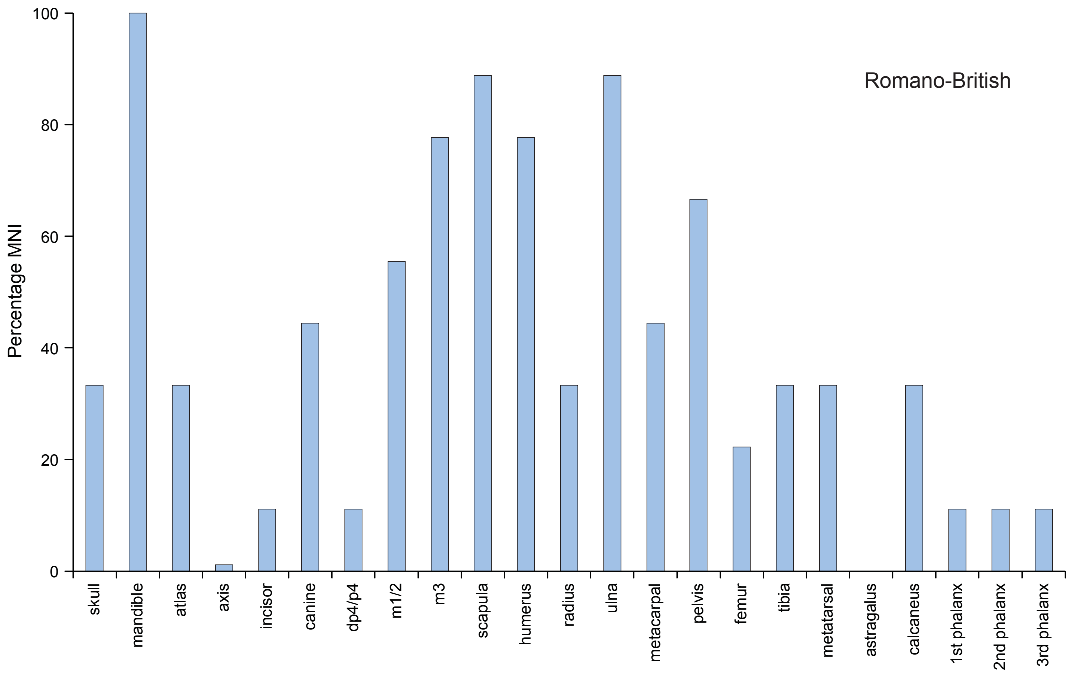


Fig. 4.106 Animal bone: pig body part representation expressed as a percentage of MNI in relation to the most common element

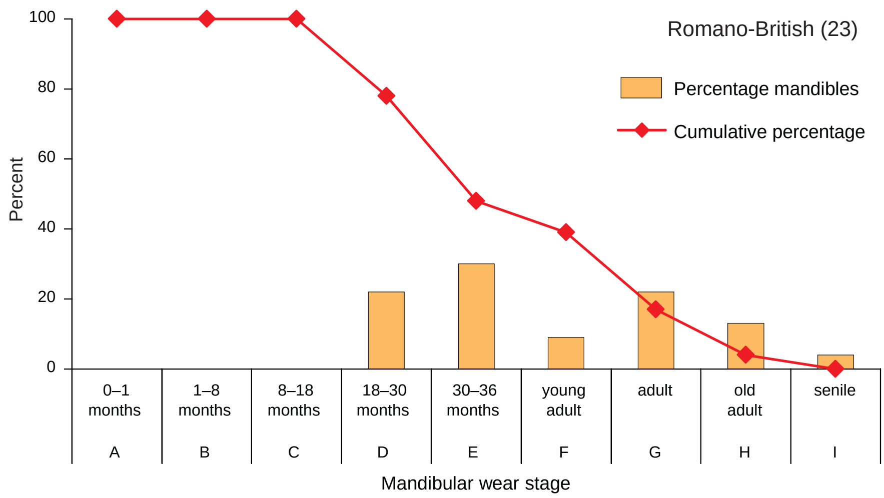


Fig. 4.107 Animal bone: cattle mortality profiles based on mandibles (retaining 2+ teeth with recordable wear)

The sample of sheep mandibles is relatively large, although there is an unequal distribution between phases, and areas of the site, which again makes it difficult to assess any temporal or spatial changes. The nine mandibles recovered from early Romano-British contexts are spread fairly evenly across a number of age classes, from lambs through to old adults (wear stages C–I, after Payne 1973). The mid-Romano-British sample is the largest, providing 39 complete mandibles (the majority of which are from DE3002, adjacent to the Fosse Way) and these indicate that the peak age at slaughter was among sheep under two years (wear stages C and D; see Fig. 4.108). Indeed only *c.* 16% of sheep survived beyond this age and the majority of these were killed between the ages of 3–4 years (wear stage F). The sheep mortality profile therefore indicates that meat production was important, and in particular the supply of prime lambs and young sheep for this purpose. The mortality profile for late Romano-British mandibles shows minor peaks of slaughter at 2–6 months, 1–2 years and 3–4 years (wear stages B, D and F). The very young lambs are probably natural mortalities rather than animals culled for tender meat, the proportion that did not survive their first six months is *c.* 21% and a further 7% did not survive their first winter. The proportion of sheep surviving beyond 1–2 years (wear stage D) is *c.* 10% higher than in the previous phase, which seem to suggest that the husbandry strategy was less intensive in

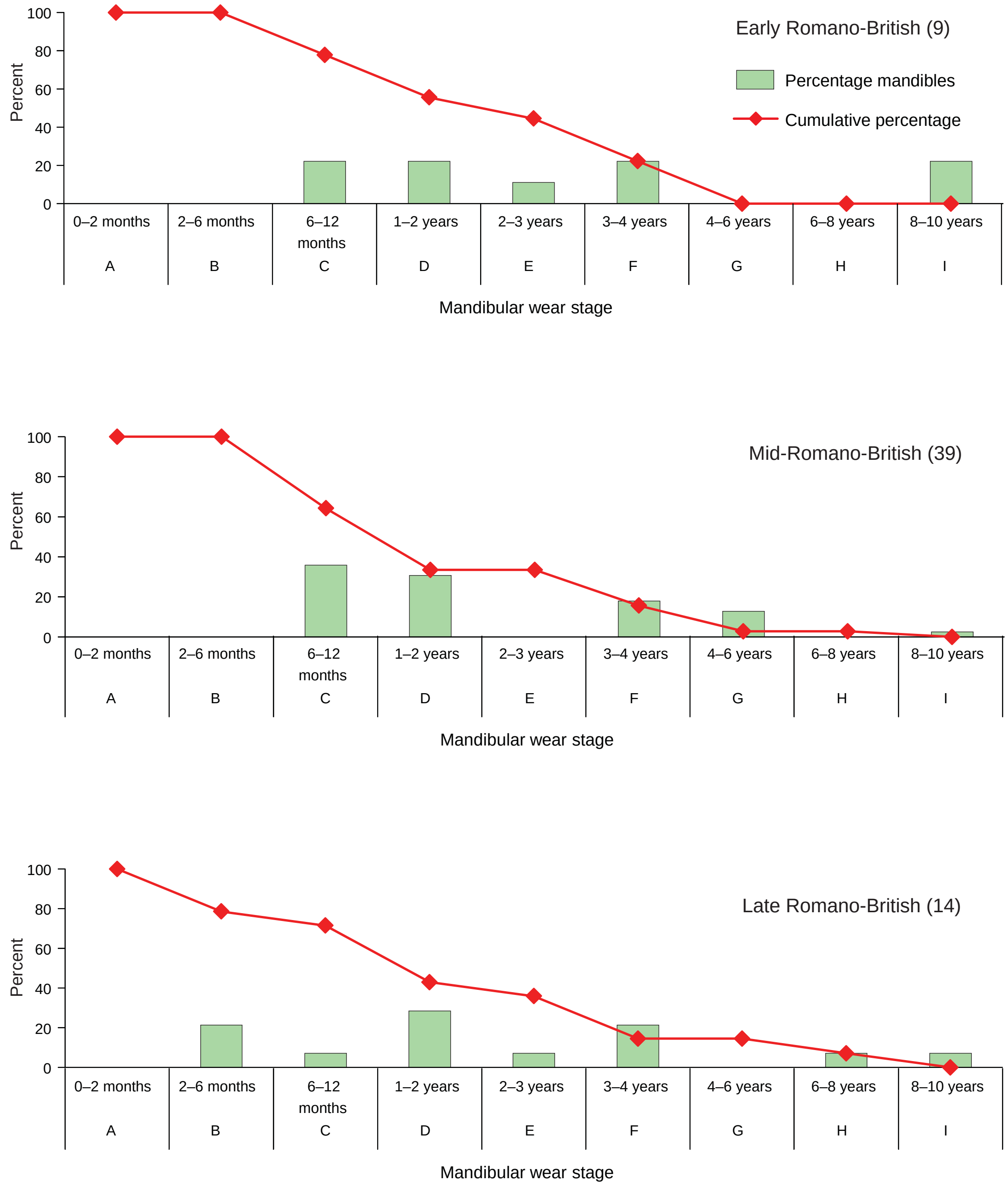


Fig. 4.108 Animal bone: sheep mortality profiles based on mandibles (retaining 2+ teeth with recordable wear)

the late Romano-British period, perhaps because there was less demand for mutton due to Romanising influences on diet or because other commodities (ie, milk and wool) were more profitable.

Only 13 complete pig mandibles were recovered from Romano-British contexts. The mortality profile indicates that the majority (59%) were slaughtered at 7–14 months and none survived beyond 14–21 months (wear stages C and D after Hambleton 1999). This pattern is common and unsurprising given that pigs reach full body weight faster than other livestock species and provide no secondary products. They are raised for meat and as such are generally slaughtered at the optimum age required to balance economic returns.

Mortality profiles based upon complete mandibles are generally more accurate than those based upon epiphysial fusion of the post-cranial skeleton; however, it is still import to assess this information particularly in a situation where the export of meat from a site is suspected. The data indicates that most of the post-cranial cattle and sheep bones deposited at the site have fused epiphysis. Most of the cattle bones are from animals over 3½–4 years, while most of the sheep bones are from animals over two years of age. This contrasts with the data obtained from mandibles and seems to support the theory that dressed meat joints were exported from the site, since the proportion of young animals represented in the primary butchery waste (ie, mandibles) is higher than the proportion represented in the food refuse (ie, post-cranial bones). In other words the tender meat from young animals was exported from the site, while locals made do with the tougher meat from slightly older animals. However, it is important to note that the epiphysial fusion method of ageing tends to underestimate the presence of younger animals (Symmons 2005), therefore the above statements should be treated with caution. The epiphysial fusion data for pig confirms the pattern suggested by mandibles.

It is also worth noting that neonatal cattle, sheep and pig bones were recovered from all three phases. The neonate bones are from DE3002 and DE3001. This suggests that livestock were bred and reared in close proximity to these areas.

Butchery

Butchery marks were evident on a total of 338 bones from Romano-British contexts (*c.* 17%). Chop marks were the most common type of mark recorded in all phases (54–66%), followed by cut-marks (33–44%) and then marks made with a saw (<1–5%). Most of the butchery evidence, and in particular most of the chop mark evidence, occurs on cattle bones. The widespread use of the cleaver as butchery tools is a well-known characteristic of Romano-British butchery practices (Maltby 1985, 20; Seetah 2006, 112); their use enabled large carcasses to be processed with rapid precision, something that was essential to provisioning large numbers of military personnel and an expanding urban population (Dobney 2001, 39–40; Seetah 2006, 113–14). Knives were primarily used to fillet meat from cattle bones and to joint-out sheep and pig carcasses, while the use of saws appears to have been restricted to horn- and bone-working.

Most of the butchery marks recorded on animal bones from Romano-British contexts resulted from three different processes: disarticulation (58%), portioning (*c.* 13%) and filleting (12%). Evidence for primary and secondary reduction occurs more frequently on cattle bones than on the bones of smaller mammals, but this is unsurprising given that large carcasses need to be reduced more in order to provide manageable meat portions for the purposes of storage, transport and ease of cooking.

The most significant aspect of the butchery pattern is the evidence for specialist processing to produce cured shoulders of beef. This evidence was seen on 25% of scapulae from the early Romano-British period, 72% mid-Romano-British and 57% late Romano-British, and has previously been described by a number of authors (Dobney *et al.* 1996, 27; Dobney 2001, 40–1; Grant 1987, Johnstone and Albarella 2002, 16; Lauwerier 1988; Maltby 1985; 1989). The evidence includes the following: trimming around the glenoid cavity, removal of the processus coracoideus and spine, cut or nick marks on the dorsal aspect of the distal end and on the margo thoracalis and/or margo cervicalis, and longitudinal cut-marks on the medial aspect of the blade. Trimming around the glenoid cavity opens up the dense muscle mass and allows the brine to penetrate deeper into the tissue. This evidence is occasionally accompanied by hook-hole damage on the caudal side of the blade resulting from hanging the joint in a smoker or brine vat. Variations in the combination of these marks have been used to suggest that different curing processes have been employed, for instance scapulae with trimmed glenoid cavities and spinae are thought to represent cold-smoked (ie, brined) joints, whilst scapulae with little or no evidence for trimming of these areas are thought to represent hot-smoked joints. The former method preserves the meat for long-term storage, while hot-smoked joints have a shorter shelf life.

Approximately 88% of scapulae, the vast majority of which are from DE3002, have trimmed glenoid cavities and/or spinae, which strongly suggest that joints were preserved using the cold-smoked method and were intended for long-term storage. This type of butchery has been noted at a wide variety of sites both in Britain and on the continent. The practice of curing meat probably originated in response to military food requirements and was subsequently adopted by professional butchers supplying the domestic market (Grant 1987; Maltby 1989). The evidence is common in Roman urban and military assemblages but less frequent in rural ones, indicating perhaps that only settlements above a certain population size required the services of a full-time specialist butcher. Accumulations of waste from vendors specialising in cured beef are known from several urban centres, including many in the midlands region (Dobney *et al.* 1996, 24–8; Payne 1980; Meddens 2000; Noddle 2000; Harman 1969), and it is likely that *Margidunum* itself had several such vendors. Similar enterprises might have sprung up in the hinterland, although there are no single large concentrations of cattle scapulae from the *Margidunum* Hinterland site to indicate that this was the case.

Marks made during the skinning process were also present and these were most evident on skulls, mandibles and phalanges, basically areas of the body with the thinnest covering of soft tissue. Limited evidence for marrow extraction, horn- and bone-working were also noted; the evidence is scant but does at least indicate that these industrial and craft activities were taking place at the site during the Romano-British period.

Biometry (Fig. 4.109)

The total quantity of biometric data from each phase is relatively small and this precludes detailed analysis of any chronological changes in the size and conformation of livestock. Log ratio analysis was, however, carried out on the relatively large sample of sheep tooth measurements (Fig. 4.109). The results seem to indicate a general increase in the size of sheep after the early Romano-British period and greater variation in the size of sheep during the mid-Romano-British period. It is possible that these changes are the result of genetic diversification and/or improvements in husbandry brought about by Romanising influences on the management of livestock (see for example Albarella 2007; Albarella *et al.* 2008); however this cannot be stated with any degree of certainty given the limited scope of the evidence.

Other mammals

Seven other mammalian species were identified from Romano-British deposits. Of these, horse and dog are

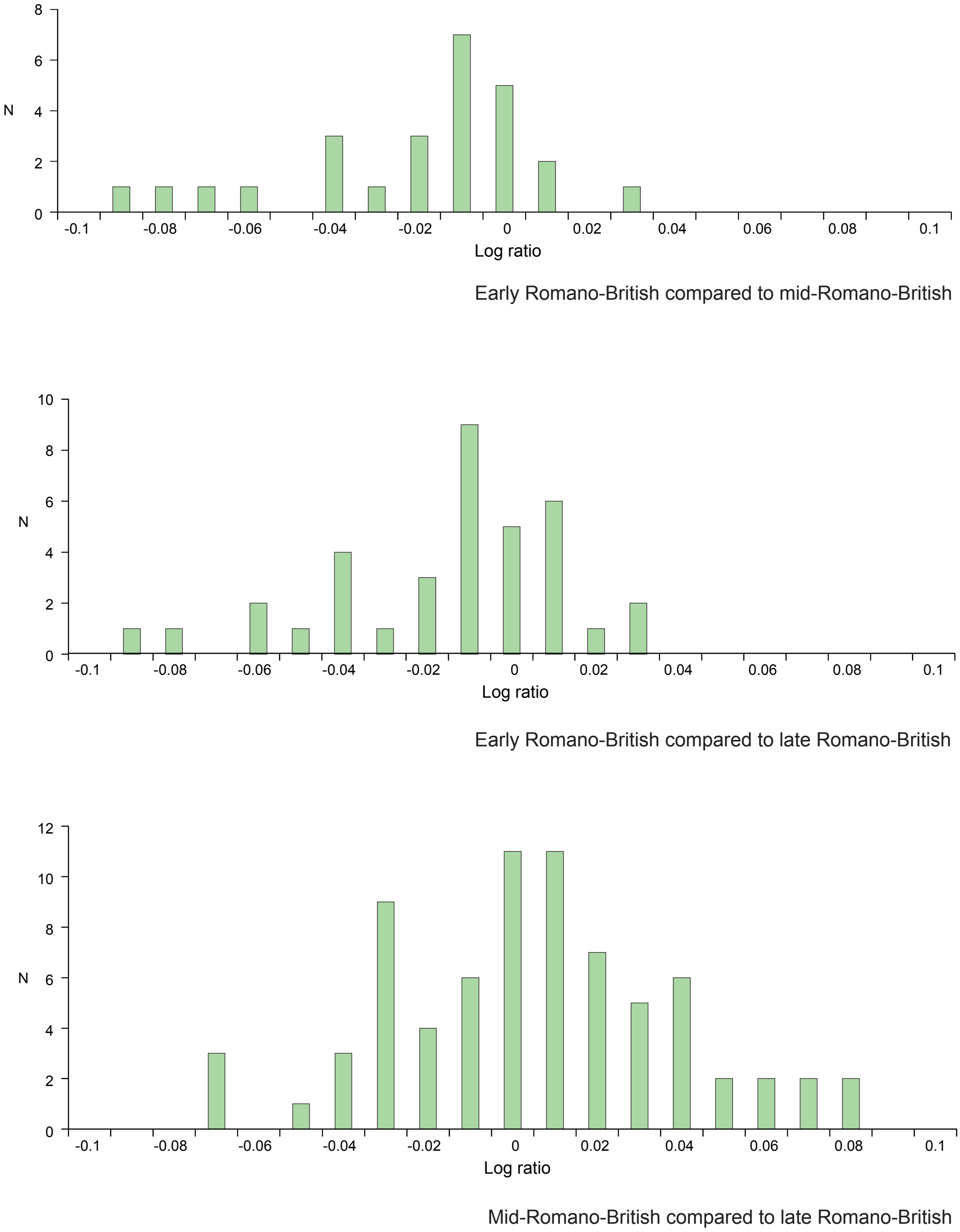


Fig. 4.109 Animal bone: comparison between the breadth of sheep lower first, second and third molars using the log ratio technique (after Davis 1996)

common, and the rest are all represented by less than three bones each; these comprise goat, cat, red deer, roe deer and hare.

Horses appear to have been bred and reared on site as suggested by the presence of neonatal and juvenile bones from the mid- and late Romano-British periods. Butchery marks were noted on a few horse bones, and these are consistent with primary disarticulation and marrow extraction. A few sawn off-cuts from object manufacture were also noted amongst the mid- and late Romano-British period horse bone assemblage.

Dogs of all ages are represented in the assemblage, from foetal/neonatal through to adult. Of note are the partial remains of a neonatal dog from ditch 218766 of early Romano-British period Enclosure A (DE3006). The deer remains include several post-cranial bones and one fragment of antler tine. Two goat horn cores were identified, but no post-cranial bones were distinguished from amongst the rest of the caprine assemblage; this is, however, unsurprising given the difficulty of distinguishing between related species. Cat is represented by just two bones, and hare is represented by a single ulna from an early Romano-British context.

Birds

Four species of bird were identified; domestic fowl are the most common and economically significant species. All of the fowl bones are from adult birds and this suggests that egg production was more important that intensive meat production. The goose bones are all fairly large and this indicates that they are probably from domestic stock. The two bones from Romano-British contexts are both from female birds, which again suggests that they were kept primarily for their eggs. Two species of corvid were identified; the crow (or rook) is represented by a few isolated bones from four separate features, while the raven occurs as a partial skeleton (Associated Bone Group 2136) from mid-Romano-British pit 303674 (Fig. 4.20). The remains include the left and right humeri, femora and tibiotarsus, and the left ulna and carpometacarpus from an adult bird, and these were recovered from near the base of the feature. No other bones or cultural material were recovered from the pit.

Corvid remains have been noted on 35 Romano-British sites, and most of these examples involve ravens rather than other corvid species such as crows (Serjeantson and Morris 2011). They are more commonly found in towns and at shrines, where they are usually recovered from pits, wells and shafts, typically in association with dogs and puppies, although other mammals (eg, cat) and birds (eg, domestic fowl) are occasionally present (*ibid.*, 94–6). Various interpretations have been put forward to explain the presence of corvid skeletons on Romano-British sites, and these are fully explored by Serjeantson and Morris (2011, 96–102). They suggest that of the possible functional reasons for killing these birds the most likely is the desire for feathers or feathered wings for use as decoration or as military or ritual regalia (*ibid.*, 99 and 103), but go on to say that this does not explain the often careful disposal of the remains. Ritual interpretations, they suggest, are more pertinent because corvids were ascribed supernatural powers by both the Celts and Romans (eg, prophecy, shape-shifting; see for example Green 1992, 87–9 and 177–81; Aldhouse-Green 2004, 54 and 187).

It is unclear whether or not the partial raven skeleton from *Margidunum* Hinterland represents a functional or ritual deposit. The parts of the skeleton recovered include both wing and leg bones, although not the distal part of the wing which carries the flight feathers. It is possible, therefore, that the partial skeleton represents the remains of a bird that had been killed for its feathers, however, this interpretation is probably too simplistic given that the remains appear to have been deliberately placed at the base of pit 303674. This action implies that greater significance was attached to the deposition of these remains than merely the disposal of raw material. The location of the pit close to several infant burials and within the possible smithy (Structure 17, DE3002) further implies that the raven burial is associated with activities outside the normal sphere of everyday life.

Anglo-Saxon

A small number of bone fragments were recovered from fills 304063 and 304058 of sunken-featured building 304064 (Structure 27). This material is poorly preserved, consequently all of the identified fragments are small durable elements; these include cattle and pig teeth and a sheep carpal.

Conclusions

The Romano-British assemblages recovered from *Margidunum* Hinterland have provided a wealth of information about the changing economy of the site. Patterns of livestock farming established during the Late Iron Age period persisted into the early part of the Romano-British period. The evidence suggests that the invading Roman army initially commandeered locally available produce and gradually built up supply networks that could provide preferred food items, such as beef. At *Margidunum* Hinterland the effects of Romanising influences on the local pastoral economy are evident in the shift from a sheep-dominated livestock strategy towards one based principally on cattle. Despite the proximity of emerging local markets in the town of *Margidunum* and passing trade from the Fosse Way, this change in emphasis does not appear to have had much effect until fairly late in the occupation sequence of the site. This pattern of gradual assimilation is in keeping with general national trends for rural civilian settlements.

Bones from foetal and neonatal livestock are present in all phases and this indicates that animals were raised locally rather than brought to the site on the hoof. The settlement therefore appears to have been self-sufficient, but also acted as producer of livestock and meat. Biases in the body part distribution, and differences in the mortality profiles obtained from mandibles and post-cranial bones, indicate that prime beef, lamb and mutton joints were exported from the site, most probably to markets in the town of *Margidunum*.

Evidence for the systematic butchery of cattle carcasses and specialist meat processing techniques (ie, cured shoulder joints) were recorded in all three phases. These practices are thought to have a military origin but appear to have been taken up relatively quickly at *Margidunum* Hinterland despite initial resistance to changes in diet and husbandry practices.

Environmental Remains

Molluscs

by Sarah F. Wyles

A series of 10 small samples and two bulk samples were selected for molluscan analysis. These included a series of six mollusc samples through mid-Romano-British boundary ditch 218516 (Fig. 4.18). The samples were processed and analysed following the methodology described in Chapter 3, and the results were tabulated (Tables 4.29 and 4.30) and histograms produced (Figs 4.110 and 4.111, some species have been grouped). Shell numbers were generally very high, with the terrestrial species outnumbering the aquatic species in almost all of the assemblages.

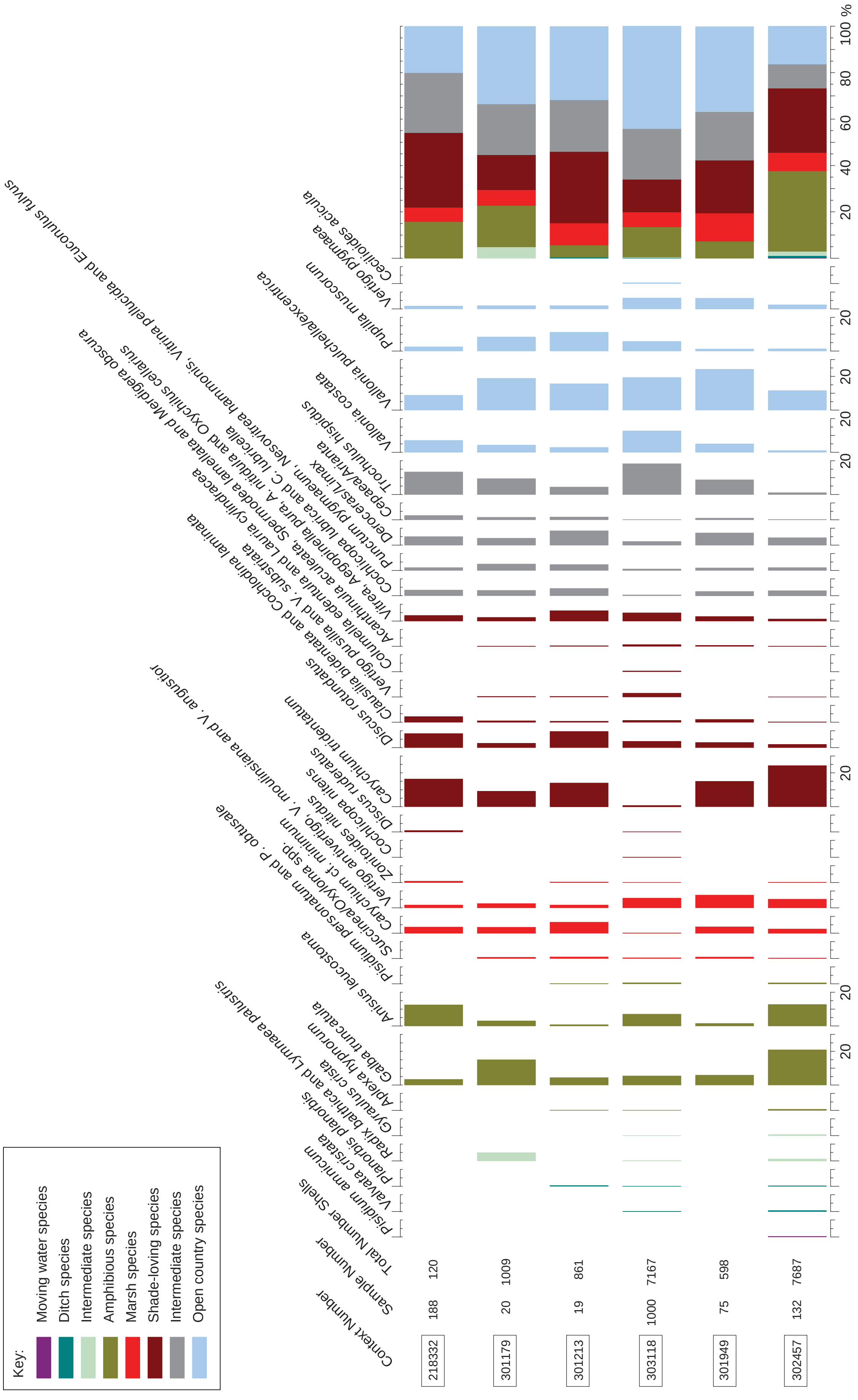


Fig. 4.110 Mollusc assemblages from Middle Iron Age to mid-Romano-British features

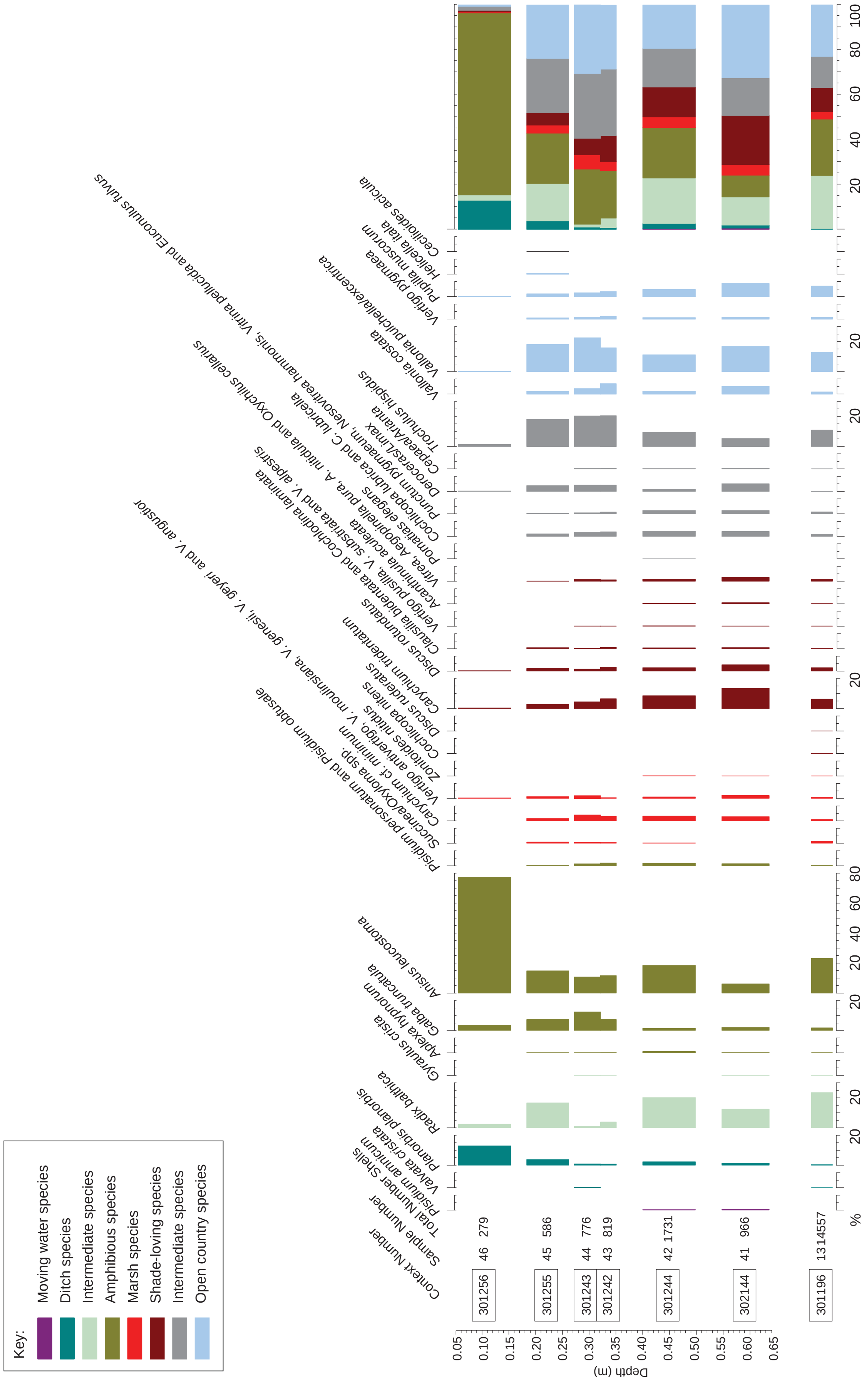


Fig. 4.111 Mollusc assemblages from mid-Romano-British ditches 218516 and 218515

Gully 301948 (DE3001, in Enclosure A)
This sample was from a gully inside Enclosure A which pre-dates the early Romano-British recutting of the enclosure ditch, and is probably Late Iron Age (although classified as undated; Fig. 4.3). Terrestrial species form the majority of the assemblage, with only 7% aquatic species. These comprised amphibious species, in particular *Galba truncatula*. The terrestrial species are dominated by *Vallonia pulchella/excentrica* and *Carychium tridentatum*. There are also a number of *Vertigo angustior* and *Vertigo antivertigo*, forming 7.5% of the assemblage, together with a few shells of *Clausilia bidentata* and *Acanthinula aculeata*. The gully seems to have been in a generally open grassland landscape with small patches of longer damp grass, possibly along the edge or even within it. There is also an indication of the presence of a woody environment in the vicinity such as a few trees, scrub or a hedgerow.

Pit 303115 (DE3003)
The large sample from this early Romano-British pit (Fig. 4.9) contained high numbers of shells (Table 4.29). The assemblage is dominated by the terrestrial species (86%), in particular the open country group which

Table 4.29 *Margidunum* Hinterland: mollusc assemblages from Middle Iron Age to mid-Romano-British features

Phase	*MIA*	*Undated*	*LIA/ERB*			*MRB*
Feature type	*Pit*	*Gully*	*Pit*		*Pit*	*Well*
Feature	*302456*	*301948*	*303115*		*301178*	*303715*
Context	*302457*	*301949*	*303118*	*301213*	*301179*	*218332*
Sample	*132*	*75*	*1000*	*19*	*20*	*188*
Depth (m)	*spot*	*spot*	*spot*	*spot*	*spot*	*spot*
Volume (l)/ Weight (g)	*1500 g*	*1500 g*	*40 l*	*1500 g*	*1500 g*	*14 l*
Land snails						
Carychium cf. *minimum* Müller	140	12	6	31	22	2
Carychium tridentatum (Risso)	1380	48	40	67	57	9
Carychium spp.	538	52	10	79	48	13
Succinea/Oxyloma spp.	19	5	28	8	7	-
Cochlicopa lubrica (Müller)	12	1	23	4	3	1
Cochlicopa lubricella (Rossmässler)	1	1	3	-	-	-
Cochlicopa nitens (Gallenstein)	-	-	3	-	-	-
Cochlicopa spp.	217	13	9	33	29	3
Columella edentula (Draparnaud)	-	-	4	-	-	-
Vertigo pusilla Müller	-	-	88	-	-	-
Vertigo antivertigo (Draparnaud)	94	5	168	3	9	-
Vertigo substriata (Jeffreys)	2	-	72	2	3	-
Vertigo pygmaea (Draparnaud)	88	26	358	11	8	-
Vertigo moulinsiana (Dupuy)	1	-	2	-	-	-
Vertigo angustior Jeffreys	192	38	196	10	4	-
Vertigo spp.	207	14	149	7	24	2
Vertigo spp. (sinestral)	-	-	-	-	-	2
Pupilla muscorum (Linnaeus)	100	7	409	96	84	3
Lauria cylindracea (da Costa)	-	-	26	-	-	-
Vallonia costata (Müller)	75	28	906	24	41	8
Vallonia pulchella/excentrica	840	135	1386	130	180	10
Vallonia spp.	53	12	3	6	13	1
Acanthinula aculeata (Müller)	4	3	61	3	1	-
Spermodea lamellata (Jeffreys)	-	-	10	-	-	-
Merdigera obscura (Müller)	-	-	1	-	-	-
Punctum pygmaeum (Draparnaud)	72	5	20	8	4	1
Discus ruderatus (Férussac)	-	-	7	-	-	1
Discus rotundatus (Müller)	144	18	266	82	26	10
Vitrina pellucida (Müller)	22	-	-	4	16	-
Vitrea sp.	38	10	136	29	17	1

Table 4.29 (cont.) *Margidunum* Hinterland: mollusc assemblages from Middle Iron Age to mid-Romano-British features

Phase	*MIA*	*Undated*	*LIA/ERB*			*MRB*
Feature type	*Pit*	*Gully*	*Pit*		*Pit*	*Well*
Feature	*302456*	*301948*	*303115*		*301178*	*303715*
Context	*302457*	*301949*	*303118*	*301213*	*301179*	*218332*
Sample	*132*	*75*	*1000*	*19*	*20*	*188*
Depth (m)	*spot*	*spot*	*spot*	*spot*	*spot*	*spot*
Volume (l)/Weight (g)	*1500 g*	*1500 g*	*40 l*	*1500 g*	*1500 g*	*14 l*
Land snails (cont.)						
Nesovitrea hammonis (Ström)	25	4	32	18	17	1
Aegopinella pura (Alder)	12	4	44	5	1	1
Aegopinella nitidula (Draparnaud)	32	2	151	19	2	2
Oxychilus cellarius (Müller)	11	-	16	-	2	-
Zonitoides nitidus (Müller)	8	-	6	3	-	1
Deroceras/Limax	339	43	154	73	41	6
Euconulus fulvus (Müller)	9	-	7	-	1	-
Cecilioides acicula (Müller)	-	-	37	-	-	-
Cochlodina laminata (Montagu)	2	-	-	1	2	-
Clausilia bidentata (Ström)	15	10	78	4	7	4
Trochulus hispidus (Linnaeus)	84	52	1305	38	95	16
Cepaea nemoralis (Linnaeus)	-	-	-	2	4	-
Cepaea hortensis (Müller)	-	-	-	3	4	-
Cepaea/Arianta sp.	18	6	-	9	7	3
Aquatic Snails						
Valvata cristata Müller	45	-	12	-	-	-
Aplexa hypnorum (Linnaeus)	46	-	3	1	-	-
Galba truncatula (Müller)	890	19	365	17	61	3
Lymnaea palustris (Müller)	1	-	3	-	-	-
Radix balthica (Linnaeus)	51	-	12	-	20	-
Galba/Lymnaea/Radix spp.	751	16	20	20	119	1
Planorbis planorbis (Linnaeus)	18	-	6	4	-	-
Anisus leucostoma (Millet)	870	9	495	6	25	15
Gyraulus crista (Linnaeus)	44	-	3	-	-	-
Planorbidae	112	-	8	-	5	-
Pisidium cf. *amnicum* (Müller)	4	-	-	-	-	-
Pisidium personatum Malm	6	-	20	-	-	-
Pisidium obtusale (Lamark)	2	-	5	-	-	-
Pisidium spp.	53	-	20	1	-	-
Taxa	40	24	44	31	30	21
Total	7687	598	7167	861	1009	120
% Open country species	17.73	37.06	44.81	31.79	34.65	21.67
% Intermediate species	10.39	20.87	21.84	22.27	21.88	25.83
% Shade-loving species	30.15	26.54	14.08	37.35	18.61	35
% Unassigned species	4.08	8.01	5.72	2.78	1.98	1.67
% Amphibious species	23.6	4.67	12.39	2.78	8.51	15
% Intermediate species	1.25	0	0.25	0	1.98	0
% Ditch species	0.82	0	0.25	0.46	0	0
% Moving water species	0.05	0	0	0	0	0
% Unassigned species	11.91	2.67	0.67	2.44	12.28	0.83

forms 44% of the assemblage. Although there is a range of freshwater species, the majority of the aquatic element comprises *Anisus leucostoma* and *Galba truncatula*. The dominant terrestrial species are *Vallonia pulchella/excentrica*, *Trochulus hispidus* and *Vallonia costata*. Again there are also a number of *Vertigo angustior*, *Vertigo antivertigo* and *Vertigo moulinsiana*, forming 6% of the assemblage.

The occurrence of a few shells of the extinct species *Cochlicopa nitens* and *Discus ruderatus* is likely to be the result of some reworking of the earlier alluvial deposits that the pit was cut through.

The low-level presence of a few species within this assemblage is noteworthy. *Spermodea lamellata* is a species 'restricted to old deciduous woodlands', *Columella edentula* is 'found in a wide variety of damp places from grasslands and woodlands to marshes' and *Lauria cylindracea* favours dry, shady places, including woodland and hedges' (Davies 2008, 174–6).

The area around the pit appears to have been a generally open grassland environment with patches of longer wet grass and probably a small area of relict deciduous woodland in the vicinity.

Pit 301178 (DE3001)

The assemblage from the primary fill of this mid-Romano-British pit (Fig. 4.18) is dominated by the terrestrial species (Table 4.29), with a smaller element of aquatic species (6%), primarily *Galba truncatula*. *Carychium tridentatum*, *Vallonia pulchella/excentrica*, *Pupilla muscorum* and *Discus rotundatus* are the predominant terrestrial species.

The assemblage from the upper fill pit is again dominated by terrestrial species but there is a marked rise in the aquatic element to 23% of the assemblage. The aquatic species are dominated by *Galba truncatula*. *Vallonia pulchella/excentrica* and *Trochulus hispidus* increase, while *Carychium tridentatum*, *Pupilla muscorum* and *Discus rotundatus* all decline.

The pit appears to have been located in open grassland, perhaps with a small area of woodland or scrub nearby together with patches of long damp grass in the vicinity of the pit. There is an increase in the amount of long damp grass in the immediate area as the pit silted up.

Well 303715 (DE3002)

The assemblage from the mid-Romano-British well (Fig. 4.20) is dominated by terrestrial species, in particular *Trochulus hispidus* and *Carychium tridentatum* (Table 4.29). The aquatic element formed 16% of the assemblage and comprised amphibious species, with *Anisus leucostoma* predominant. The molluscs indicate that there is likely to have been an area of long damp grass in the vicinity of the well.

Ditches 218515 and 218516 (DE3001)

These two largely parallel boundary ditches lay *c.* 80 m north-west of the Fosse Way, perhaps defining the rear of street plots (Fig. 4.18; Table 4.30).

Ditch 218515

The extremely large assemblage is similar to that observed in the upper part of context 302144 (sample 42) in ditch 218516 (below), with the aquatic species representing about 50% of the assemblage. The aquatic element was dominated by *Radix balthica* and *Anisus leucostoma*. Of the terrestrial species, *Vallonia pulchella/excentrica*, *Trochulus hispidus*, *Pupilla muscorum* and *Carychium tridentatum* were predominant in that order.

There are only a very few shells of noteworthy species within this large assemblage. The very low presence of the extinct species *Cochlicopa nitens* and *Discus ruderatus*, together with the rare species of *Vertigo genesii* and *Vertigo geyeri* is probably the result of the inclusion of some material from the alluvial deposits through which the ditch was cut. These species were all identified in the earlier alluvial deposits described in Chapter 3.

The mollusc assemblage appears to indicate an open landscape of grassland with areas of long wet grass in the vicinity of and possibly within the ditch itself. The ditch is likely to have been permanently damp, probably with some standing stagnant water.

The occurrence, although in low numbers, of *Vertigo pusilla* and *Vertigo alpestris*, species which are found in 'dry lightly shade environments such as open woods or walls' (Davies 2008, 174–5), together with the presence of *Clausilia bidentata, Cochlodina laminata* and *Acanthinula aculeata*, may indicate some kind of woody environment in the vicinity such as a hedgerow.

Ditch 218516

The assemblage from the lower part of context 301244, the basal fill of the ditch, is dominated by terrestrial species with aquatic molluscs only representing 24% of the shells. *Radix balthica* is the dominant aquatic species, although the amphibious species, in particular *Anisus leucostoma*, form the largest aquatic group at 12.5%. At 32.5% the open country group is the most significant, with *Vallonia pulchella/excentrica* dominant, followed at 22% by the shade-loving species, in particular *Carychium tridentatum*. The presence, albeit in small numbers, of *Vertigo angustior* and *Vertigo antivertigo* is noteworthy, as these are species which avoid habitats with marked water-level fluctuation.

The mollusc assemblage appears to be indicative of an open landscape of grassland with areas of long wet grass in the vicinity of, and possibly within, the ditch itself. The ditch is likely to have been permanently damp, probably with some standing stagnant water. The possible presence of a limited woody environment, such as a hedgerow, in the vicinity is indicated by the occurrence of *Clausilia bidentata*, *Cochlodina laminata* and *Acanthinula aculeata*.

The aquatic component increases to 45% of the assemblage from the upper part of this waterlain deposit. This is representative of the marked rise in both *Radix balthica* and *Anisus leucostoma*, the predominant aquatic species in the assemblage from the lower part of the context. Although the open country species is still the dominant terrestrial group, they only form 19% of the assemblage with the intermediate species

Table 4.30 *Margidunum* Hinterland: mollusc assemblages from mid-Romano-British ditches 218516 and 218515

Feature group	*218515*	*218516*					
Feature	*301238*	*301241*					
Context	*301196*	*301244*	*301244*	*301242*	*301243*	*301255*	*301256*
Sample	*13*	*41*	*42*	*43*	*44*	*45*	*46*
Depth (m)	*spot*	*0.55–0.64*	*0.40–0.50*	*0.32–0.35*	*0.27–0.32*	*0.18–0.26*	*0.05–0.15*
Volume (l)/Weight (g)	*1 l*	*1500 g*	*1500 g*	*1500 g*	*1500 g*	*1500 g*	*1500 g*
Land snails							
Pomatias elegans (Müller)	-	+	1	+	+	-	-
Carychium cf. *minimum* Müller	105	19	38	16	21	6	-
Carychium tridentatum (Risso)	724	92	99	33	24	11	1
Carychium spp.	219	46	70	31	20	9	-
Succinea/Oxyloma spp.	217	-	5	4	5	5	-
Cochlicopa lubrica (Müller)	58	4	8	5	3	1	-
Cochlicopa lubricella (Rossmässler)	1	-	1	-	1	-	-
Cochlicopa nitens (Gallenstein)	7	-	-	-	-	-	-
Cochlicopa spp.	168	28	51	20	17	9	-
Vertigo pusilla Müller	4	-	-	-	-	-	-
Vertigo antivertigo (Draparnaud)	25	2	2	-	4	1	1
Vertigo substriata (Jeffreys)	15	1	4	1	1	-	-
Vertigo pygmaea (Draparnaud)	126	4	11	8	5	2	-
Vertigo moulinsiana (Dupuy)	1	-	-	-	-	-	-
Vertigo genesii (Gredler)	1	-	-	-	-	-	-
Vertigo geyeri Lindholm	2	-	-	-	-	-	-
Vertigo alpestris Alder	1	-	-	-	-	-	-
Vertigo angustior Jeffreys	81	11	13	4	5	4	-
Vertigo spp.	85	15	10	9	12	6	-
Vertigo spp. (sinestral)	1	-	-	-	-	-	-
Pupilla muscorum (Linnaeus)	1048	86	86	29	21	12	1
Vallonia costata (Müller)	218	49	33	52	27	11	-
Vallonia pulchella/excentrica	1876	157	183	120	166	103	1
Vallonia spp.	18	8	16	16	12	4	-
Acanthinula aculeata (Müller)	20	7	4	-	-	-	-
Punctum pygmaeum (Draparnaud)	78	13	13	6	3	2	-
Discus ruderatus (Férussac)	5	-	-	-	-	-	-
Discus rotundatus (Müller)	335	41	40	23	10	10	1
Vitrina pellucida (Müller)	13	2	15	4	1	-	-
Vitrea sp.	76	18	11	4	-	-	-
Nesovitrea hammonis (Ström)	88	6	11	-	1	-	-
Aegopinella pura (Alder)	36	3	2	2	3	-	-
Aegopinella nitidula (Draparnaud)	65	3	10	2	6	1	-
Oxychilus cellarius (Müller)	10	1	-	-	-	-	-
Zonitoides nitidus (Müller)	7	1	3	-	-	-	-
Deroceras/Limax	6	50	26	35	33	23	1
Euconulus fulvus (Müller)	11	1	1	-	1	-	-
Cecilioides acicula (Müller)	-	-	-	-	-	1	-
Cochlodina laminata (Montagu)	5	2	-	-	1	-	-
Clausilia bidentata (Ström)	47	5	9	8	1	4	-
Helicella itala (Linnaeus)	-	-	-	-	-	4	-
Trochulus hispidus (Linnaeus)	1597	52	164	169	159	107	4
Cepaea hortensis (Müller)	1	-	-	-	-	-	-

Table 4.30 (cont.) *Margidunum* Hinterland: mollusc assemblages from mid-Romano-British ditches 218516 and 218515

Feature group	*218515*			*218516*			
Feature	*301238*			*301241*			
Context	*301196*	*301244*	*301244*	*301242*	*301243*	*301255*	*301256*
Sample	*13*	*41*	*42*	*43*	*44*	*45*	*46*
Depth (m)	*spot*	*0.55–0.64*	*0.40–0.50*	*0.32–0.35*	*0.27–0.32*	*0.18–0.26*	*0.05–0.15*
Volume (l)/Weight (g)	*1 l*	*1500 g*	*1500 g*	*1500 g*	*1500 g*	*1500 g*	*1500 g*
Land snalis (cont.)							
Cepaea/Arianta sp.	11	6	6	4	5	-	-
Aquatic snails							
Valvata cristata Müller	2	-	-	-	1	-	-
Aplexa hypnorum (Linnaeus)	18	2	16	2	1	1	-
Galba truncatula (Müller)	180	10	9	28	45	17	6
Radix balthica (Linnaeus)	2443	61	127	15	4	39	4
Galba/Lymnaea/Radix spp.	1051	69	238	49	56	84	7
Planorbis planorbis (Linnaeus)	45	13	40	7	7	22	36
Anisus leucostoma (Millet)	3074	59	319	95	83	87	216
Gyraulus crista (Linnaeus)	14	1	-	2	1	-	-
Planorbidae	297	-	-	-	-	-	-
Pisidium cf. *amnicum* (Müller)	-	2	1	-	-	-	-
Pisidium personatum Malm	2	5	4	6	-	-	-
Pisidium obtusale (Lamark)	3	-	1	-	-	-	-
Pisidium spp.	16	11	30	10	10	1	-
Taxa	44	34	35	27	32	23	11
Total	14557	966	1731	819	776	586	279
% Open country species	23.17	33.02	19.58	28.54	31.31	24.23	0.72
% Intermediate species	13.96	16.77	17.16	29.63	28.87	24.23	1.79
% Shade-loving species	11.42	22.64	16.58	14.63	11.21	7	0.72
% Unassigned species	2.38	1.45	1.33	0.98	1.8	1.71	0.36
% Amphibious species	22.52	7.87	20.16	15.98	16.62	17.92	79.57
% Intermediate species	16.88	6.42	7.34	2.07	0.64	6.66	1.43
% Ditch species	0.32	1.35	2.31	0.85	1.03	3.75	12.9
% Moving water species	0	0.21	0.06	0	0	0	0
% Unassigned species	9.37	8.28	15.48	7.2	8.51	14.51	2.51

and shade-loving species at 17 and 13% respectively. *Vertigo angustior*, *Vertigo antivertigo*, *Clausilia bidentata*, *Cochlodina laminata* and *Acanthinula aculeata* are again present in small numbers.

There appears to have been an increase in the areas of long damp grass and the ditch itself is likely to have been permanently wet. There is again the indication of the possible presence of some woodland element in the vicinity.

The assemblage from the waterlain context 301242, which overlies 301244, is dominated by terrestrial species (74%), in particular by *Trochulus hispidus* and *Vallonia pulchella/excentrica*. There is a continued decline in the shade-loving element down to 11%. The amphibious species *Anisus leucostoma* and *Galba truncatula* are predominant amongst the aquatic element.

The mollusc assemblage composition seems to reflect a decrease in the areas of long damp grass in the vicinity of the ditch, with the ditch itself probably becoming drier again.

The general assemblage composition from context 301243 is similar to that from context 301242 (which it overlies), with a small increase in *Vallonia pulchella/excentrica* and *Galba truncatula* and a small decrease in the shade-loving element and *Radix balthica*.

There is a decline in the terrestrial species from 73% to 57% within context 301255 (above 301243). The marked increase in aquatic species is mainly represented by the rise in numbers of *Radix balthica*.

The mollusc assemblage appears to reflect an increase in the areas of damp grass in the vicinity of the ditch. The ditch itself was likely to have been permanently wet at this stage, again probably with more stagnant rather than fast flowing water.

The aquatic species are dominant within the upper fill of the ditch (301256), forming 96% of the mollusc assemblage. The predominant species is *Anisus leucostoma* (77% of the shells). This species occurs in a variety of aquatic habitats and it is most typical of 'swampy pools and ditches, especially those drying up in the summer' (Kerney 1999, 60).

By this time the local environment of the ditch itself may be one of damp swampy grassland, possibly with localised areas of more bare earth and limited vegetational cover in the immediate vicinity, as reflected by the small numbers of terrestrial species and very low species diversity indices. This may be indicative of the ditch failing as a drain at this stage as a result of having become clogged up.

The mollusc assemblages from this ditch indicated that although the ditch lay in a general open landscape throughout its history, the rate of water flow and amount of damp swampy grassland fluctuated over time.

Summary

The mollusc assemblages from these Romano-British features, and also from the Iron Age pit alignment (see Chapter 3), appear to depict a generally well-established open landscape at *Margidunum* Hinterland by the Middle Iron Age which seems to have continued during the early and mid-Romano-British periods. Within this open landscape there is an indication of areas of long damp grass probably with hedgerows and a few small wooded areas or scrub.

There are small variations within this general landscape. There is an indication of a possible small area of relict deciduous woodland surviving in DE3003 into the early Romano-British period. The mid-Romano-British landscape both east and west of the Fosse Way appears to have followed the general pattern, although there were localised fluctuations as reflected in the sequence through ditch 218516.

Ostracods

by John Russell

Four samples from monolith 40, through ditch 218516 (Fig. 4.18), were investigated for ostracods. The feature was initially interpreted as a palaeochannel, but examination of the sediments established it was a boundary and/or drainage ditch (David Norcott, in archive). The methods of analysis are as described in Chapter 3. The four samples from monolith 40 (at depths of 0.60 m, 0.47 m, 0.32 m and 0.23 m) contained generally well-preserved ostracod faunas, the results of which are given in Table 4.31.

The ostracods are all Candoniid forms dominated by the species *Candona neglecta*. *Candona neglecta* is usually found in permanent water bodies although the eggs, juveniles and adults of *Candona neglecta* are dessication resistant. These Candoniid ostracods are known to inhabit a wide range of environments including springs, brooks, wells, ponds, ditches and the littoral and profundal zones of lakes (Meisch 2000).

Table 4.31 *Margidunum* Hinterland: ostracod assemblage from monolith 40, ditch 218516

Depth (m)	*0.60*	*0.47*	*0.32*	*0.23*
Candona candida	x	x		
Candona sp..	x	x		
Candona neglecta	xx	xx	x	x
Fabaeformiscandona sp.	•	x		
Ilyocypris gibba	x	x	x	
Paracandona euplectella		x		
Potamocypris sp.				
Broken/unid	x			•

KEY: • = 1 specimen; x = 1–9 specimens; xx = 10–50 specimens

Charred Plant Remains

by Chris J. Stevens

A total of 115 samples were taken and processed for charred plant remains. These came predominantly from features of Romano-British date although two came from the Anglo-Saxon sunken-featured building 304064; a single sample also came from a Neolithic pit (see Chapter 3),

The assessment indicated varying degrees of preservation and quantities of charred material across the site. The samples from DE3001 immediately adjacent to the eastern edge of Newton Villa (which lay just beyond the site), and within DE3002 to the east of the Fosse Way were notably richer in charred material. Most of these samples were of early–mid-Romano-British date.

Features at the south end of DE3001, and in areas DE3006 and DE3003 to the north of it, were much less rich in charred cereals. However, samples from features in the western half of DE3004, at the far north of the site, were reasonably rich in charred cereal remains, and at least some were associated with activity within the late Romano-British period, centred on a corn-drying oven and a number of buildings.

Following the assessment, 33 Romano-British samples and two Anglo-Saxon samples were chosen for full analysis. Of the Romano-British samples, 22 came from the richer features in DE3001 and DE3002, a further eight from DE3004, with the remaining three coming from DE3006 and DE3003. In addition, the assessment of a single sample from the buried soil (134007) from the late Romano-British outer defences on the south-west side of the town of *Margidunum* is also reported on, although the results are not represented in the tables.

Methods

The samples were processed using standard flotation methods with the flot collected on a 0.25 mm mesh. All identifiable charred plant macrofossils were extracted from the flots, together with the 2 mm and 1 mm residues. For a number of the samples the flots were exceptionally large and rich in charred plant remains and for this reason subsamples of 10% from the finer 0.5 mm and 0.25 mm fractions and in two cases from the 1 mm fraction were taken. The remains from these flots were then extracted, identified and multiplied by 10 to provide estimates (indicated in the tables by *est.*) of the original count.

Identification was undertaken using stereo incident light at magnifications of up to x40 using a Leica MS5 microscope, following the nomenclature of Stace (1997) for wild species and the traditional nomenclature, as provided by Zohary and Hopf (2000, tables 3, 28, 65), for cereals. The results are presented in Tables 4.32–4.39.

Results

Romano-British

The Romano-British samples varied in the density of remains across the site with concentrations of material associated with the early to mid-Romano-British enclosures in DE3001, and around the late Romano-British crop dryer and buildings in DE3004.

Early Romano-British crop dryer 301876 (DE3001)

Cereal remains were very dense in the three samples from crop dryer 301876 and pit 301631, associated with the crop dryer complex (Fig. 4.12; Table 4.32). While barley (*Hordeum vulgare*) was well represented in the sample from the crop dryer itself 301876 (301878), the samples were mainly dominated by glumes of hulled wheat, being mainly of spelt wheat (*Triticum spelta*), although some chaff and grains of emmer wheat (*Triticum dicoccum*) were also identified. All three samples also had good evidence for germinated grain and sprouts or elongated acrospires. Furthermore, a large number of the grains were hollow, which is characteristic of grains that have been sprouted or malted.

The weed seeds from these samples were dominated by grains of oats (*Avena* sp.) and brome grass (*Bromus* sp.), along with those of perennial rye-grass (*Lolium perenne*) and meadow grass/cat's-tails (*Poa*/*Phleum* sp.). In addition to oats and brome grass, further larger seeded species included corncockle (*Agrostemma githago*), vetch/wild pea (*Vicia*/*Lathyrus* sp.) and black-bindweed (*Fallopia convolvulus*). Also present were capsules of runch (*Raphanus raphanistrum*) and seeds of headed and intermediate weed seeds, most notably dock (*Rumex* sp.) and scentless mayweed (*Tripleurospermum inodorum*), along with some seeds of smaller seeded species, eg, fat-hen (*Chenopodium album*). Finally one of the crop dryer samples also contained several seeds of sedge (*Carex* sp.).

It should be noted that, in contrast to the samples discussed below from Enclosure A and the mid-Romano-British features adjacent to the Fosse Way, no charred stems of heather or grasses were recovered from these three samples. This is discussed further below.

Early Romano-British Enclosure F (DE3003)

Only a single sample from DE3003 was examined. This came from pit 303115 and was of a late 1st century AD date, being associated with Enclosure F on the east of the site, the closest feature examined to *Margidunum*, lying just outside the later town defences (Fig. 4.9; Table 4.32).

While richer in charred plant remains than most of the samples in this part of the site, the sample was still poor in comparison to the site as a whole. The sample produced just a few grains of cereals, mostly unidentifiable, and several glume bases from hulled wheats. More unusually it did contain several fragments of hazelnut shell (*Corylus avellana*) which were generally absent from most of the site.

Weed seeds were also poorly represented in terms of numbers, although a reasonable range of species were present, similar to the previous phase. A reasonable number of seeds of sedges (*Carex* sp.) were recovered along with several stems, particularly of monocots and grasses.

Early Romano-British Enclosures A and C (DE3001)

Several samples that were moderately rich in charred plant remains were recovered from features associated with Enclosures A and C (Figs 4.3, 4.6; Table 4.33), although only that from pit 302551 (associated with Structure 2) might be described as particularly rich; the two other samples from Enclosure A, ditches 301815 (not shown in plan, but lying directly beneath the eastern ditch of the enclosure) and 218602 (intervention 301997), had relatively few remains. Barley was fairly well represented in the sample from ditch intervention 301997, mainly by rachis fragments, which included those identifiable as of the six-row type (*Hordeum vulgare* subsp. *vulgare*). The main remains otherwise were those of hulled wheat, in particular glumes of spelt, predominantly from the Enclosure C ditches 218586 (interventions 302344 and 302714). The only other cultivated plant represented was flax (*Linum usitatissimum*), from a single capsule fragment recorded in pit 302551.

Of particular note were remains of other plants, less likely to be related to cereal processing and more probably collected for fuel. These included pinnules of bracken (*Pteridium aquifolium*) mainly from pit 302551, and stems and roots of heather type (Ericaceae), most probably common heather (*Calluna vulgaris*) rather than heath (*Erica* sp.). There were also stems of the Genisteae, most probably broom (*Cytisus* sp.), rather than greenweed (*Genista* sp.) or gorse (*Ulex* sp.), as well as high numbers of stems and rootlets from monocotyledonous plants, including those of sedge and grasses. While the remaining samples, in particular those from Enclosure C but also from Enclosure A (ditches 301815 and 301997), did not have stems of heather or pinnules of bracken, they also contained a number of culms, stems and rootlets of grasses, with a number of swollen culms of onion couch grass (*Arrhenatherum elatius*) in samples from Enclosure A. Also of note were tubers of probable pignut (*Conopodium majus*) from ditch 301997.

The high number of stems and roots in these samples make it difficult to ascertain whether the seeds of wild species are from plants associated with the cereal crop

Table 4.32 *Margidunum* Hinterland: charred plant remains from early Romano-British corn-drying complex (CDC) in DE3001, and pit 303115 (DE3003)

	Area	*DE3001*	*DE3001*	*DE3001*	*DE3003*
	Enclosure	*CDC*	*CDC*	*CDC*	*Encl F*
	Feature type	*Pit*	*Dryer*	*Dryer*	*Pit*
	Feature	*301631*	*301876*	*301876*	*303115*
	Context	*301632*	*301879*	*301878*	*303118*
	Sample	*66*	*76*	*78*	*1000*
	Vol. (l)	*10*	*10*	*5*	*40*
	Flot size (ml)	*100*	*250*	*250*	*350*
Cereals					
Hordeum vulgare sl (grain)	barley	7	24	330	-
Hordeum vulgare sl (rachis fragment)	barley	4	12	est.50	-
H. vulgare sl (6-row rachis fragment)	barley	2	3	18	-
Secale cereale (grains)	rye	-	cf.1	cf.1	-
Triticum sp. (grain)	wheat	-	15	8	-
Triticum sp. (awn)	wheat	-	+++	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	22	161	172	3
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	13	62	2	-
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	3	-	est.56	1
Triticum spelta (spikelet fork)	spelt wheat	-	-	3	-
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	est.1408	est.5901	est.1673	5
Triticum spelta (glume bases)	spelt wheat	48	est.1524	est.90	-
Triticum cf. *dicoccum* (grain)	emmer wheat	-	-	5	-
T. dicoccum (spikelet fork)	emmer wheat	-	10	cf.1	-
Triticum dicoccum (glume base)	emmer wheat	-	3	-	-
Triticum turgidum/aestivum L. *sl* (grain)	bread wheat	-	5	12	-
T. turgidum/aestivum L. *sl* (rachis frag.)	bread wheat	-	3	-	-
Cereal indet. (grains)	cereal	23	514	171	3
Cereal indet. (est. whole grains from frags)	cereal	15	70	130	8
Cereal (germinated coleoptile)	cereal	14	est.68	est.300	-
Cereal indet. (basal rachis fragment)	cereal	-	-	3	-
Cereal indet. (culm node)	cereal	1	-	-	-
Cereal indet. (basal culm node)	cereal	-	-	-	1
Other species					
Ranunculus subg. *Ranunculus* (arb)	buttercup	-	1	-	1
Corylus avellana (shell fragments)	hazelnut	-	-	-	17f.
Chenopodiaceae	goosefoots	-	est.20	est.20	-
Chenopodium polyspermum	many-seeded goosefoot	-	est.10	-	-
Chenopodium album	fat-hen	-	est.122	est.10	-
Atriplex sp.	orache	-	est.11	-	2
Montia fontana subsp. *chondrosperma*	blinks	-	-	-	1
cf. Caryophyllaceae/Primulaceae?	valvate capsule?	-	4	est.13	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	-	1	-	1
Polygonum aviculare	knotgrass	-	-	-	1
Fallopia convolvulus	black-bindweed	1	3	-	-
Rumex sp	docks	11	7	est.111	-
Rumex acetosella group	sheep's sorrel	-	-	est.10	-
Agrostemma githago	corncockle	cf.1	2	11	-

Table 4.32 (cont.) *Margidunum* Hinterland: charred plant remains from early Romano-British corn-drying complex (CDC) in DE3001, and pit 303115 (DE3003)

	Area	*DE3001*	*DE3001*	*DE3001*	*DE3003*
	Enclosure	*CDC*	*CDC*	*CDC*	*Encl F*
	Feature type	*Pit*	*Dryer*	*Dryer*	*Pit*
	Feature	*301631*	*301876*	*301876*	*303115*
	Context	*301632*	*301879*	*301878*	*303118*
	Sample	*66*	*76*	*78*	*1000*
	Vol. (l)	*10*	*10*	*5*	*40*
	Flot size (ml)	*100*	*250*	*250*	*350*
Other species (cont.)					
Brassica cf. *nigra*	black mustard	1	-	-	-
Raphanus raphanistrum (capsules)	runch, charlock	2+7f.	-	est.5	-
Calluna/Erica sp. (stems)	Heather/heath	-	1	-	-
Calluna/Erica sp. (rootlets/rhizomes)	Heather/heath	-	-	-	1
Potentilla sp.	cinquefoil/tormentil	-	-	-	2
Potentilla argentea	hoary cinquefoil	-	-	-	1
Aphanes arvensis	parsley-piert	-	-	-	1
Vicia./Lathyrus sp.	vetch/pea	9	2	21	1
Ulex/Lotus/Trifolium Type	gorse/trefoil/clover etc.	-	-	cf.1	-
Linum usitatissimum	Flax	-	-	4	-
Torilis sp.	hedge-parsley	-	-	2	-
Plantago lanceolata	ribwort plantain	-	-	-	1
Galium aparine	cleavers	1	-	6	-
Tripleurospermum inodorum	scentless mayweed	-	-	est.200	3
Monocot stems/rhizomes/rootlets	sedge, grasses, rush	-	-	-	5
Carex sp. (triangular)	sedge (triangular)	-	est.12	-	33
Carex sp. (lenticular)	sedge (lenticular)	-	-	-	12
Poaceae (culm node)	grass culm node	-	-	-	5
Poaceae (basal culm node/rootlet)	grass rootlets	-	-	-	16
Poaceae (small seeds indet.)	grass seeds	-	-	est.30	-
Lolium perenne	perennial rye-grass	-	est.50	est.30	-
Lolium perenne L./*Festuca* sp.	perennial rye-/fescue grass	2	-	2	-
Poa type	meadow grass	-	-	-	1
Poa/Phleum sp.	meadow grass/cat's-tails	-	est.20	est.120	3
Avena sp. (grain)	oat grain	11	43	21	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	est.10	-
Avena L./Bromus sp.	oat/brome grass	-	132	96	5
Avena sp. L. (awn)	oat awn	-	+++	+++	-
Bromus sp.	brome grass	2	23	18	-
Seeds indet.		-	-	1	-
Small seed indet.		-	-	est.20	1
Stems/internodes indet.		-	-	-	12
Tubers/rhizome indet.		-	-	-	2

Table 4.33 *Margidunum* Hinterland: charred plant remains from early Romano-British Enclosures A and C (DE3001)

	Enclosure	*Enc A*	*Enc A*	*Enc A*	*Enc C*	*Enc C*
	Feature type	*Ditch*	*Ditch*	*Pt*	*Ditch*	*Ditch*
	Feature	*301815*	*301997*	*302551*	*302344*	*302714*
	Context	*301813*	*301999*	*302181*	*302346*	*302713*
	Sample	*74*	*92*	*111*	*128*	*154*
	Vol. (l)	*10*	*20*	*20*	*10*	*10*
	Flot size (ml)	*175*	*375*	*325*	*230*	*150*
Cereals						
Hordeum vulgare sl (grain)	barley	2	1	22	17	6
Hordeum vulgare sl (rachis fragment)	barley	2	-	est.160	-	-
H. vulgare sl (6-row rachis fragment)	barley	-	-	est.41	-	-
Triticum sp. (grain)	wheat	1	-	3	1	-
T. dicoccum/spelta (grain)	emmer/spelt wheat	10	2	2	18	8
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	-	-	-	cf.2
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	1	-	2	2	-
T. spelta (spikelet fork)	spelt wheat	-	1	-	-	-
T. dicoccum/spelta (glume bases)	emmer/spelt wheat	11	4	est.20	73	25
T. spelta (glume bases)	spelt wheat	2	-	9	70	21
T. dicoccum(spikelet fork)	emmer wheat	-	-	-	1	-
T. dicoccum (glume base)	emmer wheat	-	cf.1	-	3	-
Cereal indet. (grains)	cereal	9	-	-	-	8
Cereal indet. (est. whole grains)	cereal	2	-	-	-	-
Other species						
Pteridium aquifolium (pinnules)	bracken	-	-	est.180	-	-
Ranunculus subg. *Ranunculus* (arb)	buttercup	-	-	est.40	2	-
Ranunculus bulbosus (tuber)	bulbous buttercup	cf.1	-	-	-	-
Urtica urens	small nettle	1	-	-	-	1
Atriplex sp.	orache	-	-	-	1	-
Montia fontana subsp. *chondrosperma*	blinks	1	5	est.10	5	2
Stellaria media	chickweed	-	-	1	-	-
cf. Caryophyllaceae/Primulaceae?	valvate capsule?	-	1	-	-	-
Polygonum aviculare	knotgrass	1	4	3	-	1
Fallopia convolvulus	black-bindweed	-	-	-	6	-
Rumex sp	docks	-	1	est.118	7	2
Rumex acetosella group	sheep's sorrel	3	1	-	1	-
Viola sp.	violet	1	1	-	1	cf.1
Brassica cf. *nigra*	black mustard	-	-	1	-	-
Raphanus raphanistrum (capsules)	runch, charlock	1	-	2+2f.	-	-
Calluna/Erica sp. stems & roots	heather/heath	-	-	+++	-	-
Rosaceae thorns	bramble/rose type thorns	-	-	2	-	-
Potentilla sp.	cinquefoil/tormentil	2	-	-	-	-
Aphanes arvensis	parsley-piert	1	-	-	-	-
Rosa sp.	rose	-	-	cf.1	-	-
Vicia./Lathyrus sp.	vetch/pea	19	2	21	1	5
Lathyrus cf. nissolia	grass vetchling	-	-	-	-	cf.1
Medicago lupulina	black medick	-	-	-	-	1
Trifolium sp.	clover	6	4	est.130	2	-
Cytisus (stems)	broom	-	-	++	-	-
Linum usitatissimum (capsule)	flax	-	-	1f.	-	-

Table 4.33 (cont.) *Margidunum* Hinterland: charred plant remains from early Romano-British Enclosures A and C (DE3001)

	Enclosure	*Enc A*	*Enc A*	*Enc A*	*Enc C*	*Enc C*
	Feature type	*Ditch*	*Ditch*	*Pt*	*Ditch*	*Ditch*
	Feature	*301815*	*301997*	*302551*	*302344*	*302714*
	Context	*301813*	*301999*	*302181*	*302346*	*302713*
	Sample	*74*	*92*	*111*	*128*	*154*
	Vol. (l)	*10*	*20*	*20*	*10*	*10*
	Flot size (ml)	*175*	*375*	*325*	*230*	*150*
Other species (cont.)						
Conopodium majus (tuber)	pignut	-	5	-	-	cf.1
Stachys cf. palustris type	woundwort	1	-	-	-	-
Lamium sp.	dead-nettle	-	-	2	-	-
Prunella vulgaris	self-heal	1	-	-	-	-
Mentha sp.	mint	-	-	cf.1	-	-
Plantago lanceolata	ribwort plantain	-	-	est.54	1	-
Galium aparine	cleavers	-	-	1	-	-
Asteraceae indet. (small)	daisy family indet.	-	-	-	1	-
Centaurea sp.	knapweed	-	1	est.13	-	-
Tripleurospermum inodorum	scentless mayweed	2	-	est.71	-	2
Monocot stems/rhizomes/rootlets	grass/sedge/rush	-	-	++++	-	-
Luzula cf. *sylvatica*	great wood rush	-	-	est.21	-	-
Cyperaceae (rhizome/roots/tubers)	sedge	-	-	+++	-	-
cf. Carex paniculata?	greater tussock-sedge	-	-	-	-	3
Eleocharis sp.	spike-rush	-	-	1	-	-
Carex sp. (triangular)	sedge (triangular)	8	6	est.110	-	2
Carex sp. (lenticular)	sedge (lenticular)	3	1	-	-	1
Poaceae (culm node)	grass culm node	50+	15+	+++	5	6
Poaceae (basal culm node/rootlet)	grass rootlets	100+	50+	++++	35	40
Poaceae (tuber)	grass tubers	-	15+	++	-	-
Poaceae (small seeds indet.)	grass seeds	1	-	est.142	-	-
Lolium perenne	perennial rye-grass	23	2	est.63	-	2
Lolium perenne L./*Festuca* sp.	perennial rye-/fescue grass	3	-	est.82	-	-
Festuca type	fescue grass	1	-	-	-	-
Poa type	meadow grass	6	2	-	-	1
Poa/*Phleum* sp.	meadow grass/cat's-tails	10	3	est.108	-	1
Arrhenatherum elatius var. *bulbosum*	false oat-grass	3	-	12	-	cf.1
Avena sp. (grain)	oat grain	-	5	17	5	7
Avena sp. L. (floret base wild.)	oat floret base indet.	1	-	-	-	-
Avena L./*Bromus* sp.	oat/brome grass	19	-	21	29	19
Avena sp. L. (awn)	oat awn	-	-	-	-	1
Bromus sp.	brome grass	-	1	8	5	2
Danthonia decumbens	heath-grass	-	-	est.20	-	-
Seeds indet.		-	8	5	-	-
Stems/internodes indet.		-	-	+++	-	-
Seeds/tubers indet.		-	-	3	-	-
Tubers/rhizome indet.		30	13	++	17	16

or came from the collection and burning of turf/heath grassland material that included the stems and roots of heather and grasses. Seeds of several of the same species listed above, in association with cereal remains, in crop dryer 301876, included dock, knotgrass (*Polygonum aviculare*), black-bindweed, vetch/wild pea, oats and brome grass and cat's-tails/meadow grass.

However, that seeds of wild species are less common in the two samples from Enclosure C, which also have fewer stems and rootlets, might suggest that many of the seeds result from the collection and burning of heather/heath type material. Furthermore, that seeds of smaller seeded grasses, including heath-grass (*Danthonia decumbens*), are commonest in the samples rich in charred stems and roots, also supports the theory that they may be arriving with the collection of heath vegetation rather than the harvesting of cereals. Potentially, the range of species arriving via such sources could also include seeds of clover (*Trifolium*), blinks (*Montia fontana* subsp. *chondrosperma*) and ribwort plantain (*Plantago lanceolata*), along with those of wood-rush, probably great wood-rush (*Luzula* cf. *sylvatica*), and sedges (*Carex* sp.), all of which are common in the sample from pit 302551.

Early Romano-British features in DE3001 (adjacent to the Fosse Way)

A number of samples that were relatively rich in charred plant remains were analysed from early Romano-British features lying west of the Fosse Way – three from waterhole 218519 and pits 301122 and 301221, and one from ditch 218517 (Fig. 4.13; Table 4.34). While the ditch was slightly less rich in cereal remains, all three pits contained reasonably high numbers of cereal remains, with glumes dominating the sample from pit 301122, while grain dominated those from waterhole 218519 and pit 301221. Hulled barley was also present in all three samples, and in many cases was still within the hulls. In a few cases grains could be seen to be clearly germinated, although elongated coleoptiles were relatively rare. The only other cultivar represented was a single pip of fig (*Ficus carica*) from pit 301221.

As seen in the samples above, charred pinnules of bracken were very common within pit 301221, along with stems and roots of heather. While generally such remains were absent from the other three samples, that from waterhole 218519 did have stems of heather and a probable capsule/flower. However, all four of these early Romano-British samples did have stems, culm nodes and rootlets of grasses, and, as with the earlier samples, potentially seeds of grasses and other species that might relate more to the collection of heath grassland for burning than to having been brought onto the site with the harvested crop. However, the range of wild species is slightly narrower than seen in the other samples from early and mid-Romano-British features and also, despite the high number of charred roots and stems, seeds of arable weed species dominate these samples. These species include the larger-seeded species, such as oats, brome grass, redshank/pale persicaria (*Persicaria maculosa/lapathifolium*), knotgrass, dock, corncockle, vetch/wild pea, cleavers (*Galium aparine*), runch and dock, as well as smaller-seeded ones such as scentless mayweed, poppy (*Papaver* sp.) and fat-hen. However, seeds of species such as clover, ribwort plantain and sedge may still relate to the burning of grassland heath.

Mid-Romano-British features in DE3001 and DE3002 (adjacent to the Fosse Way) and DE3006

A number of samples that were relatively rich in charred plant remains were analysed from mid-Romano-British features lying adjacent, both to the east and west, of the Fosse Way (DE3001 and DE3002), and further to the north-west in DE3006.

Those in DE3001 and DE3002 came from four pits/waterholes (301058, 301123, 301142, 301178; Fig. 4.18; Table 4.35), two wells (303715, 303819), the oven (303779) associated with Structure 16 and the stone cist (303611) perhaps related to Structure 19 (Table 4.36) (Fig. 4.20). These samples were all dominated by the remains of hulled wheat, most probably of spelt; no remains of emmer were identified. Barley, while present, was much less well represented. Cereal remains, in particular glumes of hulled wheat, were very high in three of the samples from well 303715 and particularly from oven 303779. The latter context had many thousands of glumes, but also a number of germinated grains and large number of elongated coleoptiles. These same samples also produced a few remains of rye (*Secale cereale*), including two grains and one rachis fragment. The other samples also produced similar evidence, although not in such quantities, with greater amounts of grain from waterhole 301123. Other remains included occasional fragments of hazelnut shell.

Unlike the earlier Romano-British samples no pinnules of bracken were seen. However, stems of heather, along with monocot stems, tubers and rhizomes, including those of grasses, were recorded in several of the samples in reasonable quantities, including waterhole 301123, pit 301178 and wells 303715 and 303819. While oven 303779 also contained several stems of heather and tubers/rhizomes of possible sedge, such remains were less well represented than in the other samples. It should be noted that while pits 301058 and 301142 had less of this category of remains, the samples were not particularly rich in charred remains.

While seeds of wild species were perhaps on the whole less numerous than in the earlier samples, a similar range of species was present, with those of oat and brome grass being particularly dominant in the sample from oven 303779, while seeds of vetch/wild pea, clover, scentless mayweed and of the Chenopodiaceae were also recorded. Two of the samples from well 303715 and oven 303779 also provide the first evidence for stinking mayweed (*Anthemis cotula*), a common weed of heavy soils that is likely to have been introduced in the Romano-British period (Godwin 1984, 479).

The sample from the stone cist (303611) had very few cereal remains, but did have an amorphous, semi-vitrified charred conglomerate/residue that contained barley grains and potentially a spikelet of hulled wheat.

Table 4.34 *Margidunum* Hinterland: charred plant remains from early Romano-British contexts in DE3001, adjacent to and west of the Fosse Way

	Feature type	*Pit*	*Pit*	*Waterhole*	*Ditch*
	Group			*218519*	*218517*
	Feature/cut	*301122*	*301221*	*301300*	*301247*
	Context	*301280*	*301223*	*301304*	*301248*
	Sample	*29*	*24*	*49*	*26*
	Vol. (l)	*15*	*30*	*8*	*20*
	Flot size (ml)	*2000*	*700*	*220*	*230*
Cereals					
Hordeum vulgare sl (grain)	barley	11	21	16	-
Hordeum vulgare sl (rachis fragment)	barley	-	1	-	-
H. vulgare sl (6-row rachis fragment)	barley	-	1	-	-
Triticum sp. (grain)	wheat	7	51	7	5
Triticum sp. (awn)	wheat	++	-	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	12	294	145	33
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	2	5	-	1
Triticum dicoccum/spelta (spikelet)	emmer/spelt wheat	1	-	-	-
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	6	12	-
Triticum spelta (spikelet fork)	spelt wheat	-	4	5	-
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	est.220	14	34	1
Triticum spelta (glume bases)	spelt wheat	est.270	23	35	2
Triticum cf. *dicoccum* (grain)	emmer wheat	-	cf.1	-	-
T. dicoccum(spikelet fork)	emmer wheat	cf.1	-	-	-
Cereal indet. (grains)	cereal	7	88	102	3
Cereal indet. (est. whole grains from frags)	cereal	-	-	-	3
Cereal (germinated coleoptile)	cereal	-	2	-	-
Cereal indet. (basal rachis fragment)	cereal	-	4	-	-
Species					
Chara sp.	stonewort	-	-	1	-
Pteridium aquifolium(pinnules)	bracken	-	410	-	-
Ranunculus subg. *Ranunculus* (arb)	buttercup	-	3	1	-
Ranunculus parviflorus	small-flowered buttercup	-	1	-	-
Papaver cf. *dubium/rhoeas*	long-headed/common poppy	-	-	1	-
Papaver cf. *dubium/rhoeas* (seedhead)	long-headed/common poppy	-	-	3f.	-
Papaver cf. *dubium* (capsule head)	long-headed/common poppy	-	-	1	-
Ficus carica	fig	-	1	-	-
Chenopodium album	fat-hen	-	4	35	-
Atriplex sp.	orache	-	-	16	1
Montia fontana subsp. *chondrosperma*	blinks	-	-	32	1
Stellaria media	chickweed	-	5	43	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	-	1	18	-
Polygonum aviculare	knotgrass	-	6	13	-
Fallopia convolvulus	black-bindweed	-	1	-	-
Rumex sp	docks	-	10	12	-
Rumex acetosella group	sheep's sorrel	-	-	7	1
Agrostemma githago	corncockle	-	1	-	-
Agrostemma githago (capsule frags)	corncockle	-	3f.	-	-
Viola sp.	violet	-	-	1	-
Thlaspi arvense	field-penny cress	-	-	3	-
Raphanus raphanistrum (capsules)	runch, charlock	1	1	24+18f.	-
Calluna/Erica sp. (stems)	heather/heath	-	115	21	-

Table 4.34 (cont.) *Margidunum* Hinterland: charred plant remains from early Romano-British contexts in DE3001, adjacent to and west of the Fosse Way

	Feature type	*Pit*	*Pit*	*Waterhole*	*Ditch*
	Group			*218519*	*218517*
	Feature/cut	*301122*	*301221*	*301300*	*301247*
	Context	*301280*	*301223*	*301304*	*301248*
	Sample	*29*	*24*	*49*	*26*
	Vol. (l)	*15*	*30*	*8*	*20*
	Flot size (ml)	*2000*	*700*	*220*	*230*
Species (cont.)					
Calluna/Erica sp. (rootlets/rhizomes)	heather/heath	-	100	-	-
Ericaceae type capsule/flower	heather	-	-	1	-
Rosaceae thorns	bramble/rose type thorns	-	-	1	-
Aphanes arvensis	parsley-piert	-	-	1	-
Vicia./Lathyrus sp.	vetch/pea	3	80	90	6
Vicia cf. *tetrasperma* (pod)	smooth tare	-	-	1	-
Medicago/Melilotus	medick/meliot	-	4	-	-
Medicago lupulina	black medick	-	1	-	-
Trifolium sp.	clover	est.40	8	13	-
Scandix pecten-veneris	Shepherd's needle	-	-	cf.1f.	-
Conopodium majus (tuber)	pignut	-	-	-	1+cf.1
Anethum graveolens	dill	-	cf.1	-	-
Lithospermum arvense	corn gromwell	-	1	-	-
Galeopsis sp.	hemp-nettle	-	1	-	-
Plantago lanceolata	ribwort plantain	-	6	3	-
Odontites vernus	red bartsia	-	-	6	-
Galium aparine	cleavers	est.26	57	3	2
Centaurea sp.	knapweed	-	-	1	-
Tripleurospermum inodorum	scentless mayweed	est.40	7	60	-
T. inodorum (seedhead fragments)	scentless mayweed	-	-	3	-
Monocot stems/rhizomes/tubers	grasses, sedges, rushes	-	40	-	-
Eleocharis sp.	spike-rush	-	1	2	-
Carex sp. (triangular)	sedge (triangular)	est.20	12	6	2
Carex sp. (lenticular)	sedge (lenticular)	-	-	2	-
Poaceae (small indet.)	small grass seed	-	-	8	-
Poaceae (culm node)	grass culm node	est.276	54	32	-
Poaceae (basal culm node/rootlet)	grass rootlets	est.271	-	96	26
Poaceae (tuber)	grass tubers	est.50	-	-	7
Poaceae (small seeds indet.)	grass seeds	-	3	-	-
Poa/Phleum sp.	meadow grass/cat's-tails	-	1	27	-
Arrhenatherum elatius var. *bulbosum*	false oat-grass	-	5	-	-
Avena sp. (grain)	oat grain	est.191	25	5	-
Avena sp. L. (floret base wild.)	oat floret base indet.	-	1	-	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	1	-	-
Avena L./*Bromus* sp.	oat/brome grass	3	228	87	5
Bromus sp.	brome grass	est.21	2	3	-
Danthonia decumbens	heath-grass	-	-	4	-
Seeds indet.		-	5	4	-
Small seed indet.		-	9	3	-
Stems/internodes indet.		-	240	105	-
Tubers/rhizome indet.		2	-	6	9

Table 4.35 *Margidunum* Hinterland: charred plant remains from mid-Romano-British contexts in DE3001, adjacent to and west of the Fosse Way, and DE3006

	Area	*DE3001*	*DE3001*	*DE3001*	*DE3001*	*DE3006*
	Feature type	*pit*	*pit*	*pit*	*pit*	*Pit*
	Feature	*301058*	*301123*	*301142*	*301178*	*306111*
	Context	*301063*	*301127*	*301145*	*301179*	*306143*
	Sample	*5*	*1*	*7*	*14*	*1009*
	Vol. (l)	*8*	*20*	*8*	*10*	*20*
	Flot size (ml)	*100*	*450*	*150*	*310*	
Cereals						
Hordeum vulgare sl (grain)	barley	-	9	5	2	1
Triticum sp. (grain)	wheat	-	7	6	-	-
T. dicoccum/spelta (grain)	emmer/spelt wheat	-	70	5	5	4
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	5	-	-	-
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	2	-	1	-
T. spelta (spikelet fork)	spelt wheat	-	1	-	-	-
T. dicoccum/spelta (glume bases)	emmer/spelt wheat	2	est.30	3	4	10
T. spelta (glume bases)	spelt wheat	-	2	-	1	-
T. dicoccum (glume base)	emmer wheat	-	-	-		-
Cereal indet. (grains)	cereal	10	10	2	9	5
Cereal indet. (est. whole grains from frags)	cereal	7	5	2	4	-
Cereal indet. (culm node)	cereal	-	4	3	-	-
Other species						
Corylus avellana (shell fragments)	hazelnut	-	1f.	-	-	1f.
Chenopodium album	fat-hen	-	est.10	-	-	-
Atriplex sp.	orache	-	-	-	2	1
Montia fontana subsp. *chondrosperma*	blinks	-	est.11	1	-	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	-	est.11	-	-	cf.1frg
Polygonum/Persicaria	knotgrass/persicaria	-	1	-	-	-
Polygonum aviculare	knotgrass	-	est.25	1+3m	-	-
Fallopia convolvulus	black-bindweed	-	2	-	1	-
Rumex sp	docks	1	est.11	-	-	-
Thlaspi arvense	field-penny cress	1	-	-	-	-
Raphanus raphanistrum (capsules)	runch, charlock	-	2f.	1	-	-
Calluna/Erica sp. (stems)	heather/heath	3	est.63	-	29	-
Calluna/Erica sp. (rootlets/rhizomes)	heather/heath	4	7	-	72	15
Aphanes arvensis	parsley-piert	-	-	-	-	1
Vicia./Lathyrus sp.	vetch/pea	17	6	-	1	3
Trifolium sp.	clover	-	2	-	1	-
Lithospermum arvense	corn gromwell	-	3	-	-	-
Prunella vulgaris	self-heal	-	1	-	-	-
Odontites vernus	red bartsia	1	-	-	-	-
Galium aparine	cleavers	1	7	-	1	-
Sambucus nigra	elder	-	-	-	1	-
Valerianella dentata	narrow-fruited cornsalad	1	-	-	-	-
Centaurea sp.	knapweed	-	-	-	1	-
Tripleurospermum inodorum	scentless mayweed	7	est.10	-	-	-
Monocot type stems/rhizomes/rootlets	grasses, sedges, rush	5	36	13	59	10
Cyperaceae (rhizome/roots/tubers)	sedge	-	-	cf.3	-	-

Table 4.35 (cont.) *Margidunum* Hinterland: charred plant remains from mid-Romano-British contexts in DE3001, adjacent to and west of the Fosse Way, and DE3006

	Area	*DE3001*	*DE3001*	*DE3001*	*DE3001*	*DE3006*
	Feature type	*pit*	*pit*	*pit*	*pit*	*Pit*
	Feature	*301058*	*301123*	*301142*	*301178*	*306111*
	Context	*301063*	*301127*	*301145*	*301179*	*306143*
	Sample	*5*	*1*	*7*	*14*	*1009*
	Vol. (l)	*8*	*20*	*8*	*10*	*20*
	Flot size (ml)	*100*	*450*	*150*	*310*	
Other species (cont.)						
cf. Carex paniculata?	greater tussock-sedge	-	-	-	1	-
Eleocharis sp.	spike-rush	1	-	-	-	-
Carex sp. (triangular)	sedge (triangular)	-	-	-	4	-
Poaceae (culm node)	grass culm node	-	2	3	-	-
Poaceae (basal culm node/rootlet)	grass rootlets	-	-	-	-	18
Poaceae (small seeds indet.)	grass seeds	2	est.20	-	-	1
Lolium perenne	perennial rye-grass	4	16	-	2	-
Lolium perenne/Festuca sp.	perennial rye-/fescue grass	-	1	-	-	-
Lolium cf. *temulentum*	darnel	-	-	-	3	-
Arrhenatherum elatius var. *bulbosum*	false oat-grass	-	-	-	3	-
Poa/Phleum sp.	meadow grass/cat's-tails	-	-	-	-	1
Avena sp. (grain)	oat grain	1	40	-	-	1
Avena L./*Bromus* sp.	oat/brome grass	1	-	10	2	1
Bromus sp.	brome grass	-	1	-	1	-
Seeds indet.		-	-	-	4	2
Stems/internodes indet.		4	est.197	7	52	2
Tubers/rhizome indet.		-	8	2	9	2

The conglomerate was smooth on one side and gave a strong impression of having been charred within a vessel given its clearly rounded morphology. The sample itself also contained a large number of vitrified wood fragments that given their appearance are likely to have been rich in sap or resin. It might be noted that charred birch tar has been found on Romano-British sites relating to the mending of pots, eg, Springhead (Seager Smith *et al.* 2011, 124–5). However, following a suite of geochemical analyses at Quaternary Scientific, University of Reading, the amorphous material from the cist was considered unlikely to be of plant origin. Although largely organic, the resin-like material was shown to have a similar chemical signature to human or animal fat (Finch *et al.* 2013). While this may indicate some association with the cremation rite the processes involved in the formation of this substance are difficult to unravel.

The sample from Romano-British pit 306111 (in DE3006; Fig. 4.30) included a few grains of barley and several of hulled wheat along with some glume bases (Table 4.35). The range of weed seeds was quite wide, even if the absolute numbers were relatively low. However, those of oat and brome grass were reasonably well represented. There were a few stems and rootlets of grasses, general monocots and Ericaceae.

As might be expected, given the density of cereal remains, the sample from oven 303779 was the exception, with many more seeds of wild species. These were, as with earlier cereal-dominated assemblages, mainly of larger-seeded species, such as oats and brome grass, although smaller seeds of fat-hen, orache (*Atriplex* sp.), scentless mayweed and meadow grass/cat's-tails were also all present.

Late Romano-British remains in DE3001

Two late Romano-British samples came from this area, one from a late Romano-British ditch (218508), associated with a series of enclosure ditches in the eastern part of DE3001, just to the west of the Fosse Way (Fig. 4.45), and the other from boundary ditch 218534 to the south of this area (Fig. 4.11) (Table 4.37).

The sample from ditch 218508 had only a low density of remains, mainly hulled wheat glumes, with some grain. Weed seeds were quite sparse, with a few of larger seeded species and a few again of stinking mayweed.

The other came from the upper fill (301516) of ditch 218534 (cut 301515). While the ditch is of probably Early to Middle Iron Age origin, the uppermost fills from which this sample came contained late Romano-British pottery and it is therefore likely that the charred

Table 4.36 *Margidunum* Hinterland: charred plant remains from mid-Romano-British contexts in DE3002 east of the Fosse Way

	Feature type	*Cist*	*Well*	*Well*	*Dryer*	*Well*
	Feature	*303611*	*303715*	*303715*	*303779*	*303819*
	Context	*303609*	*218332*	*303736*	*303781*	*303823*
	Sample	*505*	*188*	*507*	*508*	*521*
	Vol. (l)	*20*	*14*	*10*	*10*	*15*
	Flot size (ml)	*250*	*500*	*175*	*200*	*200*
Cereals						
Hordeum vulgare sl (grain)	barley	1	10	-	2	2
H. vulgare sl (germinated grain)	barley	-	-	-	2	-
Secale cereale (grains)	rye	-	1	-	cf.1	-
Secale cereale (rachis fragment)	rye	-	-	1	-	-
Triticum sp. (grain)	wheat	-	2	-	-	4
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	2	15	25	344	4
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	6	8	83	-
Triticum dicoccum/spelta (spikelet)	emmer/spelt wheat	-	-	12	-	-
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	est.2	-	est.20	-
Triticum spelta (spikelet fork)	spelt wheat	-	est.8	1	4	-
T. (glume bases)	emmer/spelt wheat	-	est.71	150	est.9700	2
Triticum spelta (glume bases)	spelt wheat	-	est.88	105	est.5690	5
T. turgidum/aestivum L. *sl* (grain)	bread wheat	-	-	-	3	-
Cereal indet. (grains)	cereal	1	14	14	70	4
Cereal indet. (est. whole grains)	cereal	-	8	5	40	4
Cereal (germinated coleoptile)	cereal	-	est.10	11	est.770	-
Cereal indet. (basal rachis fragment)	cereal	-	2	-	-	-
Cereal indet. (culm node)	cereal	-	1	-	2	-
Cereal indet. (culm internode)	cereal	-	-	-	1	-
Cereal indet. (basal culm node)	cereal	-	1	-	-	-
Other species						
Corylus avellana (shell fragments)	hazelnut	-	-	1f.	3f.	-
Chenopodiaceae	goosefoots	-	-	1	est.20	-
Chenopodium album	fat-hen	-	est.3	1	2	1
Atriplex sp.	orache	-	-	1	est.50	-
Montia fontana ssp. *chondrosperma*	blinks	-	-	-	1	1
cf. Caryophyllaceae/Primulaceae?	valvate capsule?	-	-	-	est.40	1
Polygonum aviculare	knotgrass	-	-	1	2min	-
Fallopia convolvulus	black-bindweed	-	-	-	1	-
Rumex sp	docks	-	est.4	5	-	-
Rumex acetosella group	sheep's sorrel	-	-	-	-	1
Agrostemma githago	corncockle	-	est.2	-	-	-
Brassica cf. *nigra*	black mustard	1	-	-	-	-
Calluna/Erica sp. (stems)	heather/heath	2	-	+	1	19
Calluna/Erica sp. (rootlets/rhizomes)	heather/heath	-	+++	+++	est.23	28
Ericaceae type capsule/flower	heather	-	-	cf.1	1	-
Potentilla sp.	cinquefoil/tormentil	-	-	-	-	3
Vicia./Lathyrus sp.	vetch/pea	-	est.12	5	-	4
Trifolium sp.	clover	-	est.8	1	est.10	-
Hyoscyamus niger	henbane	-	-	1	-	-
Lithospermum arvense	corn gromwell	-	-	-	1	-
Mentha sp.	mint	-	-	-	1	-

Table 4.36 (cont.) *Margidunum* Hinterland: charred plant remains from mid-Romano-British contexts in DE3002 east of the Fosse Way

	Feature type	*Cist*	*Well*	*Well*	*Dryer*	*Well*
	Feature	*303611*	*303715*	*303715*	*303779*	*303819*
	Context	*303609*	*218332*	*303736*	*303781*	*303823*
	Sample	*505*	*188*	*507*	*508*	*521*
	Vol. (l)	*20*	*14*	*10*	*10*	*15*
	Flot size (ml)	*250*	*500*	*175*	*200*	*200*
Other species (cont.)						
Veronica hederifolia	ivy-leaved speedwell	-	est.2	-	-	-
Galium aparine	cleavers	-	2	-	2	-
Tripleurospermum inodorum	scentless mayweed	-	est.8	1	est.21	1
Hypochaeris glabra/Leontodon sp.	cat's-ears/hawkbit	-	-	-	cf.1	-
Anthemis cotula	stinking mayweed	-	-	4	1	-
Monocot stems/rhizomes/roots	grasses, sedges, rushes	1	++	+	-	10
Cyperaceae (rhizome/roots/tubers)	sedge	-	-	-	est.20	-
cf. Carex paniculata?	greater tussock-sedge	-	-	1	7	-
Carex sp. (triangular)	sedge (triangular)	-	est.2	-	-	2
Poaceae (small indet.)	small grass seed	-	-	1	-	-
Poaceae (culm node)	grass culm node	1	-	-	-	2
Poaceae (basal culm node/rootlet)	grass rootlets	-	+	-	-	6
Lolium perenne	perennial rye-grass	-	est.2	2	-	1
Lolium cf. *temulentum*	darnel	-	-	1	-	-
Poa/Phleum sp.	meadow grass/cat's-tails	-	-	-	est.20	-
Avena sp. (grain)	oat grain	3	est.9	4	11	-
Avena sp. (germinated grain)	oat grain	-	-	-	1	-
Avena L./*Bromus* sp.	oat/brome grass	-	est.3	16	est.162	-
Bromus sp.	brome grass	-	est.7	10	12	-
Danthonia decumbens	heath-grass	-	-	1	-	-
Seeds indet.		-	-	1	-	-
Stems/internodes indet.		-	+	+	2	380
Tubers/rhizome indet.		-	1	-	3	15

material is also of this date. The samples had a reasonable number of glume bases, which where identifiable were predominately of spelt, although a few of possible emmer wheat were also recovered. Weed seeds were extremely sparse with only a few of fat-hen, vetch/wild pea, brome-grass/oats, meadow grass/cat's-tails, sedges and a capsule of runch recorded.

Late Romano-British farmstead (DE3004) (Fig. 4.38)

A total of eight samples were examined, including a particularly rich sample from pit 304120, lying in the north-east of the area (Table 4.38).

The main remains, as with the earlier Romano-British samples, were of hulled wheats, predominantly glumes, probably almost entirely of spelt wheat, but with grains well represented in some samples. One exception was that from oven 304390, which had large numbers of barley grains, mainly of the hulled type where identifiable. The sample also contained a reasonable quantity of rachis fragments, which where identifiable could be seen to be of the six-row variety, while less dominant hulled wheats were still well represented in this sample.

A few of the grains, in particular from pit 304120, could be seen to be clearly germinated, and indeed this latter sample also produced quite high numbers of germinated embryos or elongated acrospires.

The sample from crop dryer 304368, while not being particularly rich in wheat fragments, was more unusual in comparison to other assemblages from Romano-British crop dryers, in that it contained quite high numbers of charred celtic beans (*Vicia faba* var. *minor*). While van der Veen (1989) records spelt, barley and occasionally free-threshing wheat from Romano-British crop dryers, there are no records for celtic bean before now.

A similar range of wild species were recorded to those in the earlier samples, with large weed seeds well represented; knotgrass, redshank/pale persicaria, black-bindweed, cleavers (*Galium* sp.), ribwort plantain (*Plantago lanceolata*), knapweed (*Centaurea* sp.), brome grass and oats and vetch/wild pea. It might be noted that

Table 4.37 *Margidunum* Hinterland: charred plant remains from late Romano-British contexts in DE3001

	Feature type	*Ditch*	*Ditch*
	Group	*218508*	*218534*
	Feature	*301094*	*301515*
	Context	*301095*	*301516*
	Sample	*6*	*70*
	Vol. (l)	*10*	*20*
	Flot size (ml)	*60*	*250*
Cereals			
H. vulgare sl (germinated grain)	barley	1	-
Triticum sp. (grain)	wheat	2	-
T. dicoccum/spelta (grain)	emmer/spelt wheat	18	5
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	4	2
T. dicoccum/spelta (glume bases)	emmer/spelt wheat	44	26
T. spelta (glume bases)	spelt wheat	11	17
T. dicoccum (glume base)	emmer wheat	-	cf.3
Cereal indet. (grains)	cereal	9	2
Cereal indet. (est. whole grains frags)	cereal	11	1
Other species			
Chenopodium album	fat-hen	-	1
Raphanus raphanistrum (capsules)	runch, charlock	-	1
Vicia./Lathyrus sp.	vetch/pea	5	1
Odontites vernus	red bartsia	-	1
Galium aparine	cleavers	1	-
Anthemis cotula	stinking mayweed	2	-
Monocot stems/rhizomes/rootlets	grasses, sedges, rushes	2	-
Carex sp. (triangular)	sedge (triangular)	-	1
Poaceae (culm node)	grass culm node	1	-
Poa/Phleum sp.	meadow grass/cat's-tails	2	3
Avena sp.. (grain)	oat grain	4	-
Avena L./*Bromus* sp.	oat/brome grass	-	1
Whole tubers/rhizomes		2+3f.	-

smaller seeds of smooth tare (*Vicia tetrasperma*) were also frequent in several of the samples.

Seeds of dock (*Rumex* sp.) and capsules of runch were also identified, along with seeds of sedges, and grasses, in particular perennial rye-grass, meadow grass/cat's-tails and heath-grass (*Danthonia* sp.). Smaller weed seeds included those of orache, fat-hen, blinks, stitchwort, clover, mint (*Mentha* sp.), self-heal (*Prunella vulgaris*) and scentless mayweed.

Perhaps slightly more notable was that seeds of stinking mayweed were more common in several of these late Romano-British samples compared to the earlier period, mainly in ditch 304521 and oven 304390, but also in a few of the other samples.

Pinnules of bracken were absent from all these samples, while remains of heather, gorse/broom and grass stems/rootlets were sparse in all but the samples from adjacent ditches near Structure 22 (304527, cut 304024) and particularly from the earlier ditch (304521, cut 304054). The latter sample was also very rich in glume bases, as were the samples from pit 304120 and oven 304390. Oven 304390 lay close to beamslot 304512 (Structure 24) and oven 304277, which also had reasonable amounts of charred glume waste, as did the sample from the crop dryer 304368.

The range of weed species is similar to the earlier Romano-British samples and, as with the samples discussed above, despite the presence of stems, seeds of wild species were not particularly abundant in these samples.

Table 4.38 *Margidunum* Hinterland: charred plant remains from late Romano-British contexts in DE3004

	Feature type	*Oven*	*Dryer*	*Ditch*	*Ditch*	*Pit*	*Pit*	*Oven*	*Beamslot*
	Group			*304527*	*304521*				*304512*
	Feature/cut	*304390*	*304368*	*304024*	*304054*	*304120*	*304466*	*304277*	*304451*
	Context	*304391*	*304350*	*304023*	*304052*	*304123*	*304467*	*304280*	*304452*
	Sample	*1516*	*1515*	*1500*	*1503*	*1511*	*1520*	*1510*	*1519*
	Vol. (l)	*20*	*40*	*10*	*20*	*20*	*20*	*20*	*10*
	Flot size (ml)	*250*	*450*	*150*	*200*	*100*	*800*	*220*	*60*
Cereals									
Hordeum vulgare sl (grain)	barley	2220	27	6	8	65	2	4	6
Hordeum vulgare sl (rachis fragment)	barley	est.170	-	-	-	-	-	-	1
H. vulgare sl (6-row rachis fragment)	barley	est.35	-	-	est.10	-	-	-	3
Triticum sp. (grain)	wheat	54	-	-	-	-	-	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	8	26	13	223	445	80	25	17
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	-	1	-	26	1	-	4
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	7	3	1	-	est.360	-	-	-
Triticum spelta (spikelet fork)	spelt wheat	-	-	1	-	1	est.30	55	153
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	est.776	est.140	31	est.352	est.3610	-	13	48
Triticum spelta (glume bases)	spelt wheat	170	est.25	4	est.10	est.860	-	-	-
T. cf. *dicoccum* (grain)	emmer wheat						4	-	-
Triticum turgidum/aestivum L. *sl* (grain)	bread wheat	2	-	-	-	-	-	-	-
Cereal indet. (grains)	cereal	est.500	15	14	40	est.393	33	25	23
Cereal indet. (est. whole grains from frags)	cereal	est.999	20	11	est.50	est.1000	70	15	12
Cereal (germinated coleoptile)	cereal	1	-	-	-	est.420	-	-	3
Cereal indet. (culm node)	cereal	3	5	-	1	1	-	-	-
Other species									
Ranunculus subg. *Ranunculus* (arb)	buttercup	3	-	-	-	-	-	-	-
Corylus avellana (shell fragments)	hazelnut	-	4f.	-	-	-	-	-	-
Chenopodium album	fat-hen	est.20	est.10	-	est.10	-	-	-	3
Atriplex sp.	orache	est.18	-	1	-	est.10	est.10	-	-
Montia fontana subsp. *chondrosperma*	blinks	-	est.20	-	-	-	-	-	-
Stellaria media	chickweed	-	est.10	-	-	-	-	2	-
Polygonum/Persicaria	knotgrass/persicaria	-	1	-	-	-	-	-	-
Polygonum aviculare	knotgrass	28	-	-	est.30	-	-	-	-
Fallopia convolvulus	black-bindweed	5	3	-	-	-	-	-	-
Rumex sp.	docks	20	est.61	6	est.51	est.40	est.22	1	2

Table 4.38 (cont.) *Margidunum* Hinterland: charred plant remains from late Romano-British contexts in DE3004

	Feature type	*Oven*	*Dryer*	*Ditch*	*Ditch*	*Pit*	*Pit*	*Oven*	*Beamslot*
	Group			*304527*	*304521*				*304512*
	Feature/cut	*304390*	*304368*	*304024*	*304054*	*304120*	*304466*	*304277*	*304451*
	Context	*304391*	*304350*	*304023*	*304052*	*304123*	*304467*	*304280*	*304452*
	Sample	*1516*	*1515*	*1500*	*1503*	*1511*	*1520*	*1510*	*1519*
	Vol. (l)	*20*	*40*	*10*	*20*	*20*	*20*	*20*	*10*
	Flot size (ml)	*250*	*450*	*150*	*200*	*100*	*800*	*220*	*60*
Other species (cont.)									
Rumex acetosella group	sheep's sorrel	-	1	1	-	-	-	1	-
Brassica cf. *nigra*	black mustard	1	-	-	-	-	-	-	-
Barbarea vulgaris	winter-cress	-	-	-	-	-	-	cf.3	-
Raphanus raphanistrum (capsules)	runch, charlock	3+21f.	1+1f.	-	-	1+1f.	-	-	3f.
Calluna/Erica sp. (stems)	heather/heath	-	-	10	-	-	-	-	1
Calluna/Erica sp. (rootlets/rhizomes)	heather/heath	2	-	-	+++	-	-	3	-
Vicia faba var. *minor*	broad bean	-	481	-	cf.3	-	-	-	-
Vicia faba var. *minor* (weevil predated)	broad bean	-	1	-	-	-	-	-	-
Vicia faba var. *minor* (est. from frags)	broad bean	-	est.600	-	-	-	-	-	-
Vicia./Lathyrus sp.	vetch/pea	37	16	11	7	est.95	211	21	1
Vicia cf. *tetrasperma* (seeds)	smooth tare	-	est.124	-	est.80	est.333	est.370	-	-
Prunella vulgaris	self-heal	-	-	-	-	-	est.10	-	-
Mentha sp.	mint	-	-	-	-	-	est.10	-	-
Medicago lupulina	black medick	-	-	1	-	-	-	-	-
Trifolium sp.	clover	est.20	-	2	est.10	-	-	-	-
Solanum sp.	nightshade	-	1	-	-	-	-	-	-
Galeopsis sp.	hemp-nettle	1	-	-	-	-	-	-	-
Plantago lanceolata	ribwort plantain	1	-	1	est.10	-	-	-	-
Odontites vernus	red bartsia	-	-	-	-	-	est.10	4	2
Galium aparine	cleavers	-	est.73	-	-	-	-	-	-
Valerianella dentata	narrow-fruited cornsalad	-	est.10	-	-	-	-	-	-
Centaurea sp.	knapweed	3	-	-	-	-	-	-	1
Tripleurospermum inodorum	scentless mayweed	-	est.10	-	est.20	est.70	est.10	9	5
Carduus/Cirsium sp.	thistle	2	-	-	-	-	-	-	-
Asteraceae small indet.	daisy family indet.	-	-	-	-	-	-	4	-
Anthemis cotula	stinking mayweed	est.33	-	1	est.90	-	-	3	5
Monocot type stems/rhizomes/rootlets	grasses, sedges, rushes	-	-	2	++	-	-	-	1

	Feature type	*Oven*	*Dryer*	*Ditch*	*Ditch*	*Pit*	*Pit*	*Oven*	*Beamslot*
	Group			*304527*	*304521*				*304512*
	Feature/cut	*304390*	*304368*	*304024*	*304054*	*304120*	*304466*	*304277*	*304451*
	Context	*304391*	*304350*	*304023*	*304052*	*304123*	*304467*	*304280*	*304452*
	Sample	*1516*	*1515*	*1500*	*1503*	*1511*	*1520*	*1510*	*1519*
	Vol. (l)	*20*	*40*	*10*	*20*	*20*	*20*	*20*	*10*
	Flot size (ml)	*250*	*450*	*150*	*200*	*100*	*800*	*220*	*60*
Other species (cont.)									
Luzula cf. *sylvatica*	greater wood-rush	-	-	-	-	-	-	-	1
cf. *Carex paniculata*?	greater tussock-sedge	-	-	-	-	1	-	-	-
Schoenoplectus lacustris	common club-rush	2	-	-	-	-	-	-	-
Eleocharis sp.	spike-rush	-	-	-	-	-	-	1	-
Carex sp. (triangular)	sedge (triangular)	3	-	1	est.30	-	-	1	1
Carex sp. (lenticular)	sedge (lenticular)	2	-	-	++	-	-	1	-
Poaceae (culm node)	grass culm node	-	-	-	-	-	++	1	-
Poaceae (basal culm node/rootlet)	grass rootlets	2	-	4	++	-	-	10	-
Poaceae (tuber)	grass tubers	-	3	-	2	-	-	-	-
Poaceae (small seeds indet.)	grass seeds	-	-	1	-	-	est.10	-	-
Lolium perenne	perennial rye-grass	est.20	est.70	2	-	est.30	-	-	-
Lolium perenne L./*Festuca* sp.	perennial rye-/fescue grass	1	-	-	-	-	est.200	-	2
Poa/Phleum sp.	meadow grass/cat's-tails	-	est.20	-	-	-	est.10	7	3
Arrhenatherum elatius var. *bulbosum* (tuber)	false oat-grass	-	-	-	1	-	-	-	-
Avena sp. (grain)	oat grain	10	6	4	9	2	21	2	12
Avena L./*Bromus* sp.	oat/brome grass	178	est.14	-	est.50	est.154	est.388	8	16
Avena sp. L. (awn)	oat awn	+++	-	-	-	-	-	1	++
Bromus sp.	brome grass	3	-	1	2	1	est.30	1	-
Danthonia decumbens	heath-grass	-	-	-	est.30	-	-	-	-
Small seed indet.		-	-	-	est.20	-	-	2	-
Stems/internodes indet.		3	-	3	++++	-	est.10	1	-
Tubers/Rhizome indet.		-	-	1	+	-	-	-	-

Late Romano-British town defences (TT1340)

A single sample was assessed from the buried soil (134007) underneath the bank of the late Romano-British defences enclosing the town (Fig. 4.54). The date of the sample is unknown, although it is likely to date to the 2nd–3rd/4th centuries AD. The sample had only small quantities of material within it, including two grains of hulled wheat, five unidentified glume bases and two fragments of hazelnut shell. Weed seeds were also relatively sparse comprising two seeds of vetch/wild pea along with single seeds of goosefoot (*Chenopodium* sp.), brome grass/oats, scentless mayweed and heath-grass. The sample also had several charred roots and stems of monocots and heather types as seen in the other samples.

Anglo-Saxon (DE3004)

Two samples were examined from an Anglo-Saxon sunken-featured building (Structure 27, 304064) in DE3004 (Figs 4.55, 4.56; Table 4.39). The samples contained mainly grains of barley, with a few grains of unidentifiable wheat, and a single grain of free-threshing wheat (*Triticum aestivum/turgidum* type). Two probable grains of hulled wheat were recovered from context 304063, although no glumes were present. The samples contained very few weed seeds, although a fragment of sloe (*Prunus spinosa*) and hazelnut shell were recovered, along with two possible seeds of flax (*Linum usitatissimum*). More in keeping with the later Romano-British samples from this area, stems of heather and grasses etc. were very poorly represented in both these samples

Discussion

The density of charred crop material can be seen as a direct reflection of where domestic activities were taking place, involving the routine processing of crops and preparation of food. They also potentially indicate larger scale activities centred on the drying of crops prior to storage, the preparation of malt, and potentially the processing of crops for the town or military use via taxes, and especially within the 3rd and 4th centuries for the general market exchange of such crops.

Table 4.39 *Margidunum* Hinterland: charred plant remains from Anglo-Saxon contexts in DE3004

	Feature type	*SFB 304064*	
	Feature	*304095*	*304096*
	Context	*304062*	*304063*
	Sample	*1501*	*1502*
	Vol. (l)	*40*	*40*
	Flot size (ml)	*400*	*500*
Cereals			
Hordeum vulgare sl (grain)	barley	49	32
Triticum sp. (grain)	wheat	4	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	2
Triticum turgidum/aestivum L. *sl* (grain)	bread wheat	-	1
Cereal indet. (grains)	cereal	25	8
Cereal indet. (est. whole grains from frags)	cereal	8	8
Other species			
Corylus avellana (shell fragments)	hazelnut	-	1f.
Atriplex sp.	orache	1	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	1	-
Fallopia convolvulus	black-bindweed	1	1
Prunus spinosa (stone)	sloe	1	-
Vicia/Lathyrus sp.	vetch/pea	1	2
Linum usitatissimum	flax	-	cf.2
Plantago lanceolata	ribwort plantain	1	-
Galium aparine	cleavers	-	1
Carex sp. (triangular)	sedge (triangular)	1	-
Poaceae (basal culm node/rootlet)	grass rootlets	-	1
Avena sp. (grain)	oat grain	1	-
Avena L./*Bromus* sp.	oat/brome grass	2	-
Stems/internodes indet.		1	3

The distribution of the charred waste shows that such activities were centred on the early Romano-British settlement around Enclosures A and C, adjacent to the Fosse Way in the early and mid-Romano-British periods, and in the late Romano-British period around the stone buildings in the north of the site. The recovery of small amounts of similar material from the buried soil under the defences would indicate that settlement probably spread out to the edge of original late 2nd century AD town defences in the mid- to late Romano-British period or at least that settlement material was dumped in this area.

Crops and cultivated plants

Spelt wheat was commonly found in the Romano-British samples and it was the dominant wheat over much of England from the 1st to the 4th century AD (Greig 1991). Barley is also well represented in a number of samples, in particular from the early Romano-British features, including crop dryer 301876 in DE3001, but also late Romano-British pit 304390 in DE3004. Other cereal remains are sparse, emmer is almost absent and only represented within crop dryer 301876, although even here it is probably a crop contaminant. This same feature was the only one to produce both rachis and grains of free-threshing wheat, but again it is questionable whether it was grown as a crop in its own right or was just a contaminant. Rye (*Secale cereale*) is represented by only a couple of possible grains in crop dryer 301876, and a few identifications in DE3002. While the cultivation of free-threshing wheat often appears questionable for more rural farming sites during this period (cf. van der Veen and O'Connor 1998), rye has been found in greater quantities from Romano-British contexts at Dunston's Clump, near Babworth, Nottinghamshire (Jones 1987), at Ashby, Leicestershire (Monckton 2006) and Droitwich in Worcestershire (Greig 1997), although the sparse remains from the latter site might suggest it was not grown as a crop during this period.

While remains of 'celtic bean' (*Vicia faba* var. *minor*) were recovered in large numbers from the late Romano-British crop dryer 304368, only a few other tentative specimens were identified, from ditch 304521. However, it is probable that 'celtic bean' was an important crop during the Romano-British occupation of the site and, given that such remains, in comparison to cereals, more rarely came into contact with fire, then such remains are likely to be under-represented in the charred record.

Flax was also represented in a few early Romano-British contexts, by a few charred seeds in crop dryer 301876, as well as a capsule fragment in pit 302551. It should be noted that waterlogged remains of capsule fragments of flax were also recovered from early Romano-British pit 301221. It is likely this was an important crop on the site during the Romano-British period, but is probably under-represented in the archaeobotanical record since it did not necessarily come into close contact with fire.

Occasional fragments of hazelnut shell were recovered from the samples and as with many Romano-British sites it is probable that such foodstuffs were gathered regularly from wild or managed trees. Sloes are also likely to have been collected from the wild, and a single waterlogged stone of plum, from a mid-Romano-British well 303715, may have been from a hedge or scrub rather than coming from a cultivated plant.

The single seed of fig from the early Romano-British pit 301221 (Fig. 4.13) is likely to come from imported figs. There is little in the way of other finds to suggest that the inhabitants of the site had access to such imported foodstuffs on a regular basis, but the early Roman town might certainly have provided such opportunities.

One other possible cultivar was a single charred seed of possible dill (*Anethum graveolens*), also within early Romano-British pit 301221. Seeds of dill have been noted previously from Romano-British contexts, mainly from waterlogged deposits at Silchester (Reid 1906), London (Willcox 1978; 1980), Caerwent (Reid and Lyell 1911), Cheshire (Tomlinson 1987) and York (Hall and Kenward 1990).

Crop processing

Many of the samples were glume rather than grain rich, which is consistent with the samples deriving from the charring of waste generated during the dehusking of hulled grain taken from storage. This was especially the case for the samples associated with the early to mid-Romano-British enclosures in DE3001 and DE3002, and all but one sample from the late Romano-British features in DE3004.

Exceptions include slightly more grain-rich deposits from several early to mid- Romano-British features in areas DE3001 and DE3002 adjacent to the Fosse Way. These comprise pits/waterholes 301221, 218519, 301123 and one later Romano-British feature, pit 304466, which all had over one hundred cereal grains, but comparatively few glumes. Such assemblages may represent grain that had been fully dehusked or, given the poorer survival rate of glumes to grain (see Boardman and Jones 1990), in some instances may represent spikelets or even waste that was once glume rich.

The study of weed assemblages can reveal many aspects of past crop husbandry including processing and crop management (Hillman 1981; 1984; Jones 1988a; 1988b; van der Veen 1992; Stevens 2003; Fuller and Stevens 2009). However, the application of such approaches relies on ascertaining that charred seeds derive from wild species that grew alongside, and were then harvested and stored with the crop. Given the number of roots and stems of plants potentially collected for use as fuel (see below), establishing a firm association of seeds of wild species with the harvested crop is potentially problematic (cf. Hall 2003, 26–8).

Of the 33 samples from Romano-British features that were examined, stem/root-dominated samples accounted for just under half (14 samples). Within these samples, the proportion of grain and cereal remains in general, comparative to seeds of wild species, was generally lower. However, this was not always the case, for example well 303819, but these samples could be seen to be dominated by roots and stems of heather (Ericaceae) rather than monocot stems (eg, sedges and grasses).

Where stems and rootlets were low and cereal remains relatively high, then the associated assemblage of wild seeds might more confidently be related to the harvested crop and cereal processing. On this basis a number of interpretations regarding the processing of the crop and the function of crop dryers, discussed in greater detail below, might be made.

The assemblage from the early Romano-British crop dryer 301876 comprises predominately cereal waste with almost no charred stems/or root material present. It is dominated by glumes of hulled wheat, indicating the waste comes from dehusking and the separation of the glumes. These processes are normally conducted regularly throughout the year as the crop is taken from storage. However, rachis fragments of barley might be more characteristic of threshing and winnowing waste, processes usually conducted immediately after harvesting before the crop is put into storage. Consistent with such waste, seeds of smaller seeded species were relatively frequent, in particular seeds of scentless mayweed. Seeds of this species, whilst small, are often retained in the head, and as such they are often removed during coarse sieving, as the heads remain attached to the plant itself (cf. Hillman 1981; 1984; Jones 1984). Although it might be noted that the size of the heads, around 3–4 mm, is similar to that of spikelets, if removed from the stalk during threshing the heads might well remain in number with the spikelets until dehusking.

A few of the other early to mid-Romano-British samples, including some dominated by charred roots and stems, were rich in seeds of large-seeded species, in particular those of oats and brome grass. In this respect the assemblages are more comparable to those from sites where they are likely to be storing hulled wheats as semi-clean spikelets, after they had been threshed, winnowed, coarse and fine sieved following harvest.

The late Romano-British samples were less rich in stems and roots of heather, broom, monocots and bracken. The exception was the sample (304054) from ditch 304521, which contained several smaller seeds that might be related to the burning of heath vegetation, although a number of these might be regarded as more common arable weeds that were retained either in seed heads, most notably stinking and scentless mayweed, or as pods, eg, smooth tare.

Many of the remaining late Romano-British samples, as with the earlier Romano-British samples, were relatively richer in both cereal grain and large weed seeds, indicative of waste generated from the parching and dehusking of hulled wheats taken from storage as semi-clean spikelets. One exception was crop dryer 304368 which was richer in weed seeds than cereal grain. However, given the predominance of beans within this sample, and that it was still relatively rich in larger seeds, this might suggest these weeds were arriving with the bean crop rather than cereal crops.

Of other late Romano-British samples, while the assemblage from oven 304390 contained a relatively high number of barley rachis fragments, both grain and large weed seeds still predominated.

The implication is that for most of the period of occupation the crops were harvested, threshed and winnowed, and then coarse and fine sieved immediately following harvest and prior to being put into storage as semi-clean grain or spikelets. While it is possible such operations were more often conducted in the field, at least on occasion sheaves may have been brought back and processed on site, with the generated waste used to fuel the crop dryers to dry the crops prior to putting the spikelets into storage.

Crop husbandry

While the possibility exists that some species were brought to the site with the burning of heath grassland vegetation, the examination of weed species from samples with few roots and stems, and a greater number of cereal remains, can provide information on general crop husbandry techniques.

The range of species present is generally indicative of the cultivation of crops on drier, lighter calcareous soils, especially in the earlier Romano-British period. As is often the case, and although known from early Romano-British sites, the incidence of stinking mayweed increases in the later Romano-British samples, first occurring in the mid-Romano-British period in DE3002, and indicates the cultivation of clay soils. Additionally, the presence of certain species, such as blinks, recovered from the late Romano-British crop dryer, might also indicate that wetter soils, perhaps lying close to a spring-line or close to any still active palaeochannels, were also under cultivation.

As with most Romano-British assemblages the presence of free-standing, non-twining weeds and lower-growing species suggests the harvesting of these species low on the culm by sickle (cf. Hillman 1981).

Which weeds are associated with the bean crop in crop dryer 304368 is difficult to ascertain, but seeds of cleavers and smooth-tare are relatively high in the sample. Given the twining nature of such plants it is quite probable that these species were harvested and brought to the site with the bean crop, rather than being associated in this case with cereals.

Crop dryers and ovens 301876, 303779, 304368, 304390, 304277

All six samples from these five features were rich in glumes, suggesting that they were probably at least used for the parching of hulled wheats prior to pounding (see van der Veen 1989). In addition, and in keeping with other studies, the evidence strongly suggests that these features were multi-functional (van der Veen 1989; van der Veen and O'Connor 1998), as also recorded for such ovens and kilns in historical communities living within the Northern Isles (Fenton 1978).

As frequently seen upon other sites, and discussed by van der Veen (1989), the evidence for germinated grain and also for coleoptiles, from at least 301876 and 303779, suggests that they may also have been used in the preparation of malt. This would have been at the stage after steeping to first halt further germination and, given the quantities of glumes and coleoptiles, using dehusking waste as fuel.

A third use is drying cereal crops after harvest prior to storage. As noted above, the samples from crop dryer 301876 and oven 304390 were relatively rich in both grains of hulled, probably six-row barley, as well as rachis fragments. In the living plant there are approximately three grains to each rachis fragment; as such, the ratio of estimated barley grains to rachis is still greater in 301876 than might be expected from threshing waste. However, given that rachises of barley are largely removed during threshing, winnowing, racking and coarse sieving operations, often conducted immediately after harvest, the number of rachises is still relatively high (approximately 450 grains to around 68 rachis fragments from crop dryer 301876 and approximately 3250 grains to around 205 rachis fragments from oven 304390) and, therefore, may still represent threshing waste.

The appearance of barley grains within such features may also hint at another purpose. While hulled wheats are parched prior to pounding, Hillman (1981; 1984) does not record the parching of hulled barley prior to dehusking. However, Hillman notes that barley is usually parched prior to being 'hummeled', an operation to remove the awns, which is conducted prior to dehusking for hulled barley. Fenton (1978) not only records the historic use of such ovens before hummeling (probably for naked barley), but also as an operation conducted prior to grinding, as drying the crop was shown in experiments to greatly facilitate the grinding or milling process.

While little evidence for barley, threshing waste or malting was seen from the late Romano-British crop dryer 304368, this feature is unusual in its quantity of 'celtic' beans. Although this might have resulted from the use of waste containing pulses being used as fuel in the crop dryer, beans are unlikely to have made good fuel. More probably, the crop dryer had been used on occasion to dry beans after harvest and prior to storage, as well as for parching spelt wheat at other times. It was noted that one of the beans did have evidence for weevil attack, and heating the crop may have prevented further loss, although, given that only one bean showed such predation, this suggestion is tentative.

The use of these features for several tasks including malting, parching and drying crops prior to storage can be seen from the collective evidence. Generally crop dryers are more frequently found on late Romano-British sites (see Millett 1992), especially on more rural settlements, at a time when economic change may have made the use of such structures preferable for the mass dehusking of grain destined for the developing markets and towns of the 3rd–4th centuries AD (Fuller and Stevens 2009; van der Veen and O'Connor 1998). Earlier crop dryers, usually close to or within more Romanised settlements, are known, and that two of the dryers appear earlier than the 3rd century at *Margidunum* Hinterland might hint that the inhabitants of the site were involved in markets perhaps supplying the nearby early town at a time when most rural settlements had no need of access to such structures.

Finally, concerning the use of crop dryers, the preparation of malt is well established for many sites within this period. Frequently such sites lay along Roman roads, and, as was the case here, also near a spring and hence a ready supply of relatively clean water for brewing (see Stevens 2011). Such activities appear to have been present from the beginning of the Roman occupation perhaps to supply the inhabitants of nearby *Margidunum*, as well as travellers, officials and military needs associated with the Fosse Way.

The collection and burning of heath-grassland vegetation

As discussed above, a number of samples were dominated by evidence for charred stems and roots of heather, grasses and sedges, as well as bracken and broom. In addition, seeds that may have been gathered with this vegetation were also brought into the settlement and became charred. The main environment represented would appear to be wet heath grassland. For example, the sample from Enclosure A pit 302551 was very rich in seeds, especially small seeds of grasses, along with seeds of clover, plantain, sedges, grasses, dock and heath-grass, combined with stems and rootlets of heather, sedges and grasses, with leaves of bracken and stems/leaves of broom.

The high presence of roots would suggest that such vegetation was derived from the burning of turves rather than hand pulled material (see Hall 2003). While roots of heather and false-oat grass could be hand-pulled, the occasional appearance of species such as pignut, that could not have been collected by hand-pulling, suggests that at least some was brought in with turves. While such hand-pulled material may have been collected for some purpose other than for fuel, possibly for bedding or stabling and burned later, the absence of visible animal dung that often survives charring makes the latter seem unlikely. Such material could represent clearance episodes (as argued for Hadrian's Wall; see Carrott *et al.* 2004); however, such material appears to be confined to relatively few features and the samples high in roots are often associated with moderate amounts of cereal remains which, if related to clearance, would not be expected.

While such root-rich assemblages are commonly recorded in northern England, their relationship to the use of turf as a low grade fuel has until recently received little consideration (Hall and Huntley 2007). Hall (2003, 26–8) argues that seeds of small-seeded grasses, blinks, heath-grass and sedges, all commonly recorded within such assemblages, more likely result from the burning of turves than through their arrival with cereal crops.

The prominence of such material at *Margidunum* Hinterland suggests that at least during the early and mid-Romano-British periods turves were collected and burned as a low-grade but more readily accessible alternative fuel to that provided from local scrub and woodland. It is worth noting that such material does not appear within the corn-drying ovens, perhaps indicating that it was confined to use within domestic fires. Furthermore, that it is less frequent within the late Romano-British features from the northern part of the excavations might suggest that during this period the inhabitants of this part of the site were able to source firewood from elsewhere that had not been readily available before.

Waterlogged Plant Remains

by Chris J. Stevens

A number of deposits were bulk sampled for waterlogged plant remains, and in all of these a subsample of one litre was assessed. On the basis of this assessment four samples were chosen for the analysis of waterlogged plant material. It should be noted that although waterlogged material was recovered from two Romano-British palaeochannels this comprised only seeds of elder (*Sambucus nigra*).

Methods

Subsamples of 1 litre were taken from bulk samples from the selected features and processed for the recovery of waterlogged remains. Laboratory flotation was undertaken with flots retained on a 0.25 mm mesh and residues on a 0.5 mm mesh. Residues and flots were stored in sealed containers with industrial methylated spirits (IMS). The larger fraction (>5.6mm) was sorted, weighed and discarded.

Identification of waterlogged plant material was undertaken using stereo incident light at magnifications of up to x40 using a Leica MS5 microscope, following the nomenclature of Stace (1997) for wild species and the traditional nomenclature, as provided by Zohary and Hopf (2000, tables 3 and 5, 28, 65), for cereals. The results are presented in Table 4.40.

Results

Early Romano-British – Pit 301122

Waterlogged deposits were noted in this feature, which was located within 15–20 m of the edge of the Fosse Way and may have related to a building plot on the street frontage. Two samples were examined from the pit (contexts 301280 and 301279). The richer came from 301280, the lower deposit, and generally a similar range of species was recovered from the overlying deposit (301279).

The sample had high numbers of waterlogged cereal remains, mainly glume waste from the processing of spelt wheat. Remains of other plants more likely to derive from human activity rather than growing near the feature include flax (*Linum usitatissimum*) and a fragment of hazelnut shell (*Corylus avellana*).

Much of the remainder of the assemblage is dominated by weed species, some of which might derive from material brought in with the crop or plants growing alongside the road. These include numerous seeds of species commonly recorded from the charred assemblages, including fat-hen (*Chenopodium album*), orache (*Atriplex* sp.), corncockle (*Agrostemma githago*), stitchwort (*Stellaria* sp.), knotgrass (*Polygonum aviculare*), black-bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), scentless mayweed (*Tripleurospermum inodorum*) and capsule fragments of runch (*Raphanus raphanistrum*).

Other seeds of species which are less common in the charred samples, but also common weeds of arable land and waysides, include those of common/long-headed poppy (*Papaver rhoeas/dubium*), common nettle (*Urtica dioica*), small nettle (*Urtica urens*), field-penny cress (*Thlaspi arvense*), parsley-piert (*Aphanes arvensis*), smooth sow-thistle (*Sonchus oleraceus*), prickly sow-thistle (*Sonchus asper*), black mustard (*Brassica nigra*), nightshade (*Solanum* sp.), creeping cinquefoil (*Potentilla* cf. *reptans*) and fool's parsley (*Aethusa cynapium*).

Species of wet grasslands were represented by seeds of sedges (*Carex* sp.), spike-rush (*Eleocharis* sp.), rushes (*Juncus* sp.) and sweetgrass (*Glyceria* sp.). Those of meadow/creeping buttercup (*Ranunculus* cf. *acris/repens*), hairy buttercup (*Ranunculus sardous*), silverweed (*Potentilla anserina*) and tormentil (*Potentilla* cf. *erecta*) are all also potentially associated with wet grassland environments, although equally all could come from arable fields. Seeds of both hemp-nettle (*Galeopsis tetrahit*) and thistles (*Carduus/Cirsium* sp.) were both common and such species might also be associated with arable land or grassy patches in wasteland or the verges of trackways. Selfheal (*Prunella vulgaris*), mint (*Mentha* sp.) and gypsywort (*Lycopus europaeus*) occur in similar grassy environments, the latter two in wetter grassland, but equally can commonly be found in more disturbed environments.

Other species present, such as celery-leaved crowfoot (*Ranunculus sceleratus*), are more closely associated with larger bodies of standing water, such as slow streams, ditches and ponds. Remains of more woody, scrub species were rare in these samples, and despite seeds of elder being common in the samples from the palaeochannel and well 303715 (discussed below), they were absent from these samples. Such scrub remains that were present in the sample included a seed of dogwood (*Cornus sanguinea*).

Mid-Romano-British – Well 303715

A single sample was examined from the lower fills (218332) of the stone-lined well dating to the 2nd to 3rd century AD associated with Structure 21. The feature was also located close to the Fosse Way, but on the opposite eastern side to pit 301122 described above.

There are some distinct differences to the assemblage described above, including the absence of cereal remains, as well as bracken. While many of the weed species are also missing, those associated with nitrogen-rich waste or settlement soils are very high, most notably common nettle, along with seeds of small nettle, orache, henbane (*Hyoscyamus niger*), fat-hen, many-seeded goosefoot (*Chenopodium polyspermum*) and nettle-leaved goosefoot (*Chenopodium murale*), the latter associated

Table 4.40 *Margidunum* Hinterland: waterlogged plant remains from selected waterholes and wells

	Area	*DE3001*		*DE3002*	
	Phase	*ERB*		*MRB*	
	Feature type	*Waterholes/pit*		*Well*	*Well*
	Feature	*301122*		*303819*	*303715*
	Context	*301280*	*301279*	*303823*	*218332*
	Sample	*29*	*28*	*521*	*188*
	Flot size (ml)	*2000*		*200*	*500*
Cereals					
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	est.420	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	est.191	++	-	-
Triticum spelta L. (spikelet fork)	spelt wheat	1	-	-	-
Other species					
Cereal/Large Poaceae (culm node)	cereal/grass culm	-	+	-	
Pteridium aquifolium (pinnules)	bracken	est.228	+	-	-
Ranunculus acris/repens	meadow/creeping buttercup	est.100	-	-	++
Ranunculus sardous	hairy buttercup	cf.1	-	-	-
Ranunculus auricomus/acris	goldilocks/meadow buttercup	est.40	-	-	
Ranunculus sceleratus	celery-leaved buttercup	est.20	-	-	+
Ranunculus subg. Batrachium	water-crowfoots	-	-	-	+
Thalictrum flavum	common meadow-rue	-	-	-	+
Papaver rhoeas/dubium	common/long-headed poppy	est.500	++	-	-
Fumaria sp.	fumitory	-	-	-	+
Urtica dioica	common nettle	est.80	-	1	++++
Urtica urens	small nettle	est.600	+	-	++
Corylus avellana	hazel	+	-	-	-
Chenopodium polyspermum	many-seeded goosefoot	-	-	-	+++
Chenopodium murale	nettle-leaved goosefoot	-	-	-	+++
Chenopodium album	fat-hen	est.320	+	-	+
Atriplex sp.	orache	est.241	+	-	+++
Montia fontana subsp. *chondrosperma*	blinks	est.40	-	-	-
Stellaria media	chickweed	est.380	+	-	+
Stellaria palustris Retz/*graminea*	marsh/lesser stitchwort	1	-	-	-
Cerastium sp.	mouse-ears	1	-	-	-
Agrostemma githago	corncockle	est.33	-	-	-
Silene sp.	campions	est.20	-	-	-
Polygonum aviculare	knotgrass	est.400	-	1	+
Fallopia convolvulus	Black-bindweed	est.20	-	-	-
Rumex sp.	dock	est.246	-	-	-
Rumex cf. *aquaticus*	water dock	cf.3	-	-	-
Rumex cf. c*rispus* (fruit-bracts-tepals)	curled dock	est.47	-	-	-
Rumex acetosella	sheep's sorrel	-	-	-	+
Viola sp.	violet	est.80	-	-	+
Thlaspi arvense	field-penny cress	est.45	-	-	+
Coronopus squamatus	swine-cress	-	-	-	++
Brassica cf. *nigra*	black mustard	est.41	-	-	-
Raphanus raphanistrum (capsules)	runch, charlock	5+est.20f.	-	-	+
Rosaceae thorns	bramble/rose type thorns	est.40	-	-	-
Rubus sp.	bramble	-	-	-	+
Potentilla cf. *reptans* (<1.5 mm)	creeping cinquefoil	est.260	-	-	+

Table 4.40 (cont.) *Margidunum* Hinterland: waterlogged plant remains from selected waterholes and wells

	Area	*DE3001*		*DE3002*	
	Phase	*ERB*		*MRB*	
	Feature type	*Waterholes/pit*		*Well*	*Well*
	Feature	*301122*		*303819*	*303715*
	Context	*301280*	*301279*	*303823*	*218332*
	Sample	*29*	*28*	*521*	*188*
	Flot size (ml)	*2000*		*200*	*500*
Other species (cont.)					
Potentilla cf. *erecta*	tormentil	est.20	-	-	++
Potentilla anserina	silverweed	est.30	-	-	-
Aphanes arvensis	parsley-piert	est.140	-	-	-
Rosa sp.	rose	-	-	-	cf.1
Prunus domestica	plum	-	+	-	2frg.
Prunus/Crataegus sp. (indet fruit)	sloe/hawthorn (fruit)	-	-	-	1+2frg
Cornus sanguinea	dogwood	1	-	-	-
Linum usitatissimum (capsule frags)	flax	est.22	-	-	-
Oenanthe sp.	water-droplets	-	-	-	+
Aethusa cynapium	fool's parsley	est.25	-	1	1
Conium maculatum	hemlock	-	-	2	+
Hydrocotyle vulgaris	marsh pennywort	-	+	-	-
Hyoscyamus niger	henbane	-	-	-	++
Solanum sp.	nightshade	est.10	-	-	+++
Lamium sp.	dead-nettle	-	-	-	+
Galeopsis cf. *tetrahit*	common hemp-nettle	est.160	+	-	-
Prunella vulgaris	selfheal	est.70	-	-	-
Lycopus europaeus	gypsywort	est.20	-	-	-
Mentha sp.	mint	est.20	-	-	+
Galium aparine	cleavers	3	+	-	-
Sambucus nigra	elder	-	-	4	++++
Valerianella dentata	narrow-fruited cornsalad	est.10	-	-	-
Arctium lappa/minus	greater/lesser burdock	cf.1	-	-	+
Carduus/Cirsium sp.	welted/creeping thistle	est.110	+	-	++
Carduus crispus/Cirsium arvense (<4 mm)	welted/creeping thistle	est.150	-	-	-
Hypochaeris glabra/Leontodon sp.	cat's-ears/hawkbit	est.10	-	-	-
Picris echioides	bristly oxtongue	-	-	-	+
Sonchus oleraceus	smooth sow-thistle	-	-	-	++
Sonchus asper type	prickly sow-thistle	est.70	-	-	++
Tripleurospermum inodorum	scentless mayweed	est.120	-	-	-
Juncus sp.	rush	++	+++	-	+
Eleocharis sp.	spike-rush	est.40	+	-	++
Schoenoplectus lacustris	common club-rush	-	-	1	+
Carex sp. (flat)	sedge (lenticular)	est.160	+	-	++
Carex sp. (trigonous)	sedge (trigonous)	est.180	+	-	++
Glyceria sp.	sweet-grasses	est.30	+	-	-
Bryophyta (leaf stem)	mosses	++	-	-	-
Buds indet.		2	-	-	-

with lighter soils. While these species might be seen to be characteristic of nitrogen-enriched soils in general, swine-cress (*Coronopus squamatus*) is more specifically associated with animal trampling. As with the previous sample, seeds of thistles were very common in the sample, and might be associated with disturbed soils, but equally are common components within grazed environments. Great/Lesser burdock (*Arctium lappa/minus*) similarly might be found in wasteland environments or along grassy field edges.

Species associated with wet, poor grassland are still present, including sedges, spike-rush, buttercup, along with common meadow-rue (*Thalictrum flavum*). Both water-droplet (*Oenanthe* sp.) and hemlock (*Conium maculatum*) might be found in such grassland environments, but are generally more common along ditch and stream banks. While found in similar river, stream and ditch environments, common club-rush (*Schoenoplectus lacustris*) is slightly more unusual in that it is more commonly found within rivers and lakes rather than adjacent to them, although only a few seeds were recovered.

Unlike the previous sample, remains associated with scrub, while not prolific, are present in greater numbers than seen above. These include mainly seeds of elder, along with a few of rose (*Rosa* sp.), sloe/hawthorn (*Prunus/Crataegus* sp.) and potentially also the plum stone (*Prunus domestica*). The latter may come from a feral plant rather than an economic plant given the lack of other material relating to human food waste.

Mid-Romano-British – Well 303819

This final feature was of similar date to well 303715, and located in the same area of the site (DE3002) being only some 20 m to the north-east, associated with Structure 16. The sample had very little waterlogged material within it, although the range of species was similar to that from the broadly contemporary well described above, with a few seeds of elder, common nettle, knotgrass, fool's parsley (*Aethusa cynapium*), hemlock and common club-rush.

Discussion

The samples provide an insight into the local environment within this part of the settlement, although there may be elements of material which have been brought in from elsewhere, in particular from pit 301122.

As with charred material the waterlogged cereal remains within pit 301122 are to a certain extent both characteristic of the dumping of crop-processing waste and of activities conducted within the area. However, the predominance of both charred and waterlogged remains suggest that cereal processing was taking place in the immediate vicinity of the Fosse Way and in turn can be related to the contemporary settlement and buildings adjacent to the road.

The remains of flax capsules might also hint that such features could potentially have been used for retting flax, although the finds were relatively sparse and no stems were recovered. As such they might equally have served more as waterholes, providing water for animals, as well as the inhabitants of the settlement.

In terms of the environment, many of the seeds from this feature may have been brought in with the arable crops. However, the abundant seeds of poppy along with other small seeds of ecologically similar species, for example, small nettle, which were generally less well represented within the charred samples, suggest that if not related to arable fields themselves, can be seen as representative of typical disturbed soil associated with a roadside settlement. There are also a number of species that indicate wet grassland within the vicinity with few indications of scrub or hedges.

The other significant element are pinnules (leaves) of bracken (*Pteridium aquifolium*), a plant that is relatively prolific in the waterhole sample. While such remains, along with heather and monocot (grasses, sedges etc.) rhizomes/rootlets, were common in the charred samples, in this case, given the absence of heather and monocot roots, it would appear likely that the bracken was gathered for use as fuel, bedding etc. The presence of bracken is most probably associated with grassland heath.

The samples from the stone-lined well 303715, and to a lesser extent well 303819, show some significant differences, probably chronological, that can be related to the local environment. The high presence of species associated with nitrogen-enriched soils, as found in farmyards and manure heaps, indicates similar environments to those outlined for the western side of the road, but along with a much stronger likelihood of farmyard type environments with animal trampling. While bracken is absent, there is also at least some indication of scrub, in particular elder, and possibly even hedging in the area. The palaeochannels would also appear to have been lined with some scrub, which included elder.

All the samples had species associated with wetland environments, with evidence probably for some standing water. While the location of these features is away from any rivers, the road lies close to a spring-line with a number of streams and brooks in the general area. In turn, the ditches, including the roadside ditches might have contained standing water for substantial periods during the year.

Charcoal and Waterlogged Wood

by Catherine Barnett

Eleven samples of Romano-British and two of Anglo-Saxon date were chosen for charcoal analysis. These represent a variety of domestic, funerary and food production contexts. The samples were selected to investigate the type of activity at the site and to examine the nature of the surrounding landscape, its exploitation and management. In addition, five waterlogged wood assemblages found in four Romano-British waterholes were analysed.

Table 4.41 *Margidunum* Hinterland DE3001: wood charcoal identifications

Phase		*ERB*	*ERB*	*MRB*	*MRB*	*MRB*		*RB*	*LRB*	*Saxon*
Feature type		*Crop dryer*	*Hearth*	*Well*	*Well*	*Grave*		*Crop dryer*	*Grave*	*Pit*
Feature		*301876*	*302823*	*303715*	*303819*	*302289*		*302781*	*302291*	*301501*
Context	*301879*	*302825*	*301878*	*218332*	*303823*	*301502*	*302786*	*302783*	*302288*	*302290*
Sample	*76*	*161*	*78*	*188*	*521*	-	*153*	*155*	*118*	*126*
Vol. (l)	*10*	*20*	*5*	*14*	*15*	*16*	*20*	*20*	*3.5*	*5*
Flot size (ml)	*250*	-	*250*	*500*	*200*	*3500*	*425*	*450*	*400*	*500*
Charcoal >4/2mm	*80/30 ml*	-	*30/25 ml*	*40/90 ml*	*30/20 ml*	*1100/800 ml*	*325/50 ml*	*125/75 ml*	*25/15ml*	*100/50 ml*
Acer campestre (Field maple)	-	1	-	?1 twd	-	10 rwd	-	-	-	-
Alnus glutinosa (Alder)	-	-	-	4	-	-	72, ?8	54	-	-
Carpinus betulus (Common hornbeam)	-	-	-	-	-	-	?1	-	-	-
Corylus avellana (Hazel)	-	-	-	-	3	-	-	9	-	3
Fraxinus excelsior (Ash)	-	-	-	-	4	-	-	5, 8 rwd	-	-
Quercus sp. (Oak)	82*, 18 rwd	3, 2 rwd	60, 40 rwd	91, 1 twd	36, 53 rwd*	-	10	14	86, 11 rwd	36, 47 rwd
Pomoideae (Hawthorn/ rowan/ crab apple)	-	5	-	1	2	10 twd	-	4	-	-
Pomoideae *Crataegus* type (Hawthorn)	-	-	-	-	-	42 rwd	-	-	-	-
Prunus sp. (Cherry type)	-	2	-	-	-	-	-	-	-	-
Prunus sp. cf *Spinosa* (cf. Blackthorn)	-	-	-	-	-	26 rwd, 10 twd	-	-	-	-
Salix/Populus sp. (Willow/poplar type)	-	-	-	2	-	-	-	1	-	5
Ulmus sp. (Elm)	-	-	-	-	-	-	-	3	-	-
Unidentified	-	1, 3 twd	-	-	2	2	9	2	3	9
Total no. frags used	100	16	100	100	100	100	100	100	100	100

KEY: rwd = roundwood; twd = twigwood

Scheme-wide methods

All wood charcoal >2 mm was separated from the processed flots and the residue scanned or extracted as appropriate. Most samples proved moderately or very rich and, therefore, a proportion of each was identified, in a quantity felt to be representative of the sample as a whole (normally 100 or 200 fragments). Smaller samples were identified in their entirety. The fragments were prepared for identification according to the standard methodology of Leney and Casteel (1975, see also Gale and Cutler 2000). Each was fractured with a razor blade so that three planes could be seen: transverse section (TS), radial longitudinal section (RL) and tangential longitudinal section (TL). The pieces were mounted on a glass microscope slide using modelling clay, blown to remove charcoal dust and examined under bi-focal epi-illuminated microscopy at magnifications of x50, x100 and x400 using a Kyowa ME-LUX2 microscope. Identification was undertaken according to the anatomical characteristics described by Schweingruber (1990) and Butterfield and Meylan (1980) to the highest taxonomic level possible, usually that of genus, with nomenclature according to Stace (1997). A scheme-wide list of taxa by period is held in archive.

All wood recovered from waterlogged contexts at *Margidunum* Hinterland was subsampled and thin sections taken in three planes to enable identification under transmitted light microscopy, following the method given for charcoal.

Individual taxa were quantified (mature and twig separated), and the results tabulated (Tables 4.41 and 4.42 – charcoal; Table 4.43 – waterlogged wood). Where there was a possibility of the presence of coppiced roundwood, the age when cut and diameter of fragments were measured where discernible; these are given in Table 4.44 (one sample only).

Results

Early Romano-British

Two contexts (301879, 301878) were analysed from early Romano-British crop dryer 301876 (DE3001; Fig. 4.12; Table 4.41). The charcoal assemblages proved to be almost identical with large clean pieces of 82% and 60% mature oak (*Quercus* sp.) pieces and 18% and 40% oak roundwood respectively. No clear pattern of age of cutting could be discerned for the roundwood, but the possibility of a managed, coppiced resource arises.

Uncharred waterlogged wood was also found in early Romano-British pit 301122 (Fig. 4.13) and late Iron Age/early Romano-British waterhole 306394 (Fig. 4.8; Table 4.43). These were of alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), oak and bird cherry (*Prunus avium*). Most were juvenile pieces and seem to represent vegetation growing in close proximity to the features. The presence of alder indicates that parts of the site were poorly drained and more than seasonally damp.

Hearth 302823 in early Romano-British Structure 7 (DE3001) contained only a tiny assemblage of small fragmented pieces of oak, field maple (*Acer campestre*),

Table 4.42 *Margidunum* Hinterland DE3004: wood charcoal identifications

Phase	*LRB*	*LRB*	*Saxon*
Area	*DE3004*	*DE3004*	*DE3004*
Feature type	*Crop dryer*	*pit*	*SFB gp 304064*
Feature	*304368*	*304466*	*304095*
Context	*304350*	*304467*	*304062*
Sample	*1515*	*1520*	*1501*
Vol. (l)	*40*	*20*	*40*
Flot size (ml)	*450*	*800*	*400*
Charcoal >4/2mm	*50/25 ml*	*400/150 ml*	*40/70 ml*
Acer campestre (Field maple)	1	-	2
Alnus glutinosa (Alder)	5	-	
Corylus avellana (Hazel)	2, 15 rwd	-	30
Fraxinus excelsior (Ash)	8	-	14
Ilex aquifoilum (Holly)	?1	-	
Quercus sp. (Oak)	58, 6 rwd	27, 69*	?2 fissured
Pomoideae (Hawthorn/rowan/crab apple)	2, 1 twd	14 rwd**	18
Prunus sp. (Cherry type)	1	-	8
Salix/Populus sp. (Willow/ poplar type)	-	-	24
Tilia sp. (Lime/ linden)	-	-	2
Total no. frags used	100	110	100

KEY: rwd = roundwood; twd = twigwood

Table 4.43 *Margidunum* Hinterland: waterlogged wood identifications

Phase	*ERB*		*ERB*	*MRB*	*RB*
Feature type	*Pit*		*Waterhole*	*Waterhole*	*Waterhole*
Feature	*301122*		*306394*	*301171*	*302923*
Context	*301279*	*301280*	*306392*	*302094*	*302926*
Sample	*28*	*29*	*Find 1030*	*96*	*185*
Acer campestre (Field maple)	-	-	-	-	1
Alnus glutinosa (Alder)	1	-	-	-	-
Corylus avellana (Hazel)	-	1 rwd, 3 twd	-	-	-
Fraxinus excelsior (Ash)	-	1 twd	-	-	-
Quercus sp. (Oak)	4	8	-	4	-
Prunus sp. cf *avium* (Cherry cf. bird cherry)	-	-	1	-	-
Unidentified	1	-	-	-	-
Unid. twd	6	7	-	-	-

KEY: rwd = roundwood; twd = twigwood

Pomoideae and cherry type (*Prunus* sp.) (Table 4.41), with several pieces of twigwood, charred root and six thorns which compare favourably with those of hawthorn (*Cretagus monogyna*). Casual collection of small pieces of hedgerow and scrub material for a domestic fire is supported. The thorns indicate the substantial presence of hawthorn, even when the Pomoideae wood could not be further identified to species, either in hedgerows (as indicated for the Iron Age roundhouse gully feature 269392 at Saxondale – see Chapter 5) or growing as open scrub on previously cleared land.

Mid-Romano-British

Substantial quantities of charcoal were recovered from two mid-Romano-British wells (303715 and 303819) (DE3001; Figs 4.21 and 4.29; Table 4.41). Both were dominated by oak at 89% and 91% respectively, but that from 303715 was almost solely mature while nearly 60% of the oak from 303819 was of roundwood *c.* 10 years when cut. Lesser taxa included field maple, alder, hazel, Pomoideae and willow/poplar (*Salix*/*Populus* sp.). The taphonomy of these pieces is unclear given the context but it may be that deliberate dumps of spent fuel occurred once the wells went into disuse. Four pieces of waterlogged oak wood were also found in mid-Romano-British waterhole 301171 on the opposite side of the Fosse Way (Fig. 4.18; Table 4.43).

Charcoal from the vessel associated with the cist in pit 303611 was vitrified and largely unidentifiable, although three of the 87 pieces were of oak or probably so. The vitrification suggests burning at a high temperature (over 800°C, Prior and Alvin 1983).

Late Romano-British

Charcoal from crop dryer 304368 (DE3004) was in good condition and relatively varied in composition with a minimum of eight taxa (Table 4.42). Oak dominated at 64%, with 17% hazel (nearly all roundwood pieces) and lesser field maple, alder, ash, possible holly (*Ilex aquifolium*), Pomoideae and cherry type, showing that a range of types from at least two different habitats were exploited to fuel the dryer. Open deciduous woodland and/or hedgerow on well-drained soil types form the bulk of the assemblage, but the presence of alder indicates the use of wetland areas also.

Late Romano-British remains from pit 304466 (DE3004) contained a large assemblage of large, clean pieces of wood, nearly all of straight rod-like pieces of oak and Pomoideae roundwood (Table 4.42). As shown in Table 4.44, the oak had been cut at 5–15 years and was mainly 20–40 mm in diameter, while the Pomoideae had been cut at 8–10 years and was 10–20 mm in diameter. Harvesting of a managed coppiced crop is strongly indicated. Furthermore, two of the Pomoideae pieces had been

Table 4.44 *Margidunum* Hinterland: wood charcoal from late Romano-British pit 304466, age/diameter data

Feature	*304467*		
Context	*304467*		
Sample	*1520*	*Quercus* sp. (Oak)	*Pomoideae* (Hawthorn/rowan/ crab apple)
Age when cut	0–4 years	0	0
	5–9 years	18	12
	10–14 years	14	0
	15+ years	3	0
Diameter	1–9 mm	0	0
	10–19 mm	3	12
	20–29 mm	17	0
	30–39 mm	12	0
	40+ mm	3	0

Fig. 4.112 Worked charred wood from pit 304466 (DE3004)

worked (see Fig. 4.112), each displaying clear cut notches. The material probably represents the dumping of fuel waste such as that from a kiln, with the worked pieces possibly present due to the contemporary charring of structural wattle hurdle pieces within that burning event.

Two mid–late Romano-British cremation burials in graves 302289 and 302291 (DE3001; Fig. 4.30) proved similar to each other, both heavily dominated by oak including substantial roundwood; grave 302291 also contained small numbers of fragments of hazel and willow/poplar and displayed a greater degree of vitrification. Several of the pieces showed signs of lignitic degradation, ie, they had started to dry out and rot prior to burning so had either been stored/reused timbers or were collected as fallen dead wood. Clearly in both cases, the pyre had been constructed of oak, including large roundwood pieces, but the other types represented in small numbers may have been used for kindling or were present as placed objects.

Two samples were analysed from a crop dryer 302781 (DE3001; Fig. 4.30) of possible late Romano-British date (Table 4.41). Both contained large pieces, some of which were glassy and vitrified while others, in context 302786, were incompletely charred and/or heavily mineralised with iron oxides. The two samples were broadly similar taxonomically, dominated by alder at 80% and 54% respectively, with 10–14% oak. A single piece of possible hornbeam occurred in context 302786, while context 302783 also contained hazel, ash, ash roundwood and Pomoideae.

Romano-British (unphased)

A single piece of uncharred field maple was found in Romano-British waterhole 306394 (Fig. 4.8), indicating its presence nearby, probably in hedgerows/field boundaries.

Saxon

A sample from Saxon sunken-featured building 304064 (DE3004; Figs 4.55, 4.56) showed no one dominant taxa, instead containing a mix of hazel, ash, Pomoideae, cherry type and willow/poplar, with lesser types including field maple, oak and the only appearance of lime/linden (*Tilia* sp.) from the excavations (Table 4.42). A willingness to exploit whatever taxa were locally available is indicated, which is perhaps in contrast to the concentration on particular, managed, taxa demonstrated at this site for the Romano-British period, although many of the same taxa were available and used in restricted numbers in that period too. A similar broad use of fuel resources in the Saxon period following more targeted exploitation in the Roman period was also indicated at the site of Springhead in Kent (Barnett 2011).

Pit 301501 (DE3001) contained a very large (>1 litre) but fragmentary sample (Table 4.41). This proved to be wholly of roundwood and twigwood of field maple, Pomoideae (most identifiable as hawthorn type, *Crataegus monogyna*) and blackthorn (*Prunus* cf *spinosa*). These types are typical hedgerow species; the quantity of juvenile wood further indicates that these are hedge trimmings which may simply have been burnt for disposal or used for domestic fuel/kindling.

Discussion

Environment and fuel collection

The charcoal and waterlogged wood samples have proved relatively informative on the use of woodland resources through the Romano-British period. A clear concentration on oak, including oak roundwood, has been described for the early Romano-British crop dryer (301876) and for the contents of two mid-Romano-British wells. Small numbers of charred juvenile pieces from these wells and waterlogged wood from a series of pits probably represent the on- or near-site vegetation and include field maple, alder, hazel, ash, oak, Pomoideae, cherry type and willow/poplar. Smaller shrub types were described for the late Romano-British pit, but a richer mix of types was present in a broadly contemporary crop dryer. This indicates the exploitation of at least two habitats (dry open woodland and wetland margins) in addition to the use of managed sources during the period (below).

Other sites of this period in the wider region examined for their charcoal include North Caxton Bypass and Lower Cambourne, Cambridgeshire (Gale 2009). A similar (though smaller) range of types was encountered with, again, some concentration on oak, and in the case of a keyhole-shaped oven at Lower Cambourne, ash. Possible heather was found in both Late Iron Age and Romano-British contexts at Lower Cambourne, while at East of Birmingham Nurseries, Shenstone (Gale 2008a) broom or gorse was found in a number of Romano-British contexts, both types indicating at least some impoverished heathland soils in those environs and a necessity to exploit them, a phenomenon tentatively also suggested for the Romano-British period at Saxondale (see Chapter 5) but not here. At the Romano-British sites along the route of the M6 toll, charcoal contained within domestic refuse was sometimes sparse but included oak, hazel, ash, holly, willow/polar and, again, a little heather plus holly (Gale 2008b). Three ovens or hearths at Ryknield Street, Wall proved richer, with assemblages dominated by roundwood of hazel, ash and willow/poplar but including a broad range of lesser types (Gale 2008c, 177).

Pyre fuel

The two mid-/late Romano-British cremation burials clearly indicate that the pyres were constructed of oak, with the inclusion of large roundwood pieces. Small quantities of hazel and willow/poplar from one may represent kindling or placed objects. As noted above, several of the pieces showed signs of lignitic degradation, ie, they had started to dry out and rot prior to burning so had either been stored, were reused timbers or were collected as fallen dead wood. Romano-British cremations found at Ryknield Street, Wall, on the M6 Toll (Gale 2008c) contained a greater variety of woody types, although oak again dominated. Several of the other types present as roundwood were probably used as kindling, including birch, elm (*Ulmus* sp.) and Pomoideae, while others such as ash and pine (*Pinus sylvestris*) potentially represent pyre goods or furniture.

Woodland management

While there was a relatively large percentage of roundwood (notably of oak) in several of the assemblages/sites, most pieces were too fragmented to accurately gauge diameter or the number of growth rings present. Only two samples, from late Romano-British contexts 304467 from pit 304466 and 301502 from cremation grave 302289, contained enough to provide meaningful data on age. Of these, one (301502) showed such a wide range of juvenile and roundwood sizes and ages for a number of taxa that it has been interpreted as a natural (?hedge) assemblage. The other (304467) contained numerous charred rod-like roundwood oak and Pomoideae pieces including worked pieces of Pomoideae (see above). Therefore, the age and diameter data from 304467 (shown in Table 4.44) has some potential to inform on management practices such as coppicing (see Buckley 1992; Edlin 1949). As described above, the oak had been cut at 5–15 years, while the Pomoideae had been cut at 8–10 years, indicating a well-maintained and regularly coppiced resource.

The Iron Age–Romano British transition

Of particular research interest in the area is the nature of the Iron Age–Romano-British transition and the impact on environment and landscape (Monckton 2006). Unfortunately no one feature analysed has provided data to bridge this transition. However, the tentative comparison of the 10 Romano-British assemblages at *Margidinum* Hinterland (along with the single examples at Saxondale and Flintham) with the three Iron Age assemblages at Saxondale indicates a great deal of continuity in the presence and small-scale exploitation of a range of open woodland and hedgerow types in the area. The notable difference, however, is the greater concentration on oak during the Romano-British period, along with the much more substantial use of both oak and Pomoideae roundwood for specific purposes. This may be in part a reflection of the particular contexts analysed, but there has been a clear indication of woodland management, at least from the findings from pit 304466.

Pollen

by Michael J. Grant

Methodology

Standard preparation procedures were used (Moore *et al.* 1991): 2 cm³ of sediment was sampled, with a *Lycopodium* spike (two tablets from batch 1031) added to allow the calculation of pollen concentrations. Pollen counting was done at a magnification of x400 using a Nikon Eclipse e400 transmitted light microscope. Determinable pollen and spore types were identified to the lowest possible taxonomic level with the aid of a reference collection kept at Wessex Archaeology. The pollen and spore nomenclature follows Bennett (1994; Bennett *et al.* 1994), with the exception of Poaceae which follows the nomenclature of Küster (1988), with plant nomenclature following Stace (1997). Conifer stomata were identified following Sweeney (2004). Total land pollen (TLP) sum of 400 grains has been adopted in this study excluding obligate aquatics and pteridophytes. The pollen diagrams were drawn using Tilia v 1.7.16 (Grimm 2011).

Results

Monolith 40

Monolith 40 came from mid-Romano-British ditch 218516 in DE3001 (Fig. 4.18). Three monolith sequences were examined with only the basal samples in the monolith providing sufficient pollen for assessment.

Although pollen was recorded in all four samples, only the two lowest samples, from context 301244, provided sufficient pollen to enable counts to assessment level. Pollen identified from the four samples is given in Table 4.45. The low counts preclude meaningful interpretation on the pollen assemblage from the upper two samples (0.34 m and 0.42 m). The two lowermost samples did yield sufficient pollen to reach assessment level and have been subsequently taken to full analysis (counts of 400 TLP; shown in Fig. 4.113). These show a largely open environment, with a variety of herb taxa present, notably Poaceae (grass), Cyperaceae (sedges) and Brassicaceae (cabbage and mustard family). The high abundance of Brassicaceae, Apiaceae (carrot family) and Lactuceae (dandelions) is likely to indicate local waste areas/disturbance rather than a factor of differential preservation, given the diversity of pollen types preserved. Similar interpretation of rough/waste ground, along with open grassland, may also account for the occurrence of Chenopodiaceae (goosefoots), *Urtica dioica* (nettle), *Cerastium*-type (mouse-ears), *Ononis* (restharrows), *Cent-*

Table 4.45 *Margidunum* Hinterland: pollen results from monolith 40, ditch 218516

Depth (m below top of monolith)	*0.34*	*0.42*	*0.50*	*0.58*
Pinus sylvestris	1	-	-	-
Betula	-	-	-	1
Alnus glutinosa	1	-	-	-
Tilia cordata	-	-	-	-
Corylus avellana-type	-	-	-	1
Salix	-	-	4	-
Ranunculus acris-type	-	-	-	1
Chenopodiaceae	-	-	5	2
Caryophyllaceae undiff.	-	-	-	3
Polygonum	-	-	1	-
Rumex sanguineus-type	-	-	-	1
Brassicaceae	-	-	27	22
Calluna vulgaris	-	-	1	1
Filipendula	-	-	3	4
Fabaceae undiff.	-	-	1	1
Apiaceae undiff.	-	-	6	7
Plantago lanceolata	-	-	1	1
Succisa pratensis	-	-	-	1
Centaurea nigra	-	-	-	1
Lactuceae undiff.	-	-	-	4
Solidago virgaurea-type	-	-	2	2
Cyperaceae undiff.	1		15	19
Poaceae undiff.	-	2	29	26
Glyceria-type	-	-	-	2
Cerealia-type	-	-	1	-
Polypodium	-	-	1	-
Pteridium aquilinum	-	-	2	2
Pteropsida (monolete) indet.	2	4	6	13
Total Sum	5	6	110	115
TLP SUM	3	2	101	100
Pollen concentration (grains cm^{-3})	5791	5212	57332	25506

aurea nigra (common knapweed), *Solidago virgaurea*-type (goldenrods) and *Arrhenatherum*-type (false oat-grass). Indicators of local disturbance include *Plantago lanceolata* (ribwort plantain), *Cirsium*-type (thistle) and *Pteridium aquilinum* (bracken). The local vegetation associated with the ditch includes *Ranunculus acris*-type (buttercups), *Filipendula* (meadowsweet), *Solanum dulcamara* (bitter-sweet), *Glyceria*-type (sweet-grass) and *Potamogeton natans*-type (broad-leaved pondweed). One Cerealia-type pollen grain was also found at 0.50 m, which, along with *Polygonum* (knotgrass), may indicate local arable activity. The presence of *Calluna vulgaris* (heather) may indicate some local patches of heath. As already stated, the pollen indicates a largely open environment, though some wooded components are still noted, including *Corylus*

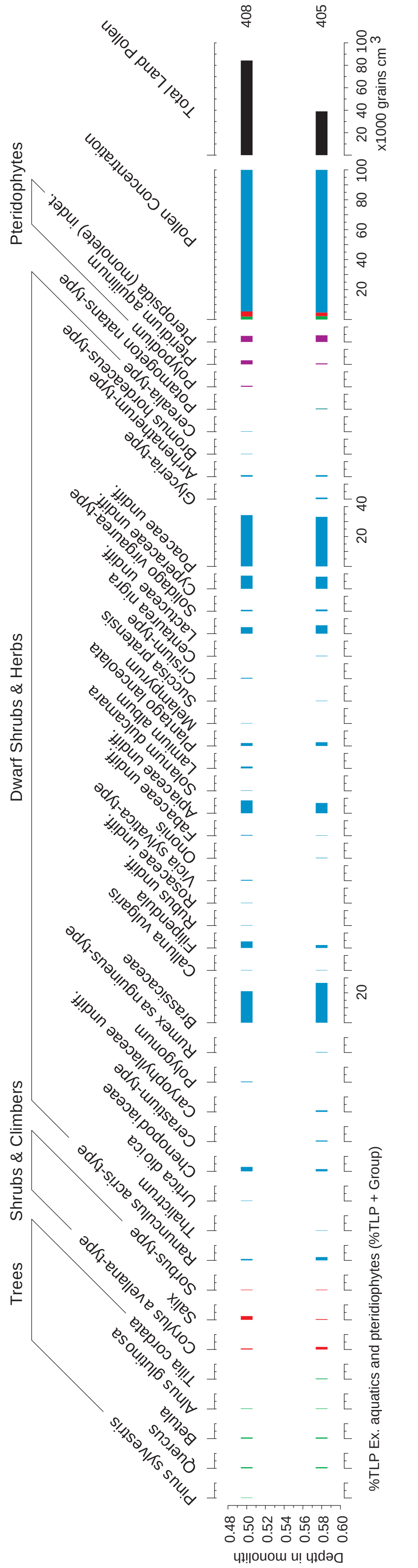


Fig. 4.113 Pollen diagram for mid-Romano-British ditch 218516

avellana-type (hazel), *Salix* (willow) and *Sorbus*-type (whitebeam), supported by a herb assemblage of *Vicia-sylvatica*-type (wood vetch), *Melampyrum* (cow-wheats) and *Rubus*-type (bramble). These may indicate local patches of scrub or woodland edge, possibly as a result of enclosure features such as hedgerows. Other trees present in the pollen assemblage include *Quercus* (oak), *Betula* (birch) and *Alnus glutinosa* (alder), though again in low amounts and may simply represent small stands within the pollen source area.

Monolith 69

Monolith 69 came from cut 301515 through a substantial Iron Age ditch (218534, DE3001) which finally silted early in the Romano-British period (Figs 3.6, 4.11).

Table 4.46 *Margidunum* Hinterland: pollen results from monolith 69, ditch 218534

Depth (m below top of monolith)	*0.20*	*0.35*	*0.48*	*0.65*
Chenopodiaceae	-	-	-	1
Plantago lanceolata	1	-	-	-
Lactuceae undiff.	2	2	3	3
Cyperaceae undiff.	-	3	1	-
Poaceae undiff.	5	3	3	4
Pteropsida (monolete) indet.	-	-	3	-
Total Sum	8	8	10	8
TLP SUM	8	8	7	8
Pollen concentration (grains cm^{-3})	1200	585	974	1559

Pollen was recorded in all four samples, though none provided sufficient quantities of pollen to enable counts to assessment level. Pollen identified within the four chosen samples from monolith 69 is given in Table 4.46.

Radiocarbon Dating

by Alistair J. Barclay and Chris J. Stevens

Introduction

Nine samples of human bone from *Margidunum* Hinterland were submitted to the Scottish Universities Environmental Research Centre (SUERC), East Kilbride for radiocarbon dating (three failed). Methodology covering pre-treatment, the presentation of the results and calibration is given in Chapter 7. The selected material came from eight discrete inhumation burials or bone deposits and one apparently redeposited bone from an occupation layer. The objectives for doing the dating were to answer the following:

- What is the date of the selected burials?
- Are they of similar date?
- Can they be placed in an ordered sequence?
- What date is the skull vault with cut-marks? Is it contemporary with the date of occupation or does it represent the possible manipulation of much older remains?

Results

The results are listed in Table 4.47 and are presented in Fig. 4.114 (excluding SUERC-44287). Attempts to

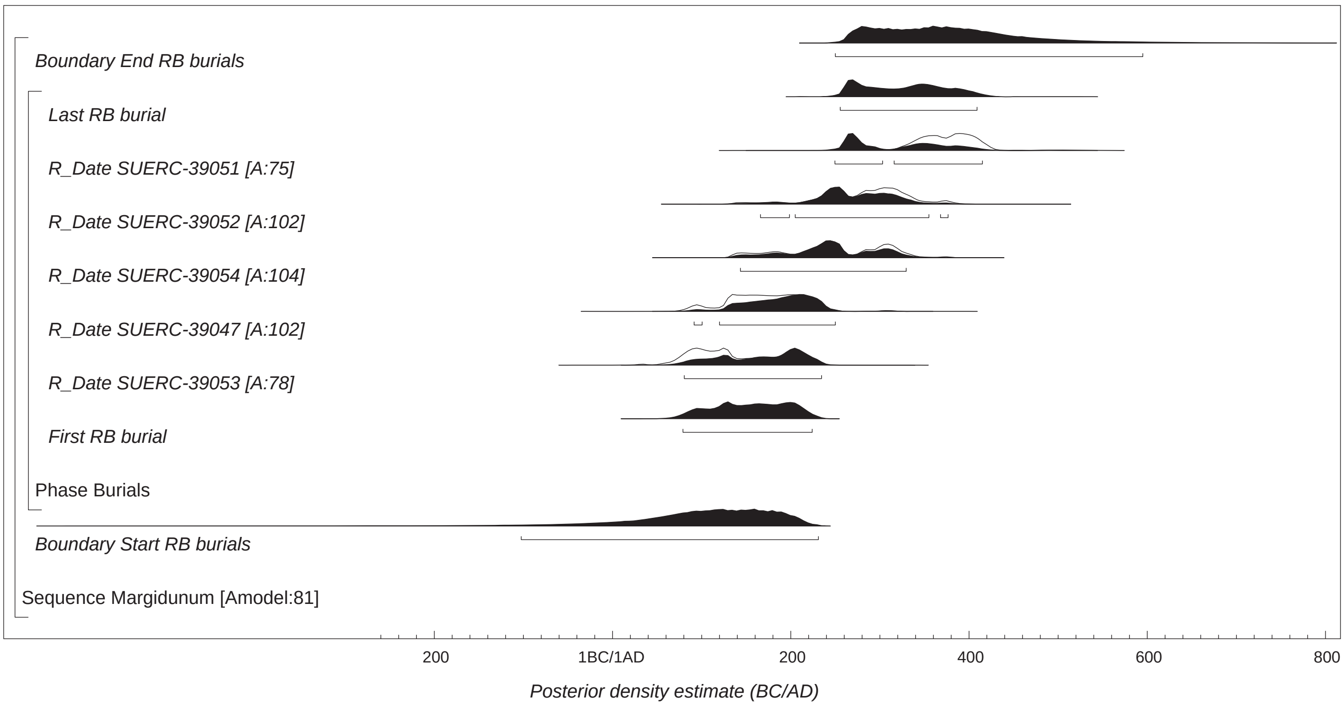


Fig. 4.114 Probability distribution (posterior density estimates at 95% probability) for radiocarbon dates from Romano-British burials at Margidunum *Hinterland*

date bone from graves 304515, 301448 and 301849 all failed due to insufficient collagen. Calibrated dates are given at 95.4% probability unless otherwise stated. The skull vault (303691 SUERC-44287) is of pre-conquest date (100 cal BC–30 cal AD at 95% confidence) and, for this reason, is considered separately from the other burial dates.

The earliest Romano-British burial dated is the neonate 303814a, which has a date (SUERC-39053) of *80–240 cal BC (95% probability)*, while the isolated male in grave 302809 (SUERC-39047) is slightly later – *120–260 cal AD (94.3% probability)*. The other three burials are all later, with dates within the 3rd and 4th centuries cal AD (Table 4.47).

The posterior density estimates, derived from Bayesian modelling of the burials as a group, give slightly more precise dates in most cases (Table 4.47, final column) and, for this reason, these results are used throughout the text. Table 4.48 presents the radiocarbon results for the five burials in their probability order, from oldest to youngest date using the OxCal Order function.

Summary

by Nicholas Cooke

Late Iron Age

The excavations to the south-west and west of the Roman small town of *Margidunum* revealed evidence for fairly extensive Late Iron Age settlement and enclosure complexes. This all started in the century or so before the

Table 4.47 *Margidunum* Hinterland: radiocarbon measurements for selected burials. Results are given in cal AD unless otherwise stated

Laboratory code	*Feature (context)*	*Material identification*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*$\delta^{15}N$ (‰)*	*C:N Ratio*	*Calibrated date range (95% confidence) cal AD*	Posterior density estimate 95% probability cal AD
SUERC-39047	302809 (302808)	Human bone, possible femur	1840±30	-20.6	11.50	3.2	80–250	*120–260 (94.3%)*
SUERC-39051	303504 (303502)	Human bone, left femur proximal shaft	1675±30	-19.6	10.20	2.9	250–430	*250–310 (45.4%)* *310–420 (50%)*
SUERC-39052	218519, 301257 (301284)	Human bone, left femur	1760±30	-19.9	11.10	2.9	140–390	*210–360 (91.1%)*
SUERC-39053	303814a (303814)	Human bone, neo-nate right femur	1880±30	-19.8	14.20	3.3	60–230	*80–240*
SUERC-39054	302289 (302288)	Cremated human bone	1780±30	-19.8	n/a	n/a	130–340	*140–330*
SUERC-44287	303691	Human bone, frontal vault with cut marks	2030±16	-20.5	11.3	3.3	100 cal BC–30 cal AD	-
GU-26653	304515 (304240)	Human bone, left arm	Failed	-	-	-	-	-
GU-26656	301448	Human bone ?femur (small frags)	Failed	-	-	-	-	-
GU-26657	301849	Human bone, left femur	Failed	-	-	-	-	-

Table 4.48 *Margidunum* Hinterland: the probability (%) that the radiocarbon date for one burial is older than the other four (the table should be read from the left-hand column across each row)

	303814 SUERC-39053	*302808 SUERC-39047*	*302289 SUERC-39054*	*218519 SUERC-39052*	*303502 SUERC-39051*
303814, SUERC-39053	0%	66%	91%	97%	100%
302808, SUERC-39047	34%	0%	49%	94%	100%
302289, SUERC-39054	9%	16%	0%	66%	88%
218519, SUERC-39052	3%	6%	34%	0%	80%
303502, SUERC-39051	0%	0%	12%	20%	0%

Roman conquest and formed a pattern of settlement and land use distinct from the Middle Iron Age settlements identified elsewhere on the project. It does, however, appear that the pattern owed something to the Middle Iron Age land divisions, since the large complex of interlinked enclosures (Enclosures A–E) lay to the north of the Iron Age pit alignment, while to the south was a different pattern where independent enclosures (G and H) were widely spaced, with Enclosure H physically linked to a partly silted-up Middle Iron Age boundary ditch. Some of the smaller northern enclosures (particularly A, B and C) contained penannular and curving ditches suggestive of foci of settlement (Structures 1–8) and, while the interpretation of many of these features is not clear cut, the finds of pottery and animal bone also tended to come from the same areas. Fewer finds came from the enclosures to the north ('ladder' Enclosure E and others), and it seems likely that these were for livestock, which are represented in the animal bone assemblage by sheep and cattle in almost equal numbers, with smaller numbers of pigs. However, the pottery from these features did include some north Gaulish whiteware beakers and less diagnostic amphora sherds, indicating contacts with the Continent before or around the time of the conquest. Perhaps significantly, these are drinking rather than cooking vessels and hint at a degree of status that is not otherwise apparent.

There were no good charred plant assemblages from the earliest phases of occupation in the northern enclosures, although later recuts, such as those of enclosure ditches A and C, and pit 302551, cutting the gully of Structure 2, had some barley, wheat and a flax capsule, as well as notable assemblages of stems and roots of heathland plants (bracken, heather) and of grasses, suggesting the use of turf for fuel.

Early Romano-British

The Late Iron Age enclosures continued in use into the post-conquest period, and early Romano-British pottery was recovered from the upper fills of some of these features, while some of the enclosure ditches were redug and new structures added. The early Romano-British pottery includes late 1st- and early 2nd-century types (McSloy, above), but lacks Claudian/Neronian vessels, and there is therefore some indication of discontinuity in the hinterland of *Margidunum* at the time of the conquest that is not borne out by the evidence of site development. There is no evidence from the pottery or other finds of a military presence. A fragment of copper casting mould from Enclosure B is an indication of some specialist crafts in this area.

The post-conquest continuity of settlement did not last long, and much of the settlement and enclosure complex appears to have fallen into disuse by the end of the 1st or early 2nd centuries AD. At the same time, there appears to have been a shift of settlement to the zone either side of the Fosse Way. The eastern spur of DE 3001 and in DE 3002 showed activity in the form of enclosures, pits and structures from the pre- or early Flavian period (AD 60s–70s). In Area DE3003, the area of excavation closest to the town itself, an assemblage of Flavian/Trajanic pottery was recovered from a relatively isolated pit (303115) in a part of the site largely comprising drainage ditches. Some relict ancient woodland was indicated by the snail assemblage from the pit, but elsewhere across the excavations the combination of environmental evidence shows largely open grassland throughout the Iron Age and Romano-British occupations.

The settlement on both sides of the Fosse Way appears to have been divided into plots, many containing rudimentary structures and associated pits and waterholes. There was evidence of both agriculture and industry and it is likely that these had slightly differing roles, although it is difficult to ascribe specific functions to them. To the west of the road (DE 3001) there was no evidence of a structure, although the presence of a rectangular enclosure, backing onto a long-lived, possibly hedged, boundary ditch, a waterhole and several pits, suggest that this was the back of a plot with a roadside frontage. The earliest forms of samian pottery came from this area (Monteil, above). The waterhole and pit 301122 contained abundant cereal processing waste and weeds of arable cultivation and, interestingly, pit 301221 contained a charred fig seed, indicating some consumption of imported food at this early stage.

The eastern side of the Fosse Way appears to have been divided into three plots, each containing structures, perhaps in pairs (Structures 9 and 10, 11 and 12 and part of Structure 14 to the south). Four of these structures were of circular or partly circular form indicating a continuity of native building traditions, while the forms of Structure 13, apparently replacing Structure 11, and of Structure 14 appear to have been rectangular. The nature of this roadside settlement was not apparent although the pottery profile showed a relatively narrow range of utilitarian wares, with more jars and fewer 'tablewares', compared with DE3001 and DE3003 at this time (McSloy, above).

It is tempting to link this abandonment of the late Iron Age/early Romano-British settlement enclosures to the establishment of Newton Villa immediately to the west. A much truncated crop dryer 301876, within its own enclosure in DE3001 (Fig. 4.12), appears to be an early 2nd-century construction, and can be seen in this context. It contained charred cereals (wheat and barley) with some indication for the preparation of malt (Stevens, above) and oak charcoal with some evidence that it came from a coppiced source (Barnett, above).

To the north, Enclosure G appears to have been refurbished and may have been linked to a double-ditched field boundary running east. To the south, Enclosure H appears to have been reworked in the early Romano-British period, and supplemented by the addition of Enclosure J. It is possible that both extended as far east as the line of the Fosse Way and became part of the zone of settlement and activity adjacent to it. The form and function of these enclosures remain unclear although, among the unremarkable range of finds, a samian inkwell from Enclosure J is noteworthy, if of uncertain significance.

Middle Romano-British

There was a marked change in settlement pattern around the middle of the 2nd century. The early enclosure and associated features on the western side of the Fosse Way, with the exception of the back ditch, went out of use, and near the road there is evidence for a structure (Structure 15) in the form of a clay floor, postholes and a beamslot. While its overall extent and form are unclear, finds from nearby features suggest it is likely to have been a domestic building engaged in cereal production or processing. Behind the building a series of shallow gullies appear to define fields, associated with several waterholes or wells. A slightly later line of pits on a different alignment to this boundary system may represent a later boundary or alignment. Of great interest were deposits of disarticulated human bone from mid-Romano-British deposits in the upper fill of the earlier well 218519, and further disarticulated (probably redeposited) bone from mid-Romano-British pit 301170. One of the bones, which was of an adult woman, was radiocarbon dated to AD 140–390 (at 95% confidence: SUERC-39052) (Table 4.47) showing a clear relationship with the mid-Romano-British occupation, despite having been reburied on the site of the well, rather than in a burial ground. To the east of the Fosse Way (DE 3002) the two northern plots may have been amalgamated, although there is a clear division between the northern group of structures (Structures 16–19) and the southern one (Structure 21), apparently divided by a line of large postholes (Fig. 4.20). There was a large quantity and range of finds, particularly from the northern plot, both from the wells, pits and postholes and from associated layers (Fig. 4.23). The functions of structures cannot be readily determined from their structural remains and related features, nor from the distribution of finds generally (many of which came from superficial layers), although a few suggestions can be made.

Structure 16 was identified from a fragmentary clay floor into which were set an oven and a stone-lined well. Burnt residue from the fills of the oven indicates that it was used as a drying oven in the early stages of malting. This, together with the proximity of the well, suggests that the structure was being used for some elements of the brewing process. To the south-east, Structure 20 was defined by a 9 m-long gully and an approximate parallel line of pits and postholes enclosing a space about 4 m wide. This contained a stone plinth of unknown purpose. The overall form and function of this structure is not clear, although it may have been related to Structure 16 playing a role in malting or brewing. The later structure in this area (Structure 26) contained a millstone fragment in one of its postholes, and this may have come from a grain preparation location in the vicinity.

Structure 17, to the south of Structure 16, was post-built and probably rectangular. The concentration of iron-smithing residue from this area in particular suggests that the structure was a smithy, engaged in small-scale forging and repairs (Starley, above). There is also evidence of copper casting, and the repair of samian pottery using lead plugs or rivets. Substantial spreads of occupation debris built up across much of the northern plot. Material from these spreads included hammerscale, over 20 smithing bottoms and numerous sherds of repaired samian ware. A block of quartzite that had probably been used as an anvil came from layer 303677. Two placed deposits from inside the structure may have been associated with its use or abandonment; one (pit 303672) contained part of an articulated cattle spinal column, while another (303674) contained a largely complete raven burial.

To the west of Structure 17 lay another rectangular post-built structure – Structure 18. It contained an apparently contemporary rectangular sandstone setting in the form of a solid block of masonry set slightly off centre within the building, perhaps suggesting a counter or an altar. The latter interpretation is suggested by a small pit dug against its southern edge for a small stone-lined cist, which contained the neck of an early Romano-British glass flagon and a smashed pot which appears to have contained a resin-like substance possibly derived from human or animal fat. The cist appears to have contained some sort of offering, and may have been a cenotaph. Its proximity to the stone setting strongly suggests that the two are related, although the cist may have been associated with Structure 19. This was a small building with mortared foundations at an angle to earlier structure. Although this itself had suffered significantly from later robbing or truncation, this was probably a small square or rectangular building. Its function is unclear, although it was closely associated with a crude, exterior cobbled surface to the north and the burial of a newborn baby (grave 303859) within it. This was one of 18 burials of newborn (peri-natal and neonatal) and one slightly older infant within the northern plot. They generally appear to have been stratigraphically later than the structures, with many dug through the extensive spreads of occupation debris which had built up here and through the edge of the stone plinth in Structure 20 (Fig. 4.25). It cannot be demonstrated, however, that the infant burials constituted a distinct, post-abandonment, phase of activity.

In the southern plot was a single rectangular timber building (Structure 20) defined by a short beamslot and a series of postholes, and contained a central hearth. This was closely associated with a stone-lined well which was constructed in the 2nd century AD, and probably backfilled in the late 3rd century. The fill of this well contained an array of waterlogged plant species associated with disturbed nitrogen-rich soils and animal trampling. There is therefore a distinct lack of metallurgical activity in this plot, and a suggested emphasis on domestic stock. At the southern end of DE 3001, Enclosure J continued in use throughout the mid-Romano-British period whilst Enclosure H fell into disuse, and was replaced by a ditched trackway and, to the south, Enclosure K, which appears to have defined the southern extent of the roadside activity fronting on to the west side of the Fosse Way.

Beyond this zone of roadside activity, on the north part of DE3001 large fields appear to have been laid out (Fig. 4.16) and the track leading to Newton Villa, while largely of late Romano-British date, may have had its origins in the 2nd century. Certainly, the early Romano-British crop dryer complex, which lay adjacent to this track, was enclosed in the mid-Romano-British period. This may have been replaced later by crop dryer 302781 which lay in a field a short distance to the north (Fig. 4.30). An isolated inhumation burial, 302809, lay adjacent to field boundary ditch 2218552. A radiocarbon date of *AD 120–260 (94.3%)(at 95% probability: SUERC-39047)* from this burial supports this broad phasing. It seems that these large rectangular fields, the crop dryer and the burial were linked with the Newton Villa immediately to the west.

Late Romano-British

In the late Romano-British period, from about AD 250, there was a marked change in settlement layout. On the western side of the Fosse Way (DE3001) there was no direct evidence for settlement, the plot now being occupied by a few enclosure ditches and a waterhole (Fig. 4.45) perhaps aspects of pastoral farming. On the other side of the road, a new metalled road flanked by a roadside ditch was laid, leading off the Fosse Way in the direction of Bingham (Fig. 4.46), and the earlier building plots were rearranged. Pottery and coins indicate that the new road was established in the late 3rd century AD. On the north-eastern side of the road, two small subrectangular stone platforms were associated with a large stone packed posthole, redug at least once. It is not sure how these features related to each other, but the platforms may have supported roadside funerary monuments.

To the north lay two large rectangular structures (Structures 25 and 26). Structure 25 was partly defined by a gully, which probably defined the wall-line since it was abutted by the remnants of a clay floor. Finds from the gully included a coin of the last decade of the 4th century. A very late and heavily truncated burial, 303502 (grave 303504), had been dug through the terminal of this gully. A radiocarbon date of AD 250–430 (SUERC-39051 at 95% confidence) confirmed that this dated to the end of the Romano-British period (Table 4.47: *310–420 cal AD (50%) at 95% probability*). Structure 26 was a large hall-like post-built structure with a stone-lined hearth set off centre. At the southern end of DE3001 the ditches of both Enclosure J and Enclosure K were redug. Enclosure K became the location of a small inhumation cemetery, predominantly comprising adults (12), with a single juvenile. These were generally unfurnished, although nine were probably buried in coffins, despite there being little regularity to the pattern of iron nails found. The majority of the graves were aligned on the nearest boundary. There seems to have been some care taken not to disturb earlier burials, perhaps with graves being marked, although one burial clearly truncated an earlier burial. Only a small number of grave goods accompanied the burials, and included hobnailed shoes, a coin and a broken finger-ring.

Beyond the zone of roadside activity, there is evidence for the reorganisation of the mid-Romano-British landscape east and north-east of Newton Villa in the 3rd century (Fig. 4.30). A range of enclosures were added to the northern end of the villa complex and a metalled ditched trackway was laid leading to the villa from the Fosse Way, In a field to the north were two cremation burials (graves 302291 and 302289), one containing hobnails, and the late date receives some support from radiocarbon dating (*AD 140–330 at 95% probability*, SUERC-39054; Table 4.47). Three late Romano-British buildings, probably belonging to a farmstead, lay to the north west of *Margidunum* (DE3004; Fig. 4.38, Structures 22–24). Two had stone footings, bonded with earth, whilst the third was defined by shallow beamslots. It is not clear whether the stone footings of Structures 22 and 23 supported a timbered superstructure. These may have been roofed with substantial stone tiles, which were relatively crude and suggest fairly low status buildings, although roof tiles and other ceramic building material also came from this area. The timber building (Structure 25) contained two small ovens, probably used in the processing of crops, and a larger crop-drying oven lay nearby. These ovens contained a range of crops, including barley and beans, and it seems likely that the building was an agricultural drying and storage barn. A single inhumation burial (304515) not far from the crop dryer is likely to be of a similar date although a radiocarbon sample failed due to lack of collagen. While the coin evidence on the farmstead suggests that it was in decline in the second half of the 4th century AD, elsewhere there is good evidence for activity towards the end of the 4th century and possible into the early 5th. After this, however there appears to be a significant hiatus in activity. There is some evidence for Anglo-Saxon activity on the site, dating to the 5th or 6th centuries AD, but it is confined to a single sunken-featured building in DE3004 and two isolated features in DE3001. It is clear that this does not represent continuity from the late Romano-British activity at *Margidunum* Hinterland, but settlement of a largely undefined nature on the same site.

For much of the medieval and post-medieval period, the site was used as agricultural land, with much ridge and furrow identified. The only areas which appear to have been relatively untouched by this regime are areas containing earlier palaeochannels, or active streams, which were probably slightly lower lying and thus prone to periodic episodes of flooding, perhaps fed by the springs which rise to the south-west of *Margidunum*. The site of *Margidunum* appears to have been largely forgotten, apart from as a source of building stone, until growing antiquarian interest, including the description of the site by Stukeley, led to the excavation campaigns of Oswald and Todd, which provided the background to the current project design by URS and the excavations that followed.

Chapter 5
Saxondale:
Prehistoric, Romano-British and Early Anglo-Saxon Landscapes

Ray Holt

Introduction

The site occupies the line of the new road close to Lings Farm in the south and the dismantled railway line north-east of Lodge Farm in the north, and its interchange with the A52 between Bingham to the east and Saxondale village to the west (Fig. 5.1).

The main excavation area (comprising SM2067–70 and 2073) covered an area of *c.* 9.4 hectares, comprising higher ground to the south at *c.* 64.5 m aOD, a north-facing slope and flat valley base to the north at *c.* 37 m aOD. Smaller excavations were undertaken *c.* 500 m to the north-east to examine the edge of the Roman road (SM2072), and to the south-east to investigate a

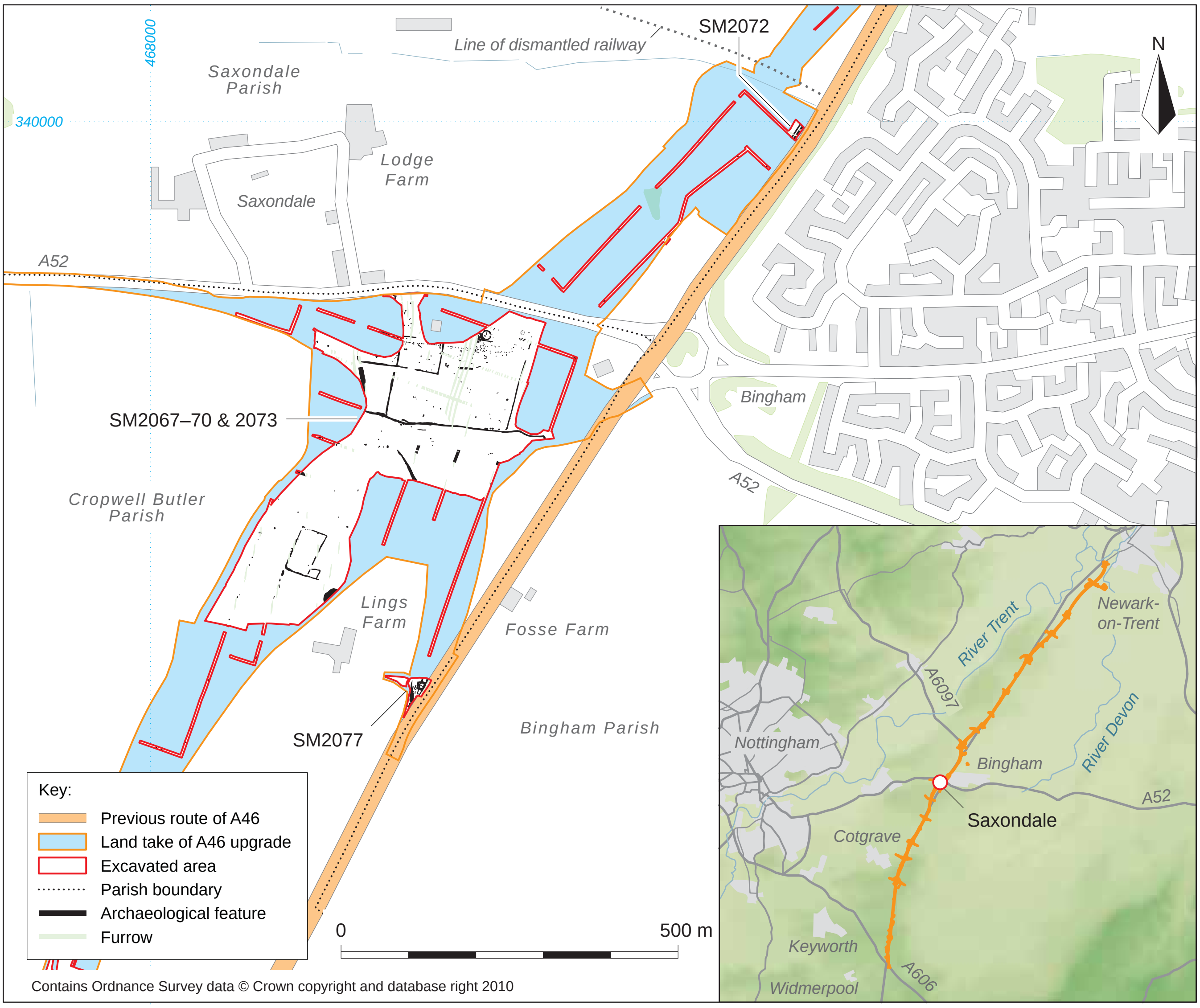


Fig. 5.1 The location of Saxondale excavations

group of enclosures adjacent to the former A46 road near Lings Farm (SM2077). In all areas the underlying geology was a clayey silt which is mapped as Edwalton Member, Dolomitic siltstone and mudstone to the south, and mudstone of the Branscombe Mudstone formation to the north.

Strip, map and sample excavations revealed the presence of Romano-British features, including enclosure ditches and a pit, as well as part of the Roman road (Fosse Way) and a roadside ditch, medieval and later agricultural features, and a few less well-dated features. The subsequent excavations revealed a diverse range of features including Bronze Age postholes, pits and cremation graves, Iron Age structures and associated pits and postholes, a Romano-British field system and other enclosures and an Anglo-Saxon cremation cemetery. In the northern part of the main area of excavation pre-medieval features were sealed by a layer of colluvial soil which had been cut by an extensive pattern of later ridge and furrow.

The pottery from the site spans the Middle/Late Bronze Age through to the post-medieval period. Features were not generally well preserved and were often scattered and frequently poorly dated. Within the long chronological sequence there does not appear to have been dense occupation at any time, and the archaeological record shows dispersed and perhaps intermittent activity over a long period. Despite the generally truncated and sometimes poor quality of the archaeological evidence, one of the most significant aspects of this site is the demonstrated association between the group of roadside enclosures with Romano-British origins, and the small early Anglo-Saxon cremation cemetery. This cemetery, in turn, appears to have contributed to the continuing significance of this location, in a slightly wider sense, as a meeting place for the Bingham Wapentake from later Anglo-Saxon times, and the site of an earthen mound (of possible funerary significance) observed and depicted by William Stukeley in 1722 (see Fig. 10.15). These developments, with a consideration of the post-Anglo-Saxon documentary sources, are presented more fully in Chapter 10 (Discussion).

Unless otherwise stated, the features described lie within the main excavation area.

Bronze Age

Bronze Age features comprised a small number of Middle Bronze Age cremation-related features, a Middle–Late Bronze Age roundhouse, a line of three Late Bronze Age pits and a large enigmatic 'trough' (Fig. 5.2). It is possible that some of the undated pits and postholes also date to the Bronze Age.

Cremation Burials

There were two (possibly three) cremation graves, and a number of other contexts containing cremated human bone, all in the north-eastern part of the excavation area (Fig. 5.2). Grave 270050, on the north-facing slope above the valley, was heavily truncated and survived to a depth of only 0.05 m. It contained the unurned burial remains of a subadult/adult, which was radiocarbon dated to 1610–1440 cal BC (at 95% confidence)(SUERC-39042, 3245±30 BP) (see Table 5.10).

The small quantities of cremated bone in two nearby features (270043 and 270046), also heavily truncated, may represent redeposited pyre debris, although the material from the latter could be the remains of another unurned burial, of an adult. The cremated bone in two poorly defined 'spreads' (270047 and 270048) is likely to be redeposited pyre debris (see McKinley, below).

Grave 269625, located on the valley floor *c.* 115 m to the north-north-east of grave 270050, contained the remains of an unurned burial (269626) of an infant. The bone was concentrated in the centre of the grave suggesting it may have been within an organic container. A radiocarbon date in the Middle Bronze Age of 1420–1220 cal BC (at 95% confidence)(SUERC-39041, 3055±30 BP) (see Table 5.10) was obtained, which is slightly later than that from grave 270050 (see Table 5.10).

Grave catalogue

by Kirsten Egging Dinwiddy

N.B. all grave fills and cremation-related deposits: mid-dark blackish-brown sandy/clay silt with charcoal and stones, or a variation thereof.

Cremation graves

Grave 269265 (burial 269626) (see Fig. 5.21)
NW–SE; subrectangular with rounded corners, shallow–moderately sloping sides & concave base; 0.59 x 0.62 x 0.12m (base at 37.76 m aOD). Unurned burial (269626), largely undisturbed; bone concentrated in centre (?within a bag).
Human bone: 40.9 g infant *c.* 0.5–4 yr.
Date: 1420–1220 cal BC (SUERC-39041; 3055±30 BP)

Grave 270050 (burial 270049)
N–S; subsquare with rounded corners, near vertical sides & flat base; 0.36 x 0.33 x 0.05 m (base at 43.51 m aOD).
Unurned burial + redeposited pyre debris (270049).
Human bone: 74.6 g subadult/adult *c.* 13–20 yr.
270047 redeposited: 2.1 g ?= part of 270049
270048 redeposited: 3.3 g ?= part of 270049
Date: 1610–1440 cal BC (SUERC-39042; 3245±30 BP)

Pits containing cremation-related deposits

Pit 270046 (burial 270045)
E–W; subcircular/square with rounded corners, concave sides & flat base; 0.3 x 0.3 x 0.04 m (base at 43.45 m aOD). ?Redeposited pyre debris/?unurned burial + redeposited pyre debris (270045).
Human bone: 19.7 g adult >30 yr.

Pit 270043 (fill 270044)
NE–SW; subrectangular with rounded corners, shallow sides & concave base; 0.3 x 0.28 x 0.04 m (base at 43.38 m aOD). Redeposited pyre debris (270044).
Human bone: 0.5 g human

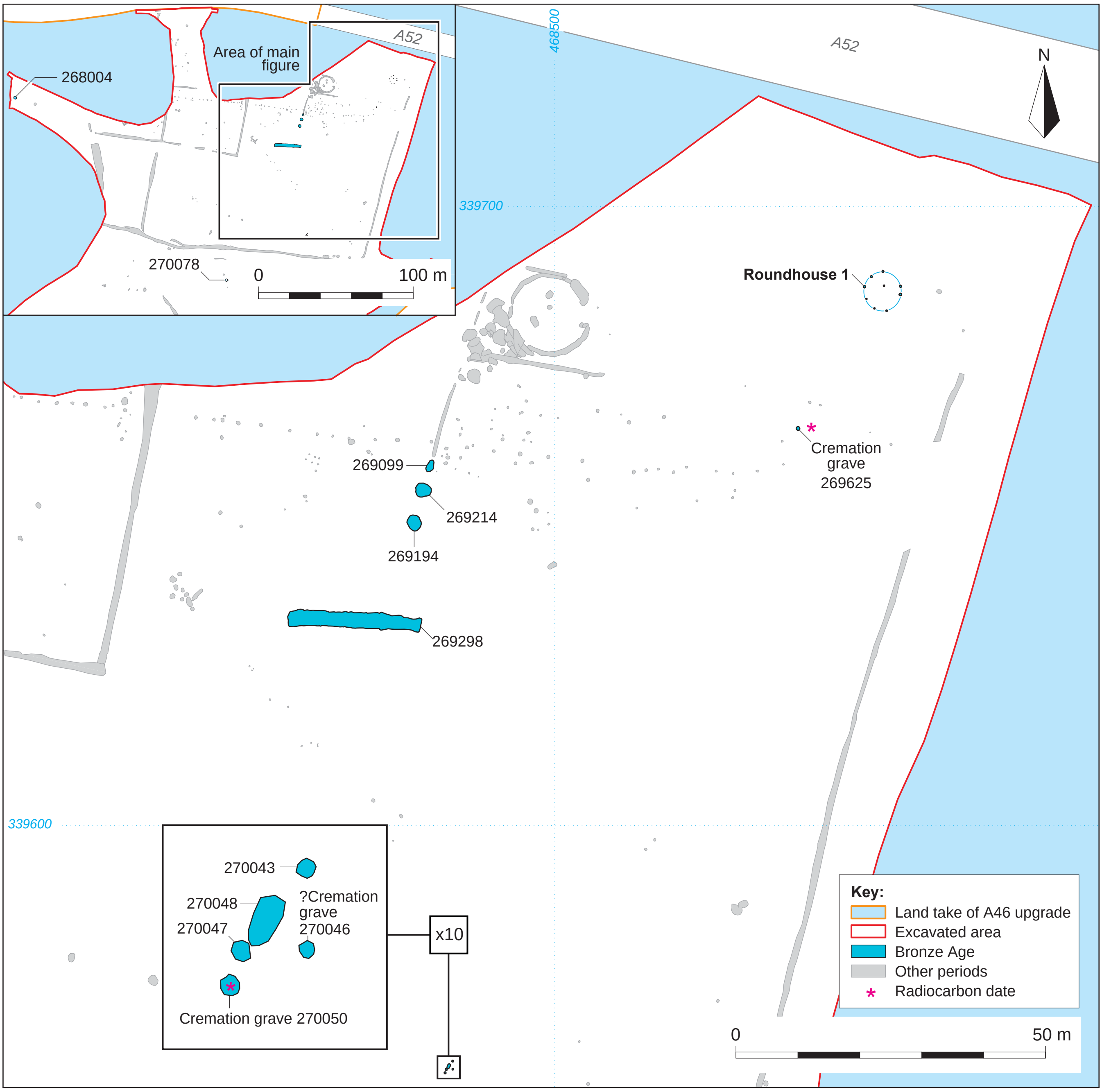


Fig. 5.2 Bronze Age features

Settlement

Roundhouse 1

Approximately 20 m north of cremation grave 269625, a group of eight postholes, seven of them in a circle, represent the remains of a *c.* 6 m diameter roundhouse (Roundhouse 1) (Figs 5.2 and 5.3). The postholes were 0.2–0.4 m wide and up to 0.17 m deep, and the two largest (269168 and 269170), *c.* 1.2 m apart, may have marked the position of an east-facing doorway. There were wide gaps on either side of the entrance, but the other postholes were spaced at *c.* 2 m intervals; there was one internal off-centre posthole.

The only finds, from posthole 269158, were worked flints of unspecific prehistoric date. However, radiocarbon dating of oak charcoal from posthole 269160 (fill 269161) provided a date in the Middle–Late Bronze Age of 1260–1020 cal BC (at 95% confidence) (SUERC-39036, 2930±30 BP) (see Table 5.10). While this single date is not conclusive and the wood is likely to have an age offset, the structure is within the tradition of later Bronze Age post-built roundhouses, there being a closely similar example, *c.* 7 m in diameter, at Colne Fen, Cambridgeshire (Brudenell and Evans 2007, 40, fig. 12, structure 7). The notably similar posthole layout includes apparent gaps to either side of an east-facing doorway, and also internal shallow pits or postholes on the northern side.

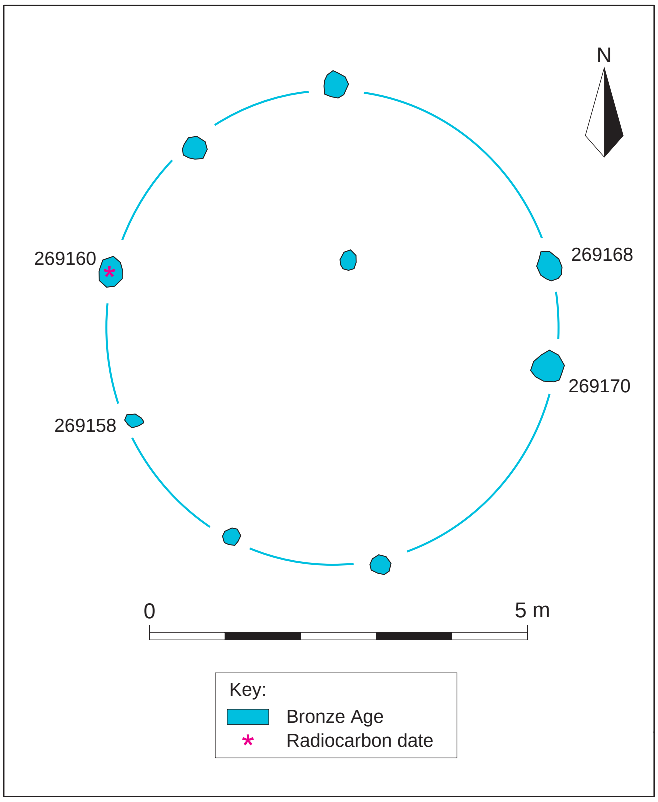


Fig. 5.3 Middle–Late Bronze Age Roundhouse 1

Unfeatured bodysherds of grog-tempered pottery of probable Middle Bronze Age date were found in two shallow possible postholes, one (268004) in a close group of three at the north-west of the excavation area, the other (270078) being one of a close pair *c.* 70 m south-west of cremation grave 270050 (Fig. 5.2 inset).

Pits

Three pits (269099, 269214 and 269194) lay *c.* 80 m south-west of Roundhouse 1, in a *c.* 10 m long north–south line (Fig. 5.2).

Pit 269099 was *c.* 2 m wide and 0.4 m deep with steep sloping sides and a slightly concave base. The primary fill (269100), a brownish grey clay containing frequent charcoal flecks, was overlain by a charcoal-rich layer of sandy clay (269101) containing 16 sherds of Late Bronze Age pottery, probably a dump of domestic waste. The final fill (269102), largely devoid of cultural material, appeared to contain clods of natural clay probably representing deliberate backfilling.

Pit 269214 contained no finds but has been allocated to the same period due to its position and similarity of form and fills. It also had a charcoal-rich lower fill (269215) yielding moderate quantities of spelt wheat (see Table 5.7). There were signs of the pit's sides slumping in on top of this deposit, suggesting it had been left open for some time. The final fill again appeared to represent deliberate backfilling.

The southern pit (269194), which was *c.* 2.6 m wide and 1 m deep, showed a similar depositional sequence, with a charcoal-rich primary fill (although with few identifiable charred remains, see Table 5.7), followed by episodes of slumping, dumping of domestic waste and subsequent deliberate backfilling.

The presence of Late Bronze Age pottery and charred cereals in these features suggests domestic occupation nearby, and it is possible that some of the undated postholes to their east represent structures of this period.

'Trough'

South of the line of pits lay a linear feature (269298) *c.* 22 m long (east–west) and 2.6 m wide with moderately steep sides (Figs 5.4 and 5.5). It had an uneven base, being shallowest near its centre and sloping slightly down to the west, but up to 0.6 m deep in its eastern half, suggesting that it may have been dug in a series of sections. The fills were all very similar, appearing to have been formed by natural accumulation after the feature had gone out of use, while the few artefacts had potentially been washed in from the immediate vicinity. A soil monolith (monolith 72) confirmed that the lower fills were essentially composed of geological material from the side profile, while the rather siltier upper fills contained probable topsoil-derived material (Norcott, in archive). The lower fills contained grog-tempered pottery of Early–Middle Bronze Age date (*c.* 2400–1100 BC), whereas the upper fills contained Early–Middle Iron Age pottery (700–100 BC), from later accumulation or intrusions through bioturbation. There appeared to be no *in situ* material relating to the feature's use, and its function remains unclear.

Fig. 5.4 Bronze Age 'trough' 269298 viewed from the west

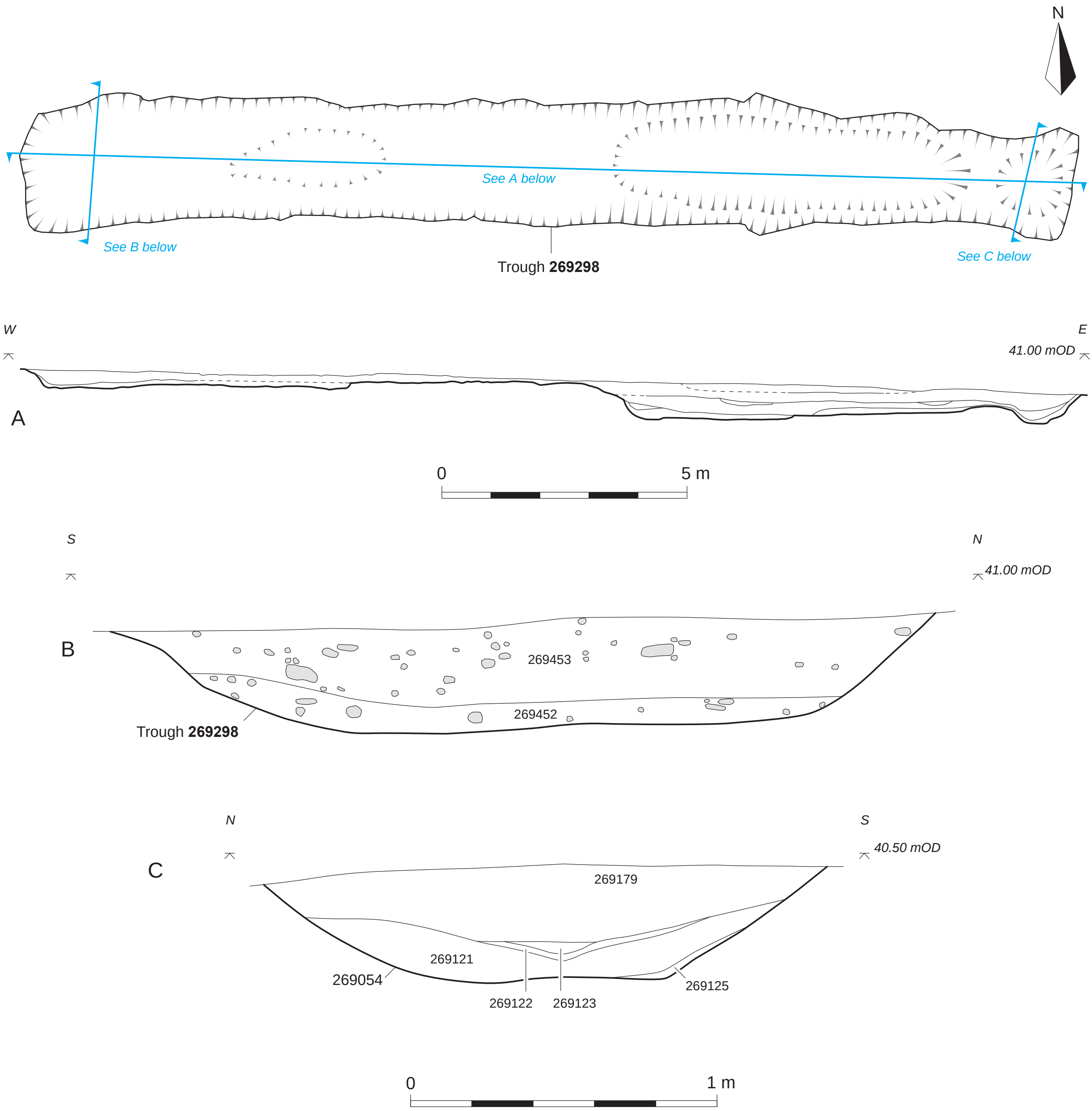


Fig. 5.5 Bronze Age 'trough' 269298, plan and sections

Iron Age

Settlement

Evidence for Iron Age settlement, in the form of a roundhouse (Roundhouse 2), a number of storage/refuse pits and a rectangular post-built structure (Structure 3) was recorded on the flat valley base (Fig. 5.6). The pottery from the settlement is largely of Early and Middle Iron Age type (*c*. 700–100 BC), with little evidence of Late Iron Age/early Romano-British forms.

Roundhouse 2

The roundhouse was marked by a segmented penannular gully (277277and 269278) 11.8 m in diameter with an east-facing entrance (Figs 5.7 and 5.8). The gully, probably a drip gully, was 0.4–0.9 m wide and up to 0.2 m deep with a concave profile. (It cut two postholes, not illustrated, on its northern and southern sides.) Only the southern terminal of the entrance survived, the northern one having been truncated by a group of later pits, but the gap would have been at least 3.2 m wide. Immediately inside the southern terminal, and cut by it, were two small pits, the outer (269373) possibly replacing or recutting

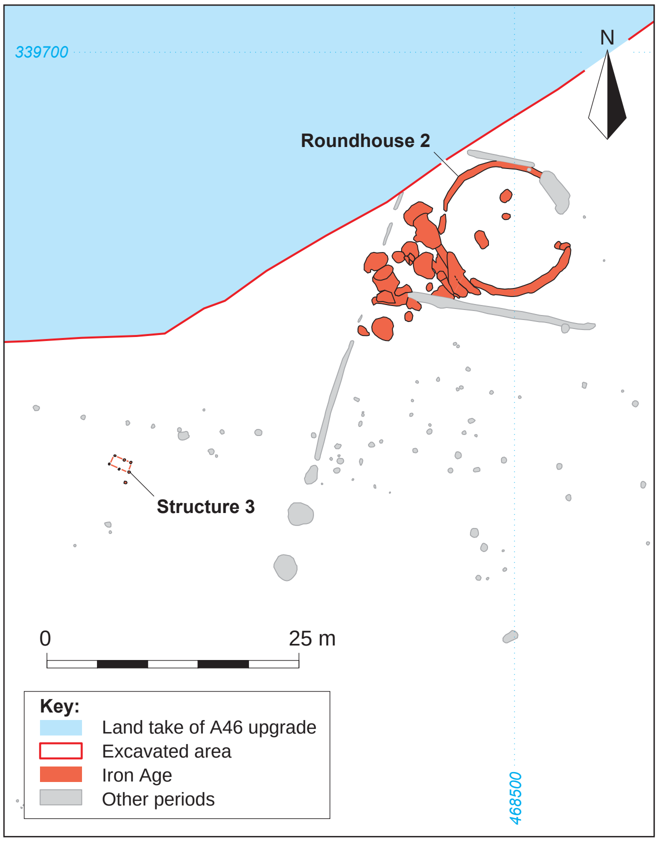


Fig. 5.6 Middle Iron Age features

the inner (269375) (Fig. 5.7, section C). Together, they contained 116 sherds of Middle Iron Age pottery, most of it from a single vessel possibly deliberately placed at the entrance; pit 269373 also contained burnt animal bone (not identified to species).

In its northern arc the gully contained a single homogeneous fill, while its southern part had a similar lower fill, but with an upper fill in the south-east which yielded two sherds of pottery dated Iron Age to 1st century AD. No datable artefacts were recovered from the lower fill, but a soil sample (cut 269392, fill 269393) contained large quantities of cereal remains (see Table 5.7), which provided a radiocarbon date in the Middle Iron Age of 380–200 cal BC (at 95% confidence) (SUERC-39037, 2215±30 BP) (see Table 5.10).

A number of curvilinear gullies (277276, 277275 and 277274) on the western side of the roundhouse suggest the repeated remodelling of this section of gully, perhaps indicating that it was prone to silting, or to unintentional infilling with upcast from the numerous adjacent pits. The earliest of these gullies (277276) could have been contemporary with the initial construction of the roundhouse; three sherds of Middle Iron Age pottery were recovered from the final phase (277274).

There were three features in the interior of the roundhouse, a small shallow pit (269404), and two large subrectangular pits, 269253 and 269560, the latter apparently recut (as 269548) (Fig. 5.7, sections D, E and F). However, it cannot be established whether any were directly associated with the roundhouse. The large pits had steep/vertical (in places undercut) sides and flat bases. Samples from pit 269560 (see Table 5.7) yielded de-husking waste from grain processing and calcined sheep/goat bones, more highly burnt than would be expected from cooking for reasons that are not clear.

Pit cluster

There was a dense cluster of approximately 30 pits to the immediate south-west of Roundhouse 2 (Fig. 5.7). They displayed considerable variation in size and form, suggesting that they had a variety of functions. At least three phases of pit digging were apparent. Some of the larger ones were steep sided and flat bottomed suggesting they may have been for grain storage, although there was no direct evidence of this, the nature of the fills suggesting their final use for the disposal of refuse, and then often silting up through natural processes.

Pit 269414 (Figs 5.7 and 5.9), at the south-west of the group, was one of the larger pits, measuring 2.4 m wide and over 1 m deep. Its northern side was undercut (often a feature of grain storage pits), but its southern edge had a stepped profile that appeared deliberate, possibly for access. Fills 269415 and 269417 contained pottery of possible Iron Age date, while the intervening charcoal-rich fill (269416), which contained some identifiable cereal grains and weeds (see Table 5.7, sample 55), appears to have derived from the dumping of fire debris.

Postholes

There were numerous undated postholes to the south of the roundhouse, apparently respecting it, and so potentially representing multiple and broadly contemporary structures (Fig. 5.6). The long east–west fence-line is thought likely to have been Romano-British (see Fig. 5.13) but it is possible that it had earlier origins. The only other coherent structure was formed by a group of seven postholes lying 35 m to the south-west, six of which appear to form a rectangular structure (Structure 3), 2 m long (NNW–SSE) and 1 m wide, which may have been a raised grain store. The postholes (269041, 269043, 269045, 269047, 269049 and 269051) were of a similar size and shape, being sub-circular or oval, *c.* 0.2–0.3 m across and just 0.05–0.1 m deep.

Romano-British

Evidence for Romano-British activity was found across the entire site. The Roman Fosse Way, revealed to the north of the A52, showed evidence for various stages of resurfacing and repair. There was evidence of landscape organisation and division in the form of several ditched enclosures, an extensive field system and a variety of discrete features, including deep pits that may have been wells or cisterns. Adjacent to the Fosse Way east of Lings Farm there were several small intercutting enclosures. Overall, the pottery indicates activity from the 1st century AD through to the 4th century AD. Many of the undated pits and postholes may also date to the Romano-British period.

Fig. 5.7 Iron Age Roundhouse 2 and associated pits, plan and sections

Fig. 5.8 Roundhouse 2 viewed from the south-west

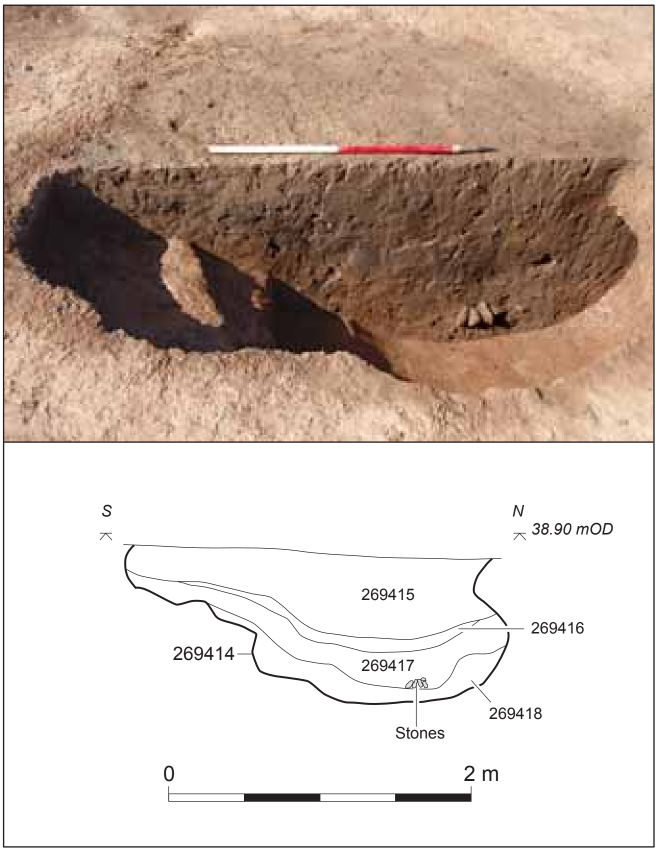


Fig. 5.9 Iron Age pit 269414 viewed from the east, and section

The Roman Road

The north-western edge of the Roman road and the adjacent roadside ditch were revealed in SM2072 at the northern end of the site (Figs 5.1 and 5.10) The

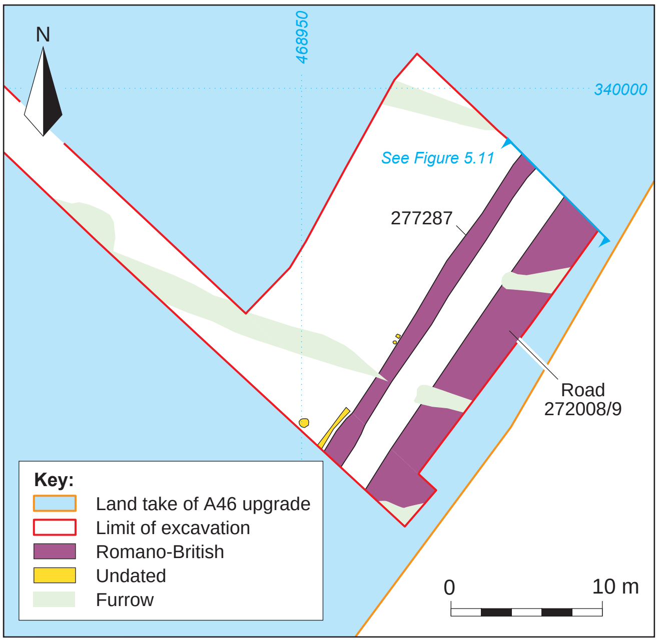


Fig. 5.10 Roman road (Fosse Way) and roadside ditch (SM2072)

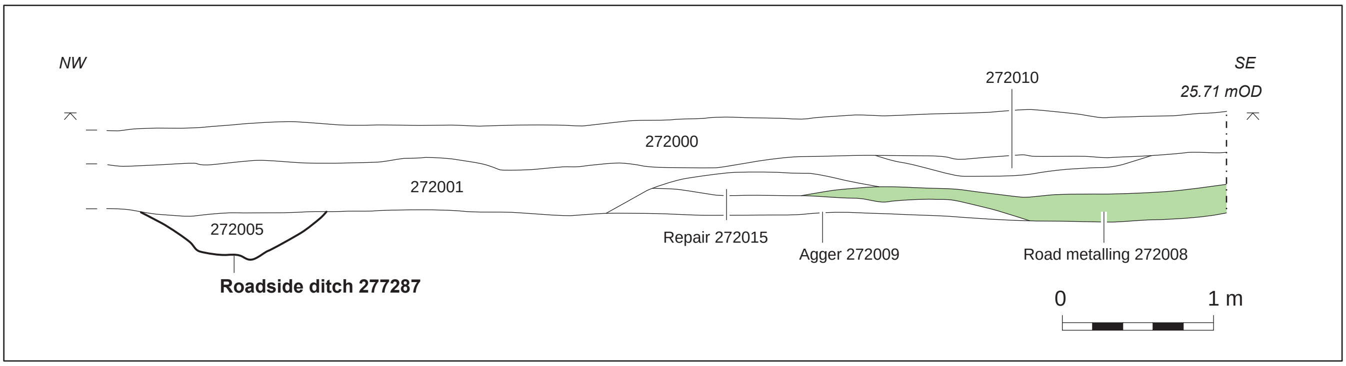


Fig. 5.11 Section through the Fosse Way Roman road and roadside ditch

road, laid upon the alluvium, had a foundation layer of coarse yellow sand (272009) up to 0.15 m thick, creating a pronounced mound or *agger* to assist drainage. The overlying road surface (272008) consisted of a compacted layer of riverine pebbles, 0.15 m thick, which had been eroded to form a slight hollow towards the middle of the road. A later repair, consisting of a compact layer of sand and pebbles (272015), was identified on the north-western side of the road in the section, but proved difficult to trace for more than a metre into the excavation area due to a uniform crust of iron panning. The entire road was subsequently sealed by ploughsoil (272001) to a thickness of 0.25 m. A stony deposit (272010) below the topsoil probably derived from plough action on the road metalling (Fig. 5.11).

The roadside ditch (277287), which ran parallel to the road *c.* 2.5 m to its north-west without a stratigraphic relationship, was 1.3 m wide and 0.3 m deep, and filled with sandy silt (272005).

Enclosures and Field Systems

Southern enclosures

A rectangular enclosure (Enclosure 1, Fig. 5.12), with a small enclosed annexe at its south-east corner (Enclosure 2), was revealed on higher ground at the southern end of the excavation north-west of Lings Farm (see Fig. 5.1). The large pottery assemblage from the enclosure ditches suggests a 1st–2nd-century date, with no later finds recovered.

Enclosure 1

Enclosure 1, measuring *c.* 66m long (NNE–SSW) and *c.* 35 m wide, was defined by a series of discontinuous shallow ditch segments. Its eastern side, defined by ditch segments 277243, 277244 and 277245, was punctuated by three entrances, one near the centre, and two at the south (one giving access to Enclosure 2). Ditch 277245 also formed much of the north end of the enclosure; to its west was a *c.* 10 m wide gap, within which were three evenly spaced postholes, possibly a fence or gateway, beyond which was another short ditch segment (277246) extending to the north-west corner. Ditch 277240 formed the southern side and much of the western side of the enclosure (there was a gap at its north end), and showed two phases of recutting, perhaps indicating greater silting from the slightly higher ground to the south.

Most of the ditch fills indicated a gradual accumulation of material, although a few intentional backfill/dump deposits were identified and, as such, may indicate contemporaneous occupation in or near the enclosure. A notable group of pottery came from the upper fill of the southern terminal of ditch 277245 (cut 273078). The position of this material, on the left-hand side (looking out) of the central and possibly main entrance to the enclosure, may reflect some continuity of tradition with the comparable deposit at the entrance to Iron Age Roundhouse 2 (above).

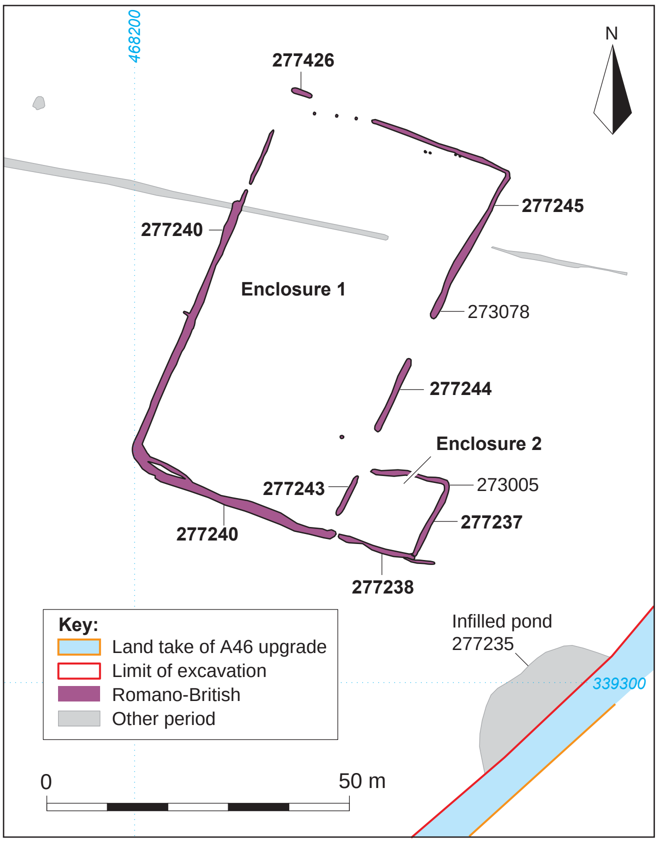


Fig. 5.12 Romano-British Enclosures 1 and 2

The enclosure interior was almost completely empty of features, with just two pairs of postholes close to the northern side, possibly representing structures for stock control, drying racks or part of a fence, and a pit towards the south-east corner which appeared to have been deliberately backfilled. However, they contained no datable artefacts.

Enclosure 2

A small annexe abutted the south-west corner of Enclosure 1, measuring *c.* 13 m east–west by 11–13 m north–south. Its north and east sides were formed by ditch 277237, and its south side by ditch 277238. There were narrow gaps to either side of ditch 277243 which it shared with Enclosure 1. The ditch fills, for the most part, appear to represent natural silting, although there were substantial groups of pottery from ditch 277237 suggesting occupation within the enclosure or nearby. Fragments of Roman window glass came from ditch 277238. The quantity and nature of the finds (see McSloy, Romano-British Pottery, below) suggests the location of a domestic building here, but there were no features interpretable as elements of such a structure. It is probable that shallow foundations, perhaps in the form of beamslots or plinths, had left no surviving trace of a building.

Northern field system and enclosures

An east–west fence-line was revealed in the northern part of the excavation (Fig. 5.13). Although undated, its orientation was matched by that of an extensive ditched rectilinear field system, incorporating three enclosures. Within the field system were a number of discrete features including postholes, gullies, pits and possible cisterns or wells. A number of these features were dated artefactually to the Romano-British period and several undated features had functional or spatial relationships with them. A small number of discrete Romano-British features were also identified to the south of the field system.

Fence-line

An east–west line of undated postholes crossed the flat valley base, and was recorded for 165 m within the excavation area, appearing to extend beyond it to the west (Fig. 5.13). The postholes were generally spaced *c.* 5 m apart, although there were some gaps and irregular spacings. A short line of postholes also ran at right-angles to it, crossing its line. The lack of dating evidence makes the context of the fence-line uncertain although it may represent a precursor of the ditched Romano-British field and enclosure system which shared the same orientation.

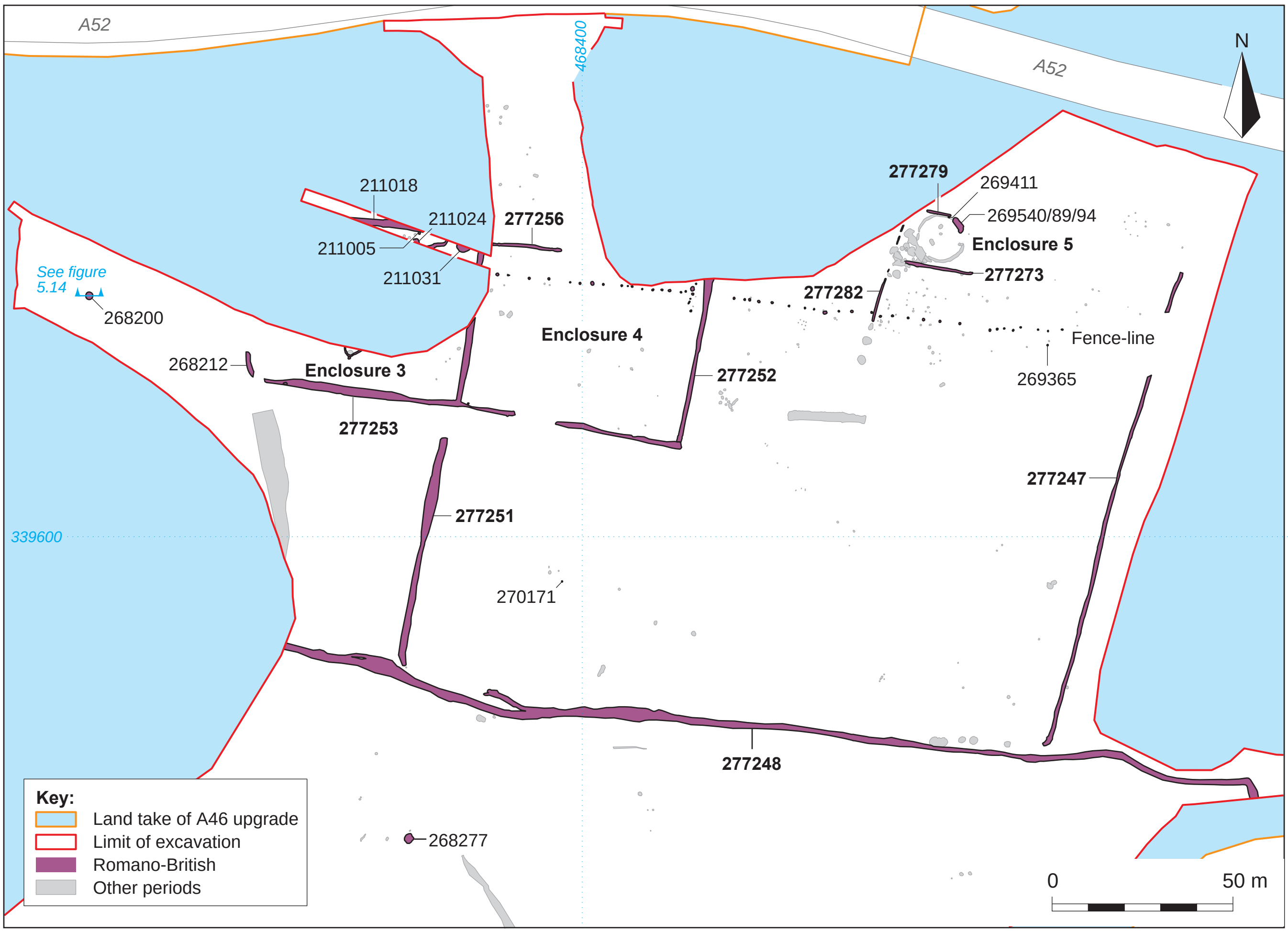


Fig. 5.13 Fence-line, Romano-British field system and Enclosure 3–5

Field system

The southern boundary of the field system was marked by a relatively substantial, slightly sinuous east–west ditch (277248) running along the north-facing slope across the entire excavation area (*c.* 270 m), with the field system extending north onto the flat valley base, and with higher open ground to the south. The boundary ditch varied in width from *c.* 0.9 m to 2.4 m and in depth from 0.4 m to 1.3m. Three phases of localised recutting were recorded towards the west within the western portion of the ditch, but not elsewhere, probably representing the cleaning or remodelling of ditches over time, but these could not be correlated to different phases of the wider field system. A small quantity of Romano-British pottery of undiagnostic date was recovered from the ditch. Generally the pottery from the field system indicated broad dating, with some pottery indicating contemporaneity with the early enclosures to the south (Enclosures 1 and 2), while pottery dating from the later 3rd century AD was also recovered (McSloy, Romano-British Pottery, below).

Two field ditches (277247 and 277251) ran north from the boundary ditch, creating three adjacent fields, the central field being *c.* 180 m wide. Ditches 277247 and 277251 were of a similar form and size, a little over 1 m wide and up to 0.35 m deep. Neither contained datable artefacts other than residual Bronze Age pottery, but their pattern clearly relates to the dated Romano-British features, including two adjacent enclosures (Enclosure 3 and 4, below) which lay either side of the western field boundary.

A small group of ditches in the north-east of the excavation area share the same orientations as the field system, and are probably part of it, appearing to form a small enclosure (Enclosure 5, below).

Enclosures 3 and 4

Two adjacent rectangular enclosures of similar size, approximately 60 m long (east–west) and 45 m wide, were revealed on the valley floor (Fig. 5.13), their shared ditch (277253) continuing the line of the western field ditch (277251) after a *c.* 9 m break. Enclosure 4 (and probably Enclosure 3) overlapped with the probably earlier fence-line. Enclosure 3, only partly exposed to the west, was defined to the north by ditch 211018 and to the south and east by ditch 277253. The latter ditch also extended further to the east, in part defining the southern limit of Enclosure 4, with ditches 277252 and 277256 making the east and north sides respectively. Evidence of recutting was noted along the southern sides of both enclosures. Pottery dating from the late 1st–4th centuries AD was recovered from the ditches, with the majority dating to the 2nd–4th centuries. Some animal bone was also recovered. Enclosure 3 contained a higher number of discrete features than Enclosure 4, including pits, postholes and a well or cistern (below), and is likely to have been associated with settlement, whereas Enclosure 4 is more likely to have had an agricultural function.

Enclosure 5

A small enclosure north-east of Enclosure 4 was defined by ditches 277273 to the south, 277279 to the north, and segments of ditch (277282) to the west, the latter continuing a short distance further south. Enclosure 5 appears to have been open at the east, although there was an angled line of three intercutting pits (269540, 269589 and 269594) at the end of ditch 277279. These pits had a common upper fill from which 19 sherds of 1st-century AD pottery was recovered.

Enclosure 5 was clearly purposefully positioned to encompass the site of Middle Iron Age Roundhouse 2 along with most of the associated pits to its south-west, and might therefore be thought to be contemporary with it. However, the enclosure ditches (and posthole 269411) cut the roundhouse gully and one of the Iron Age pits, and the three intercutting Romano-British pits cut the roundhouse's northern entrance terminal; moreover, the enclosure's orientation is consistent with that of the wider Romano-British field system. Nonetheless, the position and orientation of the Iron Age roundhouse and its associated features appears to have influenced the subsequent Romano-British field and enclosure system, even though the dating evidence does not show any continuity of occupation. It is assumed that the visible remains were sufficient to mark the area for physical enclosure, and there may have been demarcating features here without trace in the archaeological record.

Possible wells or cisterns

Three deep pits were recorded, one (268277) on the higher ground to the south of field system boundary ditch (277248), a second (268200) on the valley floor west of Enclosure 3, and the third (211031) in the north-east corner of Enclosure 3. They were all of similar size and form, *c.* 2 m wide and up to 1.8 m deep with vertical or near-vertical sides and flat or slightly concave bases. Feature 268200 was typical in having a series of distinct fills (Fig. 5.14), suggesting periodic dumping of rubbish after it had gone out of use; it yielded Romano-British pottery dating to the 1st–2nd centuries AD. When fully silted a shallow pit was cut into its top.

If these deep pits were wells, or cisterns to collect rainwater, a wooden or wattle lining would probably have been needed to prevent the sides collapsing and, although there was no trace of linings, the vertical profiles of their lower sides suggests that they may originally have been present. The features contained no waterlogged deposits. Deep pit 268200 contained charred remains that included in particular wheat glume bases, and also oats, but there was very little material from 268277 (see Table 5.8).

Roadside enclosures

A cluster of six intercutting ditched enclosures (Enclosures 6–10, Figs 5.15, 5.16), with a possible mortuary or ritual function, was recorded to the east of Lings Farm, on the brow of the hill immediately adjacent to the A46 trunk road (SM2077) (Fig. 5.1). They later appear to have become the focus of an Anglo-Saxon cremation

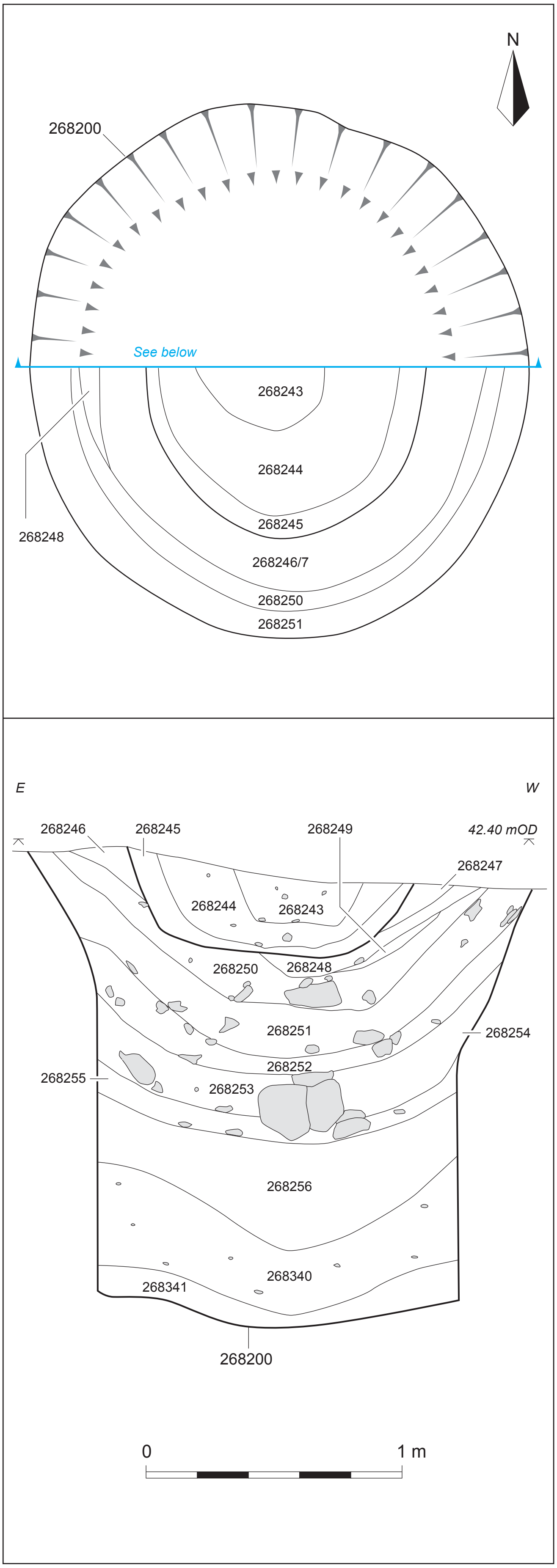


Fig. 5.14 Pit/well 268200, plan and section

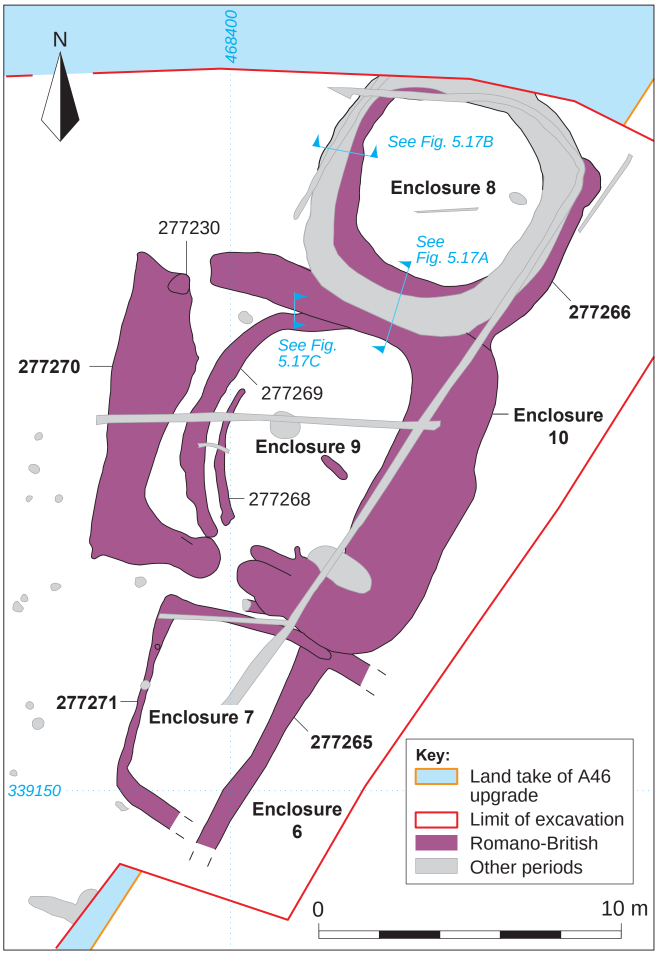


Fig. 5.15 Romano-British roadside Enclosures 6–10 (SM2077)

cemetery (below). The stratigraphy of the enclosures shows a sequence of ditch cutting, and silting, followed by minor shifts of focus and the replacement of earlier enclosures. At least three broad phases of activity are represented, two of Romano-British date (Phases 1 and 2), the third of possible Saxon date (see below), although the small assemblages of Romano-British and Saxon pottery recovered do not provide a firm chronological

Fig. 5.16 Roadside Enclosures 9 and 10 under excavation

resolution to this activity, and the sequence outlined below is not altogether secure.

Phase 1 – Enclosures 6, 8 and 9

The stratigraphically earliest features were the ditches of Enclosures 6 and 8, and two curvilinear gullies forming Enclosure 9. They may not all have been contemporary, but they are all stratigraphically earlier than Enclosure 10. Enclosures 6, 8 and 9 lay in a line NNW–SSE and together extended over a distance of approximately 25 m.

The southernmost enclosure, Enclosure 6, was represented only by parts of its northern and western sides as defined by ditch 277265, which was 0.9 m wide and 0.2 m deep. This indicates a probably rectangular shape, although its overall form was not recoverable and its purpose is difficult to ascertain. To the east and south it was cut by later agricultural features and truncated by medieval to modern ploughing. Although no datable artefacts were recovered from ditch 277265, the enclosure's north-western corner was truncated by the south-eastern corner of Enclosure 10 and by part of Enclosure 7 (see below).

At the north, Enclosure 8 was defined by a subcircular ditch (277266), *c.* 0.7–1.4 m wide and 0.3–0.7 m deep (Figs 5.15 and 5.17, sections A and B), which enclosed an area *c.* 6 m wide. Five Romano-British sherds of 2nd–3rd-century AD date were recovered from the ditch fills, along with a number of Saxon sherds probably intrusive from the later, Saxon enclosure ditch (277207, below) which cut it.

In the centre, Enclosure 9 consisted of two concentric curvilinear gullies (277268 and 277269). Only the western portion of the gullies remained, most having been truncated by the ditch of Enclosure 10 (Fig. 5.17, section C). There was a possible entrance through both gullies at the south-west. The curvature of inner gully 277268, which was *c.* 0.2–0.5 m wide and up to 0.14 m deep, would have enclosed, if extrapolated, an area *c.* 8 m in diameter. Outer gully 277269, which was *c.* 0.5–0.9 m wide and 0.2–0.5 m deep, may have enclosed an area *c.* 11 m in diameter. The form of this enclosure is typical of the evidence found for Iron Age roundhouses and it appears likely that this 'enclosure' defined a circular structure. The lower fills of gully 277269 suggest the slumping of bank material from the exterior. Both gullies contained Romano-British greyware pottery of unspecific date.

Phase 2 – Enclosures 7 and 10

The second phase is represented by Enclosures 7 and 10. The northern, western and southern sides of Enclosure 7, defined by gully 277271 measuring *c.* 0.3–0.4 m wide and up to 0.2 m deep, enclosed an area of *c.* 7 m north–south and at least 5.5 m east–west, any eastern side perhaps having been lost due to later truncation. The enclosure's position with respect to Enclosure 6 suggests that it may have been a direct replacement, although it is possible that Enclosure 7 was an extension of Enclosure 6, cutting through the partly silted ditch.

Sub-square Enclosure 10, defined by ditch 277270, enclosed an area *c.* 8 m north–south by 7 m east–west. It had a narrow entrance midway along the south side the

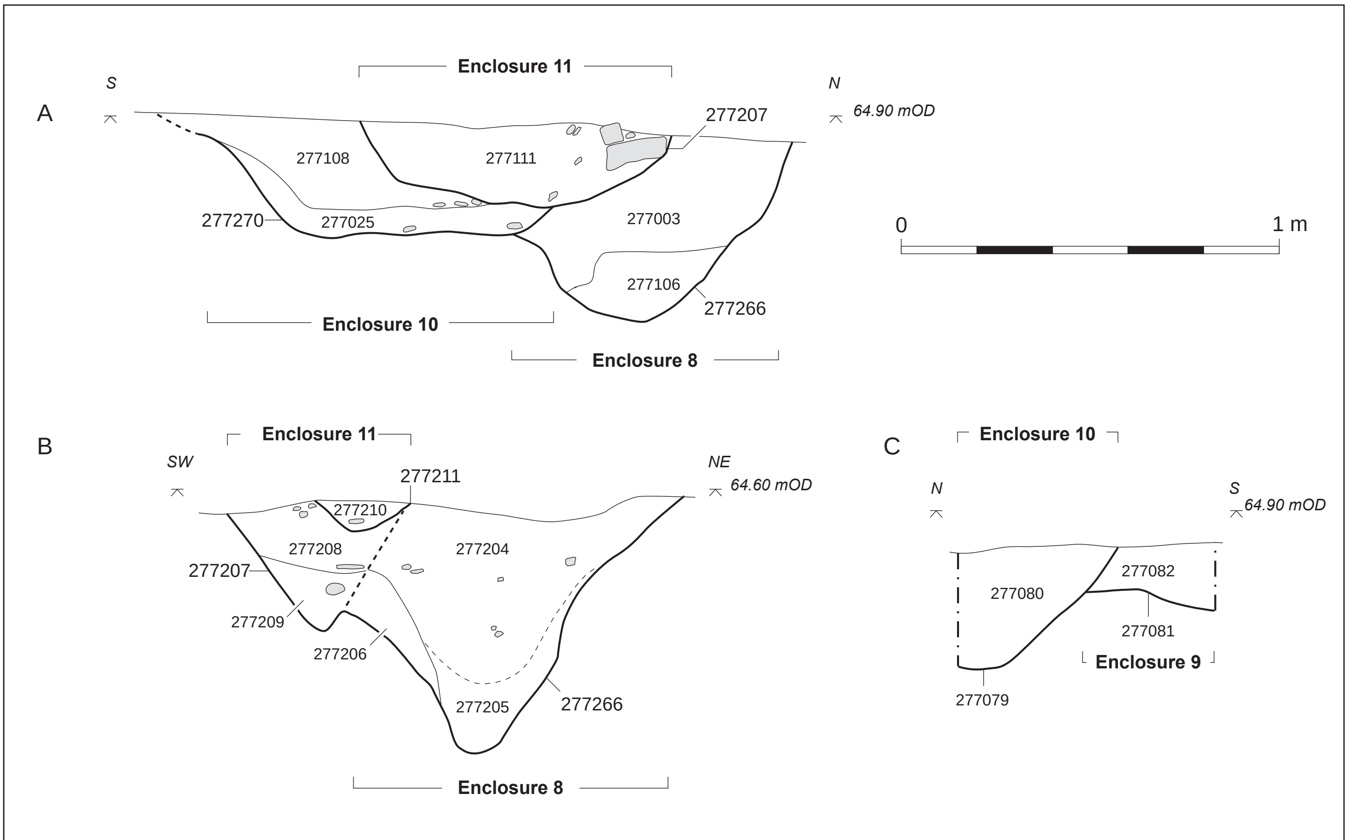


Fig. 5.17 Roadside enclosure ditch sections: A) Enclosures 8, 10 and 11; B) Enclosures 8 and 11; C) Enclosures 9 and 10

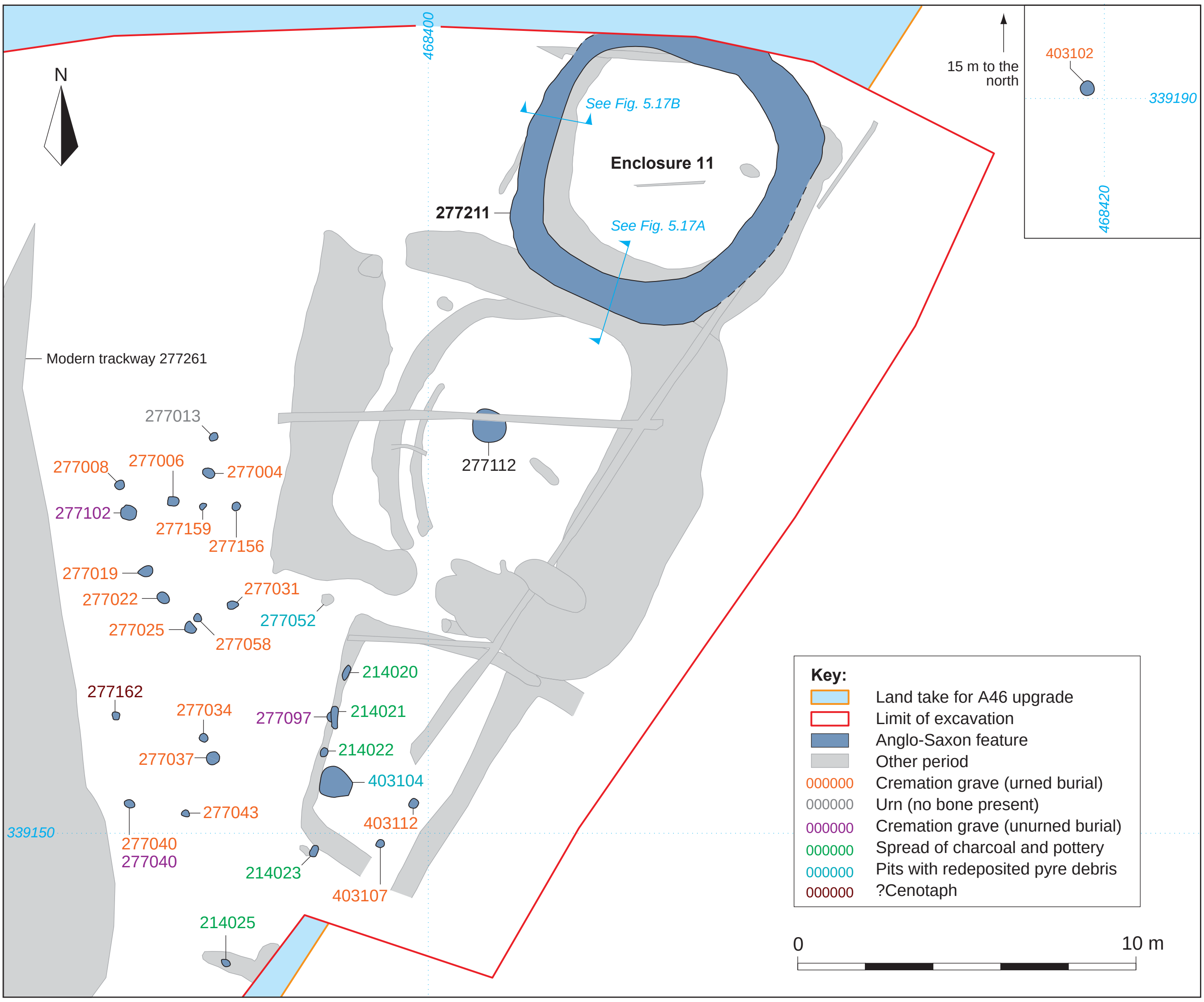


Fig. 5.18 Anglo-Saxon cremation cemetery and nearby features (SM2077)

position of which corresponded with a possible entrance to Enclosure 9, and another similarly narrow entrance at the north-west corner. The ditch, which was *c.* 1.2–2.2 m wide and 0.4–0.8 m deep, cut that of Enclosure 8 to the north, the gullies of Enclosure 9 which it appears to have replaced, and the ditch of Enclosure 6 to the south (Fig. 5.17, sections A and C). It was found to abut the gully of Enclosure 7, although it is possible that truncation of the upper levels of the site has removed a physical relationship between these two enclosures. A posthole (277230), 0.7 m in diameter and 0.3 m deep, was cut into the base of the ditch terminal adjacent to the north-west entrance, the homogeneous nature of both fills suggesting the posthole was contemporary with the ditch. Most of the ditch fills, which contained pottery dated to the late 1st–4th century AD, probably represent natural silting. There was no evidence for an associated bank.

At the centre of Enclosure 10 (or possibly off-centre within Enclosure 9) was a circular pit (277112), *c.* 1 m in diameter and 0.2 m deep (see Fig. 5.18). Its single fill, however, contained three sherds (12 g) of Anglo-Saxon pottery, and it is therefore considered more likely to be 5th century in date (see below).

The interpretation of this group of features, which showed a continuity of development into the post-Roman period and formed the focus for a group of 5th to 6th-century AD cremation burials, is continued below and amplified in Chapter 10 (Discussion).

Anglo-Saxon

Pits Associated with Iron Age Roundhouse 5

Five pits both within and immediately outside Iron Age Roundhouse 2 (269414, 269523, 269594, 269669 and 269674 (see Fig. 5.7) yielded a total of six small sherds of Anglo-Saxon pottery of 5th–8th-century date (Young and Perry, below). All the sherds came from the pits' upper fills and are, therefore, likely to be intrusive, but their presence does appear to indicate some sort of activity in this area (which is also defined by Romano-British Enclosure 5).

Roadside Enclosures

There was evidence for the re-establishment of one of the Romano-British roadside enclosures in SM2077 in the post-Romano-British period, with Enclosure 8 superseded by Enclosure 11. Perhaps related to this activity, a shallow pit was dug to the south-west, central to Romano-British sub-square Enclosure 10 (see above).

Enclosure 11

When the ditches of Romano-British Enclosures 8 and 10 had fully silted, the Enclosure 8 ditch appears to have been recut (as 277211) on largely the same line although on a slightly smaller scale, *c.* 0.5–0.8 m wide and 0.3–0.5 m deep, suggesting the position of the earlier enclosure was still at least partly visible (Fig. 5.17, sections A and B and Fig. 5.18). As well as two sherds of residual Romano-British greyware pottery, one section (its lower fill 277209) contained six sherds (20 g) of Anglo-Saxon pottery (Fig. 5.17, section B). While it is possible that the Anglo-Saxon pottery is intrusive in a Romano-British recut of Enclosure 8, its context, as well as the stratigraphic position of the ditch, would appear to indicate a Saxon date for Enclosure 11.

Pit 277112

As described above, pit 277112, located in the centre of Enclosure 10 (Fig. 5.18), contained three sherds (12 g) of Anglo-Saxon pottery. While it is possible that the sherds are intrusive within a Romano-British feature directly associated with Enclosure 10, an alternative (and more likely) possibility is that the pit indicates the re-use of what remained extant (a bank?) of this enclosure during the Anglo-Saxon period, perhaps at a time when the cremation cemetery was established to its immediate south-west. Such re-use is reflected also in the deposition within the cemetery of a possible curated Romano-British pottery vessel (below).

Cremation Cemetery and Related Features

A small Anglo-Saxon cremation cemetery was established south-west of Romano-British roadside Enclosure 10 and extended across part of the site of Enclosure 7 (Fig. 5.18). Another Romano-British enclosure, Enclosure 8, may have been re-established in the Anglo-Saxon period as Enclosure 11. However, the cemetery and Enclosure 11 (together with pit 277112 in the earlier Enclosure 10), need not have been contemporary.

A total of 20 or 21 Anglo-Saxon cremation graves were recorded, all located, with the exception of one outlier *c.* 45 m to the north-east, in an area of little more than 13 m by 8 m. A relatively modern north–south trackway (277261) lay to the immediate west of the cemetery, and may have impacted on it. Sixteen graves in the cemetery contained burials made in urns and there were two, possibly four, unurned burials, and an empty jar that may have been a cenotaph deposit; the outlier (403102) was a possible urned burial. There were several thin, discontinuous spreads and patches of calcined bone, charcoal and pottery fragments (recorded in the evaluation) which suggest the presence of other truncated burial remains within this area and a little further to the south-west (Fig. 5.18, deposits prefixed 214***). An inventory of all these features, together with their contents, is presented in the Grave Catalogue (below). More detailed discussions of the human and animal bones, urns, and metal and other artefacts follow this description.

The remains of the cemetery were confined by an extant roadside ditch to the east and a former, relatively modern, trackway to the west. It is possible that more burials once lay in both these directions. The grave pits were for the most part cut into the natural substrate and were without stratigraphic relationships, the exception being grave 277097 which had been cut through the infilled gully of Romano-British Enclosure 7. All had been truncated by modern ploughing to some degree and the burials survived in varying states of preservation ranging from almost complete urns to only the very base of the grave cut. The surviving grave depths had a range of 0.02–0.16 m. The grave cuts were subcircular or oval and some of a size to specifically receive the burial urn. As there was no intercutting of graves, it is probable that their positions were marked on the surface in some way, although there was no evidence of this found. The largest pit (403104) seems likely to have been a disturbed grave, or a pit that had received redeposited material. Most of the urns were block-lifted for excavation in the laboratory, although only three (and the empty 'cenotaph' jar) were sufficiently complete enough for micro-excavation in spits (McKinley, below).

Laboratory excavation showed that the burial remains from only one grave (277004) survived intact, the upper part of the vessel itself having been damaged by the plough but the contents undisturbed. The contents included not only the burnt human bone, but also unburnt grave goods and some burnt animal bone that is likely to have been from the funeral pyre. The remains of a second burial (grave 277006), close by grave 277004, were more truncated but largely complete. Consideration of the position of the bone within these urns suggests that bone is likely to have been lost from graves of less than 0.05 m in depth (McKinley, below). Where the burials had been heavily truncated, the sparse and sometimes scattered nature of the bone and pottery fragments makes it difficult to arrive at unequivocal statements about the number of burials and the rites practised (Figs 5.18–5.19). The outlier cremation deposit 403103 (grave 403102) was found independently of its container but the two are considered likely to have been related. There appear to have been at least two cremation burials not contained in urns. Grave 277102 was almost certainly without an urn, although there were fragments of jars of two different fabrics among the associated grave goods whose derivation is uncertain. It is possible they were redeposited from an earlier, unlocated, grave. A small deposit of bone without an urn in pit 403104 may have been the truncated remains of an unurned burial, although even this is uncertain and, as the unusually large size of the pit suggests, the remains may have been

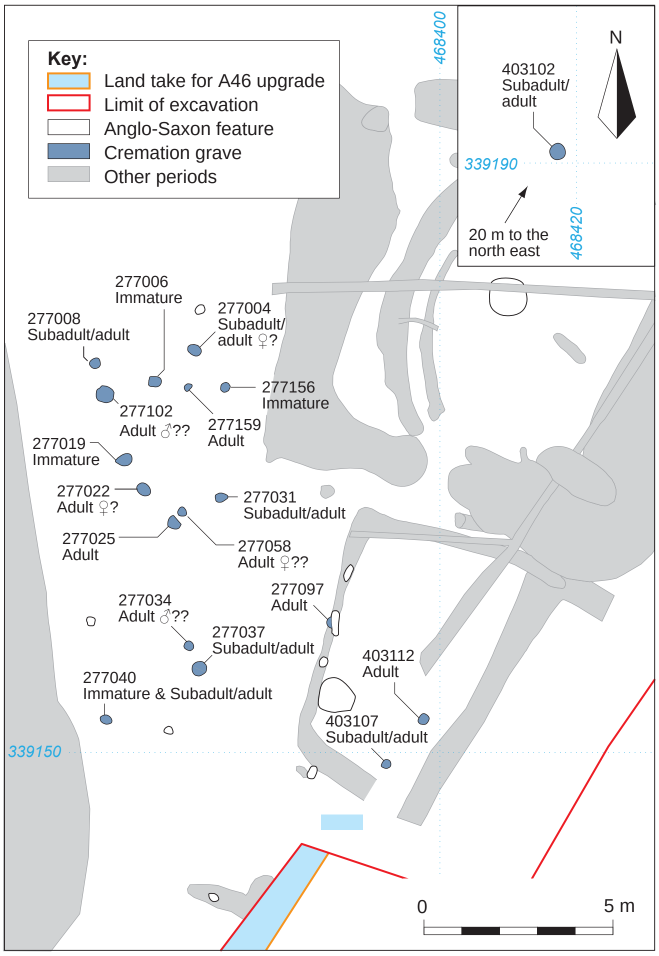


Fig. 5.19 Anglo-Saxon cremation cemetery, showing demographic data

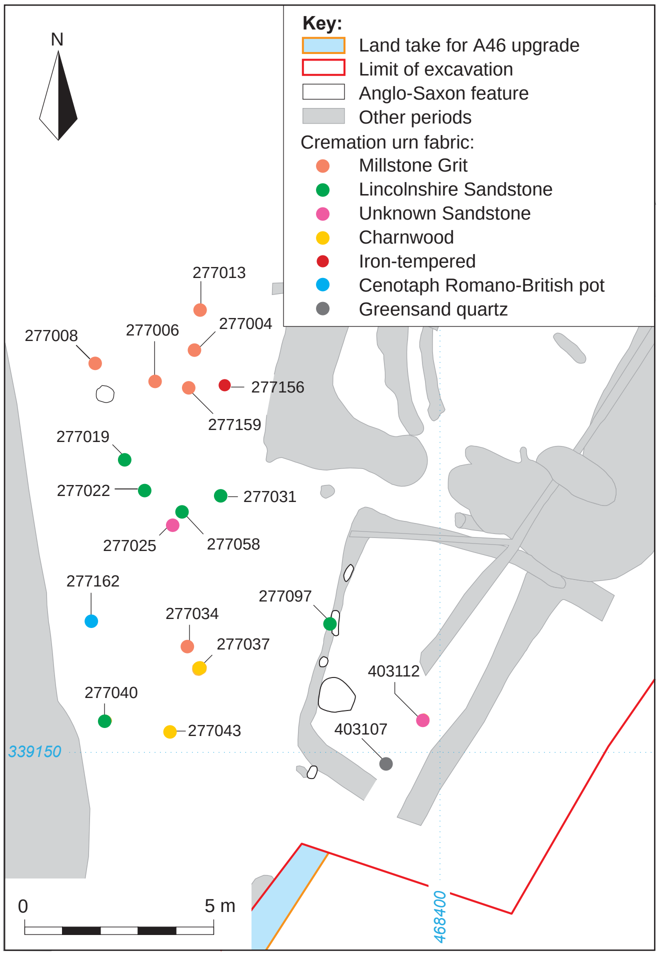


Fig. 5.20 Anglo-Saxon cremation cemetery, showing urn fabrics

entirely redeposited. Grave 277097 contained fragments of pottery that may have been the remains of an urn (although this is also unclear) along with a small amount of human bone and a pair of copper alloy tweezers. The base of an urn without cremated bone present (pit 277013) seems likely to have once contained a burial which has been wholly truncated, although it might have been an empty vessel buried for symbolic reasons, as is suggested for an empty Roman jar from pit 277162 (below).

Pyre goods, in the form of a few fragments of cremated animal bone, were found in three graves (277004, 277006, 277034) and pit 403104, the latter possibly containing entirely redeposited material. Blackened soil deriving from comminuted charcoal from the pyre was present in some of the graves (both inside and outside the urn), but it was not ubiquitous and not dense. It would seem to have been an incidental inclusion and suggests that the cremation took place close to the site of burial. There was very little identifiable wood fuel among this material (see Barnett, below). Grave goods, from seven graves, comprised mainly small metal toiletry implements including tweezers, an ear scoop, a knife, miniature shears and a nail. A few fragments of a bone comb came from grave 277004 and single glass beads from graves 277006 and 277102. None of the items appear to have been burnt. Laboratory excavation of urn object number (ON) 277001 from grave 277004 (see Grave Catalogue, below) showed that the iron knife and bone comb had been placed on top of the cremated bone and were clearly added only at the burial stage of the mortuary rite (see McKinley, below). Given the extent of truncation on the site it appears inherently likely that more grave goods from the tops of some of the urns have been irretrievably lost.

The cremation vessels themselves were normally only represented by the lower body and base. The general absence of upper vessel parts limits the information that can be gained from any decoration, which was present to a useful extent on just three of the 22 vessels recovered (see Young and Perry, below). These were the urns from graves 277004, 277022 and 277156. The vessel fabrics, however, were varied, with six represented (see Young and Perry, Chapter 4 for fabric classifications). The most common types, those with Lincolnshire Sandstone (SSTCL) and Millstone Grit (SSTMG) inclusions, were present in about equal numbers, while there were smaller numbers of vessels in fabrics of the Charnwood type (CHARN), with iron temper (FE), with Greensand quartz (ESGS) and with unidentified sandstone (SST). It is of interest that these groups tend to cluster within the cemetery (Fig. 5.20). It is possible that the pottery fabrics are connected with particular families or other groups who tended to use a particular part of the burial ground. No clear correlation is evident with other variables, such as the grave goods and age and sex of the deceased as far as the rather incomplete evidence allows. The only possible exception are the three graves with pyre debris containing animal bones (graves 277004, 277006 and 277034), all of which are associated with urns made from Millstone Grit (SSTMG) fabric, though this may well be no more than coincidence.

The urns are comparable in terms of decoration to some of those from Millgate in Newark and Cleatham, Lincolnshire. A date range from the early 5th to mid-6th centuries is suggested on this basis (Young and Perry, below), although the actual date range of this small group from Saxondale is likely to be more restricted. The metal items have a longer chronological range in the 5th and 6th centuries (and perhaps later) and confirm the pottery dating (Schuster, below). The artefact dating is broadly confirmed by a group of four radiocarbon dates on cremated bone from graves 277004, 277022, 277037 and 277102, which were in the range cal AD 410–570 and all virtually identical (see Table 5.11). The dates were associated with urns of different fabrics, and an unurned burial (Grave 277102), and the closeness of the dates suggests little, if any, chronological difference with regard to these variables.

One truncated, but substantially complete Roman Dales ware jar (Fig. 5.29.19) was found in pit 277162, on the western side of the cemetery. While almost entirely devoid of human remains it was associated with several tiny organic-tempered sherds of probably Anglo-Saxon date, and it is possible that the vessel had been collected and re-used by the Anglo-Saxons, perhaps forming a 'cenotaph' deposit used in a symbolic manner (McKinley, below). The possibility that the vessel relates to a Romano-British activity pre-dating the Anglo-Saxon use of the site cannot be entirely discounted, although this would assume intrusion of the admittedly small sherds of Anglo-Saxon pottery.

Grave catalogue and other cremation-related deposits

by Kirsten Egging Dinwiddy and Jacqueline I. McKinley with Jörn Schuster and Jane Young

KEY: $ - excavated by J.I.McKinley; ON – Object no.

N.B. unless otherwise indicated, grave backfills comprise variations of firm reddish brown and/or green slightly silty clay with small stones. Iron-panning occasionally present; disturbance occurred in all cases where not indicated to the contrary.

Cremation graves

Grave 277004 (burial 277010$; grave backfill 277005) (Figs 5.22–5.24)
E–W, sub-oval with moderate-steep sides & concave base (close-fitting); 0.31 x 0.31 x 0.16 m (base at 64.61 m aOD). Urned burial (277010): set at *c.* 30 degrees, intact & undisturbed. Bone at vessel shoulder level down (0.25 m diameter, 95 mm deep) & deposited around central organic material.
Human bone: 1192.2 g subadult/adult *c.* 15–20 yr. ?female.
Pyre goods: 2.3 g pig (1 perinatal, 1 other), ?domestic fowl, medium mammal.
Grave goods:
ON 277001: 118 sherds (1139 g) of Carboniferous Sandstone-tempered urn (SSTMG) decorated with dimples, grooved rings around neck, grooved lines forming 'matting', & chevrons around shoulder; linear basketry decoration (Myres 1977, fig. 211) (Fig. 5.30.1).
ON 277010: Spit 2B. Iron ?knife. 7 joining fragments of blade with triangular whittle tang (L *c.* 18 mm); front half of blade found in Spit 2B, appears deliberately bent/broken off. L >75 mm; ?blade W 10 mm. (Fig. 5.31.1)
ON 277100: Spit 1. 2 corroded iron lumps. Spit 2B: 3 corroded iron strip frags. Spit 2C: 1 corroded lump with adhering bone frags.
ON 277101: Spit 1. Fragments of bone comb, 2 with ring & dot decoration, 1 with part of a perforation, 3 with grooved lines, and 3 tooth fragments. Form unknown.
Date: cal AD 420–570 (at 95% confidence)(SUERC-39043; 1560±30 BP)

Grave 277006 (burial 277011$; grave backfill 277007) (Figs 5.25–5.26)
NW–SE, subrectangular with rounded corners, shallow concave sides & base; 0.36 x 0.31 x 0.07 m (base at 64.65 m aOD). Urned burial (277011): largely undisturbed. 0.95 m diameter. Bone evident at surface, denser in lower 0.05 m; central slumping; Grave backfill (277007): charcoal, fuel ash & redeposited bone.
Human bone: 199.8 g infant/juvenile *c.* 4–6 yr.
Pathology: hyperporosity – skull vault.
277007: 2 g = 277011.
Pyre goods: 0.8 g sheep/goat.
Grave goods:
ON 27702a: 154 sherds (597 g) of Carboniferous Sandstone-tempered urn (SSTMG with vegetable inclusions), with grooved line decoration.
ON 27702b: 30 sherds (136 g) base & lower body of Carboniferous Sandstone-tempered urn (SSTMG, no vegetable inclusions), undecorated. Probably a different vessel to ON 27702a.
ON 277102: glass. Small bead, globular, semi-translucent blue D 3 mm, Th 2 mm.
ON 277021a: iron. Fragmentary pair of tweezers, rectangular-sectioned arms, jaws missing. Fragments of further unidentifiable implement can be fitted to area of loop. L >61 mm. Laid on top of densest area of bone. (Fig. 5.31.2)
ON 277021b: iron. Second pair of tweezers or double-spiked loop with flat arms, ends/jaws missing. L >32 mm. Laid on top of dense area of bone. (Fig. 5.31.3)
ON 277103: Spit 1A. Iron. Flat frag. tapering to point. L>17 mm, W 8 mm.

Grave 277008 (burial 277012; grave backfill 277009)
Circular with shallow concave sides & base; 0.3 x 0.3 x 0.03 m (base at 62.02 m aOD). Urned burial + redeposited pyre debris (277012): 0.16 m diameter; dark brown-black hard clay silt with charcoal & stones. Grave backfill (277009): ?redeposited pyre debris; charcoal & fuel ash.

Human bone: 40.8 g subadult/adult >13 yr
277009: 3.5 g = 277012.
Grave goods:
ON 277003: 42 sherds (127 g) of Carboniferous Sandstone-tempered urn (SSTMG), undecorated.
Bulk finds: fragment green glass (from backfill)

Grave 277019 (burial 277021; grave fill 277020)
NE–SW, sub-oval with moderate concave sides & flat base; 0.5 x 0.5 x 0.12 m (base at 64.56 m aOD). Urned burial (277021): 0.15 x 0.1 x 0.02 m. Grave backfill (277020): ?redeposited pyre debris.
Human bone: 31.8 g juvenile *c.* 10–11 yr.
277020: 0.1 g = 277021.
Grave goods:
ON 277006a: 108 sherds (169 g) of Central Lincolnshire sandstone-tempered urn (SSTCL); several sherds burnt (?pyre goods).
ON 277006b: 1 sherd (6 g) of sandstone-tempered urn (SST).
Bulk finds: Fragment of glass (from backfill)

Grave 277022 (burial 277024; grave backfill 277023, 277233, 277234)
N–S, oval with shallow sides, concave base; 0.36 x 0.36 x 0.09 m (base at 64.44 m aOD). Urned burial (277024): 0.26 m diameter. Grave backfill (277023): ?redeposited pyre debris, light greyish-brown firm clay with black & reddish brown mottling & ?fuel ash.
Human bone: 487.5 g adult >18 yr. ?female.
277023: 16.8 g = 277024.
Grave goods:
ON 277007: 413 sherds (1227 g) of Central Lincolnshire sandstone-tempered urn (SSTCL), decorated in chevron style with 4 grooved lines encircling neck, 2-line grooved chevrons separated by oval applied bosses, single incised lines flank the bosses and cut the centre of each boss (Fig. 5.30.2).
ON 277104: iron. 2 small curved strip frags. L >10 mm.
ON 277105: copper alloy nail, flat subround head, bent shank. L 13mm. (Fig. 5.31.4)
ON 277106: iron. Pair of tweezers with flat arms tapering to loop, jaws missing. L >33 mm. (Fig. 5.31.5)
Fragment of glass (from burial)
Date: cal AD 410–560 (at 95% confidence)(SUERC-39044; 1575±30 BP)

Grave 277025 (burial 277027; grave backfill 277026)
Circular with shallow sides & ?flat base (close-fitting); 0.24 x 0.22 x 0.02 m (base at 64.52 m aOD). Urned burial (277027): dark grey-black silt with charcoal. Grave backfill (277026): redeposited pyre debris; dark grey silt, charcoal.
Human bone: 37.5 g adult >18 yr.
277026 13.5 g = 277027.
Grave goods:
ON 277008: 166 sherds (448 g) of sandstone-tempered urn (SST), base & lower body, undecorated.

Grave 277031 (burial 277033; grave backfill 277032)
Cut not seen; *c.* 0.3 x 0.4 x 0.02 m (base at 64.50 m aOD). Urned burial (277033). Grave backfill (277032): ?redeposited pyre debris; bone, pottery & ?fuel ash.
Human bone: 17.4 g subadult/adult >15 yr.
277032: 7.7 g = 277033.
Grave goods:
ON 277009: 139 sherds (308 g) of Central Lincolnshire sandstone-tempered urn (SSTCL), base & body, undecorated.
ON 277107: iron. 2 small rectangular-sectioned strip frags, poss. joining. L >25 mm, W 4 mm.

Grave 277034 (burial 277036; grave backfill 277035)
Circular; 0.24 x 0.24 x 0.09 m (base at 64.37 m aOD). Urned burial (277036): 0.19 x 0.14 x 0.03 m; mid-grey/white firm sandy-clay silt with charcoal; bone around one edge of urn (rest damaged). Grave backfill (277035): redeposited pyre debris; mid-grey-brown silty clay, & fuel ash.
Human bone: 345.3 g adult >18 yr. ??male.
277035: 2.2 g = 277036.
Pyre goods: 27.7 g dog, sheep/goat, domestic fowl.
Grave goods:
ON 277010: 115 sherds (301 g) of Carboniferous Sandstone-tempered urn (SSTMG), with unusual slightly concave base.

Grave 277037 (burial 277039; grave backfill 277038)
Circular with moderate concave sides & base; 0.36 x 0.36 x 0.12 m (base at 64.24 m aOD). Urned burial (277039): 0.09 m deep in centre of grave; bone evident at surface. Grave backfill (277038): ?redeposited bone, charcoal, & manganese underneath and around urn.
Human bone: 41.1 g subadult/adult >15 yr.
277038 0.9 g = 277039.
Grave goods:
ON 277011: 50 sherds (169 g) of Charnwood fabric urn (CHARN), base & lower body, undecorated.
Date: cal AD 420–570 (at 95% confidence)(SUERC-39045; 1560±30 BP)

Grave 277040 (burial 277042[s]; grave backfill/burial 277041)
Circular with moderate concave sides & base; 0.26 x 0.2 x 0.13 m (base at 62.02 m aOD). Urned burial (277042): 0.05 m deep. ?Unurned burial/?redeposited (277041): firm basal fill & backfill of grave; charcoal.
Human bone: 33.4 g subadult/adult >13 yr.
277041: 6.6 g juvenile *c.* 5–6 yr.
Grave goods:
ON 277012: 43 sherds (32 g) of Central Lincolnshire sandstone-tempered urn (SSTCL); tiny body sherds.

Grave 277043 (burial 277045; grave backfill 277044)
Subcircular with gradually sloping sides & flat base; 0.21 x 0.21 x 0.03 m (base at 64.32 m aOD). Urned burial (277045).
Human bone: <0.1 g.
Grave goods:
ON 277013: 34 sherds (67 g) of Charnwood fabric urn (CHARN); small body sherds.

Grave 277058 (burial 277060; grave backfill 277059)
Subcircular with concave sides & flat base; 0.37 x 0.2 x 0.1 m (base at 64.40 m aOD). Urned burial (277060): *c.* 0.2 x 0.2 x 0.04m. Grave backfill (277059): redeposited pottery & bone.
Human bone: 414.9 g adult >18 yr. ??female.
277059: 11.3 g = 277060.
Grave goods:
ON 277015: 440 sherds (889 g) of Central Lincolnshire sandstone-tempered urn (SSTCL), decorated with at least 9 grooved lines around neck.
ON 277108: Iron. Pair of tweezers, flaring in lower third to sharply in-turned jaws, loop with remains of

suspension ring. L 68 mm, W 10 mm. Context 277059. (Fig. 5.31.6)

ON 277109: E half. Iron. Fragment of tweezers arm (same as ON 277108). Context 277060.

ON 277110: W half. Iron. Miniature ?shears, tips and loop broken but present. Context 277060. (Fig. 5.31. 7).

ON 277111: Iron. Ear scoop, twisted stem with flat oval end; remains of suspension ring with ends coiled around each other within loop at proximal end. L 68 mm. Context 277059. (Fig. 5.31.8).

Grave 277097 (burial 277061)
Subcircular with gradually sloping sides & concave base; 0.32 x 0.29 x 0.04 m (base at 64.29 m aOD). ?Unurned burial + redeposited pyre debris/?redeposited pyre debris (277061): mid- to dark grey firm silty sand with bone, & fuel ash.
Human bone: 23.7 g adult >18 yr.
Grave goods:
ON 277016: Copper alloy. Plain parallel-sided tweezers with in-turned jaws that are slightly narrower than width of arms. L 27 mm, W 5.5 mm. (Fig. 5.31.9)
Bulk finds: 2 sherds (12 g) of Central Lincolnshire sandstone-tempered vessel (SSTCL). Residual.

Grave 277102 (burial 277099; grave backfills 277098, 277100, 277101)
Circular with gradually sloping sides & concave base; 0.45 x 0.45 x 0.12 m (base at 64.52 m aOD). Unurned burial + redeposited pyre debris (277099): largely undisturbed; central 0.04m; white-light grey with occasional reddish-brown patches, fuel ash; Grave backfills (277098): upper 0.03 m; redeposited. (277100): lower 0.03 m; redeposited pyre debris; dark brownish-grey soft charcoal rich silt with burnt clay & burnt bone. (277101): basal 0.02 m; mixed brown/grey silty clay.
Human bone: 299.6 g adult >40 yr. ??male.
277098: 14 g = 277099.
277100: 2.3 g = 277099.
Grave goods:
ON 277112: iron. Small rod fragment, bent at right angles. L 14 mm. (277098).
ON 277113: iron. Small rod fragment with flat end. L 10 mm (277099).
ON 277114: copper alloy. Small sheet fragment. W 8 mm (277099).
ON 277115: iron. 2 joining strip (L >29 mm) and 2 joining shank (L >21 mm) fragments. (277099).
ON 277116: glass. Small bead, hexagonal cylinder, semi-translucent blue. L 3 mm, D 2 mm (277100).
Bulk finds:
5 sherds (12 g) SSTMG vessel, 29 sherds (16g) of SSTCL jar (?redeposited in 277099).
20 sherds (1 g) of SSTMG jar (?redeposited in 277098).
2 sherds (2 g) of Central Lincolnshire sandstone-tempered vessel (SSTCL) (?redeposited in 277100).
Date: cal AD 410–550 (at 95% confidence)(SUERC-39046; 1590±30 BP)

Grave 277156 (burial 277158; grave backfill 277157)
Subcircular with rest unknown; 0.26 m x 0.26 m x [?] (top at 64.65 m aOD). Urned burial (277158): light yellowish-grey firm sandy silty-clay.
Human bone: 3.4 g infant *c.* 0.5–1.5 yr.
Grave goods:
ON 277017: 109 sherds (436 g) of thin-walled urn in unusual iron-tempered fabric (FE), decorated with large incised single line chevrons extending across the vessel's shoulders. Profile from base to shoulder.

Grave 277159 (burial 277161; grave backfill 277160)
Oval with concave sides & base; 0.26 x 0.15 x 0.04 m (base at 64.62 m aOD). Urned burial (277161): light yellowish-grey firm sandy silty-clay. Grave backfill (277160): redeposited bone.
Human bone: 114.8 g adult *c.* 25–40 yr. *Pathology:* osteophytes – middle finger phalanx.
277160: 0.3 g = 277161.
Grave goods:
ON 277018a: 4 large basal sherds (84 g) of Carboniferous Sandstone-tempered urn (SSTMG), fresher than 277018b, and possibly an earlier deposit disturbed by the insertion of the later vessel.
ON 277018b: 123 sherds (362 g) of Carboniferous Sandstone-tempered urn (SSTMG), undecorated.

Grave 403102 (burial 403103)
Cut & grave backfill not seen; *c.* 0.2 x 0.12 x 0.02 m (base at 63.96 m aOD). ?Urned burial. Bone and pottery not found together – assumed association.
Human bone: 6.4 g subadult/adult >13 yr.
Grave goods:
ON 403110: 75 sherds (33 g) from Central Lincolnshire sandstone-tempered jar (SSTCL), undecorated.

Grave 403107 (burial 403111; grave backfill 403109)
Subcircular with vertical sides & concave base; 0.22 x 0.23 x 0.05 m (base at 64.22 m aOD). Urned burial + redeposited pyre debris (403111): NE half of grave; 0.21 m diameter, 0.04 m deep; black ash & charcoal rich silt. Grave backfill (403109): SW half of grave; charcoal.
Human bone: 10.0 g subadult/adult >13 yr.
Grave goods:
ON 403108: 40 sherds (22 g) of Greensand quartz-tempered urn (ESGS), undecorated.

Grave 403112 (burial 403114)
Subcircular, shallow concave sides & flat-concave base (close fitting); 0.3 x 0.22 x 0.04 m (base at 64.25 m aOD). Urned burial (403114): shale.
Human bone: 434.5 g adult *c.* 25–45 yr.
Pathology: ante mortem tooth loss; enthesophytes – patella
Grave goods:
ON 403113: 33 sherds (926 g) from mixed sandstone-tempered urn (SST). Basal (convex) & lower body, undecorated.

Features containing cremation-related deposits

Spread 214016 (not illus.)
Amorphous spread; 10 x >4 x 0.25 m. Redeposited (ploughed-out) cremation-related deposit. Mid- to light green-grey silty clay, fairly loose with occasional charcoal flecks & small stones. Seals spreads shown on Fig. 5.18.
?Human bone: (ON 2): 0.4 g ?human/?animal.

Spread 277052 (not illus.)
Amorphous spread; 0.1 m thick. Redeposited (ploughed-out) cremation-related deposit. As 214016.
Human bone: 0.4 g subadult/adult >13 yr.

?Cenotaph 277162 (vessel fill 277164$; backfill 277163)
Subcircular, ?concave sides & base; 0.18 x 0.18 x 0.07 m (base at 64.53 m aOD). ?Cenotaph, largely undisturbed. Vessel fill (277164): as grave backfills with charcoal & fuel ash (0.17 m diameter, 0.07 m deep).
Human bone: <0.1 g
Grave goods:
ON 277019a: Roman Dales ware jar; everted rim largely missing. Fabric sh1. Probably 'salvaged' from nearby Romano-British site. (Fig. 5.29.19).
ON 277019b: in backfill (277163): 21 ECHAF (organic-tempered) sherds, with internal carbonised deposit.

Pit 403104 (fill 403106)
Subcircular, shallow sides, concave base; 1 x 0.86 x 0.09 m (base at 64.22 m aOD). ?Redeposited pyre debris (403106), truncated by land drain. Dark grey fuel ash rich lenses *c.* 0.02 m deep (upper level).
Human bone: 3.8 g adult >25 yr.
Pyre goods: 1.6 g sheep/goat.

Medieval and Later Land Use

Post-Romano-British Colluvium and Agricultural Activity

An extensive colluvial deposit, up to 0.5 m thick, was revealed over the lower, northern half of the main excavation area, coinciding broadly with the Romano-British field system and associated rectangular enclosures. The colluvium contained residual sherds of prehistoric and Romano-British pottery, and was in turn truncated by an extensive pattern of furrows. The homogeneous nature of the soil, and the fact that no archaeological features were cut from horizons within it, suggest it was formed in a relatively short period of time, although the precise timeframe of its deposition remains uncertain. On-site observations showed the accumulation of slopewash on an unvegetated surface during periods of heavy rain could attain a thickness of over 5 cm within a few weeks. It is possible that its deposition was initiated by extensive ploughing from the Late Saxon or post-conquest period.

The colluvium was cut by furrows of a ridge and furrow field system on a broad north–south alignment across the whole of the excavation area. The furrows had a spacing of *c.* 7.5 m and a very gentle 'reversed-S' shape in plan. Medieval furrows are typically spaced 10 m apart (Rackham 1986, 167) whereas later furrows are generally spaced every 4.5–5 m (*ibid.*, 168). Medieval ridge and furrow can also have a gentle curve to it (Taylor 1975, 82) whilst later ridge and furrow is generally straight (Rackham 1986, 168). While not closely datable, the furrows provide a broad *terminus ante quem* for the colluvial layer and underlying features and indicate that most of the site was agricultural land from Anglo-Saxon until recent times.

Post-medieval features consisted of a trackway and an infilled pond. The north–south trackway (277261) in SM2077 (Fig. 5.18), which was up to 6.5 m wide, represents the precursor to a modern public footpath and was in use as a farm track until the 1950s. The pond (277235), at the southern end of the main excavation area, was one of several adjacent to Lings Farm infilled since the 1950s.

Finds

Cremated Bone and Mortuary Rite

by Jacqueline I. McKinley

Cremated bone from 43 contexts was subject to analysis. A group of four cremation-related deposits were recovered from a *c.* 1.5 x 2.5 m concentration in the central part of the main excavation area, situated on the north-facing slope above the valley (Fig. 5.2). The deposits are likely to be contemporaneous and include the remains of one, potentially two, unurned burials. Radiocarbon analysis of bone from the burial in grave 270050 returned a Middle Bronze Age date, as did a sample from one other undated singleton (cremation grave 269625) found *c.* 115 m to the north (Fig. 5.2).

The majority of the material derived from a small early Anglo-Saxon cremation cemetery, located adjacent to a group of Romano-British enclosures close to the line of the Fosse Way (in SM2077); a later 5th–mid-6th-century date has been attributed on the basis of radiocarbon dating and pottery (Fig. 5.18). Most of the graves were found in a *c.* 13 m x 8 m area and contained the remains of 16 urned and two, potentially four, unurned burials, together with an empty jar that may have been a cenotaph deposit. One other possible urned burial of similar date lay *c.* 45 m to the north-east.

Methods

The fills of those cremation-related features which did not contain the remains of urned burials were excavated in quadrants to enable formation processes of the deposits to be analysed in greater detail in post-excavation. Most of the urned burial remains were block-lifted for excavation under laboratory conditions. In the event, the majority of these deposits proved to be so heavily disturbed and truncated that they too were simply excavated in quadrants or, where appropriate, halves. Three of the most intact vessels were excavated in 20 mm spits and quadrants by the writer to assist in more detailed analysis of the burial formation process (denoted $ in the Grave Catalogue). The context subdivisions were maintained throughout the osteological analysis and a summary of the overall results for each context is presented in the Grave Catalogue.

Recording and analysis of the cremated bone followed the writer's standard procedure (McKinley 1994b, 5–21; 2004c). Age was assessed from the stage of tooth and skeletal development (Beek 1983; Scheuer and Black 2000), and the patterns and degree of age-related changes to the bone (Brothwell 1972; Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Bass 1987; Buikstra and Ubelaker 1994; Gejvall 1981; Wahl 1982). The variable integrity of the attributed sex has been denoted as confident, probable ('?') and most likely ('??').

The identifiable non-human osseous material was separated out for examination by the archaeozoologist; the weight of this material is presented in the Grave Catalogue together with species identifications by Lorrain Higbee. A summary of the fragments of pyre goods and grave goods recovered in osteological analysis is also shown in the Grave Catalogue.

Results and discussion

Taphonomy

All the cremation-related features had been subject to some level of truncation – often severe – as a result of plough damage and, in a few cases, during machine stripping of the site. The surviving depths of the Anglo-Saxon graves varied between *c.* 0.02 m and 0.16 m, with a large proportion (*c.* 44%) being less than 0.05 m and only four (*c.* 22%) at greater than 0.1 m. The burial remains from only one grave (277004; 0.16 m deep) survived intact; the upper section of the vessel had been removed and the pot itself tipped over by the action of the plough but the contents undisturbed, the bone being limited to the lower 0.11 m depth of the container (see below). The remains of a second burial were slightly more truncated but it is unlikely that any bone will have been lost due to disturbance since it was concentrated in the lower 0.05 m of the vessel (grave 277006; 0.06 m deep). It is probable that some bone will have been lost from graves of less than 0.05 m in depth, though it should be noted that one of the largest quantities of bone from the cemetery assemblage was recovered from the unurned burial remains within grave 403112 which survived to only 0.04 m in depth.

The small group of Middle Bronze Age features were similarly shallow, surviving to a maximum depth of 0.05 m. The charcoal-rich fills were evident at machine strip level and it is also likely that bone will have been lost from these features. The Bronze Age singleton, grave 269625, represents one of the deepest surviving of these graves (0.12 m) and here the bone was observed in a very clear 'bag-shaped' concentration in the central area of the cut (Fig. 5.21); very little of the burial remains were evident at the surface suggesting that the deposit was largely undisturbed.

The visual condition of much of the bone is good, but some is worn and slightly chalky in appearance indicating post-depositional erosion, the less well-oxidised bone (see below) being predominantly affected (Bronze Age deposits and Anglo-Saxon bone deposits 277010, 277033, 277099/100, 403111 and 403114). No trabecular bone (generally the first to be lost in acidic soil conditions such as those prevailing at Saxondale (clayey silts); McKinley 1997, 245; Nielsen-Marsh *et al.* 2000) was recovered from the Bronze Age deposits. These more vulnerable skeletal elements and parts thereof were also absent from many of the Anglo-Saxon deposits (which lay on what would have comprised the relatively free-draining upper hill-slope), and were recorded in only scarce quantities in a few (277010, 277024, 277066 and 277161), with most being observed in the unurned burial deposit 403114. During the excavation of burial 277010, the writer observed a relatively representative proportion of trabecular bone but this crumbled and disintegrated on lifting. The degraded and fragmentary condition of both the trabecular and compact bone is illustrated in Figure 5.22, where much of the former is evident as a white powdery substance. Consequently, there will have been taphonomic loss of much of the axial skeleton and articular surfaces of the long bones.

Fig. 5.21 Middle Bronze Age grave 269625, during excavation

Demography

The Middle Bronze Age assemblage includes the remains of a minimum of two, probably three individuals; an

Fig. 5.22 Anglo-Saxon cremation burial 277010 (Grave 277004). Burial remains 277010 (from above); uppermost level of bone (top spit 2) showing the degraded and fragmentary condition of the in situ *bone, and the location of the iron knife ON 277010)*

infant (grave 269625), a subadult/young adult (grave 270050) and an adult (pit 270046). The latter two lay amongst a tight group of contemporaneous deposits including materials probably dragged out of and downhill from grave 270050 by plough action. There was a lack of duplication of skeletal elements between deposits 270045 and 270049, and the small quantity of bone recovered from the charcoal-rich deposit in pit 270046 is unlikely to have derived from the same cremation as that from grave 270050. The possible deciduous tooth root recorded from 270045 could have been a retained primary tooth, however, the level of wear seen to the permanent incisor also recorded is not commensurate with the young age of the individual from 270050. The nature of the deposit is open to debate, however, and the human remains recovered from it appear to have derived from a cremation not represented elsewhere within the Bronze Age assemblage. Dispersed singletons and small burial groups of this type are common within the Bronze Age landscape, and could include individuals across the age range and of either sex.

The surviving limits of the small Anglo-Saxon cemetery were mapped and excavated in the current investigations. It is possible that the boundaries of the cemetery extended beyond what was seen in excavation but if so the remains would have been obliterated by the later trackway (277261) to the west and perhaps by the roadside disturbances to the south-east.

A minimum of 19, probably 20, individuals were identified from the excavated remains (Table 5.1). With one exception, each of the 18 graves contained the remains of a single individual. In grave 277040, the unurned remains of a juvenile lay below the urned burial of a subadult/adult. The former may represent the original deposition possibly partially disturbed by the later burial. Alternatively, a deliberate dual deposition may have been made either of individuals who died and were cremated within a short time of each other, or one set of remains may have been curated above ground before final deposition. The nature of the deposit made within grave 277097 is inconclusive. The charcoal-rich deposit contained little bone (*c.* 24 g) and since the context was excavated as a single sample (rather than quadrants) the distribution of the archaeological components within the fill could not be ascertained. The identified skeletal elements are not distinctive and cannot confidently be stated as being duplicated in any of a number of other deposits, consequently, this unurned material could be redeposited pyre debris and have derived from one of the cremations represented elsewhere within the assemblage. This individual has, therefore, only tentatively been included in the minimum number count.

Table 5.1 Saxondale: summary of demographic data from Anglo-Saxon cemetery

Age	*Unsexed*	*Female*	*Male*	*Total*
Infant *c.* 0.5–1.5 yr.	1	-	-	1
Infant/juvenile *c.* 4–6 yr.	1	-	-	1
Juvenile *c.* 5–11 yr.	2	-	-	2
Subadult/adult *c.* 15–20 yr.	-	1?	-	1
Subadult/adult >13 yr.	7	-	-	7
Adult *c.* 25–45 yr.	2	-	-	2
Adult >40 yr.	-	-	1??	1
Adult >18 yr.	1/?2	1?, 1??	1??	4/?5
Totals	14/?15	3	2	19/?20

The very small quantity of bone (*c.* 4 g) found in a charcoal-rich lens in the upper fill of pit 403104 appears most likely to have been incorporated in a deposit of pyre debris and has not been included in the minimum number count. The absence of any archaeological components other than a minuscule fragment of cremated bone (<0.1 g) from the fill of the vessel recovered from cut 277162, 0.07 m depth; excavated by the writer), suggests this may represent the remains of a cenotaph, a type of deposit for which there is increasing evidence from other periods when the cremation rite was employed (McKinley 2000a; 2004b; in press; Toynbee 1996, 54). The use of a Romano-British jar for this symbolic deposit makes the dating ambiguous, but the presence of fragments of Anglo-Saxon pottery from the grave fill (outside the jar) suggests that the deposit belongs with the cemetery and that the jar was probably salvaged from elsewhere and re-used by the Anglo-Saxons.

A range of ages and adults of both sex are represented. The proportion of immature individuals (21%) is relatively low but is within the scope of that commonly encountered within archaeological populations of this type. For example, *c.* 20% of the population at Millgate, Newark-on-Trent, Nottinghamshire were immature (Harman 1989), 26% of those from Spong Hill, Norfolk (McKinley 1994b, 68–9), 29% from Sancton, Yorkshire (McKinley 1993b), and 33% from the much smaller cemetery (of more commensurate size to Saxondale) at St Mary's Stadium, Southampton (McKinley 2005). The poor condition of the bone and dearth of diagnostic skeletal elements – particularly the articular ends of long bones and other trabecular bone elements – has limited the age ranges attributable to most individuals. Only three adults could be given tighter age ranges beyond a basic placement in the immature or adult categories, and even here the range was broad. Similarly only a small proportion of individuals could be sexed (26.3%, or 33% of subadult/adult individuals).

Despite the paucity of detail there is sufficient to indicate that this represents a normal 'domestic' cemetery, probably serving one small settlement/farmstead. Although possibly fortuitous, it may be pertinent to note an apparent clustering of the immature individuals in the northern area of the cemetery (which also includes the young adult female; Fig. 5.19). Lucy (2000, fig. 4.7) noted *c.* six cremation cemeteries of a commensurate size in the wider region (*c.* 6–50 burials), with slightly greater numbers of smaller cemeteries (13 with 2–5 graves) and much larger ones (>50 burials, *c.* 10 cemeteries), and a few singletons. Osteological data is not currently available for the smaller cemeteries, most having been excavated some time ago when cremated remains were not routinely subject to analysis. In contrast with the very large and generally earlier cemeteries (S. Lucy pers. comm.), such as Loveden Hill and Millgate, these smaller groups, as at Saxondale, are likely to have served settlements in the immediate vicinity.

Pathology

Given the poor condition of the bone and loss of most of the trabecular elements, which are commonly the focus of many bone lesions, the paucity of observed pathological changes is unsurprising. Lesions were recorded in the remains of three individuals and are summarised in the Grave Catalogue. Dental conditions and degenerative changes such as those seen here are commonly observed in archaeological populations. The form and nature of these various conditions are outlined elsewhere in this volume (see Egging Dinwiddy and McKinley, Chapter 4). None of the lesions are heavy or extensive. The slight hyperporosity in two fragments of skull vault from the juvenile burial 277011 are mostly likely indicative of local hypervascularity caused by repeatedly scratching the scalp in response to an infestation of head lice.

Pyre technology and mortuary rite

Oxidation

The majority of the cremated bone is white in colour, indicative of full oxidation of the bone (Holden *et al.* 1995a and b). However, slight variations in colour, reflecting incomplete oxidation (*ibid.*), were observed in a few bone fragments from one Bronze Age and 14 Anglo-Saxon graves. The reflected shortfalls are slight, with light grey colouration in most cases (including the one Bronze Age), often affecting only the inside of the bones or the central portion. Limited blue or blue/grey colouration was noted in five Anglo-Saxon cases, and long bone fragments from one infant grave are black (charred). Between one and six skeletal elements are affected to differing extents, but an entire element is never involved. Within the Anglo-Saxon assemblage elements of the lower limb are most commonly affected (65% burials), most frequently the femur. Elements of the upper limb and skull are involved to a much lesser degree (25% and 15% of burials respectively); the latter only is affected in the Bronze Age case. The most extensive variations were seen in the remains of the two adult males (two–three skeletal areas, four–six skeletal elements, more extensive involvement) and the young female 277010 (five elements of lower limb).

Factors affecting the efficiency of oxidation have been discussed in detail elsewhere by the writer (McKinley 1994b, 76–8; 2004b, 293–5; 2008b). The common involvement of the femur is most likely to reflect the dense soft-tissue coverage of the bone in this area of the body, which has to burn away before the bone itself is exposed to oxidation. The implied greater susceptibility of the adult males could be indicative of the larger size of these individual (greater muscle bulk), requiring more fuel and/or longer to cremate with a shortfall in one or both of these requisites. This potential sexed-based variation has parallels with observations from numerous Romano-British cremation cemeteries (McKinley 2008b; see also Chapter 4). The singular involvement of numerous elements of the lower limb of the young female 277010 may indicate a shortage of heat in this distal portion of the pyre, perhaps resulting from too strong a wind blowing down its length cooling one end and concentrating the flame/heat at the other. Alternatively, there may have been some form of covering over the individual's legs for part of the cremation, muffling this part of the body from the flame (ie, cutting off the oxygen supply). Swaddling of some form certainly appears most likely to be responsible for the charred condition of many of the long bones of the infant 277158 in the face of the full oxidation of the skull elements.

It should be noted, however, that we could be observing a level of oxidation skewed by taphonomic factors. There is some evidence to suggest the poorer preservation of the less well-oxidised bone (see above), and it is possible that some of that subject to low levels of oxidation may have preferentially perished in the burial environment. Set against this possibility is the preservation of the charred long bone fragments from grave 277156.

The variability in oxidation (degree and extent) appears less than that noted in contemporaneous cremation cemeteries at Sancton (McKinley 1993b), Spong Hill (McKinley 1994b, 83–4) and St Mary's Stadium (McKinley 2005, 19–21), and less, at least by degree, than recently observed at the London Transport Museum (AOC Archaeology Group 2009). Some colour variation was also noted at Portway, Andover, Wiltshire (Henderson 1985) and at Alton, Hampshire the bone was almost uniformly a pale grey (Powers 1988). This suggests that, despite the implied minor shortfalls, sufficient fuel and time was generally employed to facilitate full oxidation of the bone.

Bone weight

The weights of bone recovered from the burials varied widely under the effects of various factors. The weights from the two confirmed Bronze Age graves were both low despite the 40.9 g from one representing the remains of an infant. In the latter case, the unsorted 1 mm sieve residue also contained a substantial amount of bone but this would not have served to increase the overall weight by more than a third. Some bone was also observed in the smallest unsorted fraction from grave 270050 but this is unlikely to have taken the total weight to 100 g. The latter represents only *c.* 6% of the expected weight of bone from an average adult cremation (McKinley 1993a).

The weight range from the Anglo-Saxon burials was extremely broad, <0.1–1192 g, with an overall average of 187 g. In broad terms the age of the individual was an obvious factor. The weights from the four burials of immature individuals have a range of 3.4–199.8 g with an average of 60.4 g; for the individuals >15 years of age (11 graves) the range is 17.4–1192.2 g with an average of 309.9 g. The most significant factor, however, appears to have been the surviving depth of the grave, itself a reflection of the level of disturbance. For graves of >50 mm depth (individuals >15 years of age) the mean weight recovered is 463.4 g, and if limited to those of >100 mm depth the figure increases to 635.6 g (excluding the 'double' grave 277040 where the later urned burial was confined to the upper levels). The latter figure represents *c.* 40% of the expected average weight of bone from an adult cremation (McKinley 1993a) and is in the median range of weights generally seen from cremation burials. Even this is likely to be a minimum, however, given the known loss of trabecular bone due to taphonomic factors.

The most reliable bone weights, ie, those most representative of the weight of bone originally deposited, are obtained from the intact and only slightly disturbed deposits (see Grave Catalogue). The three cases from Saxondale again show a wide variation in weight under the effects of diverse factors. The urned burial 277010 held the greatest amount of bone recovered, representing *c.* 74% of the average expected weight of bone from an adult cremation (McKinley 1993a). More of the trabecular bone was preserved in this case than in most of the other burial remains (grave depth, lack of disturbance, protection afforded from burial environment by urn), and is the closest to 'normal' distribution of skeletal elements with just slightly more skull elements identified at the expense of upper limb and axial skeletal elements (see below). Even here, however, some trabecular bone was observed to crumble during excavation (see above), and at least 100 g of bone was present in the unsorted 1 mm sieve fraction amounting to an additional *c.* 8% above the recorded weight. There was poor preservation and recovery of trabecular bone from the unurned adult burial 277099, and here again *c.* 100 g of bone was noted in the unsorted small fraction residue, ie, almost one-third again of the recorded weight. Very little additional bone was observed in the small fraction residue from grave 277006, but again very little trabecular bone survived.

All these figures illustrate the detrimental impact on the bone of the burial environment (degradation and disintegration of trabecular bone) and different levels of disturbance resulting in direct displacement of bone from the grave. It remains clear, however, that there were variations in the quantities of bone included in burial deposits. This characteristic of the cremation rite is recognised across the temporal range, and as yet there is little clear indication of the factors affecting the quantities included (McKinley 2006), though one possible influence may be suggested by the possible collection (from pyre site to burial) procedures employed (see below, *Skeletal elements*).

Comparisons of bone quantities with contemporaneous cemeteries in East Anglia and northern England has its limitations due to the frequent inclusion of large quantities of cremated animal bone (pyre goods) in many of these burials (cutting comparative numbers). Notwithstanding, the average for the undisturbed adult burials at Sancton is *c.* 882.2 g (McKinley 1993b), whilst the recorded weights from sites (possibly slightly later and closer in date to Saxondale) in southern England tend to have shorter ranges and lower averages, with few deposits of more than 500 g (AOC Archaeology Group 2009; Bayley 2003; Cameron 1988; Henderson 1985; McKinley 2005; Powers 1988). Exceptions may be found, as, for example, at Christchurch, Dorset (Bayley 1983) where average weights of almost 600 g were recorded, and at Ringlemere, Kent, where the intact deposits have an average weight of 806.3 g (McKinley 2009). The quantity of bone from the young female's grave at Saxondale falls within the upper range of weights recorded for both the Anglo-Saxon period and others within which the mortuary rite was practised. What is unclear is why this should be so and whether this apparent preference was genuine or an artefact of differential preservation.

Fragmentation

Amongst the bone from the two Bronze Age burials the majority was recovered from the 5 mm (66%; adult) or 2 mm (55%; infant) sieve fractions, with maximum fragment sizes of 24 mm and 11 mm respectively.

The majority of bone (44–76%) from all but two of the Anglo-Saxon burials was recovered from the 5 mm sieve fraction; for burials 403103 and 403111 slightly more was recovered from the 10 mm fraction (45–46%). The largest recorded fragments from each grave ranged from 16 mm (an infant) to 41 mm (the 'intact' burial 277010), with a mean of 28 mm. In general, the size of the bone fragments recorded in osteological analysis is small – a further artefact of disturbance and burial in aggressive soil conditions. The difference between the size of fragments at the time of deposition and that recorded in analysis is illustrated by the two burial deposits excavated by the writer. Figures 5.22–5.24 (burial 277010) and Figure 5.25 (burial 277011) show the *in situ* bone prior to excavation. The infiltration of the intrusive grave fill

Fig. 5.23 Anglo-Saxon cremation burial 277010 (Grave 277004). Burial remains 277010 (oblique view) uppermost level showing fragmentary condition of the in situ *bone*

Fig. 5.24 Anglo-Saxon cremation burial 277010 (Grave 277004). Burial remains 277010 (view of base, after removal of vessel) showing original length of in situ *bone fragments and extensive dehydration fissures*

into the dehydration fissures formed during cremation is apparent. This heat induced fragmentation has been exacerbated by the repeated action of wet/dry and probably freeze/thaw on the burial environment causing the bone to fracture along the dehydration fissures. The consequences are further demonstrated by comparison of the pre-excavation maximum fragment sizes with those recorded in analysis. In the case of burial 277010, for example, in spit 1 the maximum pre-excavation fragment of 43 mm was reduced to 15 mm, in spit 3, 46 mm fell to 35 mm, and in spit 4/5 from 80 mm to 41 mm (Figs 5.22–5.24).

The overall fragmentation levels are higher than those observed at many other contemporaneous cemeteries. At Spong Hill and Sancton most of the bone was found in the 10 mm fractions (averages *c.* 50% and 43% respectively), with average maximum fragment

Fig. 5.25 Anglo-Saxon cremation burial 277011 (Grave 277006).Burial remains 277011 (side view, only vessel base in situ) showing the degraded and fragmentary condition of the in situ *bone*

sizes of 42 mm and 35.5 mm (McKinley 1993b; 1994b, 84). At St Mary's Stadium and Ringlemere the average maximum fragments were 52 mm and 58 mm respectively (McKinley 2005; 2009), with a relatively low average of 35 mm from Portway (Henderson 1985). However, as at all these sites, here at Saxondale there is no evidence to suggest any deliberate fragmentation of bone prior to burial, its condition largely being due to taphonomic factors (McKinley 1994a).

Skeletal elements

The proportion of the bone identifiable to individual skeletal elements was generally rather low, with a range *c.* 18–62% by weight and an average of *c.* 35% for the Anglo-Saxon assemblage (15–32% for the Bronze Age). The highest percentages (>40%) were mostly from heavily disturbed deposits containing <40 g of bone, the exception being burial 277011 (grave 277006).

Most cremation burials of any period (unless substantially disturbed) will include fragments of elements from all four skeletal areas (skull, axial skeleton, upper and lower limb). The identifiable proportions from each are often skewed from what may be referred to as a 'normal' distribution due to the ease with which skull fragments may be recognised, even as very small fragments, and the difficulties in distinguishing individual long bones (McKinley 1994b, 6). The taphonomic loss of trabecular bone also reduces the proportion of the axial skeleton (mostly trabecular) identified (see above).

No axial skeletal elements were identified within either of the Bronze Age burials. Seven of the Anglo-Saxon burials were also devoid of such fragments, with very low proportions (<5% of identified skeletal elements) being recovered from most of the other graves. There are only two cases where the axial elements comprised close to normal proportions – graves 277004 and 277159. In the former the distribution between the four skeletal areas approached that which may be expected (by weight), whereas in the latter there was a clear shortfall in lower limb elements; in both cases there was the commonly observed over-representation of skull elements. Taking the various taphonomic effects into account, there is no evidence to suggest deliberate selection of particular skeletal elements for burial. The unusual proportions of skeletal elements within grave 277025 may, however, suggest something of the burial formation process. Here a very small proportion of the identified skeletal elements were from the skull (*c.* 3%) with a substantial proportion of lower limb (83%). Since only the lower 20 mm of the urned burial survived, the very low percentage of the usually readily identifiable skull elements may be due to the lower limb fragments having been placed in the vessel first. The observation can, however, only be viewed as a tentative suggestion given the small quantity of bone recovered (37.5 g) and the small amount identifiable to skeletal element (29%).

Tooth roots and the small bones of the hands and feet are commonly recovered from the remains of cremation burials of all periods, and it has been suggested that their frequency of occurrence may provide some indication of the mode of recovery of bone from the pyre site for burial (McKinley 2000a; 2004b, 299–301). Between one and 31 elements were recovered from 14 of the Anglo-Saxon graves (compared with a maximum three from the Bronze Age). The greatest number of elements was observed in the grave 277004 assemblage, perhaps unsurprising given the much larger weight of bone recovered from here than from elsewhere. Of the seven other graves from which relatively substantial quantities of bone were recovered (>200 g), between two and 13 such elements were identified, predominantly hand/foot bones.

The data does not present a clear or consistent idea of the mode of recovery employed in collection of remains from the pyre site for burial at Saxondale. Where none or low numbers of small elements were recovered collection may have been effected by the hand-picking of individual bones/fragments, creating a bias towards the more easily recoverable large bones. In contrast, it seems likely in at least the case of burial 277010 that the cremated remains were raked off the burnt-out pyre *en masse* and possibly then winnowed prior to burial (to remove the lighter pyre debris), thereby facilitating the easy recovery of the smaller skeletal elements as well as the larger ones. At Ringlemere, it was observed that the burials with weights in the lower range appeared to fit into the first category whilst those containing >800 g of bone seem to fit with the latter (McKinley 2009). It was suggested that there may be a direct link between the quantities of bone included in the burial and the manner in which the bone was recovered for burial. Unfortunately, the high level of disturbance and probable loss of bone from the graves at Saxondale does not allow either corroboration or the confident dismissal of this apparent connection.

Dual burials

Contemporaneous cemeteries in the north and central-eastern areas of England have been found to contain burials containing the cremated remains of two, and rarely more, individuals at a rate of *c.* 4–7% (McKinley 1993b). Few of the cemeteries from southern England appear to include such deposits with, for example, none having been recovered from Alton (Cameron 1988; Powers 1988) or Worthy Park, Hampshire (Bayley 2003), or from St Mary's Stadium, Southampton (McKinley 2005). No burial deposits of this type were recorded at Saxondale, though one grave did contain the remains of two separate burials (see *Demography*). Rather than being a 'regional' variation as implied by the data presented here, this may be a temporal change with a shift away from dual cremation in the later part of the period (see below).

Pyre goods

Small quantities of cremated animal bone, the remains of pyre goods, were recovered amongst the remains of three of the Anglo-Saxon burials (*c.* 16%) and what appears to have been a deposit of pyre debris (see Grave Catalogue). More than one species was found in two graves; grave 277034 (adult male) containing the remains of three species and grave 277004 (young female) a minimum of two. Sheep/goat and domestic fowl were each recorded in two graves, the former also being found in the deposit of pyre debris. Fragments of dog and pig bones were identified within one grave each. The elements recovered suggest the sheep/goat and pig remains placed on the pyre comprised joints of meat (three adjacent cut marks were noted on one sheep/goat rib fragment), while the domestic fowl was placed on whole. The dog was represented by elements of the skull and feet which could imply the animal had been skinned and its pelt was being used as clothing/cover or for ornamental purposes (L. Higbee pers. comm.).

The inclusion of cremated animal bone (ie, pyre goods) in burials is a common characteristic of the rite across the temporal range, and appears to reach its zenith – both in terms of quantity and variability of species – in the earliest Anglo-Saxon phases as represented in the large cremation cemeteries in the central-eastern area of England (McKinley 2000a; 2006; Hills and Lucy 2013). The quantities recovered from these sites are frequently large, with between one and five species per burial, the most frequently occurring species being horse (Bond 1993; 1994; Bond and Worley 2006; McKinley and Bond 1993; McKinley 1994b; McKinley 2000a). At least 29% of the burials (from where there was surviving bone) at Millgate contained animal bone, with sheep being the most common species (*c.* 12% burials), followed by horse (6.4%) and pig (5.4%; Harman 1989). Unlike at Saxondale, no domestic fowl or dog was recorded, though both were seen at Spong Hill and dog was found at Sancton (Bond 1993; 1994). Similarly large numbers of burials with cremated animal bone were recorded at Elsham, Cleatham, Baston and Loveden Hill in Lincolnshire (40%, 38%, 30% and 23% (sample only) respectively (Squires 2011; Manchester 1976; Wilkinson unpubl.). In contrast, no animal bone has been noted in burials from many of the closely contemporaneous cemeteries in southern England including Worthy Park (Bayley 2003), Christchurch (Jarvis 1983), Portway (Cook and Dacre 1985) and Alton (Evison 1988). Where it is found the quantities are small and horse does not feature, eg, St Mary's Stadium (28% of burials; McKinley 2005). In many respects, the findings from Saxondale appear to have more in common with the latter sites than its nearer neighbours to the north, including Millgate *c.* 10 km to the north-east.

Redeposited pyre debris

Varying quantities of redeposited pyre debris were recovered from the fills of one Bronze Age and eight Anglo-Saxon graves (*c.* 42%). The fuel ash was often of fine particle size, giving a dark grey or black colouration to the grave fill, but many contained few or no larger charcoal fragments. In the Bronze Age grave 269625, the pyre debris appears to have been deposited around a bag containing the cremated bone collected for burial (Fig. 5.21). In the Anglo-Saxon graves the pyre debris generally appears to have been deposited around or possibly over the urned burial following partial backfilling of the grave (levels of disturbance render a conclusive statement difficult in some cases).

The inclusion of pyre debris in grave fills is a common characteristic of the rite throughout its use and in general probably reflects the proximity of the pyre site to the place of burial (McKinley 1998; 2000b; 2000c). One temporal exception is the early part of the Anglo-Saxon period as represented by the large cremation cemeteries in central-eastern England. Here only very small quantities of fuel ash (max. 3 g) have been recovered from a few deposits (<2%), generally from amongst the bone in the urned burials (McKinley 1993b; 1994b). These large cemeteries probably functioned as communal burial places for dispersed communities who cremated their dead within/close to the settlement area and thereafter transported the cremated bone for burial (*ibid*.; McKinley 2006). Pyre debris has, however, been recorded from some of the smaller, probably slightly later early Anglo-Saxon cemeteries (S. Lucy pers. comm.) in southern England including Alton (Evison 1988), St Mary's Stadium (*c*. 44% graves; McKinley 2005) and Ringlemere (McKinley 2009).

Formation processes

Some comment on burial formation processes has already been made above including where it affects calculation of the minimum number of individuals (see *Demography*) and the distribution of redeposited pyre debris within grave fills. In one of the Middle Bronze Age graves (269265) the use of some form of organic bag as a burial container for the bone was illustrated in the section (Fig. 5.21) and is reinforced by the distribution of the bone within the excavated quadrants. Over half the bone was recovered from the south-west quadrant, almost 90% being contained in the western half of the grave. A similar distribution pattern was seen in the Bronze Age grave 270050, where a disproportionate 46% of the bone lay in the south-west quadrant and almost 70% in the southern half. No clear pattern of distribution was observed in grave 270046; here there was a relatively dispersed distribution but only 7% of the bone was in the south-east quadrant.

In the Anglo-Saxon assemblage the most detailed information on the formation process of the deposits was recovered from the two almost complete urned burial remains excavated by the writer. Information pertaining to the levels of bone within the vessels has already been outlined above. A further observation from burial 277010 (grave 277004) is that the angle at which the bone lay within the vessel suggests there was originally some form of organic material in the central area around which the bone was deposited and as it decomposed the bone subsided into the remaining void. Similarly located evidence of organic inclusions within an urned burial was observed in C380 from Sancton (McKinley 1993b, illus. 23). Very little bone was found in the upper 50–60 mm of the surviving fill of the vessel from grave 277004 (*c*. 3.5% of total), the dense layer of bone being confined to the lower 0.11 m (Fig. 5.23). Slightly more bone was found in quadrants B and C than in A and D, which may suggest that the angling of the vessel noted above was an early feature concentrating the bone in what would have comprised the 'lower' half of the vessel. Elements from all parts of the skeleton were found dispersed throughout the fill with, for example, fragments from both side of the mandible found in spits 1, 2 and 4/5. The small bones of the hand and feet were found similarly distributed, as were the few fragments of cremated animal bone included in the burial. There are, however, some indications for a broadly layered distribution of skeletal elements with a high proportion of skull elements (49–81% of identified skeletal elements) recorded in spits 1–2, falling to 9–23% in spits 3–5; most of the axial skeletal elements were observed in the central fill of the vessel (spit 3); and elements of the upper limb showed no vertical concentrations, whereas much of the lower limb was concentrated in the lowest spits (4/5; 53–67% of identified skeletal elements). The surviving size of the bone fragments show a slight but progressive increase from the upper to lower levels, the largest fragment being recovered from spit 4/5.

A similar distribution pattern was observed in burial 277011 from grave 277006. Here comparatively little bone was recovered from spit 1 (of three; 12.3% of tota1 weight). A greater proportion of the skull elements were found in spit 2 (44–92% of identified elements) compared with spit 3 (23–60%); most of the axial skeletal elements were in spit 3; and the elements of upper limb again appeared dispersed whilst those of the lower limb were concentrated in the lowest spit (spit 3). In this case the largest fragments tended to fall in the central area rather than the base of the vessel.

These observations suggest a number of possible influences. It appears that the bone from the pyre sites was probably inserted directly into the vessels rather than first being held in some form of temporary container. If, as is suggested by the number of small bones incorporated in the burials, the bone was collected from the pyre site by raking (see above), the lack of through mixing of the skeletal elements suggests they were not winnowed, or at least not all together. The implication is that collection, by whatever means, and deposition of bone within the vessel commenced at the distal/foot end of the pyre and progressed towards the head end.

The final additions to these two vessels, probably prior to their deposition in their graves (some form of lid – possibly textile or skin – would initially have been placed over the urn before the burial was made), appears to have been that of grave goods, ie, items which had not been on the pyre but which formed part of the burial deposit. The remains of unburnt metal items (predominantly iron and copper alloy toilet implements; Schuster, below) were recovered from seven graves including two of those containing vessels emptied by the writer. In most cases the location of the items was not recorded, but in burials 277010 and 277011, the small knife and two sets of tweezers respectively, were found clearly positioned above the bone (Figs 5.22 and 5.26). Given their location and the high level of disturbance/ truncation to most of the excavated graves, it is probable that more of the burials incorporated such goods but that they have been damaged/removed post-depositionally.

Fig. 5.26 Anglo-Saxon cremation burial 277011 (Grave 277006). Burial remains 277011 (view from above, top spit 2) upper level of bone in urned burial showing position of two sets of iron tweezers (ONs 277021a–b)

The majority of the graves from which such goods were recovered (8 of 12) had survived to more than 0.05 m depth, three being over 0.1 m.

Concluding remarks

The relatively small size of the cemetery at Saxondale, coupled with the mortuary rites reflected in the form and nature of the deposits, places it in the latter part of the 5th century following the shift away from the use of large 'centralised' burial grounds such as Loveden Hill, Millgate and Elsham. The latter drew together a dispersed population from several settlements/farmsteads, the dead being cremated near their place of habitation and their remains transported to be buried with other relatively recent migrants (not necessarily first generation) with whom they shared a common mortuary culture. Over time and with succeeding generations the need to congregate in death seems to have faded, and both the primary and secondary part of the mortuary rite increasingly occurred closer to settlements of the individual groups. At the same time, subtle changes in the mortuary rite, with a slightly different emphasis on the secondary, burial, stage, seems to have occurred.

The small cemetery at Saxondale has provided a rare opportunity that has not previously been afforded in the region to study in greater detail all aspects of one of these later smaller cemeteries and to document the changes in the mortuary rite.

Prehistoric Pottery

by E.R. McSloy

A total of 262 sherds (weighing 1690 g) of late prehistoric pottery was recovered, representing 0.56 estimated vessel equivalents (EVEs) based on rim percentage values. All material comes from the main excavation area (and associated trial trenches). A minority of material (45 sherds) relates to Romano-British or unphased deposits; the remainder from Bronze Age and Iron Age features. Most context groups are small and dating is hindered by the absence of featured sherds.

Recording reflects that for the larger groups from High Thorpe and Cropwell Wolds (see Chapters 6 and 8). Thin-section analysis of pottery fabrics was not undertaken for the Saxondale material.

Composition

Pottery fabrics are described below and set out by phase in Table 5.2. The few identifiable vessel forms are described below in relation to consideration of date. The late prehistoric fabrics, including quartz-tempered, vesicular and metasandstone-tempered, compare visually to types described from the Middle Iron Age groups from High Thorpe and Cropwell Wolds. Most or all are probably local in origin.

Table 5.2 Saxondale: prehistoric pottery, summary by fabric

	Bronze Age and Iron Age			*Romano-British and unphased*			*Total*		
Fabric	*No.*	*Wt. (g)*	*EVEs*	*No.*	*Wt. (g)*	*EVEs*	*No.*	*Wt. (g)*	*EVEs*
GR	12	106	-	-	-	-	12	106	-
MS	4	30	-	6	54	-	10	84	-
QZf	36	89	-	12	18	-	48	107	-
QZs	138	1063	0.44	-	-	-	138	1063	0.44
QZv	8	106	-	-	-	-	8	106	-
VES	41	167	-	5	57	0.12	46	224	12
Totals	239	1561	0.44	23	129	0.12	262	1690	0.56

Summary fabric descriptions

GR Grog: Dark grey throughout or with light brown surfaces and margins. Soft with soapy or slightly sandy feel. Common moderately sorted sub-angular grog, in range 1–3 mm.

MS Metasandstone: Dark grey throughout or with patchy red-brown exterior; Soft with sandy or harsh feel. Common sub-angular sand-sized quartz in range *c.* 0.3–0.5 mm and moderately sorted polycrystalline sandstone/metasandstone in range 1.5–3 mm.

QZs Quartz with sandstone: grey-brown throughout. Soft with sandy or harsh feel. Common or abundant well-sorted subrounded quartz/quartzite in range 0.3–0.5 mm; common, poorly sorted, sub-angular, fine-grained sandstone 2–5 mm.

QZf Fine sandy (quartz): dark grey throughout. Soft with sandy feel. Abundant, well-sorted sub-angular quartz/quartzite in range 0.2–0.3 mm; may contain sparse polycrystalline quartz (?metasandstone), up to 2 mm.

QZv Quartz/vesicular: dark grey throughout. Soft with sandy feel. Common or sparse, well-sorted sub-angular quartz/quartzite in range 0.2-–0.3 mm; common rounded voids up to 3 mm.

VES Vesicular: Soft with smooth/soapy feel. Dark grey throughout or with brown surfaces. Common plate-like vesicles in range 2–4 mm.

Discussion

Bronze Age

Middle Bronze Age activity is evident from at least two unurned cremation burials (269625 and 270050). A small quantity of pottery can be tentatively dated to this period based on characteristics of fabric and thickness. Most characteristic is grog-tempered fabric GR which occurs as unfeatured bodysherds from 'trough' 269298 and possible postholes 268004 and 270078 (Fig. 5.2).

Pottery from the 'trough' 269298, for which Bronze Age dating might reasonably be expected, comprised bodysherds (25 sherds weighing 119 g) in a mixed range of fabrics. The greater abundance of sherds in sandy fabrics (14 sherds in types QZs and QZV) suggests a later prehistoric date. Also present were eight thick-walled (in excess of 14 mm) bodysherds in grog-tempered fabric GR, for which an Early or Middle Bronze Age date would be appropriate, with several occurring in a lower fill of the trough. Given the nature of the excavated feature and the contamination risk from furrows, it is tempting to regard the later prehistoric sherds as intrusive.

A small quantity of pottery is tentatively dated to the Bronze Age based on characteristics of fabric and thickness. Most characteristic is grog-tempered fabric GR which occurs as unfeatured bodysherds from discrete features across the area, including pits 269099 and 269194, although here the association with vesicular fabrics probably makes the date of the pits slightly later than that of the trough.

Evidence for Late Bronze Age activity was provided by radiocarbon determinations from a posthole of Roundhouse 1, although associated pottery was lacking. Pottery tentatively of this period was identified from the line of three pits *c.* pits 80 m south-west of the roundhouse. Nineteen sherds (121 g) were associated with two of the pits (269099, 269214), the majority (16 sherds) from the northernmost pit (269099) which contained 16 bodysherds from the same vessel in a vesicular fabric (VES). Some of the sherds have the uneven surfaces resulting from 'finger wiping' which is commonly seen with pottery in the Late Bronze Age post-Deverel-Rimbury plainware tradition.

Later prehistoric/Middle Iron Age

The larger part of the assemblage is considered to be of broadly late prehistoric date. Material from Roundhouse 2 gully 277277 and most, or perhaps all, of the remainder dates to the Middle Iron Age. Such dating is prompted by a small number of form sherds and decoration. An absence of fingernail/fingertip ornament or of carinated forms would also be consistent with such dating.

Pottery associated with the roundhouse gully is consistent in suggesting a Middle Iron Age sequence. Most material (116 sherds) derives from pits 269373 and 269375 which were cut by the gully at the roundhouse entrance. The majority, including sherds from both features, derive from a single vessel, a crudely made neckless jar of ovoid or barrel-shaped profile with simple, slightly in-turned rim (Fig. 5.27.1). Similar vessels are known from the Late Bronze Age, continuing into the Middle Iron Age. A sherd in a metasandstone-tempered fabric with light vertical scoring indicates a Middle Iron Age date for this group.

Small quantities relate to the fills of the roundhouse gullies or from internal features; the fabrics represented in fill 269555 of pit 269548 and fill 269644 (terminal cut 269576 of gully 277274) are a mix of quartz-tempered, vesicular and metasandstone-bearing types, consistent with a Middle Iron Age date. A miniature vessel (Fig. 5.27.4) from fill 269552 of pit 269548 has the profile of a barrel-shaped jar with 'pushed-out' base which is typical of the Middle Iron Age in the region. Miniature vessels are uncommon from this period and the possibility arises of a structured deposit. Other 'featured' sherds associated with the roundhouse are restricted to a small squared rim sherd, probably from a neckless jar of ovoid or barrel-shaped form (Fig. 5.27.2). A similar vessel in a vesicular fabric (Fig. 5.27.3) was recorded from small Romano-British pit/posthole (269411) cutting gully 269278.

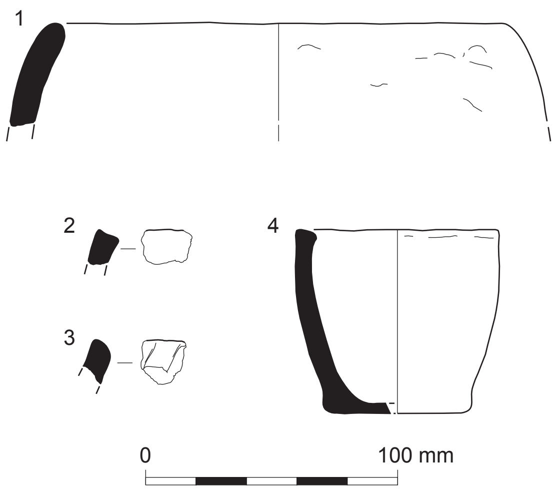


Fig. 5.27 Prehistoric pottery (1–4). See catalogue for descriptions

List of illustrated pottery (Fig. 5.27)

1 Barrel-shaped or ovoid (neckless) jar with simple rim. Fabric QZm. Context 279374, Bronze Age pit 279375.

2 Neckless jar with squared rim. Fabric QZv. Context 269644, Iron Age roundhouse gully 277274.

3 Neckless jar with simple rim. Fabric VES. Context 269410, Romano-British pit/posthole 269411.

4 Barrel-shaped miniature jar. Fabric VES. Context 269552, Iron Age pit 269548.

Romano-British Pottery

by E.R. McSloy (incorporating samian identifications by G. Monteil and mortarium stamps, by Kay Hartley)

Romano-British coarse pottery amounting to 1799 sherds, weighing 19 kg, was recovered from 79 separate deposits. The estimated vessel equivalents (EVEs) total, based on rim percentage values, is 20.22. Samian amounting to 14 sherds (211 g) is recorded separately (Monteil, in archive), with dating information included here and quantification integrated as appropriate for the major dated groups (Table 5.3).

Recording methodologies are those used for the larger Romano-British assemblage from *Margidunum* Hinter-

Table 5.3 Saxondale: Romano-British pottery, summary quantification by area
(shown as count, weight (in grams) and rim EVEs totals)

Area		*Enclosures 1–2 (and associated features)*			*Enclosures 3–5 (and associated features)*			*Enclosures 6–10 (and associated features)*			*Total*		
Fabric group	*Fabric**	*No.*	*Wt. (g)*	*EVE*	*No.*	*Wt. (g)*	*EVE*	*No.*	*Wt. (g)*	*EVE*	*No.*	*Wt. (g)*	*EVE*
Grog/clay pellet	GTA1	-	-	-	5	11	-	2	20	-	7	31	-
	GTA2	18	486	0.28	1	5	-	1	1	-	20	492	0.28
	GTA3	84	2332	0.91	14	325	0.40	-	-	-	98	2657	1.31
	GTA4	154	1460	0.72	14	289	0.03	2	4	-	170	1753	0.75
Sandy reduced	GW1	139	2040	4.45	70	1023	0.98	8	56	0.11	217	3119	5.54
	GW1r	2	24	-	-	-	-	-	-	-	2	24	-
	GW2	62	422	1.47	42	290	0.89	-	-	-	104	712	2.36
	GW3	267	2092	2.79	67	858	0.76	13	240	0.32	347	2954	3.87
	GW4	128	1294	1.20	4	56	-	-	-	-	132	1350	1.20
	GW5	32	855	0.09	11	107	0.03	1	3	0.03	44	965	0.15
	GW6	-	-	-	1	5	-	-	-	-	1	5	-
	GW7	61	518	-	-	-	-	-	-	-	61	518	-
	GW8	79	304	0.46	21	101	0.21	2	7	-	102	412	0.67
	GW9	-	-	-	4	210	0.05	-	-	-	4	210	0.05
	GW10	63	289	0.79	31	292	0.05	1	1	-	95	582	0.84
	UNV GW	2	85	0.23	-	-	-	-	-	-	2	85	0.23
	DER CO	-	-	-	1	6	-	-	-	-	1	6	-
Black-burnished	*DOR BB1*	-	-	-	4	20	-	-	-	-	4	20	-
Oxidised	*UN OX*	18	13	-	2	2	-	6	8	-	26	23	-
	OS1	38	79	0.12	14	18	0.10	1	1	-	53	98	0.22
Shell	SH1	4	4	-	60	144	0.30	187	578	0.25	251	726	0.55
	DAL SH	-	-	-	4	73	0.07	-	-	-	4	73	0.07
Colour-coated	*INV CC*	1	19	-	4	64	0.24	2	6	0.03	7	89	0.27
White/cream	WH1	3	17	-	-	-	-	-	-	-	3	17	-
	WH2	-	-	-	-	-	-	1	1	-	1	1	-
	INVWH	-	-	-	1	23	0.10	-	-	-	1	23	0.10
White (mortaria)	*INVWHM*	-	-	-	1	78	0.08	-	-	-	1	78	0.08
	MAHWH	20	1519	1.25	5	171	0.12	-	-	-	25	1690	1.32
	unid mort	2	87	-	-	-	-	-	-	-	2	87	-
Samian	*LGF SA†*	-	-	-	1	19	-	-	-	-	1	19	-
	LMV SA†	1	18	0.25	-	-	-	-	-	-	1	18	0.25
	LEZ SA2†	8	166	.06	1	1	-	-	-	-	9	167	0.06
	EG SA†	2	4	-	-	-	-	1	3	-	3	7	-
Totals		1188	14127	15.07	383	3955	4.41	228	929	74	1799	19011	20.22

Key: * types in italics are non-local and those marked '†' are continental imports

land (Chapter 4), and the reader is referred to that report for the scheme-wide fabric categories and descriptions.

The condition of the pottery is in some respects poor, with surface survival seemingly adversely affected by the local tenacious clays. Enclosures 1 and 2 include a number of large and discretely dated context groups, and that from context 273039 (upper fill of ditch 277245, terminal 2703078) is presented individually and is fully illustrated (Table 5.4; Figs 5.28 and 5.29.1–15). Several vessels among this group are substantially complete although the mean sherd weight (11.5 g) is only marginally higher than for the Saxondale assemblage as a whole (10.5 g).

Description by area

The assemblage is split into three areas – Enclosures 1 and 2 and associated features at the south, Enclosures 3–5 and associated field system and other features at the north, and roadside Enclosures 6–10 (SM2077) east of Lings Farm. The focus of dating for the site overall is the 2nd century AD, with restricted evidence for earlier and later activity.

The stratified component of the assemblage (1602 sherds/18.2 kg) has been ascribed to a single Romano-British phase. Some variation in dating was, however, detectable from the pottery and is set out below according

Table 5.4 Saxondale: Romano-British pottery, selected Group 273039 forms summary
(shown as rim EVEs and number of vessels)

Generic	*Specific*	*GR*	*GW*	*OX*	*WH*	*SAM*	*Total*	*%Total*
Beaker	Ovoid (bead rim)	-	.82/1	-	-	-	*.82/1*	
	Ovoid? (everted rim)	-	.35/2	-	-	-	*.35/2*	
	uncertain	-	-	-/1	-	-	*-/1*	
Sub-total		-	*1.17/3*	*-/1*	-	-	*1.17/4*	*10.5%/12.1%*
Jar	Neckless (everted rims)	.40/1	1.92/7	-	-	-	*2.32/8*	
	Neckless, high-shouldered	.52/1	-	-	-	-	*.52/1*	
	Necked, medium-mouth	.17/1	1.87/4	-	-	-	*2.04/5*	
	Necked, narrow-mouth		1.15/2	-	-	-	*1.15/2*	
Sub-total		*1.09/3*	*4.94/13*	-	-	-	*6.03/16*	54.5%/48.5%
Bowl	Curved-sided (bead rim)	-	-	.12/1	-	-	*.12/1*	
	Shouldered/carinated	-	2.17/6	-	-	-	*2.17/6*	
	Drag. 31	-	-	-	-	-/1	*-/1*	
Sub-total			*2.17/6*	*.12/1*	-	*-/1*	*2.29/8*	*20.7%/24.2%*
Dish	Plain rim with groove	-	.23/1	-	-	-	*.23/1*	
	Flat rim	-	.34/2	-	-	-	*.34/2*	
Sub-total		-	.57/3	-	-	-	*.57/3*	
Mortarium	BCFL	-	-	-	1.00/2	-	1.0/2	9.0%/6.1%

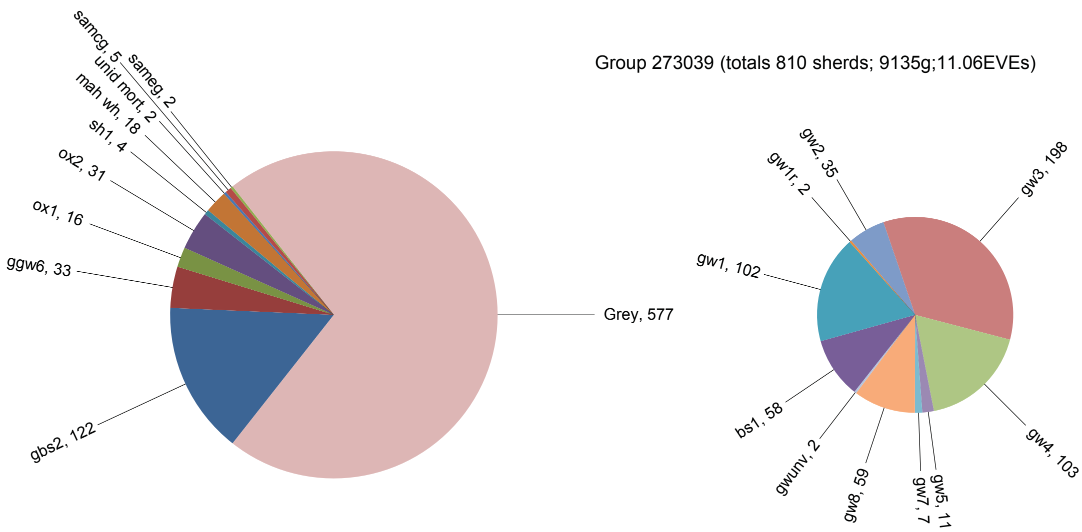


Fig. 5.28 Romano-British pottery, chart showing composition of the assemblage

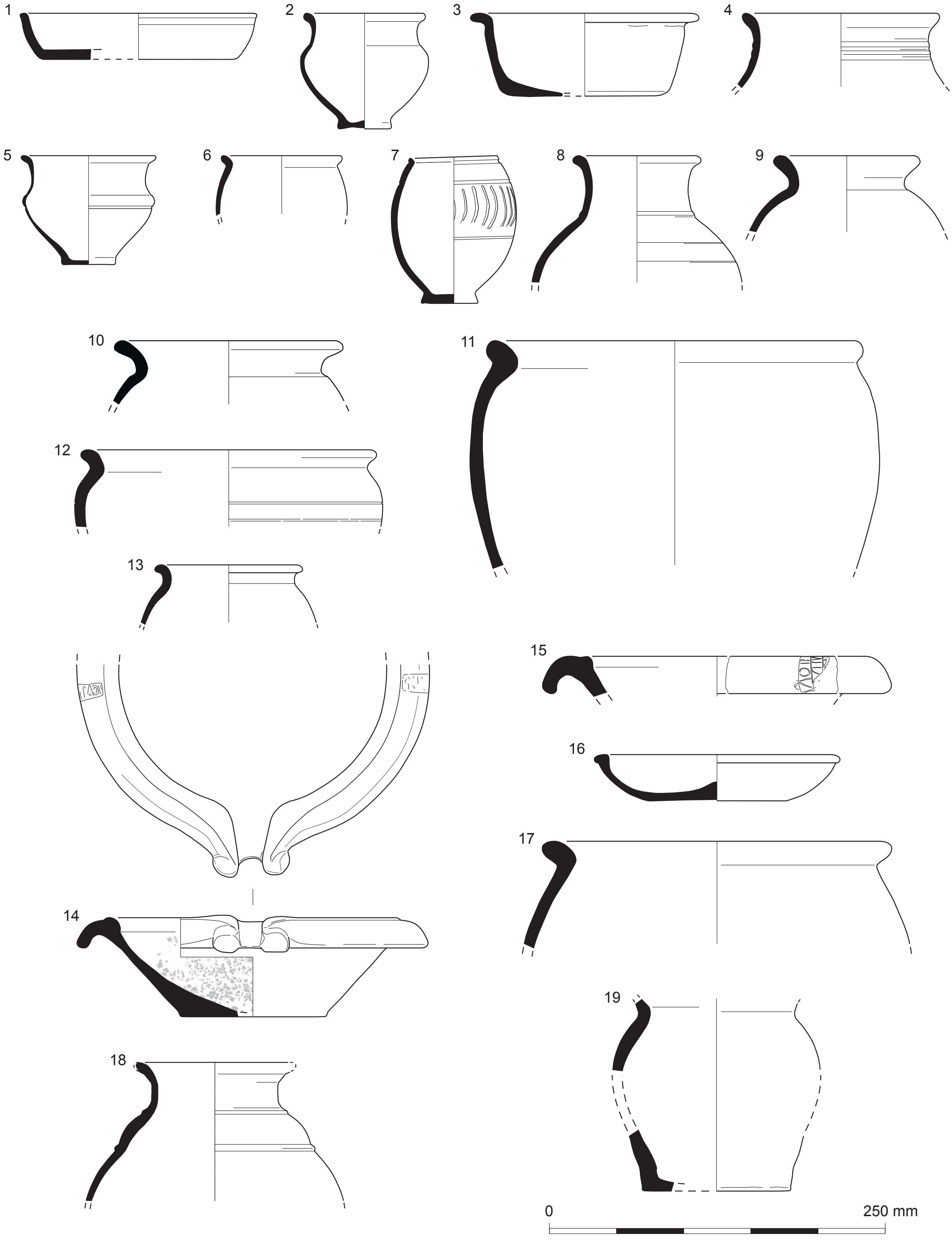


Fig. 5.29 Romano-British pottery (1–19). See catalogue for descriptions

to area. The majority (66% of the total by sherd count) relates to features associated with Enclosures 1 and 2.

Enclosures 1 and 2 and associated features

Almost all the pottery relates to the fills of ditches of Enclosures 1 and 2, the enclosures themselves having few internal features. The dating of the pottery, centring on the mid- to later 2nd century AD (below), is consistent across the pottery groups and suggests a restricted period of use. The volume of pottery and the evidence that some vessels were used for cooking (below) indicates a domestic context, and suggests that more internal features had originally been present, but have been completely truncated.

The composition of the overall assemblage is set out in Table 5.3, and that of selected context group 273039 (ditch 277245 terminal) in Table 5.4 and Fig. 5.28. Greywares of various types dominate (70.3% by count, 76.7% by EVEs). These are largely local/Trent Valley types (see descriptions in Chapter 4), with an Upper Nene Valley greyware dish the sole identifiable regional import (Fig. 5.29.1). The remainder is largely made up of other coarseware types, of which grogged/clay pelleted types (GRT types) are most prominent. The grogged types, together with most of the coarser greywares (types G3/G4), occur as larger high-shouldered jar forms (Fig. 5.29.11 and 17), similar to Todd's Trent Valley ware series (Todd 1968a, fig. 1). Shell-tempered wares are present only as crumbs from ditch context group 273039. It is unclear as to which source these represent, although Dales ware would seem unlikely.

Among coarser reduced-firing fabrics, it is jars which dominate and 16 sherds (from two fabric GW4 vessels) preserve evidence for use in the form of sooting. Most of the coarse vessels are medium-mouth forms with short necks and wide-flaring everted/out-curved rims (Fig. 5.28.9–10). Narrow-mouthed forms are sparsely present, though occur as a substantially complete vessel from group 273039 (Fig. 5.29.6).

Oxidised or fineware fabrics are scarce and 'tablewares' occur instead in finer greyware fabrics (GW1; GW2). These include ovoid beakers (Fig. 5.29.7–8), of which no. 7 appears to be an unusual example with bead rim; high-necked, shouldered bowls/cups (Fig. 5.29.2 and 5) and at least one platter/dish (Fig. 5.29.16). Black-burnished ware is absent from this area; however, its influence can be seen among the greyware dishes (Fig. 5.29.1 and 3), and dark-fired jars with everted rims (Fig. 5.29.13). Necked jars and shouldered/carinated bowls (Fig. 5.29.4–5), some with cordons, owe more to local traditions with 'Belgic' influences and can be paralleled from Trent Valley kiln groups (Field and Palmer-Brown 1991, figs 15–16).

A single Lower Nene Valley colour-coated ware beaker sherd of uncertain type was recorded as an unstratified find in Enclosure 2 (context 273090). Along with the previously noted Upper Nene greyware dish, this is the only other (non-specialist) regional import certainly present. The mortaria present are, unsurprisingly, regional imports and all of Midlands/Mancetter/Hartshill type; the identifiable forms (Fig. 5.29.14–15) are bead/curved flanged vessels.

Dating

A number of factors combine to support dating confined to the 2nd century AD, with the bulk of material probably from the early or middle Antonine (*c.* AD 140–70). Key to dating are two stamped mortaria vessels, both from the period AD 140–70 (see Hartley, below) and Gaulish samian, the latter, from central and east Gaulish sources, amounts to 11 sherds (0.9% of the total) and comprises mainly plain dishes/bowls. One Les Martres-de-Veyre vessel (form 18/31) from ditch 273005 of enclosure 2 (fill 273004) dates to the Trajanic or Hadrianic period. The majority of the samian is, however, likely to be Antonine, with *termini post quem* of *c.* AD 150 provided by form 31 vessels from enclosure ditches 273006 (fills 273004, 273007) and 277245 (terminal 273078, fill 273039). East Gaulish sherds were identified from ditch context group 273039, however, and raise the possibility of continuation into the earlier 3rd century.

The coarse pottery is fully consistent with dating provided by the samian and mortaria. Based on comparisons with well-dated groups from *Margidunum* Hinterland (Chapter 4) and sites in the wider area, including Bantycock Farm, Balderton (Leary forthcoming a) and Glebe Farm, Brough (Leary forthcoming b), there are hints that most material belongs before *c.* AD 170/80. Significant in this respect are the grogged/clay-pelleted wares (GRT types), which belong to a tradition with its roots in the 1st century AD and unlikely to extend far beyond the mid-2nd century. Similarly, fine greyware forms, including the ovoid beakers (Fig. 5.29.7–8), carinated/shouldered bowls and dish/platter no. 18, are part of an earlier or mid-2nd-century tradition comparable, for example, to kiln groups of this date from Lea and Newton on Trent (Field and Palmer Brown 1991).

The absence or extreme scarcity of types such as Lower Nene Valley colour-coated ware, Derbyshire ware and Dales ware are further indications of dating closer to *c.* AD 150 than AD 200. Such types are apparent at *Margidunum* Hinterland by the later 2nd century (see McSloy, Chapter 4) and, while this may in part relate to differing site types/status (Leary forthcoming a), in view of the proximity of Saxondale it would be surprising if such types were not available to its inhabitants *c.* AD 180/200.

Enclosures 3–5, field system and associated features (incl. SM2072)

The bulk of the 383 sherds of Romano-British pottery from this area comes from a ditch-defined pattern of enclosures. Very little material (11 sherds, weighing 28 g) was recovered from the trial trenches extending northwards, including those investigating the Roman road (in SM2072).

The overall composition is shown in Table 5.3. Greywares, mostly or entirely of local/Trent Valley manufacture, are dominant (64.7% by count). Moderate quantities of grogged and shell-tempered types also occur.

Although smaller compared with material from the area of Enclosures 1–2, there is greater variability, particularly in respect of regional imports which include Lower Nene Valley colour-coated wares and 'self-coloured' wares, including one (reeded-rim) mortarium, Mancetter/Hartshill mortaria, Derbyshire ware, Dales ware and (Dorset) Black-burnished ware. Samian is poorly represented, at only two sherds. Significantly this includes one (South Gaulish) form 37 sherd, both the earliest and the sole decorated vessel recorded from the site.

Dating

The small size of most context groups, combined with the longevity of the common coarseware types, are factors behind the broad dating for much of this assemblage. The small number of larger, better-dated groups suggests that the focus is earlier Romano-British, and that some features may be contemporary with Enclosure 1 and 2 (above). Other groups, however, those containing regional wares noted above, are somewhat later, suggesting dating to or after the later 3rd century AD.

Soft grog-tempered (GTA1) and coarser fossil shell-tempered (SH1) sherds were recovered from several deposits, most abundantly from pit 269589 (10 sherds) cutting the gully of Iron Age Roundhouse 2, and post-hole 270171 (15 sherds). Bodysherds predominate, although channel-rimmed and narrow-necked jars in shell-tempered type SH1 were recorded from Enclosure 3 ditch 211018 (fill 211016) and Enclosure 3/4 ditch 277253 (cut 268024, fill 268025). At Bantycock Farm, Balderton, Notts (Leary forthcoming a), both types are common from the 1st century AD, with quantities falling off from the later 1st/early 2nd centuries. The absence of shell-tempered wares is a notable feature at Enclosures 1 and 2, suggesting their use had largely ceased by *c.* AD 150.

Deep pits 268200 and 211024 produced groups of modest size (35 and 22 sherds) which draw comparisons with mid-/later 2nd-century-dated groups from Enclosures 1 and 2 (above). Such groups are largely composed of greywares and include carinated/shouldered bowls and narrow-necked/cordoned jars (Fig. 5.29.18).

The latest dated context groups are Enclosure 3 ditches 211018 (28 sherds) and 277253 (12 sherds). Both groups comprise largely greywares. A Dales ware vessel from ditch 277253 suggests dating after *c.* AD 250; dating after *c.* AD 250/70 is implied for ditch 211018 by a Lower Nene Valley colour-coated jar (cf. Howe *et al.* 1980, no. 70), and complemented by a Black-burnished ware jar with flaring rim, probably datable after *c.* AD 220.

Enclosures 6–10 (SM2077)

Pottery from this area amounted to only 228 sherds (929g), of which 187 sherds (526 g) represent a shell-tempered jar, seemingly deposited intact in pit 277162. The condition of the group was poor, with extensive surface loss and mean sherd weight very low at 4 g.

The Romano-British features in this area comprise a series of small subcircular and sub-square enclosures, to the west of which a small cremation cemetery of early Anglo-Saxon date was later established (see McKinley, above and Young and Perry, below). Pit 277162, from which the shell-tempered jar (Fig. 5.29.19) was recovered, appears from its location to have been part of the cemetery group, although micro-excavation yielded only one fragment of cremated human bone (possibly intrusive). Although deposition in the Romano-British period is plausible, this vessel might also represent a 'cenotaph' type deposit, utilising a curated or salvaged Romano-British vessel.

Composition and dating

The range of fabrics present is shown in Table 5.3. Allowing for the fact that the shell-tempered fabric SH1 is in actuality made up of a single vessel, it is the reduced wares which make up the largest element. For the most part these are the medium coarse sandy types of local/Trent Valley type, comparable to those from the northern part of the site. There is a single sherd of hard-firing greyware (GW11) which can be characteristic of later Romano-British traditions of the East Midlands, including types produced at Swanpool, Lincoln. 'Finewares' occur as sherds of Lower Nene Valley colour-coated ware and unsourced fine oxidised (OX2) and whiteware (WH2).

The few more specific indications of dating point to activity in the later Romano-British period: shell-tempered vessel (Fig. 5.29.19) is devoid of most of its rim, although is almost certainly in the Dales ware tradition and as such probably no earlier than the early 3rd century (Darling 1977, 28–30; 1999, 87). The few other date markers relate mainly to Enclosure 10 (ditch 277270); sherds in Lower Nene colour-coated provide a *terminus post quem* of the mid-2nd century AD, though most usefully a rim sherd from a bowl with bead-rim (in imitation of a samian form 31) from ditch cut 277093 (upper fill 277094) of this enclosure, dates after *c.* AD 270 (Howe *et al.* 1980, 9; Perrin 1999, 102).

Mortarium Stamps

by Kay Hartley

Fill 273039 of enclosure 277245 (Fig. 5.29.14)

The complete rim of this mortarium carries the full complement of one stamp to each side of the spout. Because the fabric is softish and very powdery both stamps are so abraded as to be barely visible. There is, however, sufficient to permit the reading of the left-facing stamp as CICVR and the right-facing stamp has a similar reading although it is even fainter.

The stamps are from a die which gives CICVRFE in complete impressions for Cicur(o/us) *fecit*, FE representing 'fecit' for 'made it'. Only one die-type is recorded for this potter. His work can be attributed to the Mancetter-Hartshill potteries. Twenty-one of his mortaria have previously been recorded from Brough, Notts; Castor, Cambs; Haltonchesters; Hartshill; High

Cross; Leicester (2; Connor and Buckley 1999, 109, M19); Lincoln (2); Papcastle; Stanground South, Cambs; Stonea, Cambs (Hartley 1996, 429, no. 1 and fig. 145); Twenty Foot, near March; Tiddington; Upton St Leonards, Gloucester; Wall; Wallsend (3); Wappenbury and Worcester. This distribution suggests that the bulk of his mortaria went to sites in the Midlands, only five have been found in the north, four from sites on Hadrian's Wall including three from Wallsend, which has the largest number from any single site. The absence of mortaria from Antonine Scotland is significant considering the large flush of Mancetter-Hartshill mortaria there in the early to mid-Antonine period; his four mortaria at sites on Hadrian's Wall probably post-date the abandonnment of the Antonine Wall *c.* AD 158. Mortaria ceased to be stamped in these potteries probably within the decade AD 170–180 and the form of spout used by Cicur.. is one used by the latest potters stamping mortaria there. His activity is likely to have been within the period AD 150–180.

Fill 273039 of enclosure 277245 (Fig. 5.29.15)

Two joining fragments. This retrograde, two-line stamp is incompletely impressed, the upper line reading IMIIM[.], the lower [.]VOBON with both lines retrograde, though the upper one is the same whether read as retro or from left to right. Complete examples read IMIIMI/TVOBON, the two verticals representing E while the second O is very small. The potter's complete name was presumably Imemituobonus. He worked in the Mancetter/Hartshill potteries and other mortaria of his have been recorded in England from: Aldborough, Yorks; Burton by Lincoln; Corbridge (2–4); Leicester (3–5; Birley 1948, fig. 58, no.10); Market Overton (Thistleton area); Tiddington; Toad's Hole Piece, north of Lichfield; and Wall; in Scotland from Ardoch; Bearsden (attributed); Camelon; Mumrills (2); and Newstead (1–2). His date is assessed from his presence at Antonine forts in Scotland while his rim-profiles, spouts etc fit well with a date *c.* AD 140–165. This mortarium would normally have been cream throughout, but some accidental reduction during firing has made the upper surface of the flange and the surviving part of the outer surface pale grey.

Discussion

by E.R. McSloy

The Romano-British pottery from Saxondale forms the second largest assemblage from the road scheme and, other than that from *Margidunum* Hinterland *c.* 2 km to the north, the only one of sufficient size for meaningful inter-site comparisons.

The generally low levels of pottery from the ditches associated with Enclosures 3–5 support their interpretation as part of a field system. The much greater volume of material from Enclosures 1 and 2, together with its more complete condition and evidence for use, would suggest they relate to habitation. The relationship between land uses in the two areas is unclear: selected discrete features in the northern area might be contemporaneous with the more southerly enclosures ascribed to the mid-2nd century. Dating for the initial use of the field system is sketchy, although the ditches appear to have been open into at least the late 3rd century.

The roadside enclosures and other features in SM2077 produced comparatively little pottery. The few datable pieces are broadly late. Absence of evidence for domestic use, together with at least one pottery vessel buried complete, perhaps lends weight to the suggestion that the enclosures were 'ritual' in nature and that this may be a factor in its later focus for burial in the early Anglo-Saxon period.

In its composition, particularly that from the well-dated Enclosure 1 and 2, the assemblage is consistent with a local pattern of supply which sees reduced wares dominant from as early as the late 1st century AD. The large 2nd-century groups indicate that, although primarily utilitarian, the greywares were adapted to a range of functions. There are few late groups and the few date markers of this period from the field system and roadside features are insufficient for meaningful comment with regard to supply.

A breakdown of vessel forms is presented in Table 5.5. In common with most rural groups from the region and elsewhere, the assemblage is dominated by jars (54% by EVEs), most of which were suitable for a variety of kitchen-related tasks, with a smaller group of large and thick-walled vessels probably used for dry storage. With the exception of beakers and bowls including carinated/shouldered forms, the majority of other forms probably performed a range of kitchen-related or storage functions. Occurrences of mortaria, including a complete vessel in group 273039 from enclosure 1, are among sparse evidence for Romano-British culinary practices. Significant absences are flagons and amphoras; the latter suggesting that suggesting that oils, sauces and wines, if consumed, were decanted to other containers.

Samian ware is sparse overall (0.78%) and only marginally higher (0.92%) for the consistently Antonine-dated Enclosures 1 and 2. Both the quantity and the dominance of plain forms are consistent with what would be expected for 'lower-status' rural sites in the region and beyond.

Table 5.5 Saxondale: Romano-British pottery, 'generic' vessel form summary (all areas)

Form generic	*EVEs*	*%EVEs*	*No. vess.*	*% no. vess.*
Beaker	1.88	9.3	10	8.8
Jar	10.84	53.6	59	52.2
Bowl	4.03	19.9	26	23.0
Dish/platter	2.01	10.0	12	10.6
Mortaria	1.45	7.2	6	5.3
Totals	20.21		113	99.9

List of illustrated pottery (Fig. 5.29)

Select group 273039: Enclosure 1 ditch 277245 (terminal 273038)

1 Dish with bead rim and groove. Fabric GW10
2 Shouldered/carinated bowl/cup. Fabric GW1
3 Dish with flat rim and (bevelled base angle). Fabric GW1
4 Carinated (high-necked) bowl with neck cordons. Fabric GW1
5 Shouldered/carinated bowl/cup; simple everted rim. Fabric GW1
6 Necked/narrow-mouth jar; simple out-curved rim. Fabric GW1
7 Ovoid beaker with bead rim. Clay rustication decoration below shoulder in groove-defined zone. Cf. Todd 1969, fig. 13, no. 10; Field and Palmer-Brown 1991, fig. 16, no. 33). Fabric GW1
8 Ovoid(?) beaker; short everted rim. Fabric GW2
9 Medium-mouth necked jar; everted-rim. Fabric GW3
10 Medium-mouth necked jar; everted-rim. Fabric GW3
11 Neckless (high-shouldered) jar; short everted-rim. Fabric GTA3
12 Neckless jar; everted-rim. Shoulder grooves. Fabric GTA4
13 Neckless jar; everted rim. Fabric GW10
14 Mortarium; curved flange with high bead. Stamped CIRVR[..]. Fabric MAHWH
15 Mortarium; hooked flange with groove and bead. (illit.) stamp IMEMITUOBON[..]. Fabric MAHWH

Fill 273040: Enclosure 1 ditch 277245 (terminal 273038)

16 Platter/shallow dish with basal kick. Fabric GW2
17 Neckless (high-shouldered) jar; short everted-rim. Fabric GTA3

Pits in vicinity of Enclosure 3

18 Necked/narrow-mouth jar (broad shoulder cordon); simple out-curved rim. Fabric GW1. Context 268252, deep pit 268200

SM2077

19 Jar; everted rim. Fabric SH1. Context 277164, pit 277162 (in area of Anglo-Saxon cemetery)

Anglo-Saxon Pottery

by Jane Young and Gareth Perry

A total of *c.* 22 Anglo-Saxon vessels of broadly 5th–6th century date was identified from the roadside cremation cemetery (in SM2077). It is not possible to be certain of the original number of cremation urns because some of the vessels were recovered in small fragments, and in other cases it was unclear whether the vessels had contained cremated human remains. Three 'urns' identified in the field (vessels ONs 277002, 277006, 277018) subsequently proved to include sherds of more than one vessel, so it is possible that two separate burials were represented.

A Romano-British Dales ware jar (vessel ON 277019 in pit 277162; Fig. 5.29.19) appears likely to have never contained any human remains and has been excluded from this quantification, as have sherds of handmade Anglo-Saxon pottery from a thin spread of burnt material (214021) recorded during the trial trenching, one of which, with grooved decoration and the edge of what appears to be a finger-tipped dimple, is probably of late 5th–6th-century date.

The methodology for the analysis of the pottery is as described in Chapter 4. In addition, however, fragments from two burial urns (ONs 277011 and 277013) identified as Charnwood ware were sent for thin-section and electron microprobe study to determine the geological source of their fabrics. The work was undertaken by John Carney of the British Geological Survey and Edward Faber of the Microanalysis Research Facility at the Department of Archaeology, University of Nottingham. Their analytical reports are retained in the project archive.

A complete inventory of the urned burials is presented in the Anglo-Saxon Grave Catalogue (above). The fabrics are described in Chapter 4 (see Table 4.16), as is the methodology of analysis. A detailed description, with comparative material, follows below.

Burial urns

A summary quantification is shown in Table 5.6 and the distribution of the graves is shown on Figure 5.18. The urns are, on the whole, in a very poor state of

Table 5.6 Saxondale: Anglo-Saxon urns, with total quantities by sherd count and weight

Urn	*Burial number*	*Ceramic code*	*Total sherds*	*Total weight (g)*
ON 277001	277004	SSTMG	118	1139
ON 277002a	277006	SSTMG	154	597
ON 277002b	277006	SSTMG	30	136
ON 277003	277008	SSTMG	42	127
ON 277004	277013	SSTMG	6	7
ON 277006a	277019	SSTCL	108	169
ON 277006b	277019	SST	1	6
ON 277007	277022	SSTCL	413	1227
ON 277008	277025	SST	166	448
ON 277009	277031	SSTCL	139	308
ON 277010	277034	SSTMG	115	301
ON 277011	277037	CHARN	50	169
ON 277012	277040	SSTCL	43	32
ON 277013	277043	CHARN	34	67
ON 277015	277058	SSTCL	440	889
ON 277017	277156	FE	109	436
ON 277018a	277159	SSTMG	4	84
ON 277018b	277159	SSTMG	123	362
ON 277019b	277162	ECHAF	21	18
ON 277061	277097	SSTCL	2	12
ON 403108	403107	ESGS	40	22
ON 403110	403002	SSTCL	75	33
ON 403113	403112	SST	33	926
Totals			2266	7515

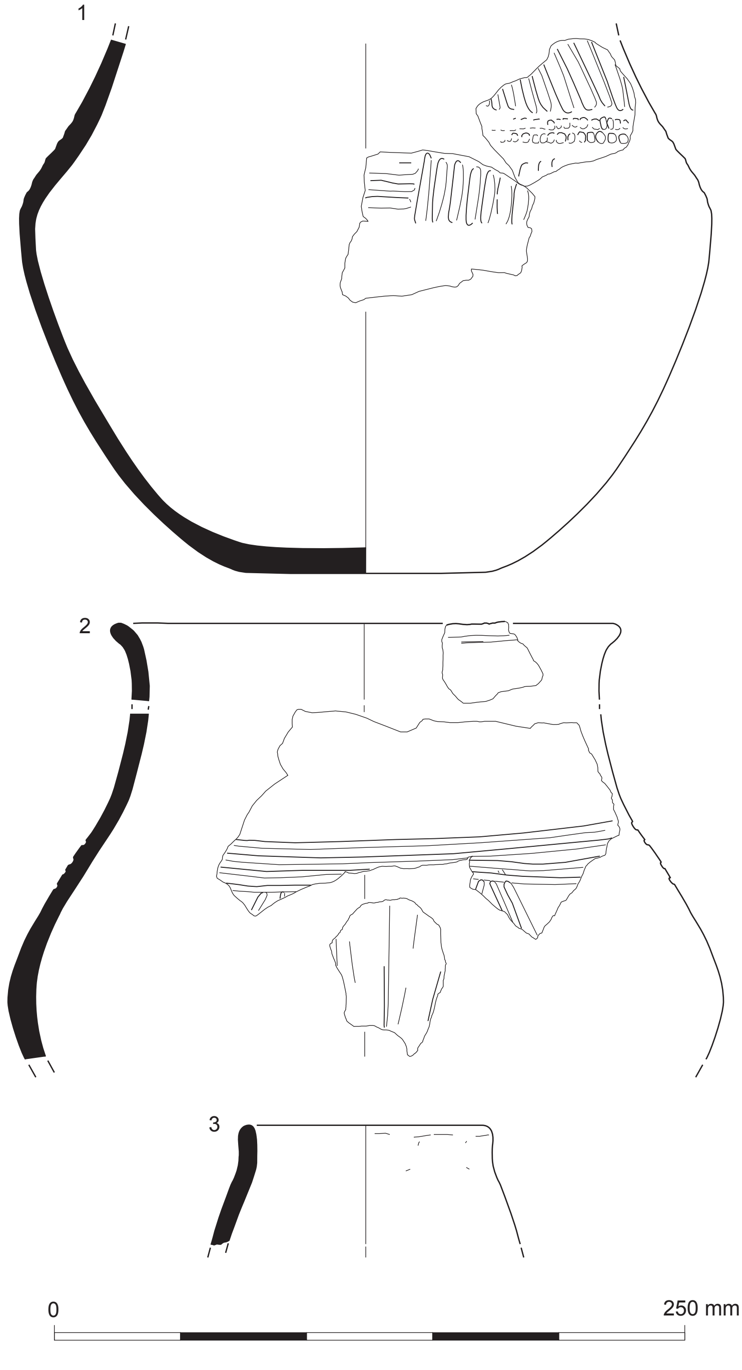


Fig. 5.30 Anglo-Saxon pottery (1–3). See catalogue for descriptions

preservation, the majority being represented only by their bases or lower body. Consequently, as decoration is generally confined to around and above the shoulders, the actual number of decorated urns is likely to be much higher than the five identified here. Nevertheless, a number of useful comparisons can be drawn between these vessels and those from published Anglo-Saxon cremation cemeteries. Basic descriptions of each vessel are given in the Grave Catalogue; diagnostic features of selected vessels are given below.

Urn ON 277001. Grave 277004, fill 277010 (Fig. 5.30.1). The linear basketry decoration (Myres 1977, fig. 211) is thought to have originated in the Anglian areas on the Continent and is frequent in the traditionally 'Anglian' areas of England, being most common in Norfolk (Myres 1977, 38). However, as a number of scholars have pointed out, the use of specific styles of decoration does not mean that the individuals whose remains were contained within were overtly expressing ethnic identity (Richards 1987; Williams 2002).

Potentially fruitful comparisons can be drawn between this urn and those from Millgate, Newark-on-Trent (Kinsley 1989), and the Cleatham cemetery, North Lincolnshire (Leahy 2007). Urn 106 from Millgate is decorated in a similar manner, but is very fragmentary and the published illustrations suggest that, although 'matted', it does not possess any chevrons or dimples

(Kinsley 1989, 45, fig. 39). Urn ON 277001 falls into Leahy's Group 08a, 'Counter angled lines or matting'; such urns, he suggests, belong to 'Phase 3' of the cemetery, with associated finds indicating an early to mid-6th century date (Leahy 2007, 69, 102). It should be noted, however, that none of the Group 08a urns from Cleatham exhibited the dimples identified on Urn ON 277001; such variations on a theme may simply relate to local tastes or the whim of an individual potter working within a wider decorative tradition (see Myres 1969, 60–1, 106).

Urn ON 277007. Grave 277022, fills 277024, 277023 (Fig. 5.30.2)

The decoration belongs to the chevron style, but in this instance grooved lines encircle the neck and grooved chevrons are separated by oval applied bosses; single incised lines flank the side of the bosses and a single incised line is drawn down the centre of each. Cleatham provides useful comparative material; the vessel appears to belong to Urn Group 10b at that site, but none of the Cleatham urns possess incised-line bosses and all have a minimum of three lines per chevron. Furthermore, no indication of date could be determined at Cleatham, as no vessels of this type could be placed within the chronological phasing of the cemetery (Leahy 2007, 106).

Encouragingly, more tangible comparisons for this urn can be drawn with vessels recovered from Nottinghamshire. Millgate Urn 320 draws the closest parallel, being decorated by two-line chevrons and incised lines flanking the bosses, though not enough of the urn remains to determine whether, like ON 277007, the bosses are vertically incised. The burial included an iron clasp and a pair of bronze tweezers; unfortunately these finds do not allow for any further refinement of dating (Kinsley 1989, 64, fig. 75). Millgate Urn 192 also possesses all the characteristics of ON 277007, including chevrons and bosses with incised flanks and a vertical intersection, yet the chevrons in this instance consist of six incised lines (Kinsley 1989, fig. 47). Millgate urns 219, 332 and 369 are all decorated with incised grooves around the neck and two-line chevrons, but all are un-bossed and again no datable finds were associated with these vessels (Kinsley 1989, figs 54, 77, 83). Although these Nottinghamshire parallels provide useful local links, it cannot be said that the two-line chevron is confined to this region. Indeed, although un-bossed, urns in this style have been identified at Caistor-by-Norwich and Downham Market in Norfolk, West Keal and Loveden Hill in South Lincolnshire, Heworth and Sancton in Yorkshire, and Little Wilbraham in Cambridgeshire; again these parallels were not associated with datable finds (Myres 1977, figs 263, 264, 265, 268, 271).

Urn ON 277017. Grave 277156, fill 277158 (not illus.)

This unusual iron-tempered (FE) urn is exceptionally thin-walled and the profile is constructable from the base to the shoulder. This urn is almost identical to Millgate Urn 253, both being embellished by large incised chevrons extending across the vessels' shoulders (Kinsley 1989, fig. 60). As it is usually the case that chevrons are composed of at least three incised lines, such single-line examples remain rare and it is therefore encouraging to find a local parallel; indeed Millgate is just 18 km north-east of Saxondale. Although there are no other finds recorded with either the Millgate urn or ON 277017, this style of decoration belongs to Cleatham Urn Group 10a. Leahy attributes this group to the first phase of the Cleatham cemetery, with associated finds and datable parallels hinting at a late 5th–mid-6th-century date (Leahy 2007, 105–6).

Urn ON 403108. Grave 403107 (not illus.)

This is the only vessel tempered with Greensand quartz (ESGS). The vessel may have originated in the Lincolnshire Wolds or have come from a source further to the south, since similar wares were in use in Bedfordshire and parts of Cambridgeshire. The tiny sherds show no signs of decoration.

Anglo-Saxon pottery from other features

Vessel ON 277019b. Context 277163, pit 277162 (not illus.)

Microscopic examination of the recovered material from pit 277162 within the cemetery showed that what initially appeared to be fragments of a single Romano-British shell-tempered jar (McSloy, above; Fig. 5.29.19) included 21 minute organic-tempered body sherds (ECHAF) from a probable Anglo-Saxon vessel. The use of Romano-British jars as burial urns in Anglo-Saxon cemeteries is not unknown in the East Midlands, the nearest parallel being at the nearby cemetery at Newark, where four Romano-British vessels were recovered (Kinsley 1989). The shell-tempered jar contained only a single tiny fragment of cremated human bone (possibly intrusive) and it may therefore represent a 'cenotaph' type deposit. The second (Anglo-Saxon) vessel, likely to have been an accidental inclusion in the grave, has an internal carbonised residue suggesting its initial use for domestic purposes.

Other deposits in SM2077

Enclosure 7 gully 277271 (cut 277065) contained two sherds from a handmade Anglo-Saxon sandstone-tempered jar (fabric SSTCL). Six sherds from a single coarse sandstone-tempered jar (fabric SSTMG) were recovered from Enclosure 11 ditch 277207 (Fig. 5.17, section B) and similar sherds came from a narrow unphased gully (277211) and from Enclosure 8 ditch 277266 (cut 277224). Pit 277112, within Enclosure 10, produced sherds from two further SSTMG jars.

A rim sherd from a handmade Anglo-Saxon jar in a quartz and iron-tempered fabric (NNRQFE) came from the topsoil (Fig. 5.30. 3). Superficial deposits elsewhere in SM2077 yielded sherds from five vessels of handmade Saxon type, including 10 sherds from a single large SSTMG jar, which appears likely to have come from a ploughed-out cremation burial.

Pits associated with Iron Age Roundhouse 2

Pit 269414 (Fig. 5.7) yielded two handmade Anglo-Saxon sherds, one vessel quartz-tempered (RQCL) and one organic-tempered (ECHAF). These sherds are of 5th–8th-century date. Single organic-tempered sherds were also recovered from pit 269674, and a small ceramic flake from pit 269669 may also be from an organic-tempered Saxon vessel. Pits 269523 and 269594 each produced single handmade Saxon sandstone-tempered sherds.

The Saxondale cemetery in a regional context

The number of Anglo-Saxon cemeteries in Nottinghamshire remains one of the smallest in any of the English counties; indeed, Meaney (1964, 200–2) records the presence of just four cremation cemeteries, three instances of inhumation and one mixed-rite cemetery, although an inhumation cemetery is now known at Collingham and a probable mixed-rite one at Sutton Bonnington. All four of the cremation and mixed-rite cemeteries lie within or on the edge of the Trent Washlands. The remains of other single burials are known from a few sites, and finds of decorated pottery could suggest a cemetery, but equally well could be from domestic vessels. Conveniently, Myres published illustrations of many of the urns (1977). Of these, only Millgate (Kinsley 1989), thought to have been in use from the 5th century and producing 400+ urns, provides any decorative parallels to the Saxondale urns (see above). Nonetheless, it is useful to consider the pottery and the location of some of the other cemeteries here.

Kingston-on-Soar

Meaney (1964, 200–1) reports that the second largest cremation cemetery in the county, Kingston-on-Soar, *c.* 22 km south-west of Saxondale, was discovered by workmen in the mid-19th century. The cemetery may have contained in excess of 200 burials covering *c.* 0.2 ha, but most were destroyed before the workmen reported their findings. Only six complete urns and fragments of three others remain, and Myres illustrated seven of these. All but two are elaborately decorated and do not draw parallels with the material from Saxondale, nor did they contain datable finds (Meaney 1964, 200–1; Myres 1977, 103, figs 5, 79, 138, 159, 215, 275, 346).

Holme Pierrepont

The single illustrated urn from the possibly mixed rite cemetery at Holme Pierrepont, *c.* 6 km west of Saxondale, is of Leahy's Group 10s, 'rings and chevrons with stamps', which apparently date to the late 5th–mid-6th centuries (Meaney 1964, 200; Myres 1977, fig. 303; Leahy 2007, 69, 106). The exact number of vessels recovered from this cemetery is not recorded; however, the urns were of 'three varieties...one evidently a copy of the usual globular Roman model'. The British Museum holds a number of finds from this site, including a late Roman/early Anglo-Saxon glass bowl, a small Roman bronze panther and a number of 5th- and 6th-century brooches (Bateman 1848 cited in Meaney 1964, 200; Skelton 1931, 16–17).

Netherfield

Just *c.* 6 km west of Saxondale, Netherfield lies just north of Holme Pierrepont, on the opposite bank of the River Trent. Meaney reports that in 1932 Lincoln Museum was in possession of six small pots from Netherfield. These pots were illustrated by Myres; all are undecorated and none were associated with datable finds. The pots are now held by Nottingham University Museum but it has not been possible to examine them further (Meaney 1964, 201; Myres 1977, 103, figs 33. 65, 67, 68, 73).

Willoughby-on-the-Wolds

The late 5th–early 7th-century inhumation cemetery at Willoughby-on-the-Wolds, with over 100 burials, is close to Saxondale, being located *c.* 15 km south of the site close to Fosse Way (Meaney 1964, 200; Kinsley 1993b, v). Again Myers (1977, figs 145, 215, 304) provides illustrated examples of some of the accessory vessels; all are more elaborately decorated than the material from Saxondale and no parallels can therefore be drawn.

Starnhill Farm, Bingham

Investigations in 1972 at Starnhill Farm, Bingham, just 2 km east of Saxondale (Alvey 1980), identified 281 pottery sherds, burnt human remains and patches of burning. Except for a small area running alongside a dyke, the cemetery appears to have been entirely ploughed out (NMR SK 73 NW 26). The finds from this site are held in Nottingham University Museum and include a number of stamped sherds, several of which can be paralleled with urns from Millgate. This would be a fruitful group with which to do detailed fabric comparisons with the Saxondale urns. Initial fabric work suggests the presence of a range of fabrics including Central Lincolnshire Sandstone-tempered and Carboniferous Sandstone-tempered types.

The Saxondale cemetery appears to be in an area of intense early Anglo-Saxon funerary activity; indeed, four cemeteries exist along an 8 km east–west axis: Saxondale, Holme Pierrepont, Starnhill Farm and Netherfeld. No closely datable finds were associated with the Saxondale burials, but the parallels provided by the Cleatham cemetery tend to suggest an early 5th to mid-6th-century date for these burials. Proximal cemeteries such as Holme Pierrepont and Willoughby-on-the-Wolds reveal that inhumation was practised contemporaneously with cremation in this region and it would be foolish to suggest that the Saxondale burials represent a chronological marker in burial rites.

List of illustrated pottery (Fig. 5.30.1–3)

1 Urn ON 277001 base and body sherds; grooved shoulder with basketry grooving below and with set of dimples between chevrons. Fabric SSTMG. Context 277010, grave 277010.

2 Urn ON 277007 rim and body sherds; horizontal and chevron grooved with four-line grooves above shoulder and boss below. Fabric SSTCL. Contexts 277023 and 277024, grave 277022.

3 Jar with simple rounded upright rim. Fabric NNRQFE. Topsoil 214001.

Metal Finds from Anglo-Saxon Graves

by Jörn Schuster

Of the 22 Anglo-Saxon cremation graves excavated at Saxondale, only seven contained any metal finds; for the most part these were small iron implements or now unidentifiable fragments of such. Copper alloy items were only found in two graves and fragments of a third, unidentifiable, object in another grave. The items are listed in the Grave Catalogue (above) and are discussed here.

Apart from a small copper alloy nail from grave 277022, all other identifiable objects can be classed as toiletry implements. Tweezers are the most common items: five, including one made of copper alloy, were discovered in four graves. The only set with identifiable elements was found in grave 277058, comprising a pair of iron tweezers, an ear scoop and what appears to be a pair of miniature shears; both the ear scoop and the pair of tweezers still retain fragments of a suspension ring with ends coiled around each other (Fig. 5.31.6, 8). It is, however, likely that further sets had been deposited in other graves, but their more fragile parts are now merely unidentifiable fragments of rods or sheet metal: grave 277004 contained a small fragmented knife as well as a number of iron lumps and strip fragments, and grave 277006 a flat, pointed iron fragment apart from the two pairs of tweezers. Besides the unidentifiable iron rod and strip fragments from grave 277102 there is also one piece of copper alloy sheet.

The five pairs of tweezers belong to at least three different types. The iron pairs from graves 277022 and 277058 had arms flaring towards the jaws, comparable to a pair from Millgate, Newark (Kinsley 1989, 149, fig. 62, 258i). The miniature bronze pair from grave 277097 had parallel sides, with a good comparison in grave 33 at Newark. The two iron examples from grave 277006 had rectangular-sectioned and flat arms respectively; their jaws are missing. All these are long-lived types considered to have little chronological significance (Härke 1992, 92; Penn and Brugmann 2007, 36). The

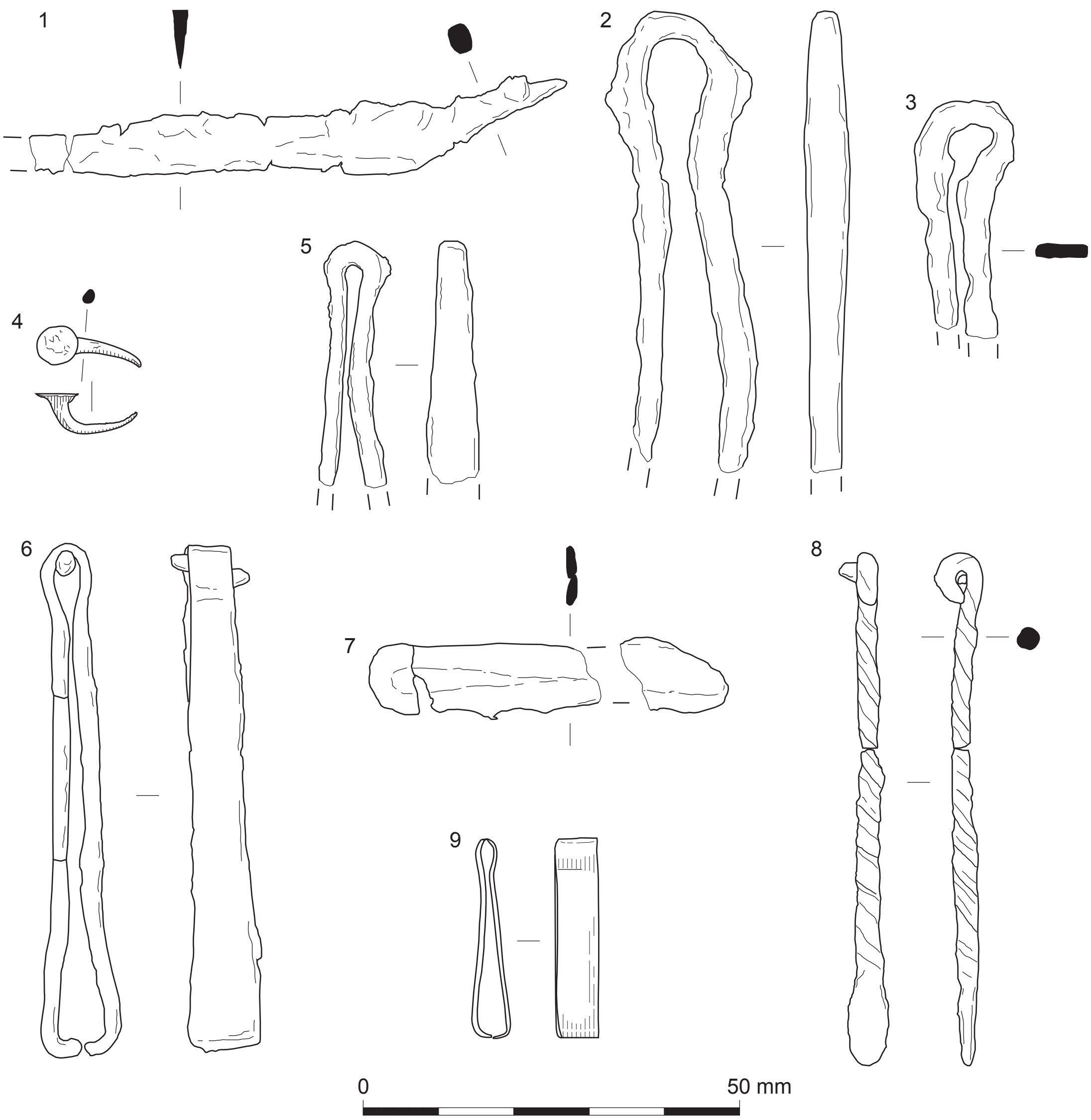


Fig. 5.31 Metal finds from the Anglo-Saxon graves (1–9). See catalogue for descriptions

first two iron pairs belong to Dickinson's type IV, dating to the 5th and 6th centuries, while the bronze example is her type II with an even longer date range, covering the 5th–7th centuries (Dickinson 1976, 221–2; cited after Scheschkewitz 2006, 156). The radiocarbon date of cal AD 410–560 for grave 277022 supports the range for Dickinson's type IV.

Tweezers are predominantly found in male graves on the Continent (Böhme 1974, 127), and there is still a clear bias towards male graves in England (Stoodley 1999, table 2). However, for the East Midlands Stoodley (*ibid.*, 44 and fig. 35) found that more than 60% of the tweezers in his sample (of inhumation graves) came from female burials, compared with slightly over 10% from male graves. A similar bias appears to exist in the Saxondale graves containing tweezers, with two burials osteologically sexed as possibly and probably female respectively, while no sex could be determined in the remaining cases. In three graves (277022, 277058, 277097) tweezers were found with adult individuals older than 18 years, while in grave 277006 the tweezers were found with an infant/juvenile. With a length of only 27 mm the copper alloy tweezers from grave 277097 are almost half the size of the average of Anglo-Saxon copper alloy tweezers at 47 mm (Hirst and Clark 2009, 617), but closer to the average of 31 mm of the eight examples found at Mucking. Although of such small size, the Saxondale example is still fully functional. As was the case at Saxondale, miniature copper alloy tweezers are often deposited singly; thus, of the eight from Mucking, only two were found in combination with miniature iron shears (*ibid.*).

The combination of two pairs of tweezers in one cremation grave (277006; Fig. 5.31.2–3) is very rare. It was, for instance, only recorded in two of the *c.* 2500 cremation burials at Spong Hill (graves 1214 and 2211; Hills 1977; Hills and Penn 1981; McKinley 1994b, table 2). It appears to be equally uncommon in Anglo-Saxon inhumation graves (N. Stoodley pers. comm.). In his national database, Dr Stoodley lists only three cases. A fourth, containing two bronze examples, comes from Wasperton, grave 4 (Scheschkewitz 2006, 156 and Taf. 3).

The fragmentary preservation of the knife from grave 277004 precludes a typological identification, but its dimensions place it firmly in Härke's group of 'small' knives which were found to be more likely to be deposited with juveniles (Härke 1989; 1992, 91, Tab. 5). The individual buried in the grave was osteologically identified as a subadult/adult (*c.* 15–20 yr.) probable female, radiocarbon dated to cal AD 420–570.

On typological grounds the shears from the toilet set found in grave 277058 (Fig. 5.31.7–8) can only be broadly dated to the early Anglo-Saxon period. Comparisons can be found in many cremation cemeteries: for the shears, see for example Newark, grave 204 (Kinsley 1989) or Spong Hill, graves 1011, 1661, 1688 or 2110 (Hills 1977; Hills and Penn 1981). The iron ear scoop (or spatula?) from the same set has a twisted stem. A comparable scoop, but made of bronze, was found in grave 40 at Spong Hill, suspended from a ring together with a pair of bronze tweezers (Hills 1977, 203, fig. 116, 40). According to Dickinson (1976, 224) ear scoops mainly belong to the late 5th and early 6th centuries, but their date range is wider, as evidenced by an ear scoop with twisted stems from an early 5th-century Saxon cremation grave at Altenbühlstedt in the Elbe-Weser triangle in Northern Germany (Böhme 1974, Taf. 1, 6), and one from grave 32 at Buckland, Dover (Evison 1987, 290, fig. 19), which demonstrate their use at the end of the 6th/early 7th century.

While it is admittedly more difficult to detect evidence of burning on iron objects, none of those from Saxondale appear to have been burnt, whereas it is certain that none of the three copper alloy objects (nail in grave 277022, tweezers in 277097 and sheet in 277102) were affected by heat. This would suggest that the toilet implements/sets had not been worn by the deceased as part of their personal equipment when they had been placed on the pyre but instead had been placed unburnt in, or on top of, the cremation urns. Kinsley (1989, 18) reports a similar observation from the large cremation cemetery at Millgate, Newark-on-Trent, some 18 km to the north-east.

Glass Beads

by Lorraine Mepham

Single miniature glass beads were recovered from cremation graves 277006 and 277102 (Fig. 5.32). The bead from grave 277006 is of globular form (diameter 3 mm; thickness 2 mm), while the example from grave 277102 is a hexagonal cylinder (diameter 2 mm; length 3 mm). Both beads are in semi-translucent blue glass.

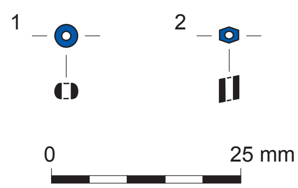


Fig. 5.32 Anglo-Saxon glass beads from Grave 277006 and Grave 277102

While Guido does not specifically discuss beads of miniature form from the Romano-British period, it is evident that they did occur, for example in a late Roman necklace from Fordington, Dorset (eg, Guido 1978, pl. IV, b). Both form/colour combinations seen here (blue globular and blue hexagonal cylinder) are known from the Romano-British period, and in each case Guido raises the possibility that they may include post-Romano-British examples (*ibid.*, 70, 96–7). Brugmann notes that miniature beads of dark colour and globular shape are occasionally found in early Anglo-Saxon graves, for example at Mill Hill, Kent, and gives her 'Miniature Dark' bead category a late Romano-British or early Anglo-Saxon context (Brugmann 2004, 30), while Dickinson concludes that they were in use throughout the early Anglo-Saxon period (Dickinson 1973, 253).

The rarity of these miniature beads in Anglo-Saxon contexts may in part be the result of recovery techniques employed during excavation; it may be noted that these examples were both extracted during detailed scanning of the sieved residues from soil samples taken from the graves.

Roman Window Glass

by John Shepherd

Three fragments of natural green-blue window glass were recovered from Enclosure 2 (ditch 277238, fill 273084). They are interesting in that they are the only identifiable Roman glass fragments from the site, suggesting that, although window glass was being used nearby, there might not have been more than a minor vessel glass supply. The glass is of the cast matt/glossy variety that is typical of the late 1st and 2nd centuries AD, although it is possible that it was being used, if not made, later in the Romano-British period.

Worked Bone

by Grace Perpetua Jones

Tiny, unburnt bone fragments were removed from cremation grave 277004 (sample 277072, spit 1, context 277010), some of which could be identified as originating from an Anglo-Saxon comb (see Grave Catalogue, above). They include two fragments with ring and dot decoration, one with part of a perforation, three with grooved lines and three tooth fragments. The overall form of the comb is unknown.

Environmental Remains

Charred Plant Remains

by Chris J. Stevens

Forty-nine samples were taken and processed for the recovery and assessment of charred plant remains. The samples were predominately of Iron Age and Romano-British date, although a few Late Bronze Age pits, and an Anglo-Saxon pit (in SM2077), were also sampled. The Iron Age features related to probable Middle Iron Age settlement, including a roundhouse and several pits. It should be noted that charred grains of hulled wheat were dated from roundhouse gully 277277 (cut 269392, fill 269393) to 380–200 cal BC (at 95% confidence) (SUERC-39037; 2215±30 BP). The Romano-British features included enclosure ditches and a deep pit that may have been a well.

The assessment showed that material was well represented in a few samples, but with many samples containing little to no charred plant remains, including the interesting 'trough' 269298 of probable Bronze Age date. On the basis of the assessment 18 samples were chosen for further analysis. The samples were processed using standard methods (see Chapter 4), and the results for the 18 fully analysed samples are presented in Tables 5.7 and 5.8.

Results

Late Bronze Age and Iron Age

The Late Bronze Age and Iron Age samples contained mainly glume bases of hulled wheats. In the vast majority of instances, where these were identifiable, they were clearly of spelt (*Triticum spelta*), however, in a few instances, including the sample from Roundhouse 2, a few glumes and/or spikelet forks were identifiable as emmer wheat (*Triticum dicoccum*). Barley (*Hordeum vulgare*) was also identifiable from grains present in several samples, and from two rachis fragments from pit 269560 within the roundhouse. Grains of hulled wheat were much less well represented than chaff and, over the samples as a whole, less frequent than barley. Of note were the large numbers of wheat awns within three of the samples from pits 269214 (Late Bronze Age), 269414 and 269548 (both Iron Age), occasionally fused, as in the case of pit 269414, into a conglomerated mass. No other crop remains were present in the samples.

The most commonly represented seeds of wild species were those of brome grass (*Bromus* sp.) and/or oats (*Avena* sp.). No identifiable floret bases were recovered which might allow cultivated oat to be distinguished from wild oat, but at this date most are assumed to come from the wild variety growing as weeds within arable fields. Other species that were reasonably common included meadow grass/cat's-tails (*Poa/Phleum* sp.) and fat-hen (*Chenopodium album*).

Further species present included scentless mayweed (*Tripleurospermum inodorum*), blinks (*Montia fontana* subsp. *chondrosperma*), black-bindweed (*Fallopia convolvulus*) and dock (*Rumex* sp.). Other species were generally represented by a few seeds and included those of buttercup (*Ranunculus* sp.), knotgrass (*Polygonum aviculare*), redshank/pale persicaria (*Persicaria maculosa/lapathifolium*), stitchwort (*Stellaria* sp.), ribwort plantain (*Plantago lanceolata*) and cleavers (*Galium aparine*).

Among the samples were also a number of other elements that are most probably derived from material brought in for use either as fuel or tinder for the hearth. This material included a few leaves and stems of greenweed (*Genista* sp.) and/or gorse (*Ulex* sp.), as well as rootlets of heather (*Calluna* type) and grass (Poaceae). There were a few thorns of sloe/hawthorn (*Prunus spinosa/Crataegus monogyna*) in the roundhouse gully (cut 269392), and a few pinnules of bracken (*Pteridium aquifolium*) in pits 269214 and 269560.

Romano-British

Four samples of probable Romano-British date were analysed. Two came from Enclosure 3 ditch 277253 (cut 268212) and Enclosure 1 ditch 277245 (terminal

Table 5.7 Saxondale: charred plant remains from prehistoric features

	Phase	*LBA*		*LBA*		*IA*		*IA*		*IA*		*MIA*	
	Feature type	*Pit*		*pit*		*Pit*		*Pits*		*Pits*		*Roundhouse 2 277277/277278*	
	Feature	*269194*		*269214*		*269414*		*269560*		*269548*		*269380*	*269392*
	Context	*269198*	*269197*	*269215*		*269417*	*269416*	*269561/2*	*269561*	*269551*	*269552*	*269382*	*269393*
	Sample	*74*	*75*	*50*	*49*	*108*	*54*	*52*	*42*	*53*	*51*	*97*	*96*
	Vol. (l)	*1*	*1*	*1*	*1*	*10*	*1K*	*1*	*1*	*1*	*1*	*50*	*50*
Cereals													
Hordeum vulgare sl (grain)	barley	-	-	-	-	-	-	12	16	2	1	2	2
Hordeum vulgare sl (rachis)	barley	-	-	-	-	-	-	2	-	-	-	-	-
Triticum sp. (grains)	wheat	-	-	-	-	-	1	-	1	2	2	-	16
Triticum sp. (charred/silicified awns)	wheat	-	-	-	+++C/S	-	++/S	-	-	++/S	-	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	-	-	-	-	2	3	7	-	7	-	19
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	-	-	1	-	1	-	-	-	4	-	6
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	-	-	13	50	4	20	3	45	64	154	3	280
Triticum cf. *dicoccum* (grain)	emmer wheat	-	-	-	-	-	-	-	1	-	-	1	1
Triticum dicoccum (glume base)	emmer wheat	-	-	-	-	-	-	-	-	-	-	-	5
T. dicoccum (spikelet fork)	emmer wheat	-	-	-	cf.1	-	-	-	-	-	-	-	1
Triticum spelta (glume bases)	spelt wheat	-	2	9	29	-	6	1	2	25	53	1	180
Triticum spelta (spikelet fork)	spelt wheat	-	-	-	1	-	-	-	-	-	-	-	1
Triticum cf. *turgidum/aestivum sl* (grain)	bread wheat	-	-	-	-	-	-	-	-	-	-	-	cf.2
Cereal indet. (grains)	cereal	-	-	-	-	-	-	9	13	2	2	-	18
Cereal indet. (est. grains from frags.)	cereal	-	-	-	-	-	3	6	10	-	-	-	10
Other species													
Equisetum type stem	horsetail	-	-	-	1	-	-	-	-	2	-	-	-
Pteridium aquifolium (pinnule)	bracken	-	-	-	2	-	-	1	-	-	-	-	-
Ranunculus acris/repens	meadow/creeping buttercup	-	-	-	-		-	-	-	-	1	-	-
Chenopodium album	fat-hen	-	-	-	-	1	7	11	12	3	-	-	2
Montia fontana subsp. *chondrosperma*	blinks	-	-	-	6	-	1	-	1	1	-	-	2
Stellaria media	chickweed	-	-	-	-	-	-	-	-	-	1	-	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	-	-	-	-	-	-	1	1	-	-	-	-
Polygonum aviculare	knotgrass	-	-	-	1	-	-	-	-	-	1	-	-

Table 5.7 (cont.) Saxondale: charred plant remains from prehistoric features

	Phase	*LBA*		*LBA*		*IA*		*IA*		*IA*		*MIA*	
	Feature type	*Pit*		*pit*		*Pit*		*Pits*		*Pits*		*Roundhouse 2 277277/277278*	
	Feature	*269194*		*269214*		*269414*		*269560*		*269548*		*269380*	*269392*
	Context	*269198*	*269197*	*269215*		*269417*	*269416*	*269561/2*	*269561*	*269551*	*269552*	*269382*	*269393*
	Sample	*74*	*75*	*50*	*49*	*108*	*54*	*52*	*42*	*53*	*51*	*97*	*96*
	Vol. (l)	*1*	*1*	*1*	*1*	*10*	*1K*	*1*	*1*	*1*	*1*	*50*	*50*
Other species (cont.)													
Fallopia convolvulus	Black-bindweed	-	-	-	-	2	1	1	1	2	1	-	-
Rumex sp.	dock	-	-	-	2	-	1	-	-	-	-	-	1
Rumex acetosella group	sheep's sorrel	-	-	-	-	-	3	-	1	3	2	-	1
Calluna type rootlets	heather	-	-	-	-	-	-	2	-	-	-	2frgs	-
Ericaceae bud?	heather bud	-	-	-	-	-	cf.1						
Crataegus monogyna/Prunus spinosa (thorns)	hawthorn/sloe thorns	-	-	-	-	-		-	-	-	-	-	5
Vicia/Lathyrus sp.	vetch/pea	-	-	-	-	-	1	1	2	-	-	-	2
Medicago lupulina	black medick	-	-	-	-	-	-	-	-	-	1	-	-
Trifolium sp.	clover	-	-	-	1	-	-	-	-	-	2	-	4
Genista/Ulex type leaves	greenweed/gorse	-	-	-	-	2	-	-	-	-	cf.1	-	-
Ulex leaflets	greenweed/gorse	-	-	-	-	-	cf.1						
Plantago lanceolata L.	ribwort plantain	-	-	-	-	-	-	-	-	1	-	-	-
Galium aparine	cleavers	-	-	-	1	-	-	-	-	-	-	-	-
Tripleurospermum inodorum	scentless mayweed	-	-	-	4	-	1	1	-	2	8	-	-
Carex sp. (flat)	sedge (lenticular)	-	-	-	-	-	-	-	-	-	1	-	-
Poaceae (small indet.)	small grass seed	-	-	-	4	-	-	-	-	2	-	-	-
Poaceae (culm internode)	grass stem	-	-	1	-	-	-	-	-	-	1	-	3
Poaceae (culm node)	grass culm node	-	-	1	4	-	-	1	-	2	1	-	-
Poaceae (rootlets/basal culm node)	grass roots	-	-	-	-	-	2	-	-	-	-	-	2
Lolium perenne L.	rye-grass	-	-	-	1	-	-	-	-	-	-	-	-
Poa/Phleum sp.	meadow grass/ cat's-tails	-	-	-	3	-	-	2	5	1	1	-	10
Avena sp. L. (grain)	oat grain	-	4	-	8	-	6	-	1	-	8	-	12
Avena sp. L. (floret base)	oat grain	-	-	2	-	-	-	2	-	-	-	-	-
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-	1	-	-	-	-	-

	Phase	*LBA*		*LBA*		*IA*		*IA*		*IA*		*MIA*	
	Feature type	*Pit*		*pit*		*Pit*		*Pits*		*Pits*		*Roundhouse 2 277277/277278*	
	Feature	*269194*		*269214*		*269414*		*269560*		*269548*		*269380*	*269392*
	Context	*269198*	*269197*	*269215*		*269417*	*269416*	*269561/2*	*269561*	*269551*	*269552*	*269382*	*269393*
	Sample	*74*	*75*	*50*	*49*	*108*	*54*	*52*	*42*	*53*	*51*	*97*	*96*
	Vol. (l)	*1*	*1*	*1*	*1*	*10*	*1K*	*1*	*1*	*1*	*1*	*50*	*50*
Other species (cont.)													
Avena L./*Bromus* L. sp.	oat/brome	-	-	12	10	7	11	1	27	29	20	-	36
Bromus sp. L.	brome	-	-	-	10	-	3	2	2	4	6	-	15
Seed indet. large	Indet. seed	-	-	-	-	-	-	-	-	-	2	-	-
Seed indet. small	Indet. seed	-	-	-	-	-	-	-	-	1	-	-	-
Terminal node thin stem		-	1	-	-	1	-	-	-	-	1	-	-
Woody stems indet.		-	-	-	10	5	-	-	-	-	1	-	-
Woody rootlets		1	-	-	20	-	-	-	-	-	-	-	-

Table 5.8 Saxondale: charred plant remains from Romano-British and Saxon features

	Phase	*RB*	*RB*	*RB*	*RB*	*Unph.*	*Saxon*
	Feature type	*Encl. 1 ditch*	*Encl. 3 ditch*	*Deep pit*	*Deep pit*	*posthole*	*Pits*
	Group	*277245*	*277253*				
	Feature/cut	*273078*	*268212*	*268200*	*268277*	*269365*	*277112*
	Context	*273039*	*268213*	*268256*	*268313*	*269366*	*277113*
	Sample	*103*	*16*	*14*	*15*	*40*	*108*
	Vol. (l)	*20*	*20*	*10*	*10*	*10*	*10*
Cereals							
Hordeum vulgare sl (grain)	barley	4	-	-	-	3	-
Triticum sp. (grains)	wheat	2	-	-	-	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	1	1	-	-	-
Triticum dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	1	cf.2	-	-	-
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	-	2	-	-	-
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	58	72	118	-	3	2
Triticum dicoccum (glume base)	emmer wheat	-	cf.2	3	-	-	-
T. dicoccum (spikelet fork)	emmer wheat	-	-	1	-	-	cf.1
Triticum spelta (glume bases)	spelt wheat	12	11	10	-	-	-
Cereal indet. (grains)	cereal	8	2	-	-	3	1
Cereal indet. (est. grains from frags.)	cereal	-	1	-	-	-	-
Cereal (germinated coleoptile)	cereal	4	1	3	-	-	-
Other species							
Corylus avellana	hazelnut	1frg.	-	-	-	1sm frg.	-
Chenopodiaceae indet.	goosefoot	1	-	-	-	-	-
Chenopodium album	fat-hen	-	-	-	-	-	-
Montia fontana subsp. *chondrosperma*	blinks	14	-	1	-	1	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	1	-	-	-	-	1
Polygonum aviculare	knotgrass	-	-	1	-	1	-
Fallopia convolvulus	black-bindweed	-	-	-	-	1	-
Rumex sp.	dock	2	-	-	-	-	-
Rumex acetosella group	sheep's sorrel	5	-	-	-	-	-
Raphanus raphanistrum (capsules)	runch, charlock	1frg.	-	-	-	-	-
Calluna type stems	heather	31frgs	-	-	-	-	3

	Phase	*RB*	*RB*	*RB*	*RB*	*Unph.*	*Saxon*
	Feature type	*Encl. 1 ditch*	*Encl. 3 ditch*	*Deep pit*	*Deep pit*	*posthole*	*Pits*
	Group	*277245*	*277253*				
	Feature/cut	*273078*	*268212*	*268200*	*268277*	*269365*	*277112*
	Context	*273039*	*268213*	*268256*	*268313*	*269366*	*277113*
	Sample	*103*	*16*	*14*	*15*	*40*	*108*
	Vol. (l)	*20*	*20*	*10*	*10*	*10*	*10*
Other species (cont.)							
Calluna type rootlets	heather	21frgs	-	-	-	-	-
Calluna charcoal Barnett	heather	2frg	-	-	-	-	-
Erica type stem	heath	-	-	cf.1	-	-	-
Ericaceae stem indet.	heath	-	-	cf.1	-	-	-
Prunus cf. *domestica* ssp. *insititia*	bullace/damson	-	-	-	-	cf.1	-
Crataegus monogyna/Prunus spinosa (thorns)	hawthorn/sloe thorns	2	-	-	1	-	-
Vicia./Lathyrus sp.	vetch/pea	2	1	2	-	3	1
Trifolium sp.	clover	-	-	-	-	2	-
Genista/Ulex type leaves	greenweed/gorse	-	-	cf.2	-	-	-
Plantago lanceolata L.	ribwort plantain	1	-	-	-	-	-
Valerianella dentata	narrow-fruited cornsalad	-	-	1	-	-	-
Luzula sp.	woodrush	-	-	-	-	1	-
Eleocharis palustris	common spike-rush	-	-	1	-	-	-
Carex cf. *paniculata*	greater tussock-sedge	-	-	-	-	1	-
Poaceae (small indet.)	small grass seed	-	1	-	-	-	-
Poaceae (culm node)	grass culm node	5	-	-	-	-	-
Poaceae (rootlets/basal culm node)	grass roots	-	4	-	-	-	-
Poa/Phleum sp.	meadow grass/cat's-tails	1	-	5	-	2	-
Arrhenatherum elatius var. *bulbosum* (tubers)	false oat-grass	1	cf.1frg	4	-	-	-
Avena sp. L. (grain)	oat grain	-	1	5	-	-	-
Avena sp. L. (floret base)	oat grain	-	-	1	-	-	-
Avena sp. L. (awn)	oat awn	-	-	6	-	-	-
Avena L./*Bromus* L. sp.	oat/brome	-	-	1	-	-	-
Charred frags, bread/dung	includes *Avena/Bromus*	-	-	17+	-	-	-
Terminal node thin stem		-	-	-	-	-	-
Woody stems indet.		-	-	-	-	-	-

273078), and the other two from deep pits 268200 and 268277, however, the latter produced little or no remains.

As with the assemblages from the Iron Age samples, glumes of hulled wheat predominated and where identifiable these were mainly of spelt wheat. Again grains were less well represented, with only a few grains of hulled wheat and barley recorded in the samples. Weed seeds were generally relatively sparse, although deep pit 268200 had a number of seeds of oat and/or brome grass. This same deposit also yielded occasional seeds of meadow grass/cat's-tails, spike-rush (*Eleocharis palustris*), blinks, knotgrass (*Polygonum aviculare*), vetch/wild pea (*Vicia*/*Lathyrus* sp.) and narrow-fruited cornsalad (*Valerianella dentata*). The sample from ditch 277245 had generally fewer seeds of weed species, although it did contain a number of seeds of blinks. Of some interest within this sample were quite high numbers of roots and stems of probably both heather (*Calluna* sp.) and heath (*Erica* sp.), along with occasional thorns of hawthorn/sloe and grass stems and/or culms. A tuber of onion couch grass (*Arrhenatherum elatius* var. *bulbosum*) was also recorded from this latter sample, with a further four tubers from deep pit 268200.

Anglo-Saxon

A single sample from Anglo-Saxon pit 277112 in the centre of Romano-British Enclosure 10 (in SM2077) was examined. The number of remains was very low but did include two unidentifiable glume bases, and one possible spikelet fork of emmer wheat. The low number of weed seeds in this pit included knotgrass and vetch/wild pea. The only other remains were a few stems of probable heather.

Unphased

A single sample was examined from unphased (but probably early Romano-British or earlier) posthole 269365 (fill 269366) close to, but not on the line of, the eastern end of the long fence-line (Fig. 5.13). It had relatively little material but did contain a fragment of plum (*Prunus* sp.) stone, most probably, from its size, of bullace (*Prunus domestica* ssp. *insititia*). The sample otherwise contained only a few fragments of cereals including three glume bases, and a few seeds of weed species in general broadly representative of the range seen from the other samples.

Discussion

Late Bronze Age and Iron Age

In common with the samples from the other Iron Age sites on this project, these samples are dominated by glumes of hulled wheat, predominantly of spelt. The sample from pit 269214 would suggest that spelt had become an important crop by the Late Bronze Age and there is only one tentative identification of emmer wheat. Barley was well enough represented to suggest that it was an important crop alongside the hulled wheat.

The predominance of glumes of hulled wheat suggest that the samples all derive from dehusking waste, which would have been produced when hulled wheats were taken from storage and processed to make clean grain for milling. Generally, larger weed seeds were better represented than smaller ones within these samples, perhaps indicating that the hulled wheat crops were stored as relatively clean spikelets.

While the number of seeds was generally small, the presence of blinks indicates that at least some wetter soils were under cultivation. Remains of heather/heath are not common, but together with the occurrence of pinnules from bracken might suggest that such material was collected for use as fuel during this period.

Romano-British

As with the Iron Age samples, the three richer Romano-British samples from the two enclosure ditches and deep pit 268200 had much higher numbers of hulled wheat glume bases than grains, suggesting again waste from dehusking of wheat stored in the spikelet and charred through processes similar to those that had taken place in the Iron Age.

The samples had generally a low, but broadly similar, range of weed seeds to that seen in the Iron Age. One of the samples from the Enclosure 1 ditch did have a number of seeds of blinks, but the presence of stems and rootlets of heather, along with stems/leaflets of gorse, in the same deposit might suggest that this species was collected with such material for fuel, where it can grow within wet, spring-flushes.

Anglo-Saxon

The Anglo-Saxon period is usually characterised by the arrival of free-threshing wheat and rye with the demise of hulled wheats (Greig 1991). However, only a few remains of hulled wheat were recovered from pit 277112. While hulled wheats are occasionally recovered from Saxon sites to the east, there is little evidence for their continuation into the Saxon period within the East Midlands area in general (Monckton 2006). The explanation at Saxondale for the absence of free-threshing wheat is probably the nature of the site, the principal Anglo-Saxon remains comprising a cremation cemetery, with little or no evidence for settlement of this period identified.

Charcoal

by Catherine Barnett

Seven samples were analysed following the standard methods (see Chapter 4). The charcoal came from two Middle Bronze Age features including one cremation grave, several Middle Iron Age settlement features, a single Romano-British ditch and an early Anglo-Saxon cremation grave. There was also one sample from an unphased posthole. The identifications are presented in Table 5.9.

Table 5.9 Saxondale: wood charcoal identifications

	Phase	*MBA*	*MBA*	*MIA*	*MIA*		*RB*	*Unph.*	*Saxon*
	Feature type	*Cremation grave*	*R-house 1 posthole*	*R-house 2 gully*	*Pit*		*Encl. 1 ditch*	*Posthole*	*Cremation grave*
	Group			*277277*			*273078*		
	Feature/cut	*269625*	*269160*	*269392*	*269560*		*277245*	*269365*	*403112*
	Context	*269626*	*269161*	*269393*	*269561*	*269561*	*269366*	*273039*	*403113/4*
	Sample	*57*	*29*	*96*	*42*	*46*	*40*	*103*	*403153*
	Vol. (l)	*6*	*20*	*50*	*2*	*0.5*	*10*	*20*	*3*
	Flot size (ml)	*60*	*90*	*110*	*25*	*15*	*175*	*15*	*25*
	Charcoal >4/2mm	*3/5 ml*	*15/10 ml*	*15/20 ml*	*3/5 ml*	*5/2 ml*	*40/50 ml*	*2/4 ml*	*1ml/ 1ml*
Acer campestre	Field maple	-	-	2 twd	-	1	-	-	-
Betula sp.	Birch	-	-	2	-	-	-	-	-
Calluna sp.	Heather	-	-	-	-	-	-	7 rt, ?2	
Carpinus betulus	Common Hornbeam	-	-	12, 9 rwd	-	-	-		-
Cornus sp.	Dogwood	-	-	2	-	-	-		-
Corylus avellana	Hazel	-	1	4	-	-	-	1	-
Fraxinus excelsior	Ash	1	-	4	-	1 unchrd	-	2	2
Quercus sp.	Oak	7	99	15, 5 twd	15	25	100	2	1, ?2
Pomoideae	Hawthorn/rowan/crab apple	1	-	15, 2	2	-	-		?5
Prunus sp.	Cherry type	?1	-	9, 3 twd	-	-	-	1. ?2	-
Prunus sp. cf *avium*	Cherry cf. bird cherry	-	-	-	2	-	-		-
Salix/ Populus sp.	Willow/poplar	1	-	10	3	-	-	1	-
Unidentified		1	-	5	-	-	-	9	-
Unidentified twigwood		-	-	1	-	-	-		-
Total no. frags used		12	100	100	22	27	100	27	10
Other remains				Chrd herb. stem					?coal

Results

Middle Bronze Age

Cremation grave 269625 contained only 12 identifiable small fragments of charcoal, but a minimum of five taxa including oak, ash, Pomoideae, possible cherry type and willow/poplar. Given that the majority of pyre debris would normally be expected to be of oak, with only occasional occurrences of other taxa as kindling or pyre goods, the relationship of this wood charcoal to the original pyre and cremated bone is unclear. It is of note that the remains were those of a young infant, whose body would have needed much less fuel for cremation than an adult, and also may have been treated quite differently.

Posthole 269160 in Roundhouse 1 was radiocarbon dated to the Middle–Late Bronze Age (Table 5.10). Oak dominated the charcoal at 99%, with only a single piece of hazel present. It is probable, therefore, that this represents the post itself, burnt *in situ*. Oak is a common and pragmatic choice for larger structural timbers given its strength and durability.

Middle Iron Age

Three samples came from Roundhouse 2. That from gully 277277 contained a rich and taxonomically varied assemblage with a minimum of 10 species. There was no one clear dominant species, but substantial quantities of mature and juvenile hornbeam, oak, Pomoideae (probably hawthorn), willow/hazel and cherry type occurred, along with lesser field maple, birch, dogwood, hazel and ash. This almost certainly represents the clearance and burning of hedgerow material in the vicinity and therefore provides a useful insight into the landscape and vegetation around the site.

Two small assemblages, comprising a few large well-preserved pieces of charcoal, came from pit 269560 within the roundhouse. These were found to be associated with burnt animal bone. Both were heavily dominated by oak pieces, with lesser taxa including field maple, Pomoideae, bird cherry (*Prunus* cf. *avium*) and willow/poplar, as well as an uncharred piece of ash. The assemblage is consistent with domestic fuel or the combination of this with a dump of cleared burnt vegetation within the same pit.

Romano-British

One rather sparse Romano-British sample, from Enclosure 1 (ditch 273038), was chosen for analysis as, interestingly, it contained scrub vegetation matter including charred roots. This proved to be dominated by heather (*Calluna*), the only representation of this plant in this analysis (Table 5.8). Most of the heather was thick root and/or basal stem material and may indicate grubbing out and burning of scrub to clear the area. Other types represented in the same sample included ash, hazel, willow/poplar, oak and cherry types, indicating the coeval presence of larger, open-loving taxa that were present also in the Iron Age. Heather is of interest because it may indicate that an expanse of acidic open heath developed during this period. However, since it has only been found in the one sample, it appears that this heath development was relatively localised and not widely exploited.

Anglo-Saxon

An Anglo-Saxon urned cremation burial (grave 403112) proved to contain very sparse identifiable charcoal along with a number of heavily vitrified glassy pieces which may have included fragments of coal or lignite. However, given the context, it was felt any identifications would be useful. Of the 10 pieces, three were of oak and possible oak, two of ash and the remainder of probable Pomoideae. This serves to demonstrate that, in this case, should the charcoal derive from pyre material, oak was certainly not the sole timber used. It should be noted that soil samples from 15 other Anglo-Saxon cremation graves were assessed for the presence of charcoal, and other charred plant remains, but no identifiable material was recovered.

Discussion

The Middle Bronze Age cremation sample proved taxonomically rich, while the oak charcoal from Roundhouse 1 certainly suggests that this timber was used for the construction of the building. Examples of analysis of charcoal and indeed charred plant remains from Middle to Late Bronze Age contexts in the region are relatively few (in comparison to the Iron Age) (cf. Monckton 2006).

In the Iron Age the apparent clearance and burning of hedgerow material represented in the gully of Roundhouse 2 provides an insight into the on-site vegetation and likely presence of hedgerow boundaries. A rich mix of deciduous shrub and tree types is described and this is likely to have resulted from deliberate planting and/or encouragement. It can be suggested that a mix of hedgerow and probably at least patches of open woodland remained in existence and that no particular reliance on open scrub or heathland was required for fuel collection at this site. The spread of heathland may be suggested in the Romano-British period, but the limited material recovered from the samples makes broad generalizations unwise.

Radiocarbon Dating

by Alistair J. Barclay and Chris J. Stevens

Eight radiocarbon samples were submitted to the Scottish Universities Environmental Research Centre (SUERC), East Kilbride. (Methods are given in Chapter 7.)

Prehistoric burials and settlement features

Two samples of cremated human bone and two of charred wood and grain were submitted for radiocarbon dating (Table 5.10), to answer the following questions:

- to determine the date of two unurned cremation burials (in graves 269625 and 270050);
- to indicate the possible date of two prehistoric structures: post-built Roundhouse 1, and Roundhouse 2 gully 277277.

Table 5.10 Saxondale: radiocarbon determinations on prehistoric features

Lab. code	*Feature (context)*	*Material identification*	*Radiocarbon age (BP)*	*δ^{13}C (‰)*	*Calibrated date range (95% confidence)*
SUERC-39042	270050 (270049)	Cremated bone 2.3 g	3245±30	-24.7	1610–1440 cal BC
SUERC-39041	269625 (269626)	Cremated bone 1.5 g	3055±30	-22.3	1420–1220 cal BC
SUERC-39036	Roundhouse 1 posthole 269160 (269161)	Charred oak wood*	2930±30	-24.6	1260–1020 cal BC
SUERC-39037	Roundhouse 2 gully 277277 cut 269392 (269393)	Charred hulled wheat grain	2215±30	-23.8	380–200 cal BC

* identification as sapwood is uncertain

Single samples of cremated bone (identified and selected by J. McKinley) from graves 269625 and 270050 were submitted for radiocarbon dating. The results (SUERC-39041–2) indicate that both burials belong to the Middle Bronze Age (1600–1150 BC). The radiocarbon results from the two burials are of different date (Figs 5.33 and 5.34). The earlier date, SUERC-39042, for 270050 falls within 1610–1440 cal BC (at 95% confidence) or the earlier part of the Middle Bronze Age, while the later date, SUERC-39041, for 269625 falls mostly within the later part of this period (1420–1220 cal BC at 95% confidence). The difference between the two measurements (modelled as *Span*) is *105–230 years (68% probability) or 40–300 years (95% probability)*, indicating that the two burial events were anywhere between a few human generations to up to three centuries apart.

The plan of Roundhouse 1 (Fig. 5.3) is similar to other house ground plans of known Bronze Age date, and this is supported by the single date (SUERC-39036 2930±30 BP) on charred oak, which when calibrated gives a range of 1260–1020 cal BC (at 95% confidence). This date corresponds to the Middle–Late Bronze Age transition (*c.* 1100 BC). However, it is likely that the oak wood was considerably old when felled, probably by 200 years or more. Thus the real date of the roundhouse is probably Late Bronze Age.

The date (SUERC-39037) on the charred wheat grain recovered from the gully of Roundhouse 2 is of Middle

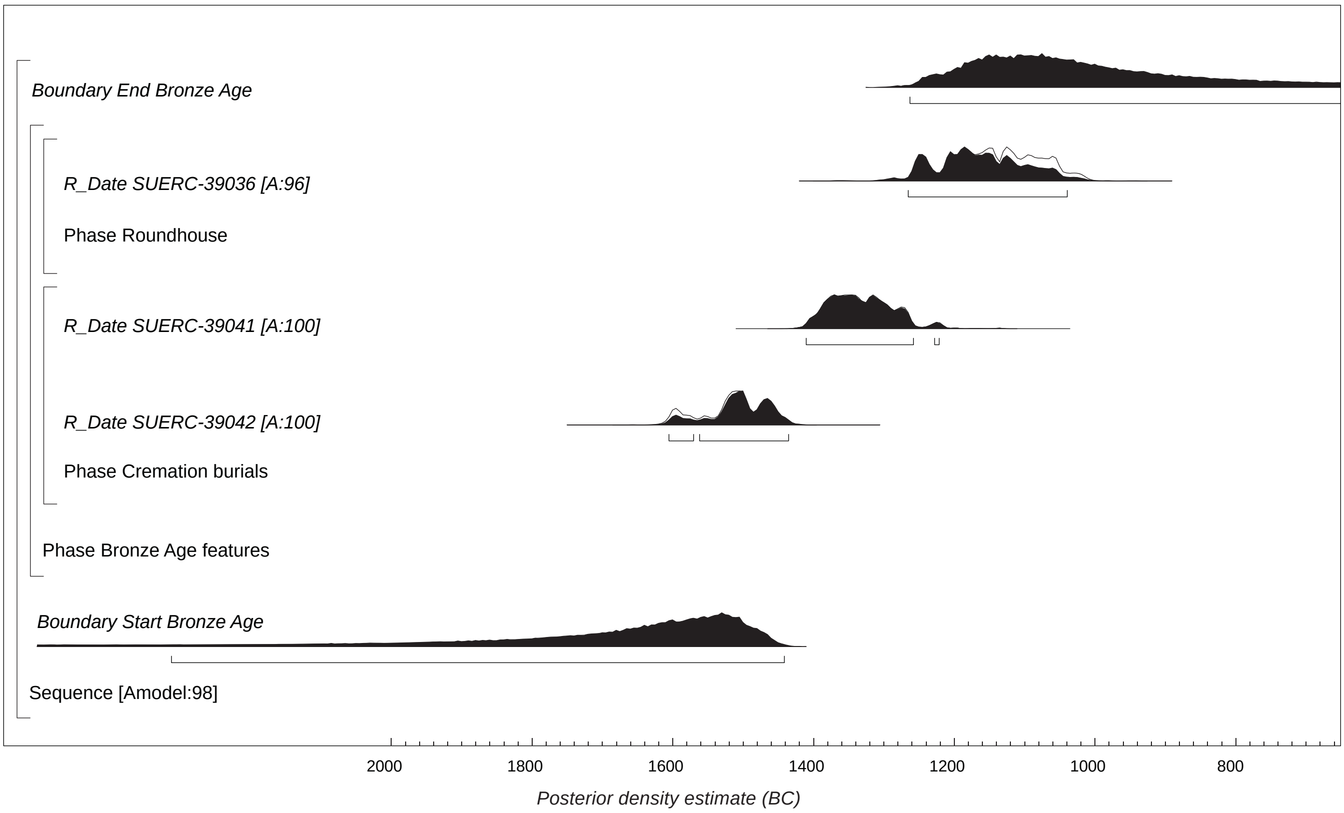


Fig. 5.33 Probability distribution (posterior density estimates at 95% probability) for Bronze Age features

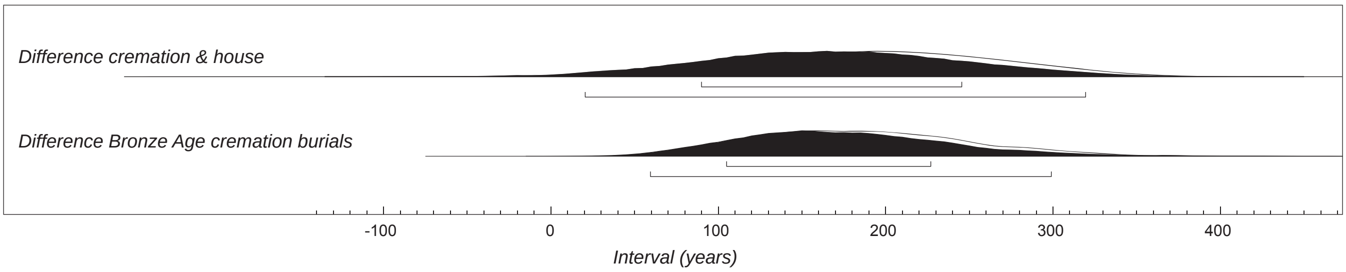


Fig. 5.34 The probable difference (posterior density estimates) in years (interval) between the last cremation burial and the date (SUERC-39036) from the roundhouse, and between the dates of the two cremation burials

Iron Age date (380–200 cal BC at 95% confidence), and in keeping with the building's likely date.

Anglo-Saxon burials
Four samples of cremated human bone were submitted, the selected material coming from four cremation burials (Table 5.11) from the Anglo-Saxon cemetery.

Simulation models for these deposits indicated that radiocarbon dating would only prove useful if the cemetery had a relatively long duration, over a period of centuries rather than decades (ie, from AD 400–600 rather than AD 450–500) and that at least some of the dates fell within the mid-late sixth rather than the fifth century due to the nature of the calibration curve (it contains several wiggles). The devised dating strategy was to have two rounds, with the first round aimed at assessing the likely date span for a range of deposits and the second only taking place if the results were positive (eg, supported a chronological sequence). Human bone was selected by Jacqueline McKinley from a representative range of burial deposits: three urned burials (one each from pottery fabric groups SSTMG, SSTCL and CHARN) and a single unurned burial (see Table 5.11) with the following objective:

- to determine the date, duration and possible order and directional spread of a series of Saxon cremation burials.

The four measurements on cremated bone all returned very similar results. Using the four dates in a simple phased model (see Fig. 5.35) it is possible to estimate the following parameters. The earliest cremation burial was likely to have been made during *AD 430–490 (68% probability)* or probably *AD 420–530 (95% probability)*, whilst the last burial could have been made during *AD 470–550 (68% probability)* or probably *AD 440–560 (95% probability)*. An attempt to place the four dates in probability order (see Table 5.12) demonstrates that they are all almost equally likely to be earlier/later than each other. One of the aims was to try and see if the three different pottery fabrics were in contemporaneous use and on the basis of this small sample this hypothesis is certainly supported (it can be noted that running the simulation model again with the four actual dates and four simulated dates made no significant difference to the outcomes). Finally, it is possible to suggest that the cremation cemetery was probably in use for *up to 50 years (68%)* or more likely *up to 100 years (95%)* (modelled as *Span cremation burials*: Fig. 5.36).

Table 5.11 Saxondale: radiocarbon determinations on Anglo-Saxon burials

Lab. code	*Feature (context)*	*Material identification*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Calibrated date range (95% confidence)*	*Posterior density estimate (95%) probability*
SUERC-39043	277004 (277010) Urn: ON 277001 uf.277010 Fabric SSTMG	Cremated bone 1g	1560±30	-24.4	420–570 cal AD	*420–550 cal AD*
SUERC-39044	277022 (277024) Urn: ON 277007 uf.277024 Fabric SSTCL	Cremated bone 2.3g	1575±30	-22.9	410–560 cal AD	*420–540 cal AD*
SUERC-39045	277037 (277039) Urn: ON 277011 uf.277039 Fabric CHARN	Cremated bone 2.0g	1560±30	-22.5	420–570 cal AD	*420–550 cal AD*
SUERC-39046	277102 (277099)	Cremated bone 2.3g	1590±30	-24.0	410–550 cal AD	*420–540 cal AD*

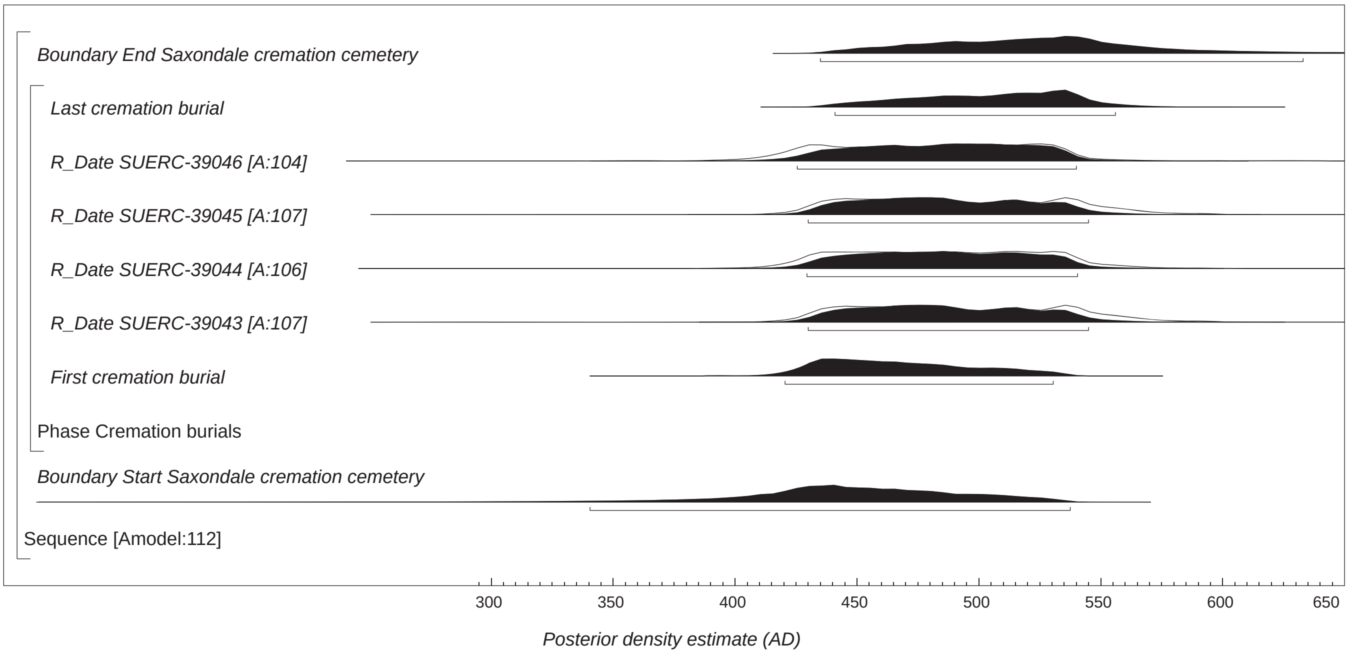


Fig. 5.35 Probability distributions (posterior density estimates at 95% probability) for selected individual Anglo-Saxon cremation burials. The likely 'Last' and 'First' burials are also shown. The square brackets and the OxCal keywords define the model's structure

Table 5.12 Saxondale: the probability that the radiocarbon date for one burial is older than the others (table should be read from the left-hand column across each row)

	277102 SUERC-39046	*277022 SUERC-39044*	*277037 SUERC-39045*	*277004 SUERC-39043*
277102: SUERC-39046	0	51%	53%	53%
277022: SUERC-39044	49%	0	52%	52%
277037: SUERC-39045	47%	48%	0	50%
277004: SUERC-39043	47%	48%	50%	0

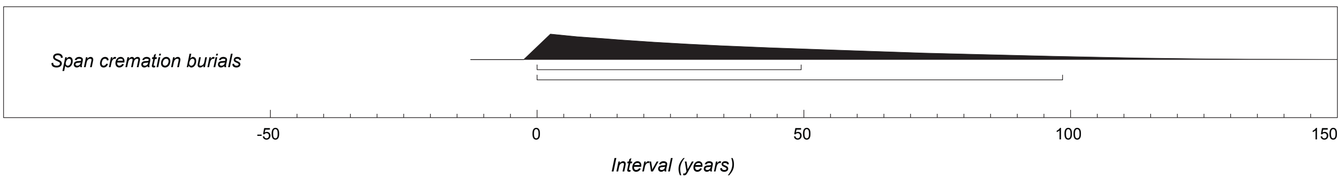


Fig. 5.36 The probable age span in years for the use of the cemetery (brackets indicate 68% and 95% probability)

Summary

The extensive excavation area of over 10 ha at Saxondale uncovered elements of a landscape showing activity since at least the Middle Bronze Age, although the evidence for any individual period of activity, and the amount of material associated with it, was generally quite sparse. The most conspicuous features were a Middle Iron Age roundhouse and associated pits, Romano-British fields and enclosures, a small part of the Roman Fosse Way and several posthole groups and alignments, which were less well dated but for the most part may have belonged with the Romano-British occupation. An early Anglo-Saxon cremation cemetery lay adjacent to a further group of Romano-British roadside enclosures on high ground near Lings Farm.

The earliest dated activity was at least two (perhaps three) cremation burials in the north-eastern part of the main excavation area, which were dated to the Middle Bronze Age (*c.* 1600–1150 BC). Two radiocarbon dates indicate that the two groups of burials, which were 115 m apart, were not contemporary (at least 40 and up to 300 years apart). No contemporaneous settlement was identified, the post-built roundhouse (Roundhouse 1) in the north-east corner of the area being radiocarbon dated to *c.* 1260–1020 BC. It is possible that other undated post-alignments or structures were Late Bronze Age, but most of these features lay further to the south-west. A short alignment of three pits produced Late Bronze Age pottery but their wider landscape context is unclear. They contained some charred plant remains, including spelt wheat, which may have been domestic refuse. South of these pits was a poorly dated (although probably Bronze Age) long shallow 'trough' of unknown function.

The Middle Iron Age is represented by a roundhouse defined by a penannular ditch (Roundhouse 2) and several pits inside and others outside it, some of which contained charred grain suggesting crop processing. A number of nearby postholes may have been of this date, and a six-post structure (Structure 3) about 30 m to the south-west is typical of Iron Age structures interpreted as raised grain stores. The presence of a variety of tree and scrub species in the charcoal suggests the presence of hedgerows within or close to the site at this time.

In the Romano-British period there is extensive evidence for fields and enclosures, but only slight traces of settlement. The clearest evidence for settlement, although confined to the 2nd century AD, came from Enclosures 1 and 2 on the higher ground in the south-western part of the site. This is based upon the quantity and nature of pottery and other finds as there were no surviving structural features. There were also pits and small features in Enclosure 3 to the north, suggesting a focus of occupation here also, but generally there were few structural features or enclosures typical of a Romano-British settlement. Three deeper pits may have been wells. Moderately rich samples of charred material from some ditches and one of the deep pits indicate a similar kind of agricultural regime as had existed in the Iron Age, and the presence of heather and gorse are indications of possible fuel sources. An investigation of the western edge of the Roman Fosse Way (SM2072) uncovered no new information about its date, but the presence of a series of small enclosures in SM2077, on high ground near Lings Farm, with extensive views to the north-east, indicates activity of an enigmatic nature specifically located in relation to the road.

The postulated development of these enclosures into the early Anglo-Saxon period, and the presence of an adjacent cremation cemetery, probably dating to the later 5th to mid-6th centuries AD, suggests the continuing importance of this location as one of customary group activity across the Roman-Saxon transition. Most of the 20 or so burials were in urns but the graves had suffered a high degree of truncation, with only the bases of the urns normally surviving. Complete bone groups were only present in one or two of the graves identified. Grave goods were found in a minority (seven) of the graves, although in other cases they may have been lost to the plough, and most comprised small metal toiletry implements such as tweezers and shears added to burial after cremation. Animals accompanied burials as pyre goods in three cases. The variety of funerary practices, and the range of origins of manufacture of the urns, as shown by variations in their fabrics, adds to the regional picture of the early Anglo-Saxon inhabitants.

There was no firm evidence for the development of the site from the 6th century onwards. The presence of ploughsoil, cut by furrows probably relating to medieval agriculture, overlying the edge of the Roman road (in SM2072), shows a decline in the road's importance as an artery of communication. A possible burial mound very close to the location of the cemetery, depicted by William Stukeley apparently on the Roman road itself (see Fig. 10.15), suggests the continuing importance of this location in the later Anglo-Saxon period, and its choice as the meeting place of the Bingham wapentake at around this time adds further depth to this site's regional significance (see Chapter 10, Discussion).

Chapter 6
High Thorpe Iron Age Settlement

Nicholas Cooke

Introduction

The High Thorpe site lies immediately south-east of the modern village of Upper Saxondale and about 600 m south-west of Lings Farm, north of Henson Lane, where the route diverted west of the line of Fosse Way (Fig. 6.1). It occupies a gentle south-facing slope, falling from *c*. 65.30 m aOD in the north to *c*. 58.80 m aOD at the south. The geology comprises Triassic mudstones of the Edwalton Member (BGS 2013) with outcrops of tabular limestone. All archaeological features cut the surface of this natural geology.

Trial trenching identified a complex of archaeological features that became the focus for targeted excavation (SM2061). The features recorded in the trenches were predominantly the furrows of a ridge and furrow field system of medieval or post-medieval date, and it was evident that earlier deposits had suffered considerable truncation. However, a substantial north–south ditch containing Middle Iron Age pottery was recorded in TT1133, and this became the focus of the excavation, covering *c*. 0.9 ha. It became clear after stripping that the ditch, which extended across the site (150 m), formed part of a boundary defining the eastern side of a Middle Iron Age settlement (Fig. 6.2).

The settlement features cut through the natural geology, although in places they were obscured by the later furrows and in the southern half of the excavation area by colluvial deposits comprising amorphous spreads of poorly sorted subsoil in naturally formed hollows. The excavation sought to define the stratigraphic relationships between the complexes of intercutting features, but because many of them were shallow and contained very similar fills, it was not always possible to establish these relationships. Moreover, the pottery recovered varies little, and so provides little help in resolving the detail of the site's chronology. Despite this, it is clear that the settlement, as at Cropwell Wolds (see Chapter 8), developed adjacent to a boundary, which was the major axis of settlement organisation.

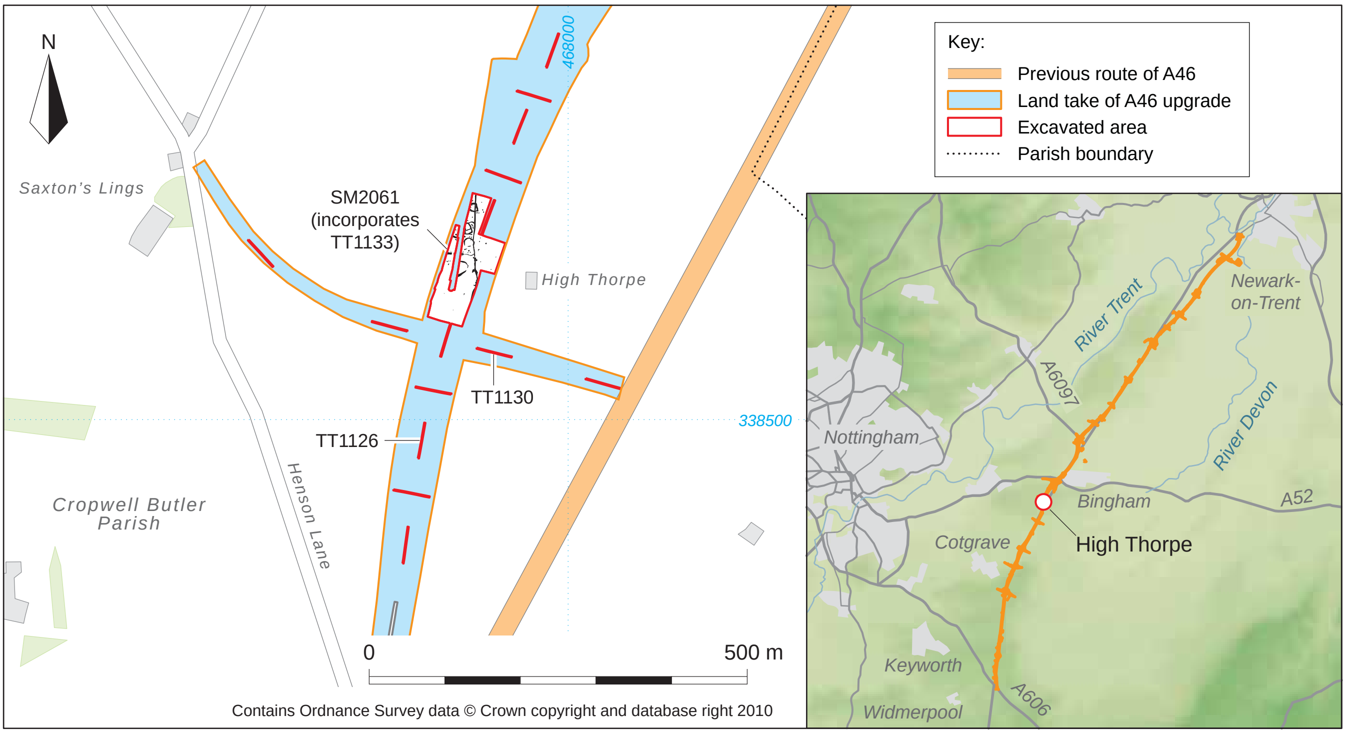


Fig. 6.1 The location of High Thorpe excavations

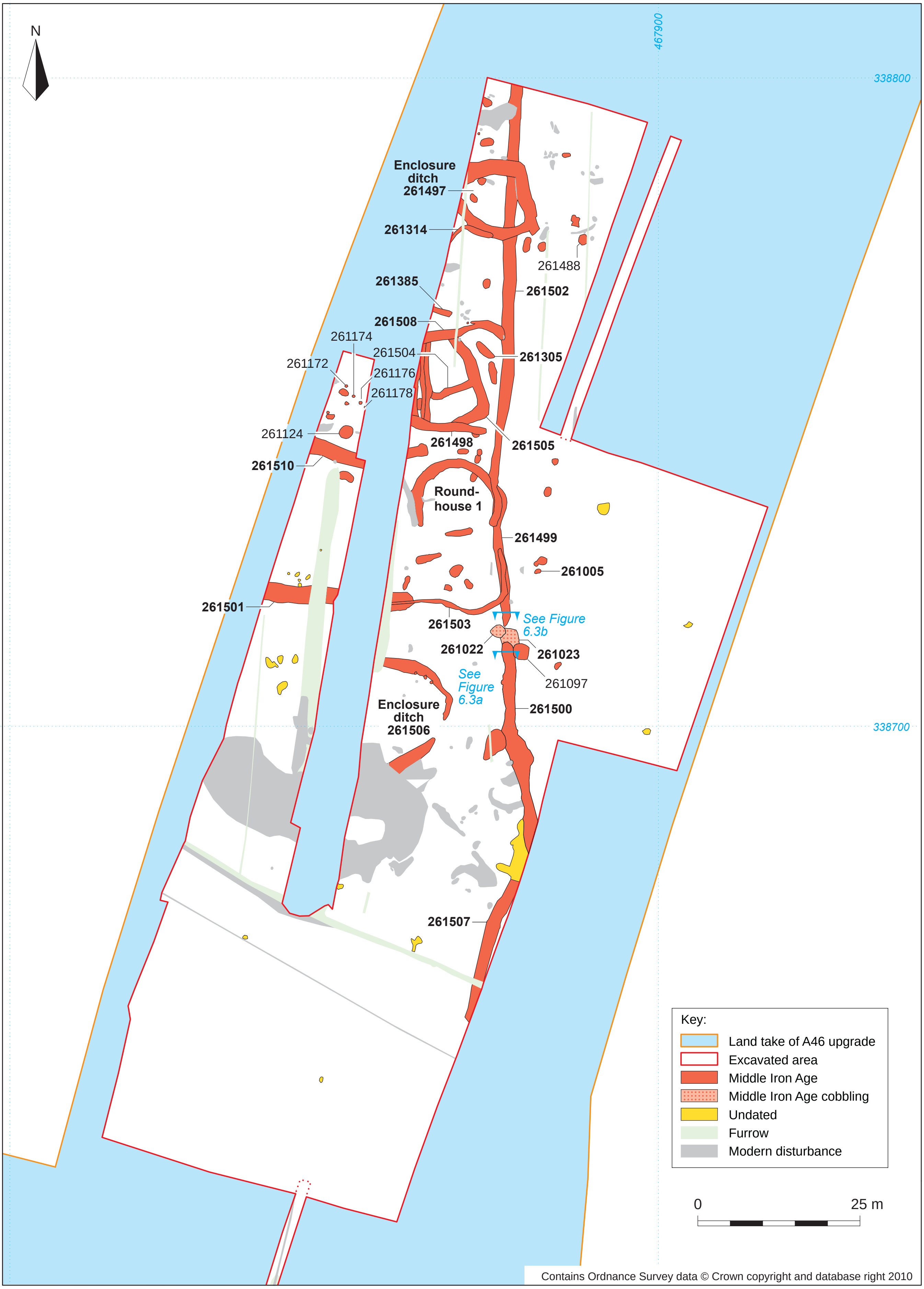


Fig. 6.2 High Thorpe excavation area

Middle Iron Age

Boundary Ditches

A substantial north–south ditch appears to have been the defining feature locally of the Middle Iron Age landscape (Fig. 6.2). In fact it comprised three stretches of ditch: 261499, 261500 and 261502. Ditches 261499 and 261500 terminated either side of a *c.* 2.5 m wide causeway, within which a hollow (recorded as 261022 and 261023) had been worn in the natural clays, indicating the gap's use as a crossing point. The hollow's base and shallow sides were roughly cobbled with a compacted layer of rounded river pebbles interspersed with artefactual material, including pottery and vitrified clay. The cobbles do not occur naturally on the site and were presumably brought in from a nearby river bed to consolidate this point of passage. Ditches 261499 and 261500 both contained Middle Iron Age pottery, while similar but more fragmented sherds were recovered from the hollow.

The southernmost ditch (261500) had steep irregular sides and a flattish base. It had filled gradually, with thin primary deposits sealed by a thick, gradually accumulated secondary fill, indicating that it was one of the longer-lived ditches on the site (Fig. 6.3). Ditch 261499 was less substantial, with a moderately steep, generally U-shaped profile and a concave base (Fig. 6.3). It too appears to have silted naturally, with a sequence of primary, secondary and tertiary fills surviving in places. There were no traces of a bank, although the subsequent

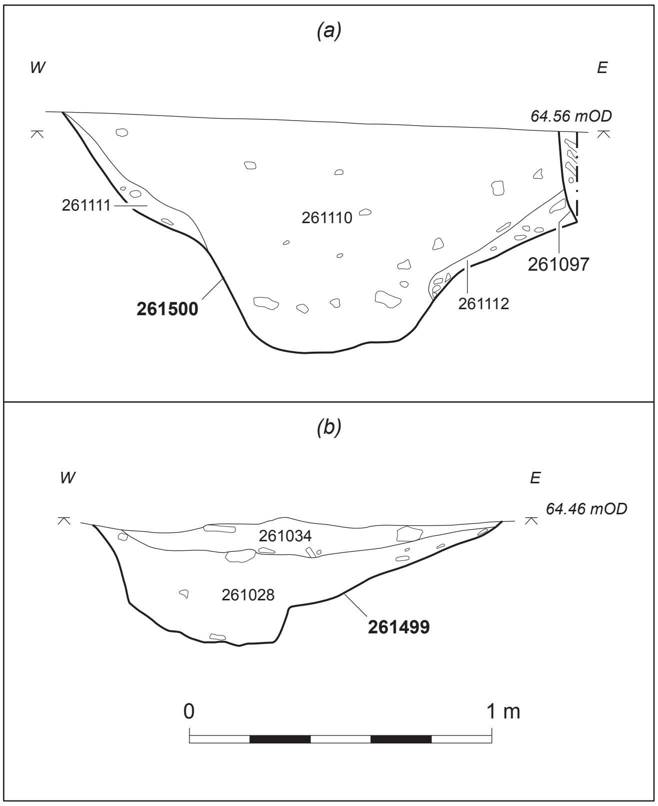


Fig. 6.3 Sections through boundary ditches 261500 and 261499

Fig. 6.4 Ditch 261502 section

activity, reflected in the density of features, immediately to the west of the ditch suggests that if there had been a bank, perhaps together with a hedgerow or fence, it probably lay to the east.

To the north, ditch 261499 appeared to connect with a penannular gully (Roundhouse 1) to its west, although this relationship is not clear. Nor is the relationship clear between ditch 261499 and ditch 261502, which continued the boundary northwards, although, on balance, the stratigraphic evidence suggests that ditch 261499 was earlier than 261502. Near the northern edge of the excavation ditch 261502 appeared to be the recut of an earlier ditch, and was possibly a reworking of the boundary system contemporary with the penannular gully associated with Roundhouse 1 (see below). Ditch 261502 was relatively substantial ditch, with steep sides and a concave base (Fig. 6.4), its fill sequence containing Middle Iron Age pottery, and suggesting a bank to the east. Charred plant remains from its fills included small quantities of spelt wheat and barley (see Stevens, below) and a small number of weed seeds.

Settlement and Associated Enclosures

The penannular gully at the northern end of ditch 261499 had an internal diameter of *c.* 10 m, and probably marks the site of a roundhouse (Roundhouse 1, Fig. 6.2). Pottery, animal bones and fired daub were recovered from it. There was a short length of possibly the same gully to the south, and one of the gaps probably marks the roundhouse entrance, but no structural features such as postholes were found within its interior.

Roundhouse 1 represents the only reasonably convincing evidence for a structure on the site. However, several irregular small enclosures defined by curving gullies and shallow ditches to the west of the boundary ditch, as well as groups of postholes, may mark the locations of other structures (Fig. 6.2), and the overall nature and quantities of artefactual material recovered support the interpretation of the site as a settlement.

Fig. 6.5 Ditch 261510 section

A number of the small enclosures were recut, or cut by later features after silting, indicating a longevity to settlement on the site, although no development in the pottery is discernible, and it provides only a broad date of the 4th to 1st centuries BC (McSloy, below). Other finds include fragments of both rotary and saddle querns, small quantities of burnt residues known as 'Iron Age grey', and two fragments of clay moulds probably used for casting copper alloy artefacts (see Starley, below). Although little animal bone survived sufficiently well to be identified, there is enough to suggest that animal husbandry formed part of a mixed agricultural regime.

A pair of deep, almost parallel east–west ditches (261501 and 261510) (Fig. 6.5) to the west of Roundhouse 1 appear to define an associated enclosure. Both were over 1 m wide and in places nearly as deep, and finds from them included pottery, animal bone and slag. Ditch 261510 respected the roundhouse gully, terminating close to it, while ditch 261501 terminated *c.* 9 m to its south, leaving a wide east-facing entrance into the enclosure. When the southern ditch (261501) had completely silted it was cut by a narrow curving gully (261503) which ran along its length and continued east up to ditch 261499, before turning north and cutting the upper fills of that ditch too. Gully 261503 terminated *c.* 3.5 m from the southern terminal of boundary ditch 261502, and appears to have defined a later phase of enclosure associated with Roundhouse 1, perhaps blocking access to it from the south.

A smaller subrectangular enclosure, measuring *c.* 12.5 m by 7.5 m internally, lay to the north of Roundhouse 1. It was defined initially by gully 261505 and a small subdivision was later marked by gully 261504. Once its ditches had silted it was replaced by a larger, more regular, rectangular enclosure defined by two broad ditches (261498 and 261508) and with a possible entrance gap at its south-east corner. The enclosure's stratigraphic relationship with the north–south boundary ditch, which it abutted, was not clear, although it is likely ditch 261508 either recut the boundary ditch or that the partially silted boundary ditch formed the enclosure's eastern side.

A further poorly dated enclosure (represented by ditch 261506) lay south of Roundhouse 1. Its northern and eastern sides were well defined but its southern and western sides had suffered damage from medieval and post-medieval ploughing; they were also obscured by an area left unexcavated due to modern services. The exposed lengths of ditch suggest that the area enclosed measured *c.* 15 m by 20 m and that there was 3 m-wide east-facing entrance.

The latest phases of activity on the site appear to be represented by two small ditched enclosures towards the northern end of the excavation. The more coherent of these (ditch 261497) was irregular in plan, and clearly cut the upper fills of boundary ditch 261502. Although its full extent was not exposed, it appears only to have enclosed a roughly triangular area up to *c.* 10 m wide, with no obvious sign of an entrance. Two small postholes in its western half may relate to an internal structure, but this is not certain. On its south side, upper fills of ditch 261497 were partially cut by a narrow gully (261314) which, along with a similar one to its south (261385), may have defined a second enclosure, *c.* 12.5 m by 4.5 m internally, open to the east.

Associated Features

The remaining features revealed in the excavation area comprised a ditch towards the south and a scatter of discrete features. The ditch (261507), lying against the eastern edge of the excavation, was aligned approximately NNE–SSW, but its relationship with the north–south boundary ditch (261500), on which it appeared to converge, was destroyed by an undated feature (Fig. 6.2).

There were numerous pits and postholes, many of which could be dated by the Middle Iron Age pottery they contained, although in general the finds from them were few. None of the postholes appear to form coherent groups which might define buildings or fence-lines, apart from a short line of four postholes (261172, 261174, 261176 and 261178), of uncertain function, in the north-west of the excavation (Fig. 6.2). Nor were there any evident concentrations of pits. The original function of the pits, some perhaps for storage, is unclear, but some appear to have been used ultimately for rubbish disposal. They were generally subcircular/oval, less than 1 m wide and with moderately shallow sides and concave bases. A sample from pit 261097, on the eastern side of the boundary ditch, contained small quantities of charred spelt wheat and barley, and a few weed seeds.

Medieval and Post-medieval

Evidence of extensive ridge and furrow was identified in a number of evaluation trenches as well as the excavated area. At the northern and southern ends of the site, the furrows were aligned broadly ESE–WNW, whilst in the central portion they were aligned NNE–SSW. This probably reflects different ploughing regimes

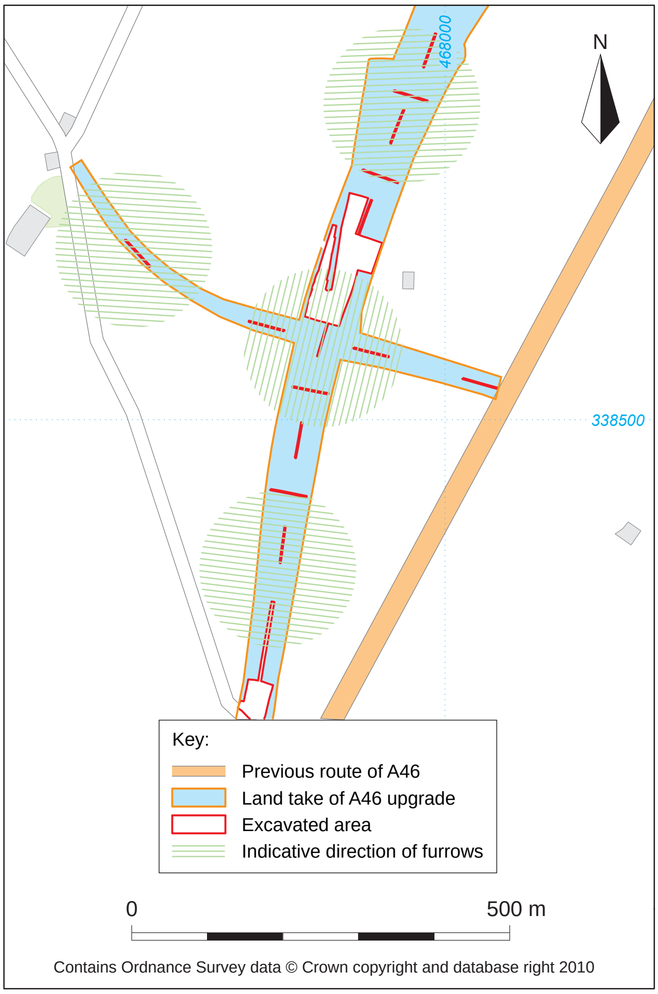


Fig. 6.6 Medieval/post-medieval land units

within different land units (Fig. 6.6). A large ditch and an associated parallel gully recorded in TT1126 are modern, as is a similar feature in TT1130 (Fig. 6.1).

Finds

Late Prehistoric Pottery

by E.R. McSloy

Introduction

Pottery amounting to 721 sherds (6200 g) was recovered from 56 separate deposits. With the exception of a single intrusive Romano-British sherd, and four Anglo-Saxon sherds (see Young and Perry Chapter 4, Table 4.16, and Fig. 6.9), the entire assemblage is considered to date to the Middle Iron Age (4th to 1st century BC) (Table 6.1).

The recording methodology employed is as for the larger and broadly contemporary group from Cropwell Wolds (Chapter 8). Thin-section analysis was undertaken for both groups with the aim of better characterising the dominant fabrics. The results of fabric analyses have been combined and are presented here in summary. Full versions of the thin-section studies are in the archive.

Mean sherd weight is only moderately high for a group of this date at 8.6 g. In other respects condition is good with sherd surfaces well preserved, with the result that carbonised and other residues could be recorded. The generally high levels of fragmentation are, however, a factor inhibiting identification of vessel form, there being relatively few vessels reconstructable below shoulder level.

Most pottery derives from ditches (392 sherds) and pits/postholes (271 sherds), with smaller quantities from spreads, 'undefined' cut features and tree-throw holes. The majority of deposits produced only small pottery groups, with only nine contexts containing more than 20 sherds. Of these, contexts 261151 (ditch 261508, cut 261152) and 261203 (ditch 261505, cut 261109) produced very highly fragmented material (in total 259 sherds, 161 g).

The site shows some stratigraphic complexity, with a number of enclosures either cutting or cut by a north–south aligned boundary ditch. However, attempts to define compositional differences across feature groups are made difficult by the small size of the assemblage overall, and of the context groups.

Table 6.1 High Thorpe: Iron Age pottery, quantification by fabric

Fabric group	*Fabric*	*Count*	*Weight (g)*	*EVEs*
Sandy	QZ	402	2606	0.51
	QZorg	54	304	-
	QZf	54	219	0.25
	Qzs	22	299	0.08
	QZv	2	85	-
	QT	1	6	0.05
Sub-total		*535*	*3519*	*0.89*
Mudstone	VMS	32	194	0.45
Sandstone/ metasandstone	MS	121	1967	0.34
Fuel ash	FA/MS	1	17	-
	FAc	19	431	0.18
	FAf	12	51	0.05
Sub-total		*32*	*499*	*0.18*
Grog	G	1	21	-
Total		721	6200	1.91

Fabrics

Fabric descriptions are presented below with the results of thin-section analysis incorporated. To avoid repetition, fuller discussion of fabric derivation and resource procurement are included with the Cropwell Wolds pottery report (see Chapter 8).

Sandy group: 567 sherds; 3713 g; 1.18 EVEs

QZ *Coarse sandy with sandstones and siltstones:* typically dark grey throughout or with red-brown exterior surface. Soft with irregular fracture and sandy or harsh feel. Inclusions comprise abundant (30–40%) rounded, well-sorted quartz/quartzite in the range 0.8–1.1 mm. Sparser inclusions (7–10%) are probably naturally occurring and comprise rounded or subrounded dull red fine-grained sandstones and siltstones up to 5 mm. Sparse rounded clay pellet (up to 2 mm) and angular flint are also probably naturally present within the clay matrix. Thin-section samples nos 1 (deposit 261098) and 2 (261006).

QZs *Fine to medium sandy with siltstones and fine sandstones:* dark grey or reddish brown throughout. Soft with irregular fracture and slightly sandy feel. Fabric QZs differs from the common quartz-bearing fabric in its reduced abundance (20–25%) and finer (up to 0.4 mm) quartz content. Sandstone and siltstone inclusions are of similar character to those described for type QZ and are probably naturally present. Thin-section sample no. 8 (deposit 261037).

QZorg *Coarser sandy type with common organic inclusions.* This fabric was not sampled for thin-section study. In the hand specimen it resembles type QZ but exhibits common voids from burnt-out vegetable inclusions (2–4 mm across).

QZf *Fine sandy type.* Usually light brown surfaces and margins with grey core. Finely irregular fracture and slightly sandy feel. Characterised by abundance (40–50%) of fine, well-sorted and rounded quartz, most in range 0.1–0.3 mm. Thin-section analysis demonstrated the very sparse presence of fuel ash and sandstone, which were not considered to be deliberately added as 'temper'. Thin section sample nos 3 (deposit 261325) and 4 (deposit 261098).

Metasandstone and sandstone: 121 sherds; 1967 g; 0.29 EVEs

MS *Metasandstone and sandstone.* Grey-brown throughout. Soft with irregular fracture and sandy or harsh feel. Inclusions comprise *c.* 40–60% of the matrix; mostly subrounded to sub-angular sand-sized (measured as up to 1.5 mm across) with sparse granule-sized (2–4 mm). The larger inclusions comprise polycrystalline quartz and quartzose wacke siltstones. Sparser amounts of rounded grog and perithic alkali feldspar are also present. Petrographic analysis confirms a granoblastic-inequigranular texture to the polycrystalline quartz indicative of a metamorphic parent rock. Thin-section samples 1a (deposit 261203) and 2a (261116).

Mudstone: 32 sherds; 194 g; 0.37 EVEs

VMS *Vesicular mudstone.* Dark grey-brown throughout; soft with soapy feel and laminated appearance at break. Common (20–25%) irregularly shaped voids up to 2 mm thought to represent disintegrated mudstone inclusions. Clay matrix contains rare (1–2%) sub-angular to subrounded and rounded to sub-angular quartz. Thin-section sample no. 7 (deposit 261098).

Fuel ash: 32 sherds; 499 g; 0.18 EVEs

FA *Fuel ash-tempered, medium sandy fabric.* Dark grey-brown throughout or with lighter-coloured exterior surface. Soft with irregular fracture and sandy feel. Sparse to moderate (7–10%) fuel ash inclusions that are angular to sub-angular and poorly sorted (1–6mm). The clay matrix contains (naturally occurring) common to very common (25–30%) subrounded to sub-angular and moderately sorted quartz (up to 0.6 mm); with sparse rounded quartz and rounded quartzite up to 1.5 mm; also sparse subrounded ferruginous siltstone (some micaceous) in range 0.7–1 mm; very fine-grained sandstone in range 1–2.5 mm; and fine-grained siliceous sandstone 0.8 mm. Thin-section sample no. 5 (deposit 261098).

FAf *Sparsely gritted, fuel ash-tempered, finer sandy fabric.* This fabric division appears to be a finer and better-sorted variation of that described above although siltstones or sandstones were not present. The fuel ash is in the range 0.2–2 mm. Inclusions considered to be naturally present comprise abundant (40%), well-sorted, sub-angular quartz (up to 0.3 mm); very sparse large quartz, quartzite and detrital flint. Thin-section sample no. 6 (deposit 261098).

Grog/argillaceous: 1 sherd; 21g

G *Grog-tempered.* Grey-brown throughout. Soft with irregular fracture and soapy feel. This fabric was not sampled for thin-section study. In the hand specimen it is characterised by common, moderately sorted (0.5–1.5 mm) angular or sub-angular dark grey-coloured grog and sparse, well-sorted, fine sub-angular quartz up to 0.4 mm.

Thin-section analysis: discussion

by E. Morris, with comment on the metasandstone and sandstone inclusions group by J. Carney

Sandy fabrics in a similar tradition to the sandy group described above are typical of later prehistoric pottery in this part of the Trent Valley; a range of coarse to fine quartz sand fabrics with occasional quartzite, sandstone, flint and opaque iron oxides present have been identified in the Late Bronze Age and Iron Age assemblage from Swarkestone Lowes, Derbyshire (Elliott and Knight 1999, 128).

Argillaceous/mudstone-tempered fabrics are interpreted as deriving from poorly wedged clays such as the Mercia Mudstone marl clays and paralleled by an Iron Age pottery fabric identified at Fisherwick in Staffordshire located on the River Tame (*ibid.*, 129; Banks and Morris 1979, 51). Therefore there is a tradition of local sandy, mudstone and marl clays being used during the later prehistoric period to make pots in this region.

The presence of fragments of fuel ash slag, which appear to have been crushed and added to two different local clays to make fabrics for Middle Iron Age pots, and the presence of fuel as stray inclusions in a third fabric in this same site assemblage, is unusual but not unique. Iron Age pottery made from a fuel ash slag-tempered fabric was not present at Cropwell Wolds (Chapter 8) nor at Bingham Basin Environs (Chapter 3), but it has been identified at Gamston, south of Nottingham on the west side of the Trent (Knight 1992, 40–1). A source common to the two sites would seem unlikely given the absence of any sandstone or siltstone fragments in the Gamston samples (inclusions thought to be naturally present in the High Thorpe fuel ash slag fabrics), and it seems likely that the use of fuel ash as temper is a tradition adopted across sites of similar date utilising resources local to the respective settlement. Fuel ash slag was certainly produced at High Thorpe (Starley, below), although the origin of this type of slag is poorly understood (Salter 2005). It may be the result of metalworking processes, or other high-temperature activities such as the burning of timber and daub structures, cattle-dung fires or pottery production.

This group containing metasandstone and sandstone inclusions equates to *Assemblage C* as defined for a wider study of late prehistoric pottery fabrics from the region (Knight *et al.* 2011). A description of inclusion lithology relating to Assemblage C group is included in the Cropwell Wolds report, it being proportionally more common there (see Carney, Late Prehistoric Pottery, Chapter 8). The two High Thorpe samples differ in detail from those from Cropwell Wolds, in particular in containing fine-grained wacke-sandstone or siltstone, and this suggests a different origin.

Vessel forms

Identical dual-level recording of vessel form (body profile and secondary element comprising rim or base form) was undertaken for the High Thorpe and Cropwell Wolds groups. Body profile can be uncertain although vessels, almost certainly jars with barrel-shaped or ovoid profiles, predominate (Forms J1/J2; Table 6.2). There are in addition vessels where the upper portion of the body suggests a globular or possibly round-shouldered profile (Form J3; Fig. 6.7.11).The upper portion of J1/J2 vessel classes may be undifferentiated (neckless), as Fig. 6.7.3, 8 and 10, though in most instances there is an upright neck (Fig. 6.7.1, 8 and 10). Rims are mainly simple/rounded (Fig. 6.7.8–10), although examples were recorded which are squared (Fig. 6.7.1 and 4), expanded (Fig. 6.7.3 and 11) short everted/bead-like (Fig. 6.7.2 and 5) or internally bevelled/concave (Fig. 6.7.6). Six examples of vessel bases were recorded; these are of simple form (Fig. 6.7.7) or slightly expanded at the base angle (Fig. 6.7.4b).

Sherd thickness, where measurable (320 sherds), is in the range 5 mm to 18 mm. Most sherds (73%) are in the range 8–12 mm. A total of 69 sherds (22%) measure under 8 mm and the remaining 18 sherds (6%) are in excess of 12 mm. There are no discernible proportional differences relative to fabric group and thickness.

Table 6.2 High Thorpe: Iron Age pottery vessel forms, quantification as number of vessels and rim EVEs

Fabric	*J1*		*J2*		*J3*		*Total*	
	No.V	*EVEs*	*No.V*	*EVEs*	*No.V*	*EVEs*	*No.V*	*EVEs*
QZ	3	.34	1	0.12	1	0.05	5	0.51
QZs	1	.05	-	-	1	0.03	2	0.08
QZf	1	.05	1	0.20	-	-	2	0.25
QT	1	0.05	-	-	-	-	1	0.05
VMS	2	0.45	-	-	-	-	2	0.45
MS	4	0.24	-	-	2	0.10	6	0.34
FAc	1	0.18	-	-	-	-	1	0.18
FAf	1	0.05	-	-	-	-	1	0.05
Total	14	1.41	2	0.32	4	0.18	20	1.91

Form summary

Profile

J1 Vessels with uncertain, barrel-shaped or ovoid profile. Can be neckless (Fig. 6.7.3), or with short upright neck (Fig. 6.7.1, 4, 9).

J2 Ovoid-profile vessels (jars). The recorded examples are neckless (Fig. 6.7.7 and 10).

J3 Vessels with uncertain, round-shouldered/globular profile. Recorded examples with short, upright necks and fingertip impressions to the rim surface (Fig. 6.7.2 and 11)

Rim

S simple/rounded (Fig. 6.7.9)
SQ squared/flattened (Fig. 6.7.1 and 4a)
IC internally concave rim (Fig. 6.7.6)
EX expanded (Fig. 6.7.3)
PB bead-like (Fig. 6.7.2)

Base forms

B1 expanded/pushed-out (Fig. 6.7.4b)
B2 simple (Fig. 6.7.7)

Surface treatments

Decoration or surface treatments are limited to incidences of scoring (156 sherds or 21.6% of the group) and two incidences of finger ornament to the rim (below). A single vessel exhibits lines of scoring to its upper rim (Fig. 6.7.5). For the most part, scoring is confined to the area of the vessel below the neck. Scoring was typically fairly lightly applied, probably when the vessel was still wet, and can be 'sparse' (Fig. 6.7.10). It is most often unidirectional, at or close to the vertical (85 sherds) and rarely is horizontal or in arcs (Fig. 6.7.2 and 4). There are a few instances of multi-directional scoring, with vertical strokes crossing an overall horizontal coverage (Fig. 6.7.1). Incidences of scoring were noted on all fabric groups, though the modest size of the assemblage makes it unclear whether there are proportional biases to particular types or to forms.

Fingertip decoration was noted on 13 sherds representing only two vessels (Fig. 6.7.2 and 11). Both were jars, with decoration to the rim, and with vessel no. 2 combined with scoring.

Evidence for use

Indications of vessel use are restricted to 16 sherds with carbonised residues which probably relate to the use of vessels for cooking. Internal (burnt food-type) residues were recorded on 10 sherds and external sooting was on six sherds. Residues occur with vessels in each of the main fabric groupings: sandy; metasandstone/sandstone and fuel ash. Identifiable vessel forms with carbonised residues (sooting only) comprise jars of J1 (three vessels) and J2 (two vessels).

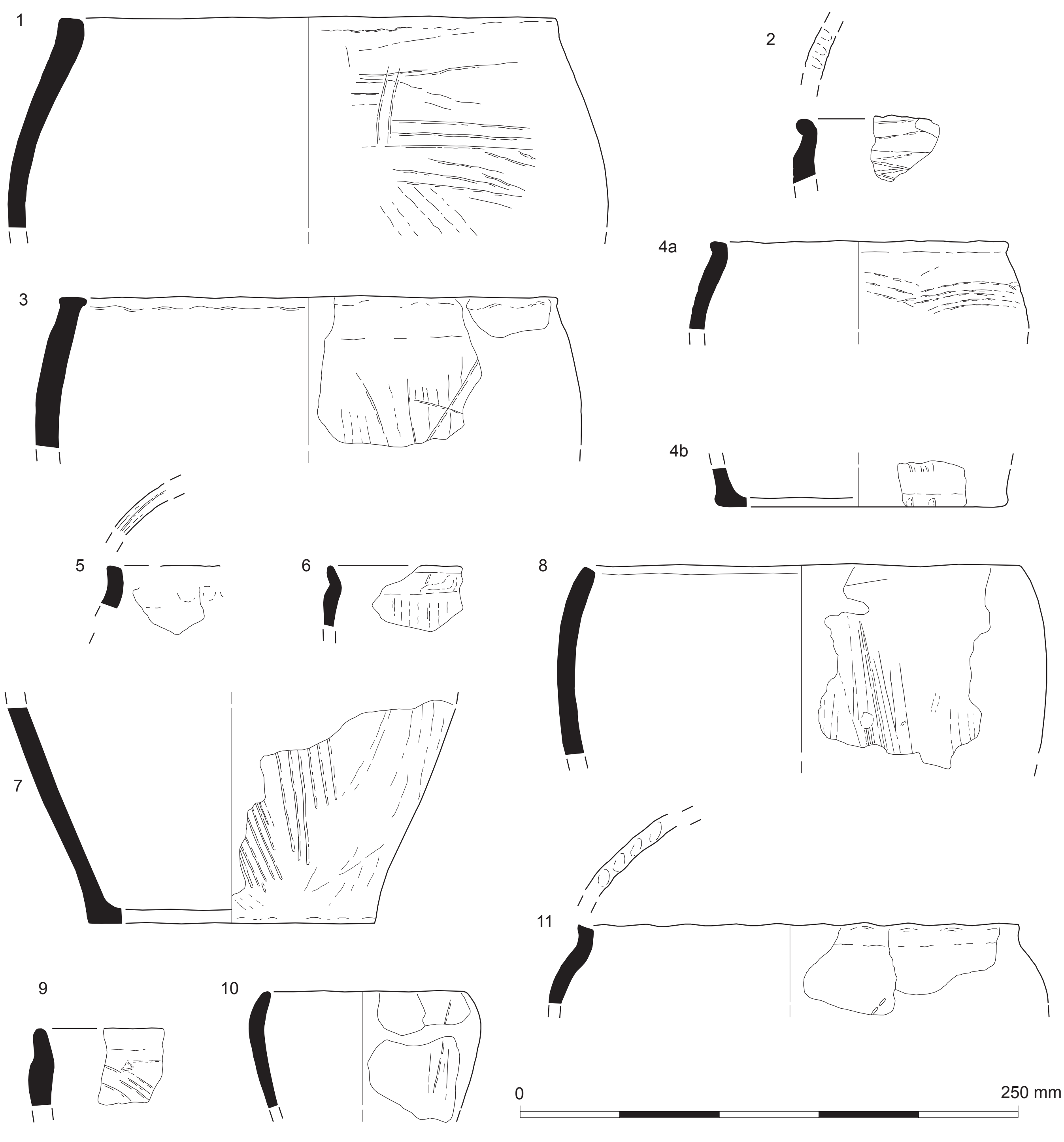


Fig. 6.7 Late prehistoric pottery (1–11). See catalogue for descriptions

Stratigraphic separation

Pottery groups from key structural elements were small or entirely absent in some instances (Table 6.3). Meagre quantities were recovered from boundary ditch 261500, boundary/penannnular gully 261499 and enclosure ditch 261497. Among the larger context groups are those from cobbled hollow 261023 (in the gap in the boundary ditch) (49 sherds/224 g), the fills of enclosure ditch 251508/261498 (105 sherds/67 g) and the fills of boundary ditch 261502 (30/1398 g). The larger groups are well fragmented and contain few featured sherds. The range of fabrics, and the presence of 'Scored wares', is consistent with a Middle Iron Age date, though further separation is impossible. Successive U-shaped enclosures 261504/261505 produced moderately small, although better-preserved groups (28 sherds/725 g) which include illustrated vessels ovoid jar nos 7, 8 and 10. Dating remains broad, within the Middle Iron Age range.

Table 6.3 High Thorpe: Iron Age pottery, summary by feature group

Feature group	*QZ*		*QZorg*		*QZarg*		*QZf*		*QZv*		*FAc*		*Faf*		*VMS*		*MS*	
	Count	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*	*Count*	*Wt. (g)*
261022	34	31	-	-	-	-	2	9	-	-	1	7	1	2	-	-	1	36
261497	2	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	9
261498	1	3	-	-	-	-	1	12	-	-	-	-	-	-	2	7	-	-
261499	1	5	1	12	-	-	-	-	-	-	2	5	-	-	-	-	-	-
261502	27	1368	-	-	-	-	-	-	-	-	1	12	-	-	-	-	2	18
261503	1	3	-	-	5	121	-	-	1	4	-	-	-	-	-	-	-	-
261504	4	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	368
261505	7	205	-	-	3	5	8	91	-	-	-	-	-	-	1	2	2	11
261508	100	39	-	-	-	-	-	-	-	-	-	-	1	6	-	-	-	-

Affinities and dating

The assemblage is consistent technologically (in its manufacture and range of fabrics) and stylistically with Middle Iron Age (early La Tène) assemblages from the region. There are clear affinities with the Scored ware tradition which is widespread across the East Midlands (Elsdon 1992), and characterising, for example, the greater part of the larger group from Gamston, Nottinghamshire, approximately 8 km to the west (Knight 1992). Defining characteristics and distribution across the region have been addressed by Elsdon (1992) and the dating reviewed by Knight (2002). It is clear that the tradition is very long-lived and absolute dating from Wanlip, Leicestershire suggests origins before *c.* 350 cal BC (Marsden 1998). Continuance of the style to the time of the Roman conquest is evidenced for some groups from Cambridgeshire (Rollo 1988); however, this does not appear to be the case across much of the region, where assemblages incorporating wheelthrown grogged or shell-tempered material in the 'Belgic' tradition are the norm by the early 1st century AD and possibly as early as 50 BC. Late Iron Age wheel-thrown vessels occurred alongside Scored wares at the nearby sites at Gamston (Knight 1992) and Holme Pierrepont (*ibid.*). From their absence at High Thorpe it is reasonable to suppose that activity stopped before the 1st century AD or a little earlier.

In the absence of vessels in earlier styles, broad dating in the 4th to 1st centuries BC can be asserted for the High Thorpe group. The small size of context groups precludes meaningful comment in respect of changing pottery use. It may be significant that neckless ovoid jar forms (Fig. 6.7.7, 8 and 10) with 'sparse' decoration occur solely among the stratigraphically earliest features. The range of fabrics is for the most part consistent across the site. It can perhaps be postulated that fuel ash-tempered types are a relatively late occurring type. Such types were absent from the stratigraphically earlier enclosures (261504/261505) and it may be significant that they are not represented at Cropwell Wolds (Chapter 8), where radiocarbon determinations support dating within the 4th/3rd centuries BC.

The recorded pottery fabrics fall within wider technological traditions from the area. Analysis suggests that all could have originated locally, albeit if certain inclusions added as temper were exotic to the area, and most likely preferentially selected from alluvial deposits. The dominance of 'local' pottery may imply limited access to (or requirement for) non-local pottery or the commodities contained within. The absence of the wide-travelled granodioritic pottery (Knight *et al.* 2011) would be consistent with an 'insular' community, although the quantities recorded in the significantly larger group from Gamston (*ibid.*) were notably small (0.4% of the total). The use of fuel ash as 'temper' is notable as further evidence of a tradition which is distinctly local in its distribution. Fuel ash, whatever are the exact processes behind its creation, is a common find from Iron Age sites and indeed comparable material was present at High Thorpe where it was interpreted as burnt daub (Starley 2011, 69–70).

List of illustrated pottery (Fig. 6.7)

1 Form J1 with upright neck and squared rim; multidirectional scoring. Fabric QZ. Context 261006, cut 261017, Middle Iron Age boundary ditch 261502.

2 Form J3? with bead-like rim. Fingertipping to rim upper surface and horizontal scoring. Fabric QZs. Context 261037, cut 261036, Middle Iron Age gully 261503

3 Form J1. Neckless, with expanded rim; horizontal/oblique scoring. Fabric FAc. Context 261098, cut 261114, Middle Iron Age pit 261097.

4 Form J1 with upright neck and squared/flattened rim and pushed-out base (B1); horizontal arced scoring. Fabric VMS. Context, 261098, cut 261114, Middle Iron Age pit 261097.

5 Form J1? with short everted rim; scoring to rim upper surface. Fabric VMS. Context 261098, cut 261114, Middle Iron Age pit 261097.

6 Form J1? with internally bevelled/concave rim. Fabric QZ. Context 261098, cut 261114, Middle Iron Age pit 261097.

7 Lower portion of ovoid jar (J2) with plain base (B2).

Sparse vertical/oblique scoring. Fabric MS. Context 261197, cut 261195, Middle Iron Age ditch 261504.

8 Form J2. Neckless, with squared rim. Sparse vertical/oblique scoring. Fabric QZ. Context 261197, cut 261195, Middle Iron Age 261504.

9 Form J1. Upright neck and simple rim. Light vertical/oblique scoring. Fabric FAf. Context 261306, Middle Iron Age pit 261305

10 Form J2. Neckless with simple rim. Sparse vertical/oblique scoring. Fabric QZf. Context 261325, cut 261324, Middle Iron Age ditch 261505.

11 Form J3. Upright neck and expanded rim. Fingertip decoration to rim upper surface and sparse vertical/oblique scoring. Fabric MS. Context 261486, Middle Iron Age pit 261488.

Worked Stone

by Fiona Roe

Two pieces of two beehive querns of Millstone Grit were recovered from Middle Iron Age pit 261097. A half complete upper stone (ON 261001), broken across the central hole, was well made with pecking over the external surface and with a shaped rim at top (Fig. 6.8). The grinding surface was slightly concave and the stone was some 330 mm in diameter and 140 mm high. The two handle holes were not fully bored, so that this quern relates best to the 'Yorkshire' type (Watts 2002, 32). This find adds to the existing evidence for beehive querns of Iron Age date found in the Trent Valley and adjacent uplands, including ones made from Millstone Grit. Such querns were found at Gamston, Nottinghamshire, only 8 km west of High Thorpe (Wright and Firman 1992, 72).

The second, much damaged piece (ON 261004) has fully bored handle holes and so relates to the 'Hunsbury' type of rotary quern (Watts 2002, 32). Further 'Hunsbury' type beehive querns made from Millstone Grit were recorded at another Trent Valley site at Willington, Derbyshire (Wheeler 1979, 144).

A third quern fragment (ON 261002), from unphased pit 261124, is part of a saddle quern of quartzitic sandstone. Saddle querns in this area tended to be made from locally available lithic materials, typically large cobbles which could have been collected from the Trent river gravels, or else from boulder clay. Similar examples were again recorded at Gamston (Wright and Firman 1992, 70).

The same pattern of lithic usage can be seen at further Leicestershire Iron Age sites (Roe 2000, 188), though south of Nottingham the more abundant boulder clay here may have been the main source for large cobbles, which could have included some of Millstone Grit, suitable for grain rubbers but not for the altogether larger beehive querns. Relatively large blocks would have been required for these and the use of quarried Millstone Grit, probably obtained from west of Sheffield, was an innovation that is likely to have accompanied the introduction of rotary querns to the area.

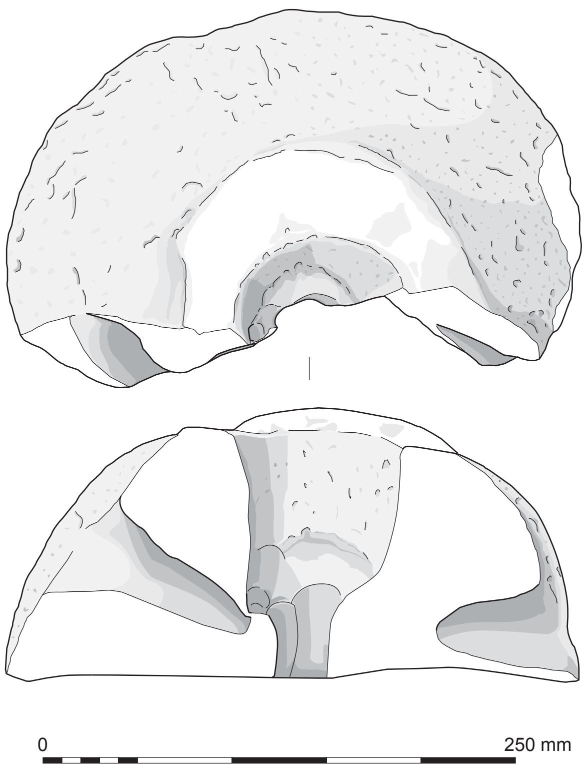


Fig. 6.8 Half the upper part of a beehive quern from pit 261097. Top: view from above; bottom: cross-section

Metalworking Debris

by David Starley

Two possible fragments of clay moulds were identified. The first, from pit 261005, characteristically showed one surface to be of dark grey colour, from the hot reducing conditions caused by contact with hot metal, whilst the other side retained its normal orange colouration. The pit, which also contained charcoal, was undated. The second fragment, from Middle Iron Age enclosure ditch 261497 (cut 261342, fill 261345), is less typical, being tongue-shaped, entirely of dark grey colouration. It appears to be the clay core from the casting of an object. The ditch also contained charcoal.

These mould fragments almost certainly derive from the casting of copper alloys, though in the Iron Age period such alloys may have varied considerably in composition. Due to the small size of the fragments, the type of artefact being produced could not be identified. The quantities of material diagnostic of copper alloy working are minimal and unsupported by other metallurgical debris such as metal prills or crucible fragment, or structural features such as hearths. They should perhaps therefore be used only to suggest the possibility that the small-scale casting of non-ferrous alloys was carried out on the site during its period of occupation. There is no evidence of ironworking.

Animal Bone

by L. Higbee

A total of 306 fragments (0.120 kg) of animal bone was recovered from a small number of Middle Iron Age ditches and pits. Once conjoins are taken into account this figure falls to just 60 fragments, the majority of which are small, poorly preserved splinters of undiagnostic bone. All of the identified elements are fragments of cattle teeth; this indicates that only the most durable elements (ie, tooth enamel) have survived due to unfavourable soil conditions.

Environmental Remains

Charred Plant Remains

by Chris J. Stevens

Three bulk soil samples were taken from Middle Iron Age boundary ditch 261502 (cut 261017) and Middle Iron Age pit 261097, and were processed for the recovery and assessment of charred plant remains. On the basis of the assessment, which showed that material was poorly preserved and only present in low quantities, two of the samples were chosen for more detailed analysis. They were processed using standard methods (see Chapter 4) and the results are presented in Table 6.4.

The very low quantities of material in the samples comprised several unidentified glume bases, a few grains of barley (*Hordeum vulgare sl*) and a single rachis fragment identifiable as being from 6-row barley (*Hordeum vulgare*). While most of the glumes were poorly preserved and identifiable only to hulled wheat, a few were clearly from spelt wheat (*Triticum spelta*). Seeds of wild species were also sparse and poorly preserved, with just a few of fat-hen (*Chenopodium album*), thistles (*Carduus/Cirsium* sp.), knotgrass (*Polygonum aviculare*) and brome grass (*Bromus* sp.), along with probable seeds of cleavers (*Galium aparine*), self-heal (*Prunella vulgaris*) and black medick (*Medicago lupulina*).

The dominance of spelt wheat, with little indication of emmer (*Triticum dicoccum*), accords with the results from Cropwell Wolds where a much larger assemblage of Middle Iron Age charred remains was found (see Chapter 8). The remains are fairly typical of de-husking waste from the processing of hulled wheats taken from storage in the spikelet. In this respect they relate to routine domestic activities centred on food preparation in which the waste from processing cereals is then discarded and charred in the hearth. The weed assemblage is too poor to make any comments about

Table 6.4 High Thorpe: charred plant remains

	Feature type	*Ditch*	*Pit*
	Feature	*261502*	*261097*
	Cut	*261017*	*261114*
	Context	*261006*	*261113*
	Sample	*1*	*2*
	Vol (l)	*40*	*40*
Cereals			
Hordeum vulgare L. *sl* (grain)	barley	2	-
H. vulgare L. *sl* (6-row rachis fragment)	barley	-	1
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	3	6
Triticum spelta L. (glume bases)	spelt wheat	3	1
Cereal frag. indet. (est. whole grains from frags)	cereal	2	2
Other species			
Chenopodium album	fat-hen	-	1
Stellaria media	chickweed	-	1
Polygonaceae indet.	knotweeds	-	1
Polygonum aviculare L.	knotgrass	1	-
Medicago lupulina	black medick	cf.1	-
Prunella vulgaris	selfheal	cf.1	-
Galium aparine L.	cleavers	-	cf.1
Carduus/Cirsium sp.	thistle	-	1
Poaceae (culm internode)	grass stem	1	-
Bromus sp. L.	brome grass	1	-

crop husbandry techniques, although it is probable that, as at Cropwell Wolds, cultivation appears to have taken place on probable drier, lighter circum-neutral to slightly calcareous soils, which may have lain a little distance away from the settlement itself.

Summary

The Middle Iron Age settlement at High Thorpe occupied a favourable position on a well-drained south-facing slope. The precise location of the settlement appears to have been determined by the presence of extant landscape divisions, for it lay immediately to the west of a north–south boundary (ditches 2614499, 261500, 261502). It is closely associated with a major linear boundary in much the same way as the Cropwell Wolds settlement (see Chapter 8) and, as at Cropwell Wolds, it seems likely that the boundary, whether defined by a ditch or by some other means, pre-dates the establishment of the settlement. On present evidence, the boundary itself had its origins in the Middle Iron Age – no evidence of earlier activity was identified, but the dating is not sufficiently precise to establish how long the boundary may have been in use before the settlement was established. However, the dearth of features to the east of this ditch does suggest that the ditch was probably the primary feature along which the settlement was established.

The linear nature and restricted area of the excavations meant that only a portion of the settlement was investigated, and its northern and western extents, in particular, were not exposed. Apart from the boundary ditch itself, there is no sign of any attempt to enclose the settlement. With its profusion of small ditched enclosures, some directly associated with the only roundhouse identified, this settlement is different in character to that at Cropwell Wolds. Although both date to the Middle Iron Age, the respective pottery assemblages from the two sites show a number of differences, in particular in the fabrics used. It is not altogether certain what these differences represent; they may relate to sources of local clay, some differences in status or contacts or a slight chronological difference between these two settlements. As with Cropwell Wolds it is not clear how long the settlement was occupied for but, judging from the relatively simple site layout, and notwithstanding a certain amount of remodelling of ditches, it does not seem likely the settlement would have lasted longer than two or three generations – perhaps no more than 100 years.

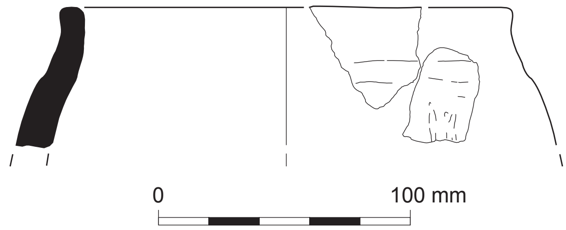


Fig. 6.9 Anglo-Saxon pottery sherd from High Thorpe with incised decoration. One of four Anglo-Saxon sherds from the site (see Young and Perry, Chapter 4)

The small assemblage of finds is largely domestic in nature. The pottery is dominated by simple forms in locally sourced fabrics, while the surface finish is comparable with the Scored ware tradition recorded elsewhere in the East Midlands. The use of fuel ash as temper in some of these fabrics is noteworthy in an otherwise typical small domestic assemblage. Very few other finds were recovered, although fragments of both rotary and saddle querns were found, the former made of Millstone Grit, which must have been sourced some distance away. Spelt wheat and small quantities of barley were amongst the de-husking waste recovered with the charred plant remains. The charred plant remains, comparable to the much richer assemblage from the Middle Iron Age site at Cropwell Wolds (see Chapter 8), indicates that crops were being processed on site although it is possible that they were cultivated on lighter, calcareous soils at distance from the settlement itself. The small quantities of identifiable animal bone from the site included cattle, suggesting a mixed arable and pastoral agricultural regime.

Chapter 7
Stragglethorpe Round Barrow

Tim Harvard

Introduction

The site at Stragglethorpe, *c.* 2 km north-east of the village of Cotgrave, occupies flat ground at *c.* 40 m aOD. The underlying geology is mapped as Branscombe Mudstone Formation mudstone (BGS 2013), which on the site comprised a mid-brown-orange clay mudstone with occasional blue grey mottling.

The main feature of the site was a ring-ditch on the south side of Nottingham Road (Fig. 7.1). This was initially recognised from aerial photographs as an almost complete circular cropmark adjacent to a modern hedgerow; this was also visible, prior to excavation, from ground level (Fig. 7.2). Its presence was confirmed by geophysical surveys undertaken in 2004 (Oxford Archaeotechnics 2005), although no new information was brought to light. Fieldwalking in 1991 recovered a spread of prehistoric flintwork between Foss Bridge at the north end of the site and Colston Gate to the south, with particular concentrations to the north of Nottingham

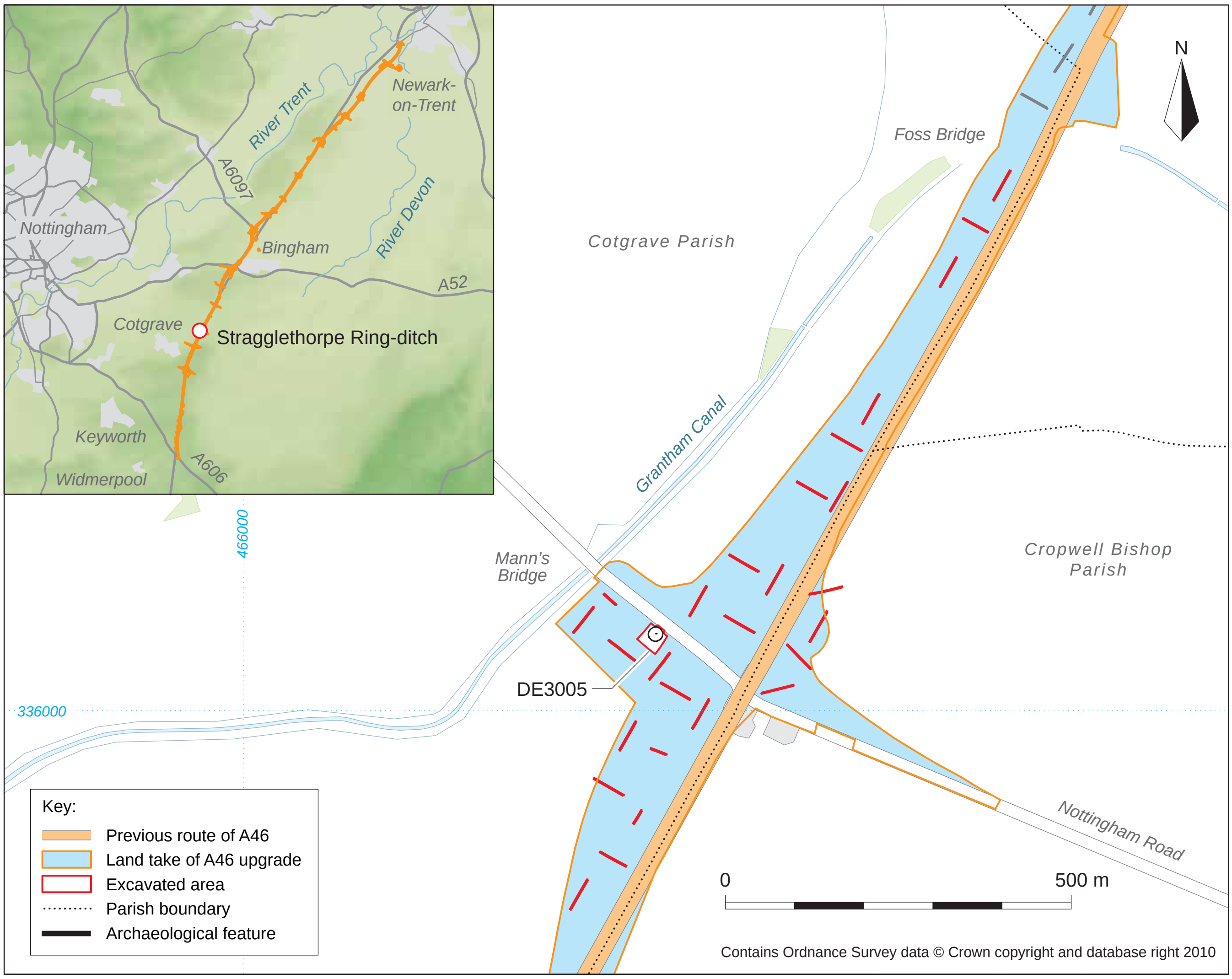


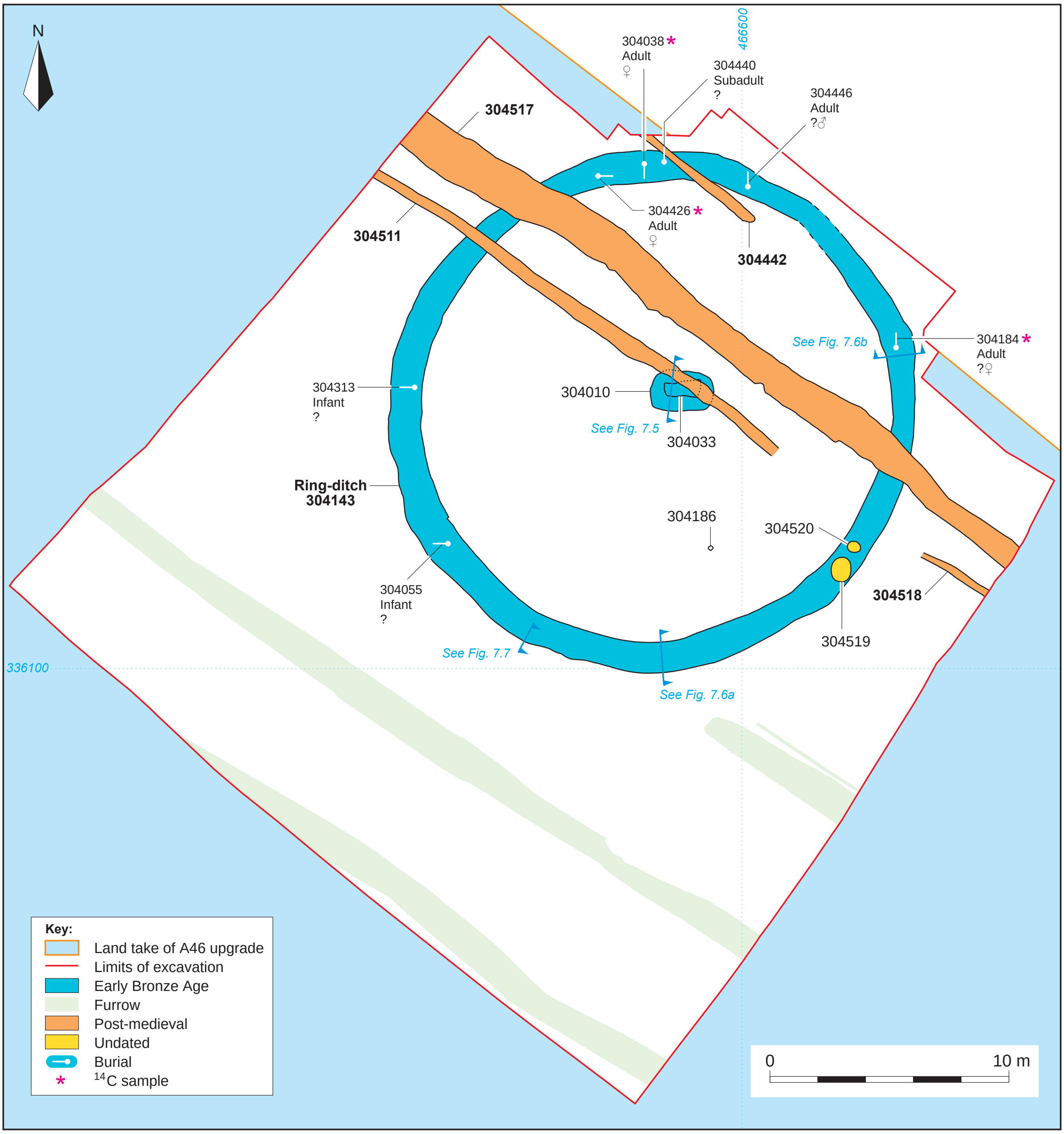
Fig. 7.1 The location of the excavations at Stragglethorpe junction

Fig. 7.2 Cropmark of the ring-ditch from ground level viewed from the north-west

Road (TPA 1992, Site 5), including probable Mesolithic and Early Bronze Age scrapers. However, there do not appear to have been any particular concentrations over the ring-ditch itself (*ibid.*, fig. 38).

An excavation area measuring approximately 35 m square was targeted on the known location of the ring-ditch (Fig. 7.3).

Fig. 7.3 Stragglethorpe excavation area (DE3005)



Early Bronze Age

Round Barrow

The excavation revealed almost the full extent of the monument, which measured *c.* 22 m in diameter, and comprised a circular ring-ditch with a grave-like feature near its centre (Fig. 7.4). The northern side of the ring-ditch lay under a modern field boundary, comprising a ditch (which partly truncated the ring-ditch), and a hedgerow; a 1.5 m length of the ring-ditch at this point could not be exposed due to the presence of a large tree stump. While the ring-ditch is believed to have been continuous, this could not be established with certainty, and there remains the possibility of a break below the tree stump, although there were no indications of terminals to either side. There were no surviving traces of any barrow mound within the monument's interior.

Central 'grave'

Just north-east of the monument's centre was a large sub-rectangular feature (304010) which had the appearance of a grave, although no human bone or other finds were recovered from it. It was 2.5 m long, 1.6 m wide and 0.3 m deep, aligned east–west, with steep concave sides and a flat base (Fig. 7.5). It contained two fills. Around the edge of the cut was a *c.* 0.4–0.6 m wide band of redeposited natural (304011), which had a steep, and at the eastern end a vertical, interface with the inner, dark grey silty fill (304012), which also extended to the base of the cut. The inner fill was rectangular in plan, measuring 1.6 m long and 0.72 m wide. While it is possible (as initially surmised) that 304012 is the fill of a later feature cut into layer 304011, a more likely interpretation is that together these represent a chambered grave. The outer fill comprised the backfill around a rectangular timber chamber (304033) placed in the centre of the grave, and the inner fill either the deliberate backfill of the chamber, or overlying possible cairn material that collapsed into it when the chamber decayed. There are many examples of chambered graves containing the remains of burials, often associated with Beakers, particularly in Wessex (Fitzpatrick 2011; Powell and Barclay forthcoming), but several examples are known from eastern England (see for example Field 1985, 133–5).

Fig. 7.4 Ring-ditch under excavation viewed from the north-west

The absence of any human remains from this grave is most likely due to taphonomic factors; the disparity in the burial micro-environment between this feature and that of the gradually accumulated fills of the ring-ditch being sufficient to effect differential preservation of the bone (see below). All that was recovered from the central grave was a small quantity of charred plant remains – fragments of hazelnut shell, a tuber, a grass root fragment – and a few oak charcoal fragments, all from the inner fill (Stevens, in archive; Barnett, in archive). Alternatively (though the two possibilities need not be mutually exclusive), the burial remains may have been disturbed in antiquity, as has been indicated within other Beaker inhumation graves (Gibson 2004, 184–90); there was no indication of antiquarian excavation. Finally, it is possible that a burial was never made in this feature and it may represent a cenotaph.

The only other feature within the interior of the monument was a shallow undated posthole (304186) in its southern half.

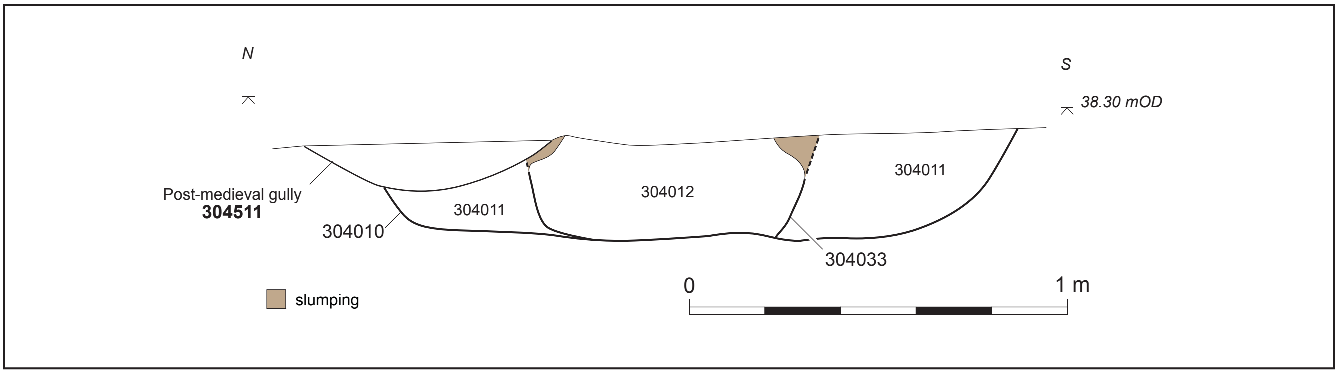


Fig. 7.5 Grave 304010 section

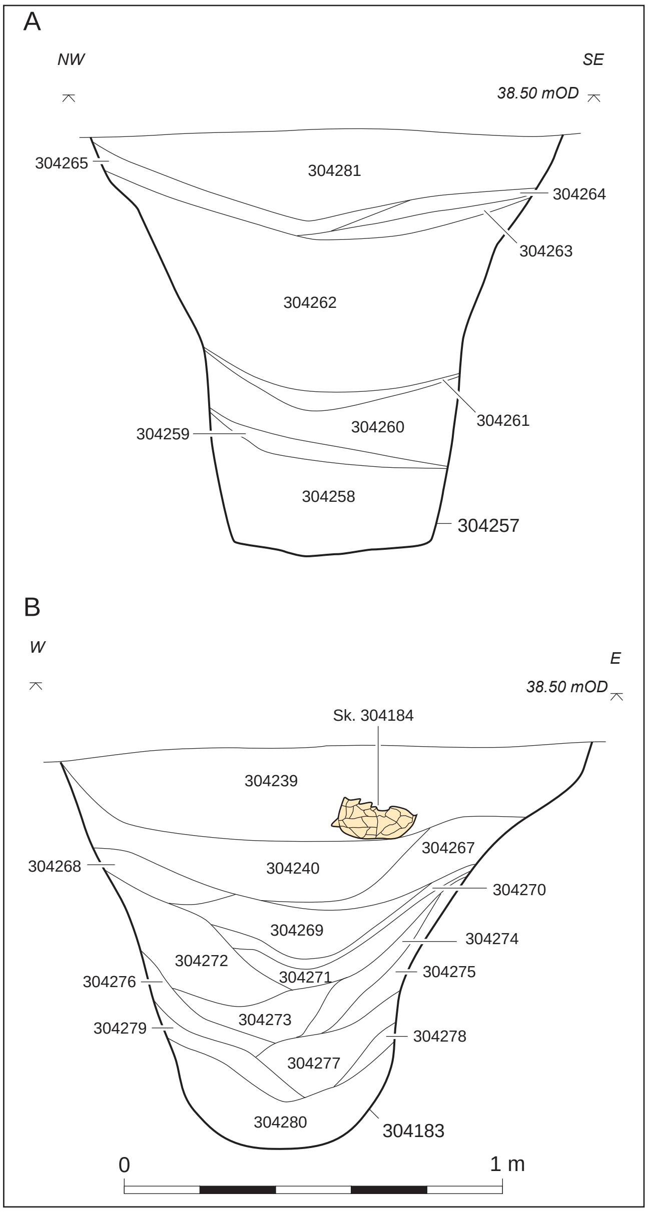


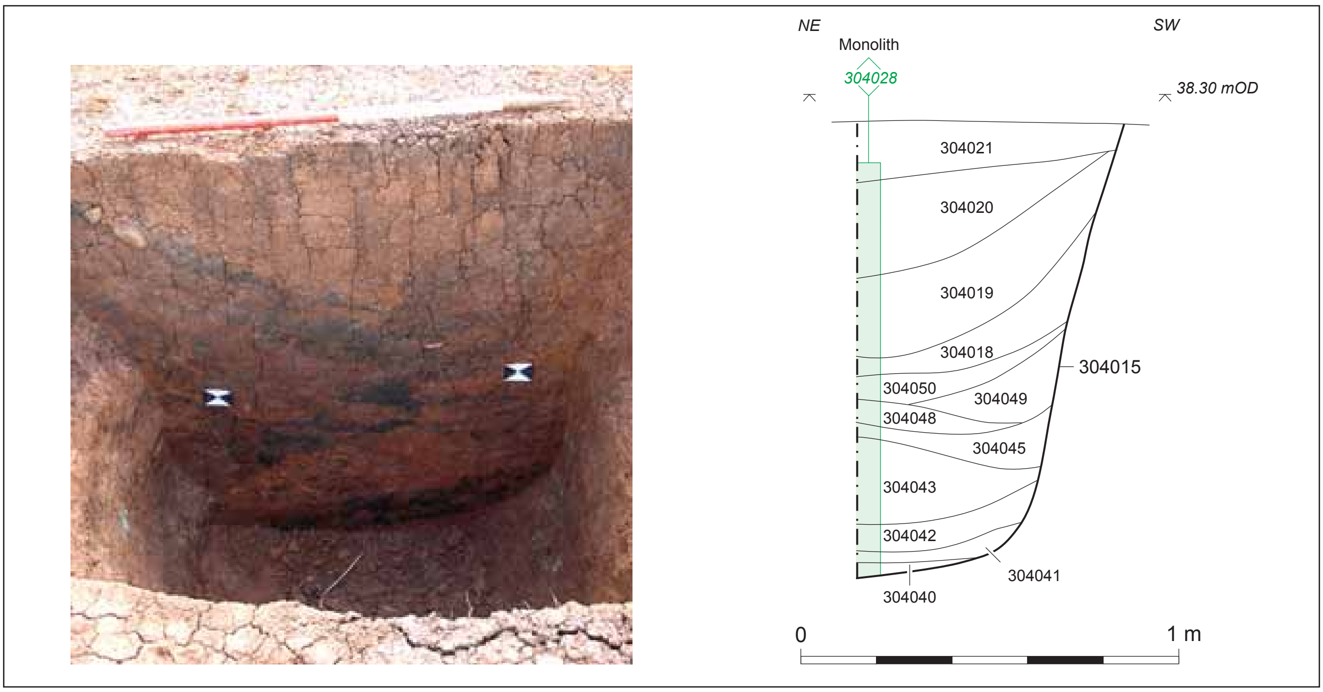
Fig. 7.6 Ring-ditch sections

Ditch

The ring-ditch (304143) averaged 1.2 m wide and 1.1 m deep, and had very steep sides and a flat base (Fig. 7.6). Approximately half of its extent was initially examined in a series of 29 slots (Fig. 7.4), but it was subsequently emptied in its entirety by hand. The sequences of infilling were not identical in each section but were broadly similar, being characterised by a repeated pattern of side erosion and collapse, followed by gradual infilling and stabilisation, although there was no clear indication in the fill profiles of either an internal mound or an external bank. The ditch filled up through natural silting to within *c*. 0.4 m of its top, and there was no evidence of recutting or maintenance. An undated pit (304519) and a posthole (304520) were cut into the uppermost fill on the eastern side of the ring-ditch.

Six bulk soil samples from the fills yielded only a single fragment of charred hazelnut shell (Stevens, in archive). Three monolith sediment samples were taken from sections to provide an understanding of the nature and processes of infilling. One of these was described in detail (304015), the south-western half is illustrated in Figure 7.7 (Norcott, in archive). In the lower part of the sequence light red-brown silty fills derived from erosion of the open ditch sides were interspersed with dark layers of turf and topsoil. In the upper part of the sequence turf-lines were identified and closely spaced; those that formed *in situ* in periods of ditch stabilisation were difficult to distinguish from those fallen from the ditch edges fills 304018–9. It can be noted that the deposits, including the turves, were silty at the base,

Fig. 7.7 Ring-ditch section (intervention 304015) viewed from the north-west, and location of soil monolith



but more clay-rich higher up, and it is possible that the earlier prehistoric soils had a higher silt content, perhaps from loess-derived soils. The final fills were more homogeneous, blocky, clay loams that may have been deliberately deposited to fill the ditch, and possibly cover the burials (see below) which were generally at or toward the base of this deposit (see Fig. 7.6B, fill 304239). In some sections a later infill of ploughsoil could be detected.

Burial remains

The remains of at least six, probably seven, inhumation burials, in varying states of preservation, were found in the upper fills of the ring-ditch, within a 0.2 m height of each other (Figs 7.3 and 7.8). The remains comprised those of five adults, four situated in the north (304038, 304426, 304440 and 304446) and one at the north-east (304184), and two infants, one at the west (304313) and the other at the south-west (304055). On the basis of their stratigraphic position and radiocarbon dates they are interpreted as being broadly contemporary. No grave cuts were identified, probably because they were rapidly backfilled with the same material through which they had been cut.

The remains of burial 304038 were the best preserved (Figs 7.8 and 7.9). This probable female, aged 45–55 years, had been laid crouched on her right side with her head to the south, facing east. An almost complete

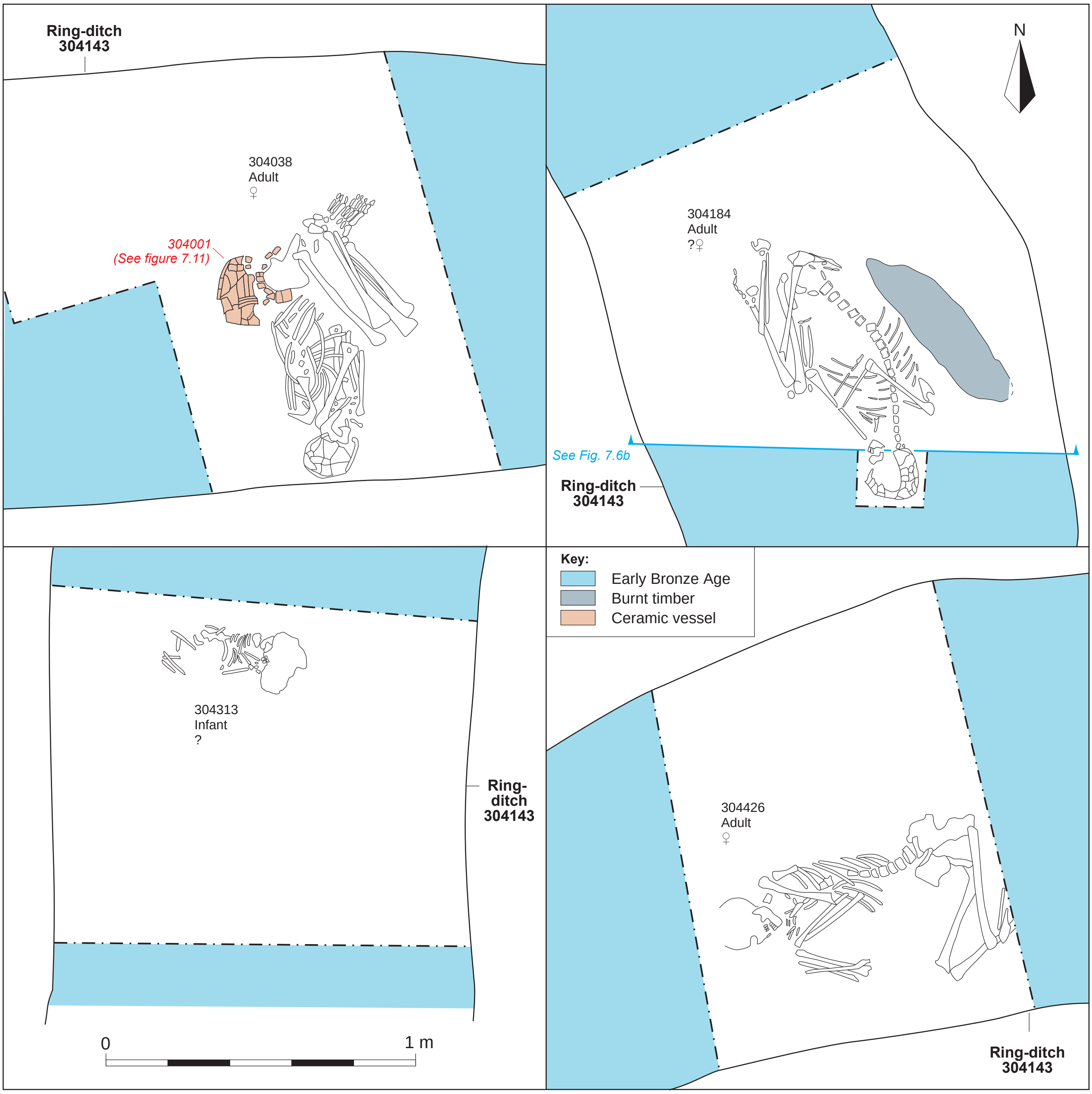


Fig. 7.8 Plans of burials 304038, 304184, 304426 and 304313

Fig. 7.9 Photograph of burial 304038 with Beaker behind pelvis, viewed from the north

Fig. 7.10 Photograph of burial 304184 with charred oak timber behind spine, viewed from the west

long-necked Beaker with geometric decoration (Figs 7.11 and 7.12) lay behind the pelvis. The vessel form and decoration are traditionally seen as late within the Beaker sequence and this receives confirmation from a radiocarbon date on bone collagen from the skeleton (SUERC-39031; 3715±30 BP), which indicates the burial was made at some point during *2130–2010 cal BC (81%)(at 95% probability)* (Table 7.6).

To the immediate west lay the relatively well-preserved remains of another adult female (304426). She had been laid flexed on her right side with her head to the west, facing south (Fig. 7.8). A radiocarbon date on bone from this burial indicates that the burial was made at some point during *2070–1950 cal BC (70%)(at 95% probability)*(SUERC-39033; 3650±30 BP), suggesting it is slightly later than burial 304038 (Tables 7.6 and 7.9).

The burial (304184) at the north-east of the monument was of a possible female aged at least 45 years, laid loosely crouched on her left side with her head to the south, facing west (Figs 7.8 and 7.10). A notable feature of this burial was a spread of charcoal staining, lying parallel to and behind the spine. The charcoal, identified as oak (Barnett, in archive), may indicate the presence of a charred timber plank in the grave. A radiocarbon date on bone from the skeleton suggests the burial was made at some point during *2070–1950 cal BC (70%)(at 95% probability)(*SUERC-39032, 3650±30 BP). Its date is almost identical to that from burial 304426 (Tables 7.6 and 7.9).

Two more poorly preserved burial remains (304440 and 304446) were also identified on the northern side of the ring-ditch, but in both cases no more than 8% of the skeleton survived. Burial 304446 was of an adult probable male (position unknown), and 304440 of a subadult of unknown sex (flexed, side unknown). The remains of two infant burials (304055 and 304313; Fig. 7.8) also survived in a very fragmented state; both had been laid flexed on the left side.

Dating

There are no direct indications as to the date of construction of the ring-ditch and the central grave. Finds from the ditch included two small sherds from 'rusticated' Beakers, a type rarely found in graves, recovered from upper fills 304262 and 304266 (see Leivers, below). There was also a scatter of nine flint flakes, which are not indicative of date or activity (Leivers 2011) and 40 fragments (335 g) of animal bone only three of which identifiable to species (Warman and Mulhall 2011). However, a long bone from an (unidentified) large mammal, from fill 304259 (Fig. 7.6A), is likely to have been deposited during *2130–2010 (86%) cal BC (at 95% probability)* (SUERC-39035; 3645±30 BP) (Table 7.6). The estimated date from a pig humerus from higher up the ditch in a different section (Table 7.6) is slightly earlier *2140–2070 cal BC (60%)(at 95% probability)* (SUERC-39034; 3755±30 BP).

The three radiocarbon dates on the inhumation burials (Table 7.6) are close to those from the stratigraphically earlier animal bones, indicating that the ditch silting was probably quite rapid. The sequence of dates obtained has been modelled using Bayesian statistics to examine the chronology of activity on the site (see Barclay and Stevens, below). In summary, the construction of the ring-ditch (shown as 'dig barrow ditch' in Fig. 7.13) may have happened during *2160–2020 cal BC (at 68% probability)* (see Table 7.8) and was used for mortuary activity during the late Beaker/Early Bronze Age period for perhaps *up to 102 years (at 68% probability) or 212 years (at 95% probability)* or within four or probably eight human generations.

Finds

Unburnt Human Bone

by Kirsten Egging Dinwiddy and Jacqueline I. McKinley

Unburnt human remains were recovered from 12 contexts associated with the Early Bronze Age ring-ditch, including the remains of six, probably seven, inhumation burials recovered from the ditch fills. Bone samples from three burials made within the north-west quadrant of the ring-ditch (see Table 7.1 and Fig. 7.3) were submitted for radiocarbon dating and all returned Early Bronze Age dates (see Barclay and Stevens, below). The other remains are assumed to be of a similar date based on contextual and stratigraphic data. The analysis methodology follows that outlined in Chapter 4. A summary of the results is presented in Table 7.1; full details are held in the archive.

Results

Disturbance and condition

The inhumation burials had all been made in the upper fill(s) of the ring-ditch and lay within approximately 0.05–0.25 m of the machined surface level. No grave cuts were observed in excavation, but this does not rule out their existence; such cuts – often made through and rapidly backfilled with the same material – are frequently difficult to detect. In all except one case, where the upper body of one individual (burial 304184) had slumped back into a semi-supine posture from an on-side position, the remains appear to have maintained their burial position, suggesting soil was placed immediately over/around the bodies after burial.

Animal and tree root disturbance, as well as later agricultural activity, had caused a small degree of disturbance to several of the burial remains. Bone preservation in the compact silty clay soil of the ditch fill was poor, and much of the material that was evident in excavation did not survive lifting, resulting in a maximum skeletal recovery of *c.* 65%. The trabecular bone is particularly poorly represented and much of the compact bone (scored between grades 2 and 5+; mostly 3–5) is heavily fragmented due to soil pressure. Possible canid gnawing was identified on the left tibia shaft from the disturbed burial remains 304426.

Demography

A minimum of seven individuals (MNI) was identified, comprising four adults (three females and one possible male) and three immature individuals (Table 7.2). The demographic profile of this small group and the potentially deliberate placement of certain individuals in specific parts of the monument (Fig. 7.3) is intriguing but

Table 7.1 Stragglethorpe: unburnt human remains – summary of analysis results

Context	*Posture/orientation*	*Quantification*	*Age/sex*	*Pathology*	*Grave goods*
304038* (inc. 304104)	crouched right side, S–N, facing E	*c.* 65%	adult *c.* 45–55 yr. female	apical void; calculus; dental caries; enamel hypoplasia; periodontal disease; pnb – mandible, S1; ddd – S1; osteophytes – atlas (af), 3C & S1 (bsm); pitting – 3T (apj); calcified cartilage (thyroid & ribs); mv – wormian bones, variant 2nd incisor, occasional facets (tarsals), fused 5th distal IP (feet)	ON 304110 Beaker
304055	flexed left side, E–W, facing S	<1% s.	infant *c.* 4–5 yr.	enamel hypoplasia	-
304184*	crouched left side, S–N, facing W	*c.*40%	adult >45 yr. ?female	apical void; calculus; dental caries; enamel hypoplasia; Schmorl's nodes – 2T, 4L; degenerative disc disease – 4L	ON 304238 Burnt Timber
304313	flexed left side, E–W, facing S	*c.* 2% s.a.	infant *c.* 3–4 yr.	enamel hypoplasia; new bone – sphenoid, temporal; mv – variant deciduous 1st incisor	-
304426* (inc. 304438 & 304425)	flexed right side, W–E, facing S	*c.* 40%	adult *c.* 30–40 yr. female	calculus; dental caries; enamel hypoplasia; Schmorl's nodes - 1L; degenerative disc disease – S1; pitting – left rib; mv – variant 2nd incisors	-
304440 & 304443	flexed, ?S–N	<2% a.u.l.	subadult *c.* 13–17 yr.		-
304446	Uncertain, ?left side, ?E–W	*c.* 8% s.a.	adult *c.* 25–45 yr. ?male	calculus; thickened diploë (skull)	-

KEY: * C14 analysis; s. a. u. l. – skull, axial, upper limb and lower limb (where not all regions are represented); pnb – periosteal new bone; C, T, L, S – cervical, thoracic, lumbar and sacral vertebrae; af – articular facet; apj – articular process joint; bsm – body surface margin; IP – interphalangeal joint; mv – morphological variation

Table 7.2 Stragglethorpe: unburnt human remains – minimum number of individuals (MNI) summary

Age	*MNI*
Immature	
Infant *c.* 3–4 yr.	1 (U)
Infant/juvenile *c.* 4–5 yr.	1 (U)
Subadult *c.* 13–17 yr.	1 (U)
subtotal	*3 (U)*
Adult	
c. 25–45 yr.	1 (??M)
c. 30–40 yr.	1 (F)
>45 yr.	2 (1F, 1?F)
subtotal	*4 (2F, 1?F, 1??M)*
Total	7 (2F, 1?F, 1??M, 3U)

KEY: F = female; M = male; U = unsexed; ? = probable; ?? = possible

not particularly unusual (cf. Twyford Down: McKinley 2000d, 102; Walker and Farwell 2000, 10). It may reflect social attitudes to the placement of the dead within an extended family group or small domestic community.

Radiocarbon dating and stratigraphic modelling suggest the barrow was in use for a relatively short period of time, possibly a century or two (see Barclay and Stevens, below). The burials were probably made more or less contemporaneously, not long after the monument was constructed. The modelling also suggests that the adult female 304038 was the first to be buried. It could be postulated that the monument was built for the purpose of demarcating a burial plot for a small local community or family, which probably continued to use the site for two or three generations.

Skeletal indices and non-metric variation

The poor condition of the bone rendered the taking of measurements for the calculation of various skeletal indices impossible. Observation of morphological variations was similarly limited and meaningful comments regarding such variations even more so (see Table 7.1 and archive). Variations in skeletal morphology may indicate population diversity or homogeneity, but the potential interpretative possibilities for individual traits is complex and most are not yet readily definable, particularly on a 'local' archaeological level (Tyrrell 2000). Several have been attributed to developmental abnormalities or mechanical modification (*ibid.*, 292).

Pathology

Pathological changes were observed in the remains of six individuals (Table 7.1). The poor condition of the bone is at least in part responsible for the relative dearth of observed lesions and, together with the small sample size, limits the value of comparative discussion. Many of the lesions and conditions recorded here are common to those seen in the Romano-British assemblage from *Margidunum* Hinterland. To minimise repetition, the background to these pathological features will not be presented again and the reader is referred to Chapter 4. Unless otherwise stated, all the rates presented here are true prevalence rates (TPR).

Dental disease

All or parts of four dentitions including erupted permanent teeth or tooth positions were recorded, as were five erupted deciduous teeth (four maxillary, one mandibular) from one infant (Table 7.3).

Table 7.3 Stragglethorpe: unburnt human remains – summary of permanent dentitions

	Max. teeth	*Man. teeth*	*Total teeth*	*Max. tooth positions*	*Max. tooth positions*	*Total tooth positions*
Female	46	46	92	32	29	61
??Male	2	-	2	-	-	-
Unsexed	2 (+11*)	2 (+11*)	4	-	-	-
Total	50 (+11*)	48 (+11*)	98 (+22*)	32	29	61

* = unerupted tooth crowns (not included in calculations)

Calculus deposits were identified in all four adult dentitions (Table 7.4). Just over half of the erupted teeth are affected (52%), with a marginally higher frequency in the females (54.3% *vs* 50%). The mandibular teeth have a slightly greater rate (56.3% *vs* 48% maxillary), though deposits are most commonly on the right maxillary M1. The majority of deposits are manifest as slight tidemarks at the gumline, with the exception of older female 304038, where the build-up is moderate to severe. The same individual has slight to moderate lesions (score 2–3) consistent with periodontal disease (rate 11.5%).

Table 7.4 Stragglethorpe: unburnt human remains – summary of dental lesions (permanent dentitions)

	Calculus	*Caries*	*Apical void*	*Hypoplasia*	*Perio-dontal disease*
Female	50 (23 max.) (27 man.)	10 (3 max.) (7 man.)	3 (1 max.) (2 man.)	19 (3 max.) (16 man.)	7 (3 max.) (4 man.)
??Male	1 (1 max.)	-	-	-	-
Unsexed	-	-	-	8*	-
Total	51 (24 max.) (27 man.)	10 (3 max.) (7 man.)	3 (1 max.) (2 man.)	19 (+8*)	7 (3 max.) (4 man.)

* = unerupted tooth crowns (not included in calculations)

Dental caries were recorded in the three female dentitions with between one and seven teeth affected in each, the elderly female again being predominantly affected (overall rate 10.2%; 14.6% mandibular and 6% maxillary). The average of 4.8% given by Roberts and Cox for the Bronze Age (2003, 82, table 2.27) is somewhat lower, though some individual sites within their sample have similarly high rates. Lesions were exclusively found in molars, with origins split equally between the cervical interdental and the occlusal fissures.

Three (4.9%) apical voids were observed in two female dentitions, each with smooth walled, spherical lesions > 4 mm in diameter and no associated signs of infection. The most likely cause of the voids are cystic granuloma, ie, soft tissue swellings at the apex of the tooth sockets caused by injury to the tooth, or exposure of the pulp to pathogens, which has subsequently become a fluid-filled sac (Soames and Southam 2005, 65–84). One case (right mandibular M1; 304038) is undoubtedly the result of advanced caries.

Enamel hypoplasia was observed in five dentitions involving between three and nine permanent teeth (Tables 7.1 and 7.4; overall rate 19.4%, mandibular 33.3%, maxillary 6%). The anterior teeth, particularly the mandibular canines, are most commonly affected, with defects evident as either multiple faint lines, or one or two more distinct lines. From their position, it appears that most episodes of stress occurred between the third and sixth years, ie, those in which most children were potentially under greatest stress (this may be linked to weaning and the development of the child's own immune system which can leave them particularly exposed during these years; Lewis 2007, chapter 6). The poorly formed molars and feathered enamel of the tooth crowns of the infant 304313 indicates that this child suffered chronic nutritional or health stress from around the age of nine months. Most comparative data is in the form of crude prevalence rates (numbers of individuals affected) rather than true prevalence rates (TPR; number of teeth affected), but either way the rates appear comparatively high with TPRs of 5–8% reported from various other Early–Middle Bronze Age sites (eg, McKinley forthcoming b; Roberts and Cox 2003, table 2.32). A number of factors may be indicated in this observation – early weaning (possibly preferentially of females) rendering them more vulnerable, exposure of a particular cohort to an epidemic of childhood illnesses and food shortages. However, given the small numbers of individuals and teeth involved, and the absence of supportive evidence, speculative over-interpretation should be avoided.

Several of the females' teeth are chipped, with vertical splitting in some anterior teeth of 304038 and 304426, and palatal polishing and general buffing in 304426.

Infection and inflammation

A small patch of lamellar (healing) new bone at the apex of a mandibular M1 tooth socket (304038) may indicate a minor dental infection. Lamellar new bone deposits were observed on fragments of the skull base of infant 304313, whose malformed tooth crowns indicate their having suffered from a chronic condition from early infancy (see above).

Metabolic conditions

Idiopathic thickening was noted in the skull vault of the possible male adult 304446, where the diploë had expanded to increase the skull thickness to 8 mm. Possible causes include iron deficiency anaemia (various factors: Roberts and Manchester 1995, 166–9; Lewis and Roberts 1997, 583), where the marrow expands to produce more red blood cells, and hyperparathyroidism, where bone is eventually replaced by fibrous material (Salter 1999, 31; Egging Dinwiddy 2011b, 105). An increase in the rates of stress indicators such as *cribra orbitalia* and enamel hypoplasia (see Chapter 4) from the Neolithic to the Bronze Age has been noted by Roberts and Cox (2003, 85), who suggest agricultural intensification and/or increased parasite load as likely explanations.

Joint disease

Forty-two vertebrae (one male, 41 female) from five spines were observable, though few could be assigned to a specific location within the different areas of the spine (Table 7.5). There are 146 observable extra-spinal joints (one male and 145 female), however condition is generally poor and the rates probably under-represent the true extent and distribution of joint disease.

Table 7.5 Stragglethorpe: unburnt human remains – summary of vertebrae and lesions observed (all from female remains except where indicated)

Vertebra	*Total*	*Schmorl's nodes*	*Degenerative disc disease*	*Osteophytes*	*Pitting*
C1	3	-	-	1 (33.3%)	-
C2	4 (incl 1 ?male)	-	-	-	-
C gen	9	-	-	3 (33.3%)	-
T gen	14	5 (35.7%)	-	-	7 (50%)
L gen	10	8 (80%)	4 (40%)	-	-
S1	2	-	2 (100%)	1 (50%)	-
Total	42	13 (31%)	6 (14.3%)	5 (11.9%)	7 (16.7%)

Schmorl's nodes were seen in between four and nine thoracic and lumbar vertebrae in two female spines. The individual with the most lesions (304184) also has the most severe examples, particularly in the lumbar region. Degenerative disc disease was seen in between one and four vertebrae in the three female spines; only the lower spine was affected (Table 7.5), with the most advanced examples from 304038. Only one spine (304038) has osteophytes. The aetiology of pitting on specific joint surfaces, as with osteophytes, is difficult to determine. Nevertheless, pitting is generally considered to be largely reflective of age-related degeneration. Three thoracic vertebrae from one spine (304038) exhibit lesions on the articular process joints. One rib joint (304426) is affected, and comprises the only extra-spinal joint observed to have any pathological changes.

The evidence indicates some participation in heavy manual labour particularly involving the spine, which may in part be related to the intensification in farming and land clearance during this period (Roberts and Cox 2003, 77). The extent and severity of the degenerative changes increase with age, following the recognised pattern. The limited quality and size of the sample precludes further comment.

Miscellaneous

Ossified cartilage is considered to be an indication of advancing age, though some disease process, as well as a natural predisposition to hyperostosis may be involved. Ossified thyroid and rib cartilage was recovered from the remains of the older female 304038, and in this case its development is likely to have been age related.

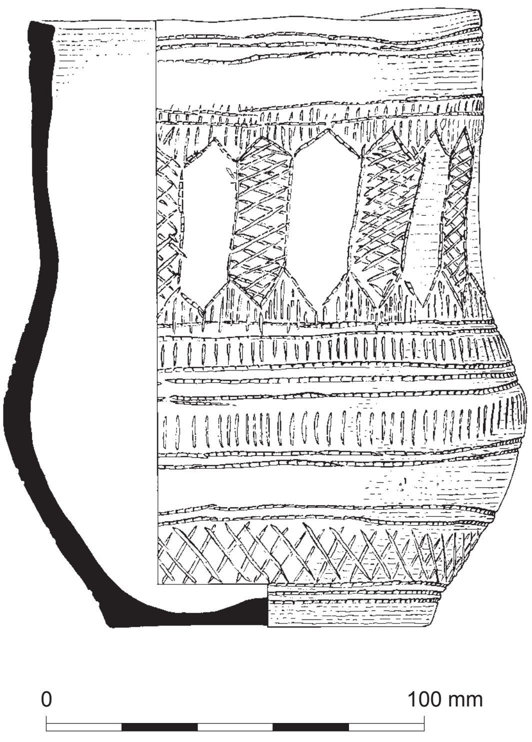


Fig. 7.11 Beaker vessel accompanying burial 304038

Prehistoric Pottery

by Matt Leivers

Eighty-three sherds of prehistoric pottery, weighing 670 g, were recovered during excavation. All but two derive from a single Beaker vessel (644 g), undoubtedly complete at the time of its deposition, placed by the pelvis of burial 304038 (context 304039) (Figs 7.11 and 7.12). The other two were coarse sherds with fingernail impressions (weighing 18 g and 8 g, respectively) possibly of rusticated Beaker type, which came from contexts 304262 (ditch fill, 0.2 m below the machined surface) and 304266 above burial 304055.

The material was analysed in accordance with the nationally recommended guidelines of the Prehistoric Ceramics Research Group (PCRG 2010). Sherds were examined using a x20 binocular microscope to identify clay matrices and tempers, and fabrics were defined on those bases. No petrological analysis has been undertaken. All data have been entered onto Wessex Archaeology's Pottery Database.

Beaker

When found the vessel was squashed flat, evidently *in situ* and apparently whole when deposited (small fragments of the rim and some parts of the neck have not survived).

The fabric (G1) is moderately hard and shows a hackly fracture in section; very few inclusions are visible at x20 magnification, but they include grog which is difficult to distinguish from the matrix, and some fine well-rounded quartz sand grains. The vessel is well made with thin walls (5–7 mm in the lower body, 4–5 mm in the neck region and 4–6 mm at 4–5 mm below the rim).

Decoration comprises a basic division of motif between the belly/lower wall and the neck/rim (Figs 7.11 and 7.12). From the base upwards, the lower portion has three horizontal lines of rectangular-toothed comb, above which an incised lattice is topped by a further two horizontal lines of comb. An empty band lies below two more horizontal lines of comb, with a band filled with short vertical incised lines above those, followed by three more horizontal lines of comb, a further band of vertical incisions and two more lines of comb impression. Above this, the motif changes: elongated vertical hexagons outlined with comb impression are alternately filled with incised lattice or are blank. Above and below the hexagons are vertical incised lines. Two further horizontal lines of comb top the motif. A blank panel is topped by a further three rather irregular horizontal lines of comb, just below the rim. Although well conceived, the design is rather irregularly executed, with various elements overlapping or not quite meeting, and the motifs (particularly the incision) rather roughly done.

The vessel is of Needham's long-necked type (2005, 195), Clarke's (1970) Southern Style Beaker. A radiocarbon determination on the accompanying inhumation returned a date of 2210–2020 cal BC (SUERC-39031, 3715±30 BP at 95% confidence) (Table 7.1). Modelling of the radiocarbon dates from the monument (Barclay

Fig. 7.12 Beaker vessel accompanying burial 304038

and Stevens, below) suggests that the Beaker-accompanied burial was the earliest of those dated, made in the period *2130–1980 cal BC (at 95% probability)* (see Barclay and Stevens, below), entirely consistent with the dating of the long-necked type (Needham 2005, table 5, 197–8).

The corpus of local comparanda is small. Clarke (1970) lists only three Beakers from Nottinghamshire, one of which (his number 713; fig. 984, 402) has broad similarities of form and decorative technique (if not motif). Eight vessels were known to Clarke from Leicestershire, only one of which is long-necked, and with an entirely different decorative scheme. Derbyshire and Lincolnshire are better represented, with 40 vessels from the former and 65 from the latter listed in Clarke's corpus. Of the Derbyshire examples, several share the long-necked form, and individual vessels have similar motifs on either the belly or neck, although none demonstrate the opposition evident on the Stragglethorpe vessel. The Lincolnshire examples are generally dissimilar.

Rusticated Beaker

The two other sherds are likely to derive from separate vessels, both decorated with finger nail impressions. The forms cannot be reconstructed, but the thickness and decoration is suggestive of Rusticated Beakers.

Fabric descriptions

G1 Micaceous quartz sand matrix; common medium and coarse subrounded grog pellets.

G2 Micaceous quartz sand matrix; moderate medium and coarse subrounded grog pellets; moderate fine black grains – iron minerals – probably naturally occurring.

G3 Moderate coarse sub-angular grog pellets; sparse coarse angular igneous rock.

Radiocarbon Dating

by Alistair J. Barclay and Chris J. Stevens

Five samples of bone were submitted to the Scottish Universities Environmental Research Centre (SUERC) for radiocarbon dating. The selected material came from three discrete inhumation burials found in the upper part of the silted ring-ditch 304143: burials 304038 (associated with a Southern Style Beaker), 304184 and 304426. Two further samples came from larger animal bones that were recovered from lower ditch silts and from levels that pre-dated the burials. The lower was a large unidentified mammal bone from fill 304259 (cut 304257), the other was a pig humerus from fill 304214 (cut 304207). The animal bone samples were not from *in situ* articulated bone and therefore could represent redeposited or residual material either from activity that pre-dated the construction of the ditch or from activities, such as feasting, associated with an initial phase of the monument's use.

The dating had the following objectives:

- What is the likely date of construction of the ring-ditch? Was it of Neolithic date reused in the Beaker period, or of Beaker date?
- How long was the barrow in use? Was this period relatively short (up to 100 years) or longer (100–500 years)?
- What is the date of the selected burials? Are they of similar date and can they be placed in an ordered sequence?

Calibration

The samples dated by SUERC were pre-treated according to their standard methods. The radiocarbon results (Table 7.6) are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977). All have been calculated using the calibration curve of Reimer *et al.* (2009) and the computer program OxCal (v4.1) (Bronk Ramsey 2009). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years for errors >25 years. The ranges in plain type in Table 7.6 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

A Bayesian approach has been adopted for the interpretation of the chronology from this site (Bayliss and Bronk Ramsey 2004; Bronk Ramsey 2001; Buck *et al.* 1996). Although the simple calibrated dates are accurate estimates of the dates of the samples, it is the dates of the archaeological events, which are represented by those samples that are of interest. In the case of Stragglethorpe,

Table 7.6 Stragglethorpe: radiocarbon determination for ring-ditch 304143

Lab. code	*Cut (context)*	*Identification*	*δ¹³C ‰*	*δ¹⁵N‰*	*C:N ratio*	*Date uncal BP*	*Calibration (95%)*	Posterior density estimate (95% probability)
SUERC-39031	304037 (304038)	Human inhumation (Beaker), L. femur shaft 4 g	-21.6‰	4.6	3.3	3715±30	2210–2020 cal BC	*2130–2010 cal BC (81%)* *2010–1970 cal BC (14%)*
SUERC-39032	304183 (304184)	Human inhumation, L. femur shaft 2.6 g	-20.9‰	10.0	3.0	3650±30	2140–1920 cal BC	*2130–2070 cal BC (25%)* *2070–1950 cal BC (70%)*
SUERC-39033	304419 (304426)	Human inhumation, L. femur shaft 3 g	-21.5‰	11.4	2.9	3650±30	2140–1930 cal BC	*2130–2070 cal BC (25%)* *2070–1950 cal BC (70%)*
SUERC-39034	304207 (304214)	Pig humerus 5 g	-21.4‰	9.8	3.1	3755±30	2290–2040 cal BC	*2140–2070 cal BC (60%)* *2070–1980 cal BC (36%)*
SUERC-39035	304257 (304259)	Large mammal long bone 6 g	-22.8‰	6.1	3.0	3645±30	2140–1920 cal BC	*2130–2010 cal BC (86%)* *2010–1980 cal BC (9%)*

it is the chronology of the barrow ditch and the associated activity that is under consideration, not the dates of individual samples. The dates of this activity can be estimated not only using the absolute dating information from the radiocarbon measurements, but also by using the stratigraphic relationships between samples. The OxCal programme provides the methodology to combine these different types of information explicitly, to produce realistic estimates of the dates of interest. However, the *posterior density estimates* produced by this modelling are not absolute. They are interpretative *estimates*, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives.

Results

A simple model based on the stratigraphic information given in Table 7.7 is presented in Figure 7.13. The model was initially run with the two animal bone samples assumed to be of a similar age to their respective ditch fills.

Table 7.7 Stragglethorpe: summary of the ditch stratigraphy

Inhumation burials	Placed within the upper ditch fill: SUERC-39031–3
Upper and middle ditch fills	SUERC-39034 from middle fill ring-ditch
Primary ditch fills	SUERC-39035 from above or upper part of primary fills
Dig barrow ditch	

However, in this version of the model both dates had a poor index of agreement (less than 60%) and the overall index of agreement was 53%. The model was rerun but with SUERC-39034, the earlier date but stratigraphically later sample, treated as a *terminus post quem* (assumed to be residual material significantly older than its context – shown as *After* in the model in Fig. 7.13). In this version the model has good agreement (Amodel = 73%).

The model was used to estimate a possible construction date for the digging of the ring-ditch (shown as 'dig barrow ditch' in Fig. 7.13) which returned an estimate of *2160–2020 cal BC (at 68% probability) or 2210–1980 cal BC (at 95% probability)* (see Table 7.8) indicating that the monument was probably constructed within the later 3rd millennium and the Beaker period. The model also allows for the span of use from construction to the latest burial to be estimated. This provided an estimate of *up to 100 years (at 68% probability) or 220 years (at 95% probability)* indicating that the burials within the upper ditch fill were made within four or probably eight human generations from initial construction.

The three burials all returned similar calibrated dates with the first burial estimated at probably occurring during *2130–2020 cal BC (68%)(at 95% probability)* and of a similar date to the upper ditch fill. The latter date estimate is for the formation of the final ditch filling into which all the burials could have been made. In other words all the burials (including those not directly dated by radiocarbon), six/seven in total, are likely to be no earlier than the 21st century BC.

The radiocarbon results for the three burials can be placed in probability sequence of oldest to youngest

Table 7.8 Summary of results (estimated parameters) derived from the model (see Fig. 7.13)

Modelled event	*68%*	*95%*
Construction of ring-ditch	*2160–2020 cal BC*	*2210–1980 cal BC*
Upper ditch fill	*2130–2020 cal BC*	*2130–1980 cal BC*
First Beaker burial	*2120–1980 cal BC*	*2130–1980 cal BC*
Period of use (span) of the ring-ditch	*0–110 years*	*0–220 years*
Period of burial use based on the three results	*0–42 years*	*0–98 years*

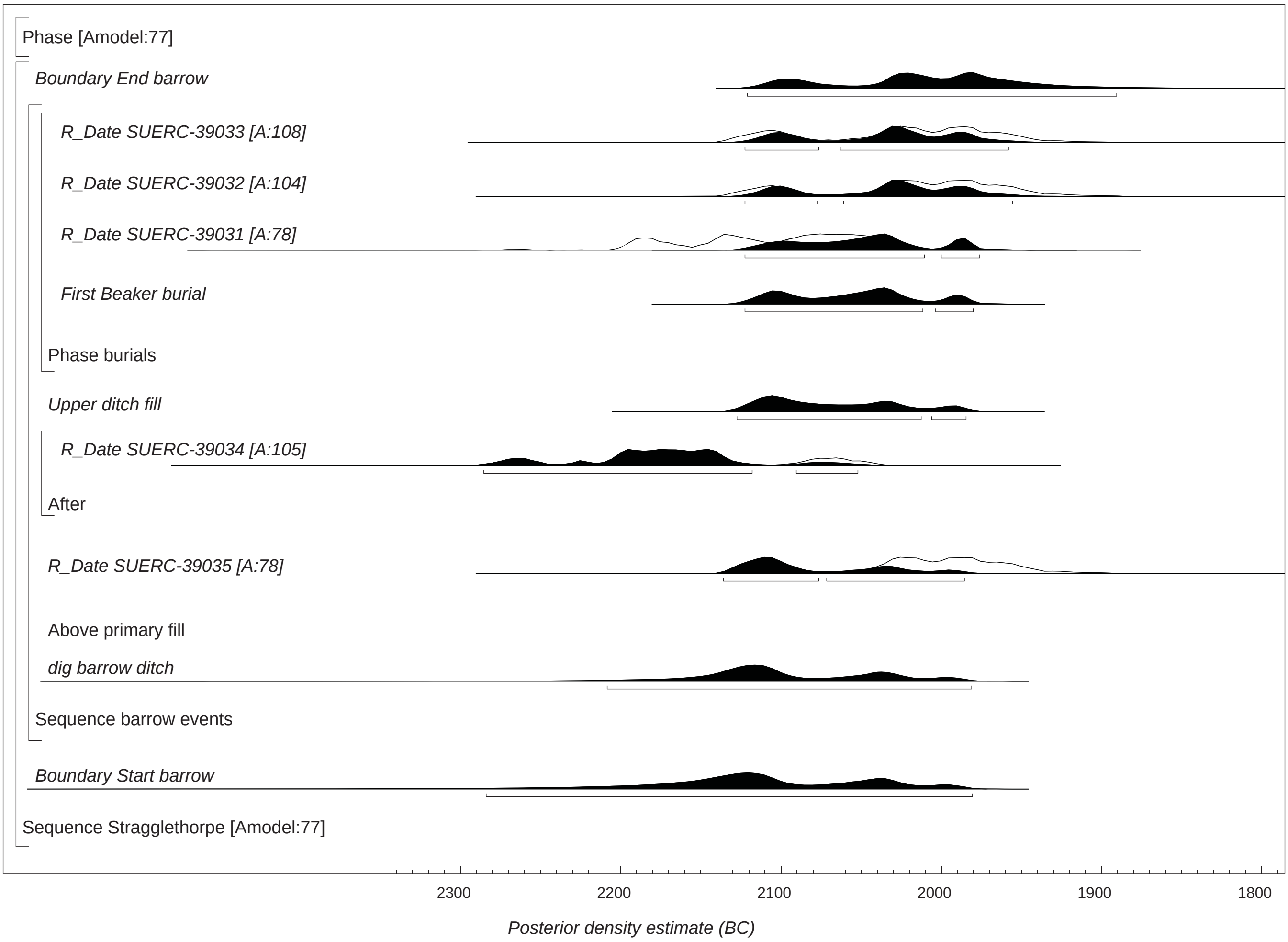


Fig. 7.13 Probability distributions (posterior density estimates at 95% probability) for the radiocarbon dates and other parameters for the ring-ditch at Stragglethorpe. The square brackets and the OxCal keywords define the model's structure

Table 7.9 The probability that the radiocarbon date for one burial is older than the other two (the table should be read from the left-hand column across each row)

	SUERC-39031 304038	*SUERC-39032 304184*	*SUERC-39033 304426*
SUERC-39031 304038	0%	66%	65%
SUERC-39032 304184	34%	0%	49%
SUERC-39033 304426	35%	51%	0%

using the OxCal Order function. The one with the Beaker (SUERC-39031) is 65/66% likely to be the earliest, while the other two are likely to be of similar date (see Table 7.9: the probability that SUERC-39032 is older than SUERC-39033, and vice versa, is 49% and 51% respectively). Taken together the three burials could all have been made *within 0–42 years or 0–98 years* (see Fig. 7.14 *Span burials*).

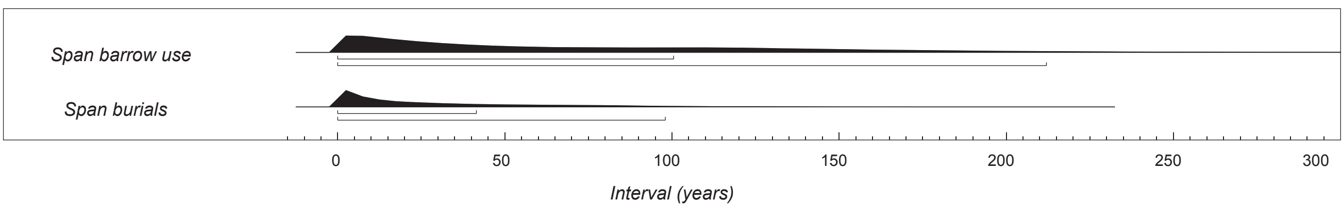


Fig. 7.14 The span (shown as interval years) for the barrow use and the duration of the dated burials. The brackets denote 68% and 95% probability

The barrow and its associated burials are likely to have been made some 300 years after the adoption and spread of Beaker practices, values and beliefs that occurred towards the end of the 25th century BC onwards in Britain.

Medieval and Post-medieval

Three undated furrows were recorded within the excavation area on a similar alignment to those seen in nearby trial trenches, perpendicular to the Fosse Way (Fig. 7.3). The northernmost furrow stopped short of the ring-ditch and appeared to respect it suggesting that any earthwork associated with the monument was still visible when the field was cultivated in the ridge and furrow system. However, the northern half of the monument was cut by ditch 304517, which probably represents a former field boundary on the south side of Nottingham Road. A small parallel gully (304442) lay to its north and another 304511/304518 to its immediate south. The shared alignment of all these features suggests they were part of the same overall field system.

Summary

The ring-ditch at Stragglethorpe lay in a valley location north of Cropwell Wolds. Excavation revealed a ring-ditch *c*. 20 m in diameter with a grave-shaped feature positioned almost centrally. The central feature contained a smaller subrectangular deposit with a darker fill, which seems likely to have been the fill of a decomposed wooden coffin or chamber. There were no finds and it is not known whether the 'grave' had ever contained a burial or, if it had, whether it had been reopened and the body, and any grave goods that might have been present, removed. The surrounding ring-ditch was *c*. 1.2 m wide and 1.1 m deep and steep sided. It was filled with a succession of clean soils interspersed with darker topsoil and turf deposits. There were very few finds from the ditch and, in common with the central 'grave', no clear evidence for its date of construction. It is also unclear what form any earthwork may have taken, but a central mound, possibly with a berm, seems most likely.

Towards the top of the largely infilled ring-ditch was a dispersed group of seven crouched inhumation burials. The best preserved (burial 304038) was of an adult woman with a complete long-necked Beaker vessel. Nearby, another adult female skeleton (burial 304426) was also well preserved, while another more poorly surviving possible female (304184) on the eastern side of the ditch had been buried with what appears to have been a burnt timber 'plank-like' object. Two other less well-preserved adults comprised a possible male and an individual of unknown sex. There were also two infants on the western side of the ring-ditch. Although the skeletal evidence is rather incomplete, a range of dental diseases and other indications of skeletal stress perhaps suggest that these individuals were subject to heavy workloads and dietary deficiencies (see McKinley, above).

Modelling of the radiocarbon dates indicates that the period of construction and burial use during the Beaker period was relatively short, most likely within 100 years and no more than 200 years from the 21st century to the 20th century cal BC, the burial with the Beaker being the earliest, and its date accords with the typology of long-necked Beakers and indeed with the use of Rusticated Beaker pottery. The burials without direct dating are probably of the same period. Dates from animal bones deeper within the ditch fill are very similar to those from the burials and suggest a relatively rapid ditch infilling and this is supported by Bayesian modelling of the sequence (see Barclay and Stevens, above).

Chapter 8
Cropwell Wolds Iron Age Farmstead

Nicholas Cooke

Introduction

The Cropwell Wolds Iron Age farmstead lay towards the southern end of the road scheme, east of Cotgrave (Fig. 8.1), on the northern spur of the Nottinghamshire Wolds. From the Owthorpe Road to the south, at *c.* 77 m aOD, the land rises to a plateau at *c.* 90 m aOD, from the northern edge of which it drops away sharply to 60 m aOD close to Colston Gate. From there, it rises again up a gentle south-facing slope to *c.* 70 m aOD before falling sharply to the flat land in the vicinity of the Stragglethorpe Junction at *c.* 45 m OD.

The site lies on an outcrop of clayey glacial till of the Oadby Member which overlies interbedded Triassic mudstones and limestones (BGS 2013). This till was encountered in all of the trenches on this stretch of the route and the area excavation, and all of the archaeological features encountered were cut through the upper surface of this geology. Deep deposits of colluvium, up to 0.8 m thick in places, were identified overlying the clay in the northernmost four trenches (TT1103–6).

Initial trial trenching identified a small number of archaeological features, including a concentration of Iron Age activity on the top of the plateau, which became the focus of targeted excavation (SM2038) (Fig. 8.1). Visibility of features was generally good, and all features not obviously natural in origin or modern in date were investigated. The earliest well-dated features were two transitional Late Bronze Age/Early Iron Age pits, which were succeeded by a small Middle Iron Age settlement. There were a few other features, the majority of which were either undated or of post-medieval or modern date.

Late Bronze Age/Early Iron Age

Two relatively shallow sub-oval pits (238172 and 238189) can be broadly dated to the Late Bronze Age/ Early Iron Age on the basis of the pottery fabrics and two sherds of post Deverel-Rimbury form recovered from their single fills (Fig. 8.2). Only small quantities of pottery were recovered, most of it made using local clays, although small quantities of shelly wares are likely to have been imported through trade or exchange. The later presence on the same plateau of a Middle Iron Age settlement (below) hints at some continuity of activity or occupation, but the features were too few and the dating insufficiently precise for this to be examined in detail.

Middle Iron Age

The excavation revealed the full extent of a small unenclosed Middle Iron Age settlement, comprising at least three roundhouses, as well as hearths, pits and postholes, associated with a substantial linear boundary ditch that appears to pre-date it (Fig. 8.2).

Boundary Ditch

The ditch was recorded running NE–SW across the entire excavation area (*c.* 160 m). Its initial cut (238207) had steep slightly concave sides and a concave base (Fig. 8.3) and, where it had not been either recut or truncated by later activity, an unbroken silting sequence was recorded, producing small quantities of Middle Iron Age pottery, animal bone and worked flint. A radiocarbon date of 380–190 cal BC (at 95% confidence)(2205±30 BP, SUERC-39027), was obtained on a cattle radius from the primary fill (238080, cut 238079). This date has been modelled with SUERC-39026 to suggest that construction of this boundary and the settlement probably happened as early as the 4th century BC (see Barclay and Stevens, below). Its southern side appears to have cut the edge of a short length of narrow ditch parallel to it (238215) (Fig. 8.6).

A length of the ditch was subsequently recut (238212), running north-east from a terminus immediately north of Roundhouse 1. The recut, which had shallower sides and was approximately half the depth of the original ditch (Fig. 8.3), was allowed to silt naturally. It contained significantly larger quantities of domestic waste, in particular from the area adjacent to the settlement. The evidence suggests that the recut was dug to respect the extents of the settlement, and it terminated with reference to other ditches which defined the settlement's limits, in particular ditch 238208 on the west side (Figs 8.2 and 8.4). The Middle Iron Age pottery from the recut is similar to that from the original ditch, indicating that the recut was probably silting during the period of settlement. A radiocarbon date of 370–170 cal BC (at 95% confidence)(2190±30 BP, SUERC-39027) was obtained from charred plant remains recovered from the recut ditch (fill 238077, cut 233075).

Settlement

While the boundary ditch recut (238212) defined the

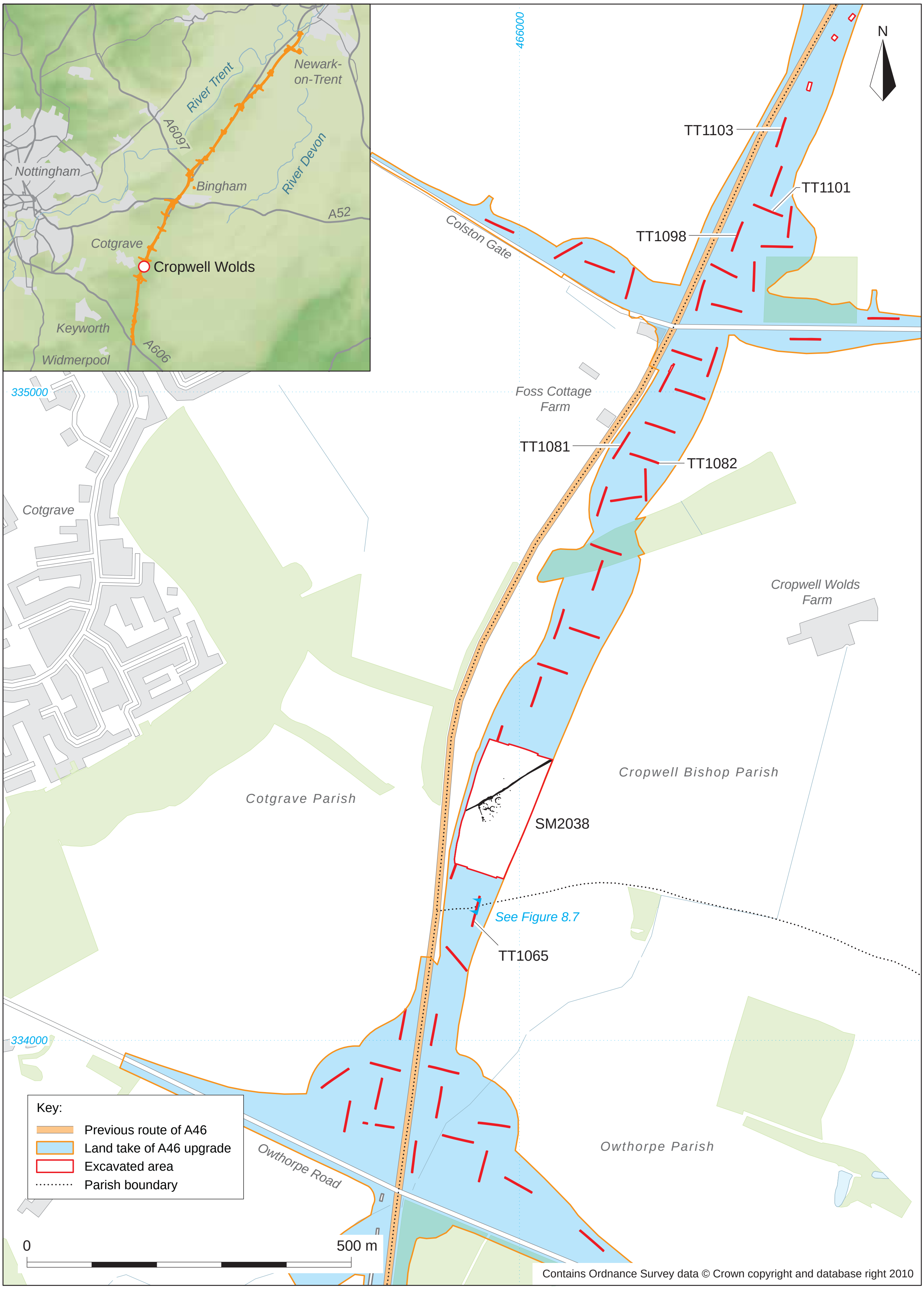


Fig. 8.1 The location of the excavations at Cropwell Wolds

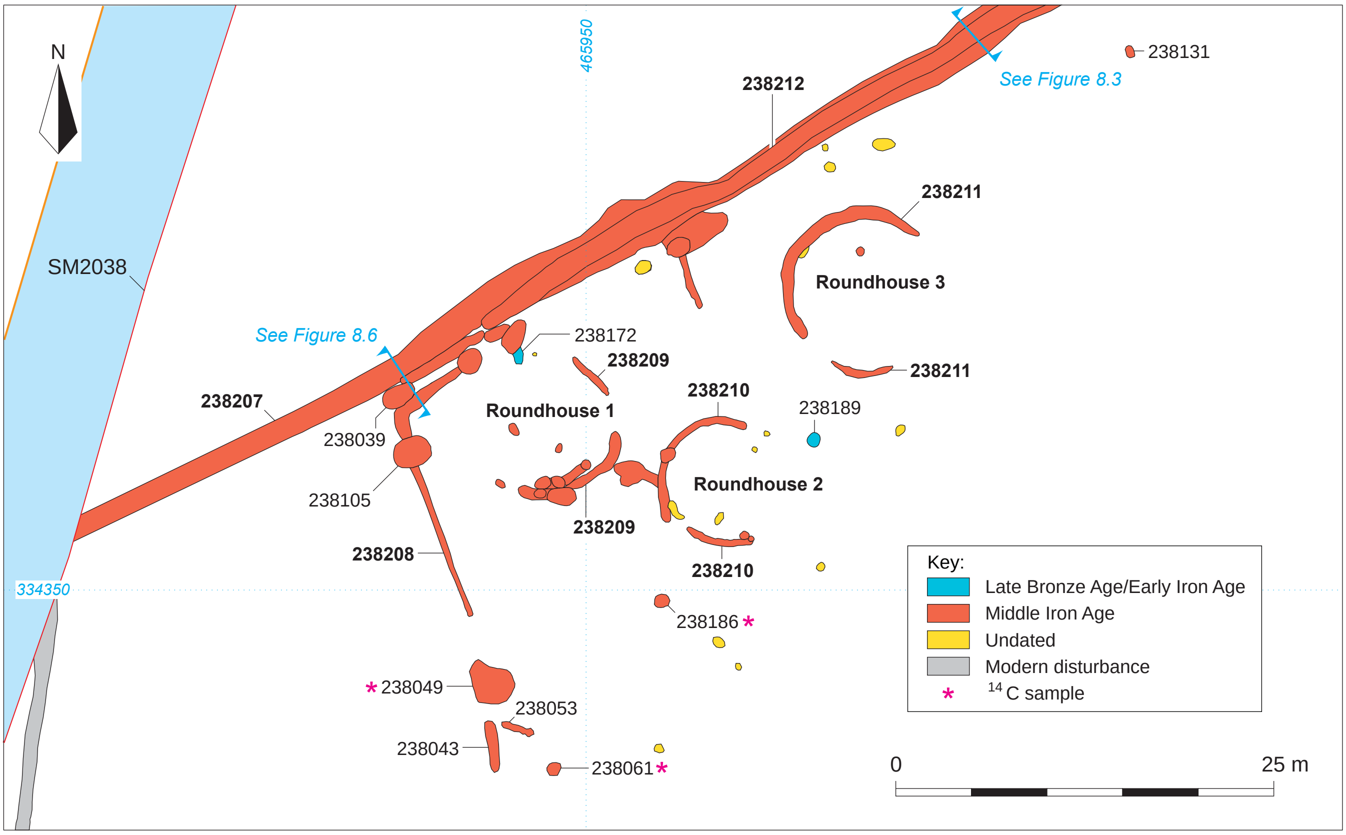


Fig. 8.2 Late Bronze Age/Early Iron Age features and Middle Iron Age ditch and settlement

north-west extent of the settlement, its south-western extent was defined by a relatively shallow ditch (238208). This ran SE–NW for *c.* 14 m, before turning to the north-east, parallel to the boundary ditch. Its northern terminal was obscured by a later pit (238143), but it ended *c.* 2–3 m from the recut ditch's western terminal, leaving a narrow entrance gap (Fig. 8.4). Ditch 238208 had a shallow U-shaped profile, contained naturally accumulated fills, and similar finds were recovered to those from 238212. There was no evidence for boundaries to the south-east or north-east, but the distribution of features associated with the settlement was confined to the immediate surroundings of the roundhouses, and does not extend far in either direction to the east.

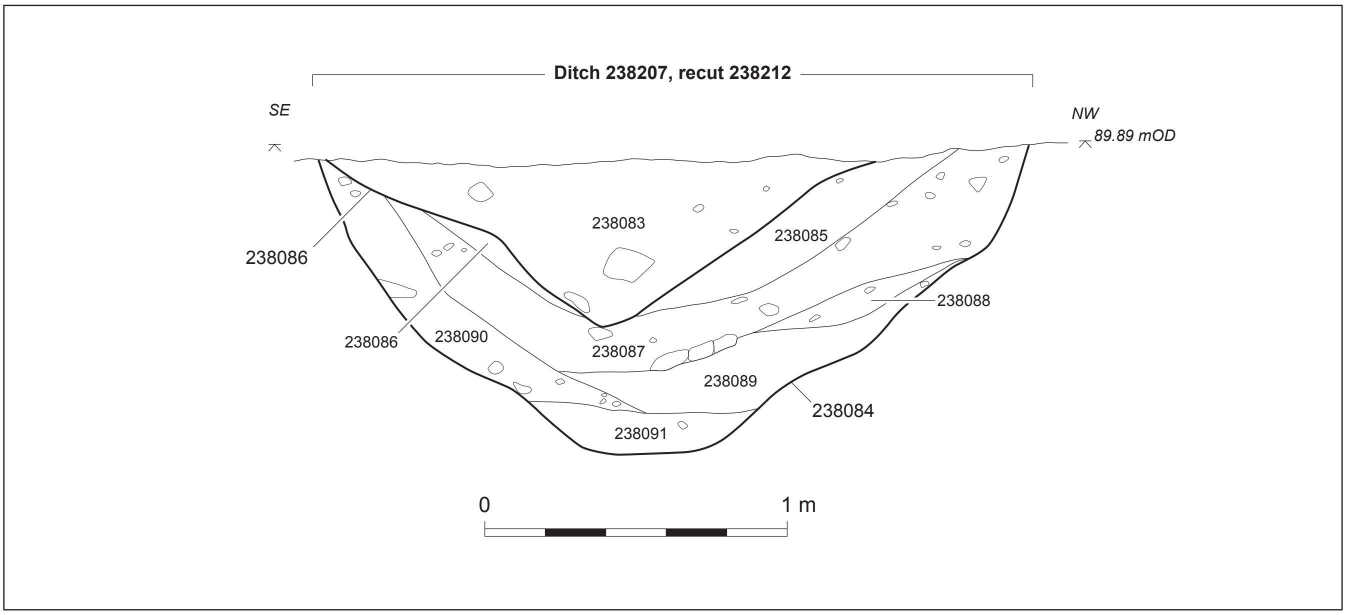


Fig. 8.3 Middle Iron Age ditch 238207 and recut 238212, section

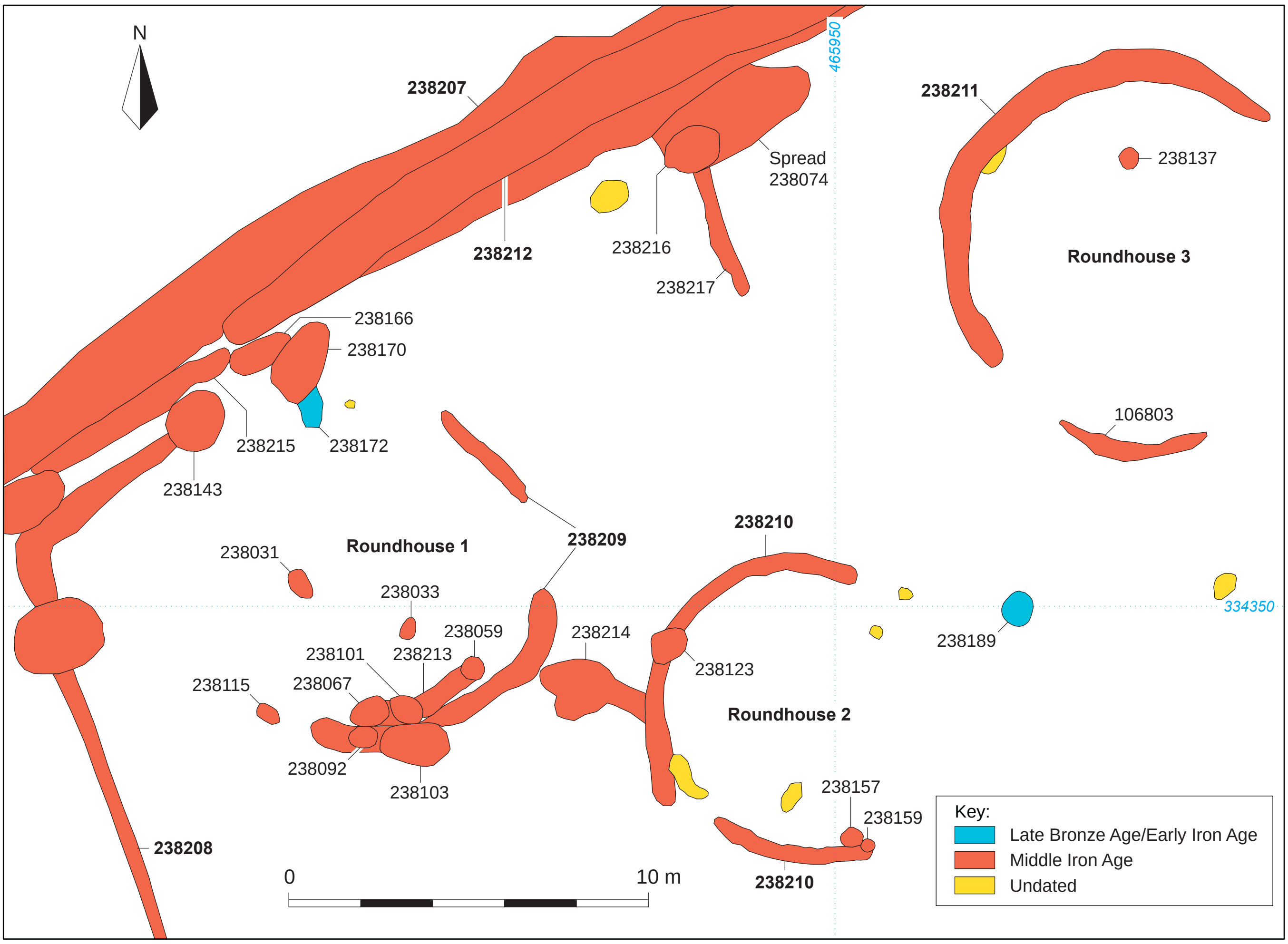


Fig. 8.4 Detail of settlement features

There was evidence for three roundhouses, in the form of incomplete penannular gullies probably defining the extent of the structures; a small number of internal features was also present.

Roundhouse 1

The westernmost roundhouse was defined by two lengths of gully (238209), one curving, which appear to incompletely define a central space some 8 m in diameter (Fig. 8.4). A *c.* 2.5 m wide gap between them may mark the position of an east-facing entrance; prehistoric roundhouses most commonly have entrances facing east or south-east (Oswald 1997). Each length of gully contained a single fill, from which a small assemblage of finds, including Middle Iron Age pottery, was recovered. Small quantities of charred spelt wheat glume bases and weed seeds were recorded from a soil sample from the gully (fill 238192, cut 238191).

Some evidence for the roundhouse's structure may be provided by another curving length of gully (238213), close to the southern part of gully 238209, which was associated at its eastern terminus with a stone-packed posthole (238059) (Fig. 8.5) and two other probable postholes (238101 and 238067). Despite its proximity to gully 238209, this may mark the wall line of the roundhouse, the outer gully possibly being a drip-gully. Two small possible postholes (238031 and 238033) within the roundhouse interior may also relate to its structure.

Roundhouse 2

This roundhouse, also defined by two lengths of curving gully (238210), lay *c.* 3m south-east of Roundhouse 1 (Fig. 8.4). The gully, which defined a roughly circular area *c.* 7.5 m in diameter, was broken by a 1.2 m-wide gap at the south-west, but had a much wider gap to the east where the doorway probably lay. The only structural evidence was a probable posthole (238157) close to the gully's south-eastern terminus, and a second posthole (238159), possibly a replacement, immediately south-east, cutting the fill of the terminal. These may represent the posts on the south side of a south-east facing doorway. Two small features near the northern gully terminal are of uncertain origin and date.

Roundhouse 3

The largest of the three roundhouses, defining a roughly circular area *c.* 10 m in diameter, lay at the north-east edge of the settlement (Fig. 8.4). It too was represented by two lengths of curving gully (106803 and 238211) with similar shallow, slightly concave profiles; these were

Fig. 8.5 Roundhouse 1 under excavation, viewed from the south-west

wider than those defining Roundhouses 1 and 2 but not significantly deeper. The gully had a single fill, although there were hints that it had been recut at least once. Finds from it included a substantial assemblage of pottery, and small quantities of fired clay and animal bone. As with Roundhouse 2, there was a narrow gap in the gully to the south-west and a wide gap to the east. However, there was no associated structural evidence, and the only internal feature was a pit (238137) containing a small assemblage of pottery.

The spatial distribution of the roundhouses makes it impossible to be certain whether or not they were in use at the same time, although their layout does suggest that they respected each other. Each probably had east or south-east facing entrances. The largest, Roundhouse 3, which also had the widest gully, contained the largest assemblage of pottery, suggesting that it was a domestic structure, although none of the roundhouses contained surviving hearths or other clear evidence for domestic activity. Some 62 sherds of pottery (452 g) were recovered from this roundhouse gully.

Associated features

There was a small number of other features within the settlement. These include a large shallow pit (238049) to the south, and on the alignment of, boundary ditch 238208 (Fig. 8.2). This was 2.81 m wide and 0.70 m deep, with moderately steep, slightly irregular sides and a flattish base, and contained three episodes of silting, one of which was charcoal-rich (238051), containing the charred glumes of spelt wheat and weed seeds, probably burnt waste material from crop processing (see Stevens, below). A radiocarbon date on the charred wheat returned a date of 400–200 cal BC (at 95% confidence) (2260±30 BP, SUERC-39025). However, it is more likely that this grain was charred at some point during *330-200 cal BC (73%) (at 95% probability)*. The well-sorted nature of the pit fills might indicate that this was used as a waterhole. The majority of the finds recovered, including pottery, were found in the slowly accumulated tertiary fill, and probably do not relate to the pit's use. Two short gullies (238043 and 238053) adjacent to pit 238049 are of uncertain function but may be related to it.

To the south-east of the short gullies was a subcircular pit (238061), *c.* 1 m in diameter and 0.27 m deep, with almost vertical sides and a flat base. It contained a single charcoal-rich fill, interpreted as a dump of waste material from a hearth. Although no artefacts were recovered, a sample contained further waste material, from crop processing, in the form of spelt wheat and weed seeds.

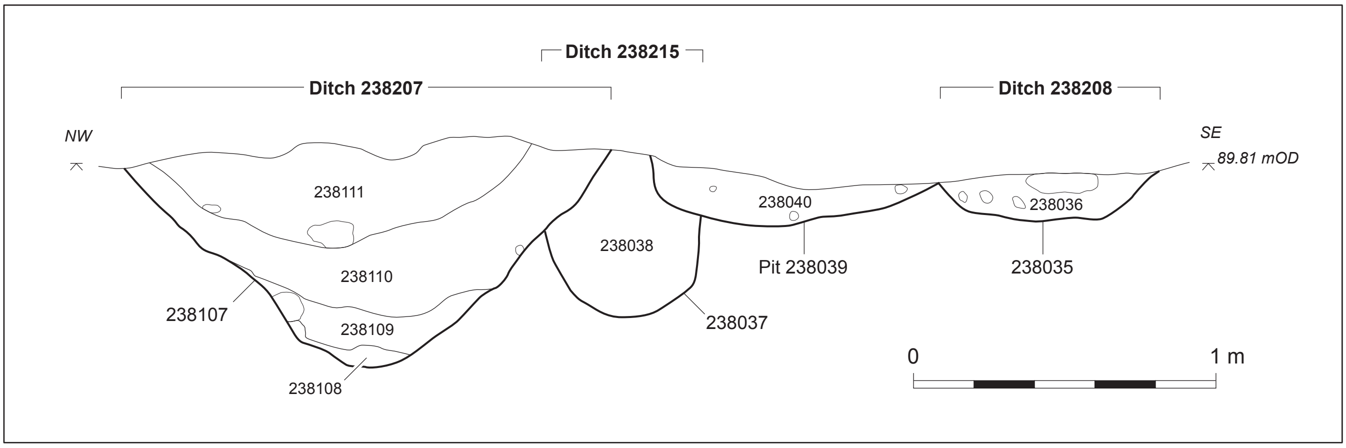


Fig. 8.6 Middle Iron Age ditches 238208, 238215 and 238207 and pit 238039, section

A radiocarbon date of 390–200 cal BC (at 95% confidence) (SUERC-39023, 2220±30 BP) obtained from this material confirms its Middle Iron Age date. Another pit (238186), similar in form and dimensions to 238061, lay almost 15 m to its north-east. The lower of its two fills (238188) also contained charcoal-rich material, including spelt wheat and weed seeds, derived from burnt waste from crop processing. This produced a radiocarbon date of 370–110 cal BC (at 95% confidence) (SUERC-39024, 2170±30 BP: although it is likely that this grain was charred during *360–280 cal BC (58%) at 95% probability*). The size and form of these pits suggests that they may have been used for grain storage, as suggested for similar pits on numerous other Iron Age settlements throughout lowland Britain.

There was a cluster of pits (238039, 238105, 238143, 238166 and 238170) in the north-western corner of the settlement (Figs 8.2 and 8.4), three of them cutting the settlement's south-western ditch (238208) (eg, Fig. 8.6). Their function, however, is uncertain – most appear to have silted naturally, and they contained very few finds, suggesting that they were not used as rubbish pits. Their peripheral location suggests a function distinct from those associated with the structures themselves.

A small group of pits (238092, 238103, 238123 and 238214) close to Roundhouses 1 and 2 (Fig. 8.4) generally contained assemblages of Middle Iron Age pottery and animal bone. A glass bead from pit 238214 (fill 238140) is of a Middle–Late Iron Age type that is locally rare, with a possible origin in Somerset (Shepherd, below). Its presence suggests that the settlement had access to wider networks of trade and exchange. Some of these pits cut the fills of the roundhouse drip gullies, although it is possible that the roundhouses remained in use after the gullies silted, and that the pits were contemporary with the structures.

Three features lay to the north-west of Roundhouse 3: a spread of material (238074) containing domestic refuse, an associated pit (238216) and an earlier short length of shallow gully (238217) lying perpendicular to the boundary ditch. Pottery and animal bone were recovered from the spread and the pit, but no finds came from the gully. The spread and pit contained a mix of pottery types, including Scored ware typical of the Middle Iron Age and not compositionally different from the overall assemblage from the site.

A number of further pits were excavated across the rest of the site but only one (238131), a small pit *c.* 18 m north-east of Roundhouse 3 (Fig. 8.2), could be dated to the Middle Iron Age with any confidence. The remainder, although unphased, are likely to relate either to the Middle Iron Age settlement or the preceding Late Bronze Age/Early Iron Age activity on the site.

Medieval, Post-medieval and Modern

A small number of medieval, post-medieval and modern features were also recorded. These included (in TT1103) traces of possibly medieval or earlier ploughing, along with a shallow gully, that were sealed by colluvium. Shallow furrows, probably the remains of post-medieval agriculture, were identified at the western end of TT1101, on the same alignment as a pair of parallel gullies recorded in TT1098.

A relatively shallow, east–west ditch (106506) was recorded on the line of the present boundary between Owthorpe Parish and Cropwell Bishop Parish (in TT1065) (Fig. 8.1). It had moderately steep sides and a concave base (Fig. 8.7), and a single fill heavily root-disturbed by a modern line of trees, many of them planted on the southern edge of the ditch. Although there is no evidence to suggest that the ditch and its fill are anything other than relatively recent in date, there was a substantial build up of colluvial soil (106501) forming a low but visible lynchet on its north side, suggesting that the boundary developed over a considerable period of time.

A dip in the ground surface and a distinct patch of reddish brown clay in TT1081 and TT1082 mark the location of a hollow shown on early Ordnance Survey mapping. This may be the site of a post-medieval/modern gypsum quarry although it is not labelled as such. A cobbled track and associated ditch (in TT1081) probably relate to its use.

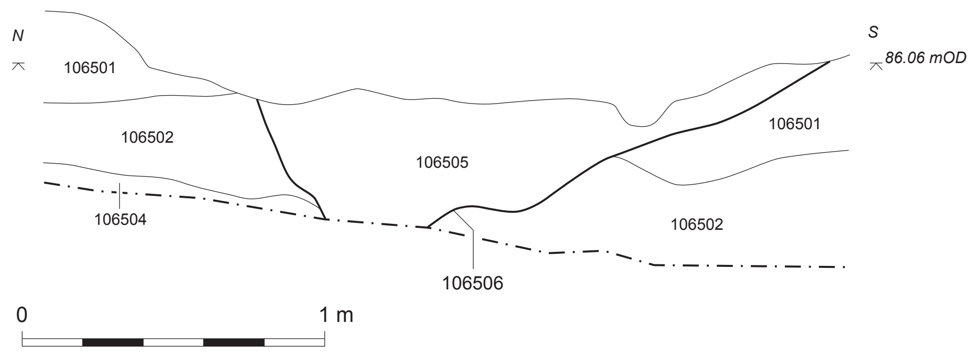


Fig. 8.7 Section of ditch on parish boundary. For location see Fig. 8.1

Finds

Late Prehistoric Pottery

by E.R. McSloy (incorporating thin-section analysis by E.L. Morris)

Introduction

Pottery amounting to 1146 sherds (10,738 g) was recovered from 50 separate deposits (Table 8.1). The larger part of the assemblage comprises Middle Iron Age Scored wares, a style which typifies groups of this date in the wider area. Selected elements are thought to date to the Late Bronze Age or 'transitional' Late Bronze Age/Early Iron Age period.

The recording methodology employed is in accordance with guidelines issued by the Prehistoric Ceramics Research Group (PCRG 2010). Vessel forms defined below follow terminology devised for the region by Knight (1984). A programme of thin-section analysis was undertaken for this and the partly contemporary group from High Thorpe (see above), with the principal aim of characterising the dominant fabrics and, where possible, establishing origin. The results of the analyses are integrated within the report presented here, with the full original study lodged with the archive.

Quantification for the assemblage has been according to defined fabric type within context, by sherd count, weight and where applicable by percentage measure of rim sherd (Rim EVEs – estimated vessel equivalents). Identification of fabric was facilitated using a x20 magnification binocular microscope. Vessel form was recorded where evident, mainly from larger rim sherds. Evidence for vessel function in the form of carbonised or other residues was recorded for all material. In addition, sherd thickness range and surface treatments were systematically recorded. The assemblage was recorded using an MS Access database, a copy of which will be submitted with the archive.

Mean sherd weight is 9.4 g, a moderately high figure for a late prehistoric group and a little higher than the broadly contemporary group from Gamston, Notts (Knight 1992) and that from High Thorpe (see above). Despite this, fragmentation appears to be high and there are few larger sherds, or vessels reconstructible much below shoulder-level. In other respects, including surface survival, condition is good.

Table 8.1 Cropwell Wolds: prehistoric pottery, summary by period, quantification by fabric

Fabric group	*Fabric*	*Count*	*Wt. (g)*	*EVEs*
Late Bronze Age/Early Iron Age				
Sandy	QZ	1	4	0.03
Shell	SH	23	75	0
Vesicular mudstone	VMSf	49	159	0.08
Subtotal		*73*	*238*	*0.11*
Middle Iron Age				
Sandstone/metasandstone	MS	898	9155	1.89
	MSqt	4	110	-
	MSv	1	4	0.05
Sandy	QZ	50	327	0.20
	QZv	5	106	-
Quartzite	QT	22	157	0.02
Argillaceous	QTarg	2	15	-
	ARG	1	4	-
Vesicular mudstone	VMS	31	273	0.10
SH	SH	56	343	-
ORG	ORG	3	6	-
Subtotal		*1073*	*10500*	*2.26*
Total		1146	10738	2.37

Provenance and phasing

The assemblage derives mainly from the fills of cut features, with the majority from pits and postholes (862 sherds) and ditches/gullies, including roundhouse gullies

(350 sherds). The majority of context groups are small, with only 17 deposits producing in excess of 20 sherds. Pit fills 238094 (pit 238092) and 238068 (pit 238067) produced large groups of 153 and 434 sherds respectively.

Pottery from pits 238172 and 238189 provides the only artefactual evidence for an earlier phase of late prehistoric activity. The material from these deposits was of distinct character (Table 8.1) and selected vessel forms suggest dating as early as the Late Bronze Age (below).

The larger part of the assemblage, from ditches, structural features and larger pits considered to represent a single broad phase, belongs to a long-lived Middle Iron Age tradition (below). Although potentially spanning three centuries or more, the homogeneity of the assemblage in terms of fabrics and vessel forms suggests that a shorter period is represented.

Fabrics

Pottery fabrics (Table 8.1) were defined according to main and any secondary inclusions and (sometimes) inclusion size or sorting. Thin-section analysis for this assemblage was conducted alongside samples from the smaller Middle Iron Age group from High Thorpe, and was undertaken ahead of full recording and following from a rapid scan. The primary aim of the thin-section programme was to better characterise fabrics and where possible establish source. The descriptions presented below incorporate the results of thin-section analysis, the conclusions for which are also presented in summary.

The sandstone and metasandstone group is dominant overall (79.2% by count) and forms the focus for thin-section analysis. This has been informed by the results of recent work on late prehistoric fabrics from East Midlands including those with a suspected source in the Mountsorrel area of Leicestershire (Knight *et al.* 2003; Knight *et al.* 2011).

Metasandstone and sandstone: 908 sherds; 9375 g; 1.94 EVEs

Note on inclusion lithology and origins (J. Carney)

The larger and thus more complete, coarse sand to granule-sized inclusions described consist of fine-grained quartzose sandstone (quartz-arenite and feldspathic arenite). Where possessing deformational features such as sutured grain boundaries, foliation and granoblastic-inequigranular textures they are classified as metasandstones.

Quartzose and feldspathic sandstones form small exposures in this part of the Midlands region, notably in Charnwood Forest. Such sandstones are undeformed, free of clay minerals, and are characterised by a quartz cement, which forms overgrowths around the original grains. This diagenetic texture has been noted in some of the samples described.

The metasandstone inclusions, together with large single quartz crystals possessing strained extinction, indicate derivation from metamorphic parent rocks that do not crop out in the Midlands region. Those with granoblastic-inequigranular textures suggest moderate to high-grade metamorphic terrains.

MS *Metasandstone and sandstone*. Dark grey throughout. Soft with irregular fracture and sandy or harsh feel. Inclusions comprise *c.* 40–50% of the matrix. Silt-sized inclusions typically less than 5% of the matrix and made up of fragmented quartz crystals which are angular to sub-rounded. One sample (no. 5) contained sporadic laths of muscovatite and biotite mica. Samples 5 and 7 also contained sparse carbonate fragments likely to be comminuted shell debris (below). Sand-sized inclusions can show a large variation in size, in the range up to 2.5 mm and well-rounded to sub-angular. Most are quartz crystal fragments some of which are unstrained but others showing strained extinction (in cross-polarized light), indicating that in their original state they had been subjected to deformation. The main type of *polycrystalline quartz* inclusion consists of *quartz-rich metasandstone*, many with granoblastic-inequigranular textures and sutured grain boundaries indicating significant deformation of the parent rock. Fragments of *alkali feldspar* and *plagioclase feldspar* with grainy alteration are present in some samples but very rare. *Black opaque* inclusions are common; some are rounded, with concentric silty inclusions developed internally. Larger granule-sized inclusions (3-4mm) were present from samples 5 and 6 and are more complete examples of the quartz-rich sandstone and metasandstone described above. Thin section samples 3-8: deposits 238094, 238068, 238162, 238054, 238060 and 238068.

MSqt *Sandstone with quartzite:* Dark grey throughout. Soft with irregular fracture and sandy or harsh feel. This fabric was not sampled for thin-section study. The hand specimen is coarsely sandy with common to abundant sand or granular inclusions which include sub-angular sandstone and sub-angular or angular quartzite up to 3 mm.

MSv *Sandstone with vesicles:* Dark grey throughout or with brown surfaces. Soft with irregular fracture and sandy or harsh feel. This fabric was not sampled for thin-section study. In the hand specimen this fabric is similar to the main MS fabric, the distinguishing factor being the presence of irregular voids up to 2 mm.

Sandy group: 51 sherds; 331 g; 0.23 EVEs

QZ *Coarse sandy with sandstones:* Typically dark grey throughout or with red-brown exterior surface. Soft with irregular fracture and sandy or harsh feel. This fabric was not sampled for thin-section study. In the hand specimen it is a coarsely sandy fabric with sparse angular rock, likely to be sandstone.

QZv *Sandy fabrics with vesicles and infrequent sandstones:* Dark grey or reddish-brown throughout. Soft with irregular fracture and slightly sandy feel. Very common (30%), poorly sorted, rounded to sub-angular quartz (up to 0.6 mm), and rare (1%), rounded to subrounded quartzite up to 0.8 mm. In a clay matrix containing sparse (5–7%), irregularly rounded voids up to 4mm, with occasional examples of subrounded, medium to coarse-grained sandstones, 1.0–3.5 mm, fine sandstone, 0.6 mm, and rounded, very fine, ferruginous sandstone, 0.3 mm. Thin section sample no. 11 (deposit 238077).

Quartzite group: 22 sherds; 157 g; 0.02 EVEs

QT *Quartzite-bearing:* Light brown surfaces and margin with grey core. Irregular fracture and harsh feel. This fabric was not sampled for thin-section study. The hand specimen contains sparse or common angular or sub-angular quartzite, up to 3 mm.

Mudstone: 80 sherds; 432 g; 0.18 EVEs

VMS *Vesicular mudstone:* Dark grey throughout or with mid-brown exterior surface. Soft with laminating fracture and soapy feel. This fabric was not sampled for thin-section study. In the hand specimen it is a soft 'soapy' fabric with laminated structure arising from common irregularly shaped voids.

VMSf *Fine vesicular mudstone*. Grey throughout. Soft, with fine, laminating fracture and soapy feel. Contains very common to abundant (30–40%), poorly sorted, irregularly shaped voids and loosely structured, disintegrating mudstones (1 mm or less), in a laminated clay matrix containing moderate (10%), sub-angular to subrounded quartz, (0.06 mm or less); the voids are former mudstones now disintegrated with some actively disintegrating mudstones becoming full voids. Thin-section samples 15 and 16 (deposit 238173 and 238190).

Argillaceous matter-rich: 3 sherds; 19 g; 0 EVEs

ARG Mid-brown surfaces with grey core. Soft with irregular fracture and rough feel. Contains common to very common (20–30%), rounded to sub-angular, iron-rich clay pellets, 1 mm or less, blending into mudstone texture inclusions occasionally up to 1.5 mm, with irregular shapes of ill-defined, loosely structured character in a micaceous clay matrix containing sparse to moderate (7–10%), sub-angular to subrounded quartz, 0.3 mm or less, and rare, rounded quartz up to 0.5 mm, in a micaceous clay matrix. Thin-section sample 12 (deposit 238052).

QTarg Quartzite-bearing, argillaceous matter-rich: Light brown surfaces and margin with grey core. Irregular fracture and harsh feel. Rough, blocky-textured, marly clay matrix comprising irregularly shaped, subangular to sub-rounded pieces of clay with often but not always jagged edges to the pieces, which may be rounded to angular in shape and range from high to low spher-icity, and sparse (7%), sub-angular, quartz 0.2 mm or less with the majority 0.1 mm or less, as well as rare to sparse (2–3%), angular to sub-angular pieces of quartzite, 1-3 mm across. Thin-section sample 17 (deposit 238051).

Organic: 3 sherds; 6 g; 0 EVEs

ORG *Organic:* Grey-brown throughout. Irregular fracture and slightly sandy feel. This fabric was not sampled for thin-section study. The hand specimen contains common to sparse linear voids from burnt-out organics and sparse sand-sized angular quartz.

Shell: 79 sherds; 418 g; 0 EVEs

SH *Fossil shell-tempered*. Grey-brown throughout or with light brown exterior surface. Soft with laminated fracture. Common to abundant (25–50%), poorly sorted, angular fragments of different fossil shells including bivalves, 4 mm or less, with clear recrystallization present indicating their true geological origin in a clay matrix with rare (1–2%), rounded quartz measuring from 0.3 mm to 0.01 mm. Thin-section samples 13 (deposit 238190) and 14 (deposit 238074).

Thin-section analysis – discussion

by E.L. Morris, with comment on the metasandstone and sandstone inclusions group by J. Carney

The Late Bronze Age/Early Iron Age and Middle Iron Age groups exhibit contrasting composition (Table 8.1), although analysis suggests the bulk of both are 'local'. Local procurement of resources for pottery production has been defined as normally up to 7 km for the clay and 10 km for tempering additives amongst sedentary, agricultural communities (Arnold 1985; Morris 1994; Morris and Woodward 2003, 289). Undoubtedly the presence of the River Trent would affect a strict interpretation of this model as it may have been a barrier to the procurement of clays for potting on its western bank and further to the west within this 7–10 km zone.

The metasandstone/sandstone fabrics group makes up 84.6% of the Middle Iron Age assemblage at Cropwell Wolds by count, but was absent from the (admittedly small) Late Bronze Age/Early Iron Age group. Analysis indicates it equates to *Assemblage C*, as defined for a wider study of late prehistoric pottery fabrics from the region (Knight *et al.* 2011). Knight's study recorded Assemblage C type fabrics from five sites in the East Midlands including at Holme Pierrepont, Notts (*ibid.*). The inclusion-types are from parent rock 'exotic' to this region, but are found in abundance as pebbles in strata of Carboniferous and Triassic age, and have been eroded from those strata to form a major component of modern floodplain alluvium and terrace deposits. Samples were fairly 'pure', suggesting that such lithologies were preferentially selected for crushing into temper. It is probable that this material was manually selected, perhaps from pebbly or sandy deposits in nearby floodplains such as the Trent. It is also, however, possible that some of these quartzose pebbles were collected from areas containing outcrops of glacial deposits.

Sandy fabrics are far less common at Cropwell Wolds compared to High Thorpe though the tradition appears to be widespread from the region. Argillaceous fabrics are interpreted as deriving from poorly wedged clays such as the Mercia Mudstone marl clays and are paralleled to an Iron Age pottery fabric identified at Fisherwick in Staffordshire located on the River Tame (*ibid.*, 129; Banks and Morris 1979, 51). Therefore, there is a tradition of local sandy, mudstone and marl clays being used during the later prehistoric period to make pots in this region.

There is only one fabric type, fabric SH (present across the Late Bronze Age/Early Iron Age and Middle Iron Age), which cannot have been made from resources available within this local area, as no suitable deposits of fossiliferous shell occur. The nearest locations for fossil shell-bearing deposits can be found in Jurassic deposits, starting with the Lias series and continuing as far as the Oxford Clay in Lincolnshire, from at least 15 km to 50 km eastwards respectively. Therefore, it would not be inappropriate to suggest that the vessels made from this fabric (represented as bodysherds only) had been brought to the site as traded commodities circulating within an exchange system, personal vessels moving to the Cropwell Wolds site through a marriage settlement, or as gifts. Sherds from a few vessels made from a similar shell-rich fabric were also identified at Gamston and recognised as most probably originating from Lincolnshire, based on the very distinctive, rouletted style of decoration which occurs on them (Knight 1992, 41–3).

Resource procurement

Sources for potting clays are difficult to identify and a number of possibilities exist based on local substrata. The sites at Cropwell Wolds and High Thorpe lie on mudstone and siltstone deposits of the Triassic Mercia Mudstone Group with thin beds of sandstones known as 'skerries' and Red and Green Marl in a local area up to 10 km; this area also includes glacial deposits such as the Lias-rich facies of the Oadby Till and Lower Lias deposits of Shaly Clay with thin limestones of Jurassic age (GSB Sheets 126 and 142; Edwards and Trotter 1954; Hains and Horton 1969; Lamplugh *et al.* 1908). An alluvial source from major floodplains, such as the Trent, is a further and logical possibility and is compatible with the evidence provided by the inclusions.

The two more likely parent sources for potting clays are the local Triassic Mercia Mudstone resources from the east of the River Trent, and the local silty alluvial clays. The vesicular mudstone and sandy groups of fabrics are consistent with the use of the former, containing as they do siltstones and sandstones and having a marl-textured structure. Alluvial clays are considered most likely for the sandstone/metasandstone group, particularly given that procurement of tempering material from this source seems likely. This is also likely based on petrographic comparisons made between Assemblage C samples and clay briquettes from local alluvial clays (Knight *et al.* 2011). This analysis found similarities both in the black opaque aggregates, and with the silt-sized inclusions which included quartz and, less commonly, alkali feldspar.

Establishing an immediately local source for fabrics is impossible using only ceramic petrology, although indications that this is the case come from comparisons between the broadly contemporary High Thorpe and Cropwell Wolds groups, sites that are located only 4.5 km apart. Assemblages of broadly the same date and decorative styles from two different sites with definably different fabrics would suggest that resource procurement was very local, with potters from the each community using different resource locations of the same widely dispersed geological deposit. The vesicular mudstone fabrics in particular emphasize that while the assemblages boast very similar fabric concepts, the sources for these may well be different enough for them to be considered as different fabrics within a fabric group.

Vessel forms

Dual-level recording of vessel form was undertaken for the Cropwell Wolds assemblage, which is compatible with systems developed for the late prehistoric period in the region (Knight 1984), and which records morphology of body profile and secondary element comprising rim or base form. As the result of fragmentation it was rarely possible to be fully certain of vessel profile.

Late Bronze Age/Early Iron Age

Few featured sherds were identified from features of this period (Table 8.2). A single tripartite carinated bowl (Fig. 8.8.1), comes from pit 238172. A rim sherd of distinctive in-curved form (Fig. 8.8.2) probably comes from a jar of (neckless) ovoid form.

Middle Iron Age

Vessels assigned to forms J1/J2 (below) exhibit 'slack' profile common to Middle Iron Age jars of barrel-shaped or ovoid profile known from the area and beyond. Vessels with more rounded/globular form (J3: Fig. 8.8.4, 10) occur less commonly (Table 8.2). Vessels of forms J1–J3 typically exhibit upright (Fig. 8.8.3, 5, 7, 10–12) or slightly everted necks (Fig. 8.8.6). Rims show little variation and are mainly simple/rounded. The rim of one larger vessel (Fig. 8.8.10) is unusually complex.

Seven vessel bases were recorded; three of simple form (B1) and four of expanded type (B2).

Sherd thickness was measurable for 900 sherds and ranges from 7 mm to 18 mm. The majority of sherds (733 sherds or 81%) are in the range 8–12 mm. Of the remainder, 110 sherds (12%) measure under 8 mm and

Table 8.2 Cropwell Wolds: prehistoric pottery, quantification by number of vessels and rim EVEs

Form>	*B1*		*J1*		*J2*		*J3*		*Total*	
Fabric	*No.V*	*EVEs*	*No.V*	*EVEs*	*No.V*	*EVEs*	*No.V*	*EVEs*	*No.V*	*EVEs*
Late Bronze Age/Early Iron Age										
VMSf	1	0.06	1	0.02	-	-	-	-	2	0.08
QZ	-	-	1	0.03	-	-	-	-	1	0.03
Middle Iron Age										
MS	-	-	11	1.30	3	0.14	4	0.45	18	1.89
MSv	-	-	1	0.05	-	-	-	-	1	0.05
QZ	-	-	4	0.20	-	-	-	-	4	0.20
QT	-	-	-	-	1	0.02	-	-	1	0.02
VMS	-	-	1	0.10	-	-	-	-	1	0.10

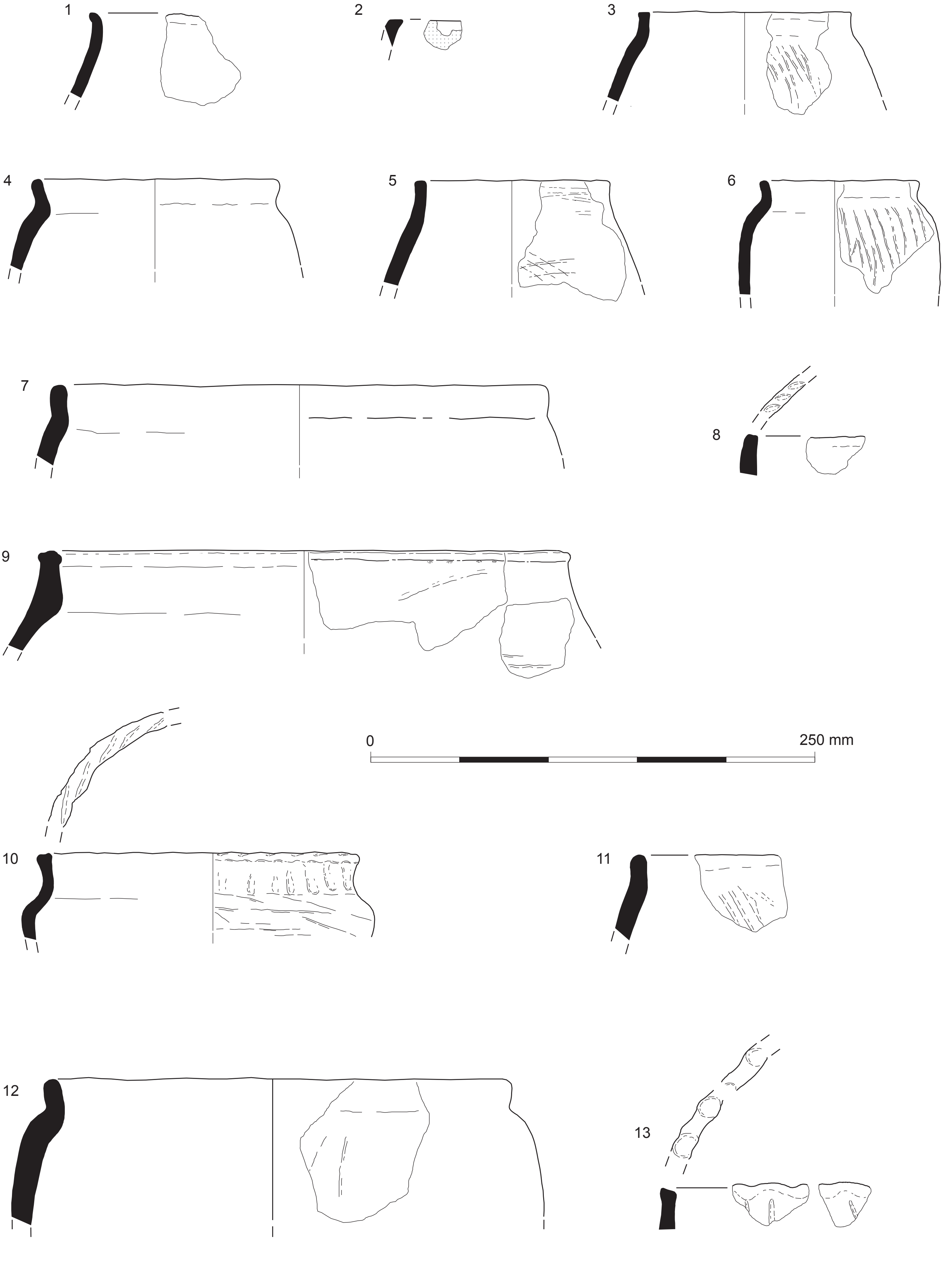


Fig. 8.8 Prehistoric pottery (1–13). See catalogue for descriptions

57 sherds (6%) are in excess of 12 mm. There are no discernible proportional differences relative to fabric group and thickness.

Form summary

Bowls

B1 Carinated (?tripartite). A single vessel (Fig. 8.8.1) belongs to this class which is characterised by angled body and upright neck.

Jars/probable jars

J1 Vessels with uncertain, barrel-shaped or ovoid profile. Typically with short upright (Fig. 8.8.3, 5, 6, 10–13) or slightly everted (Fig. 8.8.4) neck.

J2 Ovoid-profile vessels (jars). The recorded examples are neckless (Fig. 8.8.9).

J3 Vessels with round-shouldered or globular profile. With short, upright necks (Fig. 8.8.4, 7, 10).

Rims

S simple/rounded (Fig. 8.8.4–7, 11, 12)
COMP complex (Fig. 8.8.9)
EX expanded (Fig. 8.8.10, 13)
SQ squared/flattened rim (Fig. 8.8.8)
EI in-curved (Fig. 8.8.2)

Bases

B1 expanded/pushed-out
B2 simple

Decoration/surface treatment

Decoration was confined to the Middle Iron Age group and consists of scoring, recorded on 438 sherds or 38.2% of the total, and slashed or fingertip/fingernail ornament to the upper rim of three vessels (Fig. 8.8.8, 10, 13). Scoring was recorded on vessels of forms J1–J3 and occurs with most fabric groups including metasandstone/sandstone, sandy and shell-tempered. Most often it is moderately heavily incised in repeated strokes probably executed when the vessel was still wet and covering most of the area of the body below the neck. It is unidirectional, typically near to vertical (Fig. 8.8.3, 6, 11), but occurring more rarely as shallow horizontal arcs (Fig. 8.8.5).

Evidence for use

Indications of vessel use were recorded only sparsely, from as few as three vessels. A single vessel, represented by 15 sherds (Fig. 8.8.3), exhibited external sooting and two vessels (bodysherds in fabrics VMS and MSv), internal burnt food type residues.

Dating and comparisons

Late Bronze Age/Early Iron Age

Pottery from pits 238172 and 238189 amounts to only 73 sherds (238 g). The fabrics represented were distinct from those from the Middle Iron Age, most obviously in that the sandstone/metasandstone type is absent.

Indications of 'early' dating from these small context groups are from vessel forms; a carinated (possibly tripartite) bowl (Fig. 8.8.1) and an ovoid jar with in-curved rim (Fig. 8.8.2). Both would be consistent with forms equivalent to or deriving from the post-Deverel-Rimbury plainware style of the Late Bronze Age (Barrett 1980), with dating perhaps as early as 9th century BC. The groups are insufficient for closer dating, and it is unclear whether the succeeding phase represents a continuity, although this is possible. Material of Late Bronze Age and 'transitional' (Late Bronze Age/Early Iron Age) date was present, if sparsely, at Gamston (Knight 1992, 45–9), and plainware-derived and later decorated styles appear to be increasingly widely recognized across the region (Knight 2002, 124–31).

Middle Iron Age

The larger part of the assemblage is consistent stylistically with Middle Iron Age (Earlier La Tène) Scored ware assemblages from the region, represented for example among material from Gamston, 8 km to the west (Knight 1992). The tradition is also widespread across the East Midlands (Elsdon 1992; Knight 2002). Dating is in the range *c.* 400/350–50 BC or later, based on a number of absolute dates, for example from the site at Wanlip, Leicestershire (Marsden 1998), and the continuance of the style alongside wheel-thrown 'Belgic' pottery. Wheel-thrown pottery of this type was abundant at Gamston and its absence at Cropwell is an indication that activity may have ceased by the 1st century BC.

Attempts to define dating more closely based on degree and placement of decoration and fluctuations in fabric use have had some success, for example at Crick Covert Farm, Northamptonshire (Hancocks and Woodward forthcoming), although these cannot be applied across the region. Some refinement of this broad dating is possible based on radiocarbon determinations which support dating in the 4th to 3rd centuries BC (see Barclay and Stevens, below).

Dissimilarities across the Cropwell Wolds and High Thorpe fabrics have been remarked upon (Morris, Thin-section analysis – discussion above), this despite the proximity of the sites. A significant absence from the Cropwell group is of fuel ash-tempered fabrics of the kind seen both at High Thorpe and Gamston. Conversely, shelly fabrics, the only demonstrably non-local type from either site, were present only at Cropwell Wolds and Gamston. While the comments on the very localised nature of resource exploitation can account for the differences noted with the major fabric groups, it is considered that the differences in fabric group representation across the two sites are more fundamental and suggest that they are not closely contemporaneous, with the Cropwell Wolds group perhaps the earlier.

List of illustrated pottery (Fig. 8.8)

1 Form B1 with short everted neck/simple rim. Fabric VMSf. Context 238173, Late Bronze Age/Early Iron Age pit 238172.

2 Form J2 with in-curved rim. Fabric VMSf. Context 238190, Late Bronze Age/Early Iron Age pit 238189.

3 Form J1 with upright neck/expanded rim; vertical scoring. Fabric QZm. Context 238058, cut 238057, gully 238213, Middle Iron Age Roundhouse 1.

4 Form J3 with upright neck/simple rim. Fabric MS. Context 238060, Middle Iron Age pit 238059.
5 Form J1 with upright neck/simple rim; scoring as horizontal arcs. Fabric MS. Context 238060, Middle Iron Age pit 238059.
6 Form J1 with everted neck/simple rim; vertical scoring. Fabric MS. Context 238060, Middle Iron Age pit 238059.
7 Form J1? with expanded rim. Fabric MS. Context 238068, Middle Iron Age pit 238067.
8 Form J2? with expanded rim. Fingernail slashing to upper rim surface. Fabric QT. Context 238068, Middle Iron Age pit 238067.
9 Form J1 with upright neck/complex rim. Horizontal scoring? Fabric MS. Context 238094, Middle Iron Age pit 238092.
10 Form J3 with upright neck/expanded rim; fingernail slashing to upper rim surface; horizontal scoring. Fabric MS. Context 238120, cut 238119, gully 238210, Middle Iron Age Roundhouse 2.
11 Form J1 with upright neck/simple rim; vertical scoring. Fabric VMS. Context 238124, Middle Iron Age pit 238123.
12 Form J3 with upright neck/simple rim. Fabric MS. Context 238162, cut 238161, Middle Iron Age ditch recut 238212.
13 Form J1? with expanded rim. Fingertip impressions to upper surface of rim and vertical scoring. Fabric MS. Context 238192, cut 238191, gully 238211, Middle Iron Age Roundhouse 3.

Worked Stone

by Fiona Roe

There are three undated pieces of worked stone from this mainly Middle Iron Age site. A broken saddle quern of quartzitic sandstone (context 238002) may be earlier than the most of the dated finds, although it is not chronologically diagnostic. Saddle querns could simply be made out of large cobbles from local river gravels or boulder clay so may have been used where rotary querns were not available. A weathered slab of Lias with grooves from point sharpening (239190) could be of any date, and it would also fit into an Iron Age context. The third piece consists of a flat slab of quartzite with a worn surface (context 106802) and has been interpreted as a paving stone that might have been of use in a well trodden part of an Iron Age roundhouse.

Glass Bead

by John Shepherd

A single glass bead was recovered from pit 238214 (fill 238140). This is a colourless annular bead, decorated with a feathered yellow marvered trail (Fig. 8.9). Although the decorative technique used here can be seen in later, early Saxon, repertoires (for example, see Brugmann 2004, 79, figs 138–40), the context of this example is unequivocally pre-Romano-British in date, and the bead type can be paralleled within Guido's Class 11 ('Meare variant') beads of the Middle to Late Iron Age; type 11a beads, with multiple chevron lines in opaque yellow, are the commonest variety within this class. They cluster in the south-west around Somerset, although one example is known from Lincolnshire, and have a broad date range from *c.* 250 BC to the 1st century BC (Guido 1978, 81–2, 189–90, figs 30–1).

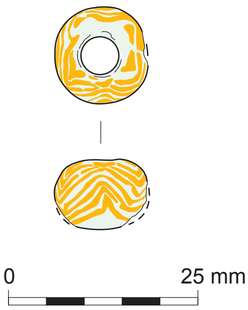


Fig. 8.9 Glass bead from pit 238214

Animal Bone

by L. Higbee

The assemblage of animal bone comprises 1804 fragments (3.639 kg). The majority of this material is from Middle Iron Age contexts, including ditches, roundhouse gullies, pits and postholes. Bone was also recovered from an isolated post-medieval pit (238007) and unphased posthole (238121). Once conjoins are taken into account the fragment count falls to just 675. The low rate of identification reflects the fragmentary state of the material and its generally poor preservation state.

Only 110 bone fragments (18% of the total) are identifiable to species and element, and most of these belong to cattle and sheep. These two species are present in near equal amounts and together account for 81% NISP. Both species are represented by a restricted suite of skeletal elements, typically the more robust and durable elements that generally survive well in most archaeological animal bone assemblages. These include loose teeth, phalanges and the distal ends of the long bones such as the humerus, radius and tibia. Tooth enamel is particularly resilient to deterioration in the burial environment, so it is unsurprising that isolated sheep and cattle teeth are particularly common, accounting for 62% and 40% of NISP per species. Tooth wear and fusion data for these two species is of limited interpretative value, and suggests little more than the presence of adult cattle and juvenile and adult sheep.

Other identified species include pig, horse, dog and deer. Little can be gleaned about the use or significance of these animals based on the available data. It is, however, worth mentioning that the single fragment of deer antler from pit 238067 is an off-cut from the beam and indicates that antler-working was undertaken on the site during this period.

Environmental Remains

Charred Plant Remains

by Chris J. Stevens

Six bulk soil samples were taken and processed for the recovery and assessment of charred plant remains. The samples were predominantly of Middle Iron Age date, coming from ditches, pits and a roundhouse gully. Remains of hulled wheats from four of these features provided dates of 390–200 cal BC (SUERC-39023, 2220±30 BP) from pit 238061; 370–110 cal BC (SUERC-39024, 2170±30 BP) from pit 238186; 400–200 cal BC (SUERC-39025, 2260±30 BP) from pit 238049; and 370–170 cal BC (SUERC-39026, 2190±30 BP) from ditch recut 238212 (cut 238075), all at 95% confidence (see Barclay and Stevens, below).

The assessment showed that material was fairly well preserved and relatively rich in most of the samples. On the basis of the assessment five samples of Middle Iron Age date were chosen for more detailed analysis: from pits 238049, 238061 and 238186, ditch recut 238212 and Roundhouse 3 gully 238211 (cut 238191). The samples were processed using standard methods (see Chapter 4), and the results for the five fully analysed samples are presented in Table 8.3.

Results

All five samples were dominated by glumes of hulled wheat which, where well preserved, were in most cases clearly identifiable as spelt wheat (*Triticum spelta*). Pit 230849 had possible chaff of emmer wheat (*Triticum dicoccum*), but none of these remains were well enough preserved for a positive identification to be made. Grains of barley (*Hordeum vulgare*) were identified in two of the samples and, although only a few grains were present, it might be noted that hulled wheat grains were also relatively scarce in these samples.

No other crops were recovered, but there were small fragments of fruit stones of probable sloe (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*). Such remains might be gathered for food from the wild, although given that these samples also contained thorns of sloe and/or hawthorn, they may represent hedging material possibly used as fuel or tinder. Also compatible with the collection and use of such material as fuel was the occurrence of a probable female catkins/cone of alder (*Alnus glutinosa*) and Rosaceae thorns, probably of dog-rose (*Rosa* sp.) or bramble (*Rubus* sp.).

The majority of the other charred plant material consisted of seeds of probable weed species, and included a mixture of large, intermediate and small-seeded species. The larger seeded species were represented by seeds of oats (*Avena* sp.) and/or brome grass (*Bromus* sp.), and vetch/wild pea (*Vicia*/*Lathyrus* sp.), along with occasional seeds of cleavers (*Galium aparine*), buttercup (*Ranunculus* sp.), black-bindweed (*Fallopia convolvulus*), knotgrass (*Polygonum aviculare*) and redshank/ pale persicaria (*Persicaria maculosa*/*lapathifolium*), hedge-parsley (*Torilis* sp.), thistle (*Carduus*/*Cirsium* sp.) and ribwort plantain (*Plantago lanceolata*). Of smaller-seeded species, seeds of fat-hen (*Chenopodium album*), clover (*Trifolium* sp.), red bartsia (*Odontites vernus*) and cat's-tails/meadow grass (*Phleum* sp./*Poa* sp.) were all quite common, along with occasional seeds of orache (*Atriplex* sp.) blinks (*Montia fontana* subsp. *chondrosperma*), parsley-piert (*Aphanes arvensis*) and scentless mayweed

Table 8.3 Cropwell Wolds: charred plant remains

	Feature type	*Pit*	*Pit*	*Pit*	*Ditch*	*RH 3 gully*
	Group				*238212*	*238211*
	Feature/cut	*238049*	*238061*	*238186*	*238075*	*238191*
	Context	*238051*	*238062*	*238188*	*238077*	*238192*
	Sample	*238002*	*238003*	*238005*	*238004*	*238006*
	Vol. (l)	*20*	*17*	*8*	*20*	*20*
Cereals						
Hordeum vulgare sl (grain)	barley	-	-	-	6	1
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	20	44	2	7	1
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	3	3	3	2	2
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	518	85	293	130	17
Triticum dicoccum (glume base)	emmer wheat	cf.3	-	-	-	-
T. dicoccum (spikelet fork)	emmer wheat	cf.2	-	-	-	-
Triticum spelta (glume bases)	spelt wheat	68	3	3	5	2
Triticum spelta. (spikelet fork)	spelt wheat	1	-	1	-	-
Cereal indet. (grains)	cereal	11	25	4	18	8
Cereal indet. (est. whole grains from frags.)	cereal	3	9	5	5	-
Cereal indet. (basal rachis fragment)	cereal	-	-	-	-	1

Table 8.3 (cont.) Cropwell Wolds: charred plant remains

	Feature type	Pit	Pit	Pit	Ditch	RH 3 gully
	Group				238212	238211
	Feature/cut	238049	238061	238186	238075	238191
	Context	238051	238062	238188	238077	238192
	Sample	238002	238003	238005	238004	238006
	Vol. (l)	20	17	8	20	20
Other species						
Ranunculus subg. *Ranunculus* (arb)	buttercup	-	-	1	-	-
Alnus glutinosa (female catkins/cones)	female catkins/cones	-	cf.1	-	-	-
Chenopodium album	fat-hen	10	2	-	15	-
Atriplex sp.	orache	-	-	-	4	-
Montia fontana subsp. *chondrosperma*	blinks	2	-	-	1	-
Persicaria maculosa/lapathifolium	redshank/pale persicaria	-	-	1	-	-
Polygonum/Persicaria	knotgrass/persicaria	-	-	1	-	-
Polygonum aviculare	knotgrass	-	-	1	-	-
Fallopia convolvulus	black-bindweed		1	-	2	1
Rumex sp.	dock	12	3	11	4	1
Rosaceae thorns	bramble/rose type thorns	-	-	-	2	-
Potentilla sp.	cinquefoil/tormentil	2	1	-	1	-
Potentilla /Fragaria sp.	cinquefoil/strawberry	1	-	-	1	-
Aphanes arvensis	parsley-piert	2	-	-	-	-
Prunus spinosa	sloe	-	1f.	-	1f.	-
Prunus spinosa/ C. monogyna/ (thorns)	hawthorn/sloe thorns	5	6	3	4	2
Crataegus monogyna (fruit stones)	hawthorn berries	-	-	-	cf.1	-
Vicia/Lathyrus sp.	vetch/pea	-	12	-	2	-
Trifolium sp.	clover	12	1	2	4	-
Apium sp.	celery/water-cress	-	-	-	cf.1	-
Torilis sp.	hedge-parsley	-	2	-	-	-
Plantago lanceolata	ribwort plantain	-	1	cf.1	-	-
Odontites vernus	red bartsia	4	29	4	1	-
Galium palustre	marsh bedstraw	cf.1	-	-	1	-
Galium aparine	cleavers	-	3	-	4	-
Asteraceae indet. (small)	daisy family indet.	3	1	4	1	-
Tripleurospermum inodorum.	scentless mayweed	2	-	2	-	-
Carduus/Cirsium sp.	thistle	-	1	-	-	-
Poaceae (culm node)	grass culm node	9	2	-	1	-
Poaceae (basal culm node/rootlet)	grass rootlets	2	-	-	1	-
Lolium L./*Festuca* sp.	rye-/fescue grass	13	7	4	-	-
Arrhenatherum elatius var. *bulbosum*	false oat-grass	1	-	-	cf.1f.	-
Avena sp. L. (grain)	oat grain	2	-	5	2	-
Avena sp. L. (floret base wild)	wild oat floret base	-	-	-	cf.1	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	3	4	1
Avena L./*Bromus* L. sp.	oat/brome	22	8	6	4	3
Bromus sp. L.	brome grass	-	-	-	-	1
Poaceae (small indet.)	small grass seed	-	2	1	1	-
Poa/Phleum sp.	meadow grass/cat's-tails	16	2	3	3	1
Avena sp. L. (awn)	oat awn	6	2	-	6	-
Small indet.		4	-	-	-	-

(*Tripleurospermum inodorum*). Of intermediate-sized species, seeds of dock (*Rumex* sp.) were quite frequent as were those of rye-grass (*Lolium* sp.) and/or fescue (*Festuca* sp.).

Discussion

The assemblages can be directly related to agricultural activity in a rural farmstead dated by radiocarbon to the 4th to 3rd centuries BC. The main crop grown appears to have been spelt wheat, along with some barley, while emmer wheat seems to have been only a minor component. On a national level the dominance of spelt and absence of emmer is similar to that seen on many Middle Iron Age sites to the south; for example, Crick in Northamptonshire (Monckton 2000), in the Upper Thames Valley and Wessex (Robinson and Wilson 1987; Stevens 2003). However, in contrast, sites to the south-west along the M6 Toll Road in Warwickshire and Staffordshire were dominated by emmer (Stevens 2008a), while for many sites in East Anglia emmer formed a significant proportion of the Middle Iron Age assemblages without dominating them (Stevens 2008b).

Glume bases are predominant within the charred plant remains. These assemblages are typical of the waste produced when spelt wheat stored in the spikelet was taken from storage and processed for clean grain (cf. Stevens 2003). In several of the samples small weed seeds dominate over both grain and larger weed seeds, which might suggest that crops were stored in a less clean state (cf. Fuller and Stevens 2009). As no culm nodes were recovered, it is possible that crops were stored as sheaves. The high number of seeds of low-growing species, in particular clover, suggests that crops were harvested, most probably by sickle, very close to ground level, as is commonly inferred on sites of this date.

The weed assemblage itself is fairly typical for the period and, apart from occasional seeds of blinks which suggest that some wetter fields might have been under cultivation, the assemblages are ecologically indistinct.

Radiocarbon Dating

by Alistair J. Barclay and Chris J. Stevens

Five dates (SUERC-39023–27) were obtained for features considered to form part of the Middle Iron Age settlement. Methodology covering the presentation of the results and calibration is given in Chapter 7, Stragglethorpe Round Barrow. The aims of the dating programme were:

- to provide a precise date for the start and end of the settlement, and to give an indication of its probable duration;
- to demonstrate that some of the pits and the ditches belonged to the same phase of activity;
- to provide precise dates for cereal remains associated with the settlement, including features that are grain-rich but of uncertain date (eg, pits 238049 and 238061).

Unfortunately, none of the associated roundhouse gullies, minor ditches or intercutting pits produced sample material suitable for radiocarbon dating.

Three dates on charred cereal grain (SUERC-39023-5: see details in Table 8.4) were obtained for pits 238061, 238186 and 238049. Only one of these pits (238049) contained Middle Iron Age pottery (see McSloy, above). Statistically similar results were obtained for these samples. All three pit deposits are likely to have been made in either the 4th or 3rd century cal BC (Fig. 8.10).

The settlement was directly associated with the large linear ditch 238207 and its later recut 238212. Two dates were obtained on material from the ditch: one on a cattle radius (SUERC-39027) from the original cut and the other on charred grain (SUERC-39026) from the recut (Table 8.4).

The model presented in Fig. 8.10 has good overall agreement (92.3%). The construction of the settlement (*First Build Settlement*) has been modelled as *390–220 cal BC (95% probability) probably 380–280 cal BC (68.2% probability)*. On this basis it is possible that the

Table 8.4 Cropwell Wolds: radiocarbon determinations

Lab. code	*Feature cut (context)*	*Material identification*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Calibrated date range (95% confidence)*	Posterior density estimate (95%) probability
SUERC-39023	pit 238061 (238062)	Charred hulled wheat grain	2220±30	-22.4	390–200 cal BC	*370–200 cal BC*
SUERC-39024	pit 238186 (238188)	Charred spelt glume bases x12	2170±30	-24.3	370–110 cal BC	*360–280 cal BC (57.6%)* *270–180 cal BC (37.8%)*
SUERC-39025	pit 238049 (238051)	Charred cf. hulled wheat grain	2260±30	-21.9	400–200 cal BC	*390–340 cal BC (22.1%)* *330–200 cal BC (73.3%)*
SUERC-39026	ditch recut 238212 cut 238075 (238077)	Charred hulled wheat grain	2190±30	-23.7	370–170 cal BC	*360–190 cal BC*
SUERC-39027	ditch 238207 cut 238079 (238080)	Cattle radius	2205±30	-21.7	380–190 cal BC	*370–210 cal BC*

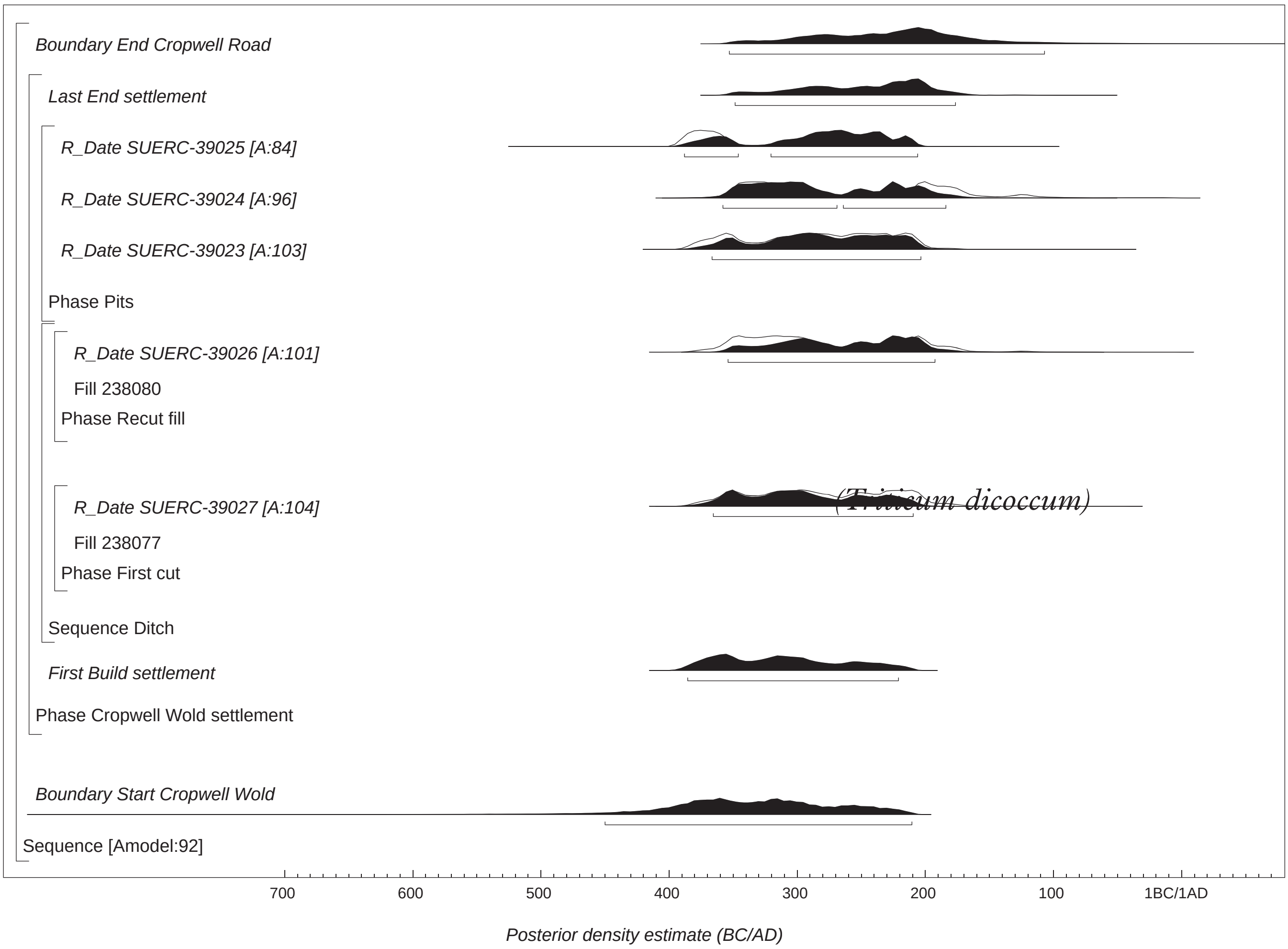


Fig. 8.10 Probability distributions (posterior density estimates at 95% probability) of radiocarbon dates and selected parameters (eg, Last and First) for Cropwell Wolds. The square brackets and the OxCal keywords define the model's structure

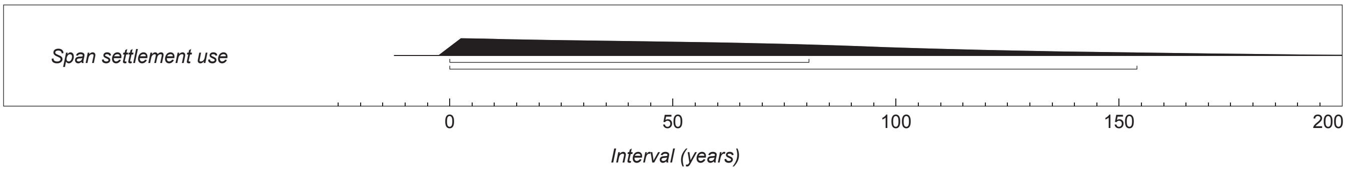


Fig. 8.11 The span (interval in years) of settlement use derived from the model shown in Fig. 8.10. The brackets denote 68% and 95% probability

settlement was constructed within the 4th century BC. Using the model it is also possible to estimate the likely span of activity or use of the settlement (Fig. 8.11: *Span Settlement use*). This could have been up to *80 years (68% probability) or much longer 160 years (95% probability)*, which could equate to up to three or six generations. The settlement could have gone out of use (Fig. 8.10: *Last End Settlement*) at some point between *360–180 cal BC (95% probability) probably 260–190 cal BC (51.3% probability) or 300–270 cal BC (16.9% probability)*. On this basis it is possible that the settlement went out of use in the later part of the 3rd century BC.

Summary

There was activity on the site perhaps as early as 800 BC, to judge by the small quantity of Late Bronze Age/Early Iron Age pottery from two small pits. This preceded the clearer evidence for a Middle Iron Age settlement, which, on the basis of the pottery and five radiocarbon dates, does not appear to have been occupied before *c.* 400 BC. There therefore does not appear to have been a continuous Iron Age occupation here. The Middle Iron Age activity commenced with a substantial recut boundary ditch and associated bank on a NE–SW alignment whose overall extent was not recoverable within the excavation area. A small number of stratigraphically early features predated the first phase of ditch, but the arrangement of three circular or partly circular buildings with associated pits and other small features was laid out with respect to the boundary and a slightly later NW/SE division, which suggest that the settlement was located in the corner of a field. The spatial relationship between the terminal of the boundary ditch recut and the shallow ditch forming the south-western boundary of the settlement, along with the quantities of domestic refuse recovered from the fills of the recut, would seem to indicate that these ditches were broadly contemporary with the settlement.

The settlement itself was small and all three roundhouses were probably in contemporaneous use, or at least built with reference to each other. All appear to have had entrances facing east or south-east, and the only apparent differentiation between them lies in their size. The largest (Roundhouse 3) probably represents the primary domestic building, while Roundhouse 1, to the west of the other two and close to the corner formed by the ditches, may have been a less important, probably ancillary, building.

By and large, the finds assemblage indicates a relatively modest settlement. The pottery from it is dominated by Middle Iron Age Scored wares, in a typical assemblage of domestic forms. These appear to be made from a very local clay source, and the fabrics differ sufficiently from the assemblage at High Thorpe such that the two may not have been contemporary. Small quantities of shell-tempered wares are also present, which were not made with local clays, and may indicate access to wider networks of trade and exchange. Only the glass bead, a much more exotic find, is suggestive of higher status, being not closely paralleled locally and also indicating wider exchange links.

Unlike the settlement at High Thorpe, it was possible to date activity within the settlement scientifically. The pottery indicates a date between the 4th and 1st centuries BC, whilst the glass bead suggests a date between the mid-3rd and the 1st century BC. Four radiocarbon dates were obtained from charred plant remains, while a fifth came from a cattle bone within a primary ditch fill. While the dated material may not encompass the entire chronology of the occupation, modelling of these dates (see Barclay and Stevens, above) suggests that the settlement and both phases of ditch are likely to be broadly contemporary and that the settlement is likely to have been established during the 4th century BC and abandoned in the late 3rd or early 2nd century BC.

There is some evidence for the agricultural economy of the settlement. Debris for crop processing was recovered from several features, including a roundhouse gully, the recut of the large boundary ditch and a number of pits, some of which are large enough to have acted as grain stores. From these it seems clear that spelt wheat was being processed on the site; a fragment of a probable saddle quern was also recovered. The presence of sloe and hawthorn stones might indicate the gathering of wild foods. Unfortunately poor preservation has limited what can be said about the animal bone assemblage, which was dominated by sheep/goat and cattle, with smaller quantities of pig, horse and dog. It seems likely that the inhabitants of the settlement practised a mixed agricultural economy.

Chapter 9
Other Sites

Nicholas Cooke

A number of other sites were identified during the evaluation and subsequently targeted for smaller detailed excavations. These comprise sites at Thorpe, Moor Lane, Flintham, Cropwell and Owthorpe Wolds (Fig. 1.2). While these revealed fewer archaeological remains, they still shed light on the wider context of the larger excavation sites and the area of the scheme in general. They are described from north to south.

Thorpe Prehistoric Pits

by Nicholas Cooke

Introduction

The archaeological works towards the northern end of the scheme, around Thorpe, comprised ten evaluation trenches, 21 Strip, Map and Sample linear excavations, and one targeted Strip, Map and Sample area excavation focused on a feature exposed in SM2034 (Fig. 9.1). A watching brief was carried out during machine-stripping of the road corridor within the southern half of the site.

This group of interventions lay relatively close to the Roman town of *Ad Pontem* and the site of a possible Bronze Age barrow at Mill Field (Fig. 9.1). They took place on a gently undulating area of river terrace, at *c.* 13 m aOD, which at the time of excavation was used predominantly as arable farmland. The underlying solid geology comprises Triassic rocks (Mercia Mudstone) overlain by glacial till deposits and in places alluvium.

Results

Very few archaeological features were recorded, although some evidence was found for prehistoric activity, along with a number of probable field boundary ditches ranging in date from Romano-British to modern.

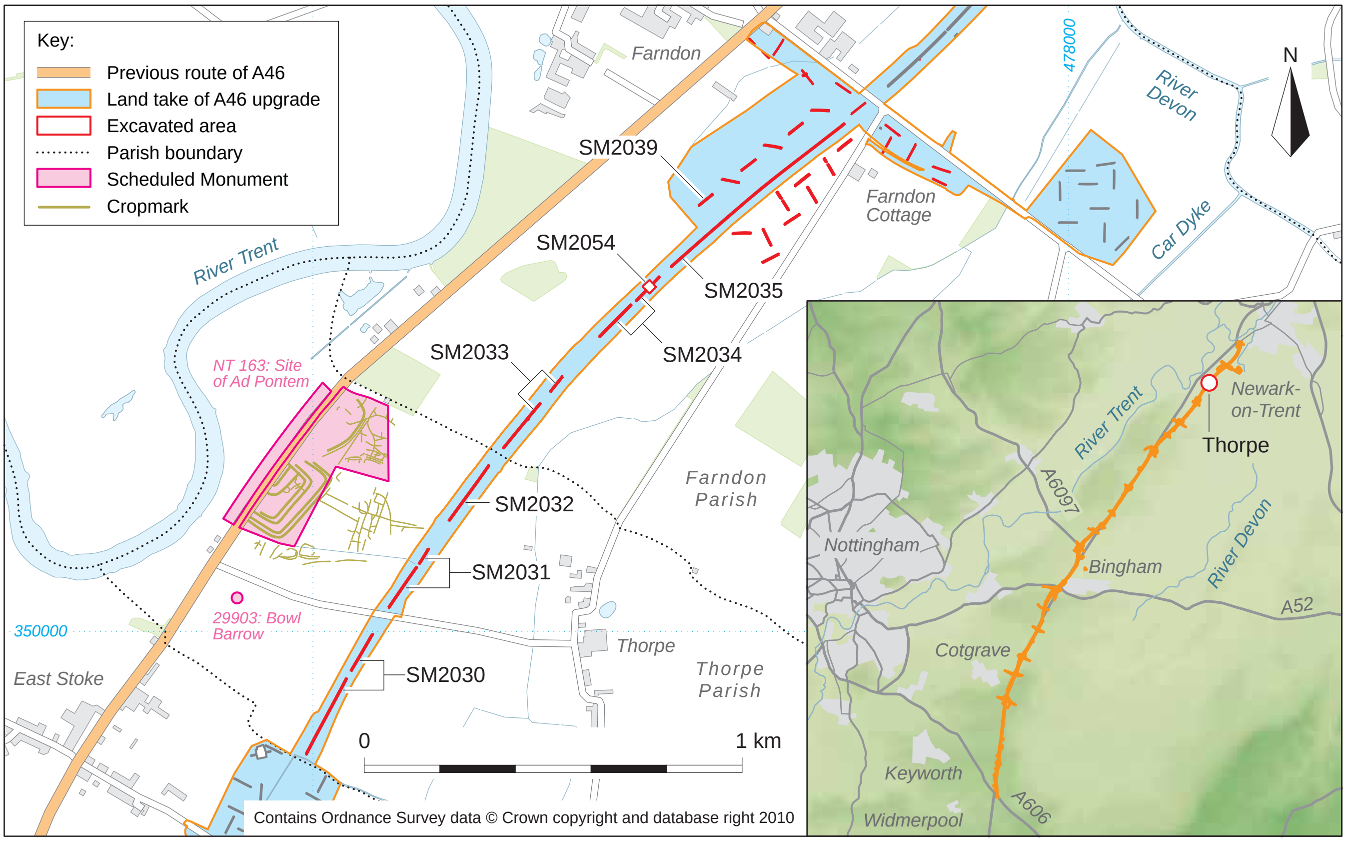


Fig. 9.1 The location of the excavations at Thorpe

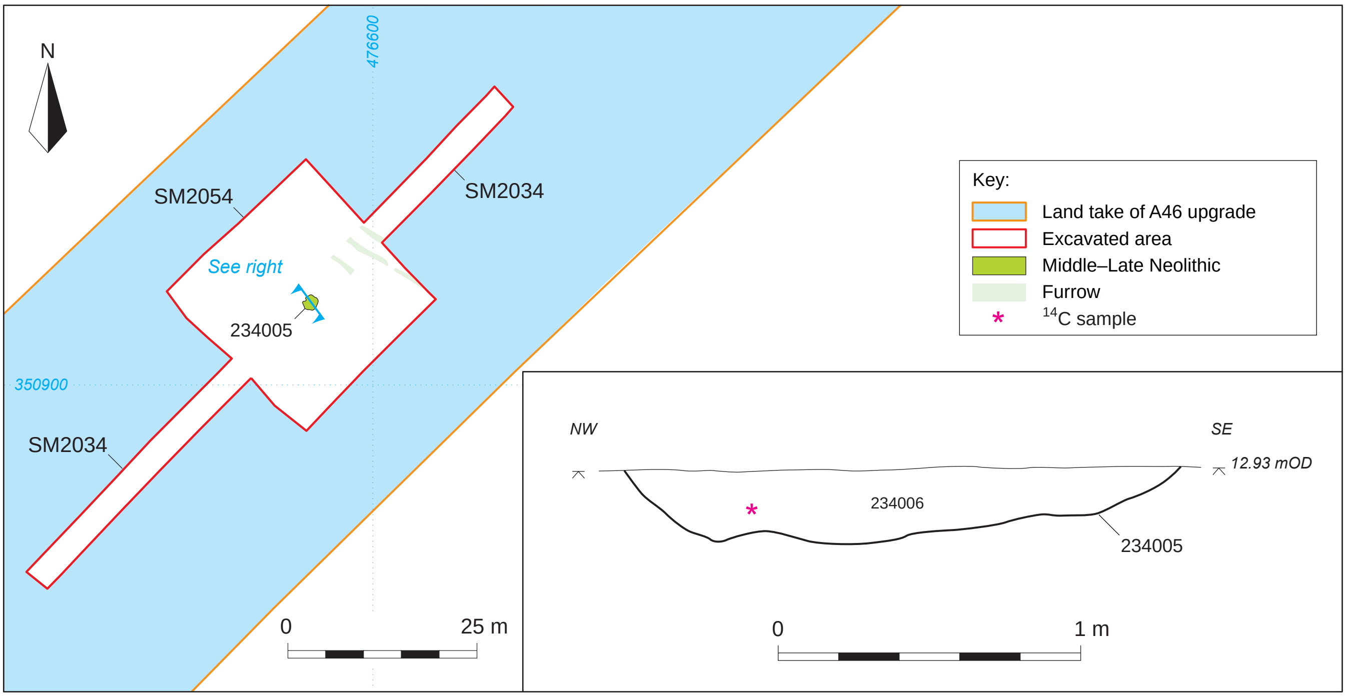


Fig. 9.2 Thorpe, Middle–Late Neolithic tree-throw hole 234005, plan and section

Middle–Late Neolithic

The only evidence for Neolithic activity was a tree-throw hole (234005), initially exposed in SM2034 and excavated in SM2054 (Fig. 9.2), the single fill of which yielded flint debitage (nine flakes and a blade) and sherds of Middle Neolithic Peterborough Ware and Late Neolithic Grooved Ware (see Leivers below). A radiocarbon date was obtained from carbonised material adhering to a sherd of Grooved Ware, returning a date of 2870–2580 cal BC (at 95% confidence) (SUERC-39055; 4125±30 BP) (see Table 9.2).

Environmental samples contained small quantities of fragmentary hazelnut shells, a few pieces of oat/brome grass, and fragments of oak and hazel charcoal that had been burnt to a high temperature, the mixed species suggesting that it may have been derived from a hearth burning locally gathered wood. Hazelnut shells are common finds in Neolithic features, and indicate the role of gathered wild foods in the Neolithic diet. A fragment of hazelnut shell returned a radiocarbon date of 2870–2570 cal BC (at 95% confidence) (4115±30 BP; SUERC-39056) (see Table 9.2).

Small quantities of worked flint were also recovered unstratified from the site, including an edge flaked knife on an axe thinning flake, blade and flake cores, flakes, a bladelet and debitage. However, no concentrations of this material were noted, suggesting only low-level activity in prehistory.

Late Bronze Age/Early Iron Age

A pit (231008), sub-rectangular in plan, with rounded corners, shallow sides and a flat base, was partially exposed in SM2031, cutting a small unphased east–west gully (231010) which may be of a similar date (Fig. 9.3). The pit had been deliberately backfilled with a series of dumped deposits, from which sherds of post-Deverel-Rimbury pottery and a single flint flake core were recovered. Some 30 sherds from at least two flint-tempered vessels (both probably carinated bowls) were present, apparently made from locally sourced raw materials. They cannot be dated closer than the Late Bronze Age/Early Iron Age transition, spanning the 10th–8th/7th centuries BC (see McSloy, below).

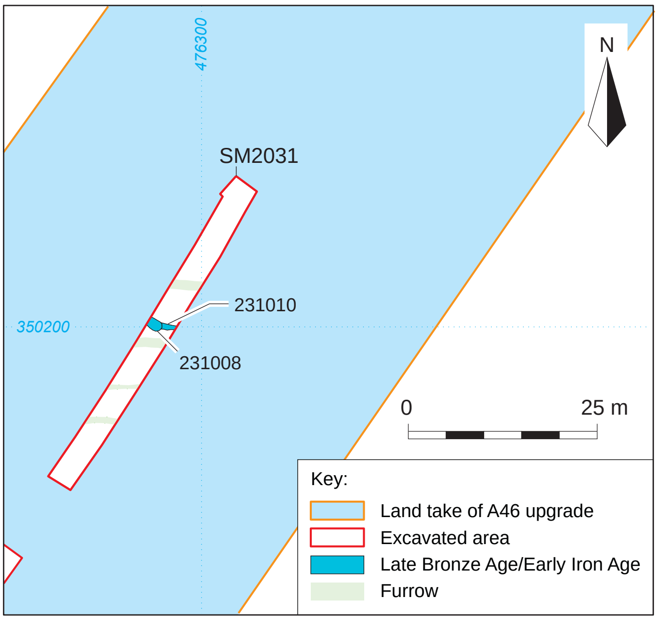


Fig. 9.3 Thorpe, Late Bronze Age/Early Iron Age pit 231008, plan

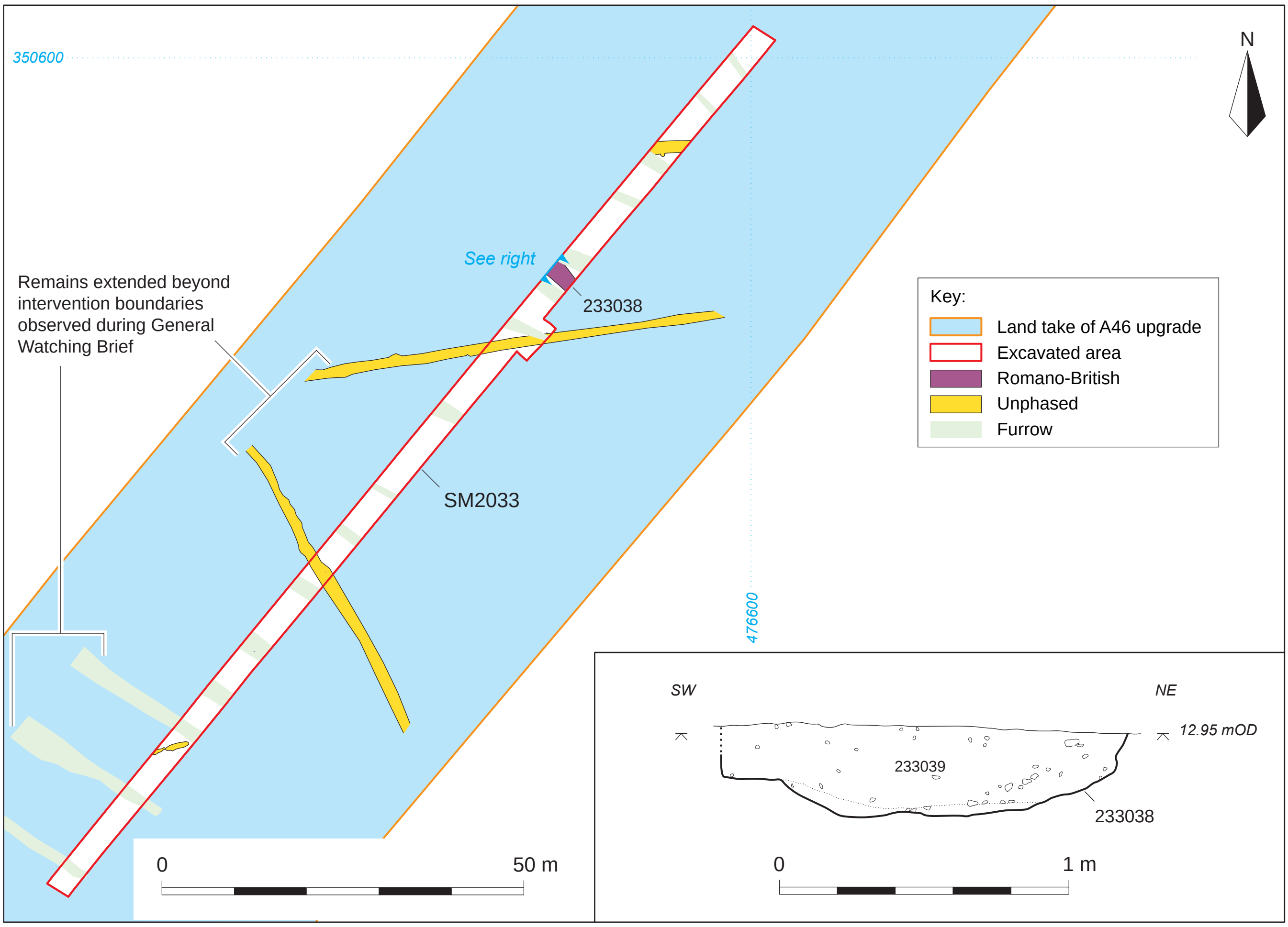


Fig. 9.4 Thorpe, Romano-British ditch 233038 and unphased ditches

Romano-British

Despite the presence of the Roman town of *Ad Pontem* some 400 m to the west of the site, there was very little evidence for Romano-British activity, although a few ditches were probably Romano-British agricultural boundaries. In SM2033, ditch 233038, aligned north-west–south-east, had steep sides and a concave base, and produced sherds of early Romano-British pottery and pieces of undiagnostic iron slag from its single fill (Fig. 9.4). Further north-east, near Farndon, Romano-British pottery was also recovered from a probable ditch terminal (239004), similarly aligned, in SM2039 (Fig. 9.1).

Medieval, post-medieval and modern

Widespread evidence for ridge and furrow agriculture was recorded on the site, the furrows in the northern part being aligned north-east to south-west (eg, Fig. 9.4), while those further south in SM2031 were aligned east–west (Fig. 9.3). Finds from the furrows included Roman, medieval and post-medieval pottery.

Post-medieval and modern ditches were excavated in SM2031, SM2032 and SM2035, whilst a post-medieval water channel and relict ponds were recorded in SM2035 and SM2031 respectively.

Undated

A number of the features could not be dated closely, including a small hearth and associated pit in SM2030, and a gully and pit in SM2032. There were also several ditches recorded in SM2033–2035 during the watching brief, those in SM2033 pre-dating the furrows and on different alignments to them (Fig. 9.4).

Finds

Early prehistoric pottery

by Matt Leivers

Sixty-eight sherds of Middle and Late Neolithic pottery, weighing 368 g, were recovered from tree-throw hole 234005 (SM2054), of which five are Peterborough Ware and 63 are Grooved Ware. Given the relative proportions of the different types present, the nature of the feature, and the unlikeliness of the two being contemporary, it seems most likely that the Peterborough Ware is redeposited and represents an otherwise unattested episode of earlier activity in the vicinity.

Peterborough Ware

The five small flint-tempered Peterborough Ware sherds

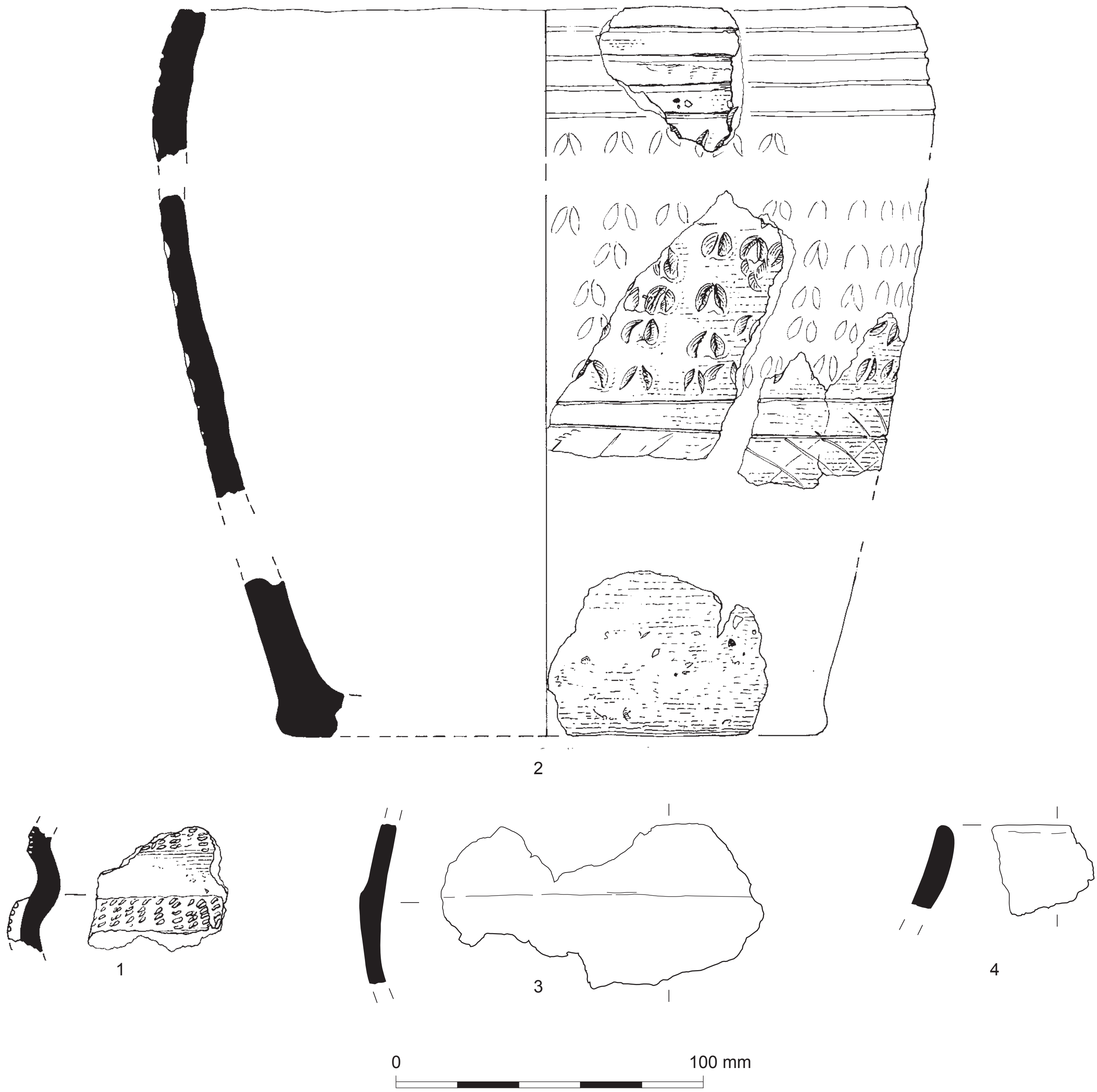


Fig. 9.5 Thorpe, prehistoric pottery: Neolithic (1–2), Late Bronze Age (3–4). See catalogue for descriptions

include one from a vessel with a deep cavetto (Fig. 9.5.1). Below the cavetto an applied horizontal cordon is decorated with closely spaced vertical whipped cord maggots. There are at least two horizontal rows of impressed decoration along the cavetto's upper edge (the decoration is too fragmentary to discern either the pattern or means of its creation, although it is possible that the apparently horizontal rows are in fact the lower portions of more vertical whipped cord maggots). The remaining sherds are featureless.

Grooved Ware

The 63 Grooved Ware sherds all derive from a single Durrington Walls-type vessel (Fig. 9.5.2). The top of the rim is decorated with a single horizontal line incised around the circumference. Below the rim on the outside are a further four deeply incised horizontal lines. Below this is a zone filled with five rather irregular rows of finger pinching bounded at the bottom by two much more lightly incised and markedly off-parallel broadly horizontal lines. The lower of these lines is crossed in places by similarly lightly incised diagonal lines. Below this the wall appears to be plain down to the base, which has a protruding foot.

Carbonised residue from inside the base/wall angle returned a radiocarbon date of 2870–2580 cal BC (at 95% confidence)(SUERC-39055, 4125±30 BP; see Table 9.2), which is comparable to dates on Grooved Ware from southern England (Garwood 1999, 174–6).

No Grooved Ware is recorded from Nottinghamshire in either of the published national gazetteers (Longworth 1971; Longworth and Cleal 1999). Manby has a single entry, from Creswell Crags (1999). The vessel from Thorpe has certain similarities in decoration to one from Burton Agnes, Yorkshire (Manby 1999, 65, fig. 1), particularly the horizontally arranged zones and band of finger pinching.

Fabric descriptions

F1 Quartz sand matrix; moderate medium and very coarse poorly sorted crushed flint.
F2 Micaceous quartz sand matrix; moderate fine and medium well-sorted crushed flint.
G4 Very slightly micaceous matrix; common medium and coarse subrounded grog pellets.

Catalogue of illustrated sherds (Fig. 9.5)

1 Peterborough Ware: one sherd from cavetto. Vertical rows of whipped cord below, possible rows above. Context 234021, tree-throw hole 234005, SM2054.
2 Grooved Ware: rim with a single horizontal line on top and four below. Five rows of finger pinching with two incised lines below. Lower lines crossed by diagonal lines. Protruding foot. Context 234021, tree-throw hole 234005, SM2054.

Late prehistoric pottery

by E.R. McSloy (with fabric analysis by E.L. Morris)

Pit 231008 (SM2031) produced pottery of Late Bronze Age to Early Iron Age date. A total of 30 sherds (219 g) was recovered from two fills (231005 and 231006), and at least two vessels appear to be represented, both occurring in a quartzite-tempered fabric, described below. Joining bodysherds from fill 231006 are from a bowl with carinated profile (Fig. 9.5.3). It is thin-walled (4–5 mm) and well made, with smoothed surfaces. A thin, carbonised internal residue suggests its use for cooking. A rim sherd from a second, slightly thicker vessel (7 mm) may also be from a carinated bowl, possibly of bipartite profile (Fig. 9.5, 4).

Although it is difficult to be certain from the fragmentary vessels represented, the carinated forms are most characteristic of the post-Deverel-Rimbury plainware tradition, or from a succeeding style extending into the Late Bronze Age to Early Iron Age transition. Dating, therefore, most likely spans the 10th to 8th/7th centuries BC. Though more often associated with southern British assemblages, the traditions are also known from the East Midlands (Knight 2002, 124–6).

The fabric sample from Thorpe is distinct from the other late prehistoric samples recorded from the scheme, due to the addition of large quartzite fragments. The sandy clay matrix appears to be local. The quartzite could have been selected; sizeable rocks could have been collected from the River Trent gravels and then crushed and added to the clay as temper. Quartzite-tempered fabrics are a feature of Late Bronze Age assemblages to the south, including groups from Oxfordshire (Barclay 2001, 127–39; McSloy 2012), although local parallels are not known.

Fabric description

QT *Macroscopic description:* a moderate number of large, angular, opaque, white quartzite fragments in a slightly sandy clay matrix with an iron-stained appearance.
Microscopic description: moderate (10–15%), angular, poorly sorted quartzite, $\leq$ 5 mm, in a clay matrix containing sparse to moderate (7–10%), angular to subrounded/rounded, quartz, < 0.5 mm, and a single piece of sub-angular to subrounded, medium-grained sandstone, 3 mm across; all grains of angular quartzite and cracks in the clay matrix are surrounded or filled in with ferrous staining due to post-depositional processes.

Catalogue of illustrated sherds (Fig. 9.5)

3 Carinated bowl. Fabric QT. Context 231006, pit 231008, SM2031.
4 Carinated bowl (bipartite form?). Fabric QT. Context 231006, pit 231008, SM2031.

Worked stone

by Fiona Roe

Two small fragments of Kimmeridge shale (ONs 233012 and 233014) were retrieved in poor condition, one from a plough furrow, the other from an undated ditch (233004) in SM2033, although it is likely that they relate to Romano-British activity. A small amount of convex curvature can be made out on each external surface, suggesting that each piece might come from a shallow vessel. Kimmeridge shale is common generally on Romano-British sites, especially in southern Britain, though it is also found north of the Wash (Denford 2000), with a great variety of artefact forms, so that an occurrence on the Fosse Way in Nottinghamshire would be of no surprise.

Environmental Remains

Charred plant remains

by Chris J. Stevens

Introduction
A single sample was taken from the fill (234006) of tree-throw hole 234005, and processed for the recovery and assessment of charred plant remains. It was assigned to the Late Neolithic on the basis of radiocarbon dates of 2870–2570 cal BC (at 95% confidence)(SUERC-39056; 4115±30 BP) on charred hazelnut shell (*Corylus avellana*), and 2870–2580 cal BC (at 95% confidence) (SUERC-39055; 4115±30 BP) on charred residues on Grooved Ware pottery. The bulk sample was processed using standard methods (see Chapter 4), and the results for the fully analysed sample are presented in Table 9.1.

While the sample comprised predominantly wood charcoal (Barnett, in archive) it also contained several fragments of hazelnut shell, along with a few rootlets of probable grasses (Poaceae) and possibly heather (*Calluna* type). A few grains of free threshing wheat (*Triticum*

Table 9.1 Thorpe: charred plant remains from later Neolithic feature 234005

	Feature type	*Tree-throw hole*
	Feature	*234005*
	Context	*234006*
	Sample	*1*
	Vol. (l)	*35*
Cereals		
Triticum turgidum/ aestivum L. *sl* (grain)	bread wheat	3
Cereal indet. (grains)	cereal	4
Cereal indet. (est. whole grains from frags)	cereal	3
Other species		
Corylus avellana L. (frags)	hazel	13
Ericaceae (type rootlets)	heather	cf. 2+
Vicia L./*Lathyrus* sp. L.	vetch/pea	1
Poaceae (rootlets)	grass culm node	4
Parenchyma indet.		3 frags

turgidum/aestivum type) were also recovered, along with a single seed of vetch/wild pea (*Vicia/Lathyrus* sp.).

The remains of hazelnut are in general keeping with the exploitation of wild foods in the Late Neolithic (Moffet *et al.* 1989). The few grains of free-threshing wheat recorded are probably intrusive, as the site was overlain by medieval and post-medieval ridge and furrow. The rootlets of grass and heather might also be intrusive from the burning of overlying vegetation, and although it may have been used as fuel no such remains were identified in the wood charcoal assemblage, which comprised mostly oak (*Quercus* sp.) with a small quantity of hazel. The wood was mature, or too fragmentary to identify as mature or juvenile. The presence of two taxa indicates that the charcoal was not exclusively the remains of the cleared tree and may rather have been locally collected fuel (Barnett, in archive).

Radiocarbon Dating

by Alistair J. Barclay and Chris J. Stevens

Very little Grooved Ware is known from the surrounding area in comparison to the adjacent regions (see Longworth and Cleal 1999 and see gazetteer map, 178). Southern British Grooved Ware is generally thought to have been in use for about 500 years from the early 29th century BC until the start of the 24th century BC (see Barclay and Marshall 2011). The small assemblage from Thorpe (see Leivers, above) provided an opportunity to obtain a direct date for a Grooved Ware vessel and a Grooved Ware associated deposit.

Two dates were obtained (Table 9.2), one on charred cooking residue from the interior of vessel Fig. 9.5.2 (SUERC-39055), and another on a fragment of charred hazelnut shell (SUERC-39056), part of a deposit of refuse associated with the pit (methodology covering the presentation of the results and calibration is given in Chapter 7, Stragglethorpe Round Barrow). The latter date was obtained partly as a check on the residue date as such measurements can occasionally be problematic (too old). It can be noted that both measurements are statistically consistent (T'=0.1; v=1; T'(5%)= 3.8) and therefore are likely to be of a similar age. It is assumed that the interval between the accumulation of refuse (the pottery and charred plant material) and its deposition within the pit was relatively short (less than a year). On this basis a date of *2860–2640 cal BC (68%)* or *2880–2610 cal BC (95% probability)* can be estimated for the deposit within the tree-throw hole (shown as *First dig Grooved Ware deposit* in Fig. 9.6). It is likely that the sherds of Peterborough Ware are redeposited or collected old material.

The deposit within 234005 was deposited between four to eight centuries before the barrow ditch at Stragglethorpe (modelled as *520–730 years at 68% or 440–840 years at 95% probability*; Fig. 9.7) (see Chapter 7). This suggests a significant interval of time between the Grooved Ware and Beaker activity at the two sites.

Summary

The finds from tree-throw hole 234005 (SM2054) north of Thorpe provide important evidence for Middle–Late Neolithic activity in the Devon/Trent interfluve area. The oak charcoal probably derives from a hearth, rather than directly from the felled tree, while the hazelnut shells are likely to represent the remains of food. The pottery comprises two different styles, Peterborough Ware and Grooved Ware; the sherds of Grooved Ware

Table 9.2 Thorpe: radiocarbon determination for feature 234005

Lab. code	*Feature (context)*	*Material identification*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Calibrated date range (95.4% confidence)*	*Posterior density estimate (95%) probability*
SUERC-39055	Tree-throw hole 234005 (234006 and 34021)	Charred organic residue from a single sherd of Grooved Ware pottery	4125±30	-28.3	2870–2580 cal BC	*2870–2800 (22.0%)* *2780–2580 (73.4%)*
SUERC-39056	Tree-throw hole 234005 (234006)	Charred hazelnut shell	4115±30	-24.7	2870–2570 cal BC	*2870–2800 (22.5%)* *2770–2570 (72.9)*

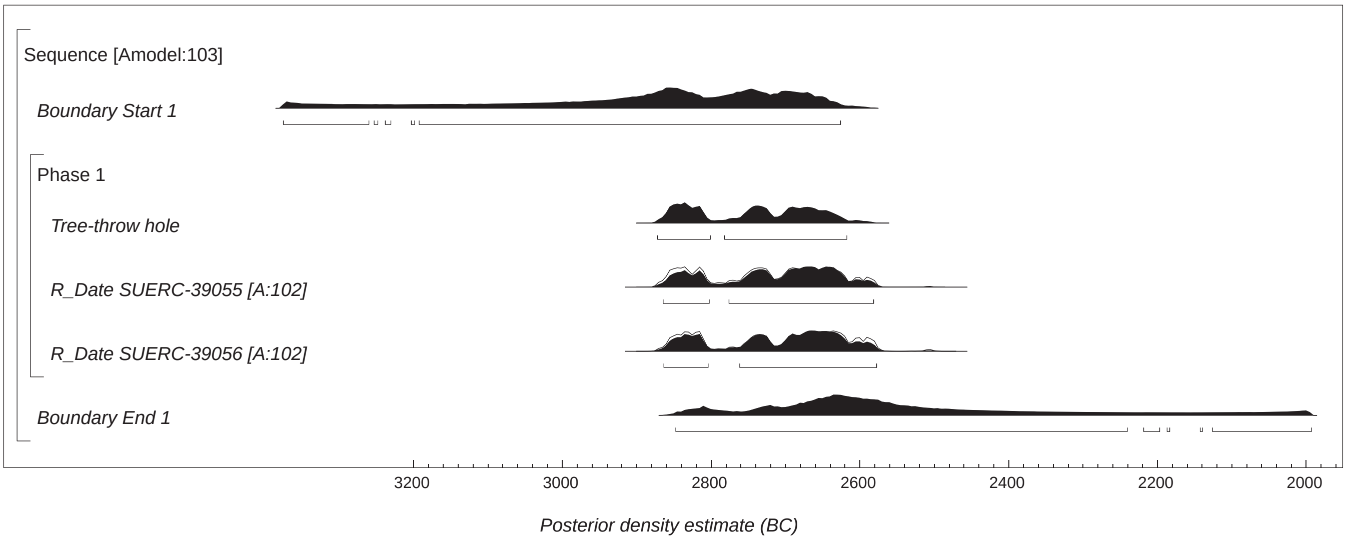


Fig. 9.6 Thorpe, probability distribution (posterior density estimates at 95% probability) for the radiocarbon dates from Grooved Ware tree-throw hole 234005. The square brackets and the OxCal keywords define the model's structure

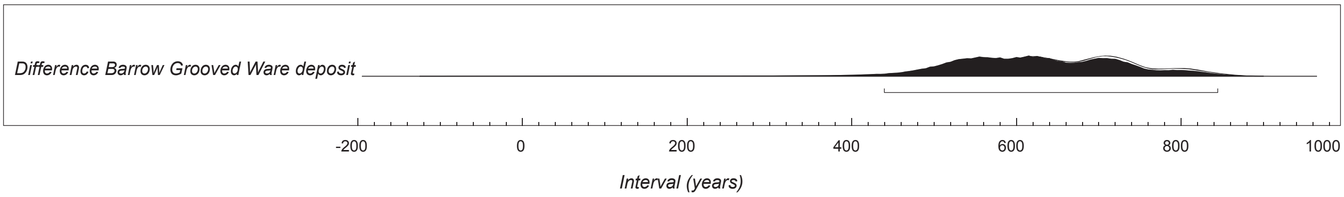


Fig. 9.7 Thorpe, the difference (interval in years) between the placing of the Grooved Ware associated deposit (234005) and the construction of the Stragglethorpe barrow. The bracket denotes 95% probability

are from a single vessel and are extremely rare in the region. Ten pieces of flint debitage came from the same feature. It is possible that this selection of cultural debris represented several aspects of Neolithic daily life, and was deliberately selected for deposition. The radiocarbon dates provide important scientific confirmation of the pottery dating.

The Late Bronze Age/Early Iron Age pit 231008 (SM2031) west of Thorpe may suggest wider occupation of this date nearby, but its significance is uncertain. There was little else of note from this section of the route, and perhaps most surprising is the dearth of Romano-British features in the hinterland to the south of the Roman town of *Ad Pontem*.

Moor Lane Iron Age Enclosure, Romano-British Trackway and Anglo-Saxon Midden

by Nicholas Cooke

Introduction

The excavations at Moor Lane, East Stoke lay to the east and south-east of East Stoke and the Scheduled Monument (29914) comprising medieval settlement and remains of open fields (Fig. 9.8). The site extended for approximately 1.5 km from just south of Elston Lane as far north as the fields on either side of Moor Lane. At this point the route lies some 500 m to the east of the former A46, in an area largely comprising farmland, both arable and pasture. From a high point of approximately 30 m aOD to the south of Elston Lane, the land falls sharply before levelling off at 15 m aOD. The land to the north of Elston Lane is generally level. The solid geology is mapped as sandstones of the Arden, Gunthorpe, Cotgrave and Edwalton formations, which in places, particularly around Moor Lane itself, are sealed by alluvium deposited by past flooding episodes of the River Devon.

The archaeological works comprised 12 trial trenches, three Strip, Map and Sample linear excavations, and four targeted Strip, Map and Sample area excavations.

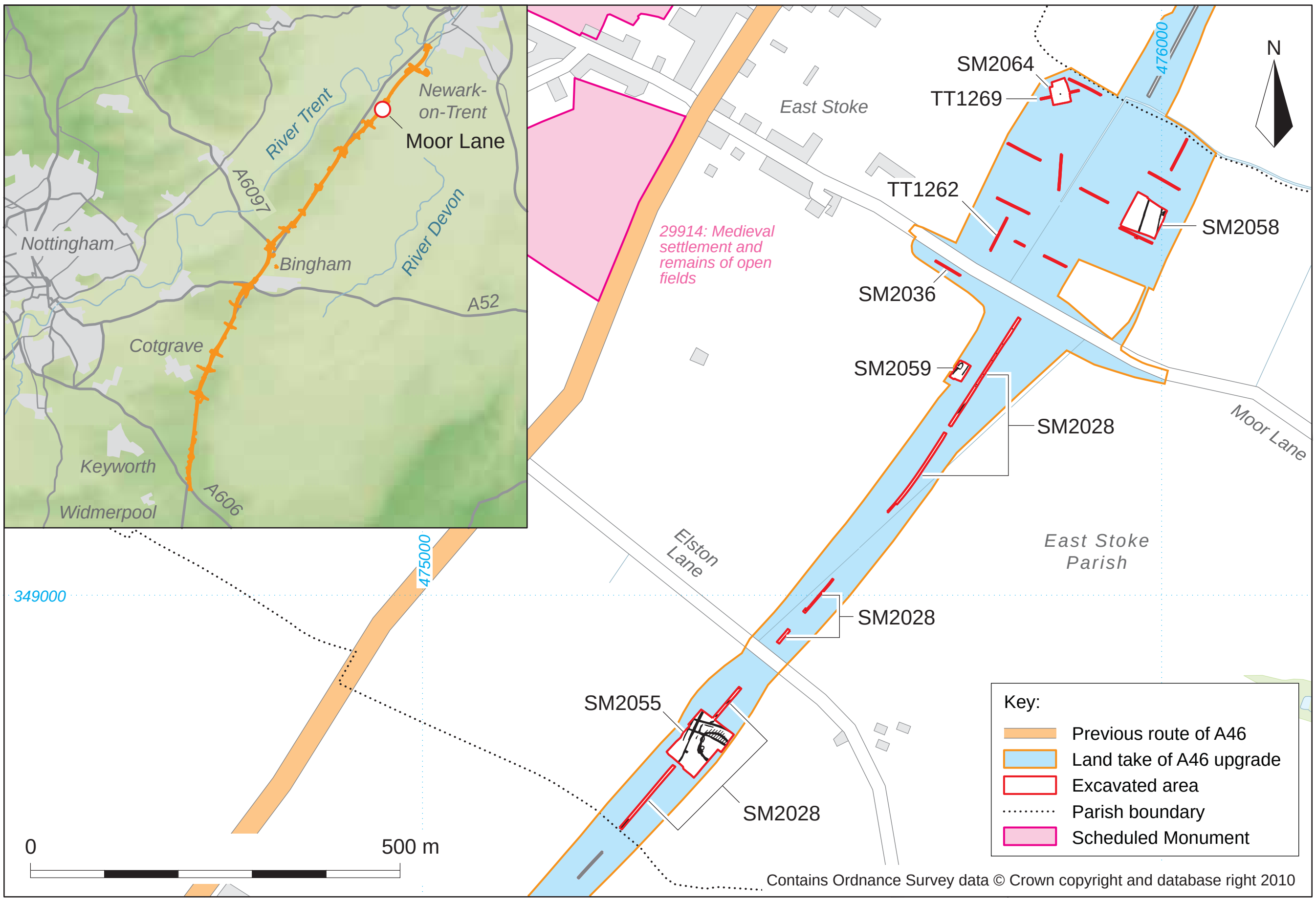


Fig. 9.8 The location of excavations at Moor Lane, East Stoke

Results

Iron Age

A few dispersed features were identified, but the only significant concentration was in SM2055, where there was an enclosure of probable Iron Age date. Unfortunately, the area of this enclosure was machined away in error by earthmoving contractors before it could be subjected to anything other than cursory excavation.

Late Iron Age/early Romano-British

A small oval enclosure defined by a single continuous ditch (259030) was partially exposed in SM2055 (Fig. 9.9). It measured *c.* 40 m north–south and at least 37 m east–west, and extended beyond the excavation to the south-east. Although destroyed before further detailed excavation could take place, three sections were excavated across the ditch, indicating that it was up to 2.6 m wide and 1.2 m deep, with steep regular sides and a slightly irregular base (Figs 9.10 and 9.11). It was filled with a sequence of silty deposits, from which no artefactual material was recovered, but its upper fills were cut by a later Romano-British ditch (259028).

No excavation was undertaken within the enclosure, but a small penannular gully (*c.* 4 m in internal diameter and with a *c.* 0.8 m wide gap at the south-east), and another length of curving gully, were recorded in plan. The pennanular gully may have defined a small structure.

Middle and Late Romano-British

Two parallel ditches (259025 and 259028), *c.* 15 m apart in SM2055, defined a broad trackway aligned NW–SE (Fig. 9.9). Although subject to only limited excavation, it is clear that both had silted up and then been recut (259026 and 259029). Relatively large quantities of middle–late Romano-British pottery were recovered from the fills of the original and recut ditches respectively, suggesting significant activity spanning these periods in the vicinity. Analysis of the assemblage, which largely comprises locally made coarse wares, suggests that the earliest phase of the southern ditch was silting in the early–mid-2nd century AD, while material from both recuts is of late Romano-British date (post-dating AD 250). This raises the possibility that the southern ditch was originally an earlier boundary and that the trackway was a later feature in the landscape. The quantities of pottery recovered from all of these features suggest that there was a Romano-British settlement nearby. A narrow gully (259027) on the same alignment as the trackway lay 2.5 m to the south of the northern ditch, and contained small quantities of Romano-British pottery.

An environmental sample taken from the recut of the

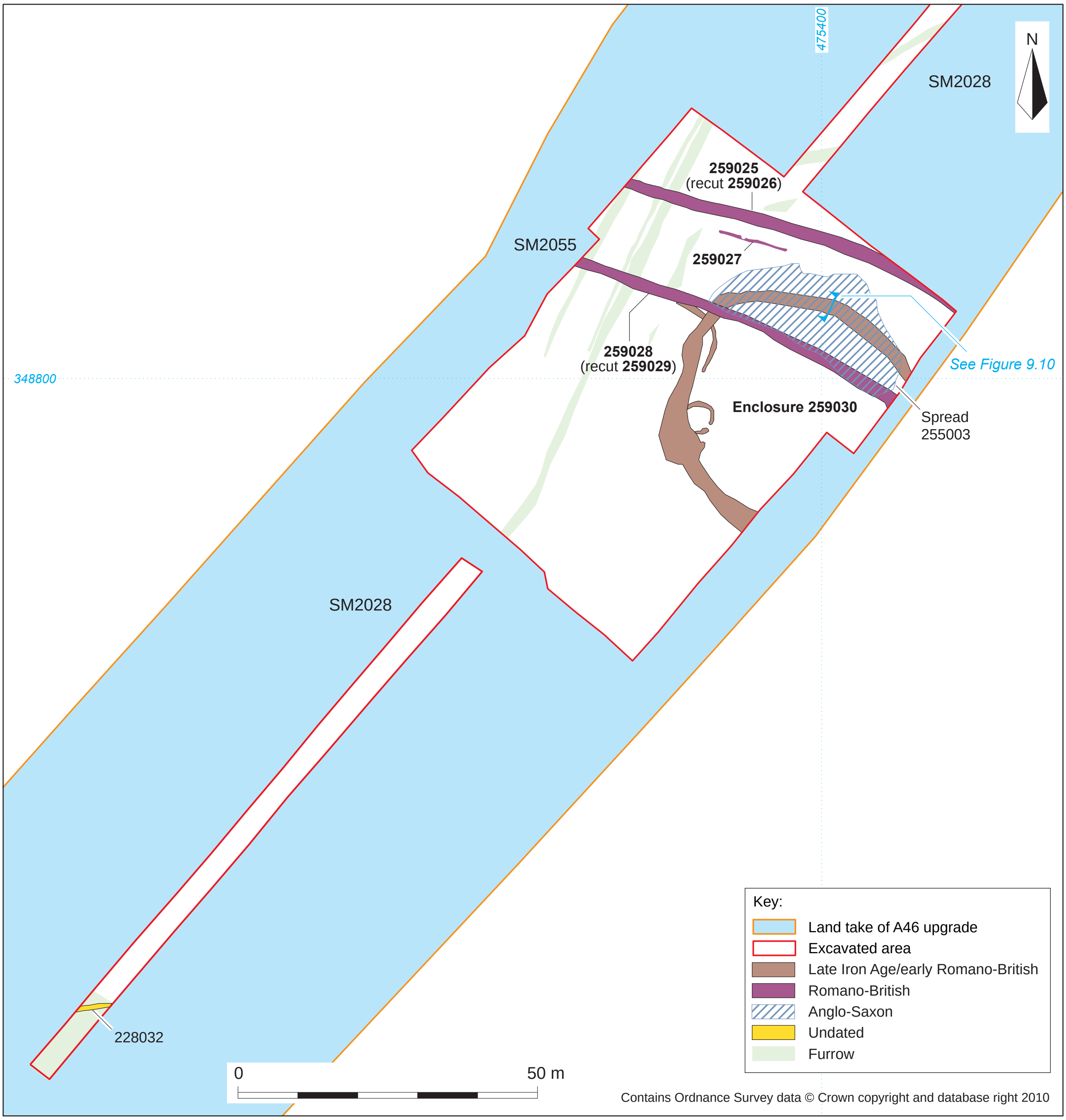


Fig. 9.9 Moor Lane SM2055 excavation area, all phases

southern ditch (259029) yielded a single charred grain of barley (*Hordeum vulgare*) and a few glumes, of which one was identifiable as spelt wheat (*Triticum spelta*); also recovered were a charred seed of vetch/wild pea (*Vicia Lathyrus* sp.) and a culm node of grass. The cereal remains are generally consistent with the main cereal crops of the Romano-British period and suggest arable economy in the vicinity. These few remains may indicate that the trackway lay just beyond the area of domestic activity.

Very little other evidence for Romano-British activity was recorded on this site. In TT1269, a small circular pit (126902) with steep sides and a flat base contained three sherds of Romano-British pottery, while in SM2058 there were two parallel ditches (259031 and 259033) aligned NNE–SSW and perhaps defining another trackway; at least one of the ditches (259031) appears to have been recut, but they are poorly dated, with only a single sherd of Romano-British pottery recovered from recut 259031 (fill 259032). Most of the identified animal bone from the site came from ditch 259033, including a sheep femur, and five horse bones, potentially from

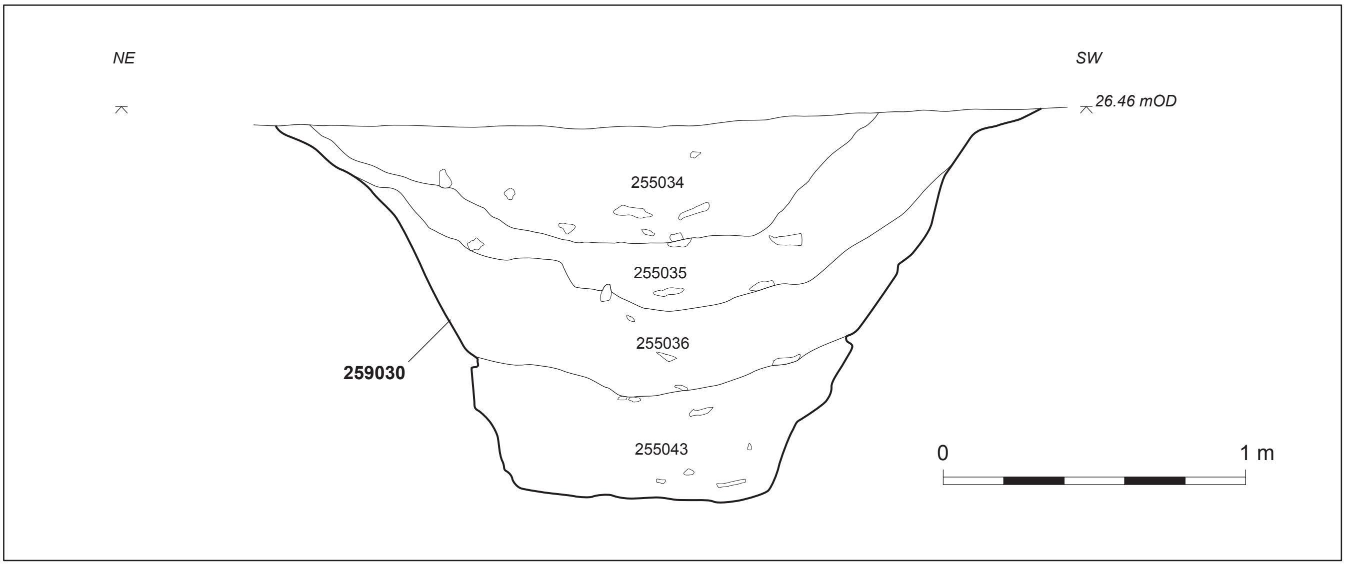


Fig. 9.10 Moor Lane, Iron Age/early Romano-British enclosure ditch, section

Fig. 9.11 Moor Lane, Iron Age/early Romano-British enclosure ditch viewed from the north-west

the same animal, which showed signs of stress on the forequarters probably caused by repeated loading.

Anglo-Saxon

In SM2055 a dark spread (255003) containing a significant quantity of Anglo-Saxon pottery (as well as Roman pottery) was recorded sealing the eastern half of the mid–late Romano-British trackway and the northern part of enclosure ditch 259030 (Fig. 9.9). The southern extent of the deposit was broadly defined by the southern trackway ditch (259028) and it extended across much of the central area of the trackway, probably representing material accumulating within the hollow created by the trackway, after it had fallen out of use. Sherds from three vessels were recovered from the main part of the deposit, with sherds from another eight vessels coming from the deposit where it filled the upper part of the southern trackway ditch recut (259029), suggesting that the ditch was still open, and may have acted as a boundary in this period. The forms and fabrics of the vessels suggest a date range of the 5th–7th centuries AD (see Young and Perry, below), which provides evidence for possible continuity of settlement location from the late Romano-British period into the Anglo-Saxon period.

Medieval

Numerous furrows, representing the remains of medieval or post-medieval ridge and furrow field systems, were recorded on both north–south and NE–SW alignments (eg, Fig. 9.9), in different areas of the site.

Post-medieval and modern

A number of post-medieval and modern features were recorded in SM2059, including ditches 259007, 259011 and 259036. A modern brick culvert (259035) was dug through the fills of ditch 259007, and cut an earlier stone retaining wall for a pond (259018). The pond retaining wall and ditches 259011 and 259036 are probably post-medieval in date, while the bricks from the culvert (259035) suggest a 19th-century date for its construction. A linear stone drainage feature (228010) recorded nearby in SM2028 may also have been associated with this activity.

Undated

There were several undated features, predominantly gullies and ditches, in SM2028, including a ditch (228032) sealed beneath a ploughing headland at the southern edge of the area. Undated ditches were also recorded in SM2036, where some were sealed by alluvial flood deposits whilst others cut these deposits. An undated ditch was also recorded in TT1262.

Finds

Romano-British pottery

by E.R. McSloy

The small Romano-British coarse pottery assemblage amounts to 354 sherds, weighing 4.1 kg (2.04 EVEs). An additional 10 sherds of samian, weighing 88 g (0.25 EVEs) were recorded (Table 9.3). All material was hand-recovered, deriving from 19 separate deposits. Almost all of the pottery relates to the fills of the ditch-defined trackway in SM2055 and spread 255003 located between the trackway ditches. The assemblage is of little interpretative value beyond providing dating evidence, although the volume of pottery from the limited excavation suggests more substantive Romano-British activity nearby.

Table 9.3 Moor Lane, East Stoke: Romano-British pottery: summary quantification by type

Fabric group	*Fabric*	*Count*	*Weight (g)*	*EVEs*
Grog/clay pellet	GTA2	4	16	.03
	GTA3	5	110	-
	GTA4	17	381	.25
	GTA8	1	5	-
Sandy reduced	GW1	48	367	.31
	GW2	8	31	.05
	GW5	5	158	.15
	GW6	84	671	.16
	GW8	7	25	.07
	GW10	23	141	.29
	GW11	2	35	-
	GW12	1	19	-
	GW14	11	456	.15
	GW15	2	11	-
	GW17	4	61	.05
	GW19	83	1062	.15
	DER CO	2	28	-
Black-burnished	*DOR BB1*	1	4	-
Oxidised	OX2	6	58	-
	OX3	3	5	-
Shell	*DAL SH*	3	25	.15
	SH1	23	89	.05
	SH3	1	133	.12
Colour-coated	CCM	2	8	-
	LNV CC	3	15	-
White	WH1	3	13	-
	WH2	1	1	-
Mortaria	*MAHWH*	1	111	.06
Samian	*LEZ SA2†*	2	8	.05
	EG SA†	8	80	.20
Total		364	4127	2.29

Key: * types in italics are non-local and those marked '†' are continental imports

The assemblage was recorded in the same manner as the larger assemblages from *Margidunum* Hinterland (see Chapter 4). Average sherd weight is on the low side for a Romano-British group and surface survival is poor. Shelly fabrics are particularly poorly preserved with the inclusions fully leached. No evidence for vessel use was recorded as carbonised or other residues; this almost certainly results from the poor condition of the assemblage.

Composition

Overall the assemblage is limited in range, containing few traded ware types other than the samian. Nearly 80% (by sherd count) comprises reduced sandy coarsewares, most or all of which are probably products of the Trent Valley, or kilns in the area north of Lincoln. The range of greyware and grogged fabrics broadly corresponds to those from Margidunum. An exception is type GW19, which was absent from the major sites to the south, but is common at this site (24% by sherd count).

Identifiable vessel forms among the grey or grogged wares are primarily jars of various types. Rebated/bifid-rim jars in fabric GW19 are similar to vessels from the kilns at Lea (Field and Palmer-Brown 1991, fig. 9, nos 13–19, and fig. 16, nos 35–37). Similarly a strap-like lug in fabric GW6 from spread 255003 can be matched with vessels illustrated from the Lea and Newton on Trent kiln groups (*ibid.*, fig. 16, no. 47 and fig. 17, no. 7). The small number of open forms include a plain rim dish (deposit 255013) and a conical flanged bowl (deposit 255013), forms commonly represented among later Romano-British kiln groups in the region and elsewhere.

Dales ware jars were identifiable from deposits 255022 and 255069. More material of this type may be present, the poor condition of the shell-tempered sherds preventing identification with certainty. Regional imports are rare, occurring as bodysherd sherds in Derbyshire ware, Lower Nene colour-coated ware and Black-burnished ware. A whiteware mortarium from deposit 255038, with a hooked flange with prominent squared internal bead, is probably a Mancetter/Hartshill product.

The small samian group (2.8% by sherd count) comprises mainly east Gaulish types (eight sherds), with the remaining two sherds Central Gaulish. Identifiable forms are dishes (form 31) and a possible late platter of the LUDTg/Wa79 family in deposit 126903 (fill of pit 126902).

Dating

The Romano-British activity has been ascribed to a single broad phase. Despite this and the uniformity of the assemblage overall, some chronological separation is possible, reflecting both the compositional and stratigraphic factors.

The initial use of the southern trackway ditch is represented as a group of 79 sherds (1121 g). The majority comprises reduced coarsewares, with the remainder mainly grogged types GTA2–4) and shell-tempered fabrics SH/SH3. Identifiable forms are limited to jars, including rebated/cordoned vessels similar to examples from the Lea kiln (Field and Palmer-Brown 1991, fig. 16, no. 36) and large, necked forms with square rims in shelly fabrics. The Dales wares and 'late' style greyware forms present among the ditch recuts are absent and the grogged and shelly components encourage dating before *c.* 200 AD. A date towards the early or middle 2nd century AD is suggested by a mortarium already described from this deposit which is typologically of this period. A small scrap from a Lower Nene Valley beaker would assume dating after *c.* AD 160/80, although this may be intrusive.

The remainder of the assemblage largely relates to recuts of the trackway ditches 259029 and 259026 (151 sherds in total), or to the overlying spread 255003 (89 sherds). Dating from the stratigraphically later deposits is consistently of the period after *c.* AD 250. The groups mainly comprise reduced coarsewares, with grogged fabrics notably less common. Key to dating are Dales ware vessels, present from recuts 259029 and 259026 sherds. Further indices are provided by late forms in greywares, including a narrow-mouth jar with frilled lower rim (ditch 259025) in hard grey fabric GW14, which is similar to vessels from the Lea kiln (*ibid.*, fig. 9, nos 22–23).

Post-Romano-British pottery

by Jane Young and Gareth Perry

A total of 81 vessels, ranging in date from the Anglo-Saxon to early modern periods, was recovered from the site. This is the second largest post-Romano-British assemblage from the scheme, although most of the pottery is of post-medieval to early modern date.

A small group of eight handmade Anglo-Saxon vessels was recovered from the upper fill of ditch 259029 (cut 228045, fill 228047) in SM2055. Four different ware types are present with SSTMG being the most common. None of the vessels is decorated or has any chronologically diagnostic features, but the general appearance of the sherds and composition of the groups suggests a 5th–7th century AD date for the group. Another handmade SSTCL sherd was found in ditch 259027 (cut 228066, fill 228067). These finds suggest early Anglo-Saxon activity in this area. Four sherds from two handmade Anglo-Saxon SSTCL vessels were also recovered from spread 255003; they are likely to be of 5th–7th century date, although the type may extend into the 8th century.

Summary

The excavations at Moor Lane, East Stoke (SM2055), although limited, nonetheless indicate the importance of this site. The small Iron Age/early Romano-British enclosure with its relatively substantial surrounding ditch is not closely paralleled elsewhere on the scheme. Unfortunately the excavation did not produce any dating evidence, and none of the interior was excavated, but the enclosure had clearly fallen into disuse, with the ditch silted up, before ditch 259028 was dug, probably in the first half of the 2nd century AD. It is not clear whether the northern ditch of the trackway was contemporary with the southern or a later addition. Certainly both ditches were recut in the late Romano-British period, with the quantity of pottery recovered from the recuts suggesting the proximity of a settlement.

The quantities of Anglo-Saxon pottery recovered from the upper fills of the recut of the southern trackway ditch recut (259029) and from spread 235003 point to activity in the early Anglo-Saxon period and also indicate nearby settlement. Whether there was any continuity of settlement between the late Romano-British and early Anglo-Saxon periods cannot be established on the available evidence.

Flintham Late Iron Age and Romano-British Features

by Nicholas Cooke

Introduction

This group of interventions extended for *c.* 7.7 km from Butt Lane (just to the south of Ten Man Lane), East Bridgford as far north as Lodge Lane north of Flintham (Fig. 9.12). The section of the route occupies gently undulating ground, at 27–53 m aOD, largely comprising farmland. The solid geology comprises Triassic rocks (Mercia Mudstones) overlain by boulder clays; in some areas colluvial deposits overlie the drift geology.

The archaeological works comprised 110 trial trenches, seven Strip, Map and Sample linear excavations with a combined length of *c.* 2.2 km, five targeted Strip, Map and Sample area excavations and an area of watching brief.

Results

There were no significant concentrations of archaeology on this site, but just occasional features. The very few archaeological features and deposits, where these could be dated, were of predominantly prehistoric or Romano-British date. They comprise mostly boundary ditches and gullies.

Prehistoric

A small quantity of undiagnostic worked flint was recovered from the site, pointing to prehistoric activity in the area, but most of it was residual in later features or recovered from modern overburden and very little can be related directly to archaeological features or deposits. A crude end scraper made on a secondary flake and two small blade cores came from silts of an undated pond in the watching brief. Elsewhere, flint debitage was recovered from the top of a periglacial feature in TT1222 (Syerston), and a small undiagnostic assemblage of flake

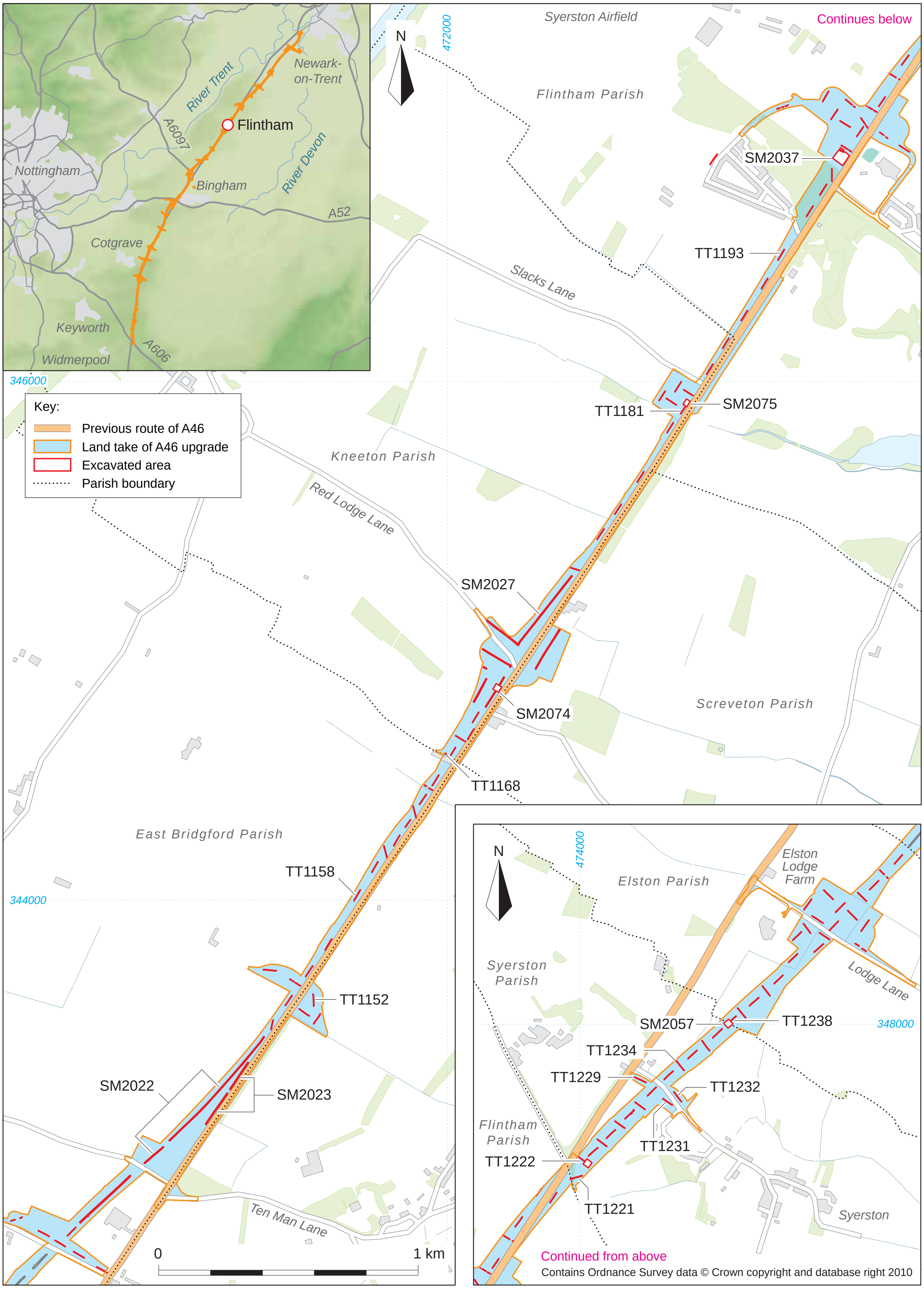


Fig. 9.12 The location of the excavations at and around Flintham

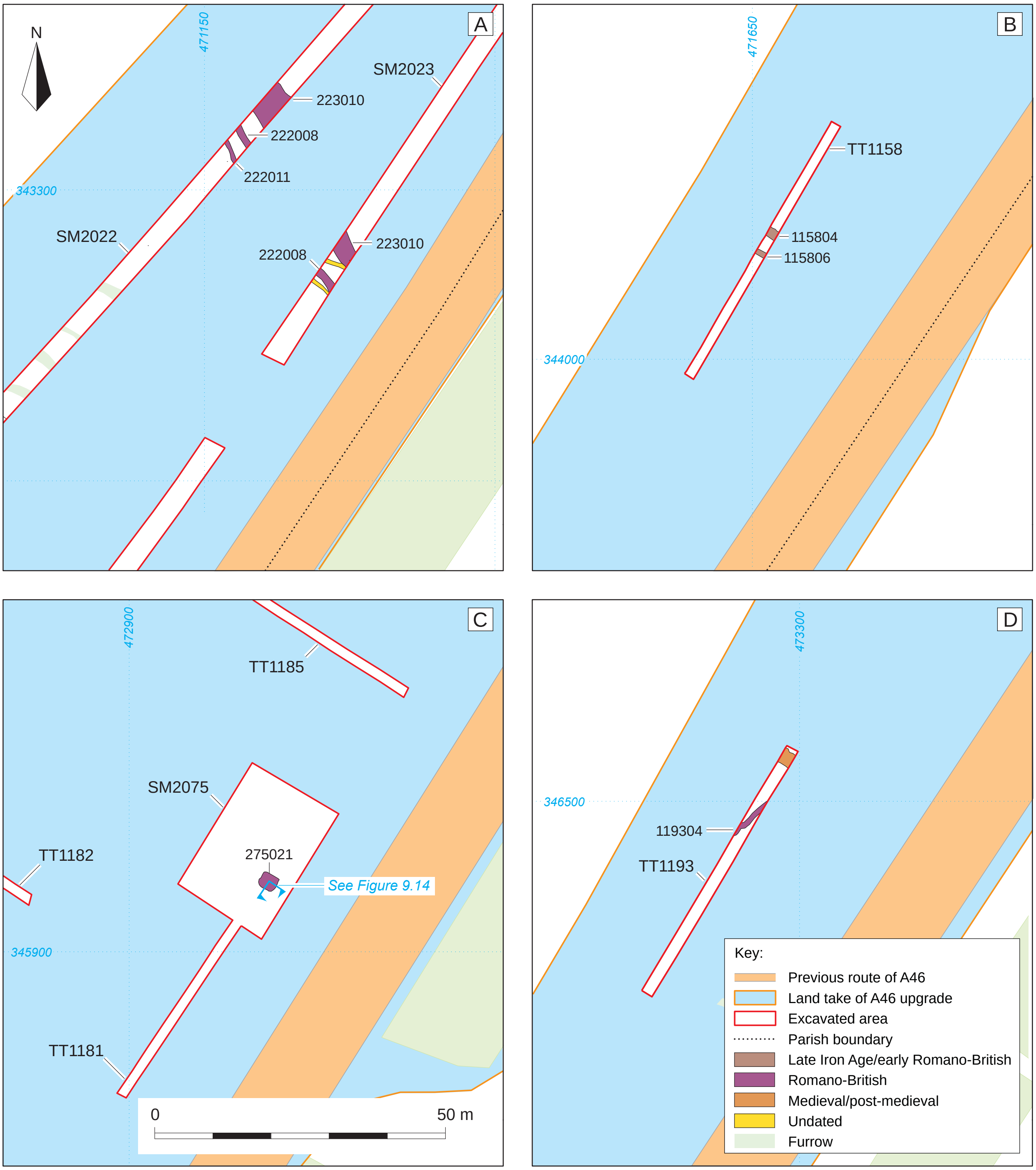


Fig. 9.13 Flintham features (all phases) in: A) SM2022 and SM2023; B) TT1158; C) SM2075; D) TT1193

debitage came from a small pit truncated by a post-medieval ditch in TT1238 (boundary between Syerston and Elston parishes).

Late Iron Age/early Romano-British

North of Ten Man Lane, in SM2022 and SM2023, two broadly parallel ditches (222008 and 223010), aligned approximately NNW–SSE, probably defined a Late Iron Age/early Romano-British trackway approximately 10 m wide (Fig. 9.13A). The eastern ditch (223010) was broad and shallow, whilst 222008, some 3 m to the south-west, was much narrower and shallower. Neither was well dated, although single sherds of Late Iron Age/early Romano-British pottery were recovered from both. A gully (222011), parallel to and *c.* 2 m south-west of ditch 222008 (only in SM2002), is likely to be contemporary.

Further north, another possible trackway was defined by two parallel ditches (115804 and 115806), *c.* 2.6 m apart, aligned north-west–south-east, in TT1158 (Fig. 9.13B). The only dating evidence was late prehistoric pottery from ditch 115806, but may have formed part of the same Late Iron Age/Romano-British field/enclosure system as recorded in SM2022 and SM2023 approximately 400 m to the south-west.

Romano-British

Near Slacks Lane, Kneeton, an apparently isolated subrectangular pit (275021), initially identified in TT1181 and subsequently investigated in SM2075, contained several episodes of deliberate backfilling (Figs 9.13C and 9.14). Three separate dumps of charred material were recorded, from which numerous sherds of Romano-British pottery (predominantly dated to the late 1st and early 2nd centuries AD) were recovered, along with animal bone and fragments of fired clay. The pottery includes a number of sherds of samian ware and a substantially complete carinated jar. These dumped deposits were sealed by slowly accumulated secondary fills, from which further Romano-British sherds were recovered. Charred plant remains from the dumped deposits contained cereals and weed seeds consistent with an arable environment. The cereals were dominated by spelt wheat glume bases, with smaller quantities of emmer wheat. The remains probably represent waste from the early stages of malting, undertaken nearby, perhaps used as fuel (see Stevens, below). Charcoal from these deposits comprised a mixture of oak, hazel and Pomoideae fruit wood, suggesting the casual collection of fallen wood for domestic fuel rather than any large-scale or targeted sourcing of wood.

To the north, in TT1193, a ditch (119304), shallow but in places quite wide, is also likely to be Romano-British (Fig. 9.13D); small quantities of Romano-British pottery were recovered from its single fill.

Medieval, post-medieval and modern

The extensive remains of ridge and furrow were recorded across this section of the route. This probably had its origins in the medieval period, and may have continued in use into the post-medieval period. Towards the southern end of the site the furrows were aligned NW–SE, roughly perpendicular to the Fosse Way.

Two parish boundaries were investigated, one in TT1168 and the other in TT1238 (Fig. 9.12). The boundary (in TT1168), between East Bridgford and Kneeton parishes, was defined by a ditch and associated bank (116805) aligned NW–SE. The ditch, on the south-west side of the bank, appeared to have been dug for the insertion of a late 20th-century drainage pipe. The second boundary (in TT1238 and later investigated in SM2057), between Syerston and Elston parishes, had the same alignment and comprised a low extant bank with a relatively insubstantial ditch (257011) on its north-east side. This ditch was dug through the earlier ridge and furrow, and fragments of post-medieval pottery and clay pipe were recovered from its fill.

A substantial post-medieval or modern quarry pit (227008), towards the south-western end of SM2027, contained sherds of early 19th-century pottery. Small-scale quarrying for stone, marl and clay was common in the area from the post-medieval period onwards.

There were two modern ditches, both aligned approximately north–south, in TT1221, and another two, perpendicular to each other and probably representing former field boundaries, in TT1234.

Undated

Numerous periglacial features and undated tree-throw holes were identified on the site, as well as a probable palaeochannel in TT1152, and possible pond deposits in TT1229, TT1231 and TT1232. There were also several undated ditches, gullies and pits or possible postholes, the majority of which are probably post-medieval or modern.

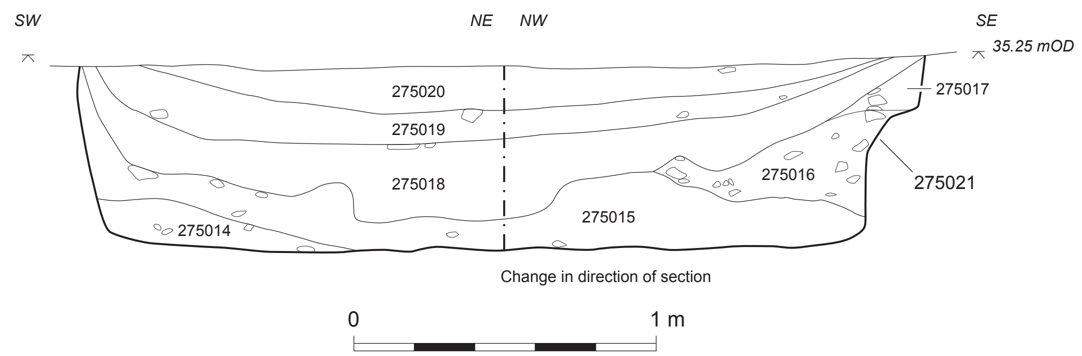


Fig. 9.14 Flintham, Romano-British pit 275021 (SM2075) near Slacks Lane, section

Finds

Romano-British pottery

by E.R. McSloy

The Romano-British pottery amounts to 103 sherds (1485 g; 1.47 EVEs) (Table 9.4). Of this total some 100 sherds come from the fills of pit 275021, including eight sherds of samian (95 g).

The coarse pottery comprises near exclusively local/Trent Valley grey and grogged wares (Table 9.4) and the overall character of the group is comparable with the earlier (Ceramic Phase 2) Romano-British groups from *Margidunum* Hinterland and Saxondale. Of note are the pale-bodied greywares (UNVGW) thought to originate from the Upper Nene Valley. Sherds in this fabric from deposit 275018 (fill of 275021) probably come from an ovoid or poppyhead type beaker which features barbotine dot panel decoration. Other identifiable forms include a carinated bowl in greyware fabric GW1 and a jar close to forms illustrated by Todd as part of his Trent Valley ware series (1968a, fig. 1, 2b).

The samian group is consistent in its character and dating. All is South Gaulish (La Graufesenque) and typically Flavian (AD 70–100). Sherds from fills 275010 and 275018 possibly represent the same rouletted dish of form Dr18/31R. A sherd from 118106 comes from a decorated bowl form Dr37.

Table 9.4 Flintham: Romano-British pottery: summary quantification by type

Fabric group	*Fabric*	*Count*	*Weight (g)*	*EVEs*
Grog/clay pellet	GTA2	1	10	.10
	GTA3	1	14	0
	GTA4	50	914	.78
Sandy reduced (RB)	GW1	9	288	.25
	GW10	1	12	0
	GW14	1	10	0
	GW2	1	2	.15
	GW3	6	86	0
	UNV GW	10	20	.09
Whiteware	WH1	1	1	0
	WH2	14	33	.10
Samian	SG SA	8	95	0
Total		103	1485	1.47

Environmental Remains

Charred plant remains

by Chris J. Stevens

Four samples were taken and processed using standard methods (see Chapter 4) for the recovery and assessment of charred plant remains. Two came from an apparently isolated Romano-British pit (275021) containing a large quantity of 1st–2nd-century AD pottery; their assessment showed large quantities of very well-preserved charred cereal remains. The other two (from natural features – an animal burrow and a tree-throw hole) contained very few charred remains and were not analysed. The results for the analysed samples are presented in Table 9.5.

The sample from pit 275021 (context 27018) was extremely rich in charred remains, with over 10 items per millilitre of processed soil and, for this reason, the sample was fractionated into 2 mm, 1 mm and 0.5 mm. The 2 mm fraction was sorted in full; while subsamples of 10% and 5%, were taken from the 1 mm sample and 0.5 mm fractions respectively. Both subsamples were fully sorted and the counts multiplied by 10 and 20 for the 1 mm and 0.5 mm fractions respectively, to provide estimated counts for the whole sample. These are marked 'est.' in Table 9.5.

Results

The material from context 275018 was very well preserved, with several glumes preserved in their entirety. It was dominated by very high numbers of glume bases, predominately of spelt wheat (*Triticum spelta*), with lesser numbers of emmer wheat (*Triticum dicoccum*); it also had large conglomerates of charred and silicified cereal chaff (around 30 ml). No barley *(Hordeum vulgare)* was seen in the sample, nor any other crop or wild food remains.

Grains were very frequent, but in lesser numbers than glume bases. Of more significance was the quite high proportion (almost 20%) of germinated grains, and the high numbers of acrospires or coleoptiles – the detached 'sprouts' from germinated grains.

Among the grains and spikelets of spelt were some spikelets which clearly only contained a single grain, rather than the more usual two, with also one of the grains indicating signs of having been aborted.

The range of weed species was quite limited, although the number of seeds was very high, far outnumbering cereal grains. The main species represented were those of large-seeded grasses which are common arable weeds, such as oats (*Avena* sp.) and brome grass (*Bromus* sp.). Also relatively common were seeds of perennial rye-grass (*Lolium perenne*), which are often larger than grain-sized prior to the separation of the seed from the spikelet, while seeds of both dock (*Rumex* sp.) and scentless mayweed (*Tripleurospermum inodorum*) often contaminate grain by virtue of bring encased either within grain or spikelet-size bracts or seed-heads respectively. Other large seeds included those of thistles (*Carduus*/*Cirsium* sp.), black-bindweed (*Fallopia convolvulus*), vetch/wild pea (*Vicia*/*Lathyrus* sp.), corncockle (*Agrostemma githago*) and knap-weed (*Centaurea* sp.). There were also large num-bers of seeds of meadow grass (*Poa* sp.) and/or cat's-tails (*Phleum* sp.).

The final remains recovered were unidentified triangular fragments of probable capsules. These compare very well to general Caryophyllaceae/Primulaceae capsules, in particular those of corncockle (*Agrostemma githago*), although the general absence of seeds of such species does raise some questions as to this identification.

The charred remains in context 245015 were similar

Table 9.5 Flintham: charred plant remains

Feature type		*Pit*	
Feature		*275021*	
Context		*275015*	*275018*
Sample		*275001*	*275002*
Vol. (l)		*5*	*5*
Cereals			
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	2	520
Triticum dicoccum/spelta (germinated grain)	emmer/spelt wheat	2	100
Triticum spelta (aborted grain spikelet)	spelt wheat	-	1
Triticum spelta (single grain spikelet)	spelt wheat	1	3
Triticum spelta (double grain spikelet)	spelt wheat	-	4
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	8	est. 150
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat		est. 40450
Triticum spelta (glume bases)	spelt wheat	56	est. 4650
Triticum spelta (spikelet fork)	spelt wheat	-	est. 70
Triticum dicoccum (glume base)	emmer wheat	-	est. 100
T. dicoccum (spikelet fork)	emmer wheat	-	est. 340
Cereal indet. (grains)	cereal	2	-
Cereal (germinated coleoptile)	cereal	1	est. 210
Cereal indet. (culm internode)	cereal	-	2
Other species			
Agrostemma githago	corncockle	-	1
Fallopia convolvulus	black-bindweed	-	est. 10
Rumex sp	docks	-	est. 170
Vicia L./*Lathyrus* sp.	vetch/pea	-	2
Capsule frag. cf. Caryophyllaceae/Primulaceae	valvate capsule frags	-	100
Carduus L./*Cirsium* sp.	thistle	-	est. 10
Centaurea sp. (seed head)	knapweed	-	1
Tripleurospermum inodorum	scentless mayweed	-	est. 520
Lolium perenne	perennial rye-grass	-	est. 1715
Avena sp. (grain)	oat grain	5	est. 1678
Avena L./*Bromus* sp.	oat/brome	11	est. 1475
Bromus sp.	brome grass	5	est. 1016
Bromus cf. *racemosus, secalinus, hordeaceus*	smooth/rye-/soft brome grass	-	cf. 95
Anisantha sterilis	barren brome	-	cf. 1
Poa/Phleum sp.	meadow grass/cat's-tails	2	est. 240

to those in 275018, although the density of material was much lower, and hence some of the less well represented elements in context 275018 were absent.

Discussion

From the high numbers of germinated grains and sprouts, the sample clearly relates to the charring of waste from malting and brewing activities. Such assemblages are often related to corn dryers and/or ovens on more Romanised settlements (van der Veen 1989).

For brewing using spelt, grains must be malted in the spikelet, first by immersing the grain in water or *steeping* for one to two days. The grains are then transferred to a malting floor, where they are left for around four to six days while they germinate. During this stage, modern practice is to regularly turn the grains to ensure even malting and to prevent the grains overheating. Germinating grain releases a large amount of heat that can halt germination unless the grain is regularly turned to cool grains lying underneath. It also prevents grains from becoming entangled although for spikelets, where the grain sprouts within the enclosed spikelet, this may be less of an issue.

After malting, the grain is heated in an oven to prevent further germination. At this stage it is quite possible that the spikelets are de-husked to separate the glumes and the germinated sprouts, or acrospires, from the malted grain. However, modern brewers will also grind or crush both chaff and malted grain together. This milled or crushed malt (the *grist*) is then *mashed*, which involves mixing it with hot water in a large vat for one to two hours. The resultant product (the *wort*) is then strained and reheated. At this point chaff might again be removed, if the malted grain was not separated from the spikelets prior to mashing. The final stage is to add yeast to this mixture; for ancient brewing this can be achieved through the addition of items which have naturally occurring yeast, for example on fruit skins, or bread.

The charred assemblage from context 275018, extremely glume-rich in comparison to grain, may represent the waste from one of two stages in this process. First, it might relate to glume-rich waste from the de-husking of malted spikelets, prior to the milling of the grain. Alternatively, it might relate to the waste separated during the sieving/straining of the *mashed* grain from the *wort*. However, this second by-product should still be relatively grain rich, although malted grain is likely to be more fragile, and hence prone to destruction during charring. Given that the assemblage is considerably richer in glumes than grain the most likely explanation is that the grain has been de-husked before it was malted. As this process would also be conducted when the glumes were dry, it would also make them more suitable for use as fuel, whereas the spent grain, the product of mashing, would be wet and unsuitable for such purposes unless dried.

Similar assemblages have been recovered from a number of sites. At Weedon Hill, Buckinghamshire (Stevens 2013) it seems very probable that the waste from de-husking was added as fuel to the drying oven. The weed assemblage from pit 257021, as with Weedon Hill, and particularly also with Springhead, Kent (Stevens 2011), is dominated by seeds of large and intermediate seeded species. This latter group includes species, such as rye-grass and dock, which have appendages that make them of similar size to spikelets. As such, many remain with the spikelets after fine-sieving, and are only separated from their appendages during de-husking.

While such evidence for malting is commonly found on Romano-British sites, usually mixed in with settlement waste, such rich assemblages, that appear to be predominantly related to malting, are often only recovered from rural settlements, villas and/or malthouse sites, usually located along Roman roads, often in close proximity to natural springs (Stevens *et al.* 2011; Stevens 2013). Given this site's location, the character of the assemblage strongly hints that a more substantial structure relating to malting might have been located nearby.

Summary

South of Slacks Lane, Kneeton, pit 275021 (SM2075), with its evidence for malting in the early Romano-British period, strongly suggests a farming settlement in the vicinity. Other than this feature, little of significance was recorded in this section of the route. Small quantities of worked flint point to prehistoric activity, but the absence of associated features suggests that this was at a low level. An isolated boundary ditch and two probable trackways are likely to represent some division of the landscape in the Late Iron Age and/or Romano-British periods and suggest that the land was well settled and organised.

Both of the parish boundary features investigated appear to date to the post-medieval period, with no surviving evidence for medieval precursors. The remaining features are of post-medieval or modern date, or undated.

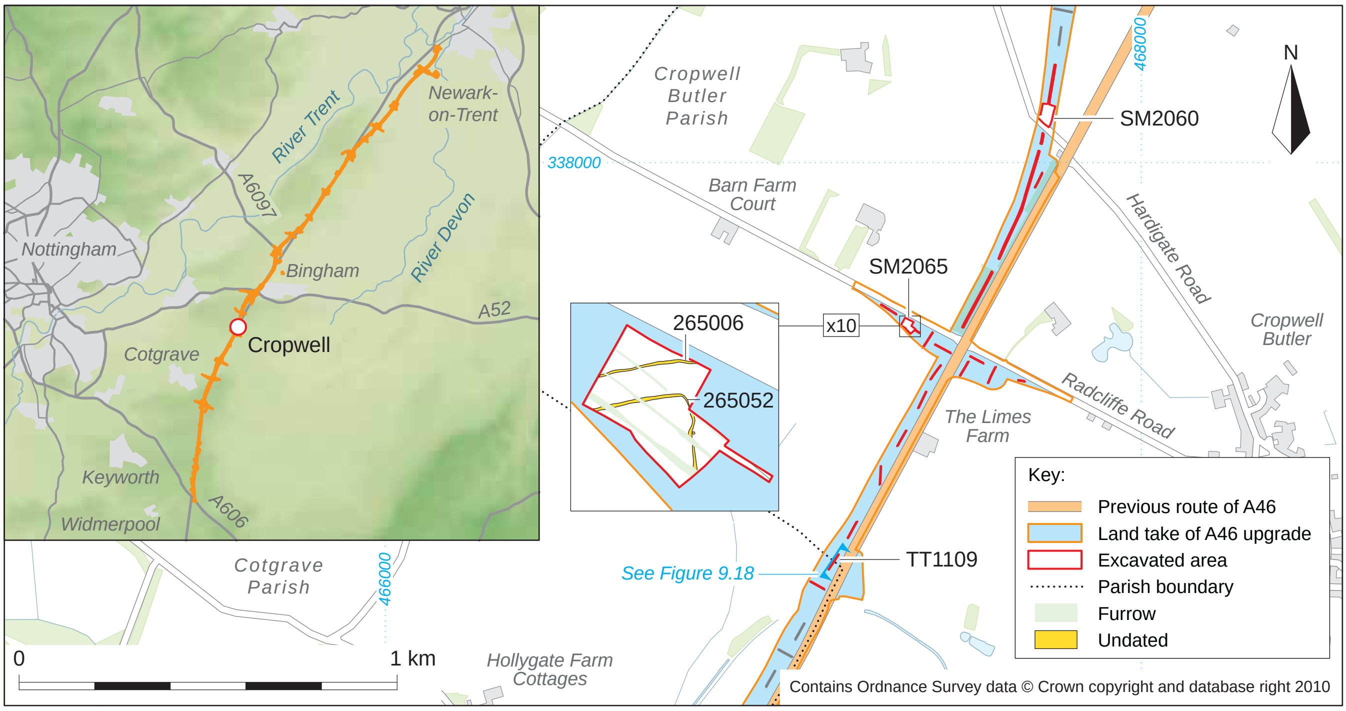


Fig. 9.15 The location of the excavations at Cropwell

Cropwell Iron Age Boundary Ditch

by Nicholas Cooke

Introduction

This site lies between the excavations at Stragglethorpe to the south and High Thorpe to the north, *c.* 3 km south-west of the town of Bingham (Fig. 9.15). It largely occupies a gentle south-facing slope, falling from *c.* 58 m aOD at the north to *c.* 50m aOD at the south. The underlying geology comprises glacial till deposits overlying Edwalton Member mudstones and Dolomitic sandstones. A number of periglacial 'ice wedges' were recorded in SM2060.

The archaeological works comprised 16 trial trenches, two Strip, Map and Sample linear excavations, and two small targeted Strip, Map and Sample area excavations.

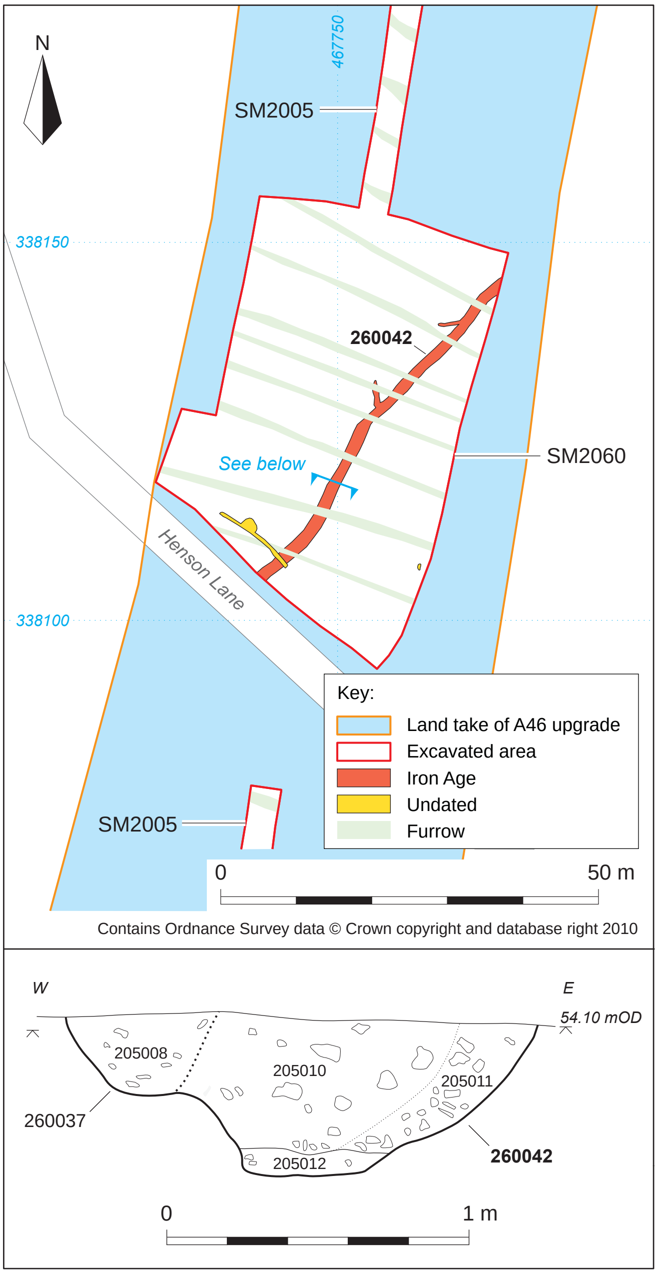


Fig. 9.16 Cropwell, Iron Age ditch 260042 (SM2060) Hardigate Road, plan and section

Results

The few archaeological features on the site included an Iron Age ditch, a poorly dated enclosure and a post-medieval ditch on the line of the modern parish boundary.

Iron Age

A slightly sinuous ditch (260042), aligned approximately NE–SW, was exposed for *c.* 50 m in SM2060 (Figs 9.16 and 9.17). It had steep, regular sides and a concave base, and yielded a small number of sherds of late prehistoric pottery. It appears to have silted naturally, before being recut (260037/8), suggesting that it marked a relatively long-lived boundary, of probable Iron Age date.

Medieval and post-medieval

The extensive remains of medieval or post-medieval ridge and furrow were recorded across the site, aligned broadly NW–SE (eg, Fig. 9.16).

In TT1109, a ditch (110904) and associated bank, aligned NE–SW, mark the line of the boundary between Cotgrave and Cropwell Butler parishes. The ditch, which was steep-sided with a concave base (Figs 9.15 and 9.18), contained 18th–19th-century pottery, although a substantial build-up of colluvial material, forming a low lynchet immediately to its north-east, suggests that the boundary was long lived.

Fig. 9.17 Cropwell, Iron Age ditch 260042 viewed from the south

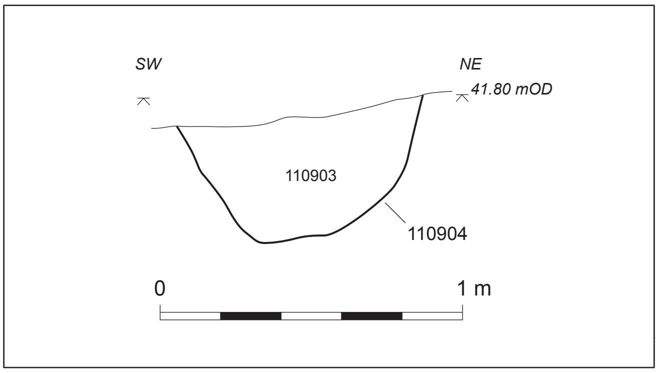


Fig. 9.18 Cropwell, parish boundary ditch 11909 (TT1109) between Cropwell Butler and Cotgrave parishes, section

Fig. 9.19 The location of the excavations at Owthorpe Wolds

Undated

A continuous gully (265052) in SM2065 appears to have formed the north-eastern corner of an enclosure (Fig. 9.15). Gully 265052 was at least 40 m long, had shallow regular sides and a concave base, and contained a single fill. A less substantial gully (265006), running parallel to it, *c.* 8 m to its north, is clearly associated, possibly defining a trackway along this side of the enclosure. No finds were recovered from either feature, but as both were cut by the ridge and furrow, and were aligned obliquely to the modern hedgerows, they may be prehistoric or Romano-British in date.

A number of other undated features, many probably natural in origin, were recorded across the site.

Owthorpe Wolds Romano-British Ditches

by Nicholas Cooke

Introduction

The site, at the southern end of the scheme, occupies an area of slightly undulating higher ground, at *c.* 90 m aOD, in the south, which drops down to the Owthorpe Junction, at *c.* 75 m aOD, at the north (Fig. 9.19). The land in Borders Wood, to the south-east of the junction, generally slopes down to the east, from the crest of the low ridge occupied by the line of the road, to *c.* 60 m aOD. The underlying geology comprises glacial till deposits overlying Jurassic mudstones and limestones. In places, particularly in the vicinity of the Owthorpe Junction, deposits of colluvium were recorded sealing the underlying drift geology.

The archaeological works in this area comprised 36 trial trenches, three Strip, Map and Sample linear excavations, and one small targeted Strip, Map and Sample area excavation. In addition, a watching brief was undertaken on the construction of three tracks con-structed in Borders Wood to provide access to Newfield Farm.

Results

Few archaeological features or deposits were recorded, although a small concentration of prehistoric worked flint was noted in association with an undated palaeochannel. The majority of the features identified during the watching brief are likely to be modern in date, although a small number of Iron Age and Romano-British features were also recorded.

Mesolithic, Neolithic and Early Bronze Age

Ten pieces of worked flint were recovered from a small area spanning Kinoulton Lane at the south end of the site (Fig. 9.20). This is a mixed assemblage, with only

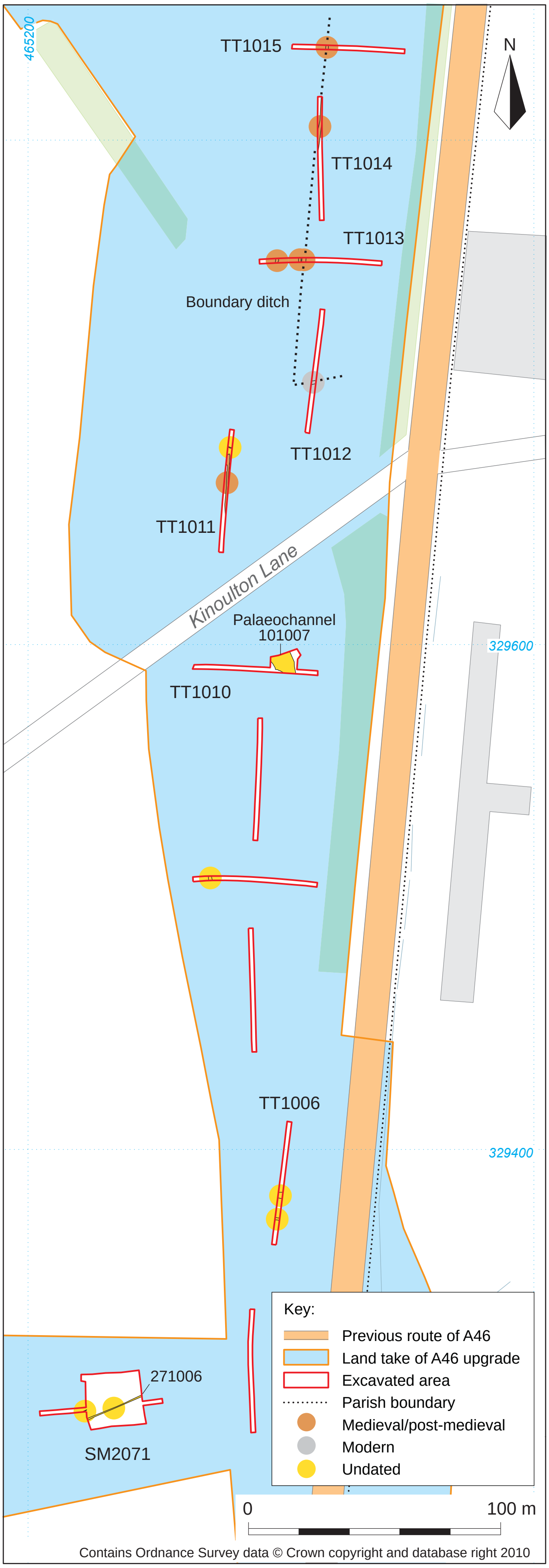


Fig. 9.20 Owthorpe Wolds, trenches and features at southern end, Kinoulton Lane

three diagnostic pieces (two probably Mesolithic and the other probably Early Bronze Age) and comprises material recovered unstratified from topsoil and subsoil deposits. Although divorced of a stratigraphic context, it may be significant that there was an undated palaeochannel (101007 in TT1010) close to where the flints were recovered. Whilst such a small assemblage has only a limited interpretative potential, it nevertheless represents, within the context of the route as a whole, a concentration of worked flint.

Romano-British

On the eastern side of Borders Wood, a series of Romano-British features, most of them small and relatively shallow, perhaps relating to field boundaries and/or enclosures, was excavated in GW4035 (Fig. 9.21). The northernmost of these, gully 403509, was aligned roughly east–west. It had moderately steep sides and a flat base, and contained a single fill from which several sherds of Romano-British pottery, including samian, were recovered. To its south lay a short length of an undated, irregular linear feature (403511), on a broadly similar alignment. South of these were five more linear features running approximately parallel or at right-angles (ditches 403520, 403514 recut as 403519, 403517, 403527 and 403523). They were of a similar size and generally steep or moderately steep sided and flat based. There was also a probable tree-throw hole (403526) cutting gully 403527. These features contained a few sherds of Romano-British pottery, that from ditch 403514 and its recut being diagnostically early, the rest of more general 1st to 4th-century date (McSloy, in archive).

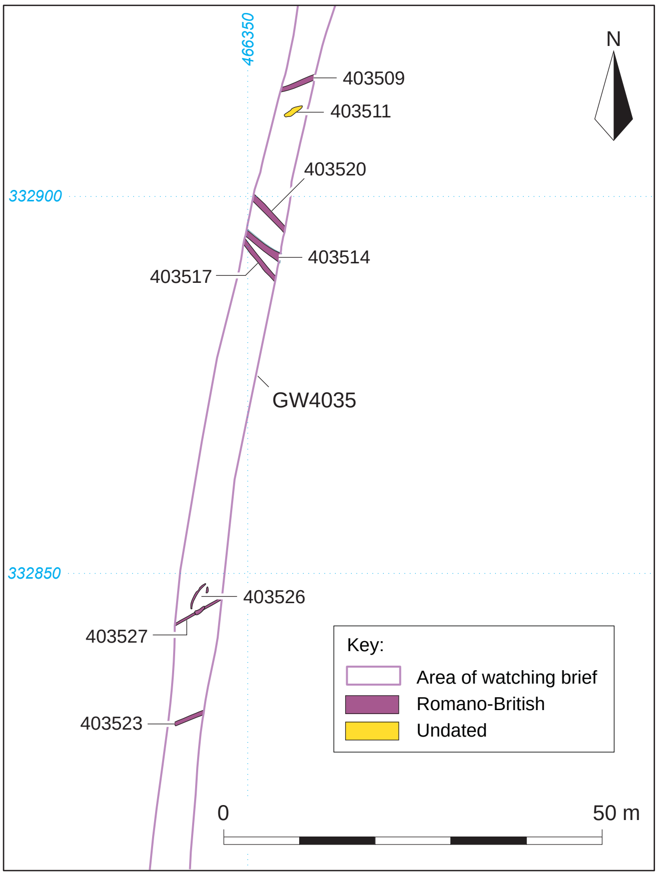


Fig. 9.21 Owthorpe Wolds, Romano-British features in GW4035, edge of Borders Wood

Post-medieval and modern

A number of post-medieval features were excavated (Fig. 9.20). A boundary ditch recorded in TT1012, TT1013, TT1014 and TT1015 north of Kinoulton Lane corresponds closely with the extent of Rohoe Wood on the 1884 Ordnance Survey map.

The majority of the features identified during the watching brief are modern in date, including a ditch and a pit in GW4034, and two gullies at the south-western end of GW4046, probably relating to modern woodland management. Many features in GW4035 were also modern in date (not illustrated on Fig. 9.21).

Undated

The excavation in SM2071 (Fig. 9.20) was targeted on a small cluster of features identified in TT1005 – a gully (271006) aligned ENE–WSW and three discrete features. However there was no dating material within the gully, and the discrete features proved to be natural.

Summary

The concentration of Romano-British features recorded on GW4035 appears to represent the remains of a rectilinear field system. The paucity of pottery recovered suggests that this may not be fairly close to a settlement site, and indicates that some of these features at least were in use in the early or mid-Romano-British period. There is therefore intriguing evidence for Romano-British land allotment in the Nottinghamshire Wolds, which must remain poorly defined or understood for the time being.

Chapter 10
Discussion

Late Upper Palaeolithic at Farndon Fields

The earliest site examined on the route of the new road was that at Farndon Fields which yielded evidence of flintworking, some of it *in situ*, dating to the Late Upper Palaeolithic and associated with hunters of the final warm phase of the last glaciation. This is the first time an open-air site of this date containing *in situ* flint knapping debris has been examined in Britain. The discussion for this unique site follows the site description and related analysis (Chapter 2, above).

Early Holocene Environment and the Prehistoric Period

by Andrew Mudd

Early Environment in the Bingham Basin

Deposits of early Holocene age were examined in a trench though a shallow palaeochannel on the western margin of the Bingham Basin (Chapter 3, above; Figs 3.1–3.4). No artefacts were found associated with these deposits. The bone of a red deer, radiocarbon dated to 6420–6100 cal BC (at 95% confidence) (Beta-260721; 7410±50 BP; Table 3.6), may have come from a naturally deceased animal rather than having been the prey of Mesolithic hunters, so there was no direct evidence of human activity from this trench, although flintwork was found in the vicinity. The sediments in the palaeochannel were shown to have been deposited by slow-moving water that would have drained eastwards into the Bingham Basin. Their locally calcareous nature resulted in the preservation of an unusually rich assemblage of ostracods and molluscs, which give a rare insight into the environment of the palaeochannel over time and also provide a chronological framework through three pairs of radiocarbon dates (six dates in total) taken from the shells of three species – *Punctum pygmaeum*, *Acanthinula aculeate* and *Vallonia costata*. The direct dating of mollusc shells has usually been avoided because of their tendency to take up ancient carbon, particularly carbon derived from limestone rock, and thereby provide unreliable results. However, it is becoming apparent that certain small species that derive their carbon from organic and atmospheric sources can produce consistent radiocarbon results, both internally and with other dated mollusc sequences. Selective dating has therefore enabled a tolerably reliable absolute chronology at this site.

The mollusc sequence showed a development from an environment of richly vegetated marsh, surrounded by open woodland, through to a more closed and drier woodland, and then a slight increase in marshland still within a wooded environment towards the top of the sequence. The three radiocarbon dates bracket this sequence *c.* 8500–5600 cal BC. Both the sequence and dating correspond well with data from other sites, such as Holywell Coombe in Kent and the Ancholme Valley in Lincolnshire. The results provide important new information on the environment of the Bingham Basin as the territory of Mesolithic hunting and gathering groups, and put into context some of the related flintwork recovered from this and other archaeological fieldwork. The sequence contained the rarely found ostracod *Paracandona euplectella* and a later presence of the mollusc *Cochlicopa nitens* than was previously known in the UK. In addition, other intrinsically rare species of mollusc were identified and provide new information on their distribution and date.

Mesolithic and Early Neolithic

Flintwork

The largest collection of Mesolithic flintwork came from the alluvial margins of the palaeochannel which drained into the Bingham Basin to the east (Leivers, Chapter 3); Late Mesolithic blades, bladelets and cores were recovered but many pieces show technology that could be Mesolithic or Early Neolithic in date, and the discussion here considers these periods together. Much of the raw material for flintworking could have been collected opportunistically from superficial drift deposits. The presence of the flints suggest seasonal occupation on the edge of the wetland with its varied resources of game, birds and fish and, perhaps as importantly, with its extended visibility within an otherwise largely wooded landscape. Late Mesolithic flintwork was recovered from a tree-throw hole to the north of the palaeochannel (in DE3006), and further Mesolithic flint was found, mostly residually in later features. The picture is augmented by the flintwork recovered during the systematic fieldwalking surveys conducted by Trent and Peak Archaeological Trust in 1991/2 in a 200 m corridor centred on the proposed route (Fig. 10.1).

It had been previously suggested (Knight and Kinsley 1992, 43–4, fig. 38) that at least three possible activity foci could be identified along the route, against a thin background scatter of flintwork. The finds from the present project support the earlier fieldwalking discovery of concentrations of Late Mesolithic and Early Neolithic flintwork, including bladelet cores and a scraper on a blade, from west of the *Margidunum* road junction (*ibid.*, site D). Elsewhere, a surprising density

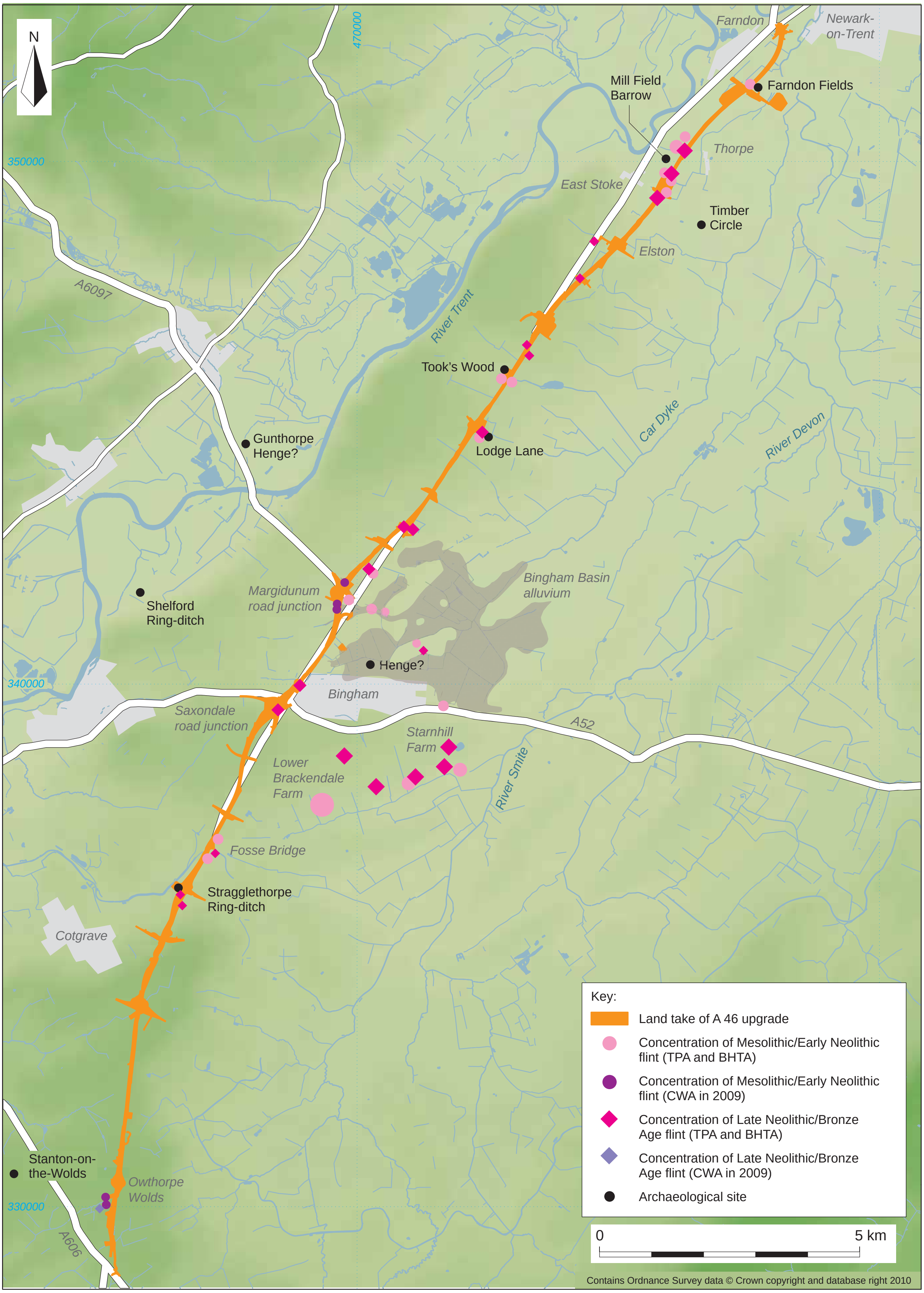


Fig. 10.1 Flint distributions along the route. Incorporating information from Trent and Peak Archaeology (Knight and Kinsley 1992) and Bingham Heritage Trails Association (Allen et al. *2010) surface collection surveys*

of this early material was reported, the diagnostic items being mostly Late Mesolithic, although this may reflect the greater ease of identifying Late Mesolithic blades and cores compared with earlier and later material. The main concentrations are shown on Fig. 10.1. As well as the Bingham Basin site, there were significant groups on either side of Fosse Bridge, at Cropwell Butler and a larger spread near East Stoke, as well as smaller groups at Lodge Lane, Screveton, from near Took's Wood west of Flintham and at Farndon Fields.

As elsewhere in the British Isles lithic findspots and scatters provide virtually all the evidence for activity in this period (Myres 2006). The lack of direct economic evidence and the paucity of data on the composition of lithic assemblages mean that little more than locational information is available. It is therefore not possible to assess the character of these sites, although it is likely that they represent temporary camps of mobile hunter-gatherer communities within an annual cycle of resource exploitation (Knight and Kinsley 1992, 43). It may be significant that these sites all appear to have been located at the headwaters of small streams draining eastwards into the basin of the River Smite and Devon. The importance of water sources and topographic boundries to the siting of these temporary camps is reinforced when considered in the light of the results of the fieldwalking survey conducted across the parish by the Bingham Heritage Trails Association (Allen *et al.* 2010). The published information has been reproduced in indicative form in Fig. 10.1, showing, for the Mesolithic and Early Neolithic, particular concentrations of flint on the marshy margins of the Bingham Basin (including the *Margidunum* road junction), and in the valley of a stream to the south draining into the River Smite (with a major concentration at Lower Brackendale Farm). Further down the valley, near Starnhill Farm, finds included a polished stone axe head, possibly from Langdale (*ibid.*, fig. 2.17).

It is notable that in this early period sites appear to have avoided the ridge south of Bingham. According to the evidence from diagnostic flintwork the upper slopes do not appear to have been occupied (at least in a manner that resulted in discarded lithics) until the later Neolithic. In the later Neolithic and Bronze Age there seems to have been a far wider occupation of the slopes and very little activity on the margins of the Bingham Basin, although the stream to the south still showed bankside occupation. This absence of later flintwork is a feature of the *Margidunum* area as well (Knight and Kinsley 1992, 44), suggesting that waterside and ecotonal resources had become less important by the later Neolithic.

The small amount of other diagnostic flintwork from the present scheme generally represents a background scatter of undiagnostic debitage redeposited in later features. The presence of some Mesolithic material from Owthorpe Wolds at the southern end of the route is of interest, however. The site lies between a small tributary of Fairham Brook to the north and Roehoe Brook to the south, and appears to have occupied a south-facing aspect adjacent to a palaeochannel, a situation typical of the wider pattern seen elsewhere on the route.

Neolithic features

Other evidence for Neolithic activity came from pit (or tree-throw hole) 304449 west of the *Margidunum* road junction (Fig. 3.3) which yielded debitage from the manufacture of a flint axe head. Of probably later date, flints and fragments of a polished Langdale axe head came from a pit further south (306242). Four Langdale axe heads (Group VI) and one North Wales axe head (Group VII) have previously been recovered as stray finds from this area (Knight and Kinsley 1992, 44), and a North Wales axe head was found at Thorpe. The significance of these finds is not clear but there seems to be an association of Early Neolithic flintwork with stone axes of probably wider Neolithic date. There was, however, very little Neolithic pottery from anywhere on the present project and no indications of settlement. A single Peterborough Ware sherd was recovered from pit 301374, at the south-west of the Bingham Basin site, while pit/three-throw hole 234005, near Thorpe (Fig. 9.2), contained both Peterborough Ware and Grooved Ware, together with flint debitage and hazelnut shell which indicates the continuing exploitation of gathered foodstuffs. Two radiocarbon dates from the latter feature – one from residue on the Grooved Ware and one from hazelnut shell – were almost identical in the range 2870–2570 cal BC (SUERC-39055, 4125±30 BP; and SUERC-39056, 4115±30 BP, respectively; Table 9.2).

The evidence in context

The Mesolithic and Neolithic finds from the project, while contributing relatively little to our knowledge of the region during this timespan, nevertheless take their place in the wider regional context. The lack of settlement evidence from the Mesolithic, Neolithic and Early Bronze Age is typical of the wider region where evidence of occupation (of usually indefinable character) is largely limited to discrete deposits such as in pits and hearths (Clay 2006, 70), although the possible Neolithic circular house depression not far away at Stanton-on-the-Wolds (Fig. 10.1) may be an exception to this generalisation (Bishop 2000c, 3).

In discussions of the transition to farming, the degrees of mobility and reliance on arable cultivation in the Early Neolithic are still matters for debate (see Clay 2006 for conflicting views of the evidence and its applicability to the region). It may be significant that the fieldwalking evidence from this project shows a similar coincidence of Late Mesolithic and Early Neolithic lithic material as has been found in wider surveys, such as those on the Derbyshire uplands, the Raunds Area Survey and those on the claylands of Leicestershire and north Northamptonshire (Clay 2006, 70). The Leicestershire surveys showed that Mesolithic and Early Neolithic sites had similar preferences for high ground and proximity to water, as well as a southerly aspect (*ibid.*). There would seem, therefore, to have been similar patterns of resource exploitation across the region in this period.

The excavation site at Willington Quarry, Derbyshire, moreover, showed a coincidence of Mesolithic and Middle–Late Neolithic flintwork from sub-alluvial assemblages in the Trent Valley, and it is significant that the Neolithic charred plants comprised exclusively wild foods – hazelnuts in particular, but also sloe stones and hawthorn pips – while cereals were absent (Monckton 2009, 116). It should be noted, however, that lipid analysis of the associated Peterborough Ware pottery showed the presence of dairy products and ruminant and porcine meat fat (Woodward 2009), so it appears that herding was an aspect of this site in the later Neolithic. In contrast, the importance of cereal cultivation at Lismore Fields, Buxton, with a date range of 3990–3105 cal BC covered by five radiocarbon dates (Clay 2006, 71), is an indication of the variety of Neolithic economic strategies in the region. The range of evidence emerging suggests that a unitary model of either mobile or sedentary settlement is inappropriate and that the picture is more complex (Knight and Howard 2004a, 70–1).

Later Neolithic and Early Bronze Age

Flintwork

Flint scatters of broadly later Neolithic and Bronze Age date on the current project were generally more widespread than in the earlier period, suggesting progressive land clearance and perhaps rising population levels. They are, however, difficult to interpret in terms of occupation or specific activities. Surface scatters of flintwork commonly do not correlate well with subsurface archaeological features, although the possible house depression at Stanton-on-the-Wolds is an exception, having been initially detected by a concentration of surface flint (Bishop 2000c, 4). There were particular concentrations on the present project both north and south of the Saxondale Roundabout, suggesting an activity focus of an unspecified nature (Fig. 10.1). There was a broader spread between East Stoke and Thorpe (in the same general areas as the earlier flintwork), with quantities of flintwork which may suggest settlement (Knight and Kinsley 1992, Site 16, 97).

The presence, north of Stoke Fields Farm, Elston (Fig. 10.1), of a major Late Neolithic or Early Bronze Age monument, in the form of a timber circle, may be significant in accounting for occupation in the area, although the site of the timber circle lies about 1 km south-east of the road corridor (Bishop 2000c, 2, Scheduled Monument No. 29909). It may also be significant that a possible Class 1 henge, 35 m in diameter (Scheduled Monument No. 29902) has been recorded on the northern outskirts of Bingham (about 2 km north-east of Saxondale Junction, Fig. 10.1); the identification of this earthwork (now buried) as a henge, however, is insecure, and it has been interpreted alternatively as a Second World War searchlight battery (Knight 2004, 17).

Despite the flintwork collected on the current project, the evidence for the later Neolithic and Bronze Age use of the landscape along the road scheme remains patchy. It is generally thought that flintwork in the period is ubiquitous, and while particular concentrations may be found their significance is currently far from understood (Bishop 2000c, 4).

Early Bronze Age burial at the Stragglethorpe round barrow

A group of seven inhumation burials, one with a Beaker, were recovered from the upper fill of the round barrow ring-ditch at Stragglethorpe (Fig. 7.3); no bone was recovered from an eighth probable grave near the centre of the monument. Three of the burials date to the Early Bronze Age and the other four seem likely to be of this date by association, although later insertions cannot be ruled out. This monument appears to be a unique find in Nottinghamshire and it takes its place among a diverse group of Early Bronze Age monuments which show few common recognisable themes or practices. The monument had been truncated and there was no surviving stratigraphy above the surface of the substrate within the ring-ditch interior, and it is possible that the truncated upper fills of ditch once contained further burials and finds that have been lost to the plough. The fact that bone survived at all, however, is an important aspect of this site, since ring-ditches on the acidic river terrace sands and gravels of the region frequently lose this evidence.

The monument, which was located in the flat valley bottom of a minor stream, is not known to be part of any ritual or burial ‘complex’, and its relationship with zones of contemporaneous settlement is likewise not known, although its location may have expressed the links of its occupants to the local terrain and the wider community. The Trent Valley region, in common with the Midlands more widely, tends to show broad scatters of ring-ditches of various shapes and sizes rather than grand landscape-wide designs (Guilbert 1999; Clay 2006; Healy and Harding 2007; Garwood 2007, 148–52). Their distribution, frequency and diversity of form and structural history suggest they may be linked with particular lineages rather than with important individuals, as has been argued for the Wessex cultural tradition (Healy and Harding 2007, 56–7). Many barrows and ring-ditches contain multiple burials and, as Barnatt has written of those in the Peak District, they tend to show concern with collective identities, rather than being focused on individuals (Barnatt 1996, 37).

Radiocarbon dates from animal bone in the ring-ditch fill and from three of the burials have been modelled to produce an estimate of the duration of use of the ring-ditch. The dates are all quite consistent, suggesting a ditch construction date of *2210–1980 cal BC*, the Beaker burial *2130–1980 cal BC*, and the other burials slightly later. The duration of use of the ring-ditch may, therefore, have been quite short, probably less than 100 years (Table 7.8), and the narrow, steep-sided form of the ditch may have resulted in rapid silting. There were no primary depositions of material in the base of the ditch or within its middle fills, and no surviving indication of any activity in or around the ditch when it was open.

The remains of the seven individuals in the upper part of the ditch are thought to have lain within the same general stratigraphic horizon, although no clear grave cuts were apparent. Radiocarbon dating of three skeletons suggests that the burial with the Beaker vessel was the earliest, and that the other two are likely to be no more than 50 years later. It is possible that all three of the comparatively well-preserved adults were females, and this group had been buried on the northern and north-eastern parts of the ring-ditch circuit; two infants had been buried on the western side. The crouched/flexed position of all the burials (where this could be determined) is typical of the Beaker tradition.

The Beaker vessel by the pelvis of skeleton 304038 was the only grave good that could be recognised as such. The vessel was highly decorated with incised and comb-impressed lines in geometrical patterns typical of this class (Figs 7.11 and 7.12), although precise comparisons have not been forthcoming. It is thought to have been buried complete and the few missing pieces, from small parts of the rim and body, are likely to have been lost through weathering. The radiocarbon date on a bone sample from the human remains it accompanied confirms the general dating of this long-necked form of Beaker.

The charred wood by skeleton 304184 may have been a grave good but it cannot be identified as an artefact. A charred oak plank was identified from a Beaker burial central to the ring-ditch at Gravelly Guy, Stanton Harcourt, Oxfordshire (Grave 4013/12, Lambrick and Allen 2004, fig. 2.10), in a similar position to that at Stragglethorpe, behind the remains of the crouched body. Charcoal was also present covering the skeleton at Gravelly Guy, so, as an interpretation of that grave suggested, it is plausible that the plank was the remains of a lid associated with the wooden lining, having only partly survived on one side of the grave when the rest of the lid collapsed into the grave. It can be noted that the wooden grave lining is an interpretation distinct from a coffin where the base of the grave pit might also be expected to show evidence of the wooden box. A very similar charred oak plank was recorded behind the primary Beaker burial (Grave 28) at Barnack, Cambridgeshire (Donaldson 1977, 208). There was no clear interpretation of this layer other than it was probably the remains of a 'plank-like object' (*ibid.*). It was clearly not a coffin since identifications of coffins were made in two other graves at this site where charcoal formed a lining within the grave cut. It also seems unlikely to have formed part of a lid to a grave lining since the photograph (*ibid.*, plate XXIX) clearly shows the 'plank' at a lower elevation than part of the skeleton. It is therefore unlikely to have formed a cover unless voids in and around the chamber had allowed a substantial degree of post-depositional movement. A similar situation is evident for skeleton 304184 at Stragglethorpe where the broken ends of the ribs protrude above the layer of charcoal (Fig. 7.8). The function of the 'oak plank' is, therefore, still unclear. Elsewhere, burnt oak timbers have been recorded in the top of a probable grave at Trowse-with-Newton, Norfolk (Healy 1982) and charred oak planks, possibly structural timbers, have been recorded from the ditch of Barrow 6 and beneath the mound of Barrow 4 at Raunds (Healy and Harding 2007, 65).

The burial positions of this group show interesting and not fully explicable variations and they do not seem to be conditioned by the fact that the burials were made in a ring-ditch. The position of skeleton 304038 (Fig. 7.8, top left), on the right side, head to the south and facing east, is typical of the female Beaker burials south of the Humber (Shepherd 2012, 274). The orientation of the body across rather than along the east–west axis of the ditch at this point appears to have been a deliberate choice. By contrast, nearby burial 304426 (Fig. 7.8, bottom right), while made in the 'female' position on the right side, was orientated with the head to the west in the typical fashion found in North-East England (*ibid.*). Skeleton 304184 (Fig. 7.8, top right) is in the typical southern male position (on the left side, facing west), and the osteological identification of a probable female is at odds with this rite. It is sometimes the case, however, that females were buried in the 'male' position, and vice versa, for reasons that may relate to specific relationships or situations in group burials (*ibid.*, 275). This may be analogous to the situation where double burials often have Beakers showing 'male':'female' or 'senior':'junior' pairings with regard to form, size and decoration (*ibid.*, 273). Both the infant burials were on their left side, facing approximately south, which accords with the 'male' position in the north-east, although it is not clear (and impossible to test on osteological criteria) that children were necessarily part of Beaker gender distinctions when it came to burial. The group as a whole, therefore, shows an intriguing mixture of southern/northern and male/female traditions which may relate to particular biographies and influences at play.

The frequent burial of children in and around round barrows has been taken as an indication that the social groups that made and used them were small-scale family groups whose members qualified for burial through birth rather than through lifetime achievement (Healy and Harding 2007, 56), and the burials in the Stragglethorpe ring-ditch are typical in that respect. The group included adults, a subadult and infants, and it may be significant that, although the adults (where identifiable) were female or probably so, one appears to have been buried in the 'male' position, as if there was a requirement for a 'male' presence. It may also be significant that the Beaker was associated with the earliest burial remains, perhaps reflecting seniority.

Despite containing no surviving bone, the near-central subrectangular feature probably originally contained a burial. It is almost identical in form and size to the Beaker 'grave' near the centre of the Catholme 'sunburst' hengiform monument (although no bone survived at that site) (Buteux and Chapman 2009, 72) and the tradition of a central burial is common more generally. The central darker fill of the grave probably represents the fill of a wooden chamber. The chamber was small in relation to the grave (1.6 m by 0.7 m), but large enough to have contained a crouched or flexed individual, being of similar size to that containing the 'Companion' to the Amesbury Archer (Fitzpatrick 2011, fig. 23). There is no evidence as to the nature of the chamber construction which, in the absence of any trace of post or plank settings, may have been of lighter wicker construction.

The absence of a skeleton may have one of three explanations: the bone had completely decayed, the chamber had been opened and the body or skeleton removed or the grave had never contained a body but rather had been a cenotaph-like structure. There is little to choose between these explanations, although a review of wooden Beaker burial chambers by Fitzpatrick (*ibid.*, 199–202) points to evidence from southern England suggesting that in some cases graves were reopened and bones removed or rearranged. The use of wooden chambers would have allowed this to have taken place, and it is possible that this was a regular part of Beaker mortuary rites (*ibid.*). The absence of grave goods may also suggest that the grave had been reopened, but there is no compelling reason for the original burial to have been accompanied despite its apparently 'primary' character. Whether the central grave was contemporary with the ring-ditch or preceded it by any significant length of time is not knowable. If it preceded it, it could have been marked in some manner, the most obvious marker being a mound made up at least partly from the soil dug from it.

Given the truncation of the site, the form and scale of any barrow mound associated with the ring-ditch also remains unknown, although the soil dug from the ditch would have been sufficient to construct a relatively modest mound and additional soil may have been scraped up from the surrounding area. The fact that one of the medieval plough furrows appears to stop short of the monument suggests some sort of surviving earthwork at that time, either preventing ploughing across it or lifting the plough above the present modern level.

Later Prehistory

Middle–Late Bronze Age burial and settlement at Saxondale

The small group of cremation burials at Saxondale have two radiocarbon dates from cremated bone confirming them as Middle Bronze Age. The slightly earlier date comes from one of the two graves near the centre of the site (270050, with a date of 1610–1440 cal BC). The single cremation grave to the north-east (269625) has a date of 1420–1220 cal BC, so does not appear to have been contemporary with either central group or the slightly later Roundhouse 1. The rite is entirely compatible with the traditions of the Middle Bronze Age, although elsewhere in the region burials have been more usually found in larger cemeteries which often include a proportion of cremations contained within urns of Deverel-Rimbury bucket- or barrel-shaped forms datable to around the mid-2nd millennium BC (eg, Martin and Allen 2001; Barnatt 1996).

The quantity of cremated bone from each burial was small, the largest quantity, 73g from burial 270050, representing only a fraction of what might be expected from an adult. It is, however, apparent on better preserved sites that the quantities of cremated bone, particularly in unurned cremation burials, normally only represents a small proportion of the cremated material produced on the pyre (Martin and Allen 2001, 13; McKinley 1994c, 339).

The landscape context of these cremation burials is unknown; they may have been associated with nearby settlement or have been at a distance from it. At Eaglestone Flat, Derbyshire, the burials were set in the boundary of an agricultural landscape, some covered by stone cairns (Barnatt 1996). It is possible that the Saxondale burials were located on a boundary away from settlement and marked in some manner, but there was no evidence of this. Elsewhere, the burials at Tucklesholme Farm, Staffordshire, lay adjacent to and were focused on a ring-ditch of presumed Early/Middle Bronze Age date (Martin and Allen 2001).

The 'trough' (feature 269298) lacks any obvious interpretation. It is considered likely to be Bronze Age in origin by virtue of a few sherds of grog-tempered pottery from the lower fills; some Iron Age pottery came from the upper fills. It seems to have largely filled in by natural processes. A similar long pit was excavated at Bromfield, Shropshire, forming the central feature of a ring-ditch (Fig. 10.2A; Hughes *et al.* 1995, Ring-ditch B9). It was shorter, wider and deeper (14 m by 4 m by 1 m) than the Saxondale trough (Fig. 10.2B), but had a similar flat-based profile and had also largely silted up naturally. It was devoid of pottery, but yielded two radiocarbon dates on unidentified charcoal, one from the primary

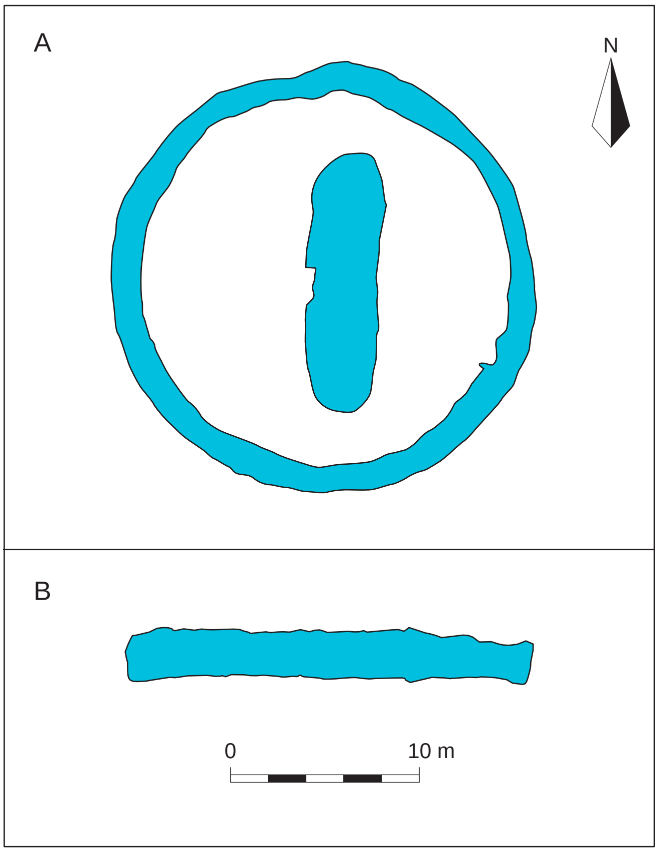


Fig. 10.2 Bronze Age 'troughs'. A) long pit from Bromfield, Shropshire (Ring-Ditch B9. From Hughes et al. 1995, fig. 9). B) trough 269298, Saxondale

fill (2200–1620 cal BC at 95% confidence; OxA-4210, 3535±105 BP) and the other from an upper lens (1440–910 cal BC at 95% confidence; OxA-4209, 2970±100 BP) (*ibid.*, 57). The features remain enigmatic, but the positioning of the Bromfield 'central feature' within a ring-ditch and the scarcity of material from either feature would suggest they were not related to normal domestic occupation but something more specialised.

Roundhouse 1 (dated to 1260–1020 cal BC, or a little later if the radiocarbon sample represents oak heartwood) is a relatively rare example in this region of a Middle–Late Bronze Age roundhouse. Typically, this was defined only by a ring of postholes (without an encircling drainage gully), the diameter of which (8.4 m) is just over the modal value of 7.5–8 m calculated for those in Wessex (Sharples 2010, 195), although there are regional variations (*ibid.*). There are, however, difficulties in defining the size of houses from the evidence of the postholes alone. Sharples (2010) appears to assume that the diameter of the post-rings defines the diameter of the internal roof supports, with the wall line (normally lost to erosion) lying further out. However, at Shorncote Quarry, Gloucestershire, with 34 structures excavated (one of the largest groups of Late Bronze Age houses in the country), the post-ring is thought to have formed the wall line (Hearne and Adam 1999). A high proportion of the houses at Shorncote Quarry had rather more substantial pairs of outer posts interpreted as projecting porches. In two cases this suggested reconstruction appears to be verified by the identification of an inner ring of roof supports.

The lack of projecting door posts at Saxondale perhaps argues that the post-ring defined the house wall (see Fig. 10.4A). The arrangement is similar to house 1744 at Shorncote Quarry (*ibid.*, fig. 10; see Fig. 10.4C), for example, which has a ring of six fairly evenly spaced wall posts and a larger and more closely set pair of door posts on the same arc facing south-east. Roundhouse 1 at Saxondale had a similar symmetry to the posthole pattern, with the more closely spaced door posts facing east. Another similar pattern of postholes formed Structure 7 at Colne Fen, Earith, with an entrance facing east (Brudenell and Evans 2007, 38–42; Fig. 10.4D).

Regional examples of post-built houses come from Swarkestone Lowes, Derbyshire (Guilbert and Elliott 1999, Figs 10.3 and 10.4B) and Catholme, Staffordshire (PS1, Losco-Bradley and Kinsley 2002; Fig. 10.4E). The Swarkstone house had a double-post door set outside a ring of nine roof supports, and the Catholme house was similar, although the projected wall line is very close to the internal roof supports. There is, therefore, some variation to the tradition of post-built roundhouses in the Late Bronze Age which on present evidence does not appear to be regional.

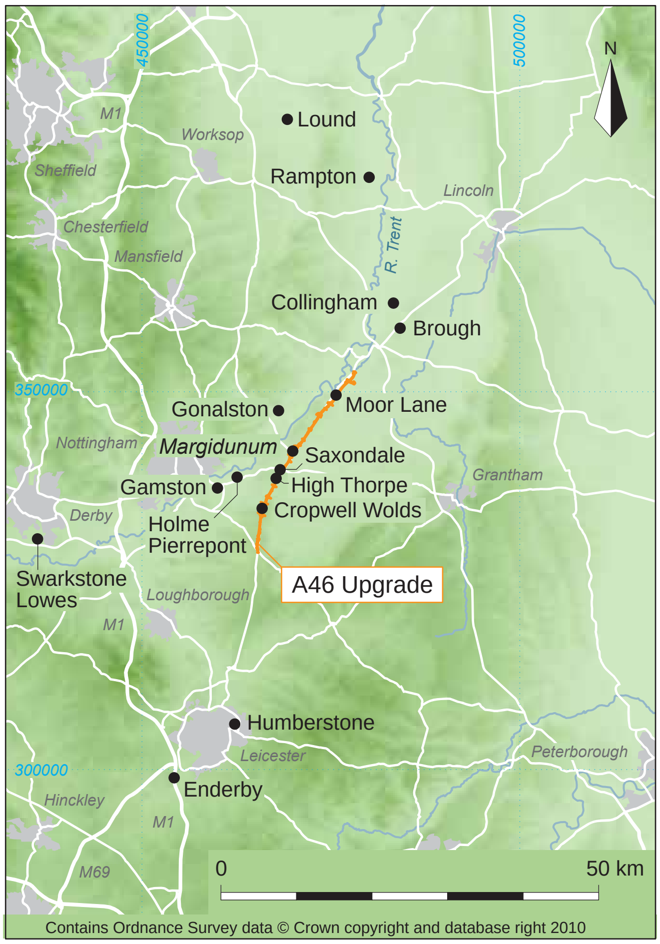


Fig. 10.3 Prehistoric and Romano-British sites in the area

Later prehistoric land division and settlement

Ditches and pit alignments

Potentially the earliest land division lay towards the southern end of the site at Bingham Basin Environs, where a double-ditched alignment may be as early as Late Bronze Age in date (Fig. 3.7). The ditches were recut and discontinuous and, being narrowly spaced, appear likely to have flanked a bank rather than a trackway. The pottery indicates a transitional Late Bronze Age/Early Iron Age, or early 1st millennium BC, date, which makes these features earlier than any of the other ditches on the site. There are, however, difficulties with accepting this evidence at face value. Ditches of this date are rare in the northern East Midlands where the appearance of land division is relatively late when compared with areas further south and east (Bishop 2000d, 4). There is a possible comparison from Gonalston (Fig. 10.3) where, among the several roughly parallel boundary ditches of generally Middle Iron Age and Romano-British date, one yielded groups of Late Bronze Age/Early Iron Age pottery (Knight and Howard 2004a, 100–1). There is, however, the possibility of redeposition from a poorly defined phase of occupation, both at this site and elsewhere where small quantities of early material are found (*ibid.*). The sparse evidence for Late Bronze Age/Early Iron Age settlement in the Trent Valley generally indicates unenclosed occupation sites and an unbounded landscape (Knight and Howard 2004a, 87). Unless more of this kind of evidence is brought to light in the region, perhaps particularly the Trent Valley, the interpretation

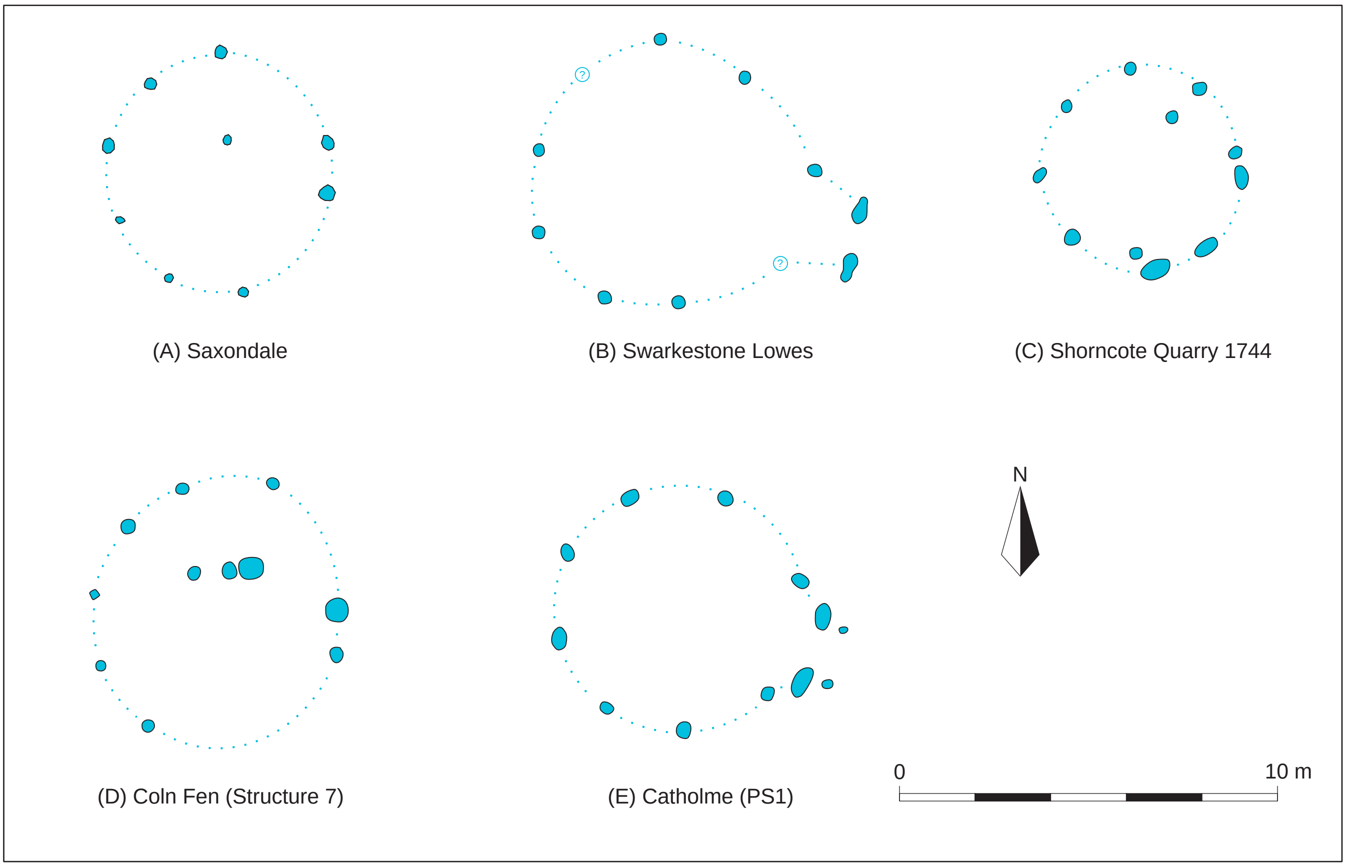


Fig. 10.4 Comparative plans of Bronze Age post-built roundhouses: A) Saxondale (Roundhouse 1), Nottinghamshire; B) Swarkestone Lowes, Derbyshire (from Guilbert and Elliott 1999, fig. 3); C) Shorncote (1744), Gloucestershire (from Hearne and Adam 1999, fig. 10); D) Colne Fen (Str. 7), Earith, Cambs (from Brudenell and Evans 2007, fig. 12); E) Catholme (PS1), Staffordshire (from Losco-Bradley and Kinsley 2002, fig. Y)

of these ditches needs to be treated with caution. They may be related to small-scale occupation of an as yet undefined nature, unrelated to wider land allotment or territorial division, or be of a date closer to the mid-1st millennium BC as found elsewhere in the region.

Pit alignments are the first evidence of large-scale land division in the Trent Valley region, where they are fairly common, and are thought to have divided blocks of land associated with settlement (Knight and Howard 2004a). As in other parts of the country, precise dating is often difficult to obtain, but they are thought to date mostly from the mid-1st millennium BC and are, therefore, later than those found further south such as in the Nene Valley in Northamptonshire (Knight and Howard 2004a, 102–4). The triple alignment at Bingham Basin Environs (DE3001, Fig. 3.7) is very unusual, but there is no reason to suspect that it was for a different purpose to the single, and occasionally double, alignments elsewhere. The single OSL date from it suggests a broadly Middle Iron Age date (Table 3.1) and, although this is relatively late, this would make it approximately contemporary with the two double-pit alignments on the lower Tame river terrace at Whitemoor Haye in Staffordshire (Coates 2002; Hewson 2007; Buteux and Chapman 2009, 102–20; Fig. 10.5C & D).

The pits of the Whitemoor Haye alignments were similar to those at Bingham Basin Environs, with evidence of having held posts, although they had more bowl-shaped profiles and were recut (Coates 2002, 15). The northern alignment at Whitemoor Haye (Fig. 10.5C) was dated by radiocarbon to 410–120 cal BC (at 95% confidence, Beta-135227; 2230±60 BP), and by a few large sherds of Middle Iron Age pottery (*ibid.*). The southern alignment was very similar in form and together they ran approximately parallel, east–west and *c.* 300 m apart, perhaps defining a block of land running down to the Tame. Other double and triple-ditched systems, to the south of the Whitemoor Haye alignments, appear less securely dated to the Iron Age, but their alignment is similar. With the ditches *c.* 5–7 m apart they have been interpreted as droveways guiding the movement of livestock from the Tame floodplain (Hewson 2007, 109).

It has also been suggested that these divisions apportioned agricultural resources in a similar manner to that achieved much later in the medieval parish system (Buteux and Chapman 2009, 106). While there was nothing to suggest that the pits at Bingham Basin Environs had ever held posts, it is perhaps an obvious interpretation for the smaller, central line of pits, which may have formed the original boundary marker, followed by the excavation of the pits on either side. At Catholme, Staffordshire, a multi-phase terrace-edge land boundary

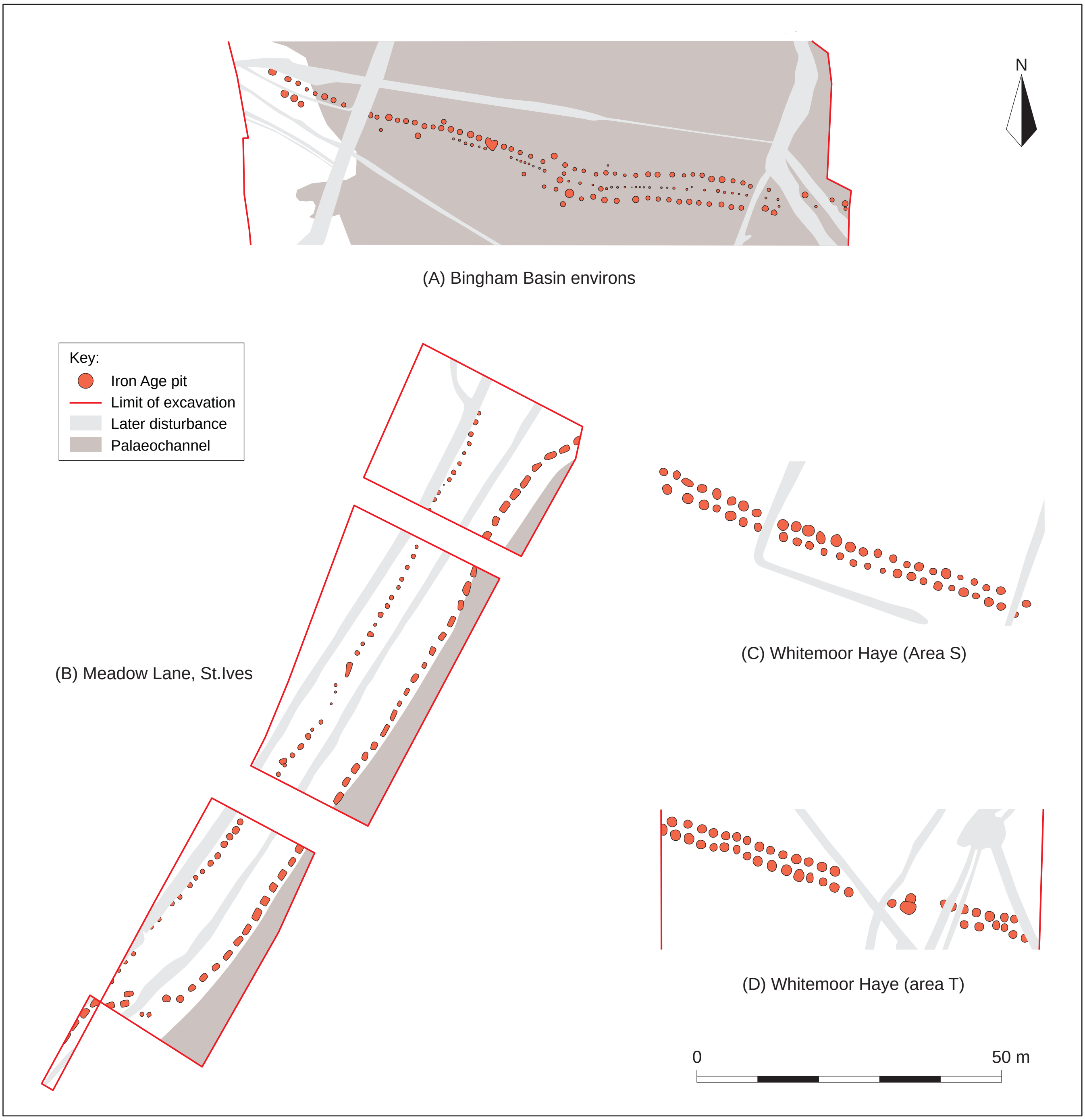


*Fig. 10.5 Comparative plans of double pit alignments: A) Bingham Basin/*Margidunum*, Notts; B) Meadow Lane, St Ives, Cambs (from Pollard 1996, fig. 4); C) Whitemoor Haye Area S, Staffs (from Coates 2002, fig. 6.5); D) Whitemoor Haye Area T (from Coates 2002, fig. 6.8)*

(lasting through to the Anglo-Saxon period) started as a roughly parallel pit and posthole alignment in the first millennium BC and was later redefined by ditches (Losco-Bradley and Kinsley 2002, 15–20).

The wider landscape context of the pit alignment is not known, but its location across parts of an earlier palaeochannel suggests that it may have represented the formalisation of an earlier natural land boundary. It is clear that the channel was not active at the time the pits were dug, but it is likely to have remained a marshy and somewhat peripheral area of land, as continued drainage endeavours into historical times indicate. In this respect it has a similarity with the meandering pit alignments at Meadow Lane, St Ives (Cambridgeshire) which followed the edge of a palaeochannel (Pollard 1996, 110; Fig. 10.5B). These were thought to have been a relatively short-lived phase of boundary definition, and they were followed by Romano-British ditches dug between the two earlier alignments. It was considered, because of their difference in form, that the Meadow Lane alignments were likely to have been sequential, the alignment of rectangular pits on the edge of the palaeochannel probably being replaced by the alignment of circular pits on higher ground 10 m further west. However, it was noted that the detail of the alignments showed such close similarity that the earlier rectangular pits must have been visible in some form when the circular pits were laid out (*ibid.*, 102). As at Bingham Basin, the Meadow Lane alignments have 'lengths of alignment displaying regular siting and spacing, interspersed with sections of rather chaotic appearance' (*ibid.*). It was suggested that the grouping of similar pits, and the minor changes in size, spacing and alignment, were indications of gang construction (*ibid.*, 100), and the Bingham Basin Environs pits invite a similar interpretation. Both sites therefore may show an aspect of communal undertaking intended to sanction the boundary's location and purpose.

The presence of another boundary ditch (ditch 218534) 450 m to the south-west, of a similar date and on a similar alignment (Fig. 3.6) is an intriguing suggestion of a regular pattern of land allotment in the area by this time. It is therefore possible that the significance of these divisions persisted into immediately pre-conquest times, when the enclosures were laid out north of the pit alignment (Fig. 4.2). One Late Iron Age enclosure (Enclosure H) certainly incorporated ditch 218534 within part of its boundary (Fig. 4.11).

Iron Age boundary ditches were examined on three other sites, at Cropwell Wolds, Cropwell and High Thorpe. In each case the ditches extended for unknown distances beyond the excavation areas, and it is possible that they were extensive. At Cropwell Wolds and High Thorpe the presence of Iron Age settlement adjacent to the boundary ditches is an indication of a type of boundary settlement which occurs widely in areas where land divisions are common, and may be in widespread in the Trent Valley north of Newark and adjacent areas (Knight and Howard 2004c, 102–3). At Cropwell Wolds the small settlement appears to have developed next to an existing boundary. The picture appears have been more complex at High Thorpe, where the boundary and settlement may have developed together, although their inter-relationships could not be entirely disentangled within the area excavated. There was no indication that these boundaries had any long-lasting influence on the landscape in the Romano-British period and beyond, and the close co-incidence of the Cropwell Wolds ditch with a public footpath to Cropwell Wolds Farm probably owes more to topography since the alignment follows a natural ridgeway.

Middle Iron Age settlements

The Iron Age settlements on this project show combinations of familiar elements including eaves drip gullies of penannular or curvilinear form, subrectangular or more irregular enclosures, groups and alignments of pits, and postholes associated with ancillary structures. Finds, including animal bone and charred cereal remains, indicate that they were farmsteads typical of the period. In the case of the Middle Iron Age settlements at High Thorpe and Cropwell Wolds the dating is not precise, the pottery indicating a general range within the period *c.* 400–50 BC, the absence of wheel-thrown wares, which occur alongside Scored wares at Gamston and Holme Pierrepont (Fig. 10.3), indicating that occupation had ceased by the 1st century AD. For Cropwell Wolds the dating was refined by five radiocarbon dates, on charred grain and animal bone, which consistently group around the 4th–2nd centuries BC, and when modelled using Bayesian statistics suggest a duration of occupation from the 4th to the later 3rd centuries BC (Barclay and Stevens, Chapter 8); it is possible that this occupation was slightly earlier than that at High Thorpe.

The differences in pottery fabrics between the two sites may also support this suggestion of chronological difference, although the dominance of local fabrics might result in fabric variations between two sites in different locations, even if they were contemporaneous. Roundhouse 2 at Saxondale is of similar Middle Iron Age date, but poses questions of continuity into the Romano-British period because of the influence the roundhouse appears to have had on the layout of Romano-British enclosures and other features here. It is possible that occupation continued later than the pottery indicates, perhaps because the status of the inhabitants meant they were not using Late Iron Age vessel types, or because truncation has removed evidence of the latest deposits, although this cannot be demonstrated. In addition to these sites, part of an Iron Age enclosure was recorded in plan at Moor Lane, East Stoke, but little of it was investigated by excavation and its date and character are unclear.

High Thorpe and Cropwell Wolds

The Middle Iron Age settlements at High Thorpe and Cropwell Wolds lay about 4.5 km apart and both were directly related to linear boundary ditches dividing the wider landscape. High Thorpe may have been a linear settlement which developed at the same time the boundary ditch was established, but its complete extent was not revealed within the excavation area. The settlement, including Roundhouse 1, was closely defined by the boundary ditch on its eastern side, although its extent was apparently not completely determined by it, as indicated by the sequence of enclosures in the northern part of the site where at least one enclosure appears to have been established after the boundary here had gone out of use. Morphologically it can be classed as an agglomerated settlement (ie, made up of enclosed and open elements but not enclosed overall), with a superficial similarity in appearance, if not perhaps scale, to the settlement at Glebe Farm, Brough (Fig. 10.3) Jones 2002; Knight and Howard 2004a, fig. 5.16) whose overall extent is also unknown.

The Cropwell Wolds settlement is slightly different both because it appears to have been unenclosed and it was more clearly positioned next to an existing boundary. There are a small number of pits on this site dated to the Late Bronze Age/Early Iron Age but no continuity with the Middle Iron Age settlement is implied.

In both cases the siting of the farmsteads was conditioned by existing land uses in a manner that is familiar in other parts of the country, but does not appear typical of the Trent Valley where small enclosed farmsteads are far more common (Knight and Howard 2004a, 90–9). In the Upper Thames Valley the 'model' for Gravelly Guy, Stanton Harcourt, sees linear settlements as being located between arable land, in this instance on the edge of the gravel terrace, and pasture lying towards the terrace core (Lambrick and Allen 2004). Similarly, at High Thorpe it is possible that the boundary location was significant in enabling access to these two land resources. In this case it may be suggested that the small enclosures were needed for livestock, and to protect stores of crops and fodder. There were few pits of grain storage type, and nothing that could be identified as a raised granary and while charred cereal remains included barley and wheat, these were sparse. In this respect there are differences from the Cropwell Wolds charred plant assemblages, which were relatively abundant. It may be significant that the Cropwell Wolds weed assemblages included a high number of seeds of low-growing weeds, indicating not only that the crop was cut close to the ground but also that the whole plant was brought to the settlement, and possibly stored as sheaves. This may be a point of contrast with High Thorpe where they may only have stored the grain only. It is of interest to further note that the weeds from High Thorpe suggest the cultivation of slightly calcareous soils. These may have been at distance from the settlement since, as the condition of the animal bone indicates, the immediate soils at High Thorpe are slightly acidic. The evidence would seem compatible with a model of a livestock-oriented economy at High Thorpe, where the cereals consumed were brought in from elsewhere, such as the more calcareous soils of the Wolds. The animal bone assemblages from these two sites, comprising the usual range of domestic Iron Age species, were not large enough to be useful, and the greater quantity from Cropwell Wolds may simply reflect a better depositional environment.

There are no clear indications of status from either site, the range of finds being typical of the small rural settlements in the region (Knight and Howard 2004a, 100). Of note, however, are the mould fragments from High Thorpe, indicating at least one episode of copper alloy working, and the glass bead from Cropwell Wolds, suggesting direct or indirect contacts with the south-west. It may be significant that the Cropwell Wolds pottery assemblage, in contrast to that from High Thorpe, contained pottery of shelly fabric exotic to the immediate area. This may suggest a desire or need to acquire some commodities from further afield, perhaps implying less self-sufficiency than shown at High Thorpe.

The layout of the roundhouses at Cropwell Wolds suggests that all three were of one phase (Fig. 10.6C). The group corresponds to a typical module of between

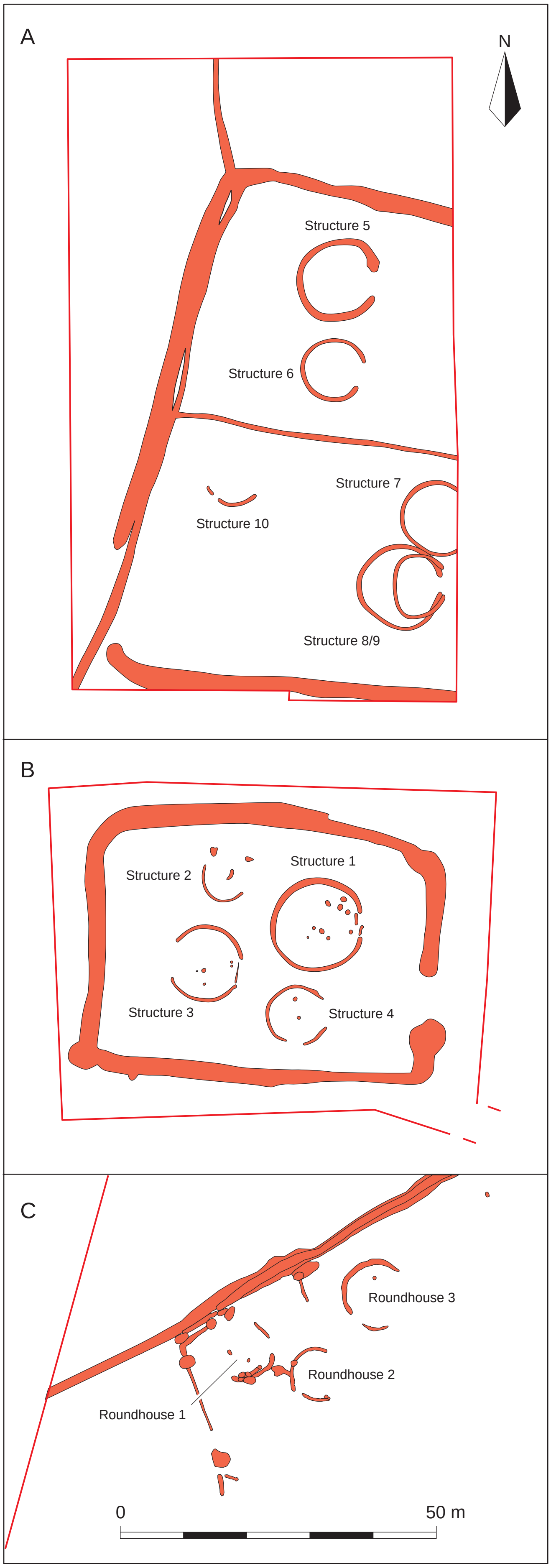


Fig. 10.6 Comparative Iron Age settlement plans: A) Whitemoor Haye Area A (from Coates 2002, fig. 22); B) Whitemoor Haye Area B (from Coates 2002, fig. 17); C) Cropwell Wolds, Notts

two and four structures recorded widely in the Trent Valley and elsewhere, where they are frequently found arranged within small subrectangular enclosures, such as those at Fisherwick and Whitemoor Haye, both in Staffordshire (Smith 1979; Coates 2002). There are no indications as to the particular functions of the structures at Cropwell Wolds, although the typical module comprises roundhouses of different sizes, typically a main house, a smaller one to one side and often one or more 'subsidiary' houses to the rear. The group in Whitemoor Haye Area A (Fig. 10.6B) is comparable with the Cropwell Wolds group, although there are four structures at the former which may relate to more than one phase of construction (Coates 2002, fig.17). The possible presence of a partially circular 'subsidiary' structure at Whitemoor Haye (Structure 2) has a counterpart in Roundhouse 1 at Cropwell Wolds, although in both cases the excavators preferred to interpret them as badly truncated penannular gullies. Similar evidence for a subsidiary structure is also present within the southern group in Whitemoor Haye Area B (Fig. 10.6A; Coates 2002, fig. 22, Structure 10).

Saxondale

The Middle Iron Age roundhouse at Saxondale (Roundhouse 2) would have been slightly smaller than its encircling gullies which enclosed a space nearly 12 m across. There was a 3 m-wide entrance gap facing east, but no trace of a hearth. The zoning of pits on the western side (rear) of the house is a distinctive feature implying a tightly controlled use of space, although the seeming absence of contemporary buildings or other features nearby is puzzling. It is possible that the cluster of undated postholes to the south represents another building, while the settlement may have extended further north as well. Some pits intercut, but it has not been possible to provide overall phasing or to ascribe functions to the majority of them. As elsewhere, some are assumed to have been for storage, although only a few of the larger ones may have been suitable as grain stores.

Other pits lay within the roundhouse and at the eastern terminals of the drip gullies, the latter of interest in having produced most of the Middle Iron Age finds from the site. Pits 269375 and 269373 at the south-east terminal of the drip gully are stratigraphically earlier, but their location suggests they relate to the roundhouse, perhaps in an early phase. They contained a large portion of a neckless jar, which although incomplete is not typical of material deposits on this site, and which may have been a 'placed deposit' relating to the use of the roundhouse. Other, larger pits (268540, 269589) cut the north-west gully terminal, although these contained fewer and smaller sherds (including post-conquest greyware).

The possible 'placed deposits' can be linked with a range of concerns that structured the habitation of domestic space in the Iron Age. The presence of unusual deposits (whether measured quantitatively or qualitatively) at the entrances to roundhouses and other enclosures is a well-known phenomenon (Parker Pearson 1996; Gwilt 1997; Mudd 2007, 169–72; Woodward and Hughes 2007). In some cases these can be seen as a more or less random accumulation of debris from nearby middens, most usually inferred to have lain to the left of the doorway (viewed from the outside). At Saxondale the singularity of the deposit of pottery in pits 269373 and 269375 (65% by weight of Iron Age pottery from the entire excavation) makes it more likely that this was an intentionally placed deposit. A similar deposit of semi-complete Iron Age vessels came from Rothersthorpe, Northamptonshire, from the southern terminals of two penannular gullies (RD1 and RD6), accounting for a similarly high proportion of the total amount of pottery from that site (Holmes and Chapman 2005). The multi-phase Iron Age site at Humberstone, Leicester (Fig. 10.3), had a remarkably large number of complete and semi-complete vessels, mainly from gully terminals, again apparently 'structured deposits' relating to building life-cycles or other earth rituals (Charles *et al.* 2000).

Moor Lane, East Stoke

The small enclosure at Moor Lane, East Stoke, was of a type not seen elsewhere on this project. Unfortunately, circumstances led to it being largely unexamined by excavation, although a section was cut through the enclosure ditch which was shown to be a substantial feature (1.2 m deep). Although the ditch remains undated it was cut by a Romano-British trackway ditch and there is no difficulty with seeing the enclosure as an Iron Age type found widely in the region, and indeed it may be considered typical of Middle Iron Age (or later Iron Age, depending upon terminology) settlement in central Britain (Willis 2006, 101). It is unclear whether there were any associated internal features among the few identified in the interior. The enclosure does not closely correspond to the Wootton Hill type of 'defended enclosure' (Dix and Jackson 1989) where the ditches tend to be deeper (2 m or more), but the supposed defensive purpose of these enclosures is, in any case, questionable (Meek *et al.* 2004, 17; Mudd 2007, 167). Whether a gateway structure was present is not known since the entrance presumably lay on the eastern side, which lay outside the limit of excavation. Overall the enclosure was of a similar size, and may have been of similar type, to the subrectangular enclosure at Enderby, south of Leicester (Fig. 10.3), with a ditch 1.45 m deep and which in any one phase contained a pair of roundhouses in one half of the enclosure (Meek *et al.* 2004).

Late Iron Age and Romano-British Period

by Nicholas Cooke and Andrew Mudd

Introduction

The excavations on the A46 improvement works clearly highlight the importance of the coming of Rome, and its legacy in the modern landscape. Prior to these works, the line of the A46 closely followed the line of the Fosse Way, one of the major Roman roads built to link key cities

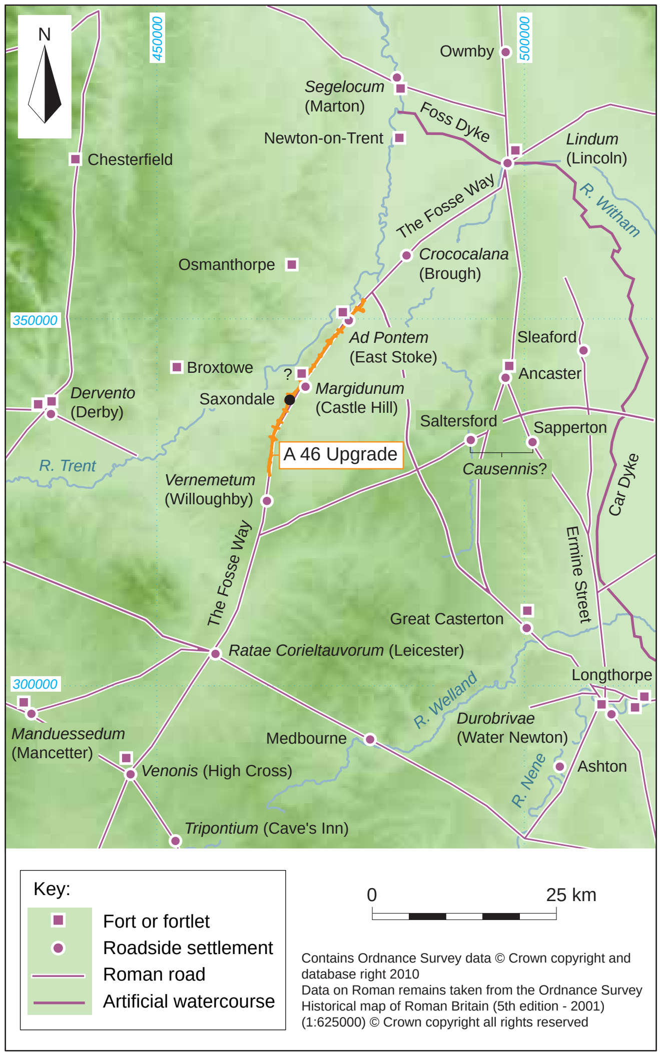


Fig. 10.7 Roman roads and roadside settlements around Margidunum

and garrisons within the province of Britain (Fig. 10.7). The secondary towns of *Margidunum* and *Ad Pontem* both lay close to the River Trent, which formed a major barrier to east–west communication in this area, and it seems likely that there were crossing points near both.

The road scheme's design ensured that the two known Roman roadside settlements or secondary towns along this stretch of the road were not impacted by the improvements, with the new road passing to the west of *Margidunum* and to the east of *Ad Pontem*. However, at *Margidunum*, it passed close to the south-western extents of the defended centre of the town and between the site of the town and the nearby Newton Villa situated on a slight rise some 500 m south-west of the defences. This allowed the exploration of an extensive area of the immediate hinterland of *Margidunum* and revealed evidence for Late Iron Age and Romano-British settlement associated with the farming of the surrounding landscape, and with the development of the settlement along the Fosse Way (Chapter 4; Fig. 10.8).

North of *Margidunum*, near *Ad Pontem*, the route passed some distance from the settlement, and the excavations only revealed limited evidence for the wider division of the landscape in the Romano-British period (Chapter 9). Within *c.* 2 km to the south of *Margidunum*, a small excavation area north of Saxondale revealed the eastern edge of the Fosse Way, with settlement, field systems and a group of roadside enclosures lying slightly further to the south (Chapter 5). Minor sites included a well-dated mid-Romano-British pit at Flintham with charred remains likely to derive from malting grain, while at the southern end of the route ditches and gullies at Owthorpe Wolds are likely to have been elements of rectilinear fields and enclosures not far from settlement (Chapter 9).

These excavations add significantly to our understanding of Roman Nottinghamshire, providing an opportunity to review the significance of the Fosse Way and the effect it had on the Romano-British and later landscape, and in particular to assess the settlement of *Margidunum* within its wider landscape. The opportunity has been taken to build upon some of the results of the earlier excavations by Oswald between 1920 and 1936 (Oswald 1927a, 1941) and Todd between 1966 and 1968 (Todd 1969), which were usefully reassessed by Leary and Baker (2004), and to add important new evidence of the extent of the settlement and its changing relationship with the countryside. This discussion sets out to explore thematically the most significant results of these excavations, viewing them in a wider context.

Late Iron Age Settlement and Land Boundaries

The Late Iron Age in the region was characterised by a growth in population and a corresponding increase in settlement density. A study of settlement in Leicestershire and Rutland suggests that the ratio may have been as high as one settlement every 2 sq km (Clay 2001b). This was associated with the developments of social hierarchies, reflected in increased differentiation of site types and material culture. It also saw the rise of tribal entities striking coinage, and the wider use of personal ornamentation such as brooches, suggesting that ideas of status and visible display were increasingly important (Willis 2006, 127). Sites on the present project are thought to have been within the territory of the *Corieltauvi*, with tribal centres at Leicester and perhaps Old Sleaford, although the actual level of control exercised from these centres is far from clear (Clay 2001b, 14).

The relatively extensive Late Iron Age settlement revealed at *Margidunum* Hinterland presents a contrast with the small farmsteads of the Middle Iron Age in the region. It appears to follow a trend of large polyfocal settlements developing in the century or so before the Roman conquest, such as Ferry Lane Farm, Collingham, Rampton (Fig. 10.3), and Glebe Farm, Brough (Knight and Howard 2004a, 100), some of which seem to develop from earlier Middle Iron Age settlements, while others appear to have been established in the Late Iron Age. It has been suggested that they result from periodic occupation during a seasonal (or part-seasonal) mobile settlement pattern, despite their apparent

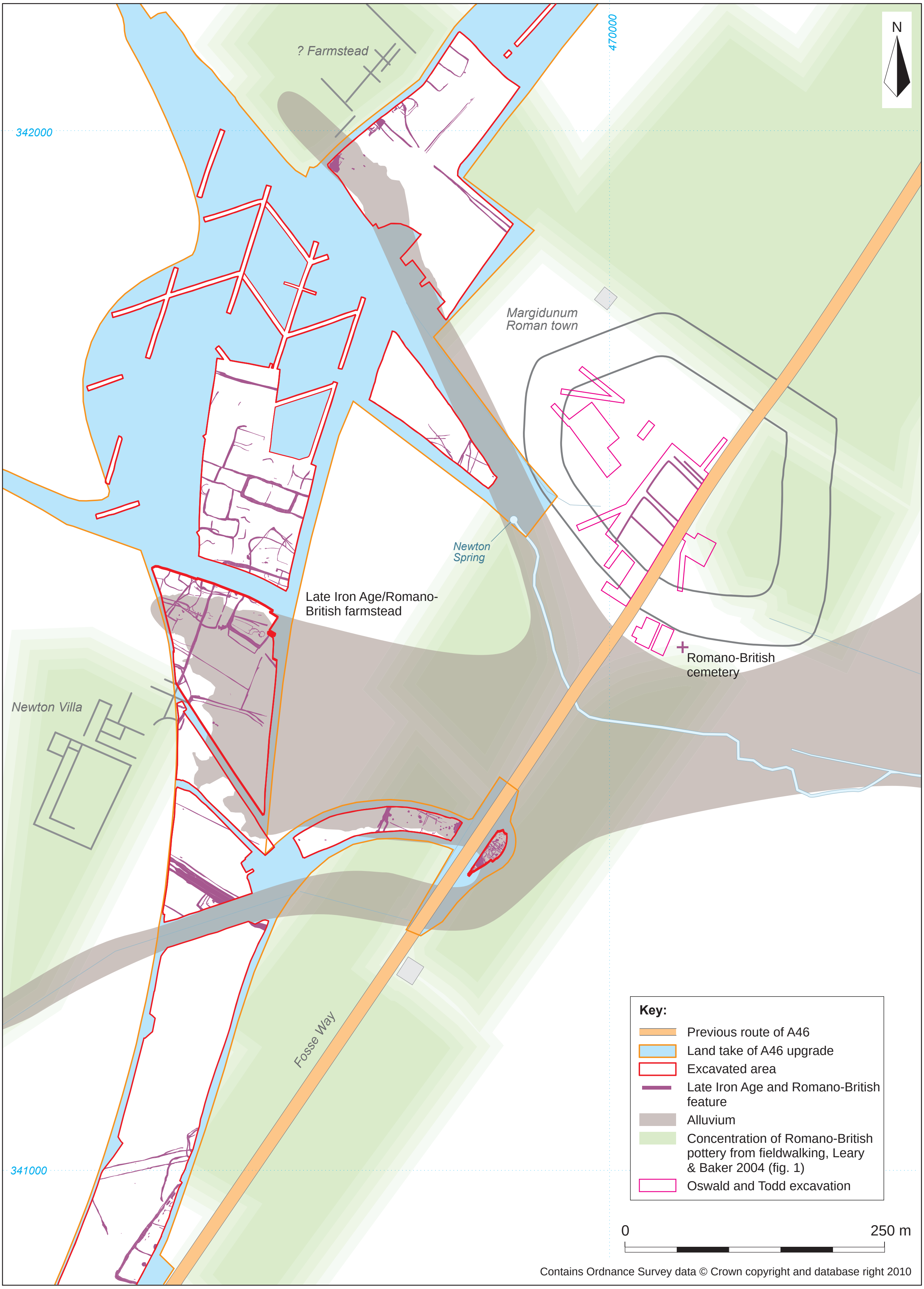


Fig. 10.8 Margidunum *and its hinterland in the Romano-British period, summary plan*

contemporaneity (Kidd cited in Willis 2006, 110). At *Margidunum* Hinterland, as elsewhere, this hypothesis remains untestable on the evidence available, although the enclosure system revealed appears to represent a largely settled and ordered landscape, with significant investment in creating and maintaining enclosure and boundary ditches.

The main area of settlement lay to the north of the Middle Iron Age pit alignment, although there were also several separate enclosures to the south (Enclosures G and H) which appear to have had Late Iron Age origins (Figs 4.2, 4.10, 4.11). It is not clear to what extent (if any) the Late Iron Age organisation of the landscape was affected by the presence of the earlier pit alignment, or by the damp, perhaps periodically flooded ground in the shallow channel through which the pit alignment was dug. It is possible that the earlier boundary was still significant and continued to demarcate two areas of settlement, one to the north and the other to the south. The limited exposure of the enclosures to the south make them hard to characterise, but the settlement area to the north comprised a large number of linked enclosures, some of which were probably for penning livestock.

The pottery assemblage indicates that the Late Iron Age settlement has its origins in the second half of the 1st century BC. While there are suggestions in the pottery evidence of a hiatus in activity around the time of the conquest, with a gap *c.* AD 40–70 (McSloy, Chapter 4), the stratigraphic evidence clearly indicates both continuity of settlement and deposition, with small quantities of the new, Romano-British, pottery found in the same deposits as the Late Iron Age fabrics. This apparent difference may be due to the limited area excavated, or simply reflect the intrinsic difficulties in dating any ceramic assemblage, particularly in this transitional period (see Taylor 2006, 140–1, for a discussion on the problems in establishing reliable chronologies). The only other dating for this settlement comprises two brooches found within Late Iron Age/early Romano-British ditch fills – a Colchester brooch likely to date to the second or third quarters of the 1st century AD and a Langton Down style brooch which is most likely to date to *c.* AD 40–60.

Late Iron Age polyfocal sites share some characteristics with 'major centres' (Willis 2006, 110) which have a particularly strong presence in Lincolnshire. These 'major centres', however, are often associated with prestige items, in particular metalwork such as coins and brooches, suggesting that while there may be similarities in settlement form, there are significant differences in 'aspects of their material culture, access to "prestige items" and consumption patterns' (*ibid.*). It is also unclear whether the Late Iron Age settlement at *Margidunum* Hinterland should be considered a true 'agglomerated' site like Glebe Farm, Brough. It may have operated more at the level of the extended family, although the extent of enclosure suggests a population larger than the 'family-sized' units of the Middle Iron Age.

No evidence was found for any zones of specialised craft or industrial activities. The limited evidence suggests an agricultural economy, although charred plant remains were absent and only small quantities of animal bone were recovered. Cattle and sheep were the most common animals, with smaller quantities of pig, and the presence of newborn lamb bone suggests that sheep were reared on the site; bones of dog and horse were also recovered. This overall pattern is typical of other sites in the East Midlands (Willis 2006, 113). The pottery from the site contains no particularly diagnostic forms or fabrics, and no significant quantities of finewares, although there was an increase over time in the diversity of vessel forms used (see McSloy, Chapter 4).

Beyond the complex of enclosures and the immediate environs of the settlement, there is little evidence for the wider enclosure of the landscape. It is clear, however, that some of the Iron Age boundaries were still used. While the status of the pit alignment and the nature of the palaeochannel at this time are uncertain, the Middle Iron Age ditch to their south, which defined the southern end of Enclosure H, was recut in the Late Iron Age (and in the Romano-British period). It was one of a number of widely spaced boundary ditches, excavated along the road scheme, which suggest that the landscape had been subject to large-scale division during the Middle Iron Age. It is likely, therefore, that the organisation of land holdings in the Late Iron Age at *Margidunum* Hinterland owed something to the earlier arrangements.

The location of the Late Iron Age settlement at the *Margidunum* Hinterland site was probably influenced by a number of other factors, in addition to any existing land division. The Bingham Basin is likely to have remained a marshy area, and may have provided additional food and other resources, although there is no clear evidence for this at this time in the small animal bone assemblage, and charred plant remains are lacking. Numerous springs are recorded in the Bingham area and it is likely that Newton Spring, or others in the vicinity, were active at this time, providing a supply of fresh water. It is also possible that the springs, or the marshland itself, held a deeper meaning to the inhabitants of the settlement, providing a focus for spiritual as well as more prosaic activity. A number of Romano-British villa sites in the wider region appear to have had Iron Age antecedents, possibly of particularly high status (Willis 2006, 111). While this may apply to the site of Newton Villa, there was no evidence for Late Iron Age activity in the excavated area closest to the villa.

Development of Margidunum *and its Hinterland*

One of the benefits of the recent excavations is that it has provided a body of data that allows the roadside settlement at *Margidunum* to be linked to its immediate surroundings. *Margidunum* was one of a number of such settlements which developed along major Roman routes in the region (Taylor 2006, 149), many of which had Late Iron Age predecessors either beneath them or close by (such as the settlement next to *Crococolana* to the north). At *Margidunum* there was little evidence from the excavations of Oswald and Todd for Late Iron

Age activity within the area of earliest Romano-British activity, but the excavations reported here have revealed evidence for a substantial area of settlement in the hinterland to the south-west.

The earliest evidence for post-conquest Romano-British occupation comprises a series of features excavated by Oswald and Todd containing Claudian and Neronian pottery of mid-1st century AD date. Todd's re-dating of the site suggested that this earliest occupation could be dated to *c*. AD 50–55 (Todd 1969, 28–9). Whether this was associated with an early post-conquest fort or not remains unclear (see below) but it appears that the earliest Romano-British settlement was sited away from the existing Iron Age settlement in DE3001 and DE3006, and was started *de novo* on a slight rise above the wet ground created by Newton spring to the south-west (Fig. 10.8) and the marshy Bingham Basin to the south-east. Presumably it was sited close to the Fosse Way itself, although it need not have straddled it. There are reasonable grounds for interpreting this as an official presence whether or not it was fortified.

The Fosse Way and the possible military origins of *Margidunum*

The Fosse Way is thought to have been built as part of the Roman military infrastructure during or shortly after the conquest of the region in about AD 47 (Webster 1958; Frere 1987, 59). As recent regional reviews have observed, the dating of military installations in the region is still very uncertain, and the notion that roads were necessarily built as part of the process of linking them is also questionable (Taylor 2006, 141–3, 157). The Fosse Way has long been claimed as a Claudian military frontier based upon the directness of its line and its apparent lack of economic purpose. These characteristics have been suggested as indicating that it was planned as a unity, with its course, along what may be seen as a natural frontier between the upland and lowland zones of Britain, reflecting the fact that it formed a natural military stopping point – the first 'phase' of conquest – with forts established along its line or at short distances ahead of or behind it.

Dating the road has relied largely on the military-historical logic of the conquest narrative of the governorship of Plautius, before the campaigns under Scapula against the Silures from AD 48 rendered this particular frontier illogical (Webster 1958, 59–60). It is worth, however, drawing attention to the fragility of the evidence for the date and purpose of the road, which has not been without its critics from the outset (*ibid*., 50–1). In particular, there is a lack of any early dating for the road itself, while the evidence for early military phases of occupation along its course, elusive at the time of Webster's review (*ibid*., 50–9), has remained largely unconvincing (Taylor 2006, 143). A fortress at Lincoln was established by the AD 60s, and an early fort has been found at Thorpe (*Ad Pontem*) which seems to have been slighted by the Flavian period (AD 69–96) (Forcey 1994, cited in Taylor 2006, 143).

The existence of forts pre-dating the secondary towns of *Margidunum*, *Crococolana* and *Vernemetum* may have been 'predicated more on expectation than evidence' (Taylor 2006). The presence of a conquest-period fort at the civitas capital *Ratae Corieltauvorum* (Leicester) is unproven despite extensive recent redevelopment within the city. Oswald interpreted the early phase of earthen defences at *Margidunum* as belonging to an early polygonal fort, an idea dismissed by Todd following his excavations (see below). At *Margidunum* small quantities of military metalwork were recovered from the relatively extensive excavations undertaken by Oswald and Todd, along with quantities of pottery likely to date to the Claudio-Neronian period (AD 41–68). The former included a *pilum* head and a possible spear butt, both recovered from Todd's excavations (Todd 1969, 92). On the northern edge of *Margidunum* Todd identified two early ditches, both containing sequences of pre-Flavian and Flavian pottery. One of the ditches was V-shaped, aligned broadly east–west, and was *c*. 2.7 m wide and 1.7 m deep, with a roughly square 'cleaning' channel at its base. The other was much broader and shallower and on a NW–SE alignment (*ibid*., 17–22). Todd suggested that the deep ditch represented part of the outer defences of an early fort which lay to the north of the later defended area.

The presence of a Roman fort at *Margidunum* has yet to be demonstrated, although the '*dunum*' element of the name suggests the presence of defences (Leary and Baker 2004, 9). '*Margidunum*' is recorded twice in the Antonine Itinerary. In Itinerary VI, which details the road from London to Lincoln, it is recorded as some 13 Roman miles from *Vernemetum* (Willoughby, Notts) to the south and 7 miles from *Ad Pontem* (Thorpe) and 12 miles from *Crococalana* (Brough) to the north. In Itinerary VIII, which covers the route from York to London, it is recorded as 14 Roman miles south of *Crococalana* and 12 miles north of *Vernemetum*. The Itinerary was probably collated early in the 3rd century from earlier documents and Todd considered it likely that both the name '*Margidunum*' and the documents on which the Antonine Itinerary are based pre-dated the establishment of both phases of the later defences and would therefore indicate the presence of an earlier fort (Todd 1969, 45).

The first element of the name '*Margidunum*' is more problematic, but may be connected with the Celtic *marga* (marl) and a reference to the local geology (Rivet and Smith 1979, 413–4; also discussed by Knight and Kinsley 1992, 13). Although the exact meaning of 'marl' in this context is unfathomable, it may be worth speculating that its significance is to be found in the calcareous nature of some of the springs in this area. This quality derives from the presence of gypsum, which was formerly worked in the East Bridgford area and was important in historical times for making plaster for building, as well as alabaster ornaments, here and more widely in the county (Rathbone 1989, 20). The mineral (calcium sulphate dihydrate) is likely to have been the cause of the calcareous deposits in the palaeochannel in the Bingham Basin (Chapter 3). It is possible that the siting of the Roman town was intimately connected with location of calcareous springs and/or deposits of gypsum, which may have had mystical as well as practical attributes; the latter in more recent times have included its use as a fertiliser. Elsewhere, it has been suggested that a possible early Romano-British temple by the Alchester Road at *Lactodurum* (Towcester) was linked to the petrifying stream here that formerly ran into Silverstone Brook (Brown *et al.* 1983, 131), and it seems inherently plausible that unusual properties of groundwater would have been the subject of particular attention for Romans and Britons alike. This is perhaps the context in which some findings from the present and earlier excavations at *Margidunum* and its hinterland should be viewed.

Settlement defences

There are two phases of settlement defences recorded at *Margidunum* – an earthen rampart with at least one, and in places two, outer ditches, was superseded by a second rampart fronted by a stone wall, also with two outer ditches (Figs 10.8 and 10.9 show simplified inner and outer limits). Todd favoured a late 2nd-century date for the first earthen rampart and, while he viewed the stone wall and second rampart as having been constructed shortly afterwards *c.* AD 200, a reassessment of the pottery from the stone wall suggests a 4th century date (Leary and Baker 2004, 31). This fits better with the sequence of ditches and ramparts revealed in Todd's excavations, and conforms to a pattern which includes *Bannaventa*, Irchester, Towcester, *Tripontium* and Horncastle in the region (*ibid.*; Taylor 2006, 149).

The area of the earlier settlement enclosed by these defences is very small indeed compared to the area occupied by the town at the time of their construction, with existing boundaries and buildings possibly cleared to allow this. Presumably, the primary purpose was to enclose and defend the public or official buildings, materials or supplies within the settlement, although none of these have yet been identified. Indeed, Oswald and Todd excavated a significant proportion of the area enclosed by the defences, and found little evidence for what might conventionally be recognised as buildings connected with Roman control or administration.

Settlement expansion and decline

From its early origins (*c.* AD 50–55), the Romano-British settlement at *Margidunum* grew rapidly. Todd has argued that it was unexpectedly large for a *vicus* associated with a fort, and that there is no evidence that it was ever confined by an early defensive circuit as many such *vici* were (Todd 1969, 21). He also noted that although there is unquestionable evidence from Oswald's excavations for widespread activity between *c.* AD 50 and AD 75, this was at its most extensive in the last 15 years of this period (*ibid.*, 22). The settlement took the form of a number of regular rectangular plots, defined by gullies or shallow ditches, arranged perpendicular to the Fosse Way (similar in width to the early roadside enclosures in DE3002) (Fig. 10.9). These plots contained buildings, commonly of timber (marked by beamslots) and in some cases associated with areas of metalling. Some of the buildings were associated with industrial processes, and iron slag was recovered in considerable quantities from a series of rectangular pits within one plot, and another contained an oven, possibly for baking. Burnham and Wacher (1990, 348) considered this to be evidence of a military-related works depot or an industrial annexe to a fort.

From the current excavations, one of the more interesting assemblages in this phase of activity came from pit 303115 (DE3003; Fig. 4.9), the feature closest to the town centre, albeit without obvious settlement context. Here, a relatively sizeable assemblage of pottery had parallels to early assemblages from within the later defences, described by both Oswald and Todd, although a single sherd of samian ware suggests a date of *c.* AD 70–96 for its deposition and it may therefore be slightly later.

Todd's trenching south of the junction between Newton Lane and the Fosse Way uncovered quantities of pottery dating to *c.* AD 60–75 (Todd 1969, 26), although he identified no structures. This area lies only slightly north of the excavations on the roadside settlement in DE3001 and DE3002, where the earliest activity is dated to *c.* AD 80. It appears, therefore, that the settlement expanded rapidly southwards along the Fosse Way and, assuming a linear expansion from the town core, reached DE3001 and DE3002 (*c.* 300 m to the south of the later defences) and beyond by the end of the 1st century AD. There may have been a degree of planning to this expansion, since the roadside plots identified in the current excavations had a fairly ordered regularity over the duration of occupation (Figs 4.14, 4.20, 4.46). There is less evidence for industrial activities in the small areas excavated here; to the west of the road the plot contains a waterhole and subdivisions, but no evidence for any structures (Fig. 4.13), while to the east there were four circular structures (Structures 9, 10, 11 and 12) and a probable rectangular one (Structure 14) (Figs 4.14, 10.6, 10.10B).

Further south, the early phase of Enclosure K (Fig. 4.16) suggests that roadside settlement existed this far south by the mid-Romano-British period, in the later 2nd century, although the absence of good dating evidence makes it difficult to be sure exactly when this point was reached. At its peak, however, the settlement appears to have extended over 800 m south from the line of the later 2nd-century defences. This conclusion is supported by the extensive spreads of Roman pottery, recovered from fieldwalking by TPA, which extended as far south as Enclosure K; this material also extended to the north of *Margidunum* (Leary and Baker 2004, fig. 1, reproduced in Fig. 10.8).

With the abandonment of the early Romano-British settlement in Enclosures A and B towards the end of the 1st century AD (Fig. 4.2), the land to the west of the Fosse Way was given over to fields, probably linked to the establishment of Newton Villa just to the west (Fig. 4.12). Although the chronology of the villa is not currently

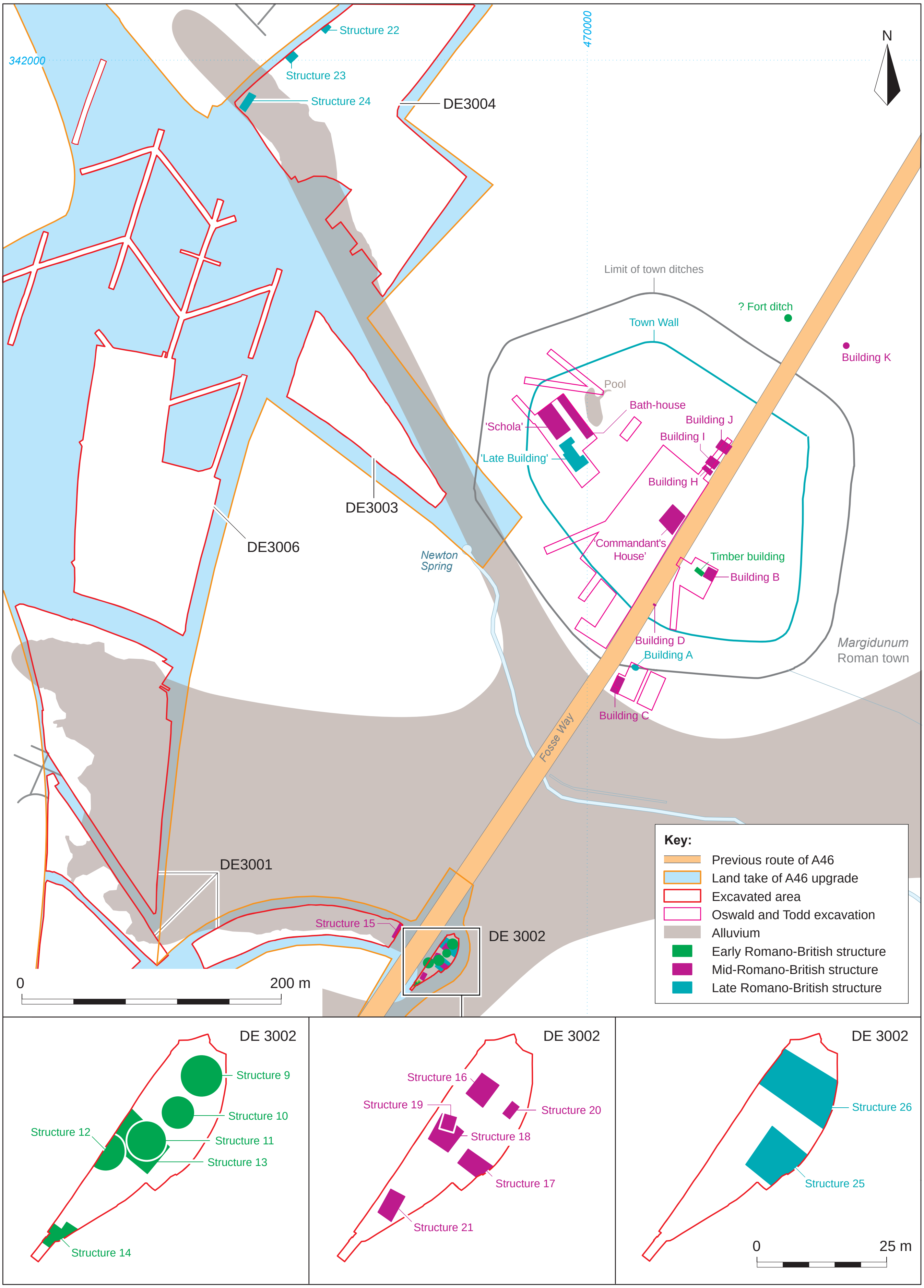


Fig. 10.9 Margidunum *and its hinterland, recorded buildings*

clear, the presence of a substantial crop dryer, within its own small enclosure about 120 m east of the villa, might suggest its foundation, or at least its importance as an arable producer, by the early 2nd century. The field system was altered in the late Romano-British period and the crop dryer was truncated by a metalled trackway leading to the villa from the road. Isolated mid- and late Romano-British burials in this area (Figs 4.17, 4.30) may also relate to the villa. The late Romano-British agricultural buildings to the north-west of *Margidunum* (DE3004; Fig. 4.38) appear to have been relatively short lived, dating only from the late 3rd to the mid-4th centuries. Both the villa complex and these late Roman buildings (which may have been part of the villa estate or an independent farmstead) lay close to *Margidunum*, and the town probably acted as a local market for some of their produce, as well as supplying much of the day to day needs of the villa inhabitants and local farmers.

The evidence for the decline of the settlement at *Margidunum* is mixed. Todd commented on how few 4th-century buildings could be identified within the defended area, despite the quantities of 4th-century finds recovered (Todd 1969, 70–1), and it seems clear that some plots were occupied at this time, whilst others contained no structures. However, it is possible that part of the problem lies with the dating assigned to a number of Oswald's structures from their associated finds assemblages, and it is possible that a reappraisal of the data might identify a later phase of construction (Leary and Baker 2004, 13).

A similar discontinuous pattern of occupation can be seen in the recent excavations; to the west of the Fosse Way the small areas excavated contained no identifiable late buildings (Fig. 4.45), and the margins of Enclosure K were given over to a small cemetery (Fig. 4.33) while to the east (DE3002) a new road was built along with two rectangular buildings (Structures 25 and 26) which continued in use in the 4th century and possibly into the early 5th century (Figs 4.46, 10.9).

Character of the Settlement

Buildings and architecture

The earliest structures recorded at *Margidunum* Hinterland were the circular roundhouses of the Late Iron Age settlement (in DE3001 and DE3006) (Fig. 10.10A). As elsewhere these were defined by penannular or part-penannular gullies which can be difficult to interpret, both because of the need to distinguish between partly surviving circular structures and structures that were partly circular, and the difficulty of ascribing a function on the basis of the architecture or associated finds. One of the largest, Structure 1 in Enclosure A, would have been about 8 m in diameter and plausibly a principal dwelling on this basis, although less than half the gully was revealed. Others were smaller and probably represent a scatter of secondary dwellings or ancillary structures. It is unclear whether there was a similar principal dwelling in Enclosure C, but there were several potential roundhouses (Structures 4, 5 and 6) with Structure 6 apparently the largest although of a slightly later phase. To the south of Enclosure C, Structure 7, which would have been about 8 m in diameter and had a central hearth, was arguably a principal dwelling. A large structure (Structure 8) also lay north of Enclosure D. Although heavily truncated, this is likely to have comprised a roughly circular structure, probably about 10 m across. There were no other features or finds to suggest its function or status.

Most Iron Age roundhouses in southern Britain were aligned with their entrances facing approximately south-east, and both practical and cosmological interpretations have been advanced to explain this (Fitzpatrick 1997; Oswald 1997). The East Midlands is no exception (Willis 2006, 112). Postholes did not survive well in DE3001 and DE3006 and it is often difficult to be certain of a structure's form or orientation. However, Structure 2 in Enclosure A was unusual in being just 4.6 m in diameter, and having a west-facing entrance. Parker Pearson (1999, 44–6) has suggested that structures with west-facing entrances had an unusual status or marked a social

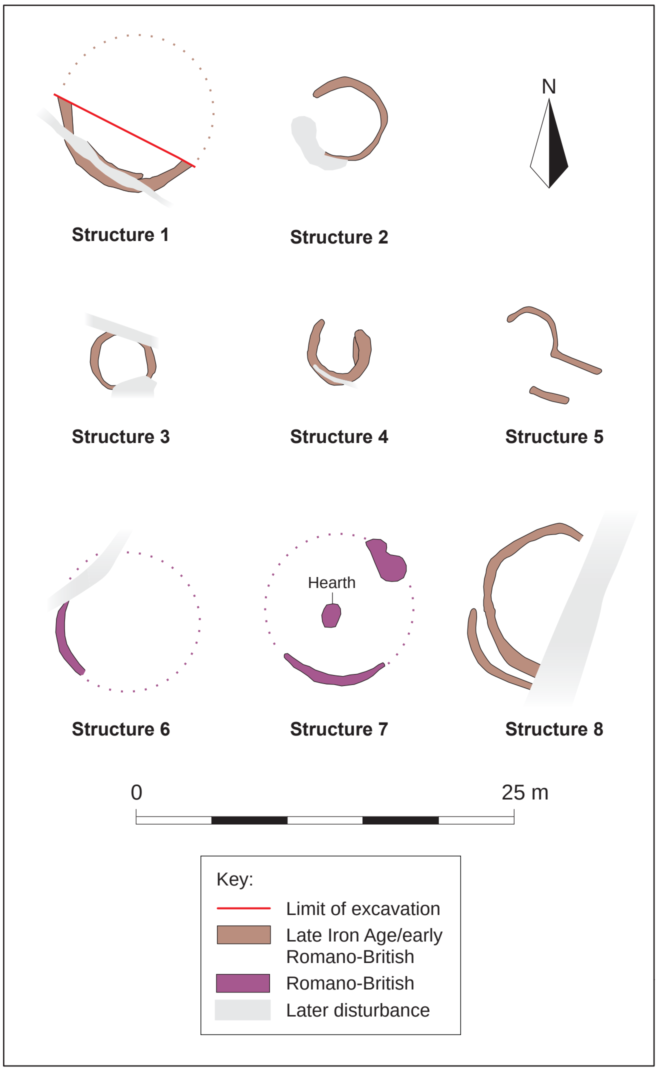


Fig. 10.10A Comparative plans of Iron Age and Romano-British structures from Margidunum *Hinterland: structures 1–8*

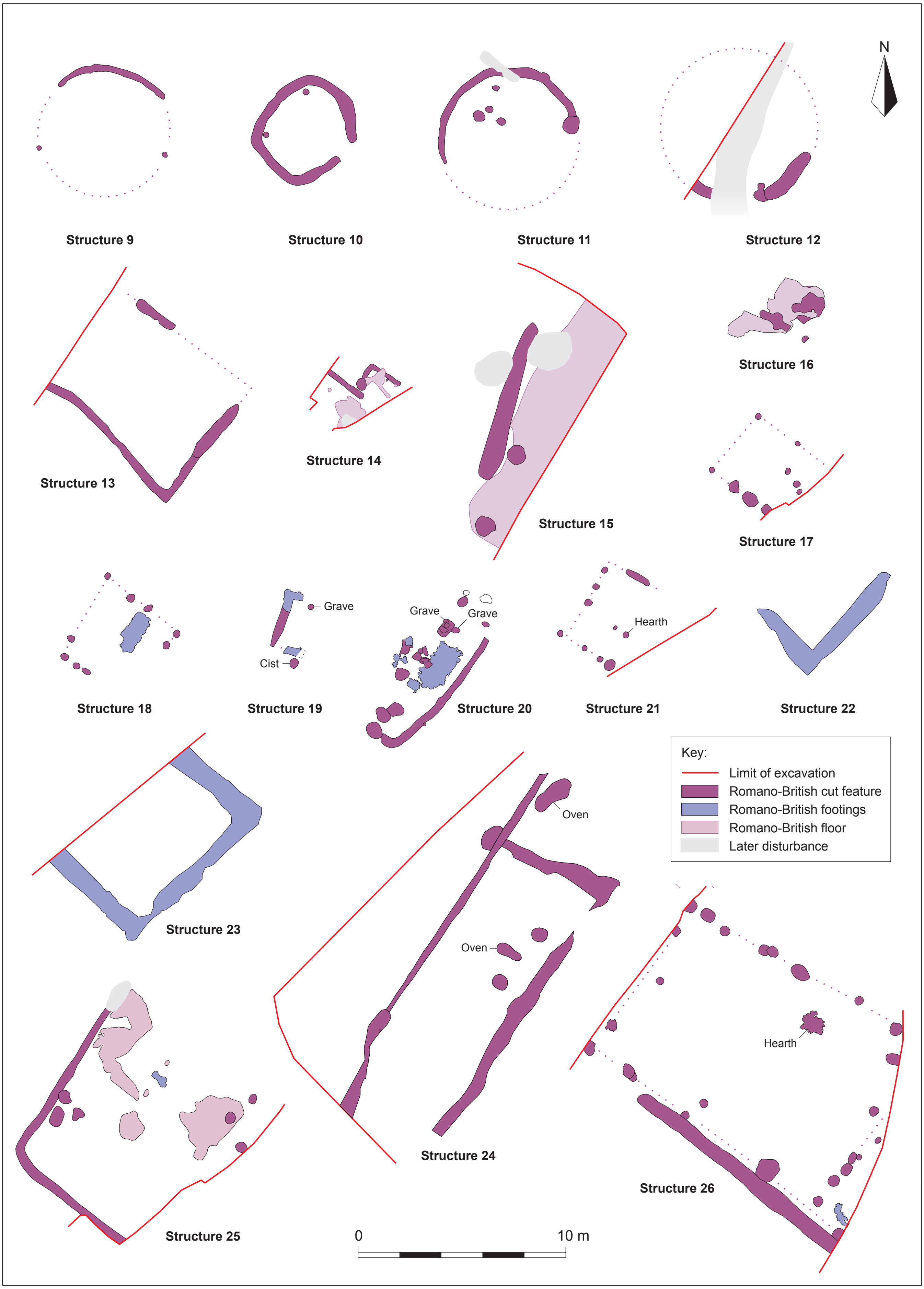


Fig. 10.10B Comparative plans of Iron Age and Romano-British structures from Margidunum *Hinterland: structures 9–26*

difference, but it is invariably difficult to be precise about what this difference was. There is little else remarkable about Structure 2 which might set it apart from any of the other Late Iron Age structures on the site, although the recutting of its southern terminal in the later 1st century AD, with the establishment of the rectangular enclosure to the west around the same time, may have marked it out as significant. Structure 4 in Enclosure C (Fig. 4.7) appeared to open to the north and may have been an ancillary structure oriented towards Structure 6 or a predecessor.

Several early Romano-British structures have now been recorded from both the settlement and hinterland of *Margidunum* (Fig. 10.9). Not all the early features encountered by Oswald were adequately recorded and Todd suggests some of Oswald's early structures were later than originally thought (Todd 1969, 22). Oswald also recorded evidence for high status buildings in deposits of 1st-century date – notably architectural fragments, window glass, painted plaster and roof tiles – but it is still unclear from where these originated (Leary and Baker 2004, 11). More securely, Todd recorded two early buildings. On his Site 2 a narrow rectangular timber building, *c.* 3.7 m wide and at least 7.3 m long, with a subdivision towards its south-western end, and aligned NW–SE (perpendicular to the Fosse Way), was defined by shallow foundation trenches (Todd 1969, 24 and fig. 6). On Site 1 (pre-dating Building C) a gully was also recorded as a possible foundation, although this identification seems less certain.

On the present excavations, early Romano-British buildings in DE3002, probably dating to the last quarter of the 1st century AD, included both circular and rectilinear structures. Four circular structures, either wholly or partially enclosed by penannular or curving gullies (Structures 9–12), occupied two adjacent plots, which might have related to distinct properties. The northern plot had one larger and one smaller structure (Fig. 10.10B, Structures 9 and 10), probably in use contemporaneously. Structure 9 was defined by a curving gully, possibly associated with two postholes. The form of this gully suggests that it acted as a drainage feature. It is not clear whether the off-centre rectangular pit was of the same phase but there is no difficulty with seeing it as an internal storage pit, probably lined with wood. The gully of Structure 10, which was not quite circular, was probably a drainage feature enclosing a slightly smaller building of which the pair of postholes represent the only surviving evidence. Paired roundhouses are a common feature of Late Iron Age sites, where the smaller is generally considered to represent an ancillary structure.

The central plot also contained two roundhouses (Structures 11 and 12), but their proximity suggests that they were not in use at the same time. It is not possible to reconstruct their architectural form but is perhaps likely that the curving gullies were drainage features in both cases, and certainly the extremely adjacent position of the boundary ditch suggests that it might have undermined any wall founded within the gully (Fig. 4.14). Later, Structure 11 was replaced by a rectangular, beamslot building (Structure 13) of not quite regular form, 7 m wide and over 10 m long. Several internal pits may have belonged with either structure.

The four roundhouses, all with entrances facing south-east, away from the Fosse Way, clearly represent a continuation of the Late Iron Age building tradition well into the post-conquest period. They are so far unparalleled within *Margidunum* and, although their identification may have been hampered by the difficulty of recognising timber buildings beneath the later phases of construction, the present evidence suggests that the people inhabiting the town's core were different from those in the suburbs. There is no reason to suppose that it was not local people making a living in the roadside hinterland settlement, initially employing their own building traditions. There is no clear indication as to the functions of any of these buildings, although the finds from the excavations as a whole show that provisioning food and small-scale repairs to pottery, metal items and, perhaps, footwear may have been the main occupations (below). There seems no reason to see the inhabitants as particular specialists and they may have been engaged in activities similar to those carried out in the traditional agricultural community, developed to serve travellers on the road.

The adjacent plot further to the south was only partially exposed, but appeared to contain a rectangular timber building built with both sill beams and posts and floored with clay (Structure 14). This is a form of construction that became common in the 2nd century but not enough of its ground plan was available for its overall form to be clear.

By the mid-2nd century AD in *Margidunum* most buildings were rectangular and, in some cases built with stone foundations (Fig. 10.9). There is a discernible pattern to the settlement in this area, with simpler rectangular 'strip-type' buildings built perpendicular to the Fosse Way within the roadside plots. Lanes between these plots accessed the land behind these buildings, within which sat more complex and higher status structures.

In exception to this pattern amongst the roadside buildings are the fragmentary remains of the 'Commandant's House', a multi-roomed courtyard structure interpreted by Oswald as a late 1st-century AD rebuild of a timber *praetorium* of the fort. Todd has highlighted the flaws in both Oswald's dating and in the interpretation of these structural remains (Todd 1969, 55–6) while Burnham and Wacher (1990, 263) comment that this interpretation was 'ambitious'. Todd excavated a number of structures with beaten clay floors fronting onto the Fosse Way (1969, 58–65). Their constructions varied, some having well-laid dry-stone, and sometimes pitched stone, foundations (Todd's Buildings C, D, H, I, J and K), while others (such as his Building B) had less well-made stone foundations. The buildings behind the roadside plots included a number investigated by Oswald. Amongst these was a group to the north-west that included the '*Schola*' (Fig. 10.11), a long rectangular building or walled enclosure *c.* 25.6 m long and nearly 12 m wide, defined by a well-built dry-stone wall two

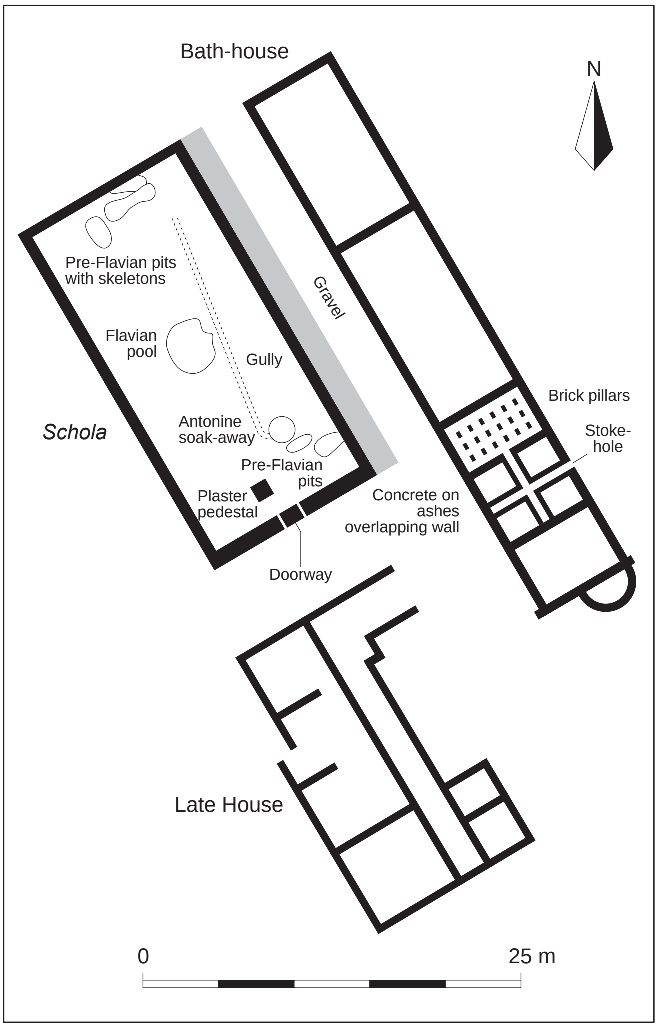


Fig. 10.11 Plan of 'Schola', 'Bath-house' and 'Late House' in Margidunum *(from Oswald 1941, fig. 9)*

courses high laid on a foundation of pitched stones. The wall had supported timber sill beams, impressions of which were recorded in associated 'concrete' or mortar deposits. A central pool, a 'plaster of Paris' (ie, gypsum alabaster) pedestal base and an Antonine 'soakaway' (which may have been a well), lay within it. Todd suggested a 2nd-century date for its construction, pre-dating the defences. The exact function of this structure is not clear, but the combination of features, which include remarkable burials (below), and its proximity to a spring recorded by Oswald to the north, make it possible that it was a shrine or, along with the adjacent bath-house and perhaps other buildings, part of a temple-sanctuary complex.

The narrow bath-house lay parallel to the '*Schola*' and its alignment, together with that of the 'Late House' to the south, suggests a unity of design. Oswald suggested that the bath-house had its origins in the later 1st century AD, and was relatively short lived, being abandoned by the second half of the 2nd century AD, after which it was covered by what he interpreted as a flood deposit (Oswald 1941, 41–4). The 'Late House' nearby comprised a range of rooms linked by a corridor, and with some traces of *opus signinum* floors. The published plan suggests more than one phase of construction but despite uncertainties over its phasing it is clear that this was a building of greater refinement than most of those fronting onto the Fosse Way. Pottery indicated that this building continued in use into the late 4th century.

On the eastern side of the Fosse Way, set back from the road and partly sealed by the outer bank of the defences, lay Todd's building C. This too was stone-built, with three rooms containing floors of rough clay or rough paving. Todd noted that the walls were particularly well built, well faced and packed with stone rubble. An exterior stone-lined pit, apparently built into the wall, may have been a water tank.

These earlier excavations show that many of the mid- and late Romano-British buildings within and close to the town had stone foundations. Those fronting onto the Fosse Way tended to be simpler, whilst those set back from the road were of a higher order, better built and using finer materials. Although many were relatively small structures, the presence of ceramic and stone tiles, painted wall plaster and window glass indicates that there were some buildings of considerable sophistication among them.

Further away from the core of the town, the present excavations have shown that most structures were of timber, occasionally provided with clay floors. Although rectangular buildings appear to have been ubiquitous from the mid-2nd century, structural techniques show irregular patterns and combinations of postholes and beamslots that are difficult to understand in structural terms. Structure 15, for instance, was defined by a clay floor, a short length of beamslot and three postholes. There is nothing to link this to a type or function of building and insufficient of the structure was exposed to determine its overall form. Botanical evidence from the pits and waterholes in this plot showed large quantities of cereal remains, perhaps pointing to a strong arable farming element to the activities carried out here (Stevens, Chapter 4). It is possible that the building was linked with storing and selling grain and cereal and other agricultural products.

On the eastern side of the Fosse Way, Structure 16 is really only defined on the basis of its clay floor, which surrounded both a well (303819) and a nearby oven (303779). The combined evidence of germinated wheat grains and coleoptiles from the oven (Stevens, Chapter 4) and the adjacent supply of water, suggests the production of malt, and it is possible, if speculative, to infer that the structure was related to a stage in brewing wheat-ale. A broken millstone re-used as packing in a later posthole (303724 of Structure 26) may have been associated with milling the malt not far away. The covering structure, lacking surviving foundations, was presumably rudimentary. As discussed in relation to the Northfleet villa, Kent (Biddulph 2011, 224) a malt house would have benefited from a firm floor and a warm, dark environment, so a covered structure would have been essential.

This structure appears to have fallen into disuse before Structure 20 was established. The obvious structural elements to Structure 20 form a narrow construction enclosing a rubble-stone plinth, probably facing to the west. The concentration of infant burials in front of the plinth is grounds for suggesting that Structure 20 was a shrine

Structure 17 was defined by a roughly rectangular pattern of postholes. The cluster of features here include infant graves and a pit with a raven burial, and one with cattle vertebrae, as well as gullies that appear to define a later structure on a slightly different alignment. There is nothing diagnostic about the form of the building to indicate its function, but the concentration of iron slag, including smithing hearth fragments and, in particular, hammerscale, suggest that the structure was a smithy (Starley, Chapter 4). There was no feature identifiable as a hearth, but this may have been raised above the ground. The evidence is not dissimilar to that for the roadside smithy at Springhead, Kent, with its 'shelter' *c.* 9 m by 5 m in size, defined by fragments of rubble wall and postholes, and the adjacent fence-lines and spreads of slag (Andrews *et al.* 2011, 121, fig. 2.90). The association of the smithy with Structure 18 to the north-west is suggested by the similar structural evidence including the common alignment of the south-western wall posts. Also parallel to this alignment, the probable beamslot (218661) may have been a screen for the smithy, and line of large postholes a fence or portico common to both structures.

Structure 18 contained a sandstone plinth, and while this may have served an industrial purpose, such as the base for an anvil, this would not seem to be a necessary feature of this type of complex, and an alternative interpretation of this as another base for a shrine or altar may be equally likely. This interpretation is influenced by the position of the later stone-founded structure in this location (Structure 19) with the cist vessel 'cenotaph' deposit (303611) and neonatal burial (303859) potentially related to it. The structure was only *c.* 3.8 m wide externally, with the footings *c.* 0.5 m wide, and its function is unclear, although its small size and roadside location might suggest a shrine or mausoleum. A similar (late Romano-British) structure, with chalk rubble footings, adjacent to a road junction on the edges of the Roman town of Springhead in Kent, was interpreted as a roadside shrine; it was *c.* 3.3 m long and 2.6 m wide externally and was associated with a small chalk plinth which may have supported an altar (Andrews *et al.* 2011, 89).

Structure 21, in the southern plot, was another structure with insubstantial posthole and beamslot foundations. It appears to have been small but, since evidence for the south eastern wall was completely lacking, it may have extended further in this direction and the 6 m length of the building is potentially its shorter dimension. It was associated with a stone-lined well (303715) whose waterlogged botanical remains may provide clues regarding the activities carried out here. While there is no real indication of industrial processes, it may be significant that there are strong indications of grassland and animal trampling (Stevens, Chapter 4). It is possible therefore that this area of the settlement had a particular emphasis on animal products, either the secondary products, such as milk and wool, or meat. The only substantial stone-founded buildings recorded in the recent excavations comprise the two late Romano-British buildings (Structures 22 and 23) in DE3004 (Fig. 10.10B). They appear to have been relatively well constructed by comparison with many of the earlier buildings – with well-laid foundations of pitched stones, which, at least in the case of Structure 23, were topped by a low wall, probably to support a sill beam. The presence in this area of most of the slate roofing tiles indicates that these buildings were so roofed but, notwithstanding some box-flue tiles suggesting cavity walled buildings somewhere nearby, these structures appear to have been solidly built rather than refined. It appears likely that they were outbuildings (perhaps storage barns) to a late Romano-British farm to the north. While the geophysical survey plot is not at all clear, it appears there may have been a villa-like regularity, even symmetry, here, with Structures 22 and 23 marking a way of entrance to the complex from the town.

The third late Romano-British building in this area, lying further to the south, was a timber structure (Structure 24) supported on ground-fast sill beams. The building was fairly large, about 5 m wide and over 13 m long with a suggestion of an internal subdivision. The presence inside of two ovens and the charred remains of barley and beans, together with the nearby external crop dryer (304368) also containing charred beans, strongly suggests that this was a crop-drying and storage barn.

The roadside settlement had two structures in DE3002 in its late Romano-British phase (Structures 25 and 26). Both were timber built, and appear to reflect a different building tradition to that within the core of the town. In the southern plot the recut gully (218660) would appear to have acted as a drip gully to keep water off the footings of Structure 25. This building was probably constructed with timber sill beams, although the possibility that it had mass walls (such as cob) cannot be discounted. The truncated internal clay floor extends almost to the enclosing ditch to the north-west, suggesting there may have been an entrance at this point. There was no trace of a drainage gully to the north-east, although the absence of flooring beyond its assumed location would suggest that a shallow-founded wall had existed here. The internal stone footing and arrangements of postholes are not readily interpretable but may have been one or more phases of supports for the roof, or alternatively for internal furnishings. The function of this building is not apparent although it may have been a workshop like Structure 17 before it.

In the northern plot Structure 26 was a large timber building for the most part constructed of earth-fast posts. In other respects this building is unique on the site and its size (9 m wide and over 15 m long) is reminiscent of post-built halls of both Romano-British and early Anglo-Saxon date. An internal subdivision was evident towards the south-east and there would seem to have been other internal roof supports shown by postholes and stone footings, although these were not of the size or spacing to suggest that they were the principal roof supports as in an aisled building. There was a hearth situated toward the north-eastern wall. No firm evidence was found as to its function, although potentially it might have housed a number of activities, as the evidence from Romano-British aisled buildings generally tends to suggest (Hingley 1989, 39–45).

In *Margidunum* itself the 'Late House' may be the only positively identified late Romano-British structure (Fig. 10.11) and this was a stone multi-roomed building of recognisably 3rd–4th-century architectural form. Within the town there may also have been traces of timber buildings – Todd's Building A was an irregular oval in plan and floored with a rough skerry paving over an area of *c.* 4.5 by 3.7 m, although there was no clear pattern of postholes and the evidence is not altogether convincing. The dating suggests a 4th-century construction. In the roadside settlement there is little significant difference in constructional technique between the mid- and late Romano-British buildings, which are generally rectangular and built using wooden posts and sill beams of quite shallow depth. It seems that, while many of the buildings within the core of the settlement enclosed by the later defences were well built on foundations of stone, in the suburbs timber buildings were the norm. The later buildings in the roadside settlement do appear to have been larger than the early and mid-Romano-British ones, and there may have been significant changes in the above-ground architecture and appearance of the settlement over time.

Role and status

The current excavations examined the hinterland and a small part of the roadside settlement at *Margidunum* and provide little evidence on the origin and status of the town. There was certainly no evidence of a military presence, and the present work does not provide any further information on the likelihood of a military origin for *Margidunum*. It has, however, been shown that settlement was quickly attracted to the Fosse Way and, if this represents an outward expansion from the core of the town, as seems likely, it indicates a rapid organic growth not typical of civilian settlements attached to early military establishments (Todd 1969, 21–2).

The early, well-appointed, buildings at *Margidunum*, examined by Oswald and Todd suggest at the very least an official presence, whether military or civilian and, later, the inclusion of the settlement within the Antonine Itinerary, and the imposition of defences, suggest a role in the administrative structure of the province, such as a centre for the collection of taxes. It is possible that the key to the town's early development lay in the presence of a spring in the northern part of the later walled area, as the '*Schola*' shrine and related buildings suggest. This seems likely to have been a focus of religious attention in the late Iron Age and, although there is no direct evidence of this, there are indications of an Iron Age tradition in some of the early mortuary evidence, both within the town and the suburb, that may be significant (Mortuary and Burial Practices, below).

It has been suggested that the '*Schola*' complex developed into a *mansio* with a related bath house, and while this has been questioned by Leary and Baker on morphological grounds (2004, 25) it does seem possible that this complex provided facilities for visitors from a wide area, perhaps even acting as a cult centre of pilgrimage. Such a role for some Roman towns and local centres has been advocated by Hingley using analogies drawn from medieval towns and their markets (Hingley 1989, 114–16).

Perhaps also of significance was the presence of Newton Villa which, although not well defined by geophysical survey, appears to have been of notable size (its core covering *c.* 100 m by 60 m), comparable with large courtyard villas such as Woodchester (Glos), Chedworth (Glos) and North Leigh (Oxon) (Leary and Baker 2004, 16–24, fig. 8). There is a strong possibility that it was closely linked to the town. In wider studies of Roman Britain the frequent proximity of villas and towns, and their possible links, has been noted and commented on by various authors (Todd 1970; Millett 1992; Hingley 1989). The possibility of a tenurial dependence of one on the other would suggest that the agricultural and other productive fortunes of the villa could have played a major role in the character and development of the town. It can perhaps be noted that, had the town been tenurially dependent on the villa, the town may not have had the range of 'high status' buildings that were sometimes present in other towns and are often expected as part of a common pattern.

It is clear that the road played a major part in the development of the settlement, presumably catering to the needs of travellers, but also providing a focal point for transactions and the distributions of goods. There is evidence for small-scale industry from very early in the life of the settlement, with an ironworking site, a possible baking oven and a probable smithy identified on the earlier excavations in the settlement core (Todd 1969). From the present work, a probable smithy and evidence of malting on DE3002 in the mid-Romano-British period provide further evidence for industry, perhaps at a slightly later date than that in the centre. It may be that over time there was a desire to move some of the more industrial crafts away from the core of the settlement, perhaps as it became more prosperous.

On the other hand it seems, from a superficial reading of the evidence, the roadside suburbs and the town may have been occupied by different groups of people. The buildings in the town tended to be of the narrow, rectangular strip-type, end on to the road and mostly stone-founded. These are commonly considered typical of urban commercial/industrial properties. In the suburbs the buildings were normally timber-built and, in the earlier period, circular in the Iron Age tradition. It is not certain that the circular structures were main residences, and it is possible that buildings of different form occupied the street frontage. Nonetheless, at face value it seems likely that the roadside here (perhaps more particularly on the eastern side) became occupied by local people, presumably moving in from nearby farms. From about the middle 2nd century their successors, and perhaps their descendants, occupied small rectangular buildings, but the evidence suggests very similar properties and activities. In the late Romano-British period, the final identifiable phase of roadside structures, the buildings were larger, although still built of timber, and this may indicate a different kind of occupation and social organisation.

In keeping with the unpretentious nature of the structures, the finds recovered from the excavations are themselves generally modest. The trade networks that came with the Roman Empire provided both access to luxury goods, as reflected in the availability of new pottery forms including finewares, and new markets for the crops grown and animals raised on the fertile land surrounding *Margidunum*. However, there is little evidence from the recent excavations for significant wealth in the suburbs – there are no fine items of metalwork, no substantial assemblages of expensive pottery or any evidence of fine buildings. The sizeable assemblage of samian pottery cannot be taken as an indicator of wealth since it is likely to have derived from the repair service offered by the smithy and as such reflects the need to prolong the usage of vessels rather than buy new ones.

Agricultural economy and the settlement

The excavations of the roadside settlement shed some light on agriculture and industry in the *Margidunum* suburb, although, as discussed in relation to the individual structures identified, there are difficulties pinpointing the locations where these practices were undertaken. It appears likely that the settlers on the Fosse Way exploited opportunities for passing trade provided by travellers. As shown by the evidence for activities such as iron-smithing, repairs to samian vessels, malting wheat and curing beef, this probably involved the supply of food and drink and the repair of tools and other equipment.

It may be significant that the earliest post-conquest pottery came from the western side of the Fosse Way (early and pre-Flavian ware came from pit 301122) in a plot of land that did not contain the range of native-style structures found on the eastern side. The early waterhole here (218519) contained waterlogged cereals, and it may also be significant that a fig seed, one of the two exotic species recorded (along with a possible dill seed) from the same plot, gives an indication that the plot was occupied by people with Romanised tastes, perhaps incomers or people of a relatively high status. Whether this had any connection with Newton Villa cannot be known, but it is worth noting the early crop dryer (301876), which appears likely to have been related to the villa, suggesting the early importance of cereal production, and this may have provided some of the early economic stimulus. Some of the palaeobotanical detail, such as the burning of bracken and the stems and roots of heather, indicate the clearance of heath and scrub. This does not seem entirely explicable as the acquisition of fuel because digging out the roots strongly implies the intention of clearing the land, whereas a fuel supply would normally be better maintained by cutting and leaving to regrow. There would therefore seem to have been an intentional clearance of marginal land, and it seems possible that this was for arable cultivation, rather than simply a result of cutting turf for fuel. Other uses of turf, such as for bedding or roofing, may be an alternative explanation, but the end product would have been land cleared of vegetation. It can be noted that this evidence appears in the early Romano-British period in Enclosure A (pit 302551) and this was for cereal cultivation, the demand for grain perhaps came from as much from the military, at least initially, as from the local population, immigrants and travellers. It can be surmised that the land around *Margidunum* was well suited to arable farming and, even if somewhat marginal land had been brought into cultivation, soil fertility was maintained by some means. The range of weed species found generally indicates cultivation of drier, lighter calcareous soils, particularly in the early Romano-British period, but there is some indication, from the presence of stinking mayweed, of clay soils being cultivated from the mid-Romano-British period. Whether this indicates greater arable production, the exhaustion of lighter soils or some other change in agricultural regime is not clear. Cereals and beans came from the late Romano-British crop dryers associated with the timber-framed barn (Structure 24) in DE3004 at the edge of what appears to have been a substantial farming complex, and Todd (1969) records two other villas within two miles (3.2 km) of *Margidunum* – one at Car Colston and another to the south-east of Car Colston. None of these villas or farms have been subject to modern excavation, although the field systems associated with Newton Villa points to that villa spanning at least the mid-2nd to 4th centuries AD. Villa estates such as these were set up to produce an agricultural surplus for sale, and it seems probable that *Margidunum* provided a market for local consumption and redistribution, as has been argued for secondary towns and villages more widely (Hingley 1989, 111–20).

There is good evidence that spelt wheat was used for producing malt from at least the mid-2nd century on the eastern side of the Fosse Way (Structure 17). A millstone from this area indicates cereal processing on a more than local scale, and it is possible that both wheat-ale and bread were made here for sale. The large quantity of repaired samian pottery may suggest that the street frontage here was the location of roadside cafes that were keen to keep their crockery serviceable rather than go to the expense of purchasing more. The evidence is not unambiguous, since the samian may have been the stock of repair workshops, including perhaps the smithy, rather than of food sellers, although the high proportion of dishes and cups may suggests the latter, and in fact both may have existed side by side. Repaired samian vessels were also recovered from *Margidunum* itself (Monteil, Chapter 4), so there does not appear to have been a single focus of use or loss. The repair industry may have been characteristic of the town and suburbs generally.

The animal bones from the *Margidunum* Hinterland excavations show changes to patterns of livestock farming from the Late Iron Age through to the late Romano-British period. Cattle and sheep were both important throughout this period, with smaller quantities of pig. In the late Iron Age, early and mid-Romano-British periods, sheep were slightly more prevalent than cattle, but in the late Romano-British period there was a greater proportion of cattle than sheep; the quantities of pig bones recovered throughout are consistently low. Because of their size, cattle provided most of meat consumed throughout the Romano-British period, but it appears clear that the quantity of mutton consumed declined in the late Romano-British period. It is not possible to detect significant change in the pastoral economy on the *Margidunum* Hinterland site as a result of the Roman conquest, and the shift towards cattle was a long-term process found more widely in rural Roman Britain (Albarella *et al.* 2008), and took place long after the establishment both of the Fosse Way and the roadside settlement.

There is some evidence that sheep were bred and reared in close proximity to the site in the Late Iron Age/early Romano-British period, and that the animals were slaughtered and consumed locally. Indeed, analysis of the distribution of cattle and sheep bones from Romano-British contexts of all phases indicates that waste from primary butchery, secondary reduction and consumption are all present. The under-representation of some of the major meat-bearing joints, such as the hindquarters, in the mid- and late Romano-British period (in comparison to the early Romano-British period) suggests that these joints were taken from site, perhaps for sale locally within *Margidunum* itself, or more widely. There is also evidence from characteristic butchery patterns for the curing of shoulders of beef by smoking or salting in brine. This is an aspect of meat supply and consumption that has been observed widely, particularly in Roman towns (Higbee, Chapter 4). Since other parts of the beef carcass tend also to be represented here, the evidence would point to this as an aspect of food production (rather than just consumption). There may be a comparison here with Castle Street, Leicester, where a pit yielded a combination of evidence, such as cured shoulders of beef, a range of imported foodstuffs and pottery containers such as amphorae, to suggest that this was the site of a 'delicatessen' (Score *et al.* 2010). The range of evidence from the *Margidunum* Hinterland is smaller but may reflect a similar kind of service. Already noted is the evidence of malting, and the range and quantity of samian that may have been used particularly for serving food in roadside cafes and stalls.

The butchery waste suggests that much of the mutton was also exported from the site as dressed joints, perhaps again to the market in *Margidunum*; much of the pig meat, in contrast, appears to have been consumed within the settlement. The age profiles of the butchered cattle and sheep suggests that most were reared for meat production, with smaller numbers kept for breeding, for milk or as (with cattle) as draught animals.

Mortuary and Burial Practices

A small number of inhumation and cremation burials at *Margidunum* Hinterland, as well as finds of disarticulated bone, represent some evidence for the treatment of the dead in the Late Iron Age and Romano-British periods. This allows a discussion of the treatment of the dead and their disposal in relation to both the changing pattern of settlement on the site and to wider regional and national trends.

Late Iron Age

A recent discussion of Late Iron Age burial practice has demonstrated how uncommon Iron Age burials are in the East Midlands (Willis 2006). This is particularly marked because the region does not seem to have developed the Late Iron Age cremation rites which appeared in south-eastern England, almost certainly through cultural links with continental Europe (*ibid.*, 116). Isolated examples of Middle or Late Iron Age cremation burials are known, while a small number of sites also have evidence for inhumation, in the form of occasional crouched burials in purpose-dug graves or in pits dug for other reasons. However, the number of such burials is so small that they clearly represent a minority rite, and most of the dead were apparently treated in a fashion that has left little archaeological trace – such as excarnation, or perhaps cremation with no burial of the cremated remains (*ibid.*). Indeed, disarticulated or partially articulated human remains have been recovered from a number of sites in the East Midlands.

At *Margidunum* Hinterland there is some evidence for the treatment of the dead in a small group of human bones recovered from a mid-Romano-British layer (303693) in DE3002. These comprised the frontal bone of a skull, a femur and a tibia, all modified (the only examples from the site) and all potentially from the same individual (Egging Dinwiddy and McKinley, Chapter 4). The frontal bone bore a number of fine cut-marks suggestive of scalping or, perhaps more likely, defleshing, while other damage occurred while the bone was relatively fresh. The absence of any healing indicates this was undertaken *post mortem*, and may have been part of a transformative ritual involving the defleshing of the bone rather than a deliberate mutilation (see Egging Dinwiddy and McKinley, above). A radiocarbon date obtained on this frontal bone indicated that it was Late Iron Age in date (95 cal BC–cal AD 25, SUERC-44287, 2030±16 BP) and, therefore, residual in the layer in which it was found.

Willis records a number of examples in the East Midlands where skulls found on Iron Age sites were subject to unusual treatment – notably at Helpringham Fen, Billingborough Fen and Billingborough itself in Lincolnshire (Chowne *et al.* 2001), Hunsbury in Northamptonshire and Birstall in Leicestershire (*ibid.*, 117). All of these sites were either on the fen-edge or the bone had been placed in a watery context, suggesting that there was some pattern to their use and deposition. While the mid-Romano-British context in which the example from *Margidunum* Hinterland was found is clearly later than the bone, the proximity of the site to local springs, such as the Newton Spring, or the Bingham Basin marshland, may have been significant.

The presence of the frontal bone in a mid-Romano-British deposit suggests that it had been disturbed from its original place of deposition but, whether or not it was unearthed accidentally, it may have been deliberately reburied in the infant cemetery (perhaps in an unidentified cut within layer 303691). Both long bones had seen significant alteration – the femur bore both cut and saw-marks, suggestive of bone-working, and evidence for canid gnawing, while the tibia, which had been gnawed prior to its modification, bore chop-marks and had probably been split longitudinally, also possibly as part of a bone-working process.

The defleshing marks on the skull and gnawing marks on both long bones are suggestive of a Late Iron Age excarnation rite, perhaps conducted where the body was exposed. Once this process was complete it seems most likely that the bones were buried together, and then found in the mid-Romano-British period. The modification of the long bones is consistent with bone-working, but whether this was of Late Iron Age or of mid-Romano-British date is unclear. The skull, more recognisably human, appears not to have seen such later modification. It may have been discarded, ending up in the layer by chance, or it may have been buried deliberately (with the long bones) alongside the infants, perhaps to link them with their ancestral dead or perhaps to afford the earlier bones a level of respect.

Early Romano-British

Further insights into local native mortuary practices may be seen in an unusual grave group excavated by Oswald within the western end of his '*Schola*' building (Fig. 10.11; Oswald 1941, 38–9). Here he recorded two pits sealed a layer of burnt daub and charcoal. The first of these pits contained the inhumed remains of an adolescent male 'about 16 years old'. The description of this burial is poor, but it is clear that the body position was unusual – the legs lay at right angles to the body 'as if the body had been dismembered'. Two skeletons were recorded in the second, larger pit. At the southern end an adult male was found: 'the arms lay behind the back, the body face downwards with the legs doubled up under the body' (*ibid.*, 39). Oswald believed that the body was in a state of advanced decomposition when buried, and suggested that the absence of the sacrum might be due to animal scavenging. The second burial was of a woman, buried supine, but with the skull reversed to face downwards. Both of these individuals had grave goods – a finger-ring fashioned from an early penannular brooch on the little finger of the man and a corroded unidentifiable brooch by the foot of the woman. Crucially, although neither of these pits was well dated in themselves, the larger pit truncated an earlier pit containing Claudian pottery, so the burials are likely to have belonged to the later 1st or earlier 2nd century AD.

Despite the lack of modern osteological analysis with which to substantiate Oswald's specific interpretation, this group of burials has a number of unusual characteristics, noted above, that link them to an Iron Age mortuary rite. They may even have had a role in the foundation of this building with its significant bounding of one waterhole and proximity to a 'pool'. The circumstances of these burials remain opaque, but they do invite the suggestion that the site had particular significance to the local people before the Roman conquest and that this is likely to have been an aspect of the town's subsequent importance and growth.

Mid-Romano-British

A number of burials from *Margidunum* Hinterland can be dated to the mid-Romano-British period, from around the mid-2nd century. A small group of features west of the Fosse Way contained disarticulated remains, a single burial was excavated adjacent to a mid-Romano-British field boundary and a burial ground for neonates and infants became established to the east of the Fosse Way.

The human remains recovered from two features (waterhole 218519 and pit 301170) to the west of the Fosse Way (DE3001) represent the most unusual evidence for burial in this period. The upper fills of waterhole 218519, which was dug towards the end of the 1st century AD, contained a small group of human bones, most of which appeared to have been gathered up and placed in the top of the waterhole after it had gone out of use. These comprise the remains of two individuals – an adult female aged *c.* 25–35, of which a substantial proportion of the remains were present, and a second adult female, aged over 18 years old. The fill of nearby pit 301170 (the last in a sequence of mid-Romano-British pits in this area) also contained a number of disarticulated human bones, of an adult aged *c.* 25–45. Disarticulated human remains are fairly common as redeposited finds on Romano-British sites, but are rarely found in an apparently deliberate act of deposition away from burial grounds, and the remains appear to be extremely unusual. There was no evidence for a burial ground close to these two features, and it seems unlikely that the bones, even the disarticulated ones, derived from graves disturbed nearby. Perhaps the most likely explanation is that the remains represent 'closing' deposits for pits and waterholes, in the form of a secondary burial. This may be associated with a continued reverence for sources of water, perhaps a continuation of a practice with origins in the Iron Age, although one should be wary of assuming 'Celtic' origins for rites present in the 2nd century AD since similar practices may have had currency in the Graeco-Roman world and have been adopted in Roman Britain (Webster 1997).

The isolated burial, uncoffined and unfurnished, of an adult male in a grave (302809) adjacent to, and parallel with, a mid-Romano-British field boundary on DE3001 is much more typical of Romano-British burial practices. A radiocarbon date of cal AD 80–250 (SUERC-39047, 1840±30 BP), obtained from a sample of the bone, falls broadly with the mid-Romano-British period. Such singletons, often associated with boundaries, are a common feature on rural and suburban Romano-British sites. Given the location of this grave it seems likely that it was associated with nearby Newton Villa. The grave's isolation from others may mark it out as that of an estate worker without nearby kin.

The graves of at least 18 neonates and infants, which occupied the cemetery in DE3002 to the east of the Fosse Way, were cut through a series of deposits associated with a sequence of buildings, including a smithy (Structure 17) and a malt house (Structure 16), all within the same plot. The burials were scattered across the plot, although two grave groups seemed clearly to respect a roughly rectangular footing of unmortared stones (Structure 20); this is unlikely to have supported any substantial structure but may have been the base for an altar or funerary monument.

Newborn and young infants are commonly excluded from Romano-British cemeteries, instead being buried singly or in groups in different locations, often closer to inhabited areas used by the living. Also, they were usually afforded a different burial rite (inhumation, when the norm was cremation burial) (see Egging Dinwiddy and McKinley, above).

Single and even large groups of infant burials have been recovered from villa sites – notable groups include those at Hambleden Villa, Buckinghamshire (97 neonates) and Barton Court Farm Villa, Oxfordshire (47) – where there often seems to have been an association with crop-drying structures, particularly in the 4th century AD, in backyards of properties on urban and semi-urban sites, and also on Romano-Celtic temple sites (Scott 1999, 110–15). Indeed, recent excavations undertaken on the outskirts of the Roman town at Springhead in Kent revealed 49 neonate and infant burials. Some were directly associated with a spring which became the focus of ritual activity, including a temple and sanctuary complex, whilst others were buried in the properties of the roadside settlement. These included both domestic properties and those used for small-scale industrial activities, such as a bakery, a smithy and a possible dyeing/brewing complex (Andrews *et al.* 2011). It is with the latter group that the cemetery at *Margidunum* Hinterland appears to have closest similarities; the two or three properties within which the burials lay contained buildings associated with small-scale industrial activity, perhaps at the margins of a domestic area (see Cooke, above).

A large group of graves of neonatal and very young infants raises the possibility that they were the victims of infanticide or 'exposure' (where an unwanted infant would be abandoned to the mercy of the elements), which is documented in the Roman period. In her discussion of the infants buried at Springhead, McKinley notes that most such exposure burials were generally undertaken shortly after birth (at 38–40 weeks), a time when the newborn are at the greatest risk of death naturally (McKinley 2011, 7–9). There is no significant evidence from the burials in DE3002 favouring an interpretation of infanticide, nor is this supported by the age range of the individuals buried, and it is likely that this small cemetery comprise neonates and infants who died naturally and were afforded respectful burials in a roadside plot, some of them adjacent to what may have been a small monument or shrine. It may be that their deposition in an area formerly associated with both metalworking and brewing, both transformative industrial processes, was deemed somehow appropriate or suitable.

Late Romano-British

A number of burials at *Margidunum* Hinterland were dated to the mid–late Romano-British period, including two cremation burials in DE3001, single inhumations on DE3002 and DE3004 and a small enclosed inhumation cemetery within Enclosure K. These add to the small number of inhabitants of *Margidunum* found in a small inhumation cemetery excavated by Todd just outside the south-eastern defences (see Fig. 10.8).

The two cremation graves lay together to the west of the Fosse Way, to the north of a boundary ditch forming part of a late Romano-British field system probably associated with Newton Villa to the west. Neither burial, of a male (grave 302291) nor a female (grave 302289), was urned, although there was evidence from the uneven distribution of bone within the grave cut for the use of an organic container such as a bag. Deposits of pyre debris were included in both graves.

A number of hobnails, presumably from the soles of shoes, were recovered from grave 302289, bone from which returned a mid–late Romano-British radiocarbon date of cal AD 130–340 (SUERC-39054, 1780±30 BP). Philpott (1991, 165–7) indicates that the presence of hobnails as grave goods in graves is increasingly common from the 3rd century onwards, and that they are a common find in late Romano-British inhumation graves. Cremation burials containing hobnails are not common, although an early Romano-British example is known from King Harry Lane in *Verulamium* (*ibid.*, 167). A number of the cremation burials from the cemetery at Brougham, Cumbria, dating to the 3rd century, also contained hobnails (Cool 2004). It seems most likely that these two cremation burials at *Margidunum* Hinterland date towards the end of the period in which cremation was the predominant rite in Roman Britain, although comparatively little is known about the nature of burial rites in the East Midlands (Taylor 2006, 158–9) and they may not be atypical. Like the earlier single inhumation burial within the mid-Romano-British field system, these burials probably relate to the villa complex to the west, and again may have been estate workers, perhaps following a tradition of being buried at the edges of the fields.

A similar explanation may be advanced for the single unfurnished inhumation burial of an adult male (304515), in DE3004. The body had been buried supine and extended, the extended position being the norm in the late Romano-British period. The man may have lived and worked at the nearby farmstead of this date.

Another 14 late Romano-British burials relate to a small inhumation cemetery in Enclosure K which appears to have marked the south-western extent of the roadside settlement on the west side of the Fosse Way at

Margidunum (Fig. 4.35). The graves largely respected the enclosure ditches, but were not well dated artefactually – one contained a coin of the AD 330s and a second was dug through the fills of an earlier ditch of the enclosure. A number also contained sherds of residual mid- and late Romano-British pottery, while four contained hobnails.

The burials are entirely typical of a small late Romano-British inhumation cemetery, apart from the absence of younger children, although this may reflect the small size of the cemetery as revealed within the excavation area. The alignment of graves on boundaries has numerous parallels in late Roman Britain. The cemetery seems to be an unexceptional one, with few of the individuals afforded grave goods, and all of the grave furnishings relatively modest. Given its distance from Newton Villa, and its location on the edges of an enclosure fronting onto the Fosse Way, it seems most likely that it was associated with the roadside settlement, if such a distinction between villa and suburb was relevant at this time. Burial on the periphery of settlements was the norm in late Roman Britain, and this cemetery fits that pattern well. Small groups of graves have been recorded in roadside enclosures at a number of local centres, including Hibaldstow, South Humberside, Catsgore Somerton, Somerset and Bow Brickhill, Buckinghamshire, while at Ilchester in Somerset some 60 graves were recorded within six partially excavated house plots, although it was not clear whether the houses were inhabited during the period when the burials were being made (Finch Smith 1987, 115–19). At Ilchester there was a clear correlation between the alignment of the plot boundaries and the graves within them, while elsewhere small enclosed cemeteries have been recorded outside roadside settlements, such as at Kelvedon in Essex (*ibid.*).

The single inhumation grave (303504) in DE3002 is more enigmatic. This had been heavily truncated by later ploughing, and the burial appeared to have been unfurnished. Dug into the terminal of the late Romano-British gully relating to Structure 25 (Fig. 4.46) in an area apparently occupied into the late 4th or early 5th century AD, this burial probably represents one of the final developments on the site. Finds from the gully included a *siliqua* of Arcadius, struck between AD 395 and 402, and a radiocarbon date of cal AD 250–430 confirmed the late Romano-British date (SUERC-39051, 1675±30 BP). This indicates that the burial took place in the last decade of the 4th century or very early in the 5th century, at a time when the settlement was in decline and the earlier Romano-British norms of burial at *Margidunum* may have been in a state of flux.

At *Margidunum* Todd uncovered two small groups of burials which may belong to the same larger extra-mural cemetery (Todd 1969, 73–9; Fig. 10.8). While the detail and location of the graves is not clear, it appears that a group of 10 had been dug through the upcast bank outside the multiple ditches of the defences. Six of these have published plans (Todd 1969, fig. 33). Most individuals were buried supine, although one was both prone and decapitated, with the head placed by the feet. All but one were adults (the single exception the badly truncated burial of a child). Only one burial was coffined, although some graves were roughly lined with stones, and only one grave clearly contained grave goods – hobnailed shoes being recovered from around the foot bones. A coin of the AD 330s recovered between the legs of the prone individual was regarded as an accidental inclusion, but on the whole the practices appear typical of late Roman Britain and in most cases were similar to those found in Enclosure K of the present excavations.

The second group of graves excavated by Todd lay immediately south-west of the first (*ibid.*, 76), suggesting that they belonged to the same cemetery. It is not clear from the description how many graves were found, but three are mentioned in some detail; two contained lead coffins, and in a third the individual was buried with six bracelets, beads and a chain linking a bronze razor, a *ligula* and a nail cleaner. The presence of lead coffins is noteworthy, particularly when few of the other burials were made coffined. These would be seen as a sign of the relatively high status of the deceased or their mourners. This group of graves clearly dates to the 4th or early 5th centuries and, given its location and distinctive burial furnishings, may represent part of an extra-mural cemetery for the inhabitants of the defended core of the town.

Saxondale and Other Sites

Beyond the immediate outskirts of *Margidunum*, the only other site containing significant evidence of activity in the Romano-British period was Saxondale (Figs 5.1, 10.12) where a range of settlement, agricultural and roadside enclosures was excavated, as well as a short section of the edge of the Roman road itself. The remaining sites along the road scheme contained little evidence for Romano-British activity, although what evidence there is indicates that areas of the landscape were enclosed or subdivided into fields for agricultural purposes. The ditches at Owthorpe Wolds, for example, appear to represent the remains of a rectilinear enclosure or field boundary, but the small pottery assemblage was insufficiently diagnostic to closely date them. Similarly, two ditches containing undiagnostic pottery at Thorpe merely confirm the presence of field boundaries to the east of *Ad Pontem*.

Saxondale settlement and land use

The evidence for Romano-British land division uncovered at Saxondale lies just 1.5–2 km south-west of Enclosure K at the *Margidunum* Hinterland site, and although recorded as a different site can be viewed in the context of the hinterland of *Margidunum*. This evidence comprised a rectilinear arrangement of ditches dividing up the landscape at a number of different scales. The dominant boundary (ditch 277248; Fig. 5.13), spanning the full width of the site, marked a topographic division between a settled but otherwise undivided area of ground to the south of the site, from a valley-based field system to the north. These lay to the west of the Fosse Way, the

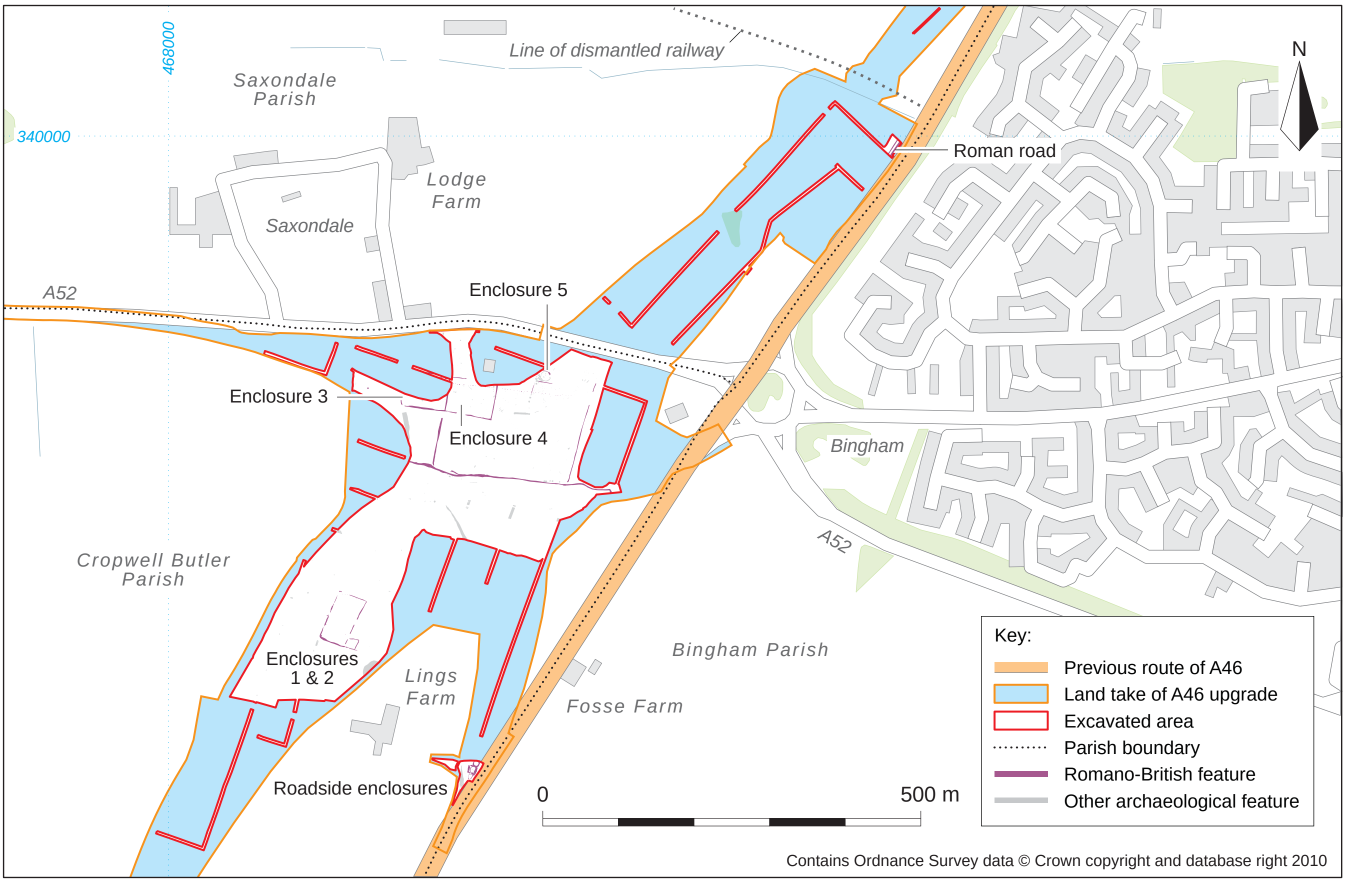


Fig. 10.12 Saxondale: summary of Romano-British features

edge of which was exposed in the northern extremity of the site (in SM2072; Fig. 5.10).

The discrete rectangular enclosure (with its small annexe), to the south of the boundary (Enclosures 1 and 2), although containing no structural evidence, appears on the basis of the range and quantity of domestic debris from its ditches to have been a settlement enclosure of the 2nd century AD. A substantial deposit of pottery from the terminal on the north side of the enclosure's south-east-facing (possibly main) entrance (ditch 277245) may represent a 'placed deposit' in a comparable location to that found at the entrance to the Iron Age roundhouse in the valley *c.* 400 m to the north-north-west. Also from the ditch of Enclosure 1 came a charcoal sample dominated by roots and stems of heather (Stevens, Barnett Chapter 5). Although from only one sample, it is strongly reminiscent of the charred plants from the early Romano-British phases at *Margidunum* Hinterland and it seems likely that this also relates to land clearance. Again, it is possible that there was a widespread conversion of heath to arable land in the early 2nd century and this is compatible with the suggestion of a rapid increase in cereal production, as has been suggested for *Margidunum* (above). It may have been the principal reason for the establishment of these enclosures on what appears to have been previously unoccupied land. While it is not possible to be certain about the location of heath at in this early period the present soils are somewhat acidic and early Ordnance Survey mapping shows the area to have included heathland.

There was also artefactual evidence of settlement within the rectilinear field system north of the main boundary ditch, as well as a number of pits of varying size and (presumably) function. It is possible that the two large abutting rectangular enclosures (Enclosures 3 and 4) had a settlement rather than an agricultural function (such as stock pens); alternatively, any associated settlement may have lain beyond the limits of excavation to the north and west. Of the three deep pits (possibly wells) in the northern area, one lay inside Enclosure 3, one outside the enclosures, on the western edge of the excavation, and the third further south.

It is possible that the Romano-British landscape division at Saxondale shows an element of continuity with the site's pre-conquest occupation, reflected perhaps in the undated (but Romano-British or earlier) line of postholes, and also in the construction of a small enclosure (Enclosure 5; Fig. 5.13) around the site of the Middle Iron Age roundhouse (Roundhouse 2; Fig. 5.6), apparently deliberately enclosing what may have remained a significant location. As the roundhouse lay on the northern edge of the excavation area, the extent of any associated larger settlement was not established.

Saxondale roadside enclosures

The group of features next to the Fosse Way, on the high ground east of Lings Farm, comprised a linear arrangement of five small Romano-British ditched enclosures or partial enclosures, one of the ditches apparently recut in the Anglo-Saxon period. The features are clearly delimited to the west, although it is possible that related enclosures lay to the north, and perhaps also to the south. There may also have been room for further enclosures of a similar size to the east, closer to the Fosse Way, since the precise line of the Roman road was not established at this location, although it was probably within *c.* 5 m of the limit of excavation. Notwithstanding these uncertainties, it seems that this was a discrete group of features sited in relation to the Roman road.

There is some uncertainty, however, over the precise dating of these enclosures, and the associated features, because pottery from them was sparse. The intercutting of the enclosure ditches shows a sequence of activity, although there was not a simple progression from one enclosure to the next (Fig. 10.13). Enclosures 6, 8 and 9 were stratigraphically early and it is possible they were in contemporaneous use. Each was of a slightly different form and they may have formed a 'suite' of enclosures with different functions.

Enclosure 9, between Enclosures 6 and 8, was of a form suggestive of circular structure, with an outer eaves drainage ditch and a concentric inner wall gully, both having an entrance facing just west of south. There was no indication of the form of any wall, although the shallow gully could have held stakes or planks. There was a shallow linear pit of unknown function in a near-central position. Two sherds of greyware from the outer ditch suggest an unspecific Romano-British date for the structure. The dating is compatible with the 'enclosure's' interpretation as a structure of traditional native form (and, at 8 m in internal diameter, of average size) for which there is evidence elsewhere of construction as late as the 3rd century AD (see Booth *et al.* 2008, 373–5, Westhawk Farm, Ashford, for examples and comparable sites).

In view of the later Anglo-Saxon developments at this location (see below), it is possible that this circular structure was a roadside shrine, although without a surrounding precinct which is often the defining characteristic of such structures elsewhere. In some cases central free-standing posts have been found (eg, shrine structure Q at Westhawk Farm) which may have been the principal focus, although this need not be characteristic. Perhaps the shallow pit, apparently 'facing' the entrance, if contemporary, may be significant in this respect.

Enclosure 8, to the north of, and virtually contiguous with the circular structure's ditch, may also have been contemporary with it (Fig. 10.13). The Romano-British pottery from its ditch provides more convincing dating than a single small sherd of Anglo-Saxon pottery, which may derive from the ditch's subsequent recutting (as Anglo-Saxon Enclosure 11). Again, the complete form of this enclosure was not recoverable but it was subcircular and *c.* 6 m in internal diameter. There was no indication of an entrance, although one in the north-east cannot be ruled out.

To the south of Enclosure 9, Enclosure 6 lay off the predominant alignment of the enclosures, and may have been deliberately sited to avoid blocking the entrance to the circular structure. Although it lay largely beyond the limit of excavation to the south and east, its possible rectangular form makes it similar to a number of 'shrines' or 'mortuary enclosures' of the Romano-British period, although this is a very tenuous link, particularly given the

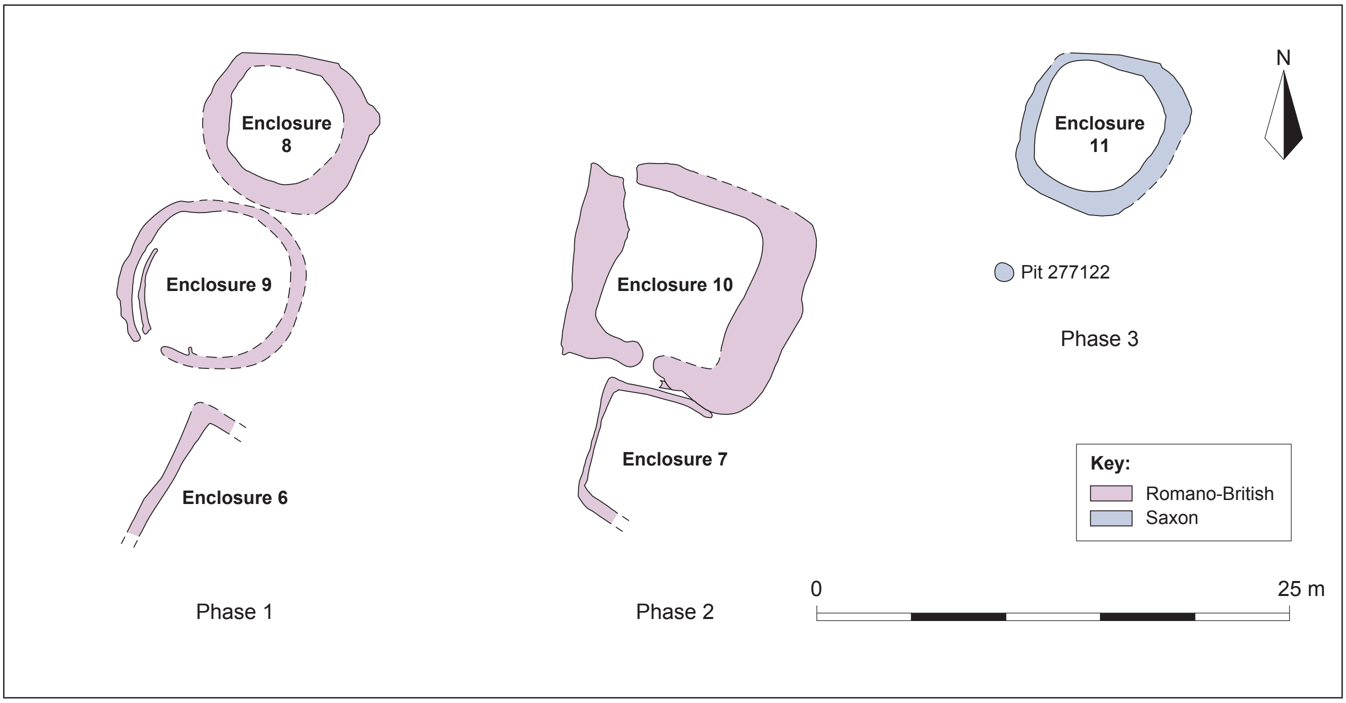


Fig. 10.13 Suggested phasing of the Saxondale roadside enclosures

absence of any evidence for Romano-British mortuary activity at Saxondale.

It is generally assumed that the siting of roadside monuments, of whatever type, was primarily concerned with making them highly visible, and those at Saxondale appear to fit this explanation. Their location on the brow of the hill, visible from *Margidunum* 3 km to the north-east, as well as further beyond, and a similar distance along the road in the opposite direction, may have been a factor in their construction. This elevated location may have made this a suitable site for a signal station, but the remains of Enclosure 6 do not immediately suggest this possibility. Although the original depth of the ditch is not known, it is shallower than the surviving depths of the Enclosure 8 and 9 ditches, and does not seem appropriate as a foundation trench for a structure of any significant height. More generally, the concept of a widespread system of military signal posts has been questioned by Donaldson (1988) because of the problems of intervisibility that any effective system would need, and the lack of epigraphic evidence for this being a military procedure, while the archaeological evidence has also been highly speculative.

When the ditch of Enclosure 6 had silted up, Enclosure 7 was laid out on its western side, appearing to form an extension or annexe to it, perhaps open on its eastern side. There was no stratigraphic relationship between Enclosures 7 and 10 but it seems unlikely that they coexisted since Enclosure 7 almost blocks the southern entrance to Enclosure 10. The Enclosure 7 ditch was cut by one of the Anglo-Saxon cremation graves (277097), the only instance of a physical relationship between the enclosures and the later cemetery.

Enclosure 10 was dug over the top of Enclosure 9 (the circular structure), and appears to have been intended as a replacement for it. Its ditch was the most substantial of all the enclosure ditches, and disproportionately wide for reasons that are not clear. There were entrances in its southern side and at its north-western corner, and a posthole in the base of one of the ditch terminals at the latter indicates a structure or post there. Centrally within the enclosure was a shallow pit (277112) containing three sherds of Anglo-Saxon pottery from two vessels, suggesting a 5th-century or later date for its infilling. There is, therefore, circumstantial evidence that Enclosure 10 was of post-Roman construction and that the few sherds of Roman pottery from its ditch might have been residual. Alternatively, the pit may have resulted from the Anglo-Saxon re-use of an earlier Romano-British enclosure. In either case it is likely that the pit was sited deliberately in relation to the enclosure, rather than this being a coincidental arrangement, which at least implies that the enclosure was a persistent feature of some significance in the local landscape.

The evidence for continued activity at the site in the early Anglo-Saxon period, with the establishment of the cremation cemetery in the 5th/6th century, and the continued significance of the immediate surroundings as place of assembly for the Bingham Wapentake, are picked up again in the later discussion (below).

Abandonment and the Legacy of Rome

The evidence for the end of the settlement at *Margidunum* is ambiguous. Quantities of 4th-century material, in particular coins and pottery, have been found on all of the sites excavated. The final phase of defences – the stone wall – also appears to date to the 4th century, and at least one substantial late Roman building has been excavated within the defences (see Fig. 10.9). However, there are also numerous areas within the defences and the extended roadside settlement where there appear to be no 4th-century buildings (Todd 1969, 70–1). In the recent excavations there is evidence in DE3002 for activity at the end of the 4th century and possibly into the 5th, whilst the late Roman farmstead in DE3006 was clearly in decline if not abandoned by the second half of the 4th century AD.

This apparently contradictory pattern may not in fact have been dissimilar to the earlier situation within the town, where many of the plots adjacent to the road appear to have been unoccupied at different times. It must be suspected, however, that this reflects the difficulty inherent in identifying and dating buildings without deep stone foundations. Unless there is scope for a re-evaluation of Oswald's work or further excavation of the site it will not be possible to take a firmer view as to whether *Margidunum* experienced a sudden or a gradual decline. As discussed in a number synthetic publications about the period, many Roman towns appear to have been in decline during the 4th century, with public buildings dismantled, empty spaces in street frontages and substantial town-houses occupying largely empty back-plots (Esmonde Cleary 1989; Higham 1992; Faulkner 2000). It would be no surprise for *Margidunum* to have shown a similar pattern of change, although the evidence is not strong enough to confirm this.

The latest identifiable occupant of the roadside settlement is the inhumation burial (303504) associated with Structure 25 who, although stratigraphically later than a coin of Honorius, was almost certainly buried within the first quarter of the 5th century on the basis of a radiocarbon date. This burial seems to have followed the abandonment of the building, and there are no securely contemporary or later deposits to suggest much other activity here. While the degree and nature of any continuity of '*Romanitas*' into the 5th century has excited much debate over the years, the archaeological evidence from *Margidunum* Hinterland, as elsewhere, conforms to the narrative that sees a dramatic hiatus in occupation at the end of the 4th or very early in the 5th century. It appears likely that once the Roman Empire withdrew its officials and troops following Honorius' edict of AD 410, whatever official function the settlement had served would have gone and, perhaps more crucially, the monetised economy which had developed during the period of Roman rule was stripped of whatever solidity it may have had. It seems likely that this combination of events precipitated an economic crisis which had disastrous consequences for *Margidunum* as a town. Although small quantities of Anglo-Saxon material were found during the current excavations, including an early Anglo-Saxon sunken-featured building on DE3006, this clearly did not represent a continuation of the earlier settlement or the kind of culture and economy upon which it had been based.

The Anglo-Saxon and Later Landscape

by Andrew Mudd

Introduction

There were few sites with significant post-Romano-British phases on the route. The most noteworthy, the early Anglo-Saxon cemetery at Saxondale, is discussed in greater detail below, while a consideration of the significance of the site is included in a review of the documentary evidence for this and adjacent parishes (Hooke, below). There was also some Anglo-Saxon pottery from the area of the Iron Age roundhouse at Saxondale whose relationship with the earlier features here is enigmatic. Elsewhere, a relatively large collection of material (the largest group of Anglo-Saxon pottery from the scheme) came from a sunken-featured building and two pits at *Margidunum* Hinterland, and there was also a small superficial spread apparently bounded by the Romano-British trackway which cut the Iron Age enclosure ditch at Moor Lane near East Stoke. In each case the evidence is difficult to place in a coherent narrative of the transition from late Romano-British to Anglo-Saxon occupation in the region. The problems of tracing developments from the late 4th into the 5th century and beyond have been considered by Vince (2006), Elliott *et al.* (2004) and Bishop (2000b) in the regional context. Chief among them is the chronologically undiagnostic nature of undecorated hand-made Anglo-Saxon pottery, which in many cases cannot be more precisely dated than to between the 5th and 7th or even 9th centuries (Young and Perry, Chapter 4), and the lack of coinage before the mid-7th century.

Margidunum *Hinterland*

The sunken-featured building in DE3004 was of rather irregular shape and without postholes, but recognisable as a type of building found widely across the country (Type D in West's 1985 classification). It was on the small side (surviving to less than 8 m² in area) and for this reason, as well as because of the absence of posts, it might be considered an ancillary building to a main residence elsewhere. While this interpretation appears to be belied by the large quantity and range of pottery (an estimated 49 vessels in seven fabrics; Table 4.16) recovered from throughout its single fill, as well as a cruciform brooch, this material may consist of rubbish deposited in it in the late 5th or early 6th century after the structure fell into disuse.

It is possible that a timber floor was suspended above the shallow pit, as in the West Stow interpretation of some of these buildings (West 1985). The irregularity of its north-west corner, however, is similar to some examples from Catholme, which was seen as evidence of an entrance to a house where the pit-bottom was the floor level, on which groupings of artefacts were sometimes found (Losco-Bradley and Kinsley 2002, 89: Fig. 10.14B–D). The reconstruction of AS50 at Catholme shows a tent-like structure with a gable end corner entrance giving headroom while also avoiding the gable end post (Fig. 10.14D). The absence of evidence of any posts at *Margidunum* Hinterland leaves the building's superstructure largely unreconstructable.

The two Anglo-Saxon pits are widely spaced both from each other, in DE3001, and from the sunken-featured building. Nonetheless, the pit to the south contained 31 sherds from two vessels, which does suggest dispersed settlement within the landscape. There is no real indication of any direct relationship between the Anglo-Saxon and the preceding Romano-British settlement; the Anglo-Saxon activity might have been considerably later, perhaps a century or more. Alternatively, there may have been settlement, but little use of pottery, during this intervening period, or it may be that imprecise ceramic dating does not allow us currently to fill this gap. It is of interest to note that excavations within *Margidunum* itself, and fieldwalking around it, have yielded small quantities of Anglo-Saxon pottery as well as a 5th-century brooch (Leary and Baker 2004, 7) suggesting a reoccupation somewhere in the vicinity. It is perhaps possible that the sunken-featured building in DE3004 is an outlier of a more extensive settlement on the north-west side of the Roman town. It is also worth noting that surface sherds of Anglo-Saxon pottery from the Bingham survey, while quite sparse, showed a greater prevalence in roughly the same locations as the Romano-British pottery. In particular, small clusters were present at Lower Brackendale, Granby Lane and in the north-west corner of the parish near *Margidunum* on both sides of Chapel Lane (Allen *et al.* 2010, 34 and fig. 3.32).

More widely, early Anglo-Saxon material has come from the periphery of *Ad Pontem* (Thorpe) and a number of other Roman centres in the region, but none with indications of continuous occupation (Elliott *et al.* 2004, 162). There is, therefore, some suggestion, based upon superficial distributions of material, that some places of Romano-British settlement became attractive to people with Anglo-Saxon culture for reasons that remain opaque, perhaps after a period of abandonment. Firm evidence of this comes from further north-east on the Fosse Way, where Anglo-Saxon settlement has been found next to the secondary Roman town at Glebe Farm, Brough (Vyner forthcoming).

Saxondale

Roadside enclosures

The final enclosure (Enclosure 11) within the sequence of roadside enclosures east of Lings Farm (in SM2077) involved the recutting of the ditch of the northernmost Romano-British enclosure (Enclosure 8) (Fig. 10.13). This recut cut through part of the infilled ditch of Romano-British Enclosure 10 to its south, although it is

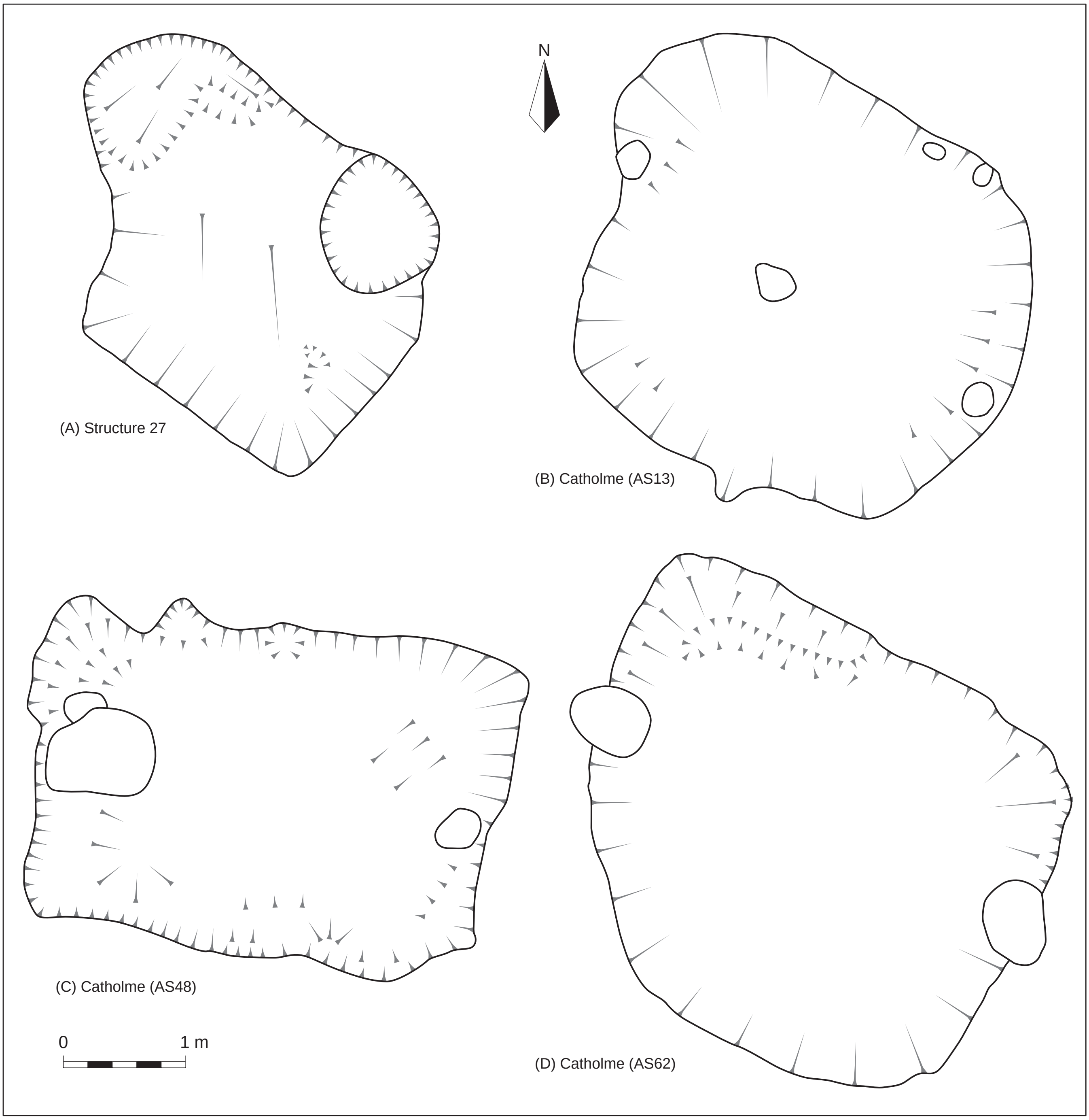


Fig. 10.14 Comparative plans of sunken-featured buildings: A) Margidunum*, Nottinghamshire; B) Catholme AS13, Staffordshire; C) Catholme AS48; D) Catholme AS62 (from Losco-Bradley and Kinsley 2002, figs 3.24, 3.64, 3.78)*

not certain that Enclosure 10 was out of use at this time. Indeed the siting of Enclosure 11 implies not only that the ditch of Enclosure 8 was still visible but that Enclosure 10 was also visible and respected. Moreover, Enclosure 10 had at its centre a shallow pit (277112) containing three sherds of Anglo-Saxon pottery from two vessels, The fact that Enclosure 10 was at least a focus of Anglo-Saxon activity, if not created at that time, appears to point to continued activity within the context of the enclosures in the Anglo-Saxon period, increasing the chances that Enclosure 11 was an Anglo-Saxon development of the site. The artefactual dating from the backfill of the ditch of Enclosure 11, comprising two Romano-British sherds and six Anglo-Saxon sherds, lends some support to this suggestion. The enclosure's similarity in form to that of Enclosure 8 which it replaced could indicate a comparable, albeit slightly later, Romano-British date, although in this case the Anglo-Saxon pottery would have to be considered intrusive. Like Enclosure 8, the purpose of Enclosure 11 cannot be inferred from the surviving evidence here.

It appears unlikely that the Enclosure 11 ditch encircled

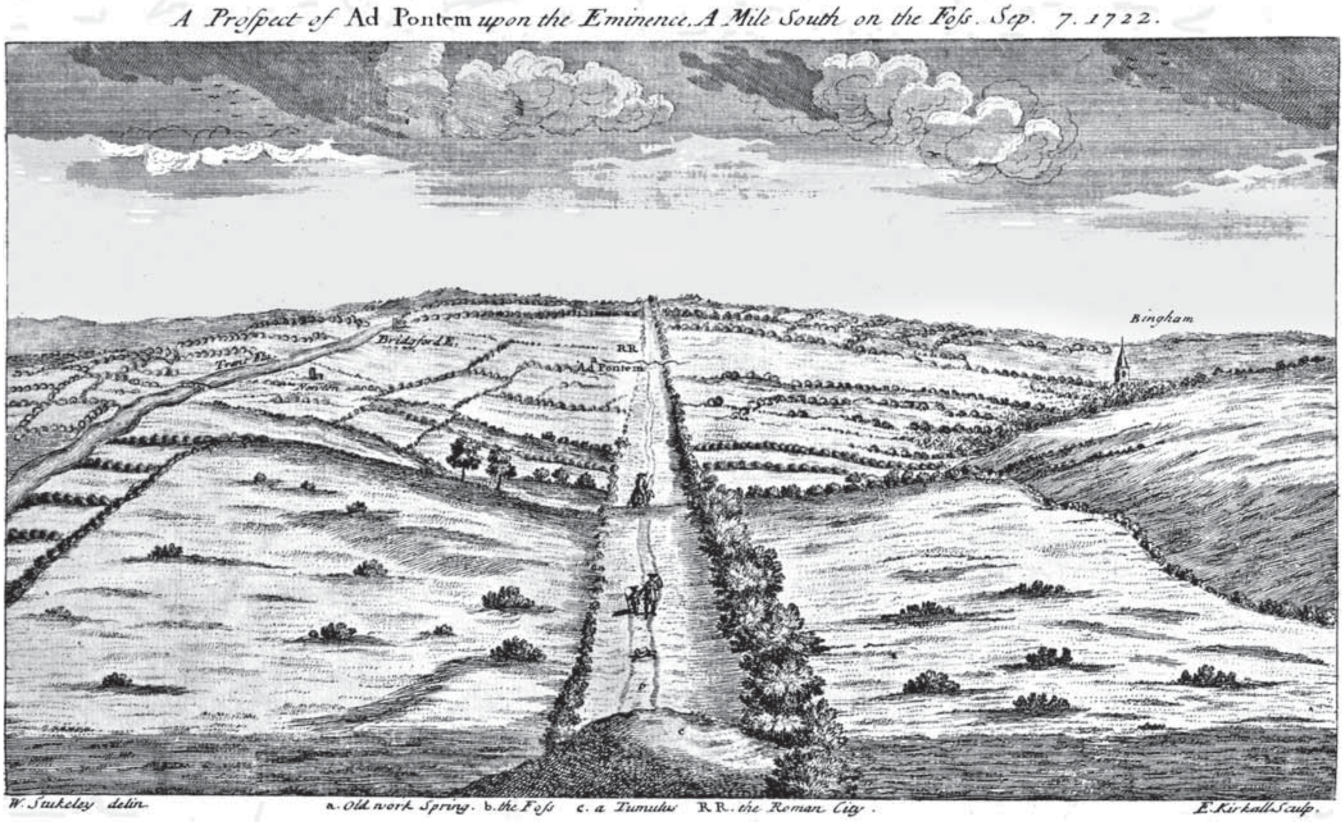


Fig. 10.15 William Stukeley's 1722 engraving: A Prospect of Ad Pontem upon the Eminence A Mile South on the Foss. *The view southward from somewhere between the present Foss Farm and Moothouse Pit shows a 'tumulus' apparently in the middle of the Fosse Way.* Ad Pontem *is a misidentification for* Margidunum *(from Stukeley 1724 with the permission of the Society of Antiquaries of London)*

the 'tumulus' depicted by Stukeley positioned in the middle of the Fosse Way as it existed in his time (Stukeley 1724). This, in any case, may have lain further to the south-west where a deviation in the recent course of the Fosse Way left 'a substantial verge on the east side for several hundred metres' (Knight and Kinsley 1992, 80) perhaps resulting from a deviation to avoid the mound (Fig. 10.15). The 'tumulus' must have been a substantial feature, and by analogy with other Anglo-Saxon burial mounds (if that is what it was), was probably of late 6th to 7th-century date.

Cremation cemetery

The use of this roadside area for cremation burials probably began, given the decorative traits on some of the urns, in the late 5th century, although on broader stylistic grounds most of the vessels are more securely of 6th-century date (Young and Perry, Chapter 5). A consideration of the mortuary rites and the relatively small size of the cemetery also place its beginnings in the later part of the 5th century, following a shift away from the larger 'centralised' burial grounds (McKinley, Chapter 5). The four radiocarbon dates from cremated bone are virtually inseparable and confirm a 5th to 6th-century date for this group, while Bayesian modelling of these dates suggests the cemetery spanned no more than 100 years (Barclay and Stevens, Chapter 5).

The range of fabrics from which the burial urns were made might suggest that the people using the Saxondale burial ground came from a wide area, although one should be wary of assuming a direct correlation between the geological source of the temper used in the vessel fabric and the homes of the people whose remains those vessel contained. The most common vessel fabric contained Carboniferous Sandstone which probably had several sources, mostly quite local (Young and Perry, Chapter 5). There were also fabrics containing Central Lincolnshire Sandstone, granitic inclusions from Charnwood in Leicestershire, Millstone Grit and Iron, all indicators of more distant and varied origins. However, since these fabrics were also present in a domestic context at the *Margidunum* Hinterland site to the north, it is evident that individual settlements could use pottery from a variety of sources.

The reasons why particular vessels were chosen for the burial rite is not clear, and although there appears to be some spatial grouping of fabrics (Fig. 5.20), no other patterning was evident in the other recordable variables within the cemetery. The 19 or 20 cremated individuals comprised a range of adults and juveniles (McKinley, Chapter 5). Around 50% are only identifiable as unsexed adult or subadult, and the others comprised infants and juveniles, females and males (although identifications are sometimes tentative). The cemetery, therefore, appears to have reflected the population of a local settled community.

The range of grave goods was quite limited, mainly in the form of small metal toiletry implements, particularly tweezers present with an infant, two females and an unsexed adult. The buried debris from the pyre included small quantities of animal bone in three graves; the sheep/goat and pig may represent joints of meat and the chicken perhaps a whole bird. Burnt sherds from one grave suggest that a pottery vessel, perhaps a container for food and drink, was also added to the pyre.

More widely, the apparently close connection between the Romano-British roadside enclosures and the early Anglo-Saxon cemetery is comparable to a number of situations where places of burial and ritual activity appear to appropriate monuments of earlier periods as a way of creating genealogies and legitimising territorial control (Bradley 2002; Williams 1997; Lucy 2000). Williams (2006, 181–4) has discussed a number of widespread examples, from Mill Hill, Deal in Kent, where two separate 6th-century burial plots were clustered around and focused on the prominent landmark of a Bronze Age barrow, to North Wales, where at Tandderwen, Clwyd, a Bronze Age barrow was enclosed by an early medieval rectangular enclosure, with four entrances, associated with an inhumation cemetery (Williams 2006, 155–7 and fig. 5.6).

There does appear to have been a tradition of square-ditched ritual enclosures traceable from the Iron Age through to the post-Romano-British and early Anglo-Saxon period, which Blair (1995) has argued are likely to have been the 'pagan shrines' referred to by early Christian writers, and in particular the 'fenced or hedged enclosures' containing 'altars' and 'crude pillars' of Bede and Aldhelm (*ibid.*, 1–3). A high proportion of these enclosures was superimposed on prehistoric monuments, normally Bronze Age barrows. Enclosure 10 at Saxondale does not quite fit this pattern since the original centre of attention would appear to have been a circular structure of later Romano-British date (Enclosure 9) and the circular and square enclosures on each side that may have been its contemporaries; the presence of posts in these enclosures is also not demonstrable.

In his study of place-names associated with pagan worship Wilson (1985, 181) notes the distinction between shrines or sanctuaries associated with *wēoh* names, which for the most part were situated very close to ancient routeways, 'never as much as a mile away, and usually virtually alongside' and which were sometimes in personal ownership, and *hearg* sites which were important public shrines in commanding places, often focused on a barrow or other mound (*ibid.*, 182). The Saxondale enclosures may have fitted both categories or conceivably have developed from one to the other since their location is a commanding one (called 'Toot Hill') and the mound depicted by Stukeley, possibly a burial place of typical *hearg* character, is likely to have been a slightly later site. The siting of a possible shrine and early Anglo-Saxon cemetery by the Fosse Way is of particular interest and conforms to a pattern seen more widely. It is noticeable that, and as with the *wēoh* sanctuaries, many Anglo-Saxon burial plots in the East Midlands appear to have been sited in relation to the Roman road network (Vince 2006, 172), and in both cases their visibility and accessibility is the assumed reason for this.

Approximately 14.5 km south-west of Saxondale, the Cross Hill tumulus at Boughton Lodge (Willoughby-on-the-Wolds) lay on the eastern side of the Fosse Way on a ridge overlooking the Roman town of *Vernemetum* to the south (Fig. 10.16). It had been built on Romano-British remains of uncertain nature and had been the place of burial by inhumation of at least five individuals of assumed but unconfirmed Anglo-Saxon date (Kinsley 1993b). Anglo-Saxon burials (of 5th to 7th-century date), 150 m to the south of the tumulus, cut into further Roman buildings and other features and encroached on the Fosse Way. The excavations on that site were limited and the records of varied quality (Kinsley 1993b, 1–9), and it cannot be demonstrated that the Anglo-Saxon cemetery was sited in deliberate relation to the Roman settlement, but its siting on the Roman road is striking. The construction of a mound over Roman roadside buildings also supports the suggestion of a close relationship between the Anglo-Saxon funerary architecture and the road. The similarities with Saxondale in these respects appear to be close. It may also be significant that the

Fig. 10.16 Anglo-Saxon sites referred to in the area

name *Vernemetum* means 'very/great sacred grove' (Rivet and Smith 1979, 495), indicating a sanctuary of some kind nearby which may have been the original focus of the funerary practices here.

How the Saxondale cemetery appeared to its users can only be conjectured, but the close proximity of the burials, without intercutting, suggests that their locations had been marked in some way. At some point Stukeley's 'tumulus' was built nearby in the middle of the Fosse Way (Fig. 10.15) and, although it no longer survives, and its location cannot now be positively identified, its siting is very similar to that of the Cross Hill tumulus to the south.

Further north along the Fosse Way Stukeley shows, in his engraving *Prospect of Crocolana*, a similar looking mound, also in the middle of the Fosse Way, which he labels 'Potter Hill' (Stukeley 1724). The site can be identified close to South Potter Hill Farm on the Nottinghamshire–Lincolnshire border, and seems likely to have been another Anglo-Saxon burial mound (TPA 1991, 52). This apparently repeated association between funerary monuments and the Fosse Way may be linked to the road as an aspect of Roman construction, rather than simply its role as a means of access or its possible status as a boundary. As Blair has written, the adoption of Roman ruins for burial by the Anglo-Saxons was common, but the choice of ruin (villa, bath-house, temple) appears indiscriminate, following a logic which is still difficult to penetrate (Blair 1995, 3). In this context it may be possible that roads had the potential to become charged with symbolic or mythical meanings in the same way as buildings evidently did.

For whatever reasons the site at Saxondale became a location of burial, and the area's significance continued as a place of open-air assembly for the *Domesday* wapentake of *Binghamhou* (Hooke, below). The location of this assembly has been identified from the name 'Moothouse Pit' (formerly '*Mote-howes*') and Moothill Farm nearby. The site is discussed by Hooke (below) and it seems likely that the *howes* and *hou* elements of these names derive from the Old Norse *haugr* and relate to a mound, and probably that recorded by Stukeley, which certainly lay not far from the cemetery at Saxondale. As late as the 18th century the wapentake is said to have convened at Moothouse Pit, a shallow and apparently natural depression about 100 m to the south of the estimated location of the mound. It seems likely, however, that the pit was a later meeting-place post-dating and deriving its name from the nearby mound (Pantos 2002, gazetteer entry for Bingham Wapentake), and that the physical remains of the mound acted as the focus for the original assembly. A similar juxtaposition of meeting-place and burial site is found at Loveden Hill (Lincolnshire), the meeting-place of the Loveden Wapentake and the site of a mixed rite cemetery (Meaney 1995, 37).

The evolution of places of burial to places of court assembly has been noted by a number of authors and is discussed by Brookes (in press). Recent research on early medieval burial has emphasised its significance as an aspect of public assembly and performance, functioning to reinforce kin associations and alliances (*ibid.*). As a venue for public discourse, large-scale cremation cemeteries appear to have been particularly appropriate because, as has been argued for Spong Hill, they tended to be the destination of the dead from a wide area rather than from a specific settlement (McKinley, Chapter 5; 1994b, 69–71; 2005; 2006; Williams 2002). This kind of development, as a meeting point for a widely dispersed population, does not, however, appear appropriate to Saxondale because the cemetery was a small one and for this reason probably served a fairly local population (McKinley, Chapter 5).

Anglo-Saxon activity at Iron Age Roundhouse 2

Early Anglo-Saxon activity at Saxondale was not restricted to the roadside enclosures and cemetery. Up to nine sherds of pottery of this date were identified from the upper fills of pits associated with Iron Age Roundhouse 2, towards the north of the site. The significance of this is not clear but it suggests either that this location was visited in the early Anglo-Saxon period, for reasons that remain obscure, or that there was more widespread use of the valley bottom here, perhaps including structures formed by some of the undated postholes.

Early Anglo-Saxon Landscape

In common with other parts of the country, the archaeological evidence from the present project points to a dramatic decline once Roman material culture disappeared, suggesting widespread social and economic collapse. Several studies have preferred to address the potential for transformations through less visible social organisations without access to mass-produced and traded goods, but with more locally based subsistence agriculture and using perishable goods. The various views ranging from cataclysmic collapse to near invisible continuity have been summarised by several writers (Dark 2000; Esmonde Cleary 1989; Bassett 1989; Higham 1992; Faulkner 2000). From the present project it is possible to see similar patterns of organisation in Romano-British and early medieval times on a landscape-wide scale (below), and it is likely that a well-ordered landscape, such as appears to have evolved by the 4th century, would have retained its structure in later centuries.

It may have been the agricultural resources – the areas of good arable land and pasture and the framework of fields – that were the major factors behind this similarity. The charred cereals from the sunken-featured building at *Margidunum* Hinterland comprised mainly barley with some wheat as well as weed seeds, indicating a choice of crops that was quite similar to those grown in the late Romano-British period in this area. It is worth noting the apparent contrast at the time of the *Domesday* Survey (1086) between the sparsely inhabited wooded country north and west of the Trent Valley, and the highly populated and extensively cultivated landscape found to the south-east (Hooke, below; Bishop 2000b). This may have had its origins in the different social and political landscapes of the post-Roman era, where the south-east

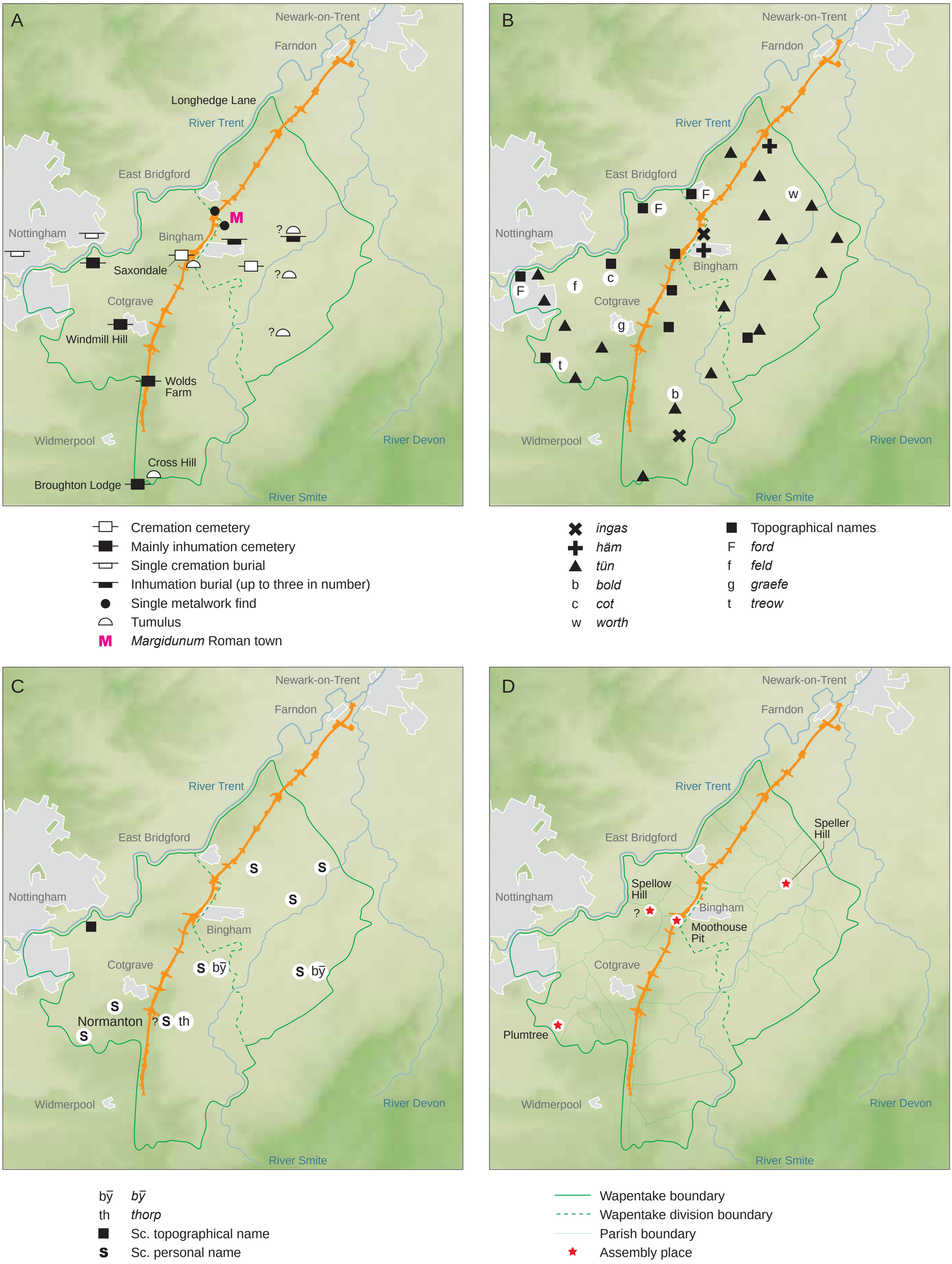


Fig. 10.17 Anglo-Saxon documentary maps of Bingham Wapentake

region showed far more continuity which Bishop has suggested may reflect a sub-Romano-British culture rather than an immigrant one (2000b). The thorny question of ethnic and political divisions at this time has been touched upon by Vince (2006) who suggests there may have been a complex mix of Britons, Saxons and Angles in the region in the 5th and 6th centuries, as is suggested for Middle Anglia in the 7th century where the numerous lineage-based names of the Tribal Hidage probably reflect a complexity of small territories (Vince 2006, 166–7). There is the intriguing possibility that the name 'Saxondale' refers to Saxon settlers in an area that became dominated by Anglo-Scandinavian culture (Hooke, below).

The documentary evidence reviewed by Hooke shows that Saxondale lay within the Wapentake of Bingham (*Bingehamhou*) in 1086, a Danish administrative unit likely to have perpetuated earlier ones. The wapentake meeting-place, later identified as 'Moothouse Pit', lay close to the boundaries of what became the parishes of Bingham, Saxondale and Cropwell Butler, although this division is not likely to have had any significance with regard to Anglo-Saxon administrative units (Figs 10.17 and 10.18). It has been suggested that some large administrative territories which came under the control of the church may have derived from Roman ones (see Bishop 2000b for this possibility for *Ad Pontem*/East Stoke), but the evidence is tenuous. No new evidence concerning the antiquity of parish boundaries was gained on the present project, although all were examined by trenching. It can be mentioned in passing that the parish boundary between Flintham and Syerston along Longhedge Lane, which formed the north-eastern boundary of the Bingham Wapentake (Fig. 10.17A), is thought to have possible prehistoric origins, but several ditches found on the Syerston side yielded only modern finds.

Early Medieval Saxondale and Bingham, within Bingham Wapentake – the Documentary Evidence

by Della Hooke

Saxondale forms part of the present parish of Bingham, located to the south-east of Nottingham within the Central province belt of England (Roberts and Wrathmell 2000) characterised by former open fields and predominantly nucleated settlement – both characteristics which began to emerge in the early medieval period. This section examines the early medieval

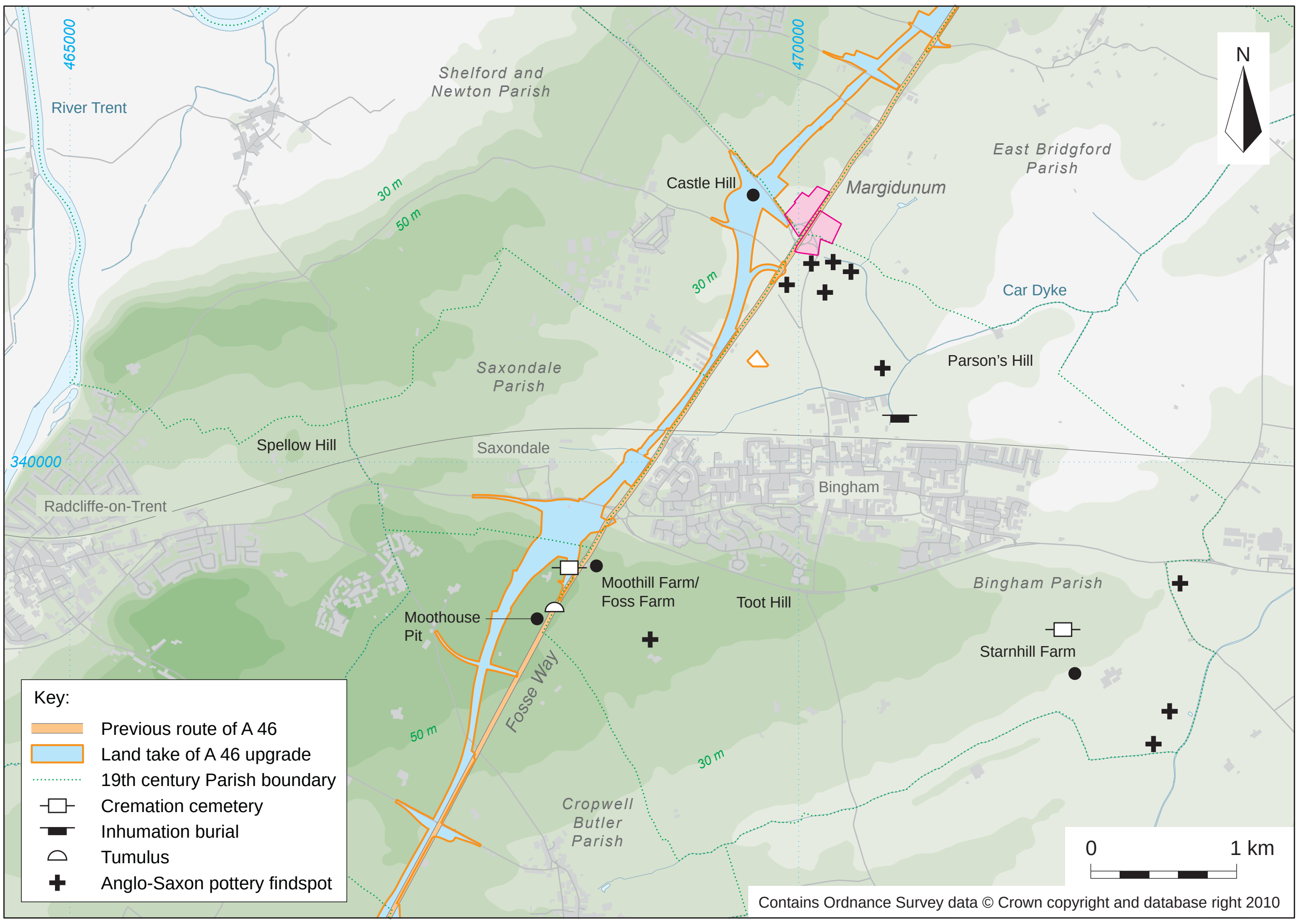


Fig. 10.18 Anglo-Saxon documentary map of Saxondale, Bingham and adjacent places

evidence for Saxondale within the wider landscape of Bingham Wapentake.

Historical background

Anglo-Saxon leadership appears to have been strongly established throughout central and eastern England by the 6th century, with this region adopting an Anglian identity in material culture (Brown and Farr 2001, 2). In the 7th century Nottinghamshire occupied a strategic position between the battling kingdoms of Northumbria and Mercia, with the River Trent the last strategic line. The southern region looked to the cultural and richer economic context of the south and east rather than the poorer north and west, falling into the territory of the Middle Angles (Bishop 2000b). Mercian suzerainty was finally secured in AD 679 after the battle of Trent which took place in Lindsey (Stenton 1971, 85), and Mercia continued to expand its territory in the 8th century from its original heartland in the Trent basin (Hooke 2001, 161, map 4). In AD 868 the Danes were overwintering at Nottingham in preparation for attacks on Mercia, the eastern parts of which they subsequently overran, bringing considerable Danish settlement into the area. The area that was to become Nottinghamshire lay within the Danelaw by the late 9th century. The reconquest of the Danelaw began under Æthelflæd who regained Nottingham in 922. However, Danish settlers remained in considerable numbers. Within the Danelaw, wapentakes replaced, but perhaps were based upon, earlier territorial divisions. The county may have been established by AD 954 with the administrative units of the wapentakes recognised in the late 9th or 10th century. An Anglo-Scandinavian society developed, and place-names suggest that some new settlements were also established with evidence for a population increasing by immigration, but that these were fitted into the pre-existing settlement pattern.

The early medieval period was characterised by enormous cultural change: the establishment of the Christian church, the growth of estates and the production of surplus goods on these estates supplying the developing markets of the monasteries and growing towns. It may have been the impetus of satisfying such demand that encouraged settlement nucleation and open field agriculture, the date of origin of which has yet to be satisfactorily ascertained (see below).

Late Romano-British to Anglo-Saxon

The Fosse Way was the main Roman thoroughfare through the region and has remained in use at some level ever since. A number of Roman centres grew up along it, to the north of the area under discussion at *Ad Pontem* (East Stoke) and, within what was to become Bingham Wapentake, at *Margidunum* (in Bingham parish). In the immediately surrounding area, villas were built at Newton, Car Colston and, possibly, East Bridgford, with a further substantial farm in Bingham. Other Roman sites outside the town, as at Granby Lane, Starnhill and Lower Brackendale Farm in Bingham, seem to have been continuously occupied into the 5th century (producing sherds of early to middle Anglo-Saxon pottery) although the area appears to have suffered a degree of economic decline during the last decades of Roman occupation. It is concluded, however, that the 'high population, extensive arable and lack of woodland in 1086 suggests that the Trent Valley and South Notts did not suffer as much depopulation as other areas in the 5th C, and retained its economic vitality. It appears that it had an existing economy and social structures which were attractive to A/S takeover . . .' (www.le.ac.uk/ulas/publications). The region was continually occupied by British communities with a sub-Roman culture, not ruling out the possibility of some survival of Romano-British estate structure. None of the small Romano-British sites in Bingham parish, however, produced any early to middle Anglo-Saxon pottery and smaller settlements may have been abandoned.

Early medieval burials and settlement

A number of Anglo-Saxon, mostly small, inhumation cemeteries in the region reveal Anglo-Saxon penetration in the Trent Valley interpreted as 'piecemeal movement from the south and south-east' (Bishop 2000b), with a number of cemeteries close to the Fosse Way to the south-west of Newark (Fig. 10.17A). Some of these were sited close to earlier Romano-British sites and the inhumation cemetery at Windmill Hill in Cotgrave (SMR 01183: Bishop 1984; SK 644357) may have had a British character indicated by the paucity of grave-goods (Bishop 1984). Here, of some 76 adult and child burials, only one was accompanied by weapons – a spear and a shield – originally beneath a mound, but two other burial mounds lay adjacent and these three became the focus for other burials. Another inhumation cemetery has been recorded beside the Fosse Way near Wold Farm, Cotgrave, found in 1839 (SMR 00883: SK 656318), with four skeletons 'interred at full length in the line of the road', each buried with two spears (Smith 1906, 196–7). A single inhumation found in 1893 at Barnhill in Aslockton was a warrior buried with swords and a lance-head (SMR 01518: Smith 1906, 197; SK 741404), and may also originally have been associated with a burial mound. Another single inhumation was found at Parsons Hill (Fig. 10.18), not far from the Roman centre of *Margidunum* (SMR 01463; Meaney 1964, 202), with a cremation cemetery at Starnhill in Bingham (Fig. 10.18) (SMR 01252; Alvey 1980) and a mixed-rite, but mainly inhumation, cemetery (with a proliferation of weapons and ornaments including brooches judged to be of 5th-century date) at Holme Pierrepont (SMR 00873; Smith 1906, 195–6). A probable 5th-century gilt-bronze pendant found at *Margidunum*, perhaps from a horse harness, may also have come from an Anglo-Saxon burial there, and an Anglo-Saxon brooch was found on Castle Hill between Car Colston and East Bridgford (*ibid.*, 203; the first edition one-inch Ordnance Survey map places 'Castle Hill' closer to Roman *Margidunum*). Cremation is usually thought of as the earlier rite, superseded by inhumation, but there is insufficient evidence to corroborate this and most cemeteries here appear to be of 6th-century date. A significant proportion of the native British population may have adhered to Christian practice, including burial rites, and this perhaps offers an explanation for the burial practices and material poverty of the 6th-century cemetery at Windmill Hill, Cotgrave (Bishop 1984) and for the absence of Middle Saxon burials.

The 5th–6th-century cremation burials discovered near Lings Farm (Saxondale) on the present project (Chapter 5) were associated with a succession of Romano-British roadside enclosures and a probable early Anglo-Saxon one. They lay not far distant from the suggested meeting-place of Bingham Wapentake (see below). The newly found cremation burials form an addition to other burials located near the Fosse Way such as those already found at Cotgrave. A mound, perhaps originally a burial mound, is also shown on the Fosse Way, a short distance south of Bingham, in an 18th-century drawing by William Stukeley in his *Itinerarium Curiosum* (1724, pl. 90; Fig. 10.15) and this may have been associated with the Bingham Wapentake assembly point (below).

Such a location for a burial tumulus upon a Roman road would not be unique: a tumulus was erected on the Roman Watling Street in Warwickshire between Bransford Bridge and Gibbett Hill in Churchover, a cemetery that contained male, female and child burials with grave-goods. It was Dugdale who recorded 'a great tumulus which is the magnitude that it puts passengers beside the usual road' (1656). A further four burials were located to the north of Gibbett Hill in 1958 during alterations to Watling Street (Meaney 1964, 259); they were also accompanied by grave-goods that included a sword. It seems that the use of the site for execution, as suggested by the name, reflects a later usage of the site, although this could have begun in later Anglo-Saxon times. Another mound, possibly of Anglo-Saxon date, is said to have stood on the Fosse Way itself at North Collingham near Roman *Crococalana* (Brough near Newark) between Newark and Lincoln. This is again depicted by Stukeley in his *Itinerarium Curiosum*, and again, like the Bingham tumulus, caused a diversion in the line of the road. To the south, at Cross Hill, a tumulus (also depicted by Stukeley) lay to one side of the Fosse Way above the Roman roadside settlement at *Vernemetum* (Broughton Lodge, Willoughby-on-the-Wolds). An enclosure map of 1790 names the North Collingham site as Gallows Nooking Common (North Collingham Enclosure map), suggesting that this also apparently attracted execution nearby at a later date (TPA 1991). Other burial tumuli (not necessarily Anglo-Saxon) may be suggested by minor names in Langar cum Barnstone and Whatton parishes (see below).

Later Anglo-Saxon (Danish) period

Domesday Book (Williams and Martin 1992; Parker and Wood 1977) reflects the situation prevailing in Nottinghamshire at the end of the early medieval period, by which time the majority of estate boundaries were securely established. Little is known about ecclesiastical organisation in the county prior to the *Domesday* survey, no doubt due to disruption by the Danes. Nottingham lay within the diocese of York by the mid-10th century and Southwell minster had jurisdiction over numerous estates in the county. More churches are recorded in Nottinghamshire in *Domesday Book* than in most other counties. The foundations of a cross-shaped Saxon church and a fragment of a Saxon cross shaft have been identified at East Bridgford and a few other present-day churches in Bingham Wapentake have Anglo-Saxon sculptural fragments – a Saxon coffin lid with interlaced ornament and two beasts' heads at Hickling (St Mary's) and a relief of the Virgin and Child at Shelford St Peter's (Pevsner 1951, 60–1, 81, 157 and pl. 34b).

There is unfortunately limited charter evidence for Nottinghamshire. Most pre-Norman Conquest charters were produced by the church, wishing to have permanent records of land transfers made, but the ecclesiastical upheaval that occurred with the Danish invasions was presumably the cause for the low survival rate of such records in the East Midlands. For the area under discussion (Bingham Wapentake) only one pre-Conquest document provides any evidence for land use in the later part of the early medieval period. In AD 978–1006 the estates of Hickling and Kinoulton, with their produce and men, were both bequeathed to Ramsey St Benedict (Ramsey Abbey) by Ærnketel and his wife Wulfrun (the parents of the fourth abbot), together with a third estate in Yorkshire (Sawyer 1968, S 1493). This document suggests that a mixed farming economy prevailed in the region, as Wulfrun bequeathed to the church [of Ramsey] on the summer feast of St Benedict (11 July), annually during her lifetime, '10 *mittæ* of malt, 5 of groats, 5 of threshed wheat flour, 8 hams, 16 cheeses, and 2 fat cows from my land at Hickling'. For the brothers during Lent she bequeathed eight salmon. These may have come from the River Smite which formed the border of both Hickling and Kinoulton (Kemble 1839–48, K 971; Hart 1975, 112–3).

Place-names and regional character

As elsewhere in the East Midlands, British names survived mainly for those of major rivers. The Trent is likely to have meant 'great wanderer' or 'great flooder', perhaps with a derivation from Br prefix **tri-* with **santōn-* 'grand wanderer' or Latin *sentina* 'bilge water, ie, flooding, strongly, draining thoroughly' (Watts 2004, 627). The Devon, its name derived from either Br **dubno* 'deep' or Br **dubo-* 'black' does not run through the wapentake, and its major tributary, the Smite, carries an OE name (doubtfully 'swift one', 13th century) but this may have had an alternative name the *Coker(bek)* (14th century, as a *Cokerbekbrigg*, later 'Cocker Bridge', is recorded in Aslockton in 1375; this is derived from a British root **kukro-* 'crooked' (Gover *et al.* 1979, 3, 8, 219–20).

Since charters are few, only two names in Bingham Wapentake are recorded before 1086. However, the *Domesday* manors are usually based upon early medieval estates, although many were in subdivided ownership/tenancy in 1086.

Of the habitative names, those with Old English *hām* are thought to be some of the earliest Old English names, often closely associated with Roman roads and Romano-British villas and settlements, and it may be significant that this is the term found in the name Bingham, 'the homestead of the Bynningas, the people called after Bynna', a settlement founded close by the Roman town of *Margidunum*, a royal estate that was to become the central estate of Bingham Wapentake (Fig. 10.17B). Bingham is also an early OE *ingas* name, names found by Welch (1983, 246) to have been in locations secondary to the primary areas of early pagan burial in Sussex. Flintham, too, is Flinta's *hām* and another royal estate in 1086. Few of the region's names are recorded before *Domesday Book* in 1086 as so few charters survive. Hickling is another early *ingas* folk-name 'the place called after Hicel'.

Saxondale lay within Bingham Wapentake by 1086. Saxondale (*Saxeden* 1086), is 'the valley of the Saxons'. This contains a folk-name *Seaxe*, gen.pl. *Seaxna*, with OE *denu* 'a valley'. The English place-name volume for Nottinghamshire (Gover *et al.* 1979) suggests that this denoted 'some isolated Saxon settlement in this Anglian territory'. Such a settlement might account for the use of the rare *denu* as against the Anglian *dæl* in the original form of this name' (*ibid.*, 241), a suggestion accepted by Watts (2004, 529). It is generally considered that in the region as a whole the population was made up of people of British, Anglo-Saxon and, later, Danish stock. The meeting-place of Bingham Wapentake lay on the Fosse Way just to the south of the Saxondale estate (above) and the current excavations revealed cremation burials beside the road just within the southern boundary of the parish (above).

Place-names do not suggest that there was a great deal of woodland to be found to the south of the Trent in the early medieval period – the characteristic *lēah* names ('wood', 'wood-pasture') are entirely absent, and only one *feld* name, a term sometimes, but not exclusively, used for an estate on the edge of a wooded region, is found (Bassingfield in Holme Pierrepont). There is, however, one name referring to a 'grove' – Cotgrave 'Cotta's grove'. This term is likely to have referred to a specific limited area of managed woodland, perhaps one even coppiced (Gelling and Cole 2000, 226–30) but the wood had apparently largely been cleared by 1086 when only underwood is recorded (below). Instead of woodland names, emergent settlement clusters are indicated by a preponderance of habitative terms, and especially by OE *tūn*. The *tūn* names were often given to emerging manorial nuclei in this period (a term which became that of many subsequent villages) and many are associated with personal names indicative of estate ownership or, at least, those living and holding land there. This term dominates in the place-names of Bingham Wapentake recorded by 1086 (Fig. 10.17B). Topographical-type names might be similarly used. Names of this kind are characteristic of closely settled and intensively cultivated regions.

A smaller number of Danish *þorp* and *bȳ* names are present (although *thorp* can also be an Old English term), in this area mainly to the south-west of Bingham, together with a substantial number of Scandinavian personal names, usually male, often associated with the *tūn* settlements, eg, Car Colston and Colston Bassett (Kolr), Thoroton, Aslockton (Áslákr) and Clipston (Klyppr) (Fig. 10.17C), the latter suggesting extensive Danish settlement within the region. (Normanton-on-the-Wolds is also 'farm/village/settlement of the Norsemen/Northmen'). Scandinavian personal names are, however, outnumbered by Old English personal names, as in the names Elton (Ella or Æthel), Hawksworth (Hōc), Barnstone (Beorn), Orston (Ōsica), Wiverton (Wigfrið), Hickling (Hicel), with some feminine names as in Kneeton (Cēngifu) and Kinoulton (Cynehild). Scandinavian village or farm terms include the 'bȳ' settlements of Tythby and Granby (with the Scandinavian personal names Tithi and Gráni) but Owthorpe could be OE or Scandinavian 'thorp' with an OE personal name Ufa or a Scandinavian name Úfi – the latter perhaps more likely. Not all *tūn* settlements were distinguished by association with a particular land-holder. A few were identified by a close physical feature – Scarrington with a 'dirty stream' and Upper Broughton with a brook – Whatton with wheat growing, whereas Newton in Shelford was 'a new farm/village'. Old English names used for lesser settlements include Lamcote and Hawksworth, the terms *cot* and *worth* often referring to hamlet settlements or single farms, and Newbold in Kinoulton referred to a new building, probably one of some status.

Topographical names provide another small window into the Anglo-Saxon landscape (Figs 10.17B and C). The ford names are self-explanatory, marking points where the River Trent may indeed once have been fordable. They include East and West Bridgford and Shelford, the last 'shallow ford'. The first is where a road from the north-west – the modern A6097 – approaches the Roman town of *Margidunum* on the Fosse Way, probably the Bridgeford Street marked on the first-edition one-inch Ordnance Survey map. A few names describe the topography of hills and valleys: Langar 'the long gore or triangle of land' may refer to a low long hill-ridge which stretches east–west to the south of the settlement and Cropwell Bishop and Butler refer to the 'humped hill' (OE *cropp* or Old Norse *kroppr* with *hyll*) known today as Hoe Hill which lies between the two settlements. Radcliffe-on-Trent is the 'red cliff or steep slope' overlooking the River Trent. Valley names are not frequent and the only one found here is Saxondale, 'the valley of the Saxons' (see above). Holme Pierrepont is ON *holmr* 'raised land in a marsh or land in a river-bend, river-meadow'.

Domesday Book also describes the county at the end of the early medieval period. The North Division of Bingham Wapentake had the highest density of plough-teams (4.7 per square mile; 1.8 per km^2) recorded not only in the county but in the whole of the northern counties, corresponding to the highest population levels (13.8 per square mile; 5.3 per km^2) (Terrett 1962, 251–2, 431, 433). Meadow too was present on most manors, more again than anywhere else in the county, and there were a number of fisheries along the Trent (as at Shelford and Radcliffe). Several mills are also recorded on the River Trent and on the tributaries of the Devon, including the Smite. Those on the Trent included mills at Holme Pierrepont, Kneeton and Shelford and on a tributary stream at Tollerton (2) while those on the Smite and its headwater streams were found at Granby, Langar (2), Hickling and Whatton, with another at Upper Broughton. Mills were being established widely by the end of the early medieval period.

As suggested by the place-names, woodland was in limited supply but was not entirely absent: scrubland or underwood, *silva minuta*, suggests degraded woodland and is mentioned three times in the wapentake – at Newbold in Kinoulton (a mere 2 acres; 0.8 ha), Flintham (divided between two estates as 3½ x 1 furlong and 1 x 1 furlong) and Cotgrave (again divided between two estates as 2 x 1 furlongs and 1 x 1 furlong). Wood-pasture, *silva pastilis*, may have been more typical of Anglo-Saxon woodland which was generally open in nature as it provided seasonal wood-pasture for many kinds of domestic stock, especially pigs, providing acorns, beech-mast and leaf fodder as well as grazing (Hooke 2010, 138–52). It seems that it was not as entirely deficient as the place-names suggest. Wood-pasture is recorded at Bingham where in total the woodland amounted to 1 league x 8 furlongs, at Cropwell Butler (½ league x 4 furlongs) and at Tythby (1 x ½ league), the latter three places lying close together. If the woods indeed lay within these estates, as they appear to have done, then the valley of the River Smite may well have been more wooded in this period (and meadowland may also not have been devoid of trees).

Although little is known about the location of early churches in the county, no doubt due to Danish attack and subsequent reorganisation, churches are not infrequently mentioned in the *Domesday* survey, as at East Bridgford, Newbold in Kinoulton, Granby, Shelford, Tythby and Flintham (each with a priest) and Orston (where there were two priests), Elton, Adbolton in Holme Pierrepont, Plumtree, Saxondale, Tollerton, Langar, Kneeton and Cotgrave. The last three had only half a church and this could obviously be shared by different manors (although Kneeton had the priest). A priest alone is recorded at Thoroton but may imply the presence of a church.

Wapentakes and places of public assembly

As wapentakes became the territorial units of the Danelaw in the mid-10th century, many are likely to have been based upon earlier hundred divisions, perhaps retaining the assembly places of the latter. Hundreds themselves are not recorded before the Hundred Ordinance, a document probably composed sometime between 939 and 961, but seem to have perpetuated an older tradition (Turner 2000). Below the level of the shire court, which met twice a year for the assessment of public burdens and royal dues and the settlement of property disputes county-wide, they usually held assemblies of the freemen of the hundred every four weeks:

> The hundred court assembled to settle matters of criminal law and to organise public duties, such as the raising of posses to pursue cattle thieves (Reynolds, 1999: 75–6). It met once every four weeks, and was attended by the freemen of the hundred, the administrative unit into which late Anglo-Saxon shires were divided (Loyn, 1984: 142–3). In many parts of the former Danelaw, the wapentake fulfilled very similar functions to the hundred, although wapentakes were often larger than the hundreds of southern and western England (Turner 2000).

Hundreds had often taken the name of a prominent feature in the vicinity, frequently a mound, where assemblies would have been held. However, some hundreds bear the name of the royal vill where the hundred court met from the 10th or 11th centuries, and it is possible that they represent territories administered from the royal centre for taxation purposes whose bounds were set out *de novo* at this time (Loyn 1984, 142). Such a system would not have been unusual to the Scandinavians, establishing control over the regions within the Danelaw in the 10th century. In Scandinavia such assemblies or 'things' fulfilled similar functions. The wapentakes frequently took their names from the places at which their central assemblies were held (again, on occasions, a burial mound or *haugr*).

Bingham Wapentake

Bingham Wapentake is recognised by 1086 (later to be divided into North and South Bingham) (Fig. 10.17). It incorporates the name of the parish of Bingham (*Bingehā* 1086) probably 'the homestead of the Bynningas, the people called after Bynna', although an alternative explanation is that the name might contain OE **bing* 'a kettle-shaped hollow' (below; Watts 2004, 58). The wapentake itself is named in 1086 in *Domesday Book* as *Bingameshou Wap/Bingehamhou*, taking its name, in part, from Bingham lordship. The meeting-place of Bingham wapentake lay close to the western boundary of the parish (Fig. 10.17D). This is a location fairly central to the wapentake and had the advantage of being readily accessible along the Fosse Way. The fact that Bingham was a royal estate might suggest the transference of a meeting-place to a royal manor in order to establish control in the later Anglo-Saxon period (above), as witnessed on many other occasions when hundreds or wapentakes became focused upon an important estate centre (eg, Newark Wapentake upon the Bishop of Lincoln's manor of Newark-on-Trent). However, it did bear a folk-name compounding *hām* and *ingas*, both terms of relatively significant early usage, and these divisions might themselves be places of primary administrative importance (Reynolds 2009, 242). Significantly, the name of the wapentake is recorded slightly differently as *Bingehamhou* 'Bingham mound', incorporating the OScand term *haugr* 'hill, mound'.

Later, alternative or more local places of assembly within the wapentake appear to be recorded at Plumtree, Bingham South Division ('the plum-tree', with references to a *Wapentak de Plumptre*, 1266) and by place-name evidence at Speller Hill in the parish of Aslockton, Bingham North Division, (*Spelhou* t.Ed.I, 'hill of speech': Gover *et al.* 1979, 220, 239). However, the name Plumtree is recorded in 1086 perhaps already suggesting the existence of an assembly place within what was to become the South Division of Bingham Wapentake. Speller Hill in Aslockton is a short ridge butting onto the road from East Bridgford towards Bottesford in Leicestershire (Fig. 10.17D). Another 'Spellow Hill' in the parish of Radcliffe-on-Trent (Fig. 10.18) is of similar derivation but is not recorded until *c.* 1825 (*ibid.*, 241). There are also place-name references to look-out points which may be early medieval in origin. Parker and Wood (1977) suggest an identification for the lost *Domesday* manor of 'Warborough' (*Wareberg*, *Warberga*) as a hill in Plumtree; although this name is not recorded by Gover *et al.* it is likely to mean 'watch hill', referring to a prominent hill on the southern boundary of the wapentake, perhaps Blackcliffe Hill, where watch could be kept for possible invaders. Another 'watch hill, look-out hill' is recorded in Bingham as Toot Hill (Fig. 10.18) overlooking the Grantham Road but the name is not recorded until *c.* 1825, although likely to be of earlier origin (Gover *et al.* 1979, 222).

Meeting-places were frequently located upon parish boundaries and the junction of Bingham, Cropwell Butler and Saxondale parishes lies approximately 550 metres north-east of the pit. The boundaries of these parishes are usually as indicated on the early Ordnance Survey six-inch maps and many have been altered since that date, especially that of Saxondale but not that of Bingham. Unfortunately, no charters with boundary clauses survive for this region. The assembly of Bingham Wapentake is said in the 17th century (Thoroton 1677, 71) to have been at a large shallow, bowl-shaped depression known as Moothouse Pit, a natural feature abutting the Fosse Way on its north-west side in the parish of Cropwell Butler (SK 683390) (close to the boundary between the north and south divisions of the wapentake) (Figs 10.17D and 10.18). This would have formed a 'natural amphitheatre' for public assembly. However, a *Mot(e)howes* is recorded in 1375, incorporating *haugr* 'hill' or 'mound' and OE *mōt*, 'moot, assembly place', – a mound rather than a depression – and gave its name to Moothill Farm, marked on the early Ordnance Survey one-inch map (Anderson 1934, I42) (now Foss Farm) (*c.* SK 685393). Gover *et al.* (1979) do not distinguish between these two sites but Pantos (2002, 401–3) proposed that the second, also beside the Fosse Way *c.* 100 m north of Moothouse Pit, may have been the earlier meeting site. A round barrow, thought to be an Anglo-Saxon burial mound, once stood just to the south on the crest of the hill over which the Roman road passes, beside Foss/Moothill Farm (Pantos 2002, 402; 2004, 162–3, fig. 7.3) and was illustrated by the antiquarian William Stukeley in 1722 (Stukeley 1724, pl. 90; Fig. 10.15). Unfortunately, enclosure removed the hedge boundaries shown in Stukeley's illustration but his mound is reckoned by Pantos to lie at approximately SK 68403910. This tumulus was probably the *haugr* which gave its name to the wapentake, as recorded in *Domesday Book*. Pantos concludes: 'Whether both features were originally used for assemblies, or whether *Moothouse Pit* came into use only at a later date, is unclear':

> The relationship between the two features at an early date cannot be known. However, in the light of their close physical proximity it seems possible that both originally played a part in meetings of the hundred [*sic*]. The differences between them would make them appropriate for different activities; the pit could accommodate a large number of people, perhaps for the purposes of discussion, whereas a mound might be more appropriate for announcements or speech-making (Pantos 2004, 163).

Furthermore, assembly sites might fulfil functions as disparate as the marketing of livestock or other trading activities, a location for sporting activities or for human execution (*ibid.*, 169).

Another site referred to by the Old Scandinavian term *haugr* 'mound' occurs in the region. In the parish of Langar cum Barnstone, to the south-east, a lost minor name is recorded as *Grane-*, *Grenehou* (*c.* 1200), which is likely to have referred to the *haugr* or burial mound of Gráni, commemorated in the name of Granby parish, *Granebi*, *Grenenbi* 1086, 'Gráni's *bȳ* (farm/village)' (Old Scandinavian name Gráni), a Scandinavian personal name with the Scandinavian term for 'village'. If the burial was indeed associated with a Danish landowner this either suggests that the mound post-dates the Viking invasion or that the new landowner's name was associated with a pre-existing prominent mound close to his allotted land – perhaps the more likely interpretation. A field-name Draker, *Drachou* t.Ed.I: 'dragon barrow, hill, mound', in Whatton parish (Gover *et al.* 1979, 321), may also have described a burial tumulus (not necessarily Anglo-Saxon), as these legendary creatures were frequently seen as protecting burials in Anglo-Saxon mythology (*cf.* the 'dragon's mound' in the poem *Beowulf*).

The Anglo-Saxon cremation burials discovered near Lings Farm may have been associated with the *Mot(e)howes* assembly site but lie some 200 m north of Moothouse Pit. Their location is closer to, but does not coincide with, the slight deviation in the line of the 19th-century road near Moothouse Pit, which may have been the location of Stukeley's mound.

Medieval agriculture

There was little direct evidence for medieval rural settlement and agricultural practices from the project. No discoveries contradict the general view held of the development of the regional landscape from small and scattered settlements in the 7th–8th centuries, to nucleated village life in the 9th–10th centuries based on a communal agricultural system of rotational cropping. Population expansion, and an increasing intake of land for arable farming, took place until *c.* 1300, before retraction and decline in the second decade of the 14th century when arable fields were sometimes turned to pasture and village contraction and desertion can be recognised in certain areas (Lewis 2006, 190–3).

Of some interest is the record of ridge and furrow cultivation from all sites on the project showing the extent of arable cultivation. This is not closely datable and may derive from a mixture of medieval and later ploughing regimes. Plough furrows covered most of the excavated areas at the largest sites at *Margidunum* Hinterland and Saxondale. At Saxondale they ran north–south, closely following the alignments of the Romano-British ditches on the lower ground. It is possible that the skeleton of the landscape survived to influence this later trend, which in the first place was probably guided by the natural topography. At *Margidunum* Hinterland plough furrows were recorded in every trench north of Bingham, except in the area of the palaeochannels (northern parts of DE3001 and southern parts of DE3004, Fig. 4.57). It is likely these areas were still marshy in early medieval times. The patterns of ridge and furrow perhaps respect the nearby roads, the Fosse Way, Newton Lane and Bridgford Street, rather than the Romano-British land boundaries which had presumably lost their significance.

Fosse Way

The Fosse Way never regained its importance as a long-distance road in medieval and later times, but became broken into a series of main roads, minor roads and lanes. It is likely that there was a substantial decline in traffic in the 5th–7th centuries. Anglo-Saxon graves were found cut into silts covering the eastern part of the road at Broughton Lodge, and there was evidence from SM2072 at Saxondale that the western edge of the road here had been encroached upon by ploughsoil for at least 2–3 m and cut by furrows of probable medieval date. The mound, of probable Anglo-Saxon date, depicted by Stukeley (Fig. 10.15) would also appear to imply less post-Roman road usage. However, the road was of sufficient status in the 11th century to enjoy the protection of the King's Peace by the laws of Edward the Confessor (Knight and Kinsley 1992, 11). The use of the road appears to have declined in the medieval period and accordingly it was not a route recorded as used by medieval kings (*ibid.*). It was, however, shown as a 'Great or Direct Post Road' in Morden's map of 1695 and Bowen's map of 1755. Stukeley's 1722 engraving of a mound apparently in the middle of the road implies that the road was not maintained to a great extent, despite its expressed status. In the early 18th century the first roads in Nottinghamshire to be turnpiked were the branches of the Great North Road, crossing the Trent at Nottingham and at Newark (Cossons 1934, 9–11 and appendix D). Later, attention was paid to the roads linking towns of the Nottinghamshire and South Yorkshire coalfields. The section of the Fosse Way between Bingham and Newark, linking the major Trent crossings, was eventually turnpiked by an Act of Parliament in 1772, but this was the only turnpiked section of this road in the county (*ibid.*), the rest being of lesser importance. To the north-east the Fosse Way between Potter Hill and Lincoln was turnpiked from the mid-18th century.

Civil Wars

The metal detector survey on 2.9 km of road corridor between Millfield Lane, Thorpe, and Greengate, Syerston, yielded no artefacts attributable to the Battle of Stoke Field in 1487 between Yorkist rebels and the Lancastrian monarch Henry VII. The corridor runs to one side of the Registered Battlefield site (which lies on the north-western side of the old A46 south of East Stoke) so it is possible that any evidence of the battle was not to be found in the area surveyed. A miscellaneous collection of (mostly modern) metal finds was retained, including 30 pieces of lead shot spanning the 17th to early 19th centuries. Six of these are large (over 15 mm in diameter) and may be appropriate for matchlocks/muskets of 17th-century date. As such they may relate to skirmishes associated with the sieges of Newark between 1642 and 1646 in the English Civil War. There was no particular concentration of this material. A larger number of items of smaller shot could also relate to this period, used with pistols or carbines, but a proportion are likely to have been from non-military firearms, including fowling pieces and shotguns in use until more recent times (Cotswold Archaeology 2010b). There is therefore no evidence of the 1487 Battle of Stoke Field in the modern soil here, although there is an indication of previously unrecorded skirmishes associated with the siege of Newark (1642–6) which might be corroborated by more extensive field survey in the area.

Chapter 11
Conclusions

This volume is the culmination of over two decades of archaeological planning, survey, evaluation and excavation in advance of the A46 road improvements between Newark and Widmerpool, involving well over a hundred people. Linear schemes such as the A46 road improvements can provide excellent opportunities for archaeologists to examine transects across landscapes, and the 28 km length of this scheme revealed a rich and complex story of human activity dating from the Late Upper Palaeolithic through to the post-medieval period. The present work was the second of two related projects, the first being the upgrading of the Fosse Way between Newark and Lincoln which was completed in 2003 (Vyner forthcoming; also see Knight and Howard 2004a).

The most significant sites on the present scheme were sealed Late Upper Palaeolithic deposits at Farndon Fields; extra-mural Romano-British settlement near *Margidunum*; a multi-period landscape at Saxondale, which included an Anglo-Saxon cremation cemetery; a Beaker ring-ditch at Stragglethorpe; and Iron Age settlements at Cropwell Wolds and High Thorpe.

One of the major successes of the scheme was the recovery of Late Upper Palaeolithic flint at Farndon Fields. Early work at Farndon Fields revealed hints of its potential, with a scatter of Upper Palaeolithic flints recovered from fieldwalking. The possibility that better preserved material survived at Farndon Fields was recognised, and it was recommended that an archaeological strategy be put in place to address the possibility of a nationally important site being present (eg, Jacobi *et al.* 2001; Garton and Jacobi 2009; Knight *et al.* 2012). As summarised by Knight and Kinsley (1992, 43):

> The most significant early prehistoric site is located in Field 373B at Farndon on a tongue of river gravel at the confluence of the Rivers Trent and Devon. This produced a scatter of Later Upper Palaeolithic flint tools and knapping debris of the Creswellian tradition, and may represent an open air site employing the technology which, with occasional exceptions, has in this region so far been recorded entirely in caves.

The prediction of possible *in situ* flint-knapping deposits proved to be correct, and the effort directed towards defining this Late Upper Palaeolithic site was rewarded by the work undertaken and reported on in Chapter 2. It should be appreciated that only a fraction of this important site was actually excavated, the remainder of the site still lies in superficial and buried deposits. The mitigation strategy has left most of the affected site in the ground, covered by the new road. It remains to be seen whether Knight and Kinsley's misgivings about being able to preserve any of these deposits with integrity under the new construction are justified. Certainly the analytical potential of the remaining resource is limited by its preservation *in situ*; however, without the opportunity afforded by the road improvements, the results of the early fieldwalking would have remained as no more than an interesting collection of Upper Palaeolithic flintwork. The excavation at Farndon Fields has provided the opportunity to employ a suite of scientific analyses to place the flintwork into its landscape setting. Remarkable analysis of the flint itself, the distribution of the micro-debitage and experimental replication has enabled an extremely detailed picture of a knapping episode to be reconstructed. Such opportunities are rare, and the strategy used to identify and recover this material, which will be available for further analysis and interpretation, may be regarded as a model for sites with similar potential elsewhere.

Five other sites defined by scatters of worked flint, of broadly Neolithic to Bronze Age date, are discussed in Chapter 10. In the absence of associated subsurface features during the trial trenching, the contribution that these fieldwalking finds can make to further research is somewhat limited. However, given the difficulties of identifying early prehistoric sites away from monuments, any opportunity to examine such a large area is welcome. Although relatively few features were identified, the Grooved Ware deposit, the unurned Bronze Age cremation burials, the Late Bronze Age roundhouse and other features are all important discoveries for the county. The large-scale approach has proved effective in identifying sparsely distributed features that might not otherwise have been found. More substantive evidence for earlier prehistoric activity came from the ring-ditch at Stragglethorpe, with the group of Beaker-period burials.

Scientific dating techniques (radiocarbon; Optically Stimulated Luminescence [OSL]), as well as a variety of geoarchaeological analyses have all provided further evidence for the building of interpretations of each of the sites investigated. Bayesian modelling of the radiocarbon dates has enabled events to be modelled with a greater precision than would otherwise have been possible.

There was more tangible evidence of the Iron Age, expanding regional knowledge of this period considerably, for which there was 'surprisingly little evidence' in 1992 (Knight and Kinsley 1992, 44). Back then, it was reasonably surmised that this paucity was due to a lack of fieldwork and the non-conduciveness of the soils to cropmarks. Trenching and topsoil stripping has now revealed settlement and land division on the Nottinghamshire Wolds and Mercia Mudstone lands to some extent comparable with that known from other parts of the East Midlands, as the sites at Cropwell Wolds, High Thorpe, Saxondale and *Margidunum* Hinterland have shown.

The main focus of Knight and Kinsley's report was the Roman 'small town' of *Margidunum*, and it highlighted the lack of any real understanding of the town's origins and development. The research potential offered by the A46 road scheme in this regard was considered extremely high. The original proposal, to widen the existing road through the centre of the Roman town, would have impacted upon the entire surviving remains of the Fosse Way street frontage in the town and suburbs, and the scale of the archaeological response to this eventuality would have been on a level far in excess of what was ultimately planned and delivered. Nevertheless, the revised proposal of the present bypass created a new set of challenges and opportunities, and the implications were examined by Leary and Baker (2004) in a wider investigation of the town and its hinterland. The research potential of the Roman road, town and surrounding settlements (Newton Villa in particular) was seen to lie in investigating the town's supposed early military function, the date and scale of the defences, the nature of the urban area as a trading or an agricultural centre and whether the intra- and extra-mural areas were distinctive in character.

The archaeological dividend regarding the urban settlement, and the themes that might have been explored, is perhaps not as high as was at one time envisaged, but this is understandable in view of the efforts made to minimise the impact on the known Roman remains, as far as was possible. As the account in Chapter 4 shows, a large body of information on the rural and roadside settlement has been gathered and interrogated, and is available for new questions to be asked of it.

While there is no new information on the origins of the town, the Late Iron Age presence in the immediate area around the time of the Roman conquest is shown to have been significant. Recent research agendas have drawn attention to the importance of the Late Iron Age communities at the time of the conquest, their patterns of land exploitation, movement and belief, and their attitudes to the Roman military and administrative presence. These interactions, and their influence on the location and form of Roman towns, are topics of significance for the East Midlands and more widely (Taylor 2006, 154–5; Esmonde Cleary 2011, 133–7). The question of whether or not there was a Roman fort at *Margidunum* seems eminently answerable by future fieldwork, but there is (currently) no reason to assume the model of fort-to-town transformation here, and neither should it be assumed that the presence of a fort would imply that the town followed a predictable path of development as a military supply centre.

While we now know that there was a Late Iron Age occupation in what was to become the hinterland of *Margidunum*, it is difficult to interpret in terms of status. The overall plan of linked enclosures suggests a design influenced by the requirements of livestock, with family-type groups of dwellings spread in and around them. The establishment may have been relatively large, and perhaps also an important, despite a lack of 'wealth' evident from the artefacts. The dynamic that transformed this settlement in the 1st century AD into one with markedly stronger evidence of cereal cultivation may have been a key influence on the growth of both the town and Newton Villa. The social and political status of the Late Iron Age inhabitants, or at least a proportion of them, may have been transferred to the new post-conquest hierarchy and ways of living. It is, however, still not clear whether the Late Iron Age, and then early Romano-British, hinterland settlement had a bearing on the location and nature of the town; its juxtaposition may have been coincidental and its interests marginal to those of the inhabitants of the town, who may have been largely incomers. This kind of question is still one that is difficult to approach by archaeological methods.

There are threads in the evidence gathered to suggest that the importance of the town's location also (or instead) related to a pre-existing religious focus, and this would seem likely to be associated with the springs on the western side of what was to become the walled settlement core. This suggestion is currently without material evidence, since Late Iron Age finds were not forthcoming from the excavations of Oswald and Todd within the town (Oswald 1941; Todd 1969), and would need to be qualified by supposing an absence of substantial associated settlement or material deposition. Nonetheless, Oswald's early (pre-Flavian) burials from beneath the '*Schola*' shrine are intriguing, and represent some of the earliest identified activity in *Margidunum* itself, placed there at around the time of, or shortly after, the conquest. And what are we to make of the (redeposited) skull of Iron Age date with evidence for possible scalping from the roadside settlement in the present excavations? While displaced from its original depositional context, and even further removed from its social one, it may hint at cult practices particular to circumstances in or near *Margidunum* in immediate pre-Roman times. Viewing the region more widely, could the Bingham Basin, with its natural and calcareous springs, have been a place of gatherings, perhaps as a cult centre, before the conquest? Could this have been a potent influence in the origin and growth of the settlement? And could this quality also relate to the origin of the name *Margidunum*, considered to mean 'marly fort' (Rivet and Smith 1979, 413)? The etymology is far from certain but a reference to the nature of the soil and the fertilising properties of the calcareous springs seems as (if not more) plausible than a description of the visual appearance of the earthworks, as Rivet and Smith proposed.

The projected extent of Romano-British settlement along the Fosse Way was deduced from the distribution of surface finds in the early stages of archaeological mitigation (Leary and Baker 2004), and this has been given substance from the current excavations. While the areas examined have been relatively small, and it should be noted that the Roman-period road frontage was not actually exposed in these locations, the data have been used to explore several topics relevant to understanding settlements at this time. These relate to some of what might be called the traditional foci of research, the date, function and status of a settlement, and also the deeper and perhaps more productive lines of enquiry concerning the themes of identity and community. In many ways the archaeological material shows a massive uptake in Roman-style cultural markers (pottery and glass vessels, coins, brooches) similar to most of southern and eastern England, but in other ways, such as architecture and buildings, and perhaps also some aspects of ritual practice (as above), a distinctive more local cultural development. Although there is little opportunity at present to examine differences between the suburban occupation and that at the core of the town, architectural evidence from published information suggests the presence of different communities. It may be possible for future research to explore whether the layout of urban and suburban buildings developed from the patterns of pre-Roman uses of domestic space, rather than something unrelated to the people who lived in the area before, and whether social structures and kin relations can be defined within this type of settlement aggregation.

It is also a matter of interest, and great complexity, to understand how the cultural identity of the area was transformed at the end of Roman political control. Although information from the present excavations was limited, there is the suggestion of a strong sense of identity with the Romano-British (and even pre-Romano-British) past, exemplified most obviously by the apparent continued reference to the Fosse Way near Saxondale as a location for ritual observances and burial and, later, the communal gathering of the Anglo-Scandinavian wapentake. These are likely to be just the more archaeologically visible manifestations of particular cultural practices. It may be possible to trace this 'memory' of the past from the Iron Age, with a circular structure referenced by a square Romano-British enclosure, and later a circular Romano-British structure developing into early Anglo-Saxon enclosures. Whether the circular structures of either period at Saxondale should be classified as domestic dwellings or something else has not been resolved and may not be particularly important. The idea of binary distinctions between structures classifiable as either ritual or domestic is not one which need relate to the specific social context of Iron Age and Roman Britain. In a context where the domestic sphere contained and was structured by symbolic expressions of understandings about the world, there may have been little outward differentiation between a structure for dwelling and one for ritual performance. Similar considerations apply to the structures in the Romano-British roadside settlement at *Margidunum* Hinterland, where burials and possible shrines existed in apparently domestic and industrial contexts.

It is somewhat ironic that the present investigations have almost nothing to say about the Fosse Way itself. The road was identified as an archaeological resource of national importance by Knight and Kinsley, and originally one which was to be impacted upon severely by development. All the investigations of the road itself up to that point had been minor ones and had yielded disappointing results, with the road fabric only tentatively identified by thin layers of gravel, and side ditches more often than not absent (Knight and Kinsley 1992, 9–12). The current works did not define the Roman road with any greater clarity. It seems that new information about the structure and dating of the Fosse Way will only be gained in locations of exceptional preservation, and there is at present no indication whereabouts, or whether, these might survive along this section of the route.

Future work in connection with the Fosse Way and *Margidunum* might usefully attempt to predict where well-buried parts of the Roman road fabric survive, and there are other opportunities in and around *Margidunum* to build upon the work reported on here. The fieldwork and handsome publication by the Bingham Heritage Trails Association (Allen *et al.* 2010) is an example of what can be achieved by local archaeologists, and it is welcome news that Farndon Archaeological Research Investigations (FARI) are now actively following up the Late Upper Palaeolithic discoveries at Farndon Fields with new fieldwork.

The re-examination of existing museum collections, with, for instance, an attention to pottery fabrics and their sources, may be one avenue to explore, and scientific analysis of human bones with the possibilities offered by ancient DNA and stable isotopes is increasingly seen as a crucial aspect to understanding ancient populations and their movements. The potential for new findings from geophysical survey would also appear to be significant, and it is encouraging to read that even areas of the Roman town excavated by Felix Oswald in 1910–11 still preserve archaeological deposits capable of being re-excavated to modern standards (Knight and Kinsley 1992, 29–32). The project archive will be an invaluable resource for future researchers using new and different analyses. To this end it is hoped that the archive will be housed at Nottingham University Museum so as to be available alongside the material from the earlier excavations at *Margidunum*.

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Index

by Susan M. Vaughan

Illustrations are denoted by page numbers in *italics* or by *illus* where figures are scattered throughout the text. Places are in Nottinghamshire unless indicated otherwise.

The A46 trunk road in Nottinghamshire has its origins as the Roman Fosse Way, and archaeological work ahead of road improvements in 2009 between Newark and Widmerpool has shed new light on both Roman and pre-Roman use of this transect of land. A number of significant sites were revealed, including evidence for Iron Age and Roman settlement in the hinterland around the Roman small town of *Margidunum* near Bingham. Further to the south-west near Saxondale, Roman roadside enclosures became the location of early Anglo-Saxon cremation burials and perhaps also a 'tumulus', as recorded by William Stukeley in 1722 in the middle of the Fosse Way. The prehistory of the landscape included further Iron Age settlements and land boundaries on the higher land of the Wolds. Earlier still was a Beaker-period ring-ditch and inhumation burials at the foot of the Wolds near Stragglethorpe. The story of human occupation revealed during fieldwork goes back much further, with the discovery of Late Upper Palaeolithic flintwork at Farndon Fields on the gravel terrace south of Newark. This nationally important site comprised scatters of debris left *in situ* by flint-knappers of the Creswellian and Federmesser hunter-gather cultural traditions.

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