THE IRON AGE AND ROMAN LANDSCAPE OF MARSTON VALE, BEDFORDSHIRE

Investigations along the A421 Improvements, M1 Junction 13 to Bedford

by Andrew Simmonds and Ken Welsh

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with contributions by

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Front cover: early Roman pits with dark fills rich in burnt chaff being excavated at Site 2, and the A421 at its opening (photograph courtesy of the Highways Agency)

Back cover: Reconstruction drawing of a samian Drag. 30 bowl from Site 7, decorated with mouldings of a group of warriors and made at Les Martes-de-Veyre. Dating from *c* AD 100–130, the vessel illustrates the interest of the site's occupants in such aspects of Roman culture, and may have been an antique by the time the sherds were deposited in waterhole 15735, probably during the 3rd century.

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Summary

Between November 2008 and July 2009 Oxford Archaeology (OA) carried out a programme of archaeological fieldwork in advance of improvements to the A421 between Junction 13 of the M1 and its junction with the A6 on the southern outskirts of Bedford. Following a programme of field evaluation, excavations were undertaken at nine locations, comprising one area of open area excavation complemented by strip, map and sample excavation and a further eight areas of strip, map and sample excavation. Watching briefs were maintained during stripping of topsoil in advance of surfacing at two construction compounds and in advance of carriageway widening at Cowbridge Junction, as well as during the stripping of topsoil and subsoil at a borrow pit. Earthwork surveys were carried out at three locations in order to create a record of historic earthworks that would be unavoidably destroyed by the Improvements. Geophysical survey and field evaluation were also carried out at the site of a proposed borrow pit that was ultimately not required and so was not taken to full excavation.

The remains uncovered by this project were almost exclusively Iron Age and Roman in date. They shared similar geological and topographical settings within Marston Vale, and so formed a particularly coherent group, providing an opportunity to study the exploitation and evolution of the local landscape during this period. The area appears to have been little used before the middle Iron Age, earlier evidence comprising a sparse distribution of worked flint, among which a small but distinct late Mesolithic/early Neolithic element was identified, and a single cremation burial dated by radiocarbon to the early Iron Age. Colonisation during the middle Iron Age was represented by two open settlements and an enclosed settlement defined by multiple ditch circuits. The subsequent history of settlement in the Vale was punctuated by two major episodes of settlement dislocation. The first of these occurred during the later Iron Age, when the settlements that had been established during the middle Iron Age were abandoned and replaced at new locations by four settlements composed of complexes of conjoined enclosures. The late Iron Age settlements all continued to be occupied into the Roman period, apparently unaffected by the conquest, until they were in turn abandoned during the late 1st-early 2nd century and two new farm complexes were established. The latter dislocation may have been associated with a wider reorganisation of the landscape during which ownership was consolidated in a smaller number of hands. The level of activity at both sites declined during the late Roman period and they were abandoned during the early part of the 4th century. Throughout the late Iron Age and Roman period the settlements were all modest rural farmsteads. No evidence for more nucleated or higher status settlement forms was found. The only evidence for activity during the Anglo-Saxon period was a single spur dating from the 10th-11th century. The medieval settlement pattern was consolidated around the historic villages that are scattered around the Vale, many of which are still inhabited, leaving the route of the A421 Improvements as agricultural land, as was demonstrated by the ubiquitous evidence for ridge and furrow cultivation that was recorded during the investigations.

Acknowledgements

The fieldwork and subsequent programme of post-excavation analysis and publication were commissioned by Balfour Beatty Civil Engineering Ltd on behalf of the Highways Agency, who funded the work. Thanks are owed to Phil Clifton, Liam McGirl and many other staff of Balfour Beatty who were supportive throughout the archaeological project. Many thanks are also owed to Nick Finch of URS (formerly Scott Wilson Limited), archaeological consultant to Balfour Beatty, who prepared the archaeological strategy and provided much advice and assistance, and to Kevin Beachus, Pete Fasham and Adam Brossler of Jacobs, who monitored the project for the Highways Agency. The project was monitored throughout for Bedfordshire County Council by Martin Oake (County Archaeological Officer) and Hannah Firth (Archaeological Officer).

The fieldwork programme was managed by Ken Welsh and the on-site work was directed by Paul Murray. Gerry Thacker was site supervisor at Brogborough Hill, Site 7 and Site 9, Kate Woodley at Site 3 and Site 4 (Trench 54), Robert Tannahill at Site 4 (Trench 61), Laura King at Site 5, Brian Dean at Site 6, and Hefin Meara supervised the evaluations at Berry Farm and the Whitbred Borrow Areas. The post-excavation analysis was managed by Ken Welsh and Andrew Simmonds. Support was provided by Leigh Allen (finds management), Rebecca Nicholson (environmental management), Louise Loe (osteology management) and Nichola Scott (archive management). Project support, oversight and monitoring was undertaken by Nick Shepherd (Regional Manager), Anne Dodd (Head of Post-excavation), Bob Williams (Chief Operating Officer) and David Jennings ((Chief Executive Officer). The work of the many other OA staff who worked on the project, both in the field and at the post-excavation stage, is also gratefully acknowledged. These included Natalie Anderson, Ben Attfield, Gary Baddeley, Simon Birnie, Thomas Black, Andrew Brown, Sergio Carvalho, Nathan Chichen, Will Clarke, Ian Cook, Geraldine Crann, Artur Fedorowicz, Peter Gane, Mark Gibson, Steven Graham, Michael Green, Rebecca Griffin, Anna Komar, Sarah Lane, Alex Latham, Paul Leader, Peter Lovett, Thomas Lyons, Robin Maggs, Roberta Marziani, Rowan McAlley, Alex McAuley, Janice McLeish, Patrick Moan, Kevin Moon, Matthew Morgan, Sophie Nias-Cooper, James O'Brien, Caoimhín O'Coileáin, Chris Pickard, Ruth Rolfe, Jennifer Ryder, Phillip Stastney, Gemma Stewart, Jennifer Thurstan, Robert Tutt, Jacon Warrender, Victoria Wilkinson, Rachelle Wood and Mark Woodley. The site surveyors were Anna Komar, who also digitised the site plans, Tori Wilkinson and Rebecca Griffin. In addition to this, Anna Komar carried out the earthwork surveys of the boundary between the parishes of Lidlington and Marston Moretaine and the ridge and furrow earthworks at Lower Shelton, assisted at the former by Roberta Marziani. Tori Wilkinson carried out the survey of the boundary between the parishes of Wootton and Kempston.

Denise Druce would like to thank Elizabeth Huckerby of OA North for commenting on her report. Kathryn Hunter would like to thank Wendy Carruthers, Leigh Allen and Cynthia Poole for their input, as well as Rebecca Nicholson, Julia Meen, Laura Strafford and Sharon Cook for their sterling work sorting flots. Seren Griffiths would like to thank Peter Marshall for discussion of the radiocarbon results.

Julia Collins and Markus Dylewski were the senior illustrators for the project and also drew the site plans and sections. Julia designed the cover and also drew the worked wood, based on draft illustrations supplied by Damian Goodburn. Magdalena Wachnik drew the pottery and metal and bone/antler artefacts. Sarah Lucas drew the worked flint.

Many thanks are due to Leo Webley and Martin Oake for reading and commenting on the text.

Chapter 1: Introduction

INTRODUCTION

Between November 2008 and July 2009 Oxford Archaeology (OA) carried out a programme of archaeological fieldwork in advance of improvements to the A421 between Junction 13 of the M1 and its junction with the A6 on the southern outskirts of Bedford (Fig. 1.1). The improvements comprised the replacement of the existing single carriageway road, which had become subject to much congestion, particularly at Junction 13, with a new dual carriageway. The route of the Improvements partly extended alongside the existing road, although in several locations it was constructed on a new alignment across agricultural land. The Highways Agency awarded the contract for the Improvements to Balfour Beattie Civil Engineering Ltd, who appointed URS (formerly Scott Wilson Ltd) as their designer. A programme of investigations was undertaken in order to identify, characterise and assess the significance of any archaeological remains that would be affected by the scheme and to enact an appropriate mitigation strategy in line with the guidelines provided by the Department of the Environment's *Planning policy guidance note 16: archaeology and planning*.

The archaeological strategy was prepared by Nick Finch, archaeological consultant to URS, in consultation with Martin Oake, the Archaeological Officer of Bedfordshire County Council. A staged approach to the archaeological investigations was adopted, comprising desk-top assessment, non-intrusive survey, evaluation trenching, mitigation in the form of preservation of remains *in situ*, excavation, watching brief and earthwork survey. Balfour Beattie commissioned OA to carry out the field evaluation and mitigation excavation, and to undertake the post-excavation analysis, the results of which are presented in this volume.

Mitigation excavations were carried out at nine locations. These comprised one area of open area excavation complemented by strip, map and sample excavation at Site 2, and a further eight areas of strip, map and sample excavation. Watching briefs were maintained during stripping of topsoil in advance of surfacing at two construction compounds and in advance of carriageway widening at Cowbridge Junction, as well as during stripping of topsoil and subsoil at a borrow pit. Earthwork surveys were carried out at three locations in order to create a record of historic earthworks that would be unavoidably destroyed by the Improvements. These comprised an area of ridge and furrow and earthworks that defined two parish boundaries. This volume also includes a report on geophysical survey and field evaluation of the site of a proposed borrow pit that was not used. The remains uncovered by this project were almost exclusively Iron Age and Roman in date. They shared similar geological and topographical settings within Marston Vale, and so form a particularly coherent group which provides an opportunity to study the exploitation and evolution of the landscape of the area during this period.

LOCATION, TOPOGRAPHY AND GEOLOGY

The Improvements were located to the south-west of Bedford (Fig. 1.1), where they extended for a total distance of 13km, from Junction 13 of the M1 (NGR SP 955 375) to Cowbridge Junction at the southern edge of the city (NGR TL 045 465). Much of the route of the Improvements extended alongside the existing A421, but it diverged significantly from the existing road at two locations: at the south-western end of the route, between the M1 and Brogborough Hill, the Improvements were to be constructed in a new cutting to the north of Highfield Farm, and between Lidlington Lake and Marston Moretaine the new alignment diverged to the north-west of the existing road for a distance of 3.25km, passing to the north of Moretayne Farm. A more minor divergence was located north-east of the junction with Hoo Lane, where a bend in the existing road was to be straightened.

The Improvements extended through Marston Vale, a south-westerly projection of the drainage basin of the river Great Ouse (Fig. 1.2). The river has its source in Northamptonshire, whence it flows in a generally north-easterly direction. As it enters Bedfordshire it describes a loop to the north followed by a loop to the south, passing through Bedford before continuing to the north-east toward its eventual meeting with the Wash at King's Lynn. It is here, as the southern loop flows westward through Bedford, that the Vale extends to the south-west. The Vale is approximately triangular and encompasses an area of nearly 9000ha, bounded to the north by the river, to the south and east by the Greensand Ridge, and to the west by the clay plateau that characterises this part of the county. It has a slight fall from south-west to north-east, toward the river, but is generally flat, with only minor and localised undulations. The Vale is drained by the Elstow Brook, a minor tributary of the Great Ouse that flows on a course almost parallel to that of the Improvements and is joined along the way by a number of insubstantial streams. At the south-western end, the Improvements climb

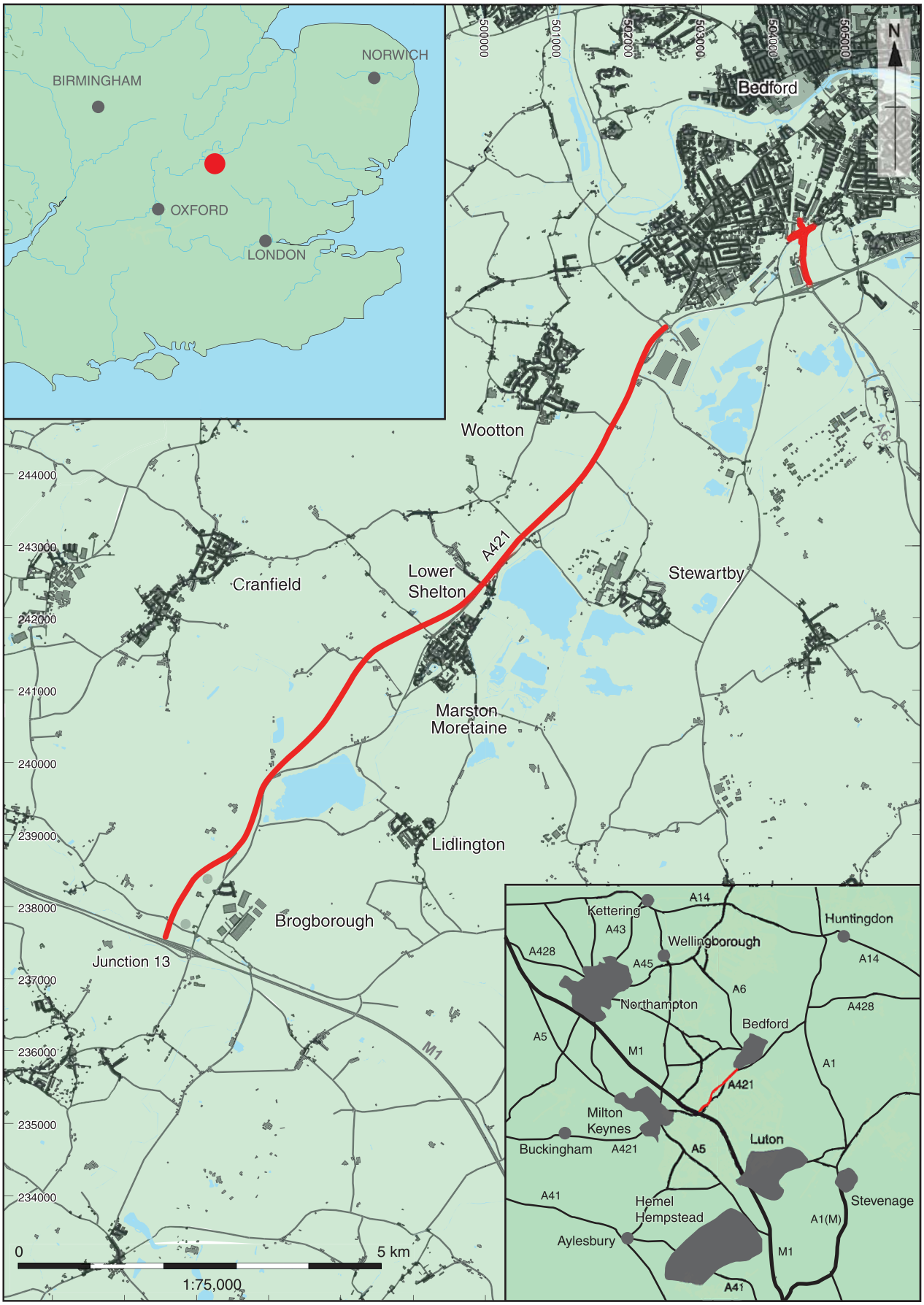


Fig. 1.1 Location of the A421 Improvements

out of Marston Vale and onto the higher ground of the clay plateau. At the top of Brogborough Hill the Improvements briefly attain a height of a little over 100m OD, marking the highest point on the project, before sloping gradually down to *c* 75-80m OD in the vicinity of the junction with the M1.

The geology of Marston Vale predominantly consists of Oxford Clay, with a narrow corridor of alluvium associated with Elstow Brook and areas of terrace gravel in the northern parts, in the vicinity of the Great Ouse, and to the east of Marston Moretaine (Fig. 1.3). The underlying clay gives rise to heavy, poorly drained, non-calcareous gley soils of the Rowsham Association (King 1969, 20-1). The poor drainage of the Vale was amply demonstrated during the fieldwork, when flooding was a frequent inconvenience. The boggy character of the area has lead some sources to suggest that it was the inspiration for the 'Slough of Despond' described in John Bunyan's Pilgrim's Progress, which was written while Bunyan was imprisoned in Bedford jail (Countryside Agency 1999, 89). The Oxford Clay is particularly suited to brick making, giving rise to the numerous modern extraction pits and brickworks that characterise the landscape of the Vale. The only variation from the Oxford Clay along the line of the Improvements occurs on Brogborough Hill, where it is overlain by Boulder Clay, and in the vicinity of Junction 13, where terrace gravels and alluvium associated with the nearby Crawley Brook are found.

BACKGROUND TO THE PROJECT

The Museum of London Archaeology Service (MoLAS) was commissioned by Hyder Consulting (UK) Ltd, on behalf of the Highways Agency, to carry out an initial desk-based assessment of the proposed route in 2004 (MoLAS 2004). This assessment demonstrated that the proposed works would impact on archaeological remains at a number of locations.

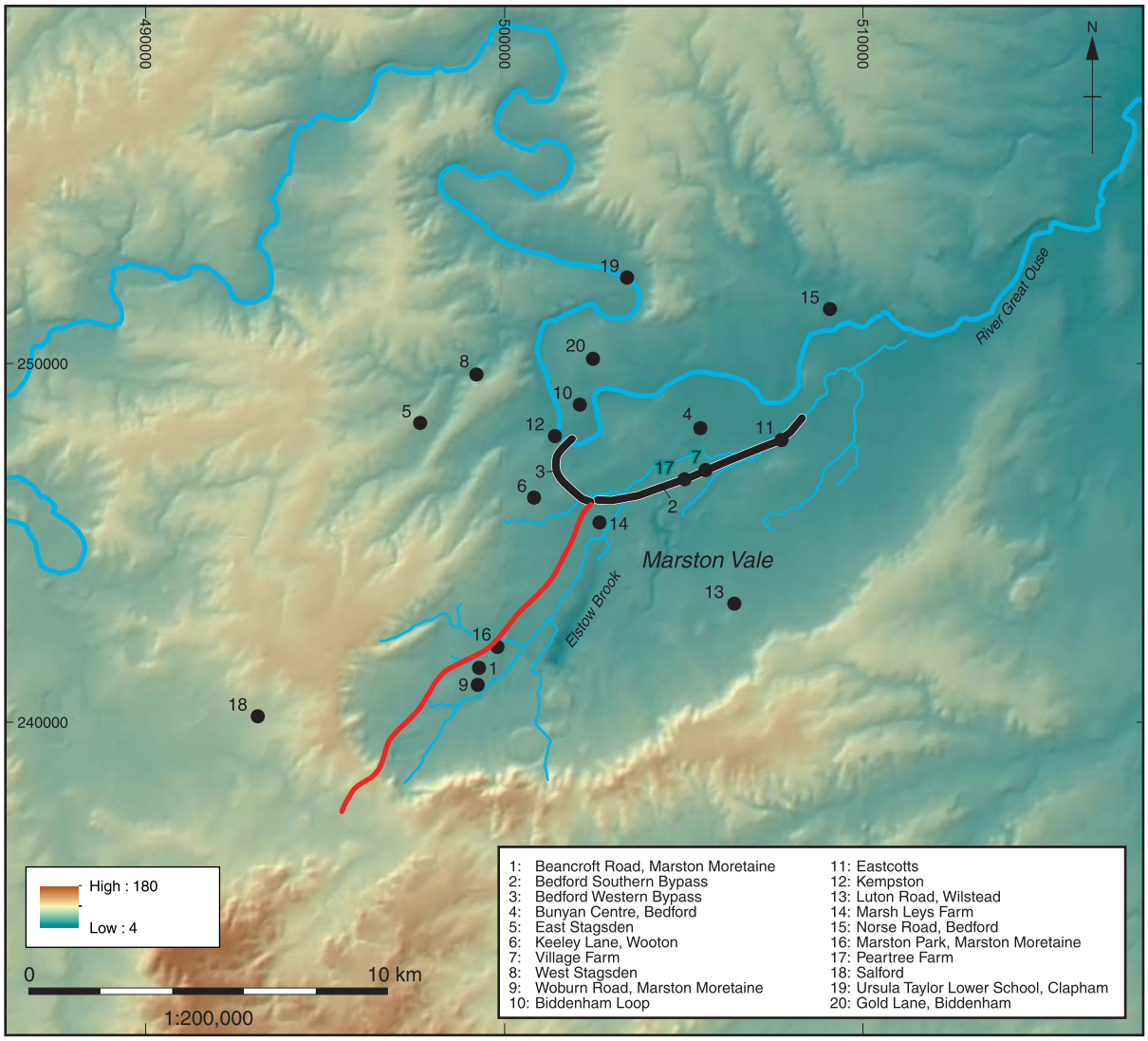


Fig. 1.2 The A421 Improvements and other sites within Marston Vale and its immediate environs in relation to the topography. (© Crown copyright. All rights reserved. Licence no. 100005569)

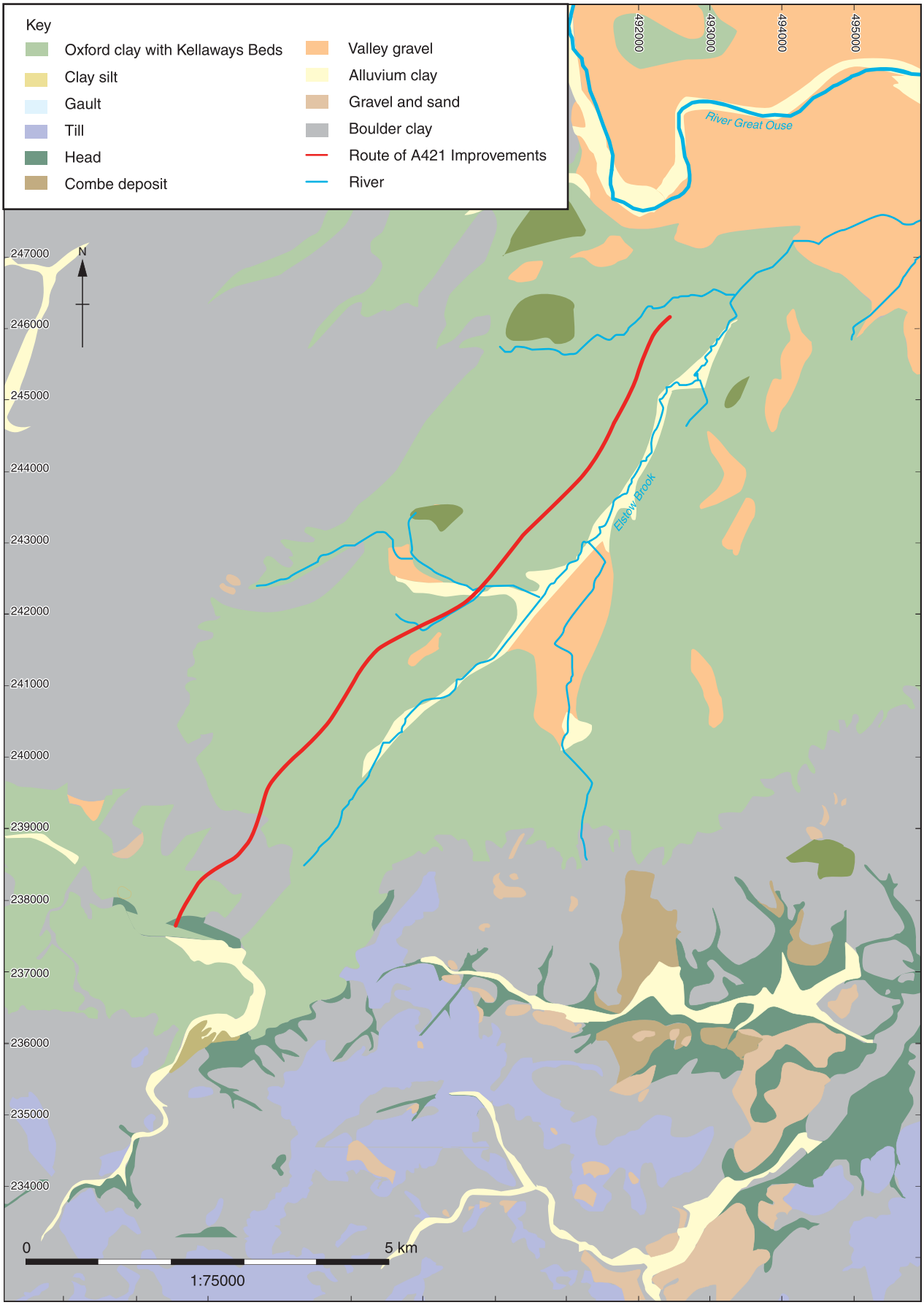


Fig. 1.3 The A421 Improvements in relation to the geology of Marston Vale and environs. (© NEERC, all rights reserved, CP 12/129)

In 2005 MoLAS undertook an archaeological watching brief during the excavation of test pits as part of the preliminary geotechnical site investigation (MoLAS 2006). A number of features were revealed including a quarry pit, a pit whose purpose was undetermined and the remains of a 19th-century outbuilding. No datable artefacts were found within any of the test pits. The report concluded that there was the potential for the survival of undisturbed archaeological remains within the area.

Stratascan was subsequently commissioned to undertake a geophysical survey of ten areas along the route to locate any features of possible archaeological origin (Stratascan 2005). The survey involved a detailed magnetometer survey that encompassed a total area of *c* 72ha. Evidence of possible settlement was identified on Brogborough Hill, as well as concentrations of linear features and pits at Site 3. Features of less certain significance were also identified elsewhere on the route, with particular concentrations located north-east of Beancroft Road, north-east of Hoo Lane on and Site 7. Extensive evidence for ridge and furrow cultivation was also identified throughout most of the survey area.

Albion Archaeology undertook a limited programme of trial trenching to provide further information for the Environmental Statement (Albion Archaeology 2006). A total of six trenches were excavated. They were positioned to assess the reliability of the geophysical survey results and to provide additional information on the nature, extent and character of the archaeological resource within the area. The results of this investigation confirmed the presence of two farmsteads at Brogborough Hill that were occupied during the Iron Age and Roman period, and of evidence for quarrying dating from the early Roman period at Site 3. The linear anomalies identified by the geophysical survey north-east of Beancroft Road were found to be of geological origin.

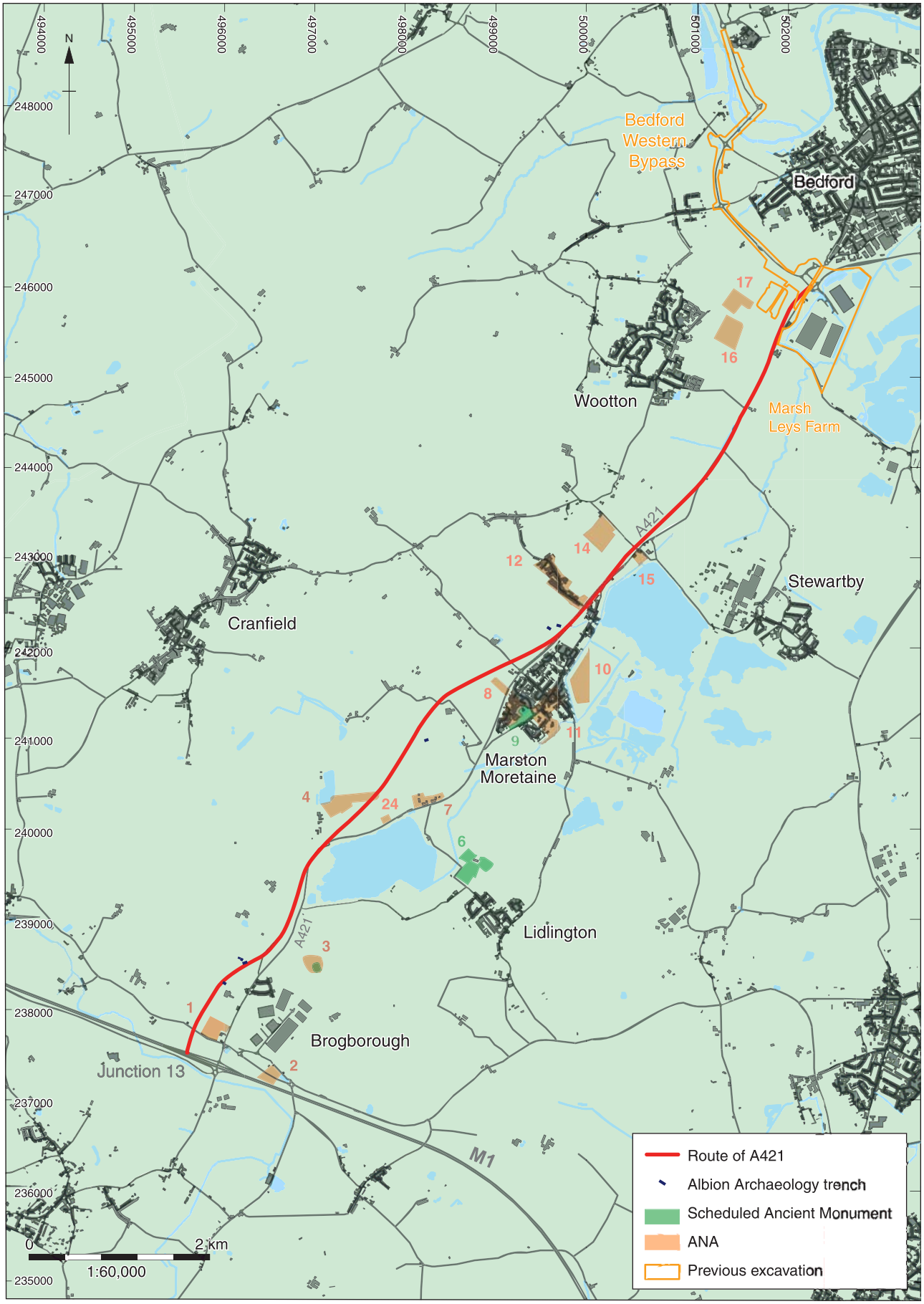
URS prepared the cultural heritage chapter of the Environmental Statement for the project, which incorporated the results of the preceding stages of investigation, of a fresh search for data from the Bedfordshire Historic Environment Record (HER) and the Bedfordshire and Luton Archive and Record Service, and of a walkover survey of the proposed route (Highways Agency 2007).

The Environmental Statement identified three Scheduled Ancient Monuments in the vicinity of the Improvements, comprising a medieval ringwork at The Round House, Brogborough Park Farm, a deserted medieval village and moated site at Thrupp End, and a medieval moated site at Moat Farm, Marston Moretaine (Table 1.1; Fig. 1.4). These were all situated at some distance from the route, however, and would not be effected by the Improvements, In addition to this, the route cut

Table 1.1: Summary of Scheduled Ancient Monuments and Archaeological Notification Areas identified in the Environmental Statement

Map ref.	*Location*	*Description*	*Period*	*HER ref.*
1	SP 9588 3778	Ridge and furrow, visible in 1996	Medieval	3329
2	SP 9651 3727	Ridge and furrow, visible in 1996	Medieval	3329
3	SP 9703 3848	Ringwork at The Round House, Brogborough Park Farm	Medieval	SAM 20436, HER 30
4	SP 9752 4029	Deserted medieval village at Lower End, defined by cropmarks and earthworks	Medieval	16509
5	SP 9773 4008	Moat south-west of Vale Farm, on 1882 and 1951 OS maps. Partially in-filled, now L-shaped	Medieval	56
6	SP 9875 3955	Thrupp End moated site and deserted medieval village	Medieval	SAM 20410, HER 31
7	SP 9815 4034	Moated settlement(s) at Escheat Farm and Vale Farm	Medieval	3399, 3400
8	SP 9902 4155	Ridge and furrow, visible in 2005	Medieval	2791
9	SP 9929 4130	Moated site and earthworks of medieval settlement, Moat Farm, Marston Moretaine	Medieval	SAM 11547
10	SP 9953 4128	Medieval village of Marston Moretaine	Medieval	16939
11	SP 9991 4159	Cropmarks east of Bedford Road, Marston Moretaine, on raised ground west of stream. Trial trenching confirmed Iron Age/Roman occupation	Iron Age/Roman	15321
12	SP 9976 4261	Medieval settlement, Lower Shelton	Medieval	16936
13	SP 9998 4255	Ridge and furrow, visible in 2005	Medieval	2791
14	TL 0017 4324	Ridge and furrow, visible in 1996	Medieval	2791
15	TL 0063 4299	Ridge and furrow, visible in 1996	Medieval	2791
16	TL 0161 4550	Ridge and furrow, visible in 1996	Medieval	5135
17	TL 0166 4586	Ridge and furrow, visible in 1996	Medieval	5135

A number of the ridge and furrow sites have the same HER numbers because the ridge and furrow for each parish was assigned a single HER number and all the surviving blocks given that number even when they were geographically separate.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Route of A421
Albion Archaeology trench
Scheduled Ancient Monument
ANA
Previous excavation

through or passed close to fourteen Archaeological Notification Areas. Archaeological Notification Areas (ANAs) were a tool used in the planning process by the now-defunct Bedfordshire County Council to provide an early indication of sites where there was higher than average potential for the discovery of archaeological remains, based on information recorded in the HER from non-intrusive survey data, aerial photographs of cropmarks, fieldwalking or earthwork surveys. They had no formal status and were afforded no statutory protection.

The route of the Improvements passed through two ANAs, clipping the eastern tip of the deserted medieval village at Lower End and cutting across an area of surviving medieval ridge and furrow earthworks on the southern edge of the deserted medieval village of Lower Shelton (Table 1.1; Fig. 1.4). The only ANA that the route passed close to that dated from earlier than the medieval period was a group of cropmark features located beside Bedford Road on the eastern edge of Marston Moretaine, which had been confirmed by trial trenching as representing Iron Age-Roman occupation. In addition to the two scheduled moated sites at Thrupp End and Moat Farm, Marston Moretaine, referred to above, a third, undesignated moated site is situated south-west of Vale Farm. The medieval heart of Marston Moretaine was an ANA, as was the settlement of Escheat Farm and Vale Farm, which were represented by two further moats. The most numerous class of site identified as ANAs in the vicinity of the A421 Improvements was represented by areas of ridge and furrow cultivation that were recorded in surveys carried out in 1996 and 2005, which accounted for a total of eight records.

On the basis of the results recorded in the Environmental Statement, an open area excavation of the main concentration of features at Brogborough Hill was proposed, with strip, map and sample excavation to be undertaken on the rest of this area and at Site 9. A further programme of evaluation was conducted concurrently with this initial phase of mitigation, comprising geophysical surveys of Construction Compounds A and B, proposed borrow areas at Berry Farm and Whitbred Farm, and an area at Area 3 that had not been included in the original survey, as well as field evaluation of the parts of the route that were not included in the earlier evaluation by Albion Archaeology and of the two proposed borrow areas. The purpose of this evaluation was to identify potentially significant archaeological sites in areas that had not previously been surveyed and to clarify the nature and extent of the surviving remains at potentially significant sites that had been identified by the previous surveys.

FIELD EVALUATION

Main alignment

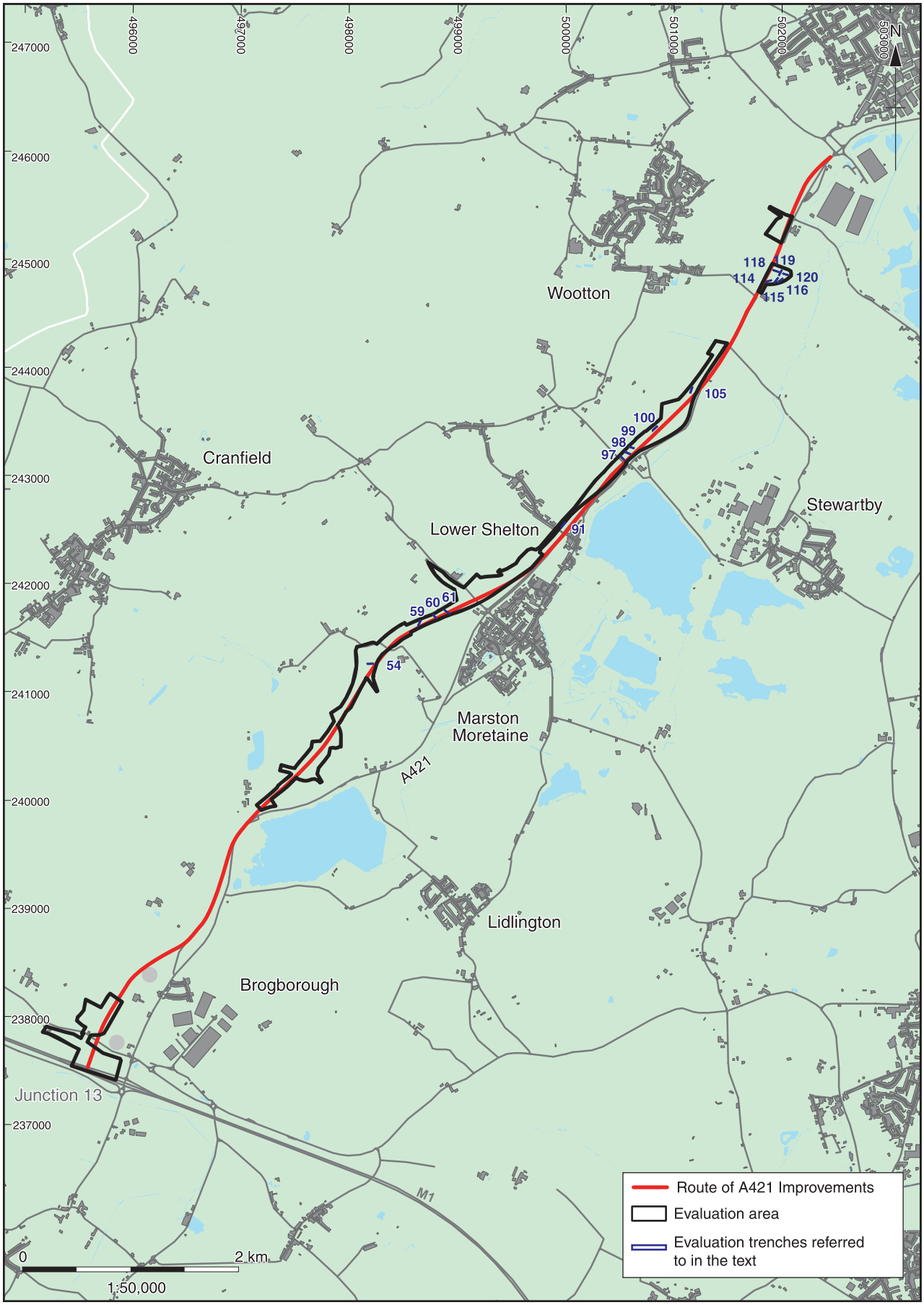
A total of 129 evaluation trenches were excavated along the route of the Improvements (Fig. 1.5). The area of the evaluation comprised most of the route but excluded Brogborough Hill and Site 9, which had been evaluated by Albion Archaeology (2006) at an earlier stage in the project and where mitigation excavation was already underway by the time of the main phase of evaluation work. Two further areas in the north-eastern part of the route were excluded because they had previously been evaluated by Albion Archaeology in relation to other projects (Albion Archaeology 2002).

The trenches typically measured 50m x 2m, although six trenches were 4m wide. The topsoil and subsoil were removed using a 360º mechanical excavator with a flat-bladed bucket under close archaeological supervision, to the top of the first archaeological horizon or the natural geology, whichever was encountered first. The exposed archaeological features were excavated by hand and recorded. The work was undertaken during November 2008, in often inclement weather, and flooding was a difficulty in a number of trenches (Fig. 1.6).

Activity dating from periods before the Iron Age was represented only by a small assemblage of eight pieces of worked flint. Two pieces were recovered from the fills of Iron Age/Roman ditches, one from a medieval plough furrow, and the remainder came from the modern topsoil. None was associated with potentially contemporaneous features. The material derived from the utilisation of flakes for expedient tools, characteristic of a later Neolithic or Bronze Age date. The small size of the assemblage indicates only a very low level of activity on the route of the Improvements during this period.

Evidence for activity dating from the Iron Age was more widespread, and was generally associated with evidence for occupation during the Roman period. The only location where the evidence was restricted exclusively to the Iron Age was at Site 4 (Trench 54). A group of four ditches were recorded here in Trench 54, only one of which had been detected during the geophysical survey. Two ditches were excavated, and were found to be quite substantial, each measuring 0.8m in depth. Domestic debris was recovered from their fills, including large sherds of Iron Age pottery as well as the largest assemblage of animal bone from the evaluation, amounting to more than 2kg. A fragment of human femur was also recovered from one of the ditches. In consultation with Nick Finch, archaeological advisor to URS, Kev Beachus,

Fig. 1.4 (opposite) The route of the A421 Improvements, showing Scheduled Ancient Monuments and Archaeological Notification Areas identified in the Environmental Statement, the trenches of the 2006 Albion Archaeology field evaluation and previous excavations by other organisations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Lidlington
Brogborough
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Route of A421 Improvements
Evaluation area
Evaluation trenches referred to in the text

archaeological advisor to Balfour Beattie, and Martin Oake, the Archaeological Officer of Bedfordshire County Council, it was agreed that excavation of the remaining ditches was unnecessary at this stage and should be deferred until the mitigation stage of the project.

The evaluation revealed evidence for activity that spanned the late Iron Age and Roman period at five locations. A range of features including ditches, pits and postholes, all of which appeared to date from the late Iron Age or early Roman period, was identified in Trench 48 at Site 3. These features were likely to be associated with a complex of possible enclosure ditches identified to the east of the trench by the geophysical survey. The range of features recorded suggested that the complex was likely to be domestic in nature, although an evaluation trench previously excavated within the complex by Albion Archaeology (2006) had found evidence only for early Roman quarrying. One particularly significant feature of this site was a cremation burial, comprising the remains of an adult of undetermined sex interred within a grey ware jar and accompanied by a flagon and a poppyhead beaker. A modest group of pits and postholes was exposed in Trenches 59-61. The artefactual assemblage was very small but indicated a date in the late Iron Age and early Roman period, and the presence of postholes suggested the possible presence of buildings. A further possible domestic site of this period was identified at Site 5, where pits and ditches were recorded in Trenches 91 and 92. Although these features were clearly not extensive – as they did not continue into the adjacent trenches – the presence of animal bone indicated the dumping of domestic refuse. A pit and a ditch each contained a fragment of human femur. The features exposed in Trenches 97-100 confirmed the presence of the ditched enclosures identified by the geophysical survey. Flooding of Trenches 97, 98 and 99 prevented excavation of these features, and so their date could not be conclusively established, although a ditch in Trench 100 contained pottery of late Iron Age or early Roman date. Trench 105 was excavated close to a group of geophysical anomalies that appeared to represent an irregular scatter of pits extending for a distance of 200m alongside the existing carriageway of the A421. The trench exposed three possible pits, although the small quantities of pottery recovered and the absence of other material suggested that the activity here was not domestic in character. The adjacent Trench 106 was targeted on a denser part of the pit scatter, but no archaeological features were identified.

The only site at which the remains were exclusively Roman in date was Site 7, where six of the eight trenches exposed archaeological features (Trenches 114-116 and 118-120). The features included ditches that corresponded with a series of ditched enclosures identified by the geophysical

Fig. 1.6 Flooding in Evaluation Trench 58

Fig. 1.5 (opposite) Route of the A421 Improvements, showing the area of the evaluation and the location of evaluation trenches mentioned in the text

survey. Other features included pits and two large features that were interpreted as quarries or wells/waterholes. A range of artefactual material was recovered that was characteristic of domestic occupation, including pottery, animal bone, slag, shell and an iron nail.

Four of the trenches excavated in the area where the Improvements cut through the medieval settlement at Lower End exposed archaeological features (Trenches 31, 34, 37 and 38). The features comprised three ditches, a gully, a pit and a wide, shallow feature that may have been a pond. Most of the features were undated, but two sherds of 13th-14th-century pottery were recovered from the gully, two sherds of 16th-century pottery came from a ditch, and the pond yielded some very small fragments of medieval pottery. The presence throughout the area of the evaluation of furrows resulting from medieval ridge and furrow cultivation indicated that much of the area encompassed by the Improvements had been farmland during this period.

The results of the geophysical survey had indicated the presence of features interpreted as the ring ditches of plough-levelled Bronze Age barrows and a possible ditched enclosure at the south-western end of the Improvements between Salford Road and the M1. No such features were identified in the evaluation, and it is likely that the geophysical anomalies were caused by an area of periglacial patterned ground and a group of tree-throw holes respectively.

Berry Farm and Whitbred Farm Borrow Areas

Programmes of archaeological evaluation were also undertaken at two proposed borrow areas, located at Berry Farm and Whitbred Farm.

The geophysical survey at Berry Farm revealed two apparently discrete complexes of ditched enclosures. A total of ten evaluation trenches were excavated, the results of which confirmed that the features were of late Iron Age-Roman date. The quantity of fill material needed by the development was subsequently found to be less than had originally been estimated, as a result of which the Berry Farm Borrow Area was not used. As this meant that no further investigation took place, the results of the evaluation constitute the only record of this site and so they are presented in some detail with the other site descriptions in Chapter 2.

A total of nine evaluation trenches were excavated at Whitbred Farm, where the geophysical survey had recorded anomalies that indicated widespread disturbance across much of the central part of the site, but no clear evidence for discrete archaeological features. Undisturbed geology, comprising Oxford Clay, was revealed at depths of 0.56-0.76m below the current ground level, overlain in all trenches by a layer of made ground up to 0.6m thick, above which lay the modern ploughsoil. No archaeological features or artefacts were identified. The position of the layer of made ground directly overlying the London Clay, with no intervening buried ground surface, indicated that the site had previously been stripped of topsoil prior to deposition of this material. While it is not known whether the underlying clay was also truncated at the same time, the absence of any archaeological features suggested that this may have been the case. If this were the case, any archaeological features that were present are likely to have been damaged or destroyed during this process.

EXCAVATION METHODOLOGY

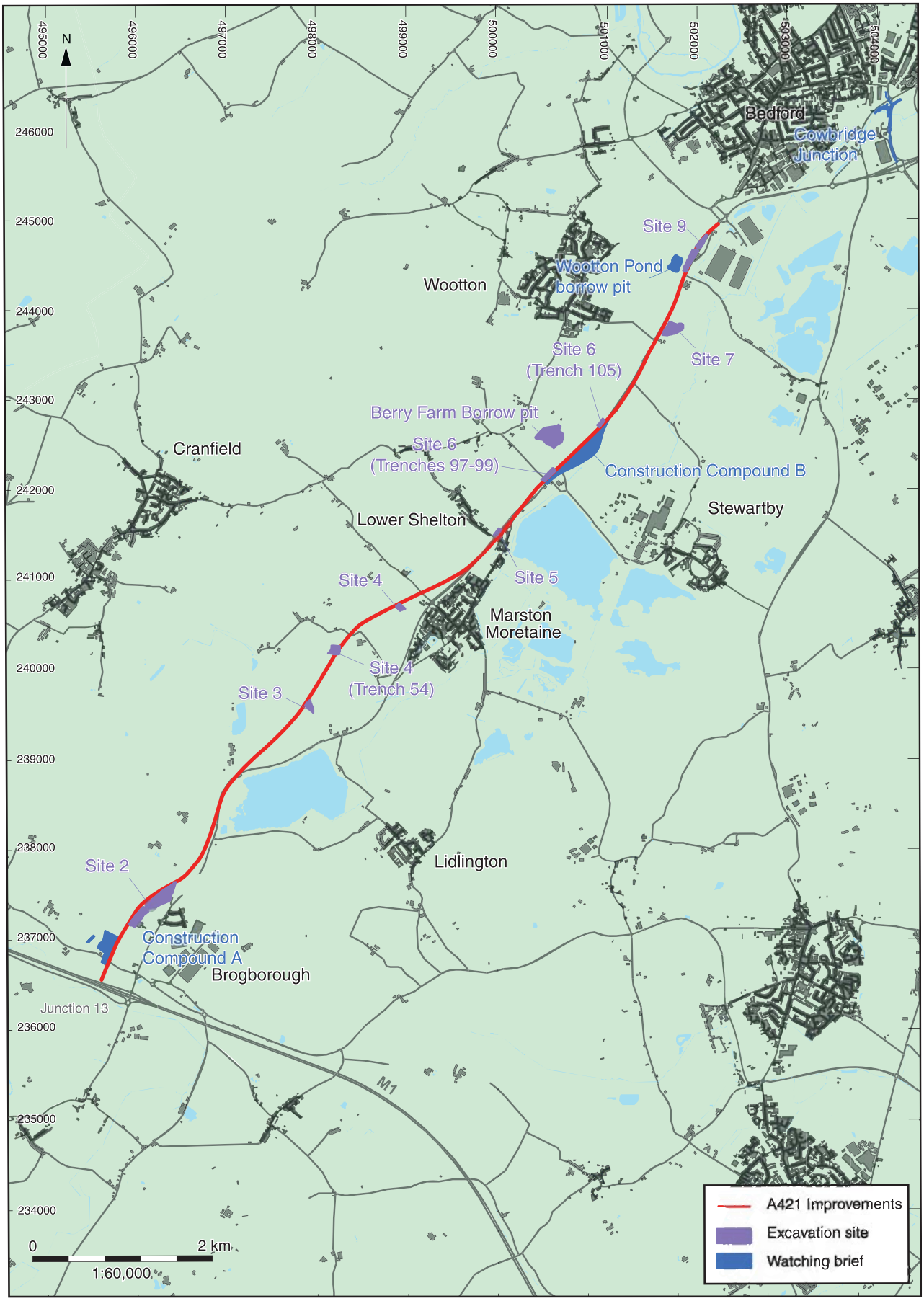
The sites

A total of thirteen areas were identified for archaeological mitigation (Table 1.1; Fig. 1.7). Three distinct levels of investigation were defined: open area excavation, strip, map and sample excavation, and watching brief. An open area excavation was carried out at the main concentration of features at the Iron Age-Roman settlement at Brogborough Hill, where the archaeological potential of the site was clear from the results of the geophysical survey and the evaluation trenching undertaken by Albion Archaeology. Strip, map and sample excavation was undertaken where there was potential for the recovery of significant archaeological remains but where the results of the evaluation were not sufficient to allow close definition of the areas of importance, evidence for occupation activity was limited to fields systems, or where it was anticipated that any archaeological remains would have been disturbed by later activities. Such areas were identified in the parts of the site at Brogborough Hill that surrounded the main concentration of features and on eight further sites. Watching briefs were carried out in four areas where the potential for encountering archaeological remains was low.

Note on the nomenclature of the sites

For the purposes of the Environmental Statement the route was divided into nine areas, numbered consecutively from south-west to north-east, and these designations were used throughout the subsequent stages of the investigations. In each of Areas 2, 3, 5, 7 and 9 only a single site was identified for archaeological mitigation, and so the site was allocated the number of the area in which it was situated; thus the excavation in Area 2 was referred to as Site 2. Areas 4 and 6 each contained two excavation areas, which were distinguished by adding the number(s) of the evaluation trench on which each was targeted, hence, for example, the excavation in Area 4 targeted on evaluation Trench 54 was referred to as Site 4 (Trench 54).

Fig. 1.7 (opposite) Location of excavation areas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Cowbridge Junction
Site 9
Wootton Pond borrow pit
Wootton
Site 6 (Trench 105)
Site 7
Berry Farm Borrow pit
Site 6 (Trenches 97-99)
Cranfield
Construction Compound B
Stewartby
Lower Shelton
Site 4
Site 5
Marston Moretaine
Site 4 (Trench 54)
Site 3
Lidlington
Site 2
Construction Compound A
Brogborough
Junction 13
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2 km
1:60,000
A421 Improvements
Excavation site
Watching brief

Table 1.2: Archaeological mitigation areas at the A421 Improvements

Site	*Name*	*NGR*	*Nature of investigation*	*Area of site (m^2)*
Site 2	Brogborough Hill	SP 962 384	Open area, SMS	13,200
				39,336
Site 3	Vale Farm	SP 979 406	SMS	6020
Site 4 (Trench 54)	Moreteyne Farm	SP 982 412	SMS	9440
Site 4 (Trench 61)	West of Marston Moretaine	SP 989 417	SMS	4253
Site 5	Lower Shelton	TL 000 426	SMS	1867
Site 6 (Trenches 97-99)	Hoo Lane	TL 006 432	SMS	7478
Site 6 (Trench 105)	East of Berry Farm	TL 012 438	SMS	3048
Site 7	Fields Road Junction	TL 020 448	SMS	21,356
Site 9	West of Marsh Leys Farm	TL 022 457	SMS	19,688
Construction Compound A		SP 957 380	WB	82,247
Construction Compound B		TL 010 435	WB	38,967
Wootton Pond Borrow Area		TL 020 455	WB	17,467
Cowbridge Junction		TL 044 470	WB	

Fig. 1.8 Hand-excavation of archaeological features underway on Site 9, while stripping of modern topsoil continues in the background

Open area excavation

The area of the excavation was positioned in accordance with the WSI using a Total Station. The excavation area was stripped of topsoil and subsoil using a 360º mechanical excavator with a flat-bladed bucket under close archaeological supervision, to the top of the first archaeological horizon or the natural geology, whichever was encountered first. The exposed archaeological features were cleaned by hand where necessary and digitally mapped using a Total Station. Hand excavation then followed (Fig. 1.8).

All archaeological features were investigated and recorded in order to establish their character, date and morphology and to investigate stratigraphic relationships between features. All pits and postholes were half-sectioned. Where such features formed part of a clearly defined structure or contained significant artefactual assemblages they were fully excavated. Hand excavated segments, each measuring at least 1m long, were spaced

regularly along the visible length of each linear feature. A minimum sample of 20% of linear features associated with settlement was excavated, and a minimum sample of 5% for other linear features, such as field boundary ditches. The urns from cremation burials 3031 and 3050 at Site 3 were block-lifted on site for excavation in the laboratory, where they were excavated in spits of 20 mm in order to identify any vertical patterning. Cremation burial 3030 had been substantially truncated by medieval and modern ploughing and the urn was too damaged to be lifted in this way, and so the cremation deposit was excavated as a single deposit. Artefacts were recovered by context. This was supplemented by a targeted programme of palaeoenvironmental sampling. Priority was given to the basal fills of features and to those contexts showing visible charred plant remains. Monoliths for pollen and phytolith analysis and series samples for mollusc analysis were taken from key selected features. All recording followed procedures laid down in the *Oxford Archaeology fieldwork manual* (Wilkinson 1992). Individual and intersecting features were planned by hand and sections were drawn, both at a scale of 1:20. Features were photographed using colour slide and black and white print film. Digital images were also recorded.

Strip, map and sample excavation

In the case of strip, map and sample excavation, the excavation area was stripped of topsoil and subsoil in the same manner as the areas subject to open area excavation. The exposed archaeological features were mapped using a Total Station, and the resultant plan served as the basis for discussions to inform the strategy for the detailed excavation of the remains. Hand excavation and recording then proceeded in accordance with the methodology outlined for open area excavation.

Watching briefs

In the case of the watching briefs, an archaeologist was present during all stripping in order to avoid disturbance to the subsoil and any archaeological deposits. The archaeologist monitored the areas as they were stripped and inspected the stripped areas after stripping was completed. The archaeological features thus exposed at Wootton Pond Borrow Area and Construction Compound B were hand excavated and recorded in accordance with the methodology outlined for open area excavation.

RESEARCH OBJECTIVES

The original research aims of the fieldwork, as specified in the written scheme of investigation (Highways Agency 2008a), related largely to aspects of rural settlement during the Iron Age and Roman period. Research questions for the Iron Age concerned, in particular, the development of later prehistoric settlement patterns and the exploitation of the claylands. It was hoped that the Improvements would provide an opportunity to investigate the relationship between settlement and enclosure in both the Iron Age and later periods. Key research questions for the Roman period concerned the character of farmsteads, the nature of site economies and communication in the hinterland of the Roman town of *Magiovinium*, near Milton Keynes, and changes in the Roman economy. The changing pattern and character of medieval field systems and the different patterns of historic land-use were also highlighted as being of interest. Characterisation of the Iron Age/Roman settlement on Brogborough Hill was identified as a specific objective.

Following completion of the fieldwork programme, assessment of the results enabled more specific research questions to be framed (OA 2010). With the exception of a very small assemblage of prehistoric worked flint and a handful of post-Roman features, the archaeological remains identified on all nine sites dated from the later Iron Age and Roman periods, and consisted of the remains of agricultural complexes. Due to the location of the sites within the similar geological and topographical setting of Marston Vale they formed a particularly coherent group, both chronologically and geographically. Thus, although individually the sites were neither of particularly rare types nor exhibited exceptional levels of preservation, they had a potential to make an important contribution to our understanding of the development of the occupation of this particular topographical area during the later prehistoric and Roman periods.

A number of period and regional research frameworks were relevant to the project. Period-based national research agendas have been published for the Iron Age (Haselgrove *et al*. 2001) and Roman period (James and Millett 2001) and were valuable in providing a context in which to frame research questions. Themes for research identified in these documents included settlement patterns and development, material culture, agricultural practices, regionality, processes of change and chronological issues. A county-wide research agenda is in place for Bedfordshire (Oake *et al*. 2007), and regional research frameworks were also relevant to the project. Bedfordshire falls within the remit of the East of England framework (Glazebrook 1997; Brown and Glazebrook 2000; Medlycott 2011), and due to the location of the project at the western edge of the county the framework for the neighbouring East Midlands region (Cooper 2006) was also relevant.

The project also benefited from being located in an area where numerous previous excavations had taken place (Figs 1.2 and 1.9). The majority of these investigations had taken place on the gravel terraces beside the river Ouse, but excavations had recently been conducted within the clay vale adjacent to the north-eastern end of the project at Marsh Leys, where two long-lived late Iron Age/Roman

farmsteads were recorded (Luke and Preece 2011), and at Bedford Western Bypass (Albion Archaeology 2008) and Bedford Southern Bypass (Albion Archaeology 1995; Shepherd 1995), at each of which a multiperiod landscape was uncovered. A little further to the east, though still within the Vale, another Iron Age and Roman settlement had been investigated at Wilstead (Luke and Preece 2010), and a prehistoric and Roman landscape had been excavated on the north bank of the Great Ouse at Biddenham Loop (Luke 2008).

Assessment of the data collected in the course of

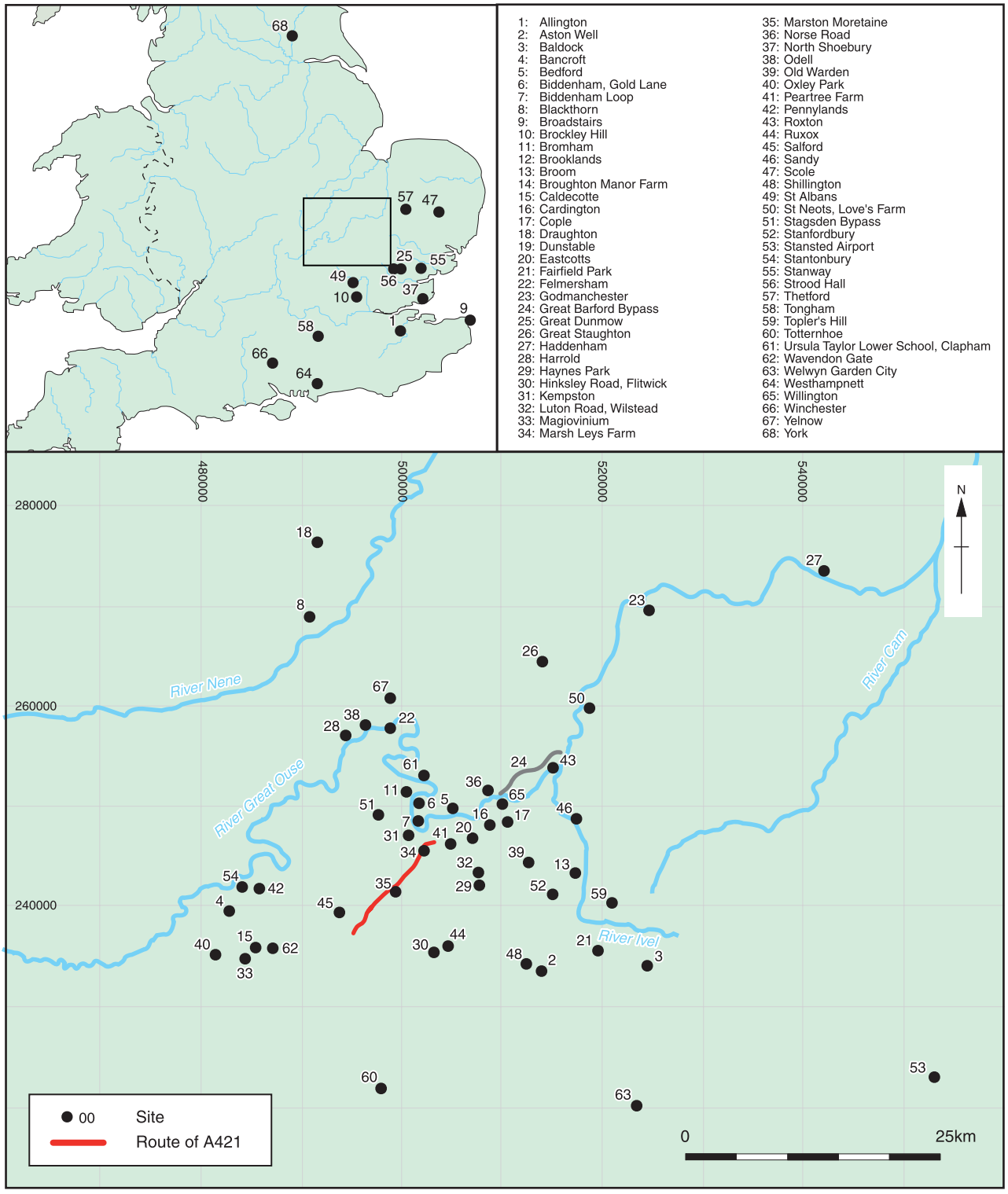


Fig. 1.9 Location of sites mentioned in the text

the investigations identified a number of broad research themes that this evidence had the potential to address:

- chronology
- settlement forms
- landscape
- economy and agriculture
- social practices
- historical trajectories

This volume presents the results of a programme of analysis that was undertaken within the framework provided by these themes.

STRUCTURE OF THE REPORT

Following this introductory chapter, which describes the background to the project and the methodology adopted in the investigations, the volume is divided between a description of the data recovered during the investigations, in Chapters 2–7, and a synthetic discussion, in Chapter 8.

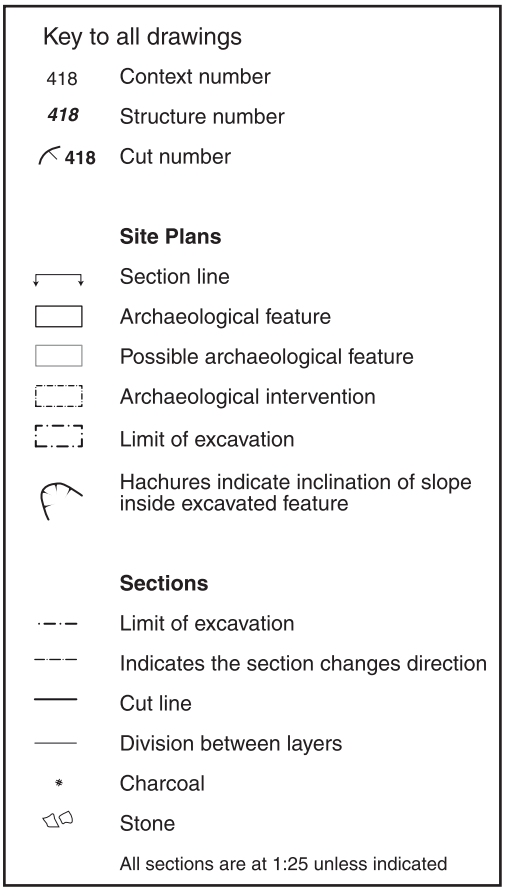


Fig. 1.10 Key to conventions used in plans and sections in this volume

In Chapter 2, the stratigraphic sequence at each site is described. The sites are presented in geographical order, progressing from south-west to north-east, beginning with Site 2 and ending with Site 9. The report on the evaluation at Berry Farm is located at the end of this chapter, as are those of the watching briefs undertaken at Construction Compounds A and B, Wootton Pond Borrow Pit and Cowbridge Junction. Each site description proceeds chronologically. No upstanding structures or substantial layers survived as all the sites had been subjected to ploughing during the medieval and modern periods, and consequently the understanding of each site sequence is based on the stratigraphic relationships recorded between cut features and on spatial associations between features. The resulting sequence was correlated with dating evidence provided principally by the pottery and, at Site 3, Site 4 (Trench 54) and Site 5, by radiocarbon determinations, which enabled the phasing to be established, and approximate date ranges attributed. The site descriptions are illustrated by phase plans, as well as more detailed plans and sections, and photographs. The drawing conventions used in the illustrations are provided in Fig. 1.10.

The subsequent chapters present the artefactual evidence (Chapter 4), human remains (Chapter 5), palaeoenvironmental evidence (Chapter 6) and radiocarbon dating (Chapter 7). Within the report on each category of evidence a consistent structure has been adopted, with the material being described by site, in the order in which the sites appear in Chapter 2, followed by a combined discussion in those instances where inter-site comparison or consideration of the assemblage as a whole helps to elucidate the material. The various strands of stratigraphic, artefactual, environmental and dating evidence are brought together in an overall discussion in Chapter 8 that considers the sites individually and as a group in relation to the research objectives outlined above.

ARCHIVE

The finds, paper record and digital archive are to be deposited with Bedford Museum under accession code BEDFM:2008.313. Owing to the increasing inaccessibility of microfilm services the basic digital archive will take the form of a pdfA scan of the hard copy records. These pdfA scans will be preserved on the OA South archive server and a copy on disc will accompany the hard copy with the archive. Digital data such as jpeg digital images and databases or geomatics data, which are not suitable for hard copy, will also be stored in this way. In time it is hoped that these digital archives will be made publicly available through the internet but in the interim anyone unable to access the hard copy or museum disc copy may approach OA South for access.

Chapter 2: The sites

SITE 2 *by Gerry Thacker*

Introduction

Site 2 was located near the south-western end of the study area, where the road climbs out of Marston Vale and onto the higher ground to the south-west. At the top of Brogborough Hill the route of the Improvements briefly attains a height of a little over 100m OD, before sloping gradually down to the junction with the M1 *c* 1km to the south-west. This marked the highest point on the project. This was one of the areas where the alignment of the Improvements diverged significantly from the line of the existing A421, in this instance passing to the west of Highfield Farm. The excavation area lay on the south-facing slope of Brogborough Hill and extended along a corridor that measured 700m NE-SW and up to 135m wide, located to the north and west of the village of Brogborough (NGR SP 962 384; Fig 2.1). The excavation comprised a total area of 5.5ha and sloped down from the top of Brogborough Hill to a point near the bottom of the slope, which lay at *c* 85m OD.

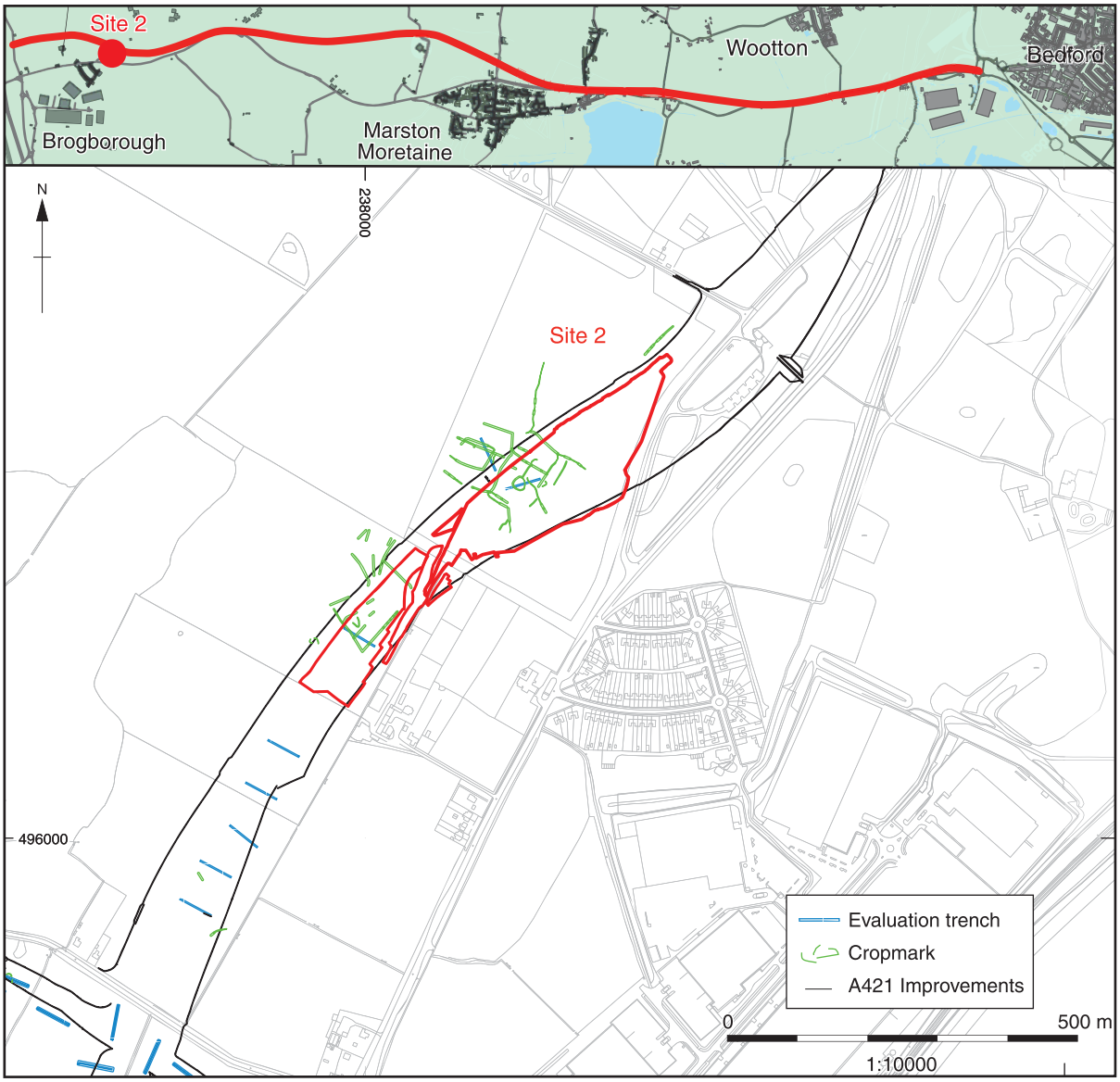


Fig. 2.1 Location of Site 2. (© Crown copyright. All rights reserved. Licence no. 100005569)

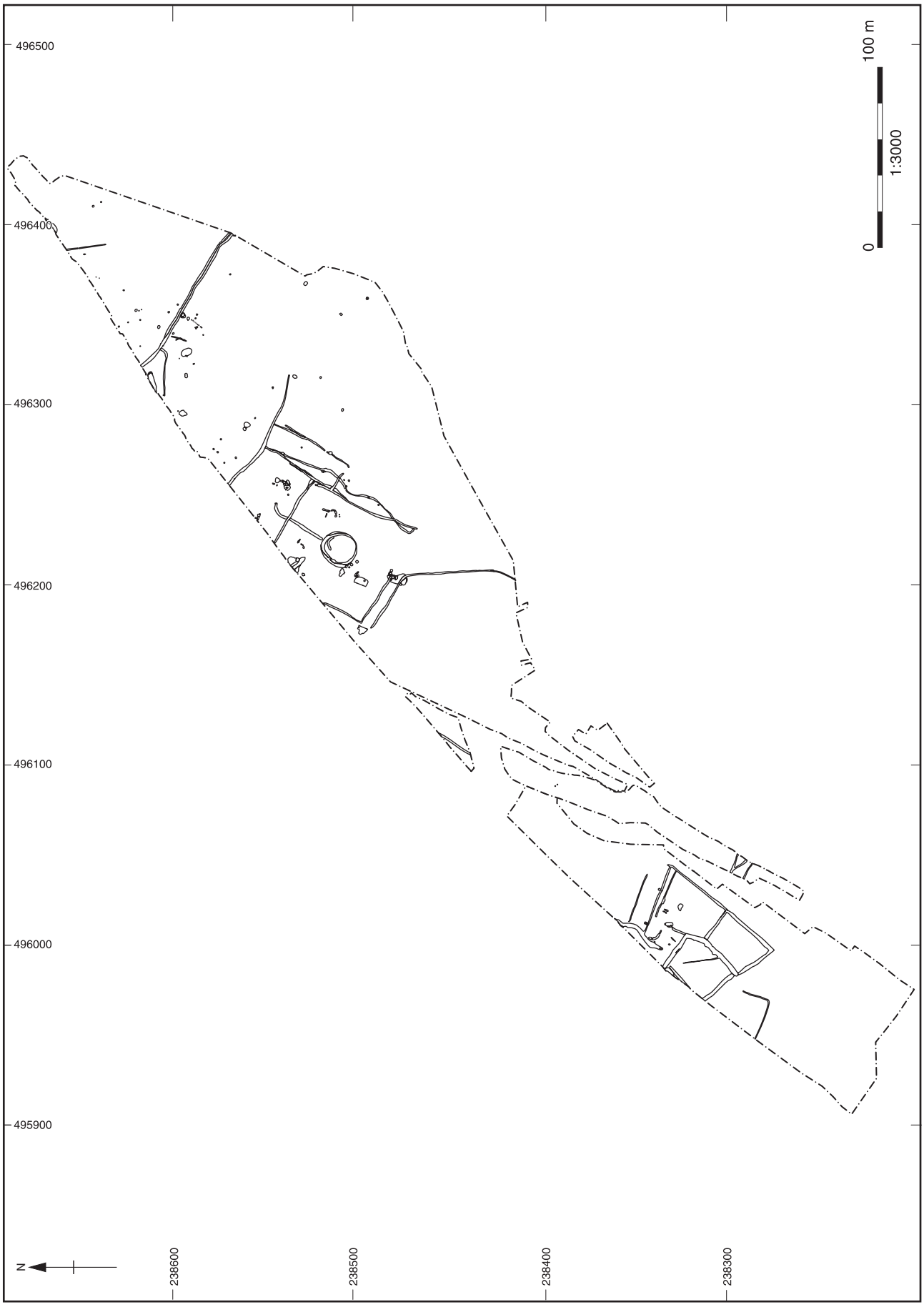


Fig. 2.2 Site 2, plan of all archaeological features

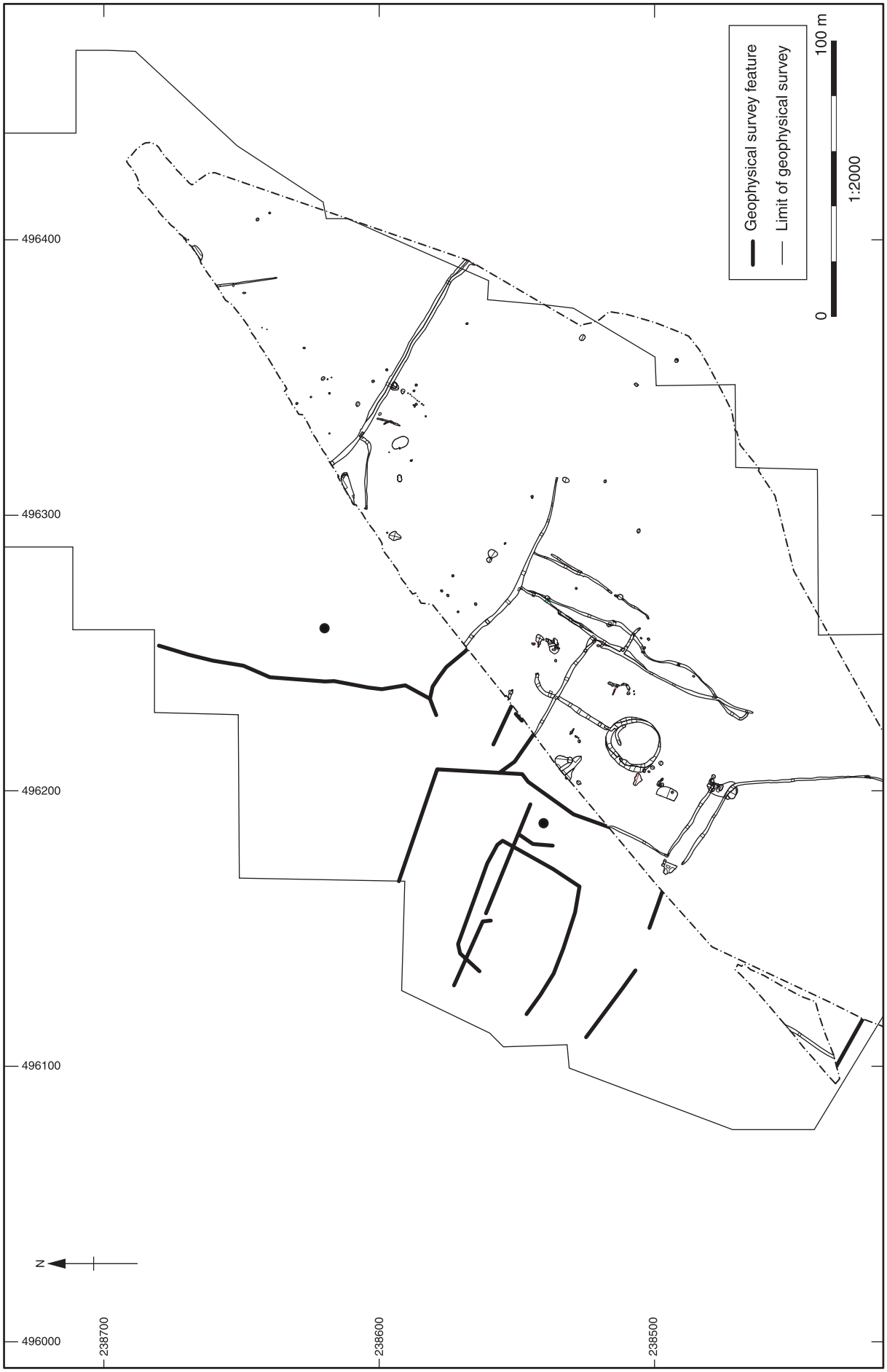


Fig. 2.3 Site 2, north-eastern area and results of the geophysical survey

The excavation area encompassed parts of two complexes of ditched enclosures that had been identified by the geophysical survey (Figs 2.2-3). The two complexes were distinct both spatially and chronologically, comprising an area of late Iron Age and early Roman activity on the upper slopes of Brogborough Hill and a concentration of middle Roman enclosures that lay some 200m to the south-west, where the ground levelled out towards the foot of the hill. In neither instance was the entire complex of features identified by the geophysical survey exposed within the excavation area, which was restricted to the footprint of the Improvements. Approximately half the south-western complex, as identified by the geophysical survey, lay within the excavation area, and a smaller proportion of the north-eastern complex. In both instances the area investigated comprised the eastern part of the complex.

Late Iron Age (early-mid 1st century AD)

Activity at the site appeared to have commenced toward the end of the Iron Age, during the late 1st century BC or the 1st century AD. The earliest features were situated exclusively in the north-eastern part of the site and formed a rather disparate group, comprising a possible roundhouse gully, a pit complex and numerous discrete pits that were scattered over a distance of more than 200m (Fig. 2.4).

Roundhouse 2907

A length of curving ditch (2907) was recorded that may have formed the north-western part of the ring gully of a roundhouse. The gully was 1.4m wide and up to 0.3m deep, but petered out at its north-eastern end. To the south the gully was truncated by early Roman ditch 2476. The gully produced a ceramic assemblage dominated by 'Belgic' wares and may have been open into the early post-conquest period, although it was certainly infilled by about AD 70.

L-shaped ditch 2710

A short length of angled ditch (2710) was located 25m south-west of possible roundhouse gully 2907, within the footprint of an early Roman roundhouse (2108/2709). The ditch extended from south-west to north-east for 5m then turned towards the south-east for a similar distance. It measured 1.1m wide and 0.55m deep, and had definite terminals at each end. The latter indicate that it was not the surviving part of a formerly more continuous feature, and so did not represent part of an earlier phase of the roundhouse, as did its angular form, which contrasted with the more regularly curved shape of the later roundhouse gully. The function of the ditch is uncertain; it appeared to be rather isolated from other contemporary features, although it is possible that such features had been destroyed by later activity in this part of the site. It is possible that it formed part of a small enclosure, with the other parts defined by surface features such as hedgelines that have left no archaeologically detectable trace.

Quarry pit complex

A group of intercutting pits was located further down the slope, where they were truncated by the ditches of an early Roman trackway (2765, 2766) and partially overlain by an associated area of metalling (Fig. 2.5). The pits encompassed an area of 11m x 6m. The artefactual assemblages from these features were very small, and it is likely that they were dug as clay quarries. The individual pits were generally ovoid in shape and were very variable in size, ranging from 1.0-3.6m wide and 0.2-0.8m deep. The largest feature was pit 2808, which was situated at the southern edge of the group and measured 3.6m x 3.0m and 0.6m deep. Only two sherds of pottery were recovered from the fills, although the pit also contained some small fragments of lava quern. A cluster of sandstone cobbles, some up to 0.5m in diameter, were located at the base of pit 2844. Similar material was encountered in pit 2847. The stones displayed no evidence of deliberate shaping but may have been utilised as building stone.

Pits at the north-eastern end of the site

A loose scatter of pits was located toward the north-eastern end of the site. Most of these features were relatively slight, with depths rarely more than 0.3m, and contained little or no artefactual material. A few, however, contained Iron Age pottery and it is possible that all of these features were of this date.

Pits 2045 and 2091 were situated close together and differed from the other pits in this area by virtue of their size and the character of their fills. Pit 2045 (Fig. 2.6) was subcircular in plan and measured 1.68m x 1.40m across and 0.67m deep. The primary fill (2049) was a deposit of clay which was overlain by by a thin layer of charcoal-rich soil (2048). Above this lay a sterile layer of redeposited clay (2047) that was very similar to the primary fill. The upper fill (2046) comprised a second deposit of black, charcoal-rich soil that contained three pottery sherds and fragments of animal bone. Pit 2091 (Fig. 2.7, section 2034) cut a shallower pit (2093) and was the most substantial feature in this part of the site, measuring 2.8m x 2.4m across and 0.94m deep. Like pit 2045, it had a substantial primary fill (2092) that was overlain by a dump of charcoal-rich soil (2088) that contained numerous lumps of orange, heat-discoloured clay. These fills were capped by clay deposit 2089, which in turn was sealed by a thin layer of darker clay silt (2090) which contained three small pot sherds of late Iron Age date. Pit 2091 was cut to the north-east by a medieval field boundary ditch (2480).

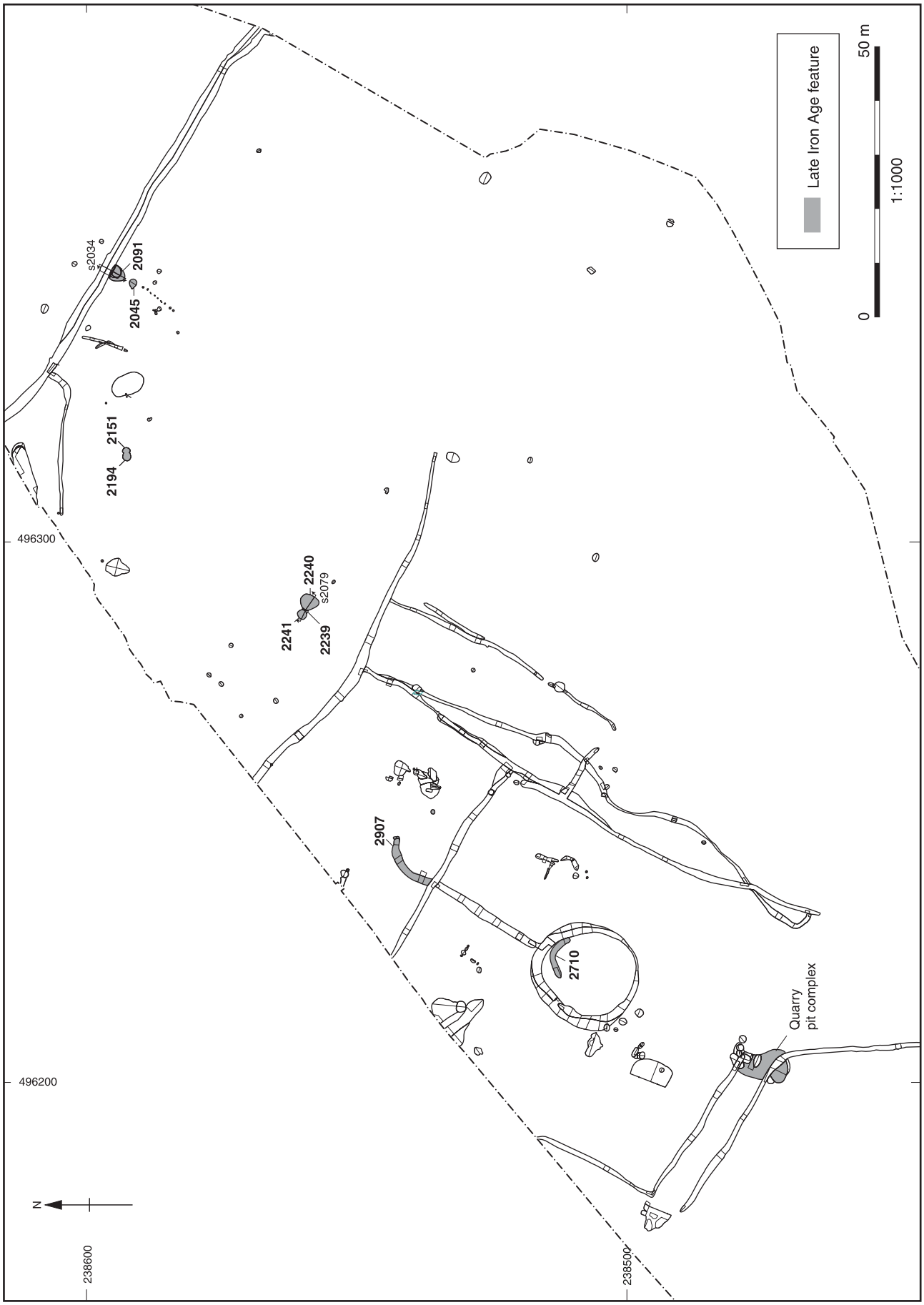


Fig. 2.4 Site 2, plan of late Iron Age features in the north-western part of the site

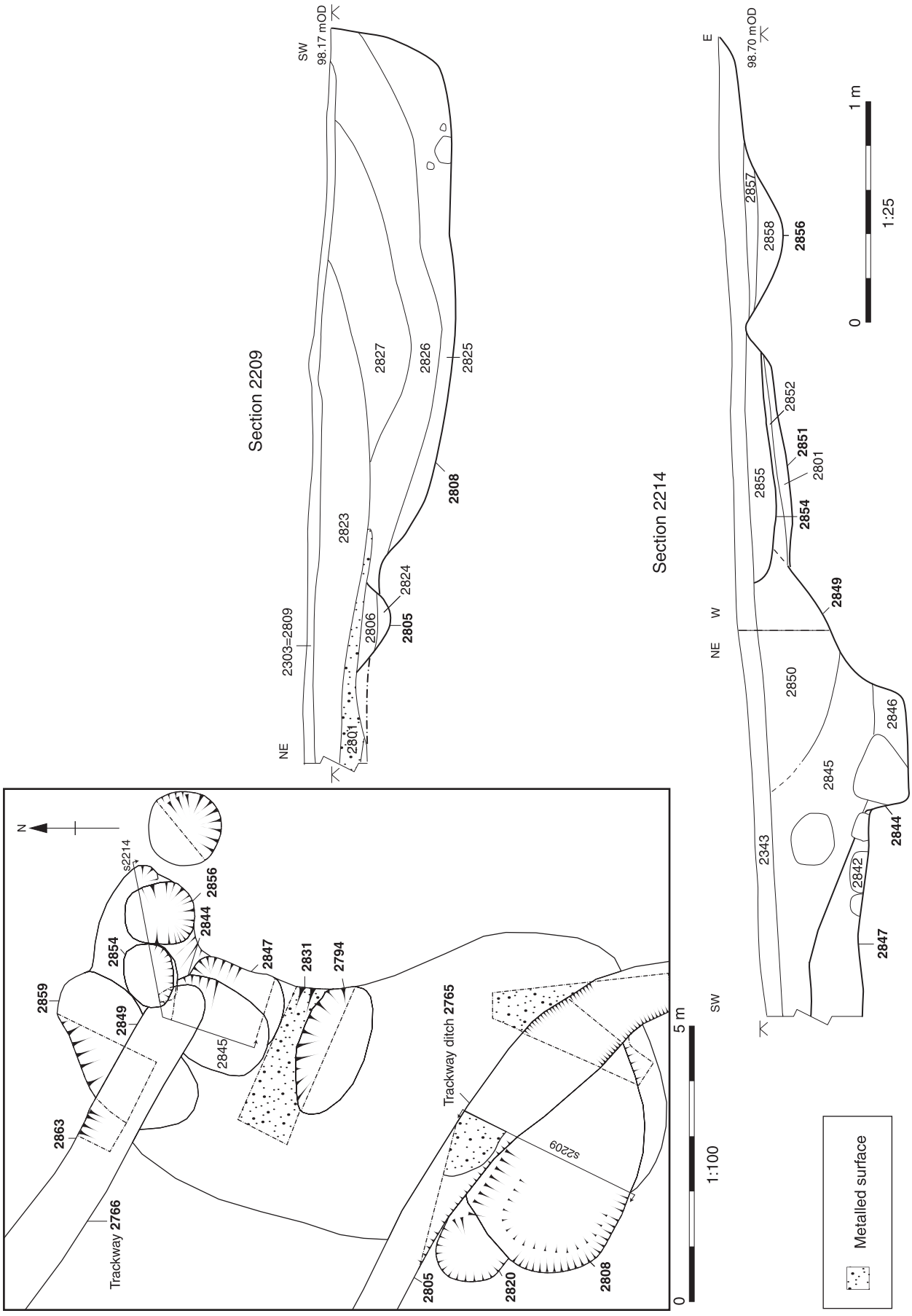


Fig. 2.5 Site 2, plan and sections of late Iron Age pit complex and early Roman trackway ditches and metalling

Pits 2151 and 2194 were situated 30m west of these features. They intersected and both measured *c* 1.5m in diameter and 0.3m deep. They appeared to have been contemporaneous, as they were filled with similar layers of silty clay. The lower fills contained occasional flecks of charcoal and covered several large rounded river cobbles that had been placed on the base of the cut. The upper layers (2153, 2196) contained frequent charcoal flecks and occasional burnt sandstone fragments. Sherds of curving sided bowls and everted rim jugs in a sandy calcareous fabric were recovered from this upper fill.

Pits 2239, 2240 and 2241 (Fig. 2.7, section 2079) were the southernmost outliers of the scatter of Iron Age pits, lying 45m from the main concentration. Pit 2239 was a shallow feature that contained no artefactual material, and was cut by the other two pits, which were more substantial and did not themselves intersect. Pit 2240, the largest of the three, had gently sloping, slightly irregular sides and a concave base. It measured 3.3m x 2.9m across and had a depth of 1.0m. The primary silting (2260, 2261) was overlain by a deposit (2262) that contained a high proportion of charcoal flecks. Above this lay a sequence of three layers of redeposited clay (2263-5), presumably representing deliberate backfilling, followed by a dump of charcoal-rich soil (2266) that contained several fragments of degraded burnt clay, probably burnt daub. The final fill was a further layer of deliberate backfilling (2267). Pit 2241 had a diameter of 1.6m and a depth of 0.75m. The pit contained three fills, the upper two of which (2271 and 2272) were flecked with charcoal fragments.

Early Roman period (mid-late 1st century-early 2nd century)

Occupation of the north-eastern part of the site continued into the early Roman period, when a complex of ditched enclosures was established (Fig. 2.8). A roundhouse was situated centrally within Enclosure 2, the largest of the three enclosures that lay within the excavation area. Other features associated with this occupation included pits, soil spreads and a group of pits or hollows that were filled with burnt crop processing debris. This phase of occupation appears to have been relatively short-lived, lasting from shortly after the middle of the 1st century until the early years of the 2nd century.

Boundary ditch 2475

Ditch 2475 (Figs 2.8-9, section 2069) formed the northern boundary of the enclosure complex. The ditch extended across the slope of Brogborough Hill on a NW-SE alignment, curving eastward towards its south-eastern extent, with the enclosures abutting its south-western side. Where best preserved it had steep sides, dropping to a narrow U-shaped base. The maximum dimensions were 1.8m wide and 0.7m deep, narrowing to 0.41m wide to the extreme south-east before the ditch was entirely truncated away. The sequence of fills comprised cleaner, naturally derived lower fills overlain by darker upper fills that contained a larger quantity of pottery and animal bone. As it silted up the ditch was used as a receptacle for dumping refuse. A discrete deposit of black, charcoal-rich soil (2206) situated in the top of the

Fig. 2.6 Site 2, late Iron Age pit 2045

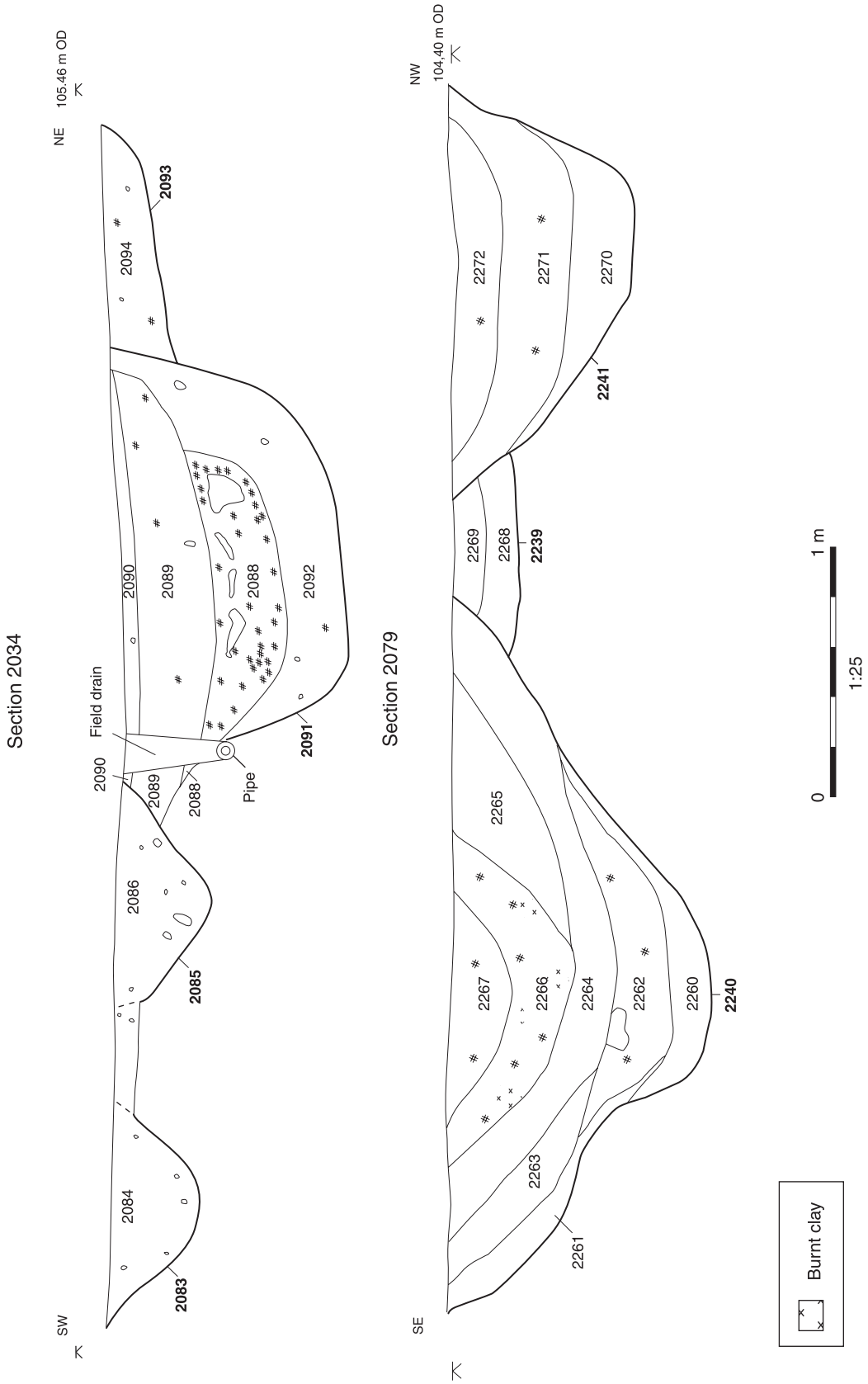


Fig. 2.7 Site 2, sections through late Iron Age pits 2091 and 2093 and medieval ditches 2083 and 2085, and late Iron Age pits 2240, 2239 and 2241

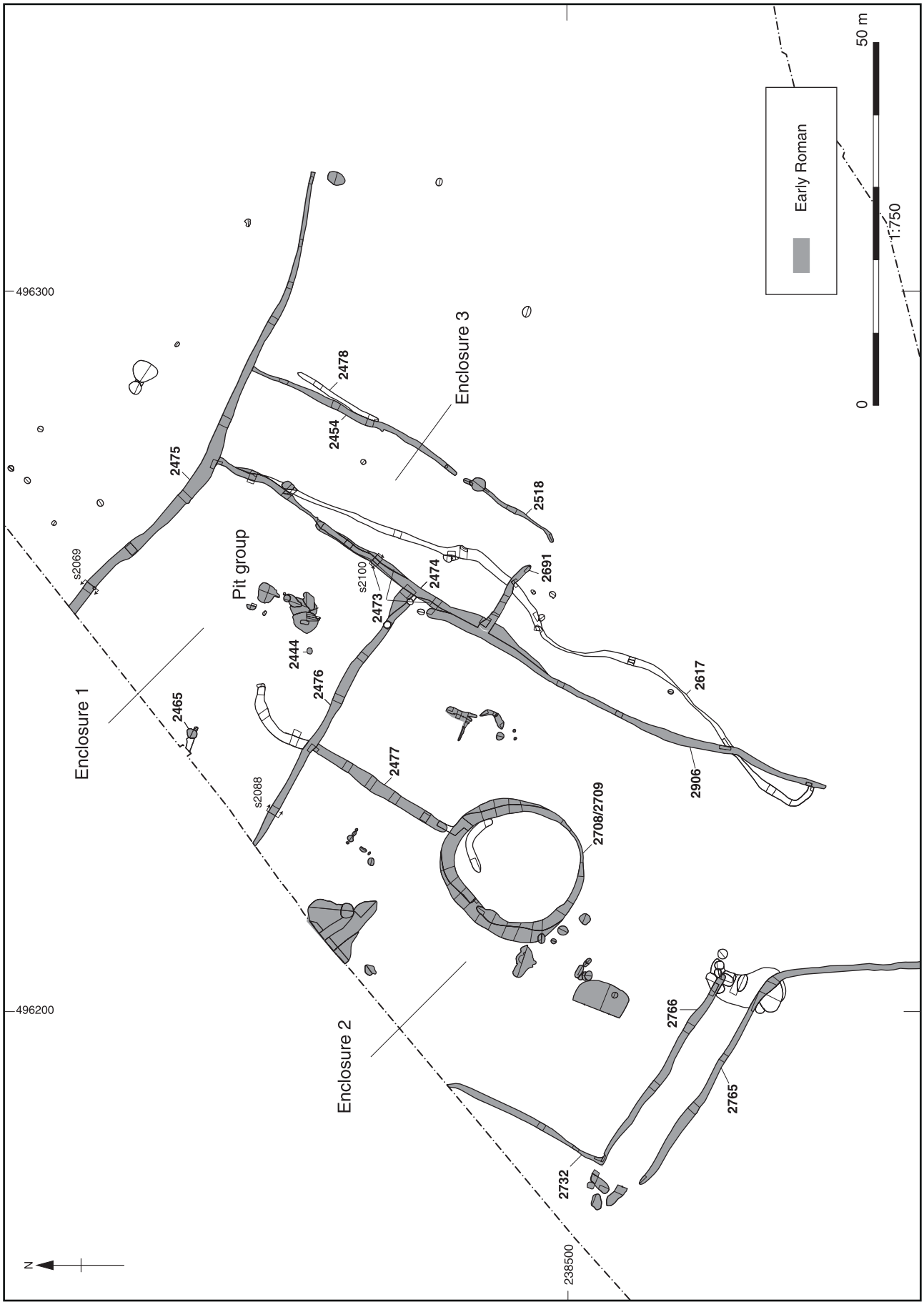


Fig. 2.8 Site 2, plan of early Roman features at the north-eastern end of the site

ditch near the north-western edge of the site contained fragments of smithing hearth bottom and fuel ash slag as well as nearly 0.5kg of pottery. Three enclosures were exposed within the excavation area that abutted the southern side of ditch 2475 (Enclosures 1-3, Fig. 2.8).

Ditches 2617 and 2478

The earliest phase of boundaries associated with ditch 2475 comprised ditches 2617 and 2478, which both extended towards the south-west on alignments perpendicular to that of the main boundary. Both were cut by ditches that subsequently formed parts of Enclosures 1-3, including ditches that appeared to have been direct replacements for these features. No demonstrably post-conquest pottery was recovered from the ditches and it is possible that they represent an initial phase of the complex that dates from the end of the Iron Age.

Ditch 2617 extended to the south-west from ditch 2475 on a sinuous alignment for a total length of *c* 95m. The ditch varied in width between 1.7m and 0.8m and was 0.55-0.24m deep, becoming shallower down-hill. The profile varied considerably, with some segments exhibiting a V-shape and others with steep sides and a flat, wide base.

Ditch 2478 lay roughly parallel to ditch 2617. It survived for 13m, and was truncated at the south-western end by early Roman ditch 2454. Ditch 2478 had a depth of 0.18m-0.2m, and was 0.7m wide and had a concave profile.

Enclosure 1

Enclosure 1 was rectilinear in plan and abutted the south-western side of boundary ditch 2475. It measured *c* 35m wide and at least 41m long, extending to the north-west beyond the edge of the site. It was bounded to the south-east and south-west by ditches 2473/2474 and 2476 respectively, the former appearing to be a direct replacement for late Iron Age boundary ditch 2617. Ditch 2474 (Fig. 2.9, section 2100) defined the earlier phase of the south-eastern side of the enclosure, and comprised a V-profiled ditch 1.35m wide and 0.55m deep. Only a short length of this ditch survived, as it had been largely cut away by the digging of ditch 2473, a recut that replaced it on the same alignment. Ditch 2476 (Fig. 2.9, section 2088) was rather more slight, measuring 1m wide and 0.35m deep.

A group of shallow features (2408, 2426, 2430/2460, 2435 and 2457) located in the south-eastern part of the enclosure had been used for the disposal of burnt crop processing debris (Figs 2.10-11). Pits 2408 and 2430/2460 appeared to have been deliberately dug features, but it was uncertain whether the other features, to the east of pit 2408, were shallow pits or natural hollows, as they were very shallow and irregular. Pit 2430/2460 was a large, somewhat irregular pit that measured 2.5m in diameter and 0.35m deep and lay a short distance north of the other features. It was filled by four layers (2431-4, 2469) of black or dark grey soil that produced more than 1.5kg of pottery, as well as a small quantity of animal bone and some sandstone cobbles measuring up to 0.4m across. Pit 2408 measured 2.5m x 2.0m across and 0.4m deep and was filled by two deposits that were similar to the fills of pit 2430. Similar material also filled the series of irregular hollows and undulations to the east of this pit (2426, 2435, 2457). Soil samples taken from the bottom fill (2461) of pit 2430/2460 and from fills of hollows 2426 and 2435 proved to be rich in charred plant remains, indicating that they had been used for the disposal of burnt crop processing debris. The hollows also contained a substantial assemblage of pottery, amounting to more than 2.5kg, as well as a poorly preserved Hod Hill brooch (SF 2007) and a small quantity of animal bone.

A deposit of pottery had been placed, apparently with some care, in a small pit (2444) that was situated

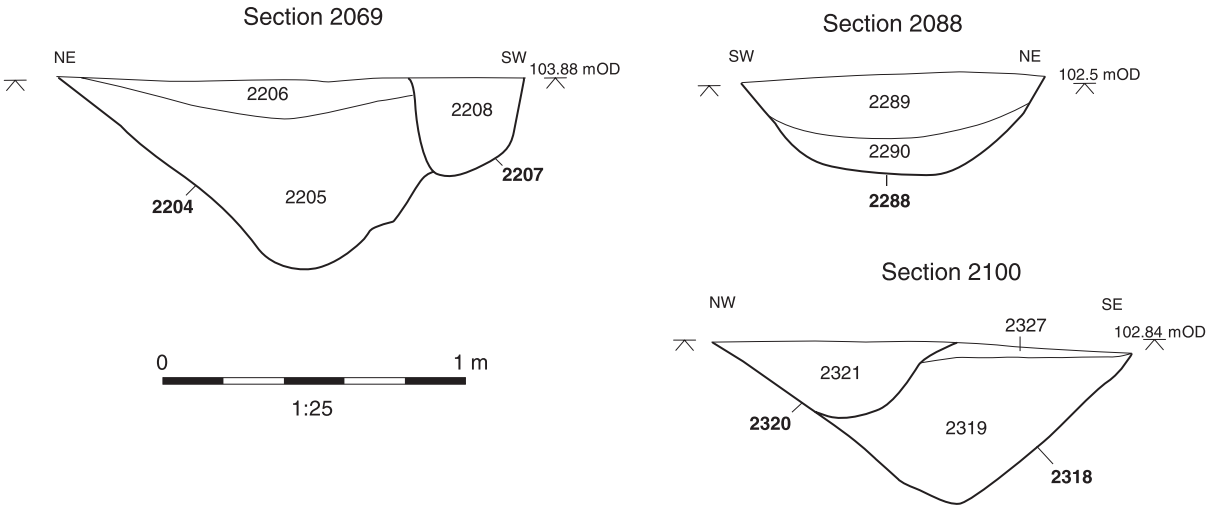


Fig. 2.9 Site 2, sections through selected early Roman boundary ditches

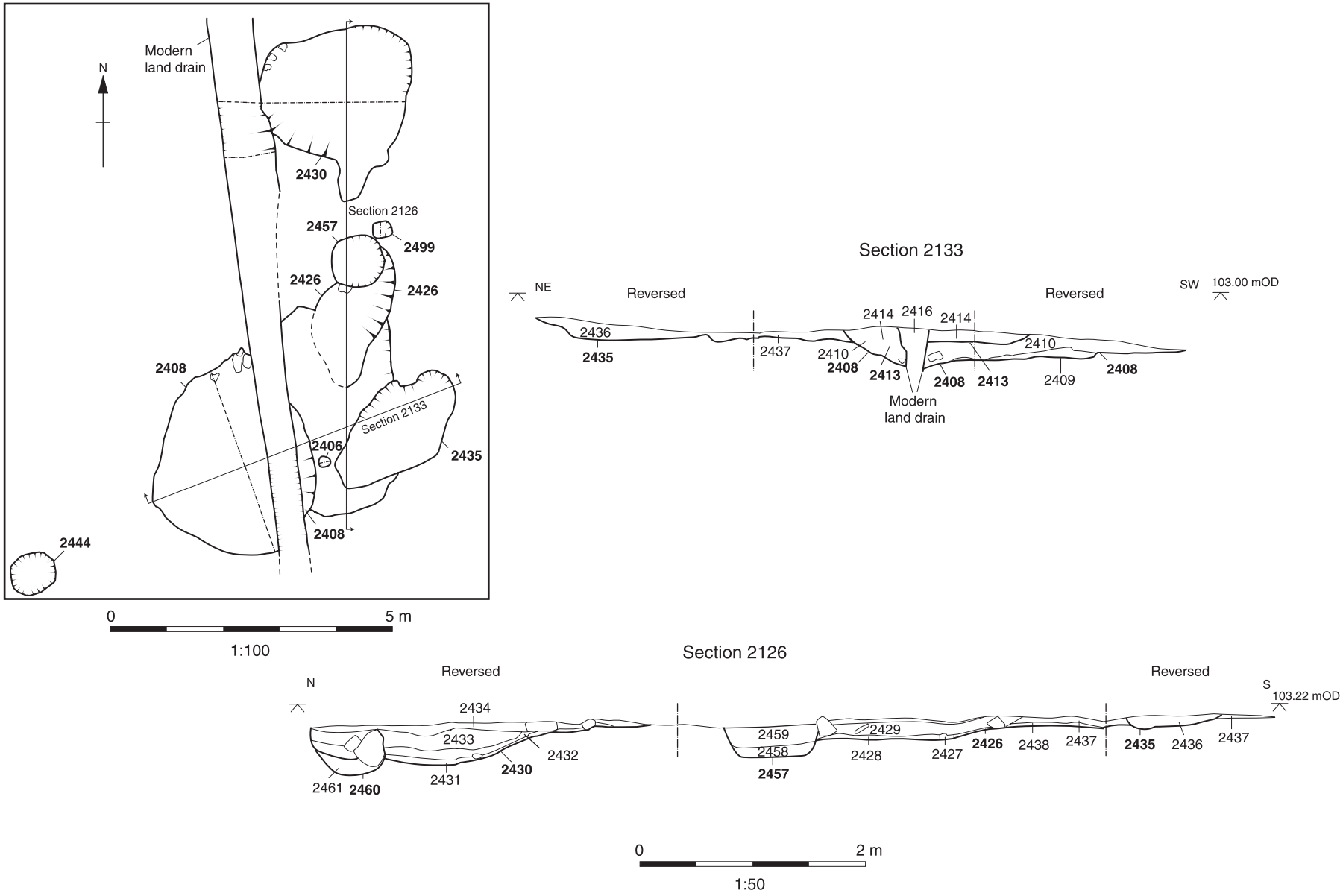


Fig. 2.10 Site 2, detailed plan and sections of pits and hollows within Enclosure 1 with fills rich in charred plant remains

Fig. 2.11 Site 2, pits and hollows within Enclosure 1 with fills rich in charred plant remains during excavation

Fig. 2.12 Site 2, deliberate deposit of pottery in pit 2444: a carinated bowl stacked within a lid-seated jar

adjacent to these features (Fig. 2.12). The pit itself measured *c* 0.8m in diameter, and had been quite severely truncated, surviving to a depth of only 0.06m. Nevertheless, a large proportion of a carinated bowl and a lid-seated jar were recovered. They had been placed on the base of the pit with the former apparently stacked inside the latter (Fig 2.12). The base of a shelly-ware jar that had been perforated after firing was also recovered, although its relationship to the other vessels was not recorded. The soil that filled the pit differed markedly from the material filling the adjacent pits and hollows, and comprised sterile brown clay that may represent backfilling of the pits with the spoil from their original excavation.

The only other feature that was identified within Enclosure 1 was pit 2465, which lay in a rather isolated situation near the north-western edge of the site. The pit measured 1.52m by 1.30m across and had a depth of 0.64m. In addition to early Roman pottery and animal bone, the upper two fills (2468, 2467) contained the partial remains of a perinatal infant. Fill 2467 contained the left distal humerus and a right rib fragment and fill 2468 contained a small fragment of cranial vault and a left distal tibia. Although these remains were recovered from two different fills, there are no repeated elements and the age is the same, and they are therefore likely to have come from a single individual.

Enclosure 2

Because of the truncation of the southern part of ditch 2474, and in particular its intersection with ditch 2476, it was not possible to be certain whether ditch 2474 originally extended to enclose the south-eastern side of Enclosure 2, or whether Enclosure 2 was a later addition that was not constructed until ditch 2474 was replaced by ditch 2473. In either case, Enclosure 2 certainly existed when the latter ditch (2473) was constructed, as the ditch formed the south-eastern boundary of both this enclosure and Enclosure 1. Enclosure 2 was considerably larger than its northern counterpart, measuring 64m x 55m, and was defined on its north-western and south-western sides by ditch 2732/2766, which extended beyond the edge of the excavation area and, according to the results of the geophysical survey, had a junction with ditch 2476 at the northern corner of the enclosure. The geophysical survey also indicated that the north-western side of Enclosure 2 also formed part of a much larger adjacent enclosure that lay beyond the limits of the excavation area (Fig. 2.3).

Ditch 2473 branched off boundary ditch 2475 and extended for c 55m before it in turn was truncated by ditch 2906. Ditch 2473 measured 0.65-0.95m wide and 0.25-0.7m deep. The ditch contained two fills, both derived from gradual silting, and produced a large fragment of tegula.

Ditch 2732 had a U-shaped profile and varied in width from 0.65m to 1.00m, narrowing to the south-west due to plough-truncation. Where best preserved the ditch had a maximum depth of 0.53m, and contained three episodes of infilling. The lower two fills were the result of gradual silting but the upper fill contained considerably more cultural material.

Fig. 2.13 Site 2, deposit of charcoal-rich soil in ditch 2477, possibly refuse from roundhouse 2708/2709

Ditch 2766 was up to 1.2m wide and 0.5m deep, often exhibiting a 'V' shaped profile. From its junction with ditch 2732 it extended south-east for 30m, terminating within the area of intercutting late Iron Age quarry pits (Fig. 2.5). It was not certain whether the ditch had been truncated beyond this point or whether this represented its full original extent. The upper fills contained dumps of pottery and bone. The fill sequence became more complex near the terminal end as the ditch was partially filled by material from the earlier pits.

A possible subsidiary enclosure was situated within the northern quadrant of Enclosure 2, defined by ditches 2477 and 2746. Ditch 2477 branched off ditch 2476 and extended for *c* 20m toward the centre of the enclosure. It terminated just before it reached roundhouse 2708/2709 (below), suggesting that the features were contemporaneous. The profile was V-shaped and deep, measuring up to 1.9m wide and 0.75m deep. The lower fills were light silty clays which contained few finds; the upper fills darker and richer in cultural material. A discrete deposit (2287=2443=2676) of dark, charcoal-rich soil and artefactual material was situated at the south-western end of the ditch and may have represented domestic refuse from the roundhouse. The deposit extended for *c* 12m from the south-western terminal and was up to 0.4m thick (Fig. 2.13). Context 2287, which formed part of thus deposit, contained a range of pottery, including the substantial remains of a lid-seated jar in shelly ware. The pottery from 2443, like that from 2287, was mixed in terms of fabric, though shelly ware and grog-tempered fabrics dominated. The pottery was reasonably well preserved, with large sherds being recorded (average sherd size was 17g), but no vessels were complete. The pottery from 2676 was of similar condition and composition. At 15g its average sherd size was slightly smaller. The deposit also contained an assemblage of more than 1kg of animal bone, including a fragmented cattle skull. Unfortunately no palaeoenvironmental samples were collected from the deposit. Ditch 2746, which may have formed the south-western side of the subsidiary enclosure, was identified in an intervention excavated through a soil spread (2868, below) beside the north-western edge of the site. The ditch presumably terminated beneath the soil spread, as it did not extend further into the excavation area. It measured 2.5m wide and 1.4m deep, with a steeply V-shaped profile, and yielded a substantial assemblage of 1st-century pottery, as well as a single, fairly large sherd from a 2nd-century necked jar, and some animal bone.

Roundhouse 2708/2709

A roundhouse was situated centrally within Enclosure 2 (Figs 2.14-16). No floor surfaces or internal structural features survived, and the structure was represented only by its encircling drip gully, evidence for two phases of which survived (2708, 2709). The northern part of the gully was best preserved; the southern part had been substantially truncated. The roundhouse had internal dimensions of 17m x 15m. It produced the largest group of pottery from the site, amounting to more than 900 sherds. The animal bone assemblage amounted to nearly 5kg and included a fragmented cattle skull that had been placed in the eastern part of gully 2709 and subsequently largely redeposited into gully 2708.

Gully 2709, which formed the earlier of the two phases, measured up to 2.25m wide and had a maximum depth of 0.65m with a slightly irregular profile and a concave base. The ditch did not survive in the south-eastern quadrant. The lowest fills were derived from gradual silting and contained only a small quantity of pottery. The overlying deposits contained some 300 sherds of pottery comprising the remains of lid-seated jars, bead-rimmed jars, necked jars and butt-beakers. The pottery dated from the second half of the 1st century AD, possibly the third quarter of the century. A discrete deposit of sandstone cobbles was uncovered in the south-eastern part of the gully (Fig. 2.16), and a fragmented cattle skull was recovered from the eastern side, much of which had been disturbed and redeposited within the fill of the corresponding part of gully 2708.

The later gully, 2708, was up to 1.5m wide and 0.56m deep (with minimum dimensions of 0.35m wide and 0.17m deep in the south-eastern part of the structure). As with the earlier phase of gully, the lower fills, where present, were caused by natural silting, and the upper fills were mostly deliberately deposited with large quantities of pottery and bone present. The upper fill contained a late Roman coin (SF 2009, dating to AD 270-295), but this is likely to be intrusive given the date of the pottery from this feature. A possible entrance was located on the north-west side, where a 1m break in the ditch was present. Over 600 sherds of pottery were recovered from gully 2708.

Other features within Enclosure 2

A number of pits and soil spreads were identified within the enclosure that are likely to have been associated with the occupation of the roundhouse (Fig. 2.14).

A group of five pits (2516, 2582, 2595, 2597 and 2604) lay immediately to the south-west of the roundhouse. Pit 2516 cut gully 2709, indicating that the pits were probably contemporary with the later phase of the structure. Pit 2595 was a shallow, concave feature, but the others were more substantial. Pit 2604 was 0.6m deep and had an irregular profile with a diameter of 1.5m, although the upper fill (2607) extended beyond the pit as a thin layer that encompassed an amorphous area measuring 4.6m x 2.8m (Fig. 2.17). The lower fill (2605) of reworked natural clay may have been a trample layer associated with the construction of the pit. The two upper fills (2606 and 2607) contained numerous fragments of animal bone and sherds of early Roman pottery

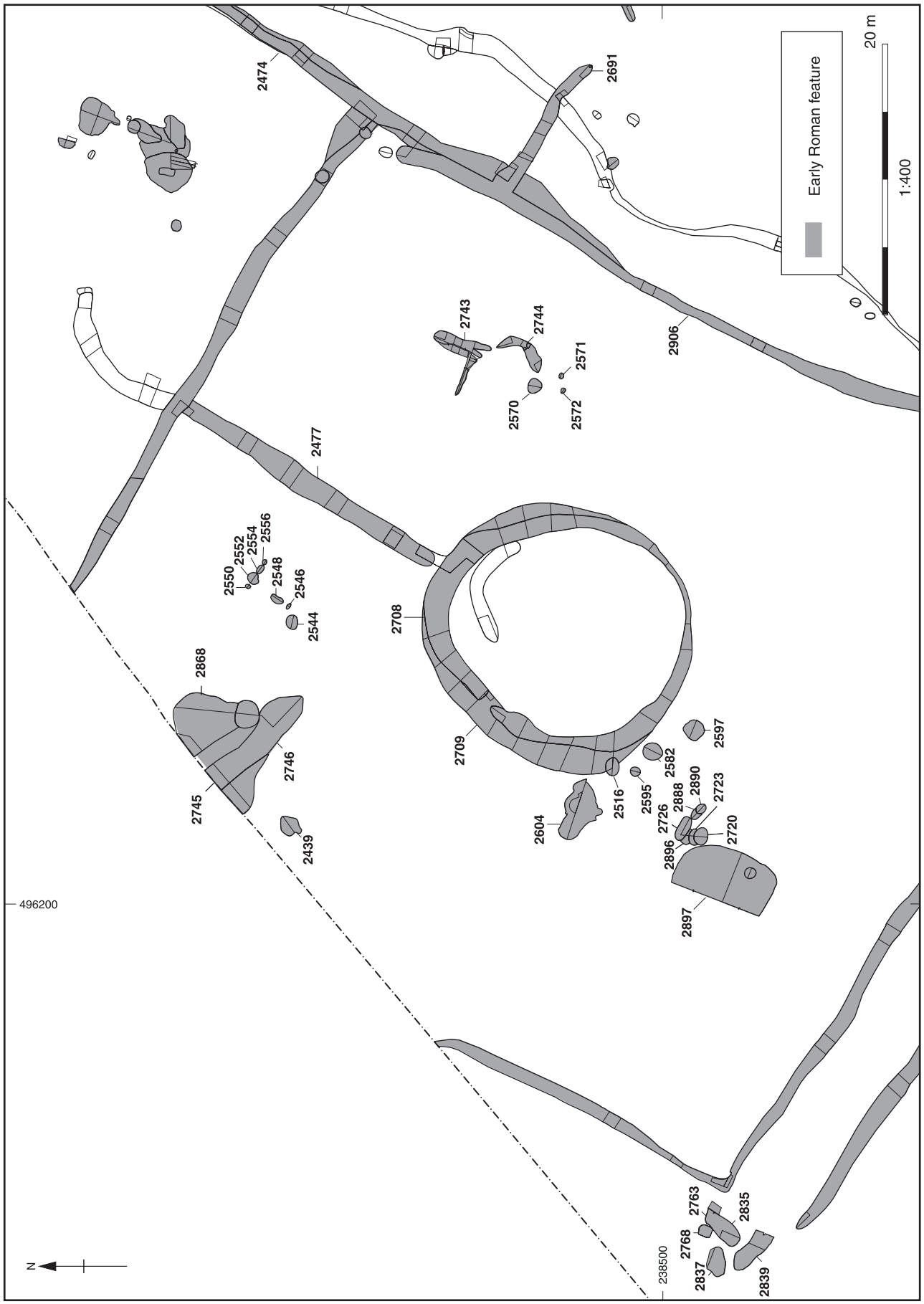


Fig. 2.14 Site 2, detailed plan of early Roman occupation within Enclosure 2

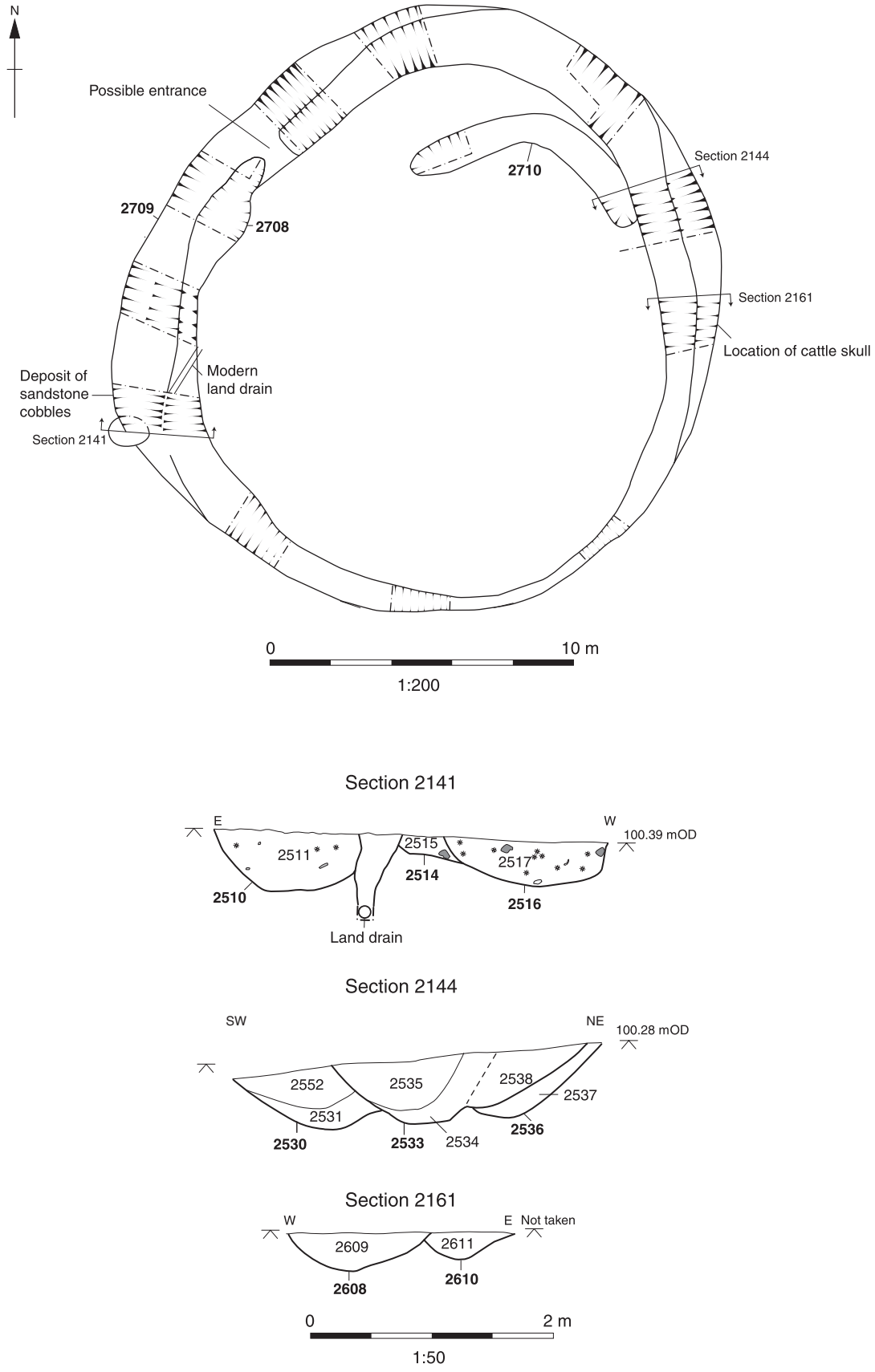


Fig. 2.15 Site 2, plan and sections of early Roman roundhouse 2708/2709

Fig. 2.16 Site 2, the western side of early Roman roundhouse 2708/2709. The sandstone cobbles seen in Fig. 2.15 can be seen at the right of the frame

Fig. 2.17 Site 2, early Roman pit 2604 and associated spread 2607

including samian ware and Verulamium white ware. It seems likely that this pit was a receptacle for waste from the neighbouring roundhouse. Pits 2516 and 2597 were both steep-sided and measured 1.4m in diameter and 0.4m deep, while pit 2582, which had a similar diameter, was a little over 1m deep. All produced assemblages of pottery dating from the second half of the 1st century, as well as smaller quantities of animal bone.

A further group of six pits (2720, 2723, 2726, 2888, 2890, 2896) was situated 5m to the south. These features were generally ovoid in shape and 0.25-0.65m deep. Pit 2896, stratigraphically one of the earliest of the group, contained a poorly preserved one-piece Colchester brooch (SF 2008) of 1st-century date.

Adjacent to this group of pits lay an amorphous soil spread (2897). The layer filled a shallow hollow that measured 7m x 4m and up to 0.25m deep, and was truncated on its north-western side by a medieval plough furrow. Early Roman pottery and animal bone were recovered from the spread.

A similar, though slightly larger, soil spread (2868) was situated in the north-western part of the enclosure. It measured 9m NE-SW and was at least as extensive from north-west to south-east, extending beyond the north-western edge of the site. The layer overlay ditch terminal 2746 (above) and a pit (2745) and yielded an assemblage of more than 1kg of pottery that dated from the second half of the 1st century. A further pit (2439) lay to the south-west of these features.

A group of postholes (2550, 2552, 2554 and 2556) was located 10m east of soil spread 2868. The line of postholes was orientated NW-SE and measured 3m in length. The postholes varied in diameter between 0.35 and 0.85m, with depths of up to 0.14m. The fills were all very similar and consisted of dark grey silty clays with chalk and charcoal inclusions. Immediately to the south-west of these features were a further three pits (2544, 2546 and 2548), all ovoid in shape. Pit 2544 contained both shelly and grog tempered wares with a date range of AD 1-100.

Two extremely irregular and very shallow features (2743 and 2744) were recorded in the eastern part of the enclosure. Feature 2743 was approximately L-shaped in plan, measuring 4.3m N-S and 4.1m E-W, and was no more than 0.15m deep. Its generally irregular shape and shallowness suggested that it was not a cut feature, and it may have been either a soil spread or an area of root disturbance. Feature 2744 may have been a curving gully, but was too shallow for this to be certain. A small pit (2570) and two possible postholes (2571 and 2572) were situated near to these features.

Trackway along the SW side of Enclosure 2

A trackway 5m wide extended along the south-western side of Enclosure 2, delineated by ditch 2766, which formed the side of the enclosure, and ditch 2265 (Fig. 2.8). It extended for 30m, from the western corner of the enclosure to the south-eastern end of ditch 2766, where ditch 2765 turned to the south, defining a boundary that ran across the prevailing slope and beyond the southern limit of the excavation area. Ditch 2765 measured up to 1.56m wide and 0.55m deep, generally becoming narrower and more shallow to the south, probably because of greater truncation.

The area where the trackway crossed the area of late Iron Age quarry pits was consolidated at this stage (Fig. 2.5). The consolidation took the form of a thin gravel surface (2801) sealing the tops of the pits, and at several points spilling over the ditches. Two small sherds from an oval-bodied necked jar dating from the mid 2nd-early 3rd century were recovered from the surface, suggesting that the trackway continued in use into this period. The surface was overlain by a layer of dark brown soil 0.05-0.20m thick which is interpreted as a build-up of soils from the use of the surface.

Recutting of boundary 2473/2473 and construction of Enclosure 3

Enclosure 3 was a later addition to the complex and was associated with a further recutting of the boundary defined by ditches 2474 and 2473, represented by ditch 2906 (Fig. 2.8). Ditch 2906 defined the boundary to the south of ditch 2476. A gap of 2m was left between the latter feature and the northern terminal of ditch 2906, either as an entrance or because a bank or hedge associated with ditch 2476 was located here. Ditch 2906 extended for 60m in a south-westerly direction. The ditch had a V-shaped profile to the north-east, changing to a U-shape to the south-west and measured 0.7-1.4m wide and 0.25-0.45m deep. The ditch infilled through gradual silting interspersed with occasional dumps of cultural material.

Enclosure 3 abutted the boundaries defined by ditches 2475 and 2473/2474/2906, and was enclosed on its south-western side by ditch 2691, which branched off ditch 2906, and on its south-eastern side by ditch 2478/2518. Ditch 2691 extended for 11m and enclosed most of the south-western edge of the enclosure, leaving an entrance 4.3m wide next to the southern corner. It had a concave profile and measured 0.4-1.2m wide and 0.3-0.56m deep. It had two fills derived from natural silting. The only finds were occasional pottery fragments, except within the south-eastern terminus, which may have been deliberately backfilled, and within which a posthole (2670) was set. Ditch 2454 branched off boundary ditch 2475 and extended towards the south-west for 32m. It generally had a concave profile, the slope of the sides becoming more moderate further to the south-west. The ditch measured up to 1.05m wide and 0.14-0.54m deep. After a break of 2m, its alignment was continued for a further 15m by ditch 2518, which was 0.7m wide and 0.1-0.2m deep. It was not certain whether the break between ditches represented an original entrance into the enclosure or was a product of

subsequent ploughing. Near its north-eastern end, ditch 2518 was cut by pit 2451, the function of which is uncertain.

Pits/hollows west of Enclosure 2

A group of intercutting pits or hollows (2763, 2768, 2835, 2837 and 2839) were situated beyond the western corner of Enclosure 2 (Fig. 2.14). Due to the amorphous and irregular forms of these features it was unclear whether they were anthropogenic, and it is possible that they were tree-throw holes. They were up to 0.4m deep, and yielded a small assemblage of pottery and an assemblage of animal bone amounting to 1.7kg. The latter was a large group by the standards of this site and suggests that, whatever the origins of these features, they were utilised for the disposal of domestic refuse. The presence of the hollows would clearly have impeded the use of the north-western end of the trackway that extended along the south-western side of Enclosure 2, and it is possible that they were deliberately filled in for this reason.

2nd-century activity in the north-eastern part of the site

Occupation within Enclosure 2 had come to an end by the end of the 1st century, by which time the ditches that formed most of the associated enclosures also appear to have fully silted up. The only exception to this was boundary ditch 2475, which had a small quantity of 2nd-century pottery in its upper fills. The only features in this part of the excavation area that were created during the 2nd century were a scatter of pits (2179, 2182, 2185, 2188, 2207, 2211, 2252 and 2802) to the north of this boundary, including one (2207) that cut the ditch (Fig. 2.18). The pits were typically shallow, bowl-shaped features measuring *c* 1m in diameter and up to 0.3m deep. Small quantities of 2nd-century pottery were recovered from pits 2179, 2182 and 2207, and it is likely from their spatial association that the other similar pits are also of this date. A fragment of vitrified hearth lining and some fuel ash slag were recovered from pit 2182 and similar material was recorded from pit 2207, although in this instance it may have been residual, as the pit had been dug through a dump of such material (2206) in the top of ditch 2475.

The only other evidence for activity in this part of the site during the 2nd century were two small sherds of pottery recovered from metalled surface 2801 and a single sherd from the surface of ditch 2765, which may indicate that the trackway that extended along the south-western side of Enclosure 2 was still in use at this time.

Middle-late Roman enclosure complex

Part of a complex of conjoined enclosures that was established during the early or middle part of the 2nd century was exposed in the south-western part of the site, at the bottom of the slope of Brogborough Hill (Fig. 2.19). This may have been a direct replacement for the earlier complex to the north-east, but the dating evidence is not precise enough to be certain. In contrast to the earlier complex these enclosures were entirely agricultural and industrial in character, with no evidence for domestic occupation. The fills of the enclosure ditches had a different character to their counterparts in the north-eastern complex, generally comprising accumulations of clay and silt derived from gradual silting which contained few finds. Industrial activity or processing of agricultural produce was evidenced by the identification of two ovens and a partly paved working hollow, as well as by a substantial pit that may have been used as a waterhole.

Five conjoined, rectilinear enclosures were identified, and the complex extended beyond the north-western edge of the excavation area (Enclosures 4-8, Fig. 2.20). The earliest pottery recovered from the enclosure ditches dated from the first half of the 2nd century, indicating that the complex had been constructed by *c* AD 150 at the latest. The ditches that defined enclosures 3 and 4 were recut during the second half of the 3rd century as quite substantial features, in the process destroying the evidence for the original ditches, but it is likely that the ditches of the earlier phase followed the same alignments.

Hollow-way 20237

The complex was accessed by means of a hollow-way (20237) that entered it from the north and terminated within Enclosure 4 (Figs 2.20-21). The hollow-way was rather sinuous. It was exposed for a total length of 30m, and continued to the north beyond the excavation area. It measured 1.8-3.2m wide and up to 0.4m deep and had been roughly surfaced with a mix of gravel, river cobbles and limestone slabs (20040). Above this the hollow was filled by a layer of dark clay (20065).

Enlosure 4

The north-eastern limit of Enclosure 4 was defined by ditch 20223, which branched off the hollow-way and extended towards the south-east for 40m. The ditch had a concave profile and measured 0.6-1.0m wide and 0.4m deep. It appeared to have been part of the same ditch as ditch 20225, which formed the south-eastern boundary of the complex. Enclosure 4 was divided from the adjacent Enclosure 5 by ditch 20235. The enclosure measured 19m NE-SW and at least 21m NW-SE

Features within Enclosure 4

A small group of features was recorded within Enclosure 4, south and east of the hollow-way, although none produced any artefactual material and their functions are uncertain.

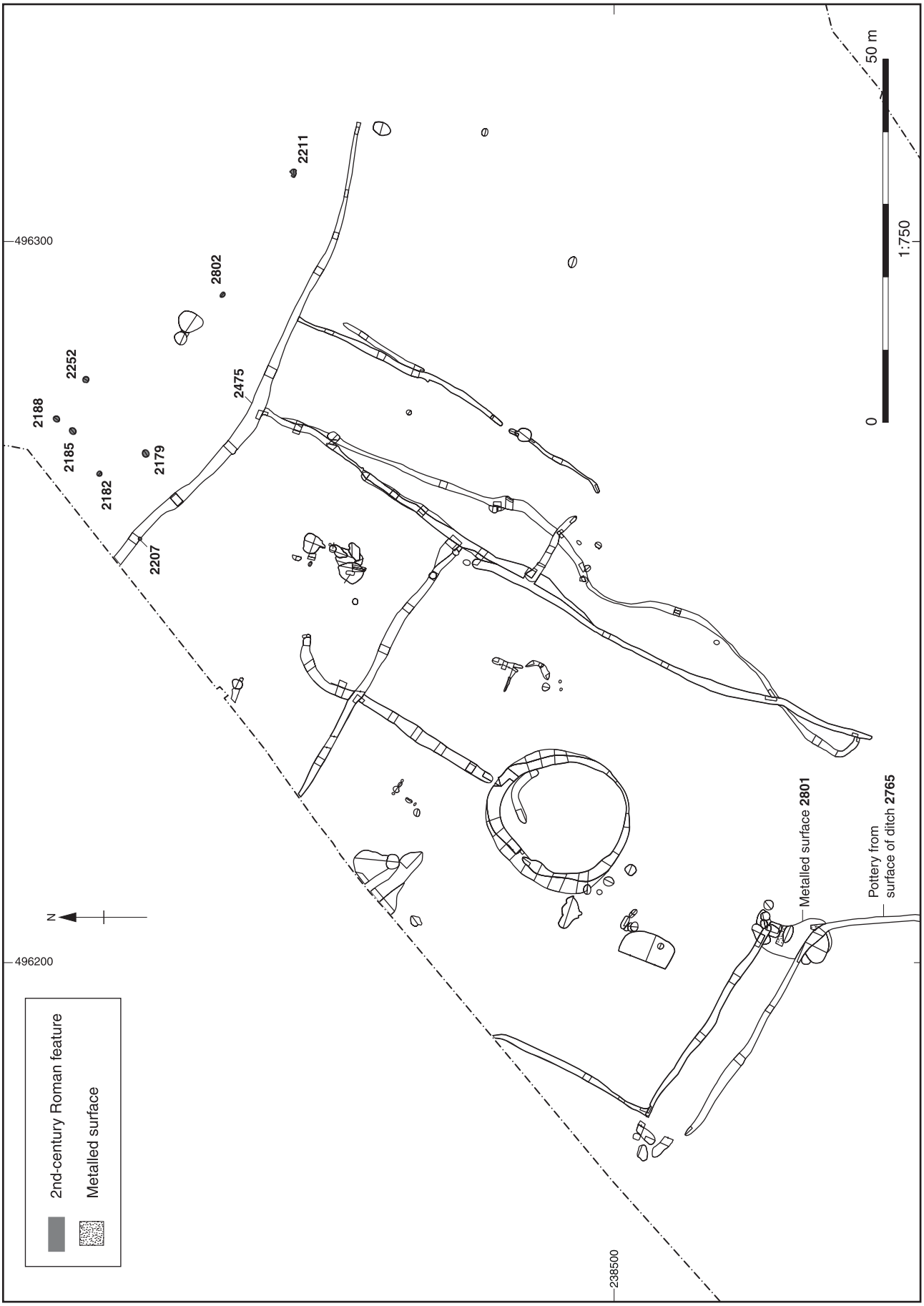


Fig. 2.18 Site 2, early 2nd-century activity in the north-eastern part of the site

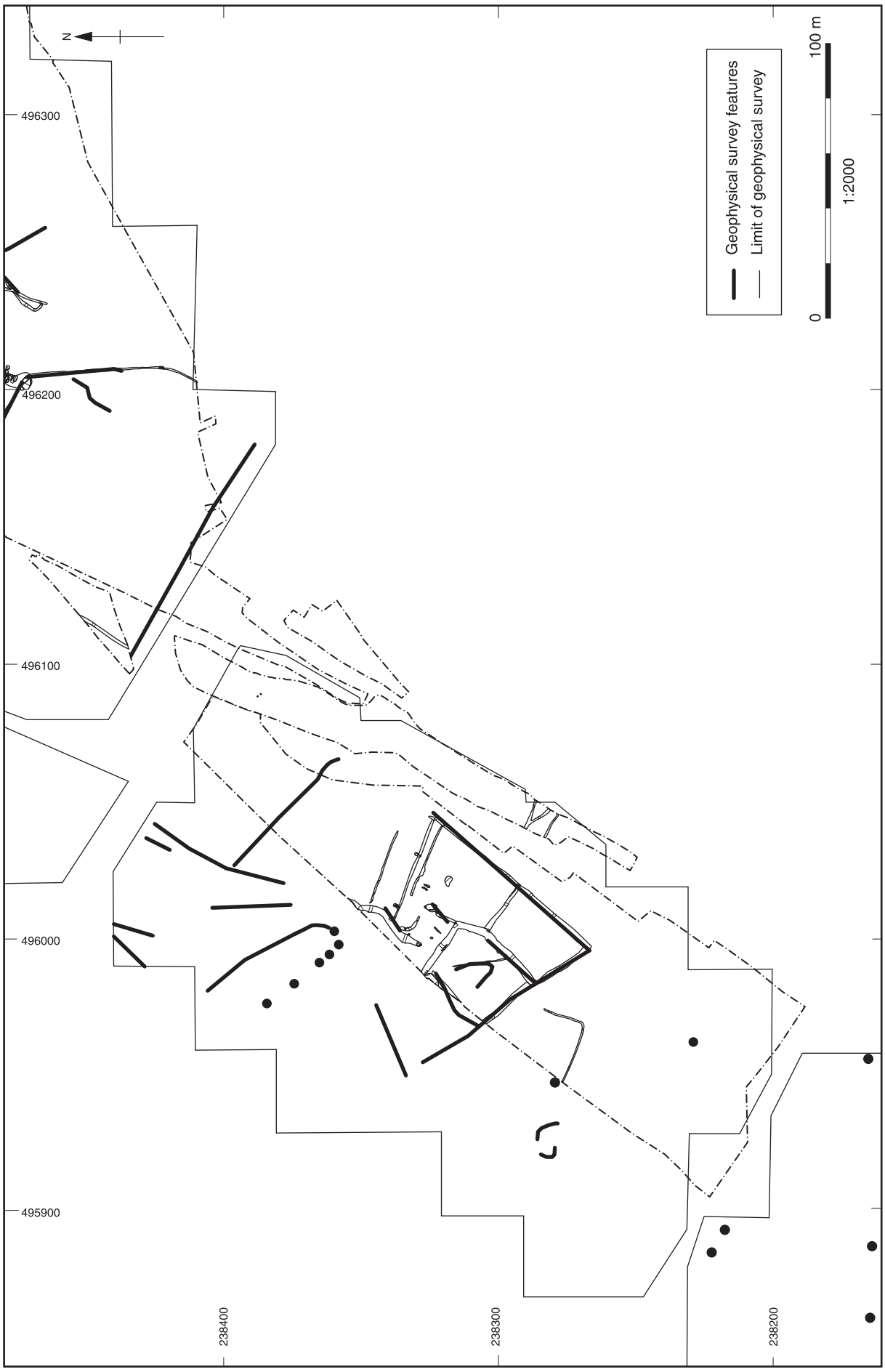


Fig. 2.19 Site 2 south-western area and results of the geophysical survey

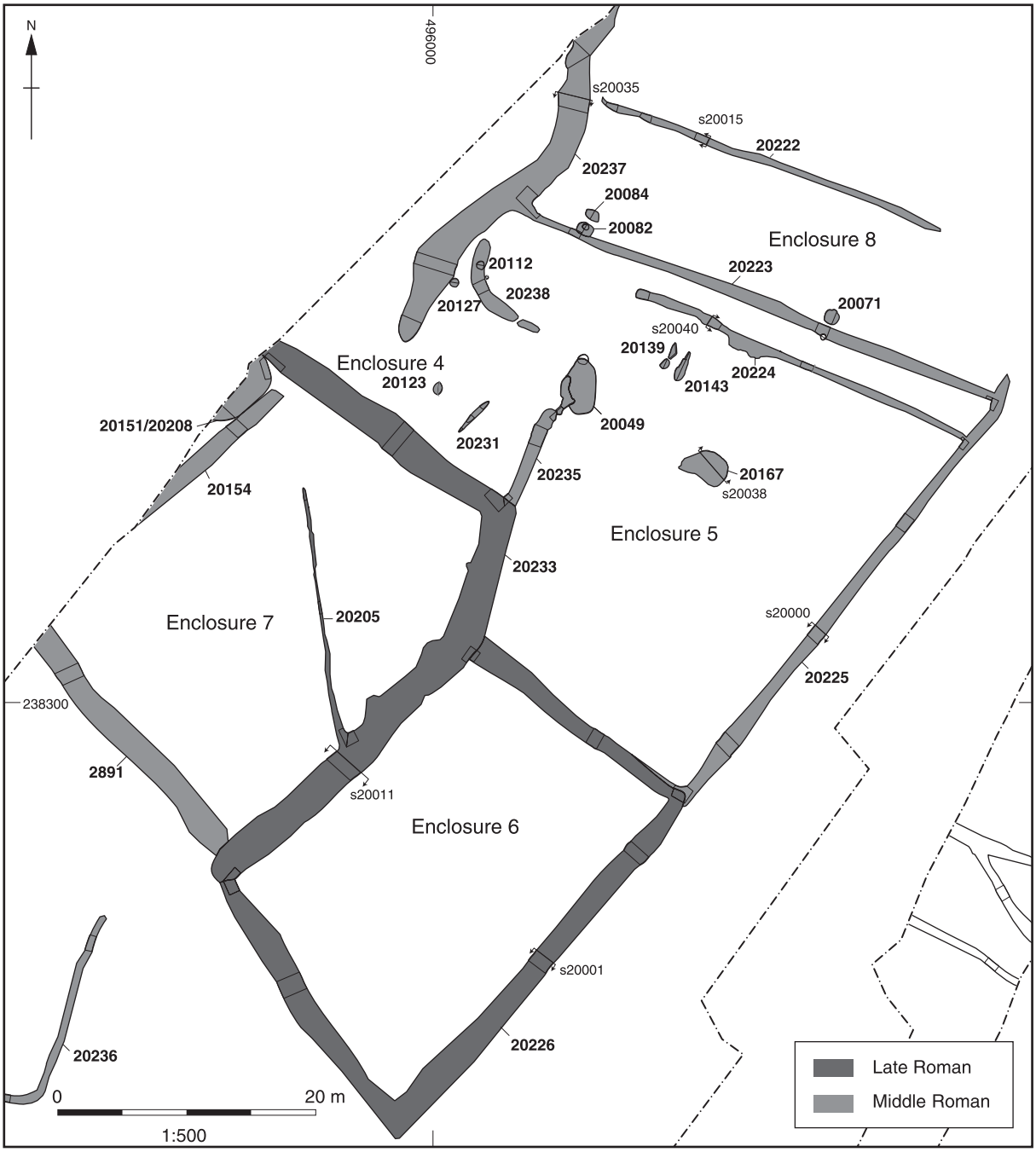


Fig. 2.20 Site 2, plan of the complex of middle and late Roman features in the south-western part of the site

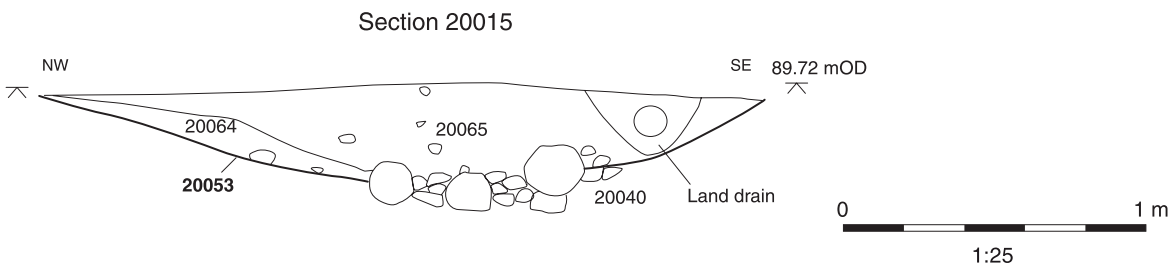


Fig. 2.21 Site 2, section through middle Roman hollow-way 20237

A curvilinear gully (20238) lay adjacent to the hollow-way and may have formed a small subsidiary enclosure. The gully was 8m in length, 0.45-1.00m wide and 0.17-0.45m deep. It was truncated by a small posthole (20112). A second, similar posthole (20127) lay a short distance to the west.

A short segment of ditch was located 8m to the south of gully 20238. This ditch (20231) extended for 4m on a NE-SW alignment and was 0.4m wide and 0.04m deep.

A very shallow pit (20123) was also situated within the enclosure. It was 0.9m in diameter and only 0.06m deep.

Enclosure 5

Enclosure 5 adjoined the eastern side of Enclosure 4, but was somewhat larger, measuring 32m by 25m. Ditch 20223, which formed the north-eastern side of Enclosure 4, continued along the corresponding side of Enclosure 5, but a second ditch (20224; Fig. 2.22, section 20040) also extended along this side of the enclosure, separated from ditch 20223 by only 1.6m. It was not certain whether the two ditches were contemporaneous, although both appeared to have been contemporary with ditch 20225, which formed the south-eastern side of the enclosure. Ditch 20225 had a flat base and measured 0.95-1.5m wide and 0.7m deep (Fig. 2.22, section 20000). It is likely that the ditch originally continued further to the south-west to enclose Enclosure 6, but this part of the feature had been completely truncated by the subsequent digging of ditch 20226 (below). Evidence did survive, however, for a return that divided this enclosure from Enclosure 5, although most of the return had also been dug away. A deposit of charred plant remains that was recovered from the fill of ditch 20224 may have been associated with the adjacent ovens (20139 and 20143, below)

Enclosure 5 may have been an area of industrial activity or agricultural processing, as it contained two ovens (20139 and 20143), a partially paved hollow (20049) and a deep pit that may have been used as a waterhole (20167) (Fig. 2.23). It is not certain whether these features were used in conjunction with each other, but they were certainly situated close together in the north-western part of the enclosure, and the pottery from hollow 20049 and pit 20167 is of similar date. No pottery was recovered from the ovens.

Ovens 20139 and 20143

Ovens 20139 and 20143 were located side-by-side a short distance from ditch 20224, which formed the north-eastern side of Enclosure 5. Both had clearly been truncated by medieval and modern ploughing, but oven 20143 was slightly better preserved than its companion. No ceramic finds were recovered from either feature.

Oven 20143 (Figs 2.23-25) comprised a circular bowl, from which a linear flue projected to the north-east. The bowl measured 1.0m by 0.75m across and 0.22m deep. The clay substrate beneath the bowl was heat-discoloured, but this was not the case in the flue. The lowest fill within the chamber (20148) was a dark grey-black clay, flecked with heat-discoloured red and orange clay. This was overlain by a layer of burnt limestone slabs (20145) above which lay a second layer of black clay (20168) that contained a rich assemblage of burnt cereal chaff and weed seeds. The flue extended for 1.5m and was 0.5m wide and 0.06m deep, tapering somewhat toward the north-eastern end. It was filled by a single deposit of dark grey clay (20170), which contained a partial domestic fowl skeleton. At the junction of the bowl and the flue, layers 20170 and 20168 were partially overlain by an irregular deposit of redeposited clay (20169) that may have been used to backfill and seal the feature when it ceased to be used.

Oven 20139 (Figs 2.23-25) had a similar subcircular bowl with a flue on the north-eastern side, although in this instance the two elements had become separated by truncation of the intervening part of the feature. The bowl measured 0.8m by 0.55m across and 0.18m deep, and contained a sequence of fills that indicated that it had been used on at least two distinct occasions. The surrounding natural clay had been baked hard and was a red colour. The earliest fill of the bowl was a layer of black soil (20136), which contained comminuted charcoal from the firing of the oven. This was overlain by a layer of redeposited clay (20135), above which were two further layers of black clay (20133 and 20134). The flue was 1.3m long and 0.12m deep and was filled by a deposit of grey soil (20138).

Partially paved hollow 20049

Hollow 20049 (Figs 2.23 and 2.26-27) was situated just inside the entrance into Enclosure 5 from Enclosure 4. The hollow was oval in plan, although the northern end tapered somewhat, and measured 4m by 2.7m across with a maximum depth of 0.2m. A possible posthole (20131) was located at the northern tip of the hollow, but it was not possible to be certain whether this was an integral part of the main hollow or a separate feature. The posthole was extremely shallow, measuring only 0.1m deep, and no other evidence was found for any form of superstructure associated with the hollow. A thin layer of mixed clay (20174) 0.05m thick extended across the base of the hollow and may have been churned up from the base of the feature during its construction or use. In the northern part of the feature this layer was overlain by a localised deposit of black clay soil (20173) that contained a few small sherds of pottery dating from the late 2nd-early 3rd century. Above this the feature had been partially paved. A single large, flat slab of limestone that measured 1.4m by 1.1m across and 0.14m thick covered much of layer 20173, and the northern end of the hollow and the area immediately south of the large slab were paved with a mixture of smaller limestone slabs and sandstone

cobbles. This stone surface was sealed by a thin accumulation of clay (20051) that contained a rich assemblage of charred cereal processing waste (Hunter, below). A similar assemblage of plant remains was also present in the main backfill of the hollow, a single deposit of dark soil (20050) that overlay this layer. The western side of the hollow was disturbed by a shallow, vaguely linear hollow (20178), but this may represent later damage rather than an element of the hollow.

Pit/waterhole 20167

Pit 20167 (Figs 2.23 and 2.28) measured 2.9m by 2.4m across and had a depth of 1.1m. It is possible that the pit was deep enough to have served as a waterhole, although it did not contain the kinds of lower silts that typically characterise such features. Three fills were recorded, all of which appeared to derive from deliberate backfilling and included domestic refuse. The lowest fill (20166) was a yellow clay which contained patches of burnt clay and sand. This was overlain by a series of tips of sands and clays (20165) that was particularly rich in domestic debris, including a significant quantity of burnt crop processing waste. This deposit contained 1kg of animal bone and almost 50 sherds of pottery. Identified forms included a flask, a plain-rimmed dish and a wide-mouthed jar in

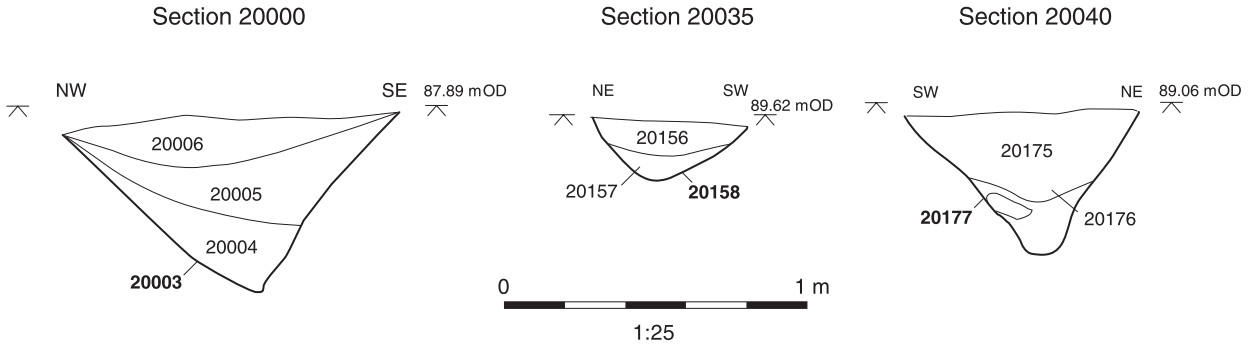


Fig. 2.22 Site 2, sections through middle Roman enclosure ditches

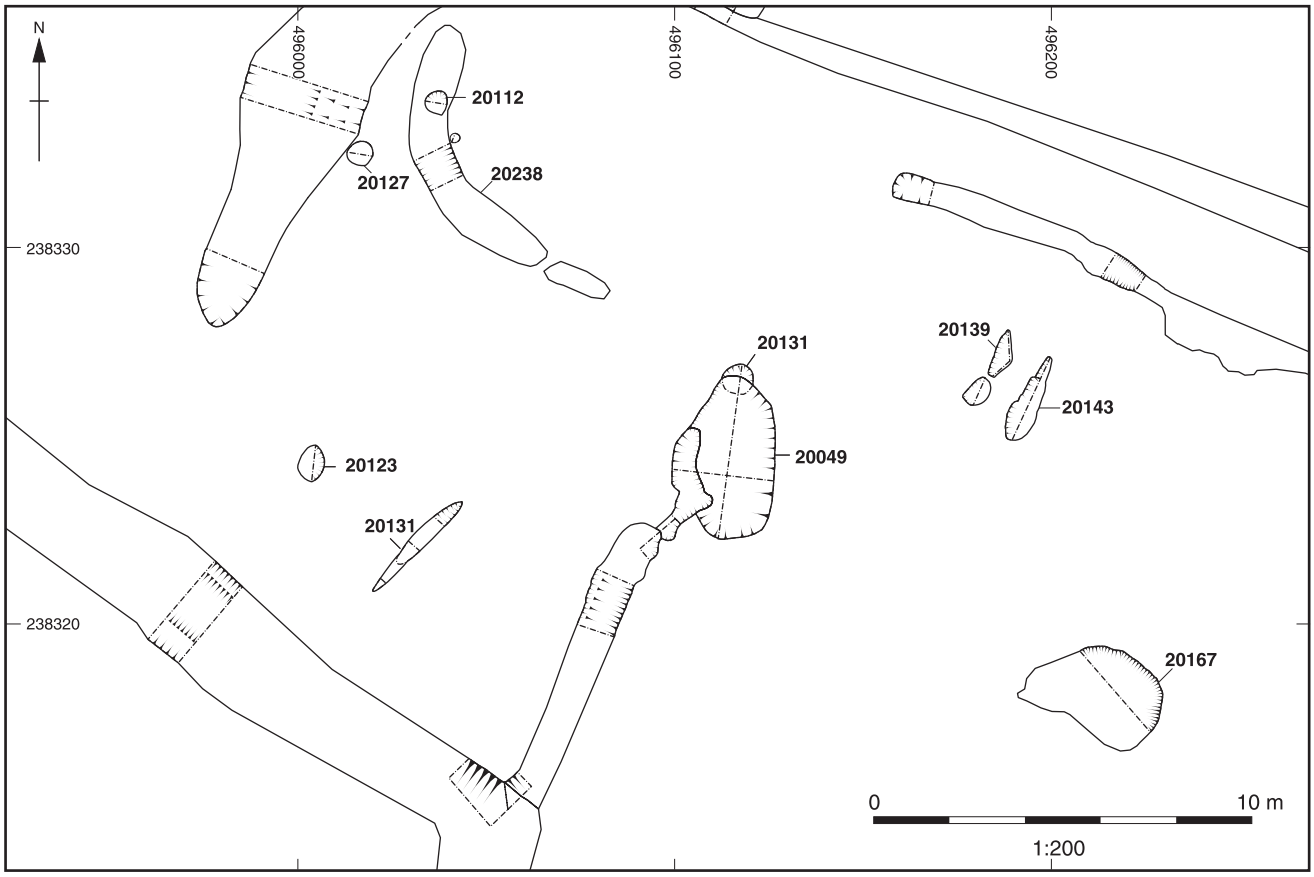


Fig. 2.23 Site 2, detailed plan of features within Enclosures 4 and 5

sandy grey ware, a shelly-ware storage jar, an indented beaker in Nene Valley colour-coated ware, and a dish in East Gaulish samian ware. The group as a whole dates to the late 2nd or early 3rd century AD. The upper fill was a layer of greenish clay (20164) which contained very few finds.

Enclosure 6

Enclosure 6 occupied the southern corner of the complex. The ditches that defined this enclosure were entirely redug during the mid-3rd or 4th century, leaving no evidence for the form of its

Fig. 2.24 Site 2, middle Roman corn driers 20139 (foreground) and 20143

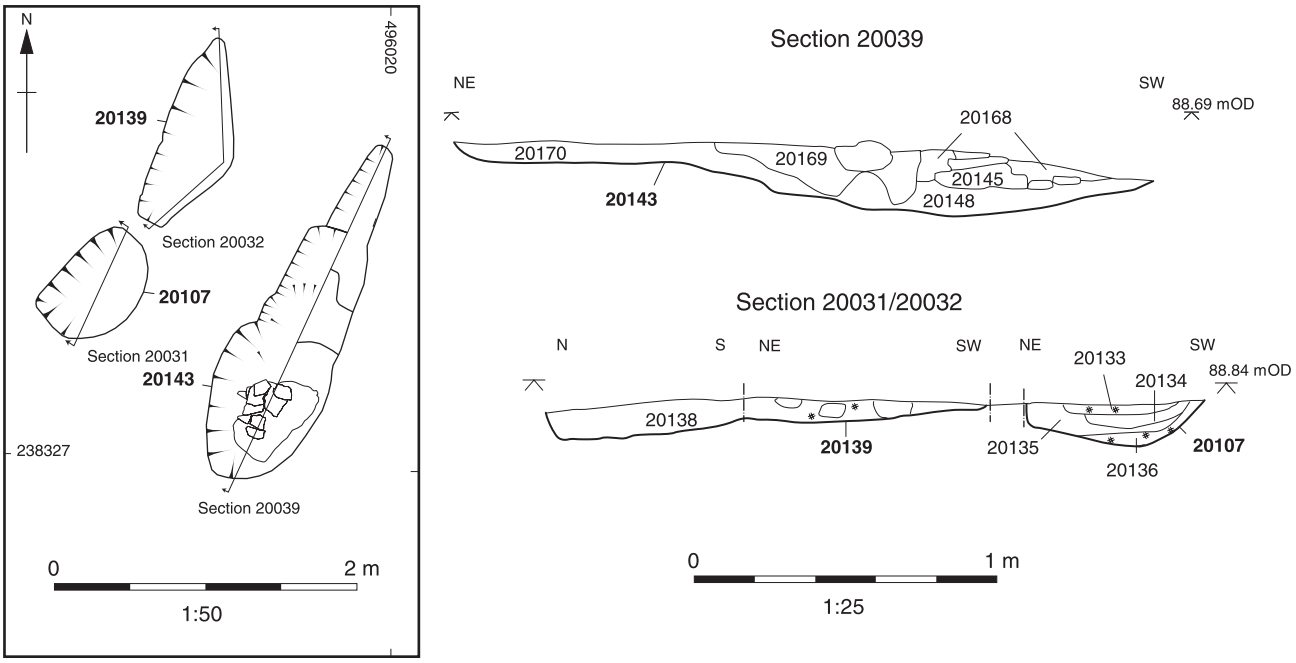


Fig. 2.25 Site 2, plan and sections of middle Roman corn driers 20139 and 20143

original boundaries. Assuming that the later ditches preserved the alignments of the original feature, however, the enclosure measured 28m by 20m. No features were identified within it.

Enclosure 7

As with the ditch that defined Enclosure 6, evidence for the ditches that originally bounded the north-eastern and south-eastern sides of Enclosure 7 had been destroyed when the boundaries were re-cut during the mid-3rd or 4th century, as ditch 20233 (below). It was uncertain whether ditch 2891, which defined the south-western side, was the original ditch or a re-cut. The latter ditch measured 1.8m wide and 0.7m deep, but no artefactual evidence was recovered from the intervention that was dug through it. The north-western side of the enclosure was defined by ditch 20154, which produced pottery dating from AD 150-240 and so may be attributed to the original phase of the complex. A total length of 14m at the eastern end of the ditch was exposed within the excavation area. The ditch was 1.3m wide and 0.45m deep with a concave profile. At the north-eastern end it terminated 1.3m from ditch 20233, perhaps to provide access between Enclosure 7 and the area to the north-west, beyond the edge of the site. In total, Enclosure 7 measured 30m by 22m.

The only feature that was identified within Enclosure 7 was a ditch (20205) that extended obliquely across the enclosure on a north-south alignment. The ditch extended for 20m and measured 0.25-0.65m wide and 0.1m deep. No artefactual material was recovered, and although it intersected with the south-eastern part of enclosure ditch 20233, the fills of the two features appeared identical and so no stratigraphic relationship could be established. Nevertheless, the anomalous alignment of this ditch raises doubts concerning whether it formed part of the enclosure complex.

Possible enclosure north-west of Enclosure 7

Ditch 20233 continued beyond ditch 20154, suggesting that a further enclosure was situated in this area. Part of a large circular pit (20151/20208) was situated on the north-western side of ditch 20154. It could only be partly excavated as much of the feature lay beyond the edge of the excavation, but it measured at least 1.5m in diameter and 0.6m deep and produced a single sherd of grey ware that dated from the late 2nd or early 3rd century.

Enclosure 8

A probable fifth enclosure (Enclosure 8) was situated at the north-eastern edge of the complex,

Fig. 2.26 Site 2, partially paved hollow 20049

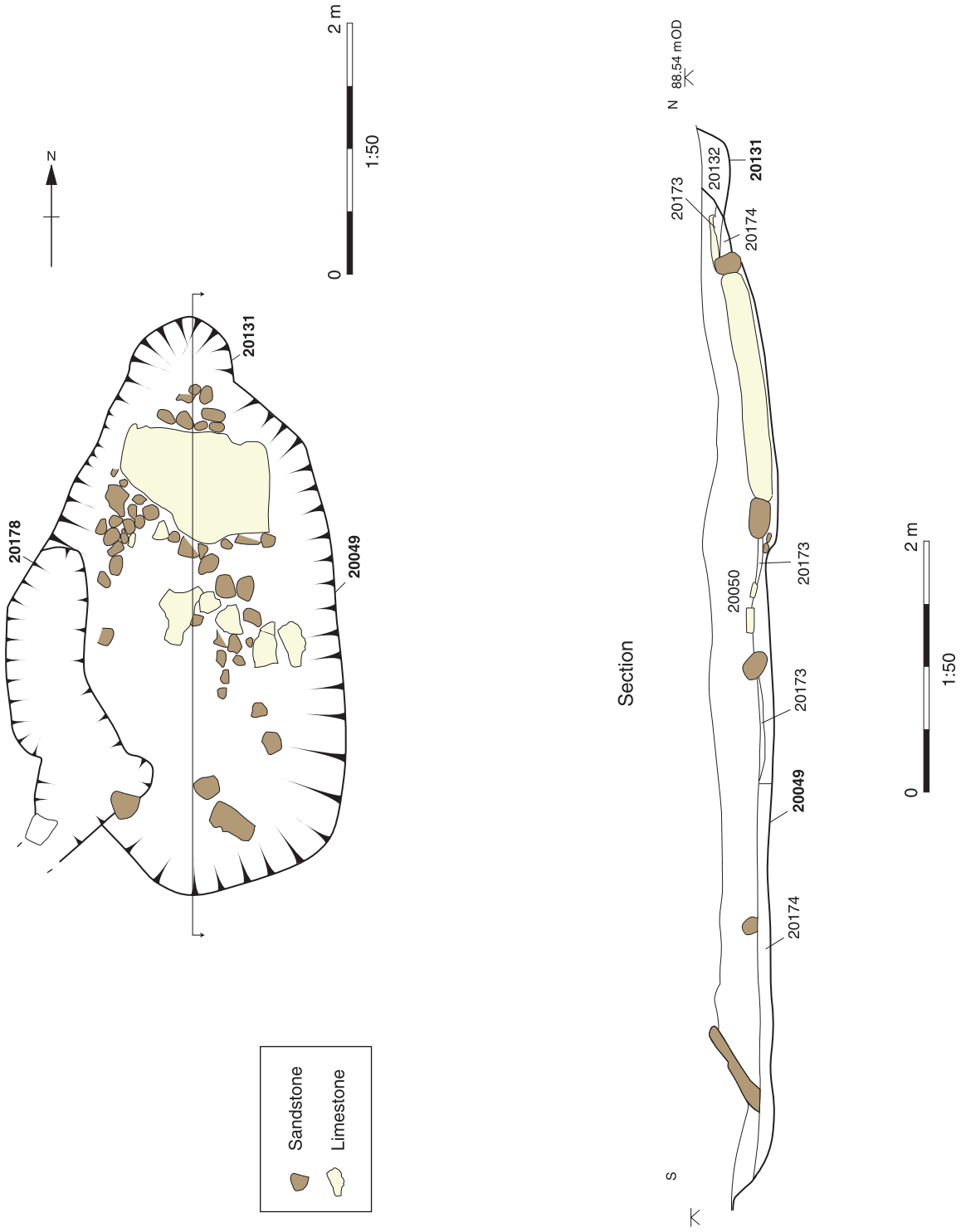


Fig. 2.27 Site 2, plan and section of hollow 20049

abutting Enclosures 4 and 5. This was a long, rectangular enclosure that was enclosed on its north-eastern side by ditch 20222, a relatively insubstantial feature that measured 0.6m wide and 0.2m deep (Fig. 2.22, section 20035). At its south-eastern end the ditch petered out, but the enclosure may have measured as much as 40m long and 10m wide.

Features within Enclosure 8

Five small pits were situated beside ditch 20223, which formed the south-western edge of Enclosure 8.

Pit 20071 was a discrete feature with a diameter of 0.9m and a depth of 0.5m. It contained pottery with a date range of AD 150-300.

A group of four intercutting pits (20080, 20082, 20084, 2086) was situated near the north-western end of the enclosure. Pit 20082 cut enclosure ditch 20223. The pit measured 1.25m by 0.9m and had a depth of only 0.15m. This shallow pit was cut by a second pit (20080) that also truncated a subrectangular pit (20086). Pit 20086 was also cut by a final pit (20084) None of these pits contained any datable material.

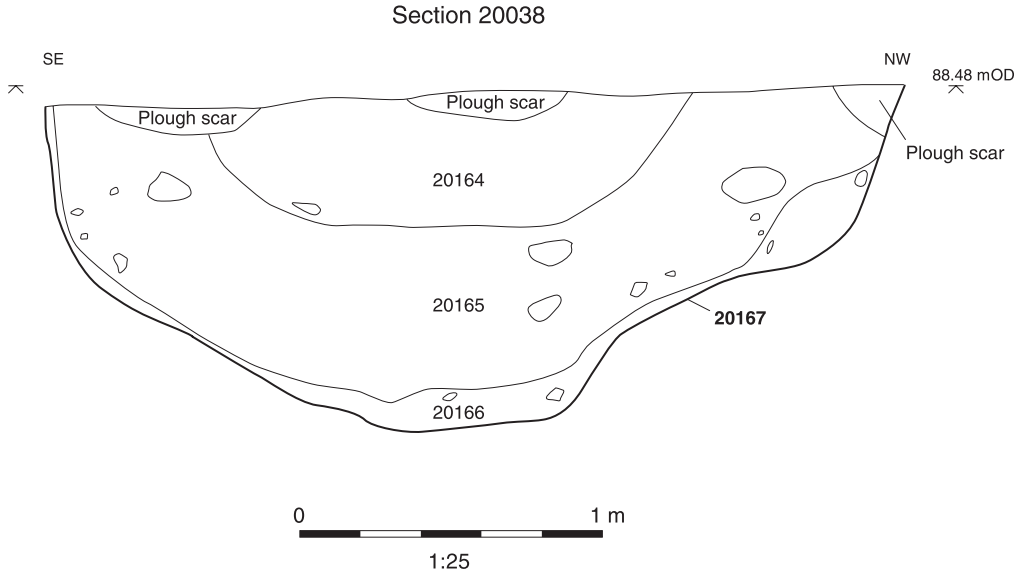


Fig. 2.28 Site 2, section through middle Roman pit/waterhole 20167

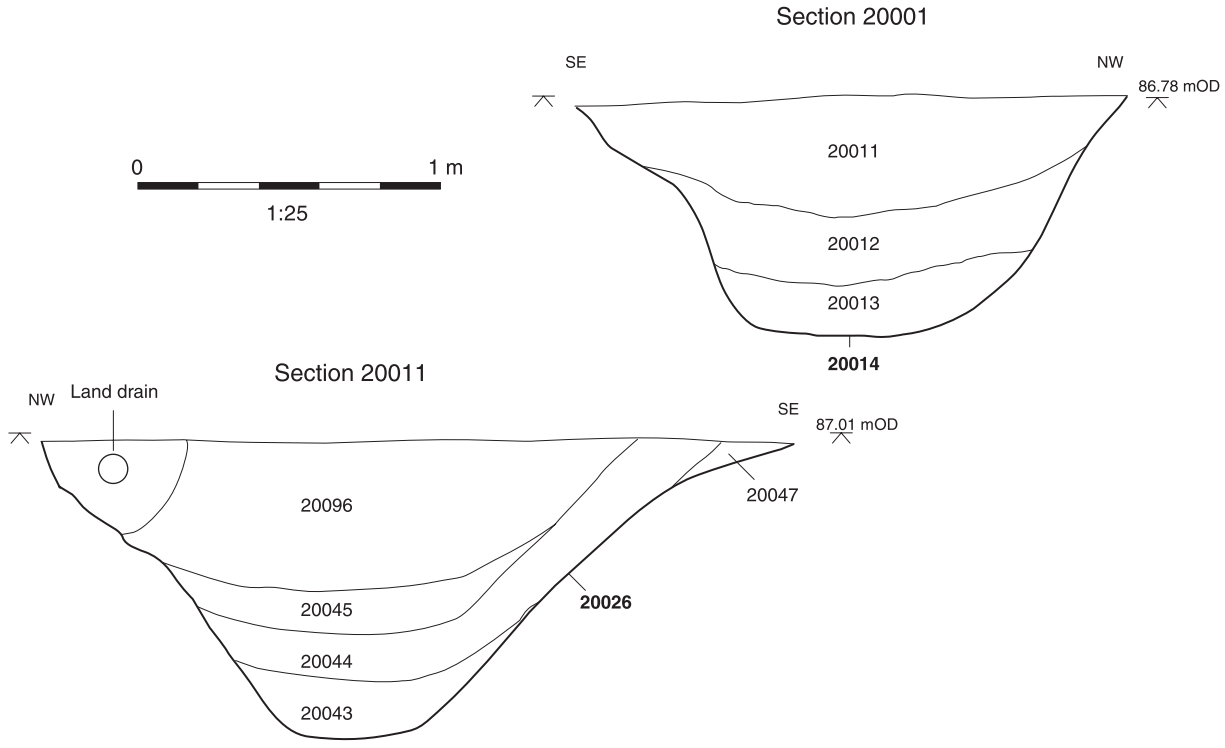


Fig. 2.29 Site 2, sections through late Roman enclosure ditches 20226 and 20233

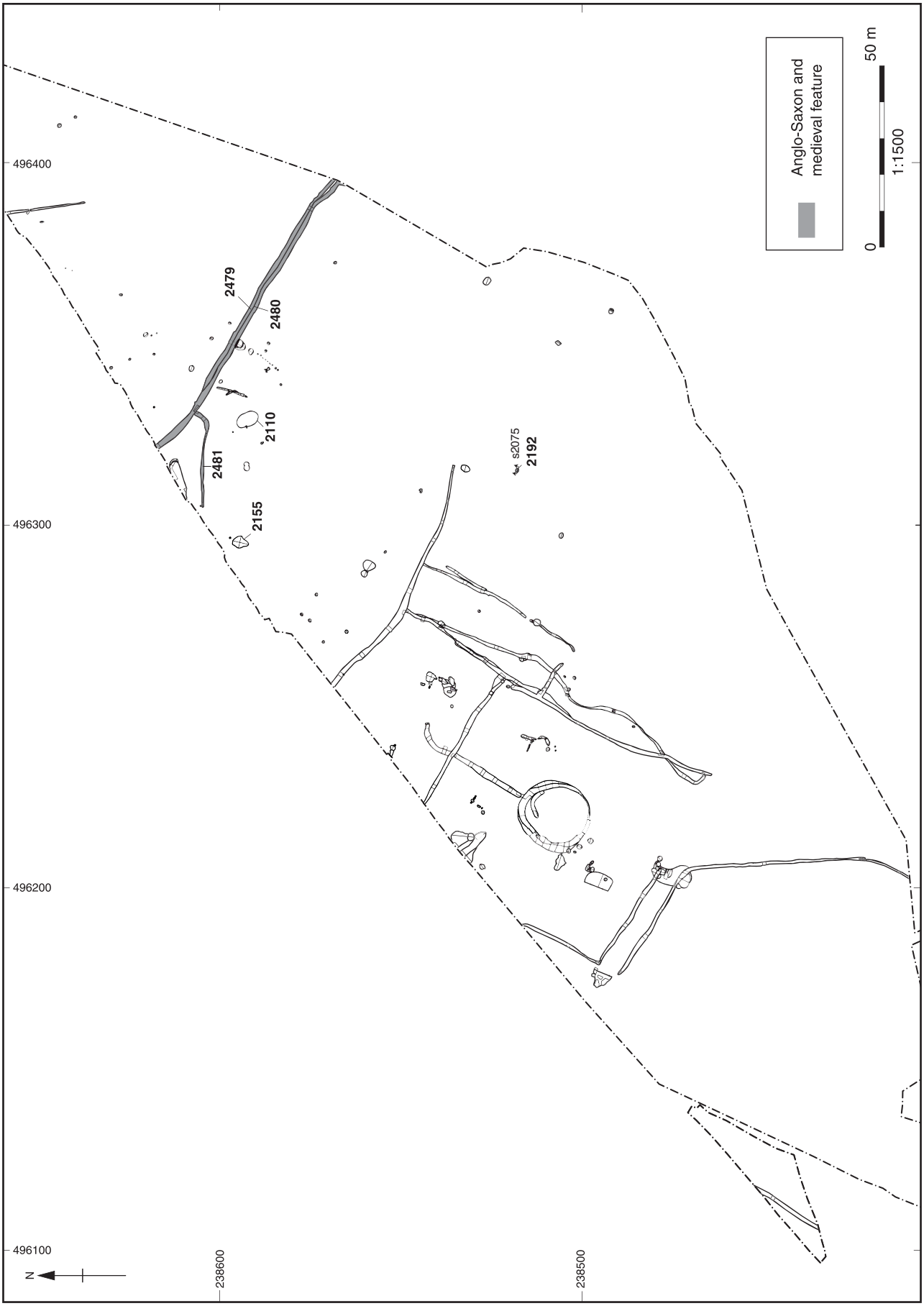


Fig. 2.30 Site 2, plan of Anglo-Saxon, medieval and undated features

Ditch 20236

An L-shaped ditch (20236) was situated outside the south-western limit of the main complex. It lay on a different alignment from the other boundaries and produced no dating evidence, but if it was contemporary with the rest of the complex it would have formed part of an enclosure against the south-western side of Enclosure 7. The enclosure would have been rather irregular in plan due to the divergent orientation of this ditch, perhaps forming a roughly trapezoid shape, and measured 30m NE-SW, making it comparable in size to Enclosures 5 and 7, the larger enclosures of the main complex. The enclosure ditch was relatively insubstantial, measuring 0.6m wide and 0.01-0.24m deep. The ditch only enclosed part of the south-eastern side of the putative enclosure, the eastern side of which was open for a distance of 9.5m. It is uncertain whether this represented an original entrance or was the result of truncation of this part of the ditch.

Late Roman re-cutting of Enclosures 6 and 7 (mid 3rd-4th century)

Some time after AD 250 the ditch that defined Enclosure 6 was recut (Figs 2.20 and 2.29, section 20001). The ditch (20226) exhibited a similar profile throughout, with steep sides and a fairly flat base. It measured 1.3-1.8m wide and was 0.6-0.8m deep. The ditch had three episodes of infilling, generally derived from natural silting although a small amount of pottery and animal bone was incorporated within the upper fill.

It is uncertain whether the ditches that defined Enclosure 7 were recut at the same time as those of Enclosure 6, but ditch 20233, an L-shaped ditch that formed the north-eastern and south-eastern sides of Enclosure 7, was certainly recut subsequently, on a substantial scale (Figs 2.20 and 2.29, section 20011). This was the largest ditch on the site, measuring 2.6m wide and 0.7-1.0m deep, and had a U-shaped profile. Fragments of smithing hearth bottom were recovered from the upper fill on the north-eastern side of the enclosure.

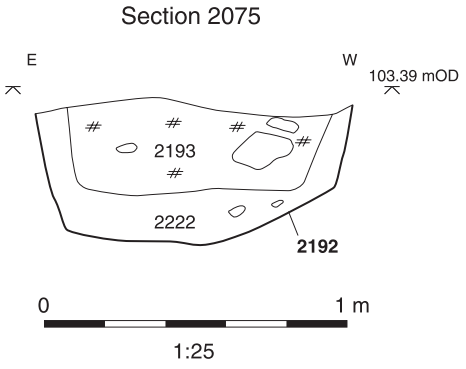


Fig. 2.31 Site 2, section through Anglo-Saxon pit 2192

Anglo Saxon period (10th-11th century)

Anglo-Saxon activity was represented only by a single pit (2192), which contained an iron prick-spur (SF 2001) dating from the 10th-11th century. The pit measured 1.05 by 0.85m across and had a depth of 0.4m, with near vertical sides and a concave base (Figs 2.30-31). The lower fill (2222) was 0.18m thick and was similar to the underlying natural. The upper half of the pit was filled by a layer of dark brown soil (2193), from which the spur was recovered. No other artefacts were recovered from the pit.

Medieval boundary ditches (13th-14th century)

A medieval field boundary defined by two phases of ditch (2479 and 2480) extended across the north-eastern part of the site on a NW-SE alignment (Fig. 2.30). The initial phase of the boundary was represented by ditch 2479, which was 0.8-1.1m wide and 0.35-0.4m deep. The ditch had a concave profile and a single fill from which no finds were recovered. Ditch 2479 was cut on its south-western side by the later phase, ditch 2480. Ditch 2480 measured up to 1.5m wide and 0.4m deep. Five small sherds of medieval pottery dating from the 13th-14th century were recovered from it, although residual pottery of early Roman date was also present.

Ditch 2481 branched off ditch 2480 near the north-eastern edge of the site and followed a dog-legged alignment towards the east, perhaps forming part of an enclosure abutting the boundary formed by the latter feature. It was 25m in length, 0.4-1.1m wide and up to 0.4m deep, becoming narrower and shallower to the west where it terminated.

Undated features

Two shallow oval hollows were recorded in the north-eastern part of the site. Neither contained any artefactual material and it was uncertain whether they were archaeological in origin.

Hollow 2110 was situated within an irregularly shaped shallow spread of mid greyish-brown silty clay (2203) that measured 11m by 9m across and had a maximum depth of 0.08m. The hollow measured 6.3m by 3.8m across and was only 0.3m deep. It had a flat base. It contained three fills, the middle of which (2112) was a thin layer of gravel that may have been deliberately laid down as a gravel surface, although it could alternatively be explained as a naturally occurring stone-line.

Hollow 2155 lay near the north-western edge of the excavation area and was somewhat smaller, measuring 4.6m x 3.5m and only 0.1m deep.

SITE 3

Site location

Site 3 was located in a former arable field north-west of Vale Farm (NGR SP 979 406; Fig. 2.32). It lay

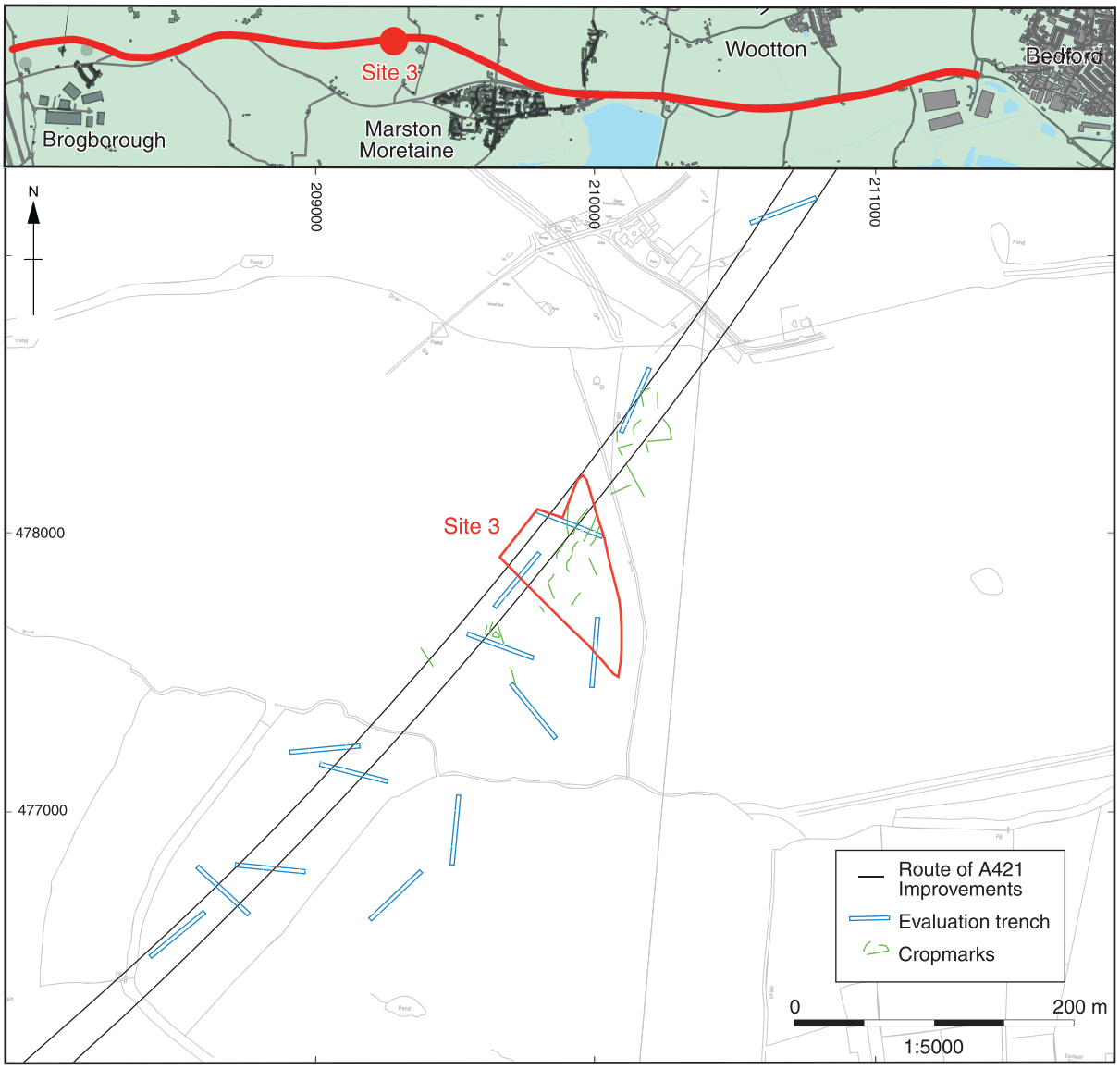


Fig. 2.32 The location of Site 3. (© Crown copyright. All rights reserved. Licence no. 100005569)

on flat ground at *c* 45m OD, overlooked from the north-west by the ridge that formed the edge of Marston Vale. The excavated area encompassed the south-western part of an extensive complex of features that was identified by the geophysical survey and which extended to the north-east into the adjacent field (Fig. 2.33). Evaluation Trench 48 was targeted on these features, and recorded a cremation burial, ditches and discrete features, all of late Iron Age or early Roman date. An approximately triangular area encompassing a total of 6020m^2 was excavated.

Late Iron Age enclosure complex

The excavation exposed the south-western edge of a complex of field or enclosure boundaries defined by ditches cut into the natural clay (Figs 2.34-35). The results of the geophysical survey indicated that the complex extends to the north-east for at least 100m beyond the area of the excavation. The excavation defined the western and southern limits of the complex, which were bounded by a single, somewhat circuitous outer ditch enclosing an area that was subdivided into three enclosures by further, subsidiary boundary ditches. The part of the complex that was exposed within the excavation measured *c* 65m by 50m.

The outer boundary ditch

The limits of the enclosure complex were defined by a single continuous ditch. Parts of the ditch had been recut, but this appeared to have been undertaken on a rather piecemeal basis and none of the recuts extended along the entire length of the boundary. The earliest surviving part of the boundary was a section of ditch on the western side of the enclosure complex (3352; Fig. 2.36). The

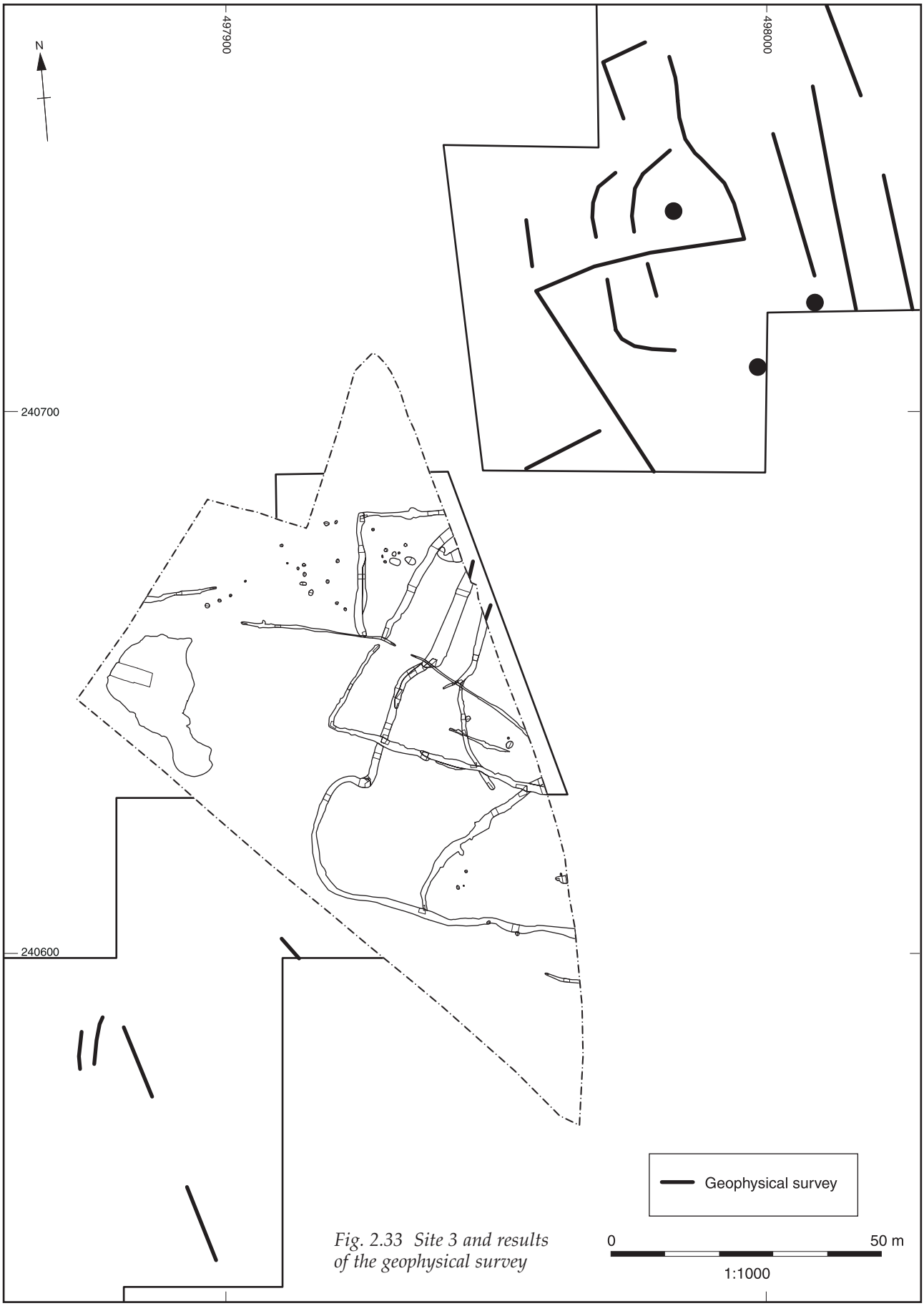


Fig. 2.33 Site 3 and results of the geophysical survey

Fig. 2.34 General view of Site 3 from the south-west

ditch had clearly originally been more extensive, and may have extended for the entire length of the boundary, but it had been truncated to both north and south by the digging of subsequent phases and a total length of only 24m survived. It was quite a substantial feature measuring 1.4m wide and up to 0.74m deep, and had a distinctly V-shaped profile (Fig. 2.37, section 3055; Fig. 2.38). It was oriented approximately NNE-SSW and curved toward the east at the northern end, with a hint of a curve toward the west at the southern end. Its fills comprised a sequence of clay deposits the grey colouration and green dendritic mottling of which were characteristic of formation in anaerobic, waterlogged conditions, although no preserved plant remains were observed. It produced an assemblage of nearly 600g of pottery, most of which comprised 'Belgic'-type wares the date range of which spans the 1st century AD, but which also included sherds from a slack- or S-profiled jar the form of which is reminiscent of middle Iron Age types and suggests a date early in the same century.

The northern part of ditch 3352 was recut as a shallower ditch (3351) with a more open profile (Fig. 2.37, section 3040). This recut extended for *c* 10m and followed the curving alignment of this part of ditch 3352 quite precisely. At its southern end it appeared to simply terminate, and to the north it was truncated by a more substantial, later phase of the boundary, represented by ditch 3350, which also truncated the northern end of ditch 3352 at this point. Ditch 3351 contained a single fill, within which had been deposited an almost complete, though fragmented, pedestal jar, with the pedestal broken off and missing (3126, SF 3008), and body and base sherds from a large jar with a perforated base (3127, SF 3009; Figs 2.39-40). It is possible that these vessels derived from a disturbed cremation burial; pedestal jars like vessel 3126 were commonly placed as ancillary vessels and vessel 3127 would have been a suitable size for use as an urn. A very small quantity of burnt human bone, amounting to less than 0.2g, as well as 6g of burnt animal bone, was recovered from a soil sample (3011) taken from the fill of vessel 3127.

Ditch 3350 represented the recutting of the northern part of the boundary to a quite substantial depth, similar to the depth of ditch 3352 (Fig. 2.37, section 3019). The new ditch was, however, considerably wider, measuring up to 2.55m, and had removed any evidence for the earlier phases in this part of the boundary. This was the straightest section of the boundary, and extended for *c* 19m before continuing beyond the edge of the excavation area.

The southern end of ditch 3352 was truncated by recut 3359, which described a loop to the west before extending eastward to enclose the southern side of the enclosure complex, continuing beyond the edge of the excavation area. The western part of the ditch was quite deep, measuring up to 0.5m, but was not particularly wide and had a steep, V-shaped profile (Fig. 2.37, section 3058). The ditch became progressively more shallow to the east

and was only 0.24m deep near the eastern edge of the excavation. The character of its fills differed somewhat from those of the ditches defining the other parts of the boundary in being almost sterile, It consisted of material that differed only slightly from the natural substrate and contained only a very small quantity of pottery and animal bone.

Enclosure 1

Enclosure 1 was situated within the south-western corner of the complex. Its shape was extremely irregular due to the circuitous alignment of the outer boundary ditch, which defined its western and southern sides, and of the curvilinear ditch that divided it from Enclosure 2,

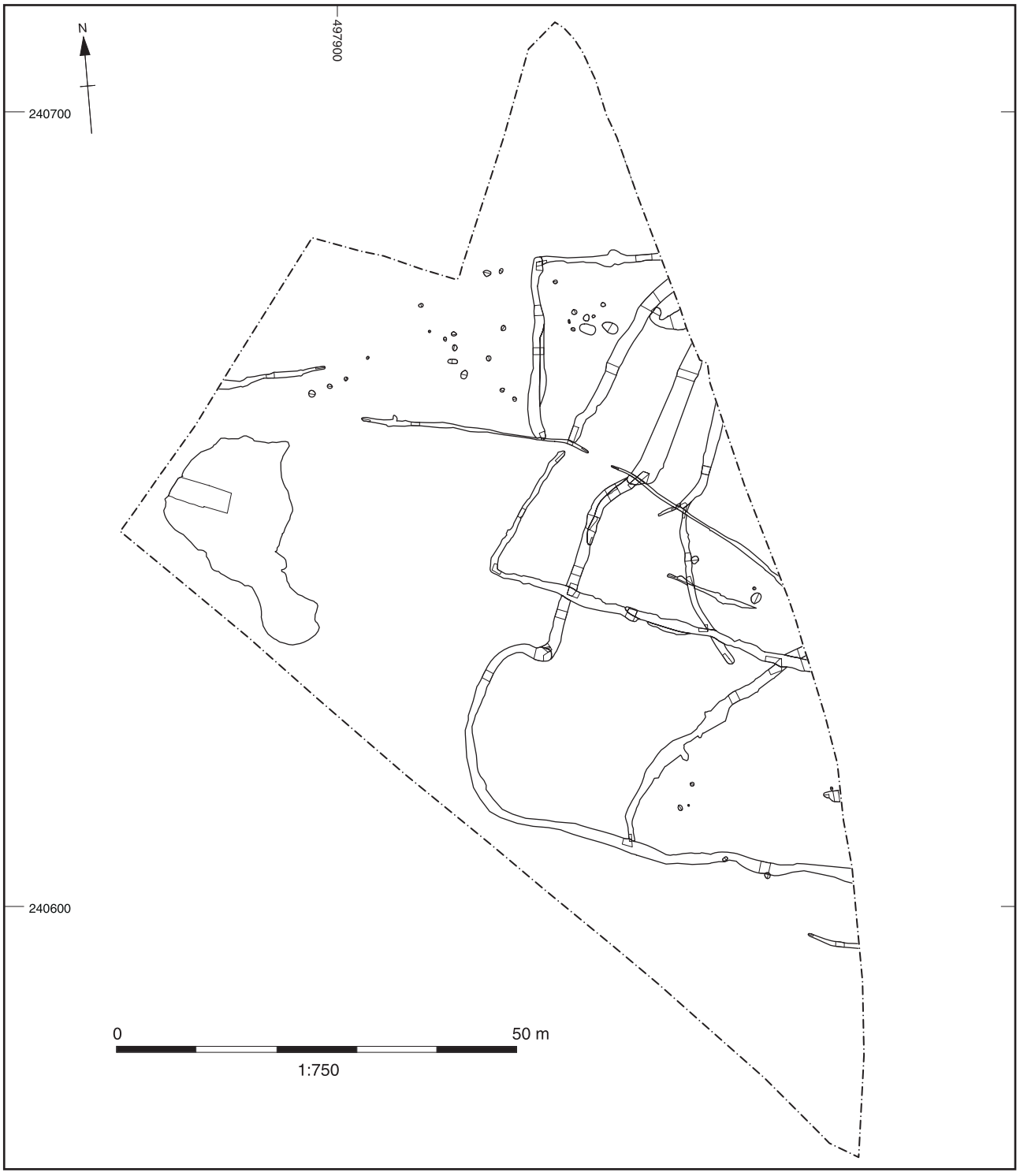


Fig. 2.35 Site 3, plan of all archaeological features

which abutted its eastern side. The boundary with Enclosure 3, which abutted its north-eastern side, may originally have been quite regular but was subsequently altered to adopt a more curvilinear form. Enclosure 1 measured *c* 43m N-S x 30m E-W, and could be accessed directly from Enclosure 3 and, after the boundary with that enclosure was altered, via a droveway that extended alongside the western boundary of the complex.

Enclosure 1 was divided from Enclosure 2 by ditch 3362, which branched off ditch 3359 roughly half way along the part of the latter feature that was exposed within the excavation area. Ditch

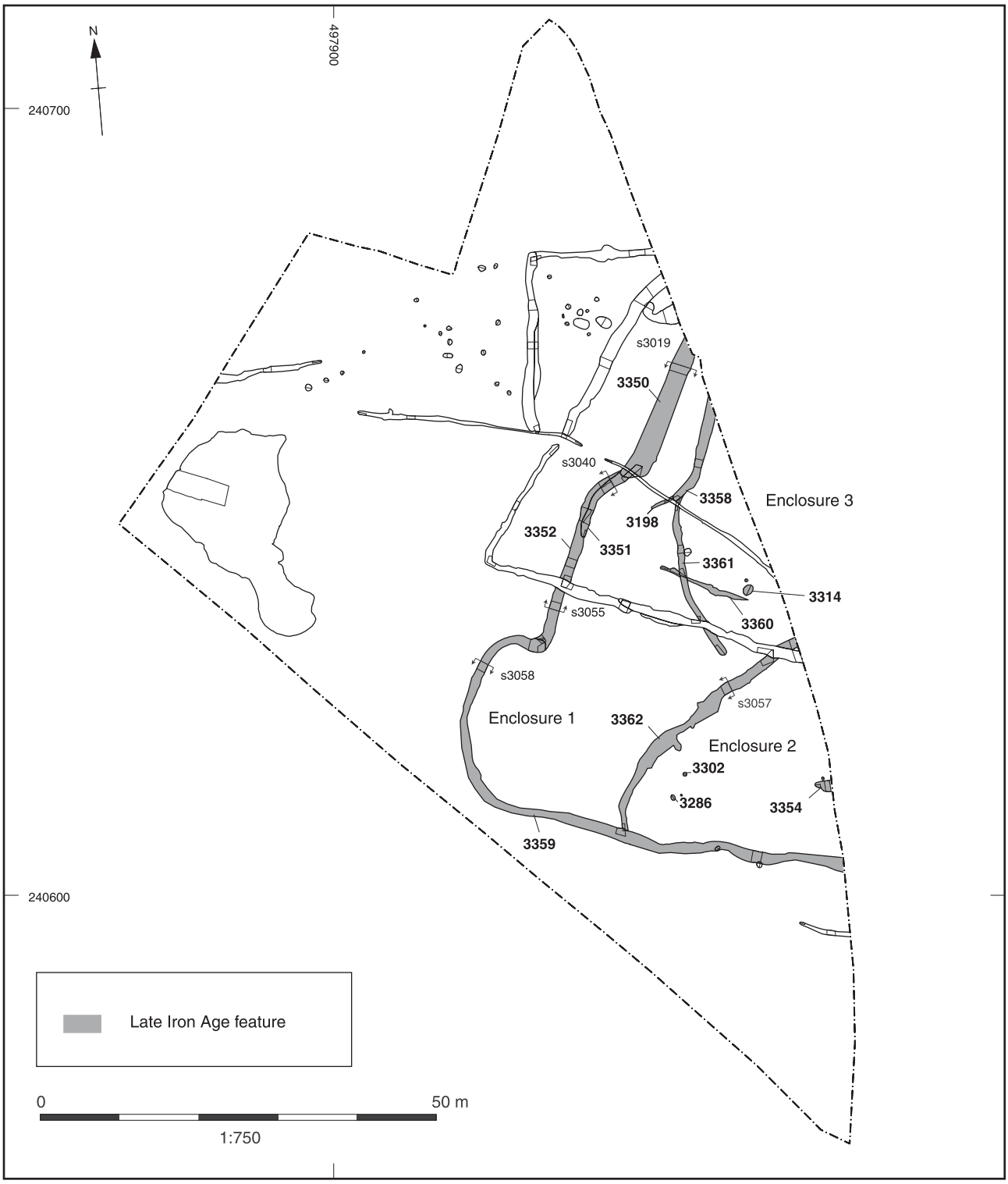


Fig. 2.36 Site 3, plan of late Iron Age features

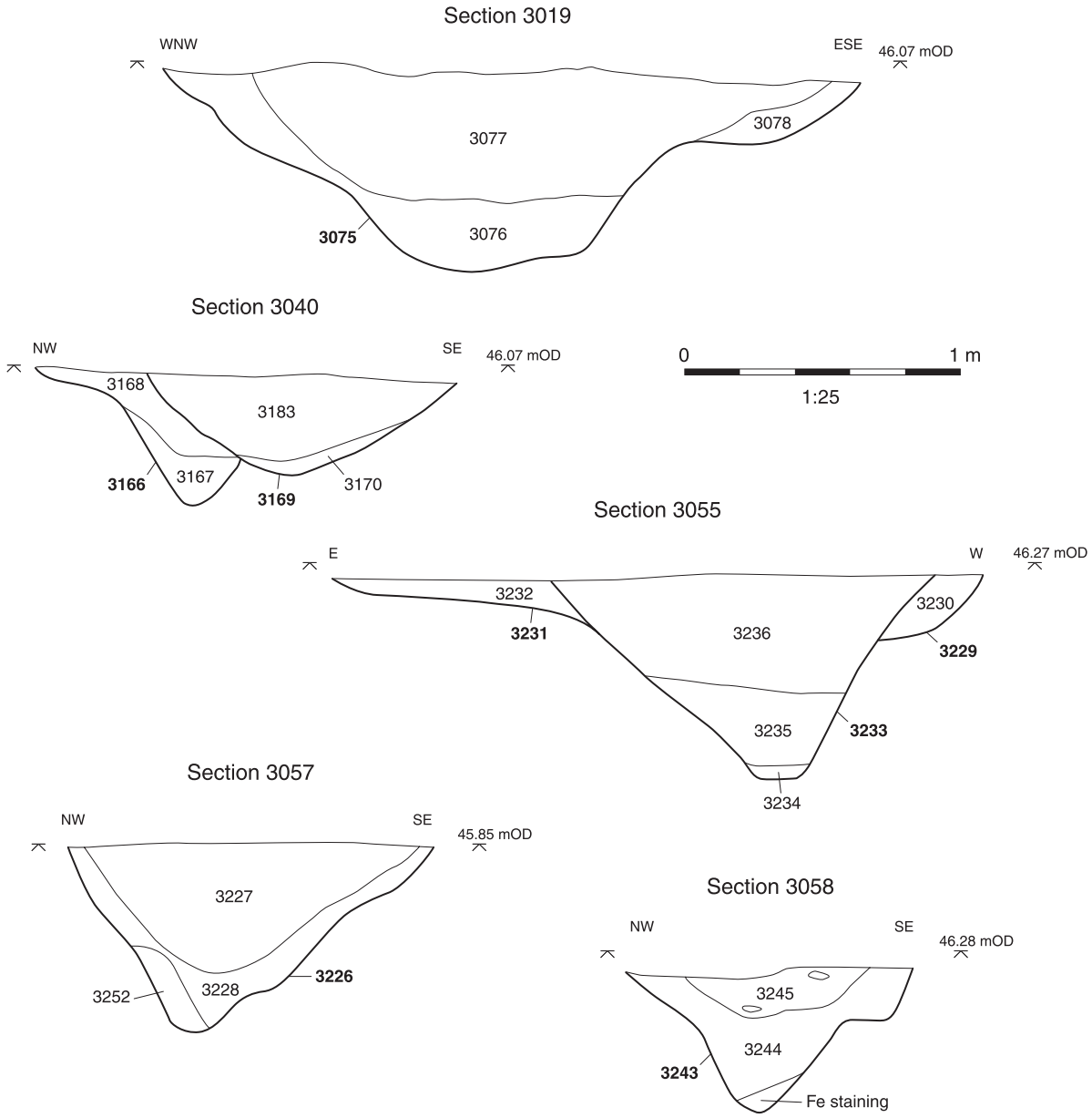


Fig. 2.37 Site 3, sections through late Iron Age boundary ditches

Fig. 2.38 Site 3, section through late Iron Age ditch 3352

3362 curved eastward, extending for *c* 32m before continuing beyond the eastern edge of the excavation. Its fills were distinctly darker and greyer than those of the majority of features on the site, and abundant charcoal fragments that derived from the burning of roundwood for fuel were recovered from its fill. The pottery assemblage recovered from the ditch was not particularly large and was generally late Iron Age in character, but included, from the uppermost fill, three sherds from a necked ovoid jar that is likely to date from the second half of the 1st century AD. A copper alloy bracelet (SF 3010) and four small fragments of ceramic tile were also recovered from this deposit, as well as a small fragment of sandstone with a single worked surface that may be a fragment from a quern.

Fig. 2.39 Site 3, excavation of possible redeposited cremation vessels 3126 and 3127 in ditch 3351

Unlike the boundary with Enclosure 2, which appeared to be of a single phase, the boundary between Enclosure 1 and Enclosure 3 had undergone alterations over time, of which three phases were identified (below). The earliest of these was represented by ditch 3360, a shallow feature no more than 0.2m deep that extended for at least 12m on a straight WNW-ESE alignment. Due to the shallow nature of the feature it was uncertain whether the western end represented an original terminal or whether the ditch simply petered out. Its eastern end was truncated by a medieval plough furrow. The almost complete skeleton of a horse (3188) lay on the base of the ditch near the western end. The head and pelvis were missing, but this may have been due to truncation, as the ditch was very shallow. In order to fit the animal into so small a feature it had been partially dismembered and bent back on itself, with the rear legs lying alongside the torso (Fig. 2.41). A small quantity of other cattle, sheep/goat and pig bones were also recovered from the ditch fill, but these may have been incidental inclusions.

Enclosure 2

Enclosure 2 was not completely exposed within the excavation area, its eastern extent lying beyond the limits of the investigation. It was located against the southern boundary of the enclosure complex and was bounded to the west by Enclosure 1 and to the north-west by Enclosure 3, the boundary with both these enclosures being defined by the curvilinear ditch 3362. The part of the enclosure within the excavation area measured 26m N-S x 28m E-W. Two possible postholes (3302 and 3286) were identified near the western corner of the enclosure, and a possible ditch terminal (3354) extended into it from the eastern edge of the excavation area.

Enclosure 3

Only the south-western part of Enclosure 3 lay within the area of the excavation, and its full shape and extent were consequently not established. The boundary between this enclosure and Enclosure 1 was altered over time (below) with the result that the shape of the enclosure was changed. In its earliest form it may have been fairly regular in plan, with a straight southern boundary defined by ditch 3360. A single pit within the enclosure produced Iron Age pottery. The pit (3314) was a shallow feature that measured *c* 1.5m in diameter and 0.35m deep, and contained a single fill (3315) that yielded a small assemblage of pottery including part of a bowl with a slack-sided profile indicative of a date in the first half of the 1st century.

Alterations to Enclosures 1 and 3

While pottery of late Iron Age type was still current, the boundary between Enclosures 1 and 3 was altered in order to create a droveway that extended alongside the western boundary of the enclosure complex, providing an access to Enclosure 1 that bypassed Enclosure 3. At the same time the boundary between the two enclosures was changed to a NW-SE alignment. The latter boundary was represented by ditch 3361, which was somewhat deeper than ditch 3360, at 0.5m, and had a more curvilinear alignment. At its southern end the ditch terminated 3m from ditch 3362, the intervening causeway presumably serving as a point of access between Enclosure 1 and Enclosure 3. The northern end of the ditch was truncated by ditch 3358, but its alignment suggests that it may originally have converged with ditch 3198. The latter was a shallow ditch 0.4m wide and 0.24m deep that extended for a little over 3m on a ENE-WSW alignment, and at its ENE end was, like ditch 3361, truncated by ditch 3358. It is possible that ditches 3198 and 3361 originally converged and that ditch 3358 was effectively a recut of the northern part of this alignment. That no evidence for such a continuation survived may be attributed to its complete destruction during the digging of the recut, which measured 1m wide and a little over 0.6m deep (Fig. 2.42) and was much more substantial than the earlier ditches. The northern part of ditch 3198/3361 would thus have lain parallel to, and *c* 4m from, ditch 3350, possibly defining a droveway that passed between Enclosure 3 and the boundary of the enclosure complex, and provided access to Enclosure 1. Part of a leg from a juvenile dog, represented by an articulated tibia

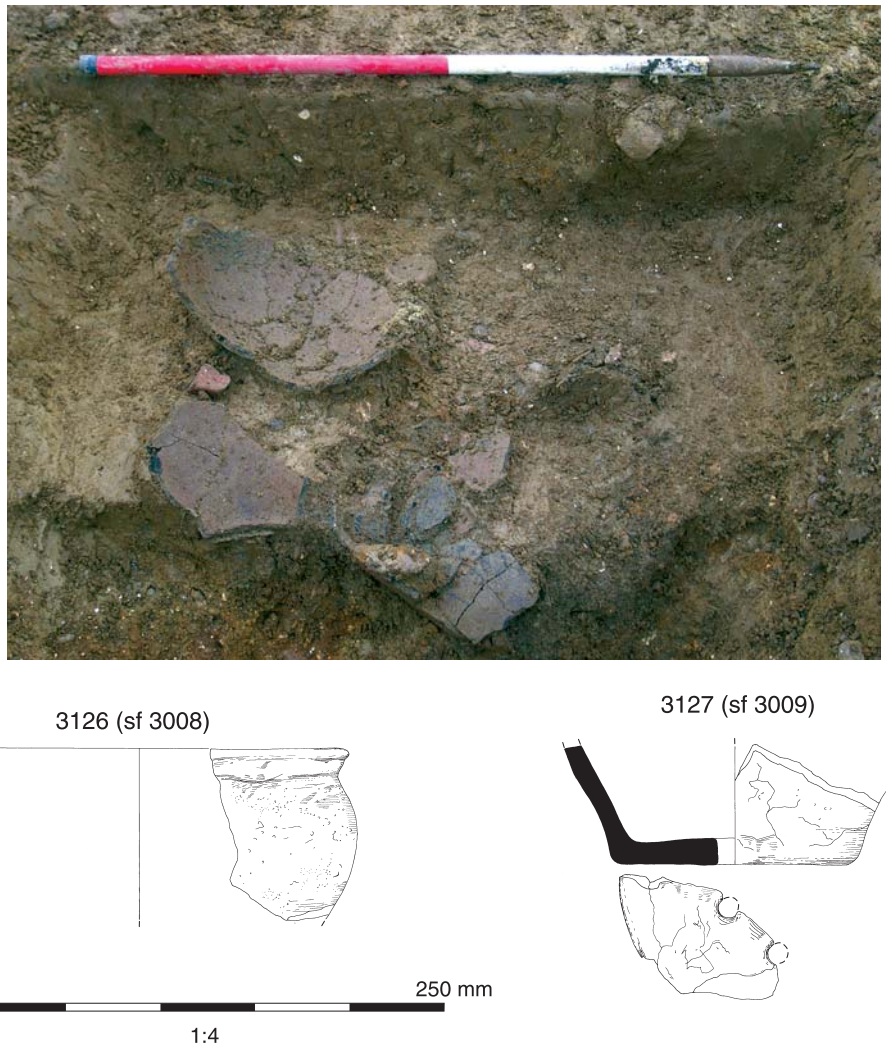


Fig. 2.40 Site 3, possible redeposited cremation vessels 3126 and 3127 in ditch 3351

Fig. 2.41 Site 3, horse burial in ditch 3360

Fig. 2.42 Site 3, section through ditch 3358

and metapodial, was recovered from the upper fill of ditch 3361 immediately adjacent to the point where it was truncated by ditch 3358. The articulating tibia and metapodial from the dog burial were submitted for radiocarbon dating and returned a determination of 350-40 cal BC (95.4% certainty; SUERC-30625; 2120±35BP).

Early Roman reorganisation of the enclosure complex

The arrival on the site of pottery made in a Roman tradition coincided with a complete reorganisation of the boundaries defining the part of the enclosure complex exposed within the excavation area. The rather circuitous ditches of the late Iron Age phase were replaced by more strictly linear boundaries, and although the basic orientation of the complex was retained, its southern and western boundaries were moved to the north and west (Fig. 2.43). At about the same time a triangular annex containing a small cremation cemetery was added to the western side of the main complex.

Enclosure 4

The new western and southern limits of the enclosure complex were defined within the area of the excavation by an L-shaped ditch (3346/3365/3364) that measured at least 42m by 42m and was interrupted by a single entrance located on the western side. The boundary was considerably more substantial to the north of the entrance where it was defined by ditch 3346, which measured as much as 1.7m wide and 0.8m deep (Fig. 2.44, section 3029), than it was to the south. The fill of the ditch was quite dark and grey in character (Fig. 2.45) and contained a particularly large assemblage of pottery amounting to more than 3kg, as well as a heat-blackened stone with one worked surface that may be a fragment from a quern, and the only coin from the excavation. The latter was a sestertius (SF 2007) that was probably issued during the 1st century, although the degree of wear may indicate that it was deposited during the 2nd. At the northern end of the ditch, where it continued beyond the edge of the excavation area, there was a suggestion of a curve towards the east, but insufficient of this was exposed within the excavation area to be certain whether this represented a return that enclosed the northern side of the enclosure complex or whether it was a more slight deviation in the alignment of the boundary. The base of the ditch rose up towards the terminal that defined the northern side of the entrance through the boundary, where it was only 0.4m deep.

To the south of the entrance the western boundary of the enclosure complex was a much slighter feature (3365), measuring no more than 0.7m wide and 0.2m deep, and was also considerably less productive of artefacts. At its southern end the ditch turned a right angle to the east to enclose the southern side of the enclosure complex, cutting across the boundaries of the late Iron Age complex (Fig. 2.46), and here it became rather more substantial, with a depth of up to 0.7m. Some 20m from the south-western corner of the complex, ditch 3365 was truncated by the western end of ditch 3364, which extended eastward on the same alignment. It was uncertain whether the boundary defined by ditch 3365 had originally terminated at this point, and was subsequently extended by the digging of ditch 3364, or whether ditch 3364 represented the

recutting of part of ditch 3365. Ditch 3364 was of similar proportions to ditch 3365 but yielded a larger assemblage of artefacts, which included an edge fragment from a saddle quern and two large kiln bar fragments (SF 3011). It is possible that the kiln bar pieces represent a substantial proportion of a single bar, but if so the middle part is missing as they did not refit.

The cremation cemetery

The cemetery enclosure

The cremation cemetery was situated within a triangular annex (Enclosure 5) that was defined by an L-shaped ditch (3160/3344/3345), with the western boundary of the enclosure complex, represented by ditch 3346, serving as the south-eastern side

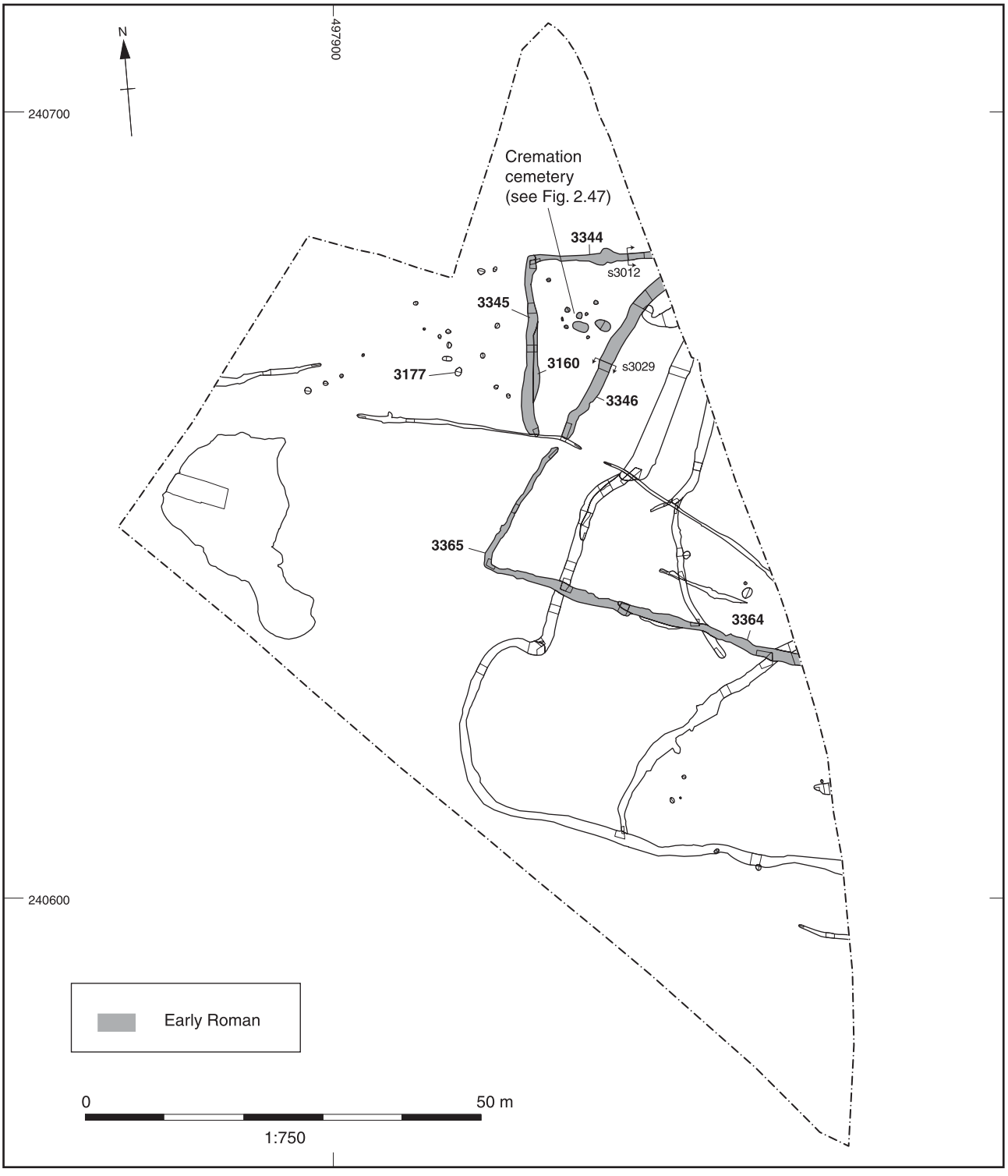


Fig. 2.43 Site 3, plan of early Roman features

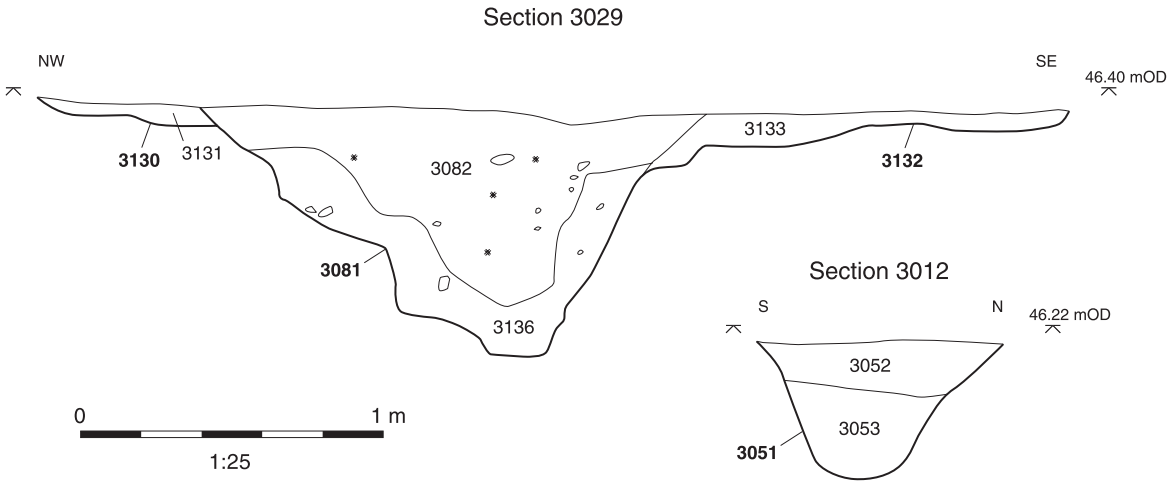
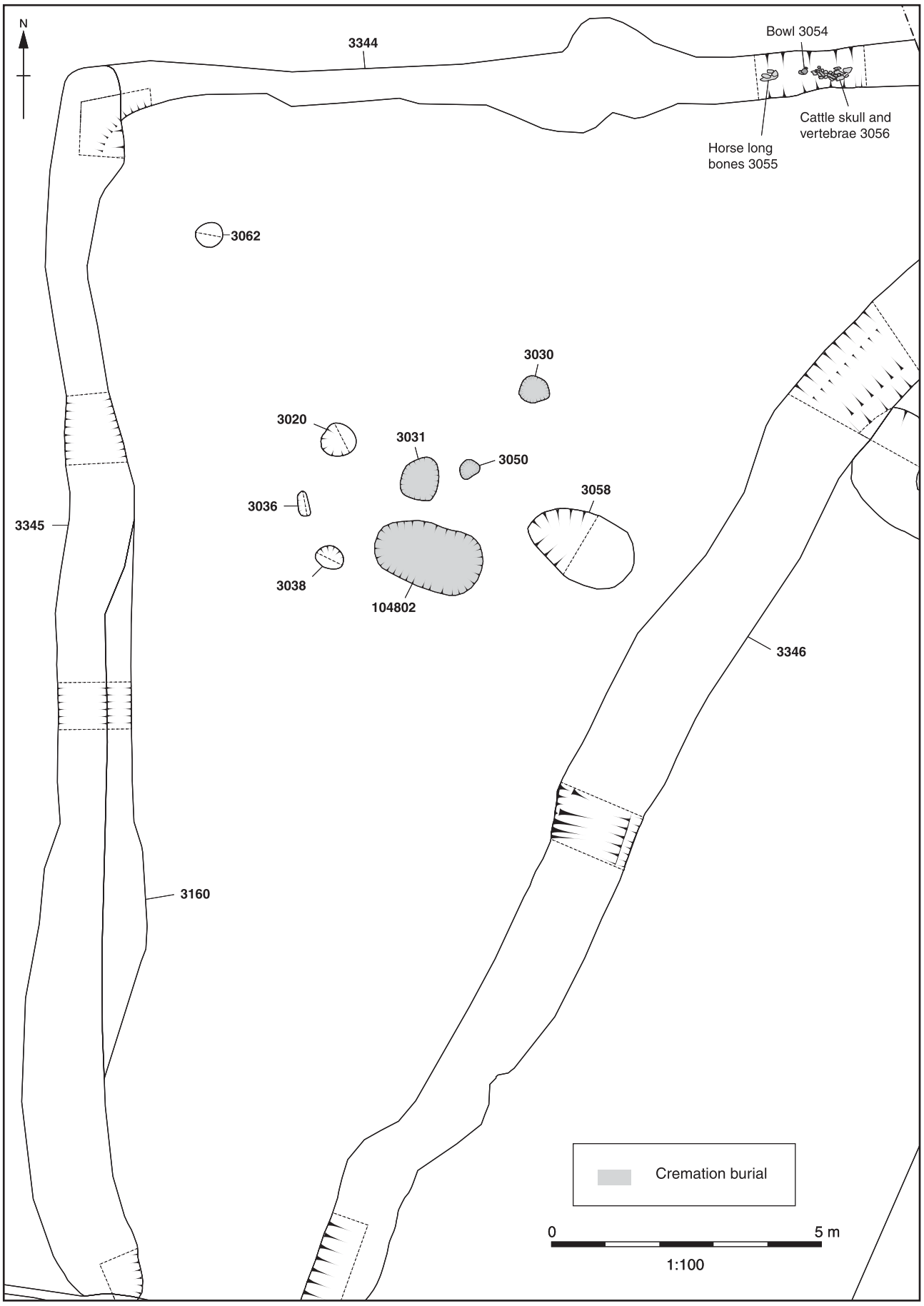


Fig. 2.44 Site 3, sections through early Roman boundary ditches

Fig. 2.45 Site 3, section through ditch 3346

Fig. 2.46 Site 3, early Roman ditch 3365 cutting through late Iron Age ditch 3352


N
3344
Bowl 3054
Cattle skull and vertebrae 3056
Horse long bones 3055
3062
3030
3020
3031
3050
3036
3058
3345
3038
104802
3346
3160
Cremation burial
0
5 m
1:100

(Fig. 2.47). The enclosure measured *c* 22m N-S and at least 16m E-W, although the north-eastern corner, and a possible junction of ditch 3344 with ditch 3346, lay beyond the edge of the excavation area. Access was provided via an entrance at the south-western corner, which was located immediately adjacent to the entrance into the enclosure complex.

The northern side of the boundary enclosing the annex was defined by ditch 3344. This ditch was truncated at its western end by ditch 3345 but it is likely that ditch 3160 was part of the same feature, enclosing the western side of the annex. Ditch 3344 was relatively slight, with steep sides and a depth of 0.44m, but contained an unusual deposit of animal bone and pottery (Figs 2.47-48). After the ditch had silted up slightly, the articulated vertebral column and skull of a cow (3056) had been placed on its base. The vertebral column lay aligned along the ditch with the skull at its eastern end, lying inverted on the upper vertebrae in a position that would not have been possible had the connecting tissue been intact. The bones, although maintaining their original form, were extremely poorly preserved and crumbled when an attempt was made to remove them. A damaged, but substantially complete, hemi-spherical bowl in a fine sandy oxidised fabric (3054) had been placed upright on the base of the ditch a short distance from the cattle remains. The form of

Fig. 2.48 Site 3, deposit of animal bone and pottery in ditch 3344

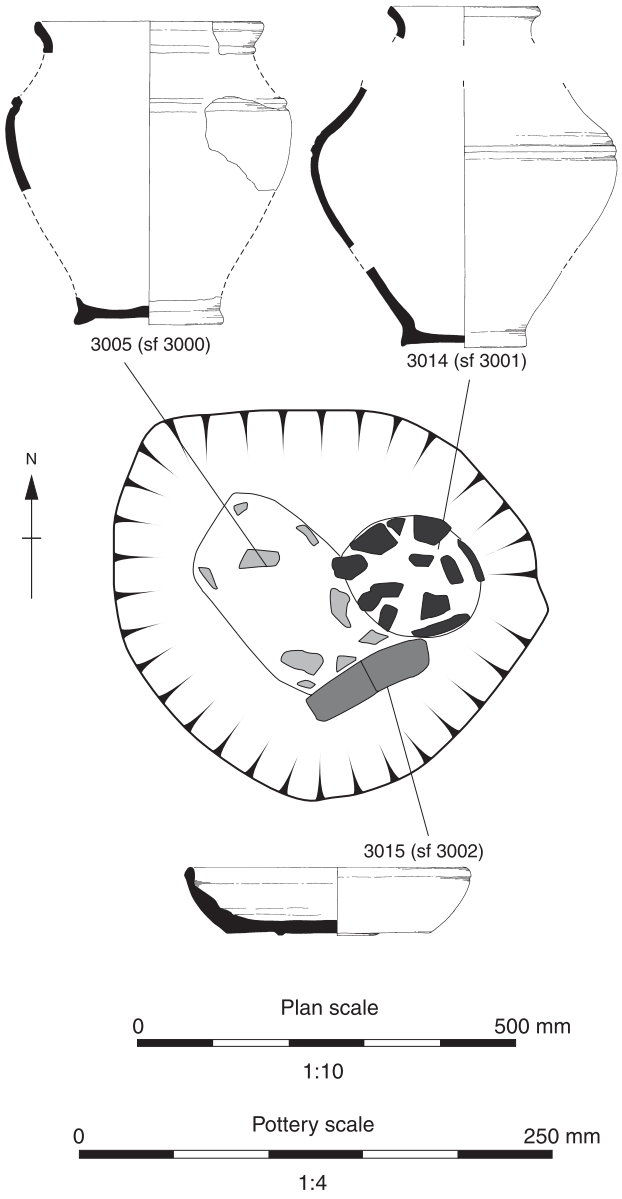


Fig. 2.47 (opposite) Site 3, plan of the cremation cemetery

Fig. 2.49 Site 3, cremation burial 3030

the bowl imitated that of samian form Drag. 37, and it was decorated with rouletting and incised decoration. Beyond the bowl lay a group of horse leg bones that were clearly not articulated and appeared to have been placed in a bundle (3055).

The western boundary of the annex had been subsequently recut on a more substantial scale (3345), although this refurbishment did not extend to its other sides. The newly redug ditch measured 0.95m wide and 0.50-0.68m deep and contained very little artefactual material. Four urned cremation burials (3030, 3031, 3050 and 104802) were clustered together in the central part of the annex, including one (104802) that had been excavated during the evaluation stage of the investigation (Fig. 2.47). The burials were not well preserved, having suffered from a combination of plough-truncation and fragmentation of the pottery vessels due to the weight of overlying soil. Five pits were also scattered around the interior of the annex.

Cremation burials

Cremation burial 3030 (Fig. 2.49) comprised a cinerary urn (3005) and two ancillary vessels (3014 and 3015), which had been placed in a shallow subcircular pit (3003) that survived to a depth of 0.16m. All three vessels were highly fragmented. The urn was a sandy grey ware globular jar (3005, SF 3000), which lay on its side. A small sandy grey ware platter (3015, SF 3002) lay propped up on one edge against the side of the urn, and a globular beaker (3014, SF 3001) was situated beside it. The urn contained the remains of a single adult, tentatively identified as a young female (3116).

Cremation burial 3031 (Fig. 2.50) was the shallowest of the group, and had consequently

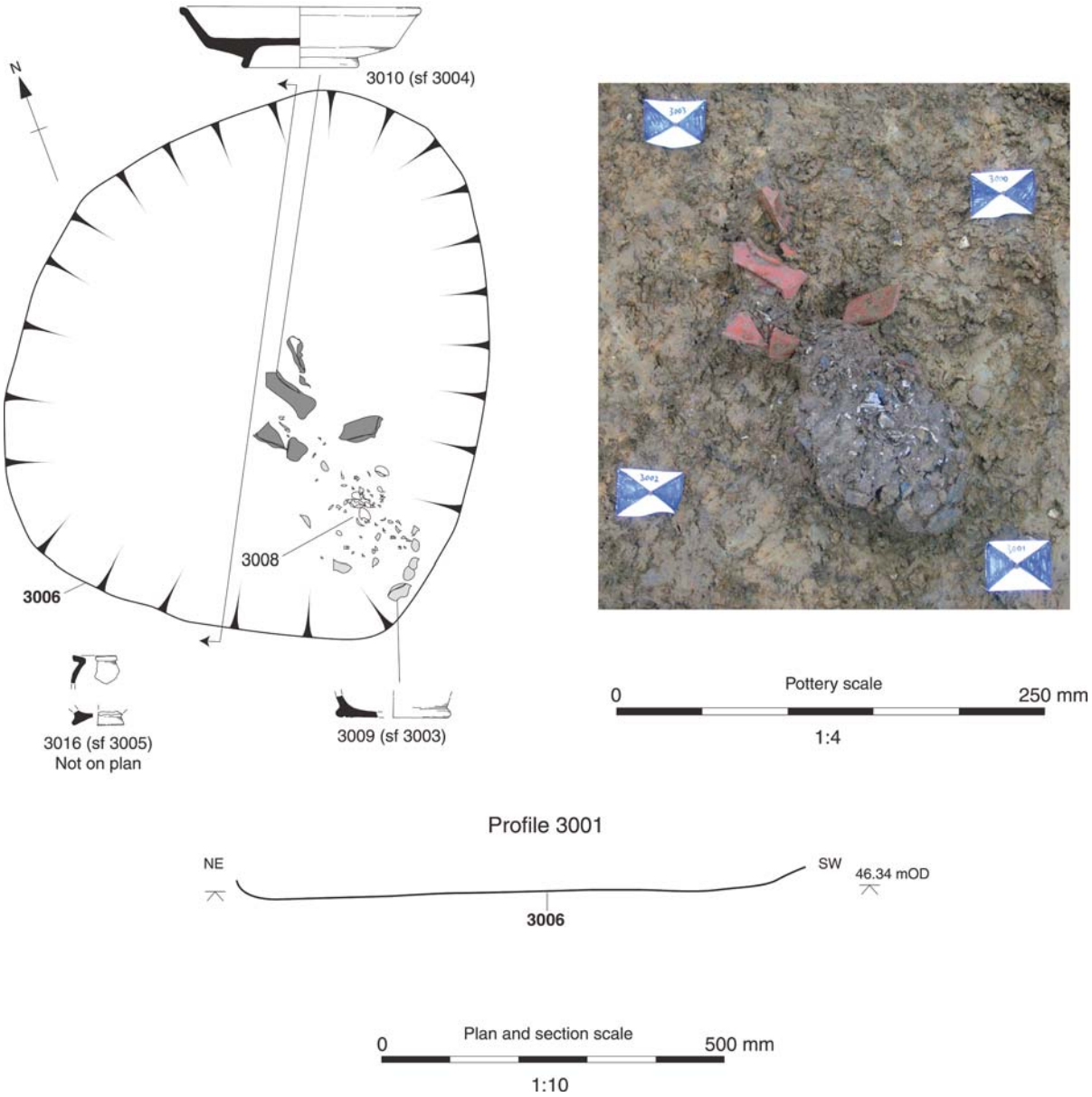


Fig. 2.50 Site 3, cremation burial 3031

been most affected by truncation from subsequent ploughing of the site, as a result of which only the base of the pit (3006) survived. The urn, a large, severely fragmented globular beaker (3009, SF 3003), was represented by a collection of very small sherds and was missing the rim due to truncation, and it is likely that the cremation deposit within it had been similarly reduced as only a little over 0.2kg of bone was recovered (3008), representing the partial remains of an adult of undetermined sex. The burial was accompanied by a South Gaulish samian ware platter (3010, SF 3004) and a fine oxidised globular beaker (3016, SF 3005), each of which was represented by only a few sherds. The beaker was particularly fragmented and the sherds did not appear to be *in situ*.

Cremation burial 3050 (Fig. 2.51) survived in rather better condition, and although a plough furrow had cut through it, this had not caused significant damage to the urn. The pit (3043) in which the burial had been interred was steep-sided and survived to a depth of 0.19, and within it lay the sandy grey ware narrow-necked jar (3045, SF 3006) that had been used as an urn. The vessel contained a little over 0.3kg of cremated bone (3049), in addition to which further such material (3044) was scattered across the base of the burial pit. It is uncertain whether this had spilled from the urn or represented a discrete, perhaps deliberate, deposit. Unfortunately the urn was badly fragmented and it was not possible to establish whether any of this damage had been sustained at the time of its insertion into the pit, and might therefore have been the source of such a spillage. The vessel had toppled over to the north-west, most likely during backfilling, but this does not appear to have been the cause of the spillage as most of deposit 3044 lay to the south and south-west of the urn. All of the cremated bone from the burial came from an adult of undetermined sex, and is likely to represent the remains of a single individual. No ancillary vessel was recognised during excavation of the feature, but the possible presence of a second vessel was indicated by the recovery from a soil sample of fragments from an unidentified vessel in grog-tempered ware.

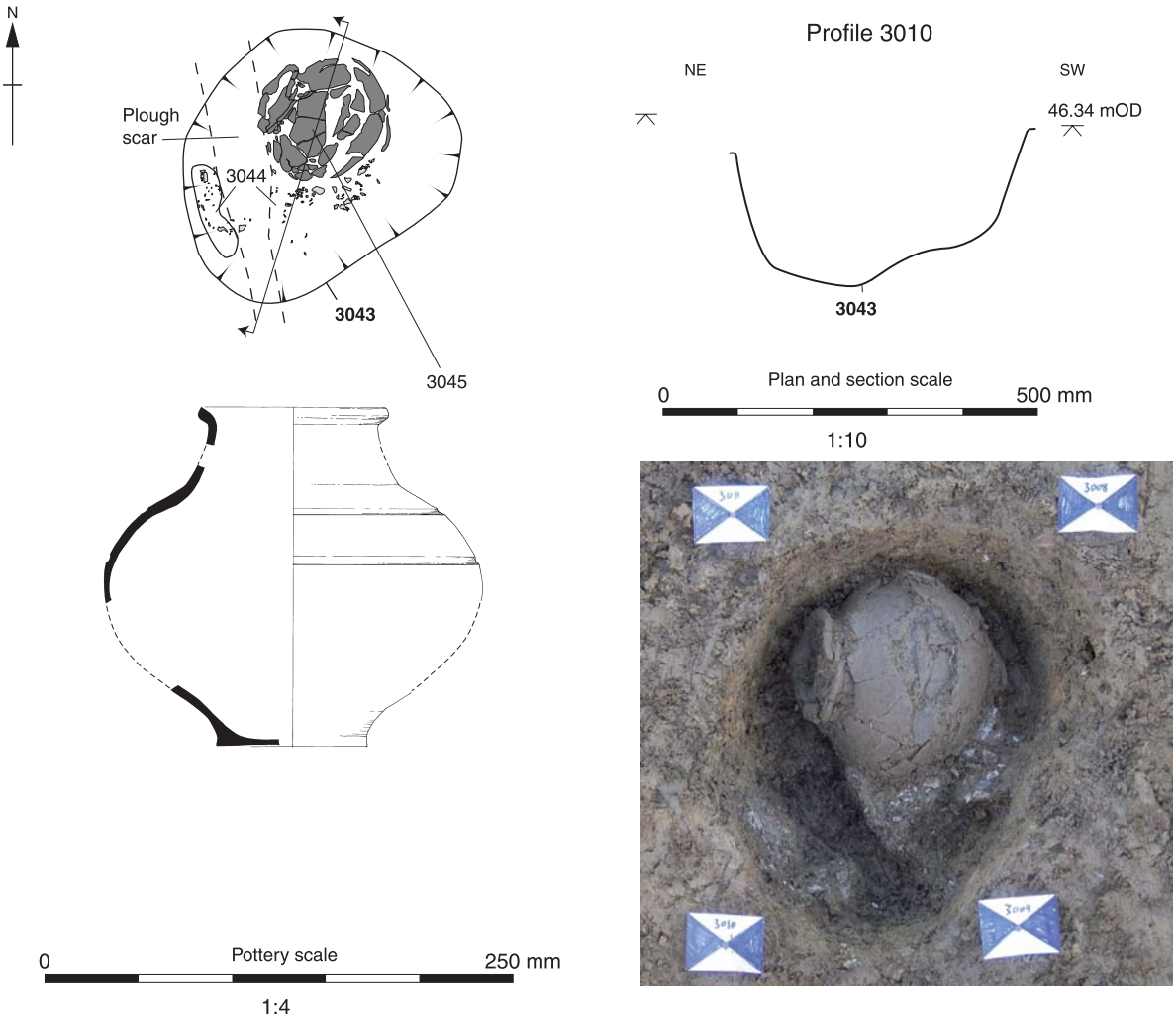


Fig. 2.51 Site 3, cremation burial 3050

The fourth cremation burial in this group (104802; Fig. 2.52) was excavated during the evaluation phase of the investigations. The sides of the pit containing the burial could not be clearly defined as its fill was almost identical to the surrounding natural, but the feature was *c* 0.28m deep. The cremated remains of an adult of undetermined sex (104835) had been placed within a jar-sized poppy-head beaker (104804), and mixed in with them were a carpal or tarsal from a large mammal and a fragment from a medium mammal long bone, both of which had also been burnt. The burial was accompanied by two ancillary vessels, comprising a fine grey ware necked bowl or small jar (104806) and a ring-necked flagon in Verulamium white ware (104805). This group of vessels provides a date range for the burial of AD 70-120.

Pits within Enclosure 5

The five pits situated within the annex containing the cremation cemetery comprised three shallow features (3020, 3036 and 3038) located to the west side of the burials, a similar feature (3062) toward the north-western corner of the annex, and a larger pit (3058) situated to the east. The latter feature measured 2.1m by 1.25m across but was relatively shallow, with a depth of 0.24m. It had been partly excavated during the evaluation stage of the investigations, as pit 104819, resulting in the recovery of small, abraded sherds from a samian ware dish in form 18/31. The only other feature in this group of pits that contained artefactual evidence was pit 3020, which yielded four small sherds from a greyware vessel of uncertain form.

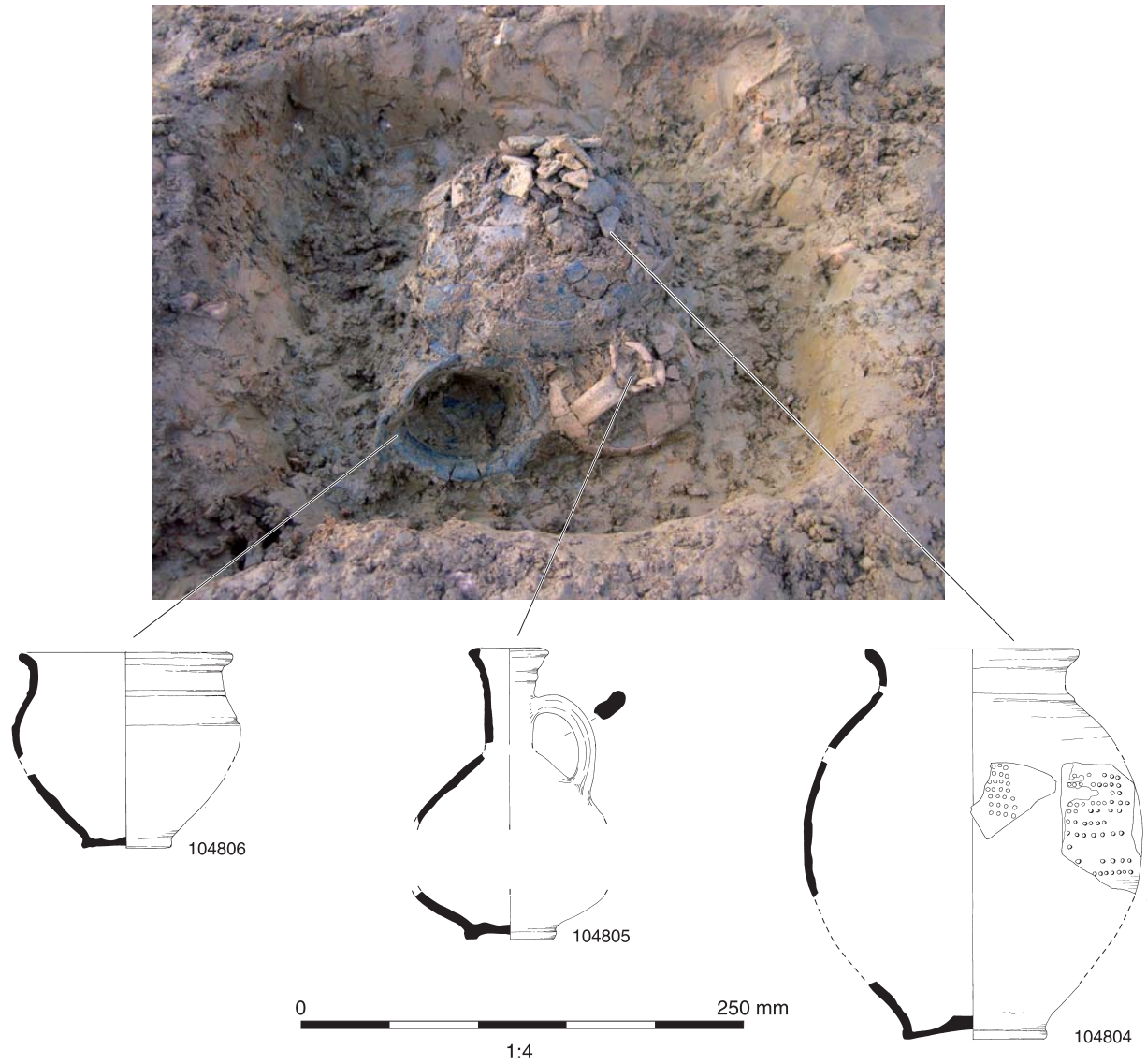
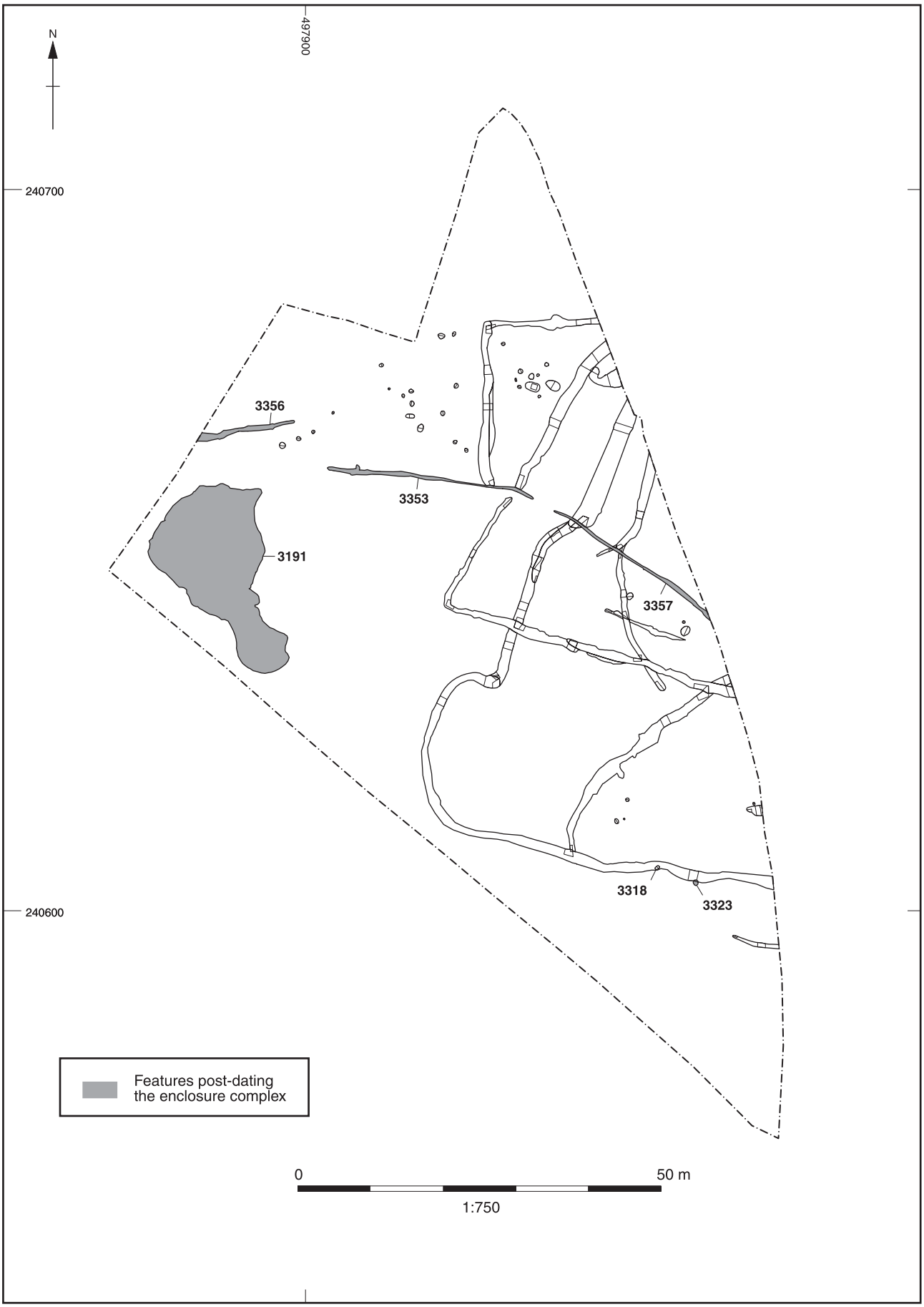


Fig. 2.52 Site 3, cremation burial 104802

Fig. 2.53 (opposite) Features post-dating the enclosure complex


N
497900
240700
240600
3356
3353
3191
3357
3318
3323
Features post-dating the enclosure complex
0
50 m
1:750

Pits west of the enclosure complex

A cluster of 17 pits was situated to the west of the enclosure complex, comprising a main group of 13 pits adjacent to the annex containing the cremation cemetery and a further four outlying features that lay 10m further west (Fig. 2.43). The pits were typically small, with only two measuring more than 1m in diameter, and none was more than 0.22m deep. The only artefactual material from these features was recovered from pit 3177 and comprised a pedestal base from a vessel of 1st-century date and some small fragments of animal bone. The location of these features suggests that they were associated with the enclosure complex, but it is not possible to attribute them specifically to either the late Iron Age or Roman phase.

Features post-dating the enclosure complex

A segmented ditch (3353/3357) extended across the excavation area on an E-W alignment, defining a boundary of unknown date (Fig. 2.53). The feature was rather shallow, with a depth of no more than 0.2m, and the break between the two parts is likely to result from plough truncation rather than representing an original feature of the boundary. Ditch segment 3356, which extended beyond the western limit of the excavation, was also aligned east-west and may have formed a continuation of the same boundary. This ditch was somewhat off-set from the alignment of ditch 5535, so if the two features were contemporary it is likely that an original entrance was situated between them. Only a very small artefactual assemblage was recovered from these ditches, the ceramic element of which comprised pottery of 1st-century date that is likely

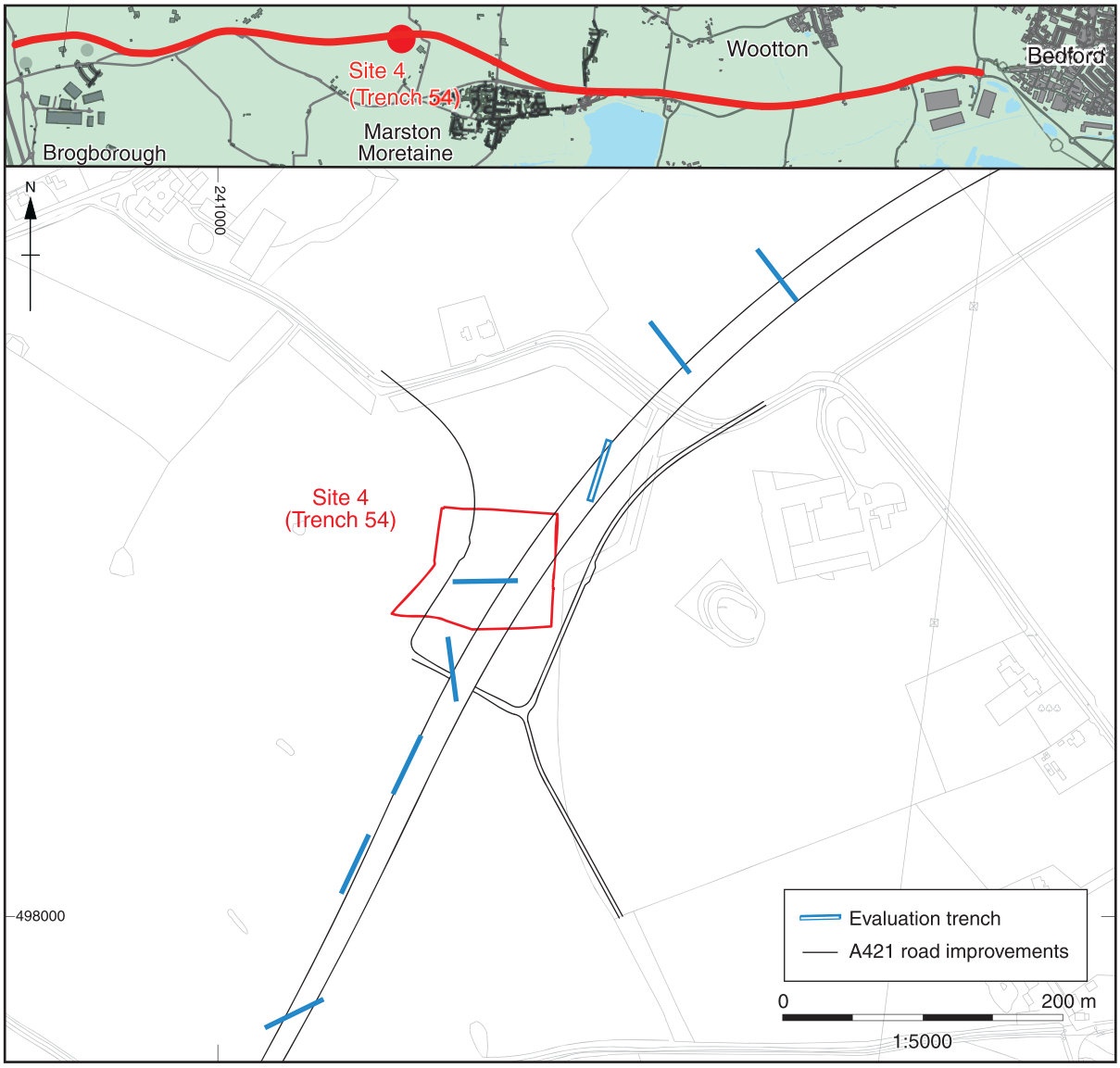


Fig. 2.54 The location of Site 4 (Trench 54). (© Crown copyright. All rights reserved. Licence no. 100005569)

to be residual, and to have derived from activity associated with the earlier enclosure complex.

A large feature (3191) interpreted as a pond was situated near the western edge of the excavation area. A machine-dug sondage 1.2m deep excavated into the western side of the feature revealed a gently sloping profile but did not reach the base. Pieces of brick and tile recovered from the fills of the feature dated from the 17th-19th century.

A pit (3323) that contained the burial of a calf (3332) had been dug into the southern edge of late Iron Age ditch 3359. The relatively large size of the skeleton suggests that the calf is of a late post-medieval or modern date. An adjacent pit (3318) that contained no artefactual material but was similar in size and shape to pit 3323 may have been of similar date.

SITE 4 (TRENCH 54)

Site location

Site 4 (Trench 54) was located *c* 500m from the north-western edge of Marston Vale in a former pasture field *c* 200m west of Moreteyne Farm, to the west of the village of Marston Moretaine (NGR SP 982 412; Fig. 2.54). It was situated on level ground at *c* 38m OD. An approximately rectangular area with a triangular projection to the west at the south-western corner was excavated, encompassing a total area of 9440m^2.

The middle Iron Age enclosure

The excavation exposed the eastern half of a middle Iron Age enclosure defined by at least three circuits

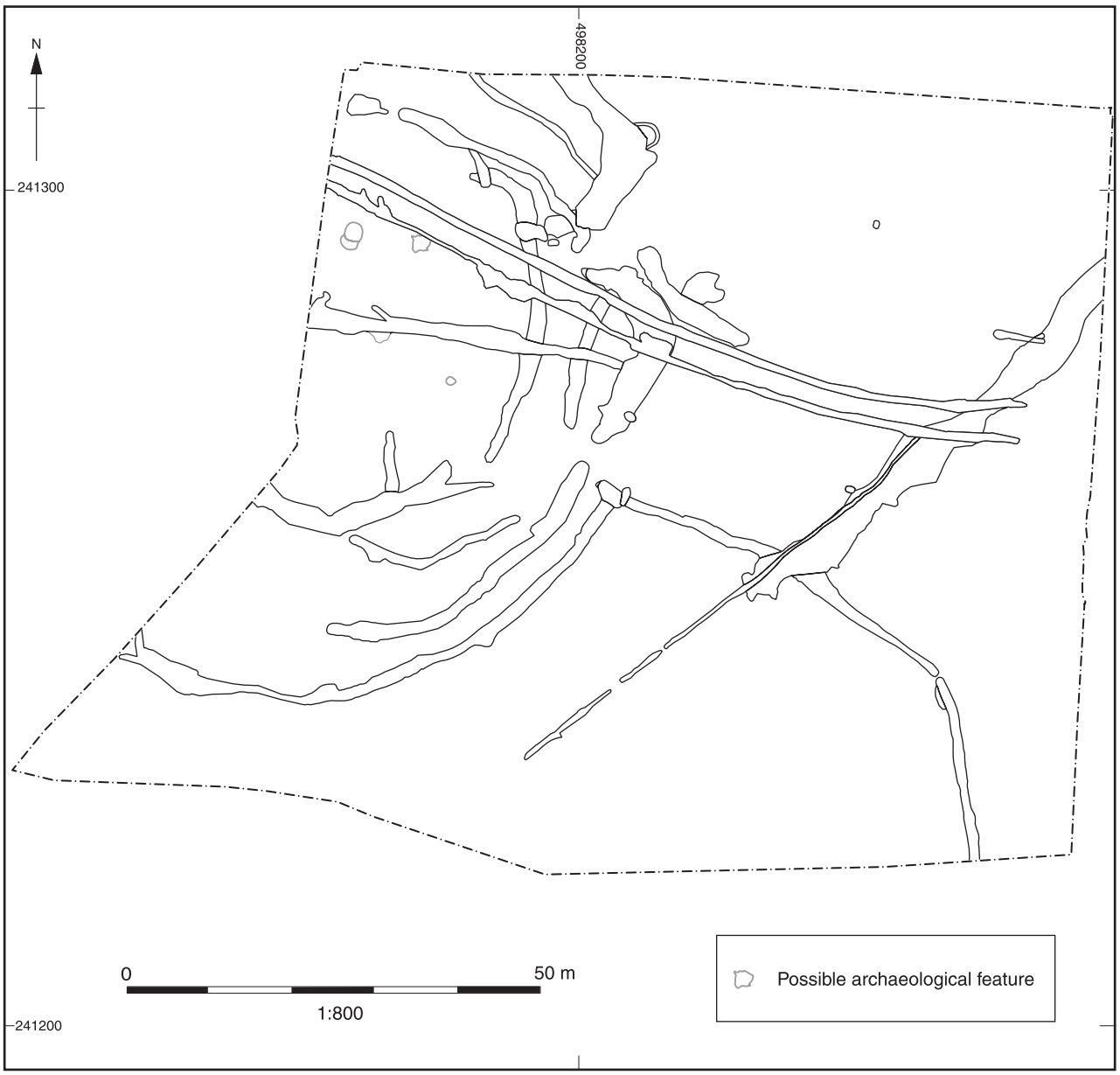


Fig. 2.55 Site 4 (Trench 54), plan of all archaeological features

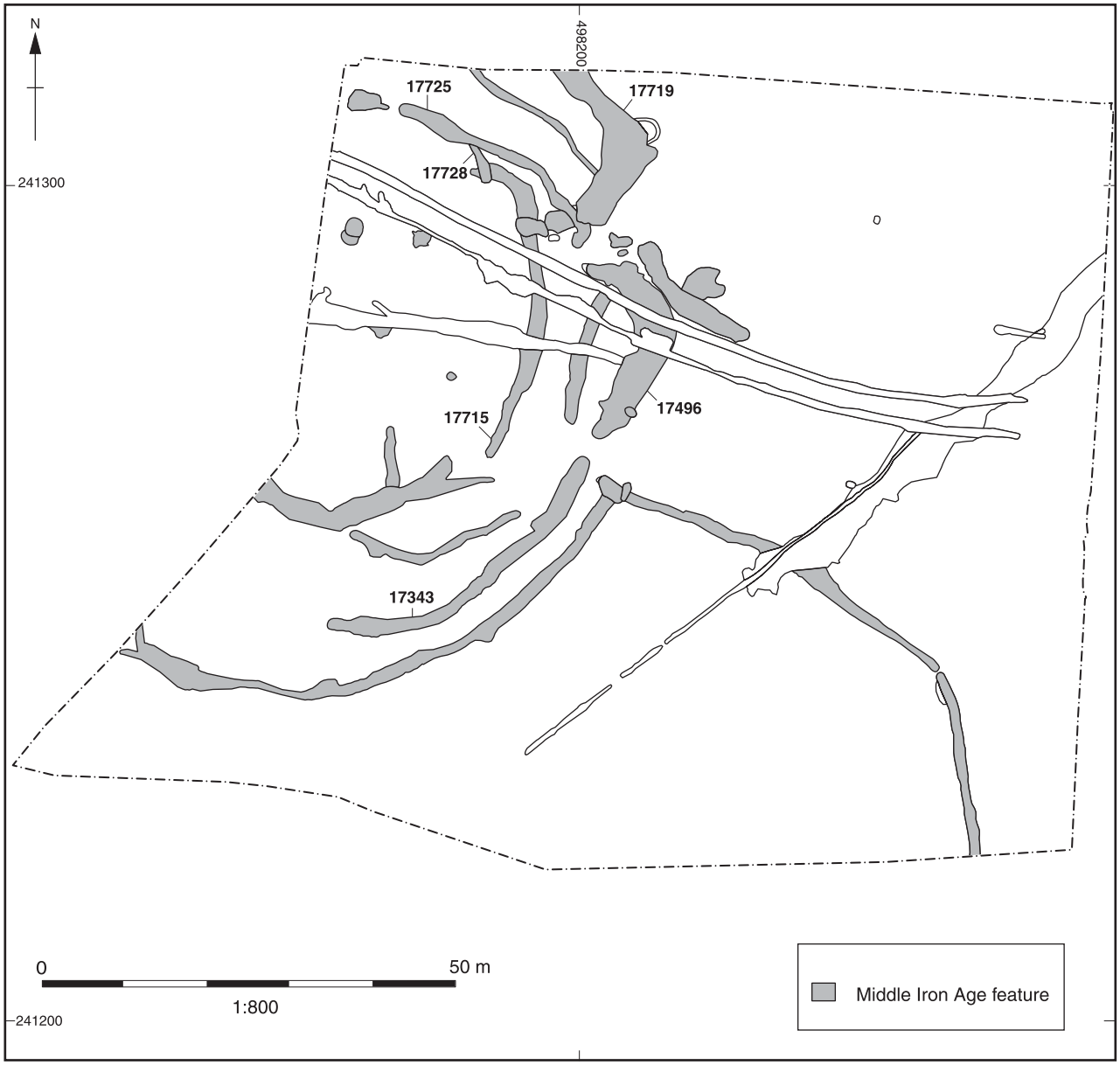


Fig. 2.56 Site 4 (Trench 45), all middle Iron Age features

of ditches (Fig. 2.56). Few definite features and no surfaces survived within the enclosure. The ditch circuits were discontinuous, composed of individual segments separated by causeways that may have served as entrances, although the main entrance appeared to have been located on the south-eastern side of the enclosure, from which an antenna ditch extended. A short gully (17728) that drained into enclosure ditch 17725 cut inner enclosure ditch 17715, suggesting that the ditch circuits may not have all been part of the original layout of the enclosure, and that the initial design may have comprised only the innermost circuit. The outer, possibly secondary ditch circuits were cut by ditches 17719 and 17496, which, along with ditch 17343, appeared to represent a re-instatement of the eastern facade of the enclosure. On the basis of these relationships the development of the enclosure has been tentatively divided into three phases. Most of the pottery recovered from the enclosure ditches comprised ovoid jars and slack-profiled jars in shelly and sandy fabrics of middle Iron Age date, but there was also a small quantity of late Iron Age material – typified by necked jars and bowls in grog-tempered fabrics – in some of the upper fills that indicate continued or renewed use of the enclosure that may have been contemporaneous with the Phase 3 ditches.

Phase 1: the inner ditch circuit

The earliest phase of the enclosure comprised the innermost circuit of ditches, consisting of ditch segments 17715 and 17716, with a causeway

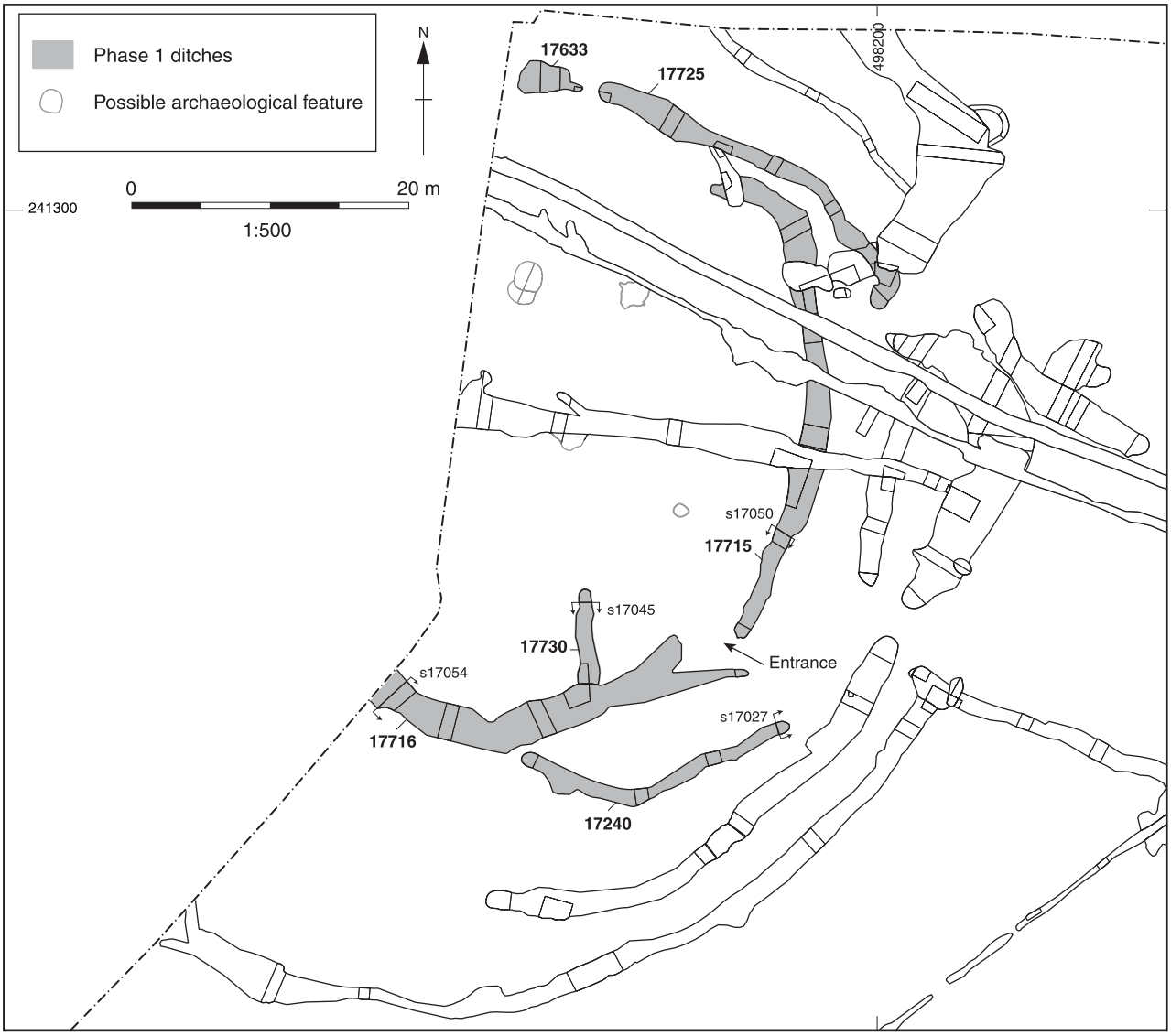


Fig. 2.57 Site 4 (Trench 54), inner ditch circuit of the middle Iron Age enclosure

between them that formed a south-east facing entrance (Figs 2.57-59). Ditch 17725 (Fig. 2.60) appeared to be part of the Phase 2 enclosure, but part of this feature may have been a recut of the alignment of a ditch that enclosed the northern side of the enclosure during Phase 1. An outwork or annex associated with the south-eastern entrance was defined by ditch 17240, and ditch 17730 may have formed part of a subsidiary enclosure within the main compound.

Enclosure ditch 17716

Ditch 17716 defined the southern side of the enclosure. It was exposed for a total length of 30m, and continued beyond the western edge of the excavation area. The ditch comprised a substantial boundary, measuring up to 3m wide and 1.08m deep (Fig. 2.58, section 17054). It had relatively steep sides, although the 'lipping out' of the upper part of the sides and the presence of a primary fill of redeposited natural clay (17182) indicates that the profile had undergone some modification due to erosion and had originally been somewhat steeper. The primary fill was overlain by a sequence of secondary fills that are consistent with natural silting processes (17180-1), but it was not possible to determine conclusively whether the uppermost fill, which comprised dark grey soils containing some gravel and pebbles (17179), was natural in origin or was associated with deliberate infilling. Two samples from secondary fill 17181 were submitted for radiocarbon dating: a charred grain produced a determination of 380-110 cal BC (SUERC-30626; 2180±35 BP) and a fragment of hazelnut shell produced a determination of 400-200 cal BC (SUERC-30627; 2250±35 BP). The ditch yielded an unusually large assemblage of pottery, amounting to almost 7kg (Fig. 2.59). Much of this material came from the upper fills, which contained a number of slack-profiled, barrel-shaped and narrow-necked

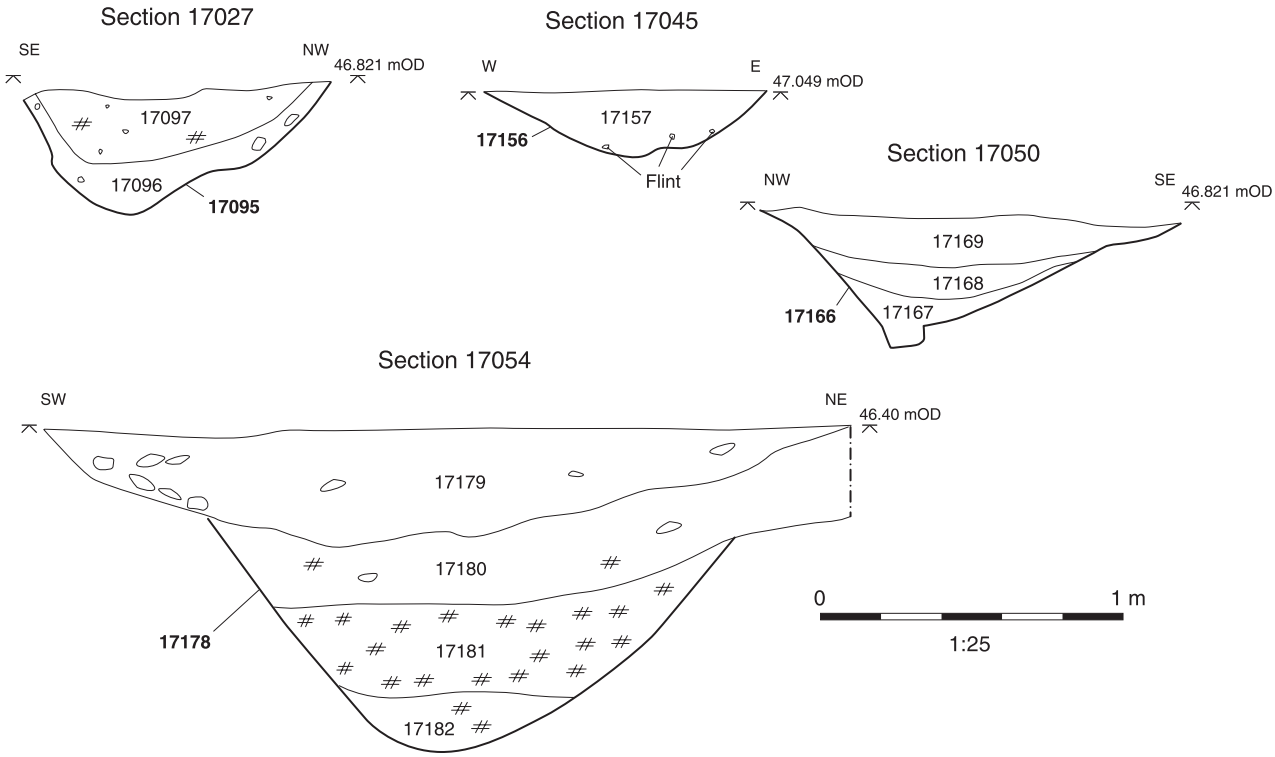


Fig. 2.58 Site 4 (Trench 54), sections through the ditches of innermost circuit of the middle Iron Age enclosure

Fig. 2.59 Site 4 (Trench 54), pottery being exposed during excavation of ditch 17716

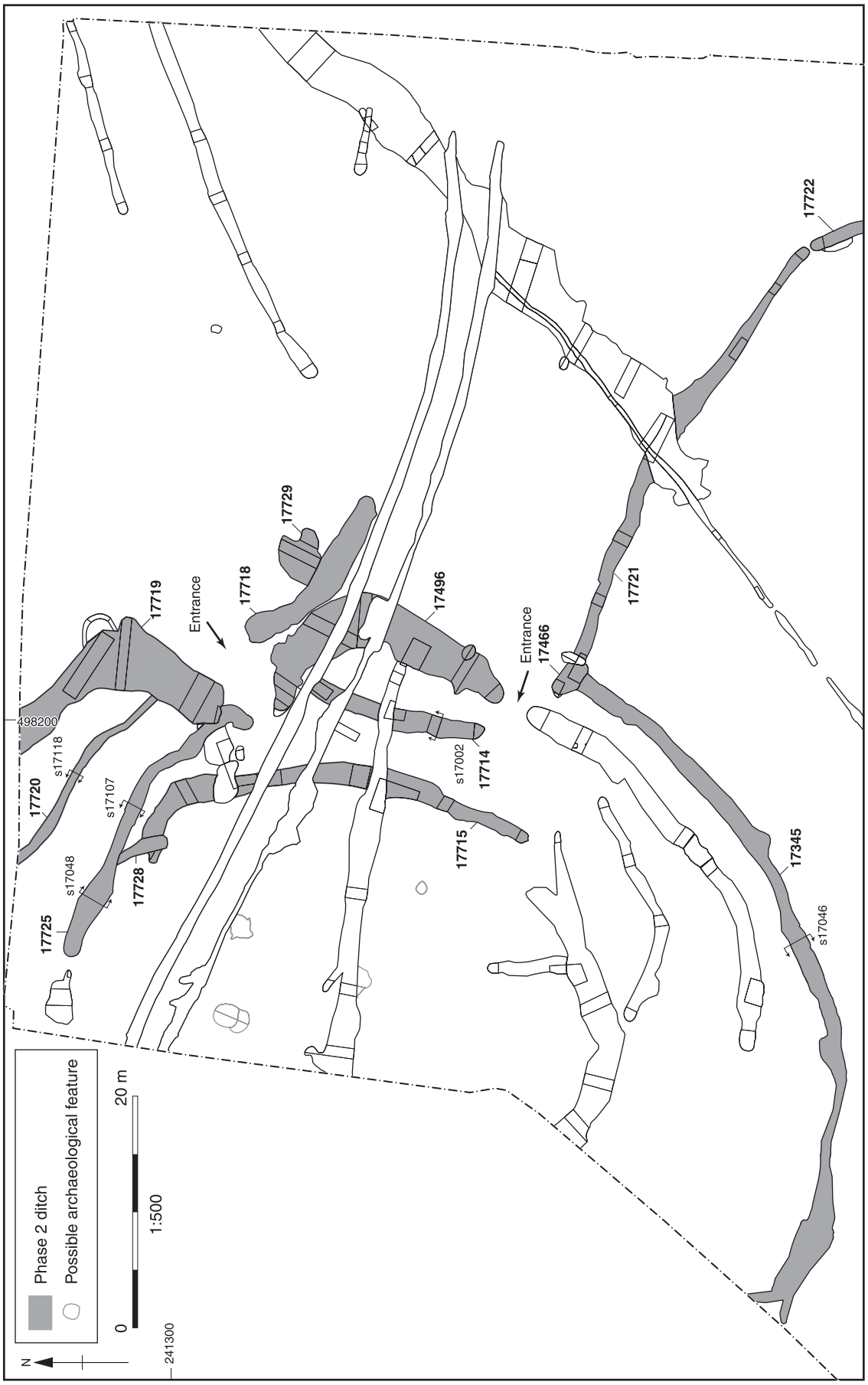


Fig. 2.60 Site 4 (Trench 54), outer ditch circuits of the middle Iron Age enclosure

jars. One of the jars was nearly complete, and another had been perforated in the base after firing, turning the vessel into a strainer. A wheel-thrown necked jar in grog-tempered ware was also recovered from the uppermost fill, perhaps indicating that this deposit continued to accumulate into the late Iron Age. A copper alloy toggle (SF17002) was also recovered. The ditch was rather angular in plan, perhaps indicating that it had been laid out as a series of at least three straight sections. At its eastern end the ditch divided into two terminals: a shallow gully that measured only 0.56m wide and 0.12m deep and a more substantial inner terminal. The latter terminal was not excavated. The relationship between the two terminals was not established, and consequently it is not known whether they represent two contemporaneous elements of the entrance to the enclosure, with the outer gully perhaps forming some sort of outwork, or two successive phases of a simpler entrance.

Enclosure ditch 17715

Ditch 17715 enclosed the eastern side of the enclosure, and extended for a total length of 35m on a gently curving alignment. The northern end curved somewhat more sharply toward the west immediately before terminating. The ditch was a rather slighter feature than ditch 17716, with a depth of no more than 0.45m in the southern half and *c* 0.6m in the northern half (Fig. 2.58, section 17050). The ceramic assemblage was also more modest than that recovered from ditch 17716, weighing a total of *c* 1.5kg.

Enclosure ditch 17725

No definite evidence was recorded for a ditch that enclosed the northern side of the enclosure during this initial phase. However, it was noted that the part of enclosure ditch 17725 that lay west of the northern end of ditch 17715, and continued its alignment around the northern part of the circuit, was 0.75-0.8m deep, considerably more substantial than the part to the east of this point. It is possible that this deeper part of ditch 17725 represented a part of the original inner circuit that was recut as part of ditch 17725 when the latter was created, although no conclusive evidence for such recutting was identified during excavation. If this is correct, a second entrance through the ditch circuit was situated between these two ditch segments. A large and slightly amorphous pit (17633) located a short distance beyond the western end of ditch 17725 is also likely to have been part of this inner circuit.

South-eastern entrance

The main entrance into the enclosure appeared to have been provided by the causeway between ditches 17715 and 17716, located on the south-eastern side of the settlement. The form of the entrance was rather irregular due to the off-set positioning of the terminals of the two ditches and the shape of the terminal of ditch 17716, which divided into a substantial inner terminal and a smaller outer one. The effect of this may have been to create an entrance between the terminals that was 4m wide, with the smaller outwork designed to constrict access, perhaps to aid the management of livestock using the entrance.

Outwork/annex ditch 17240

Ditch 17240 may have formed an outwork associated with the south-eastern entrance into the enclosure or defined a small annex against the outside of the main enclosure. The western end of the ditch lay immediately adjacent to enclosure ditch 17716, from which it extended outward towards the south-east before turning east-north-eastwards, roughly parallel to ditch 17716, defining a trapezoidal area that measured *c* 17m by 5.5m. The ditch itself was only 0.4m deep (Fig. 2.58, section 17027) and contained only a few scraps of pottery and animal bone.

Subenclosure ditch 17730

A subdivision existed within the southern part of the enclosure, defined by ditch 17730. The ditch branched off the inner side of enclosure ditch 17716 and extended for *c* 7.5m on a roughly linear alignment. It was only 0.22m deep and 1.2m wide (Fig. 2.58, section 17045), and appeared to peter out at the north end rather than ending in a deliberate terminal, and may thus originally have been more extensive or have turned to define part of a subenclosure within the main enclosure.

Phase 2: the outer ditch circuits

Northern side of the enclosure: ditches 17220 and 17725

The precise number of ditch circuits in use on the northern side of the enclosure is difficult to ascertain (Fig. 2.60). The western part of ditch 17725 (Fig. 2.61, section 17048) may have been a redefinition of part of the inner ditch circuit (above), but the eastern part of this ditch (Fig. 2.61, section 17107) extended around the outside of inner ditch 17715. If ditch 17715 or an associated earthwork was still in use then the eastern part of ditch 17725 will have formed a second circuit outside it. An insubstantial ditch (17720; Fig. 2.61, section 17118) located to the north of ditch 17725 and truncated at its eastern end by ditch 17719 may have been part of a further outer circuit. Ditch 17720 was typically 0.6-0.7m wide and 0.2m deep, although near the northern edge of the excavation area, where it was perhaps less truncated, it measured 1.1m wide and 0.5m deep. With the exception of the deeper western part, ditch 17725 was generally quite shallow, with a depth of 0.35-0.50m (Fig. 2.61, section 17107). The upper fill of the western part of the ditch contained a considerable concentration of charcoal, but when sampled the fragments proved to be too small to be identifiable and contained no other charred plant remains.

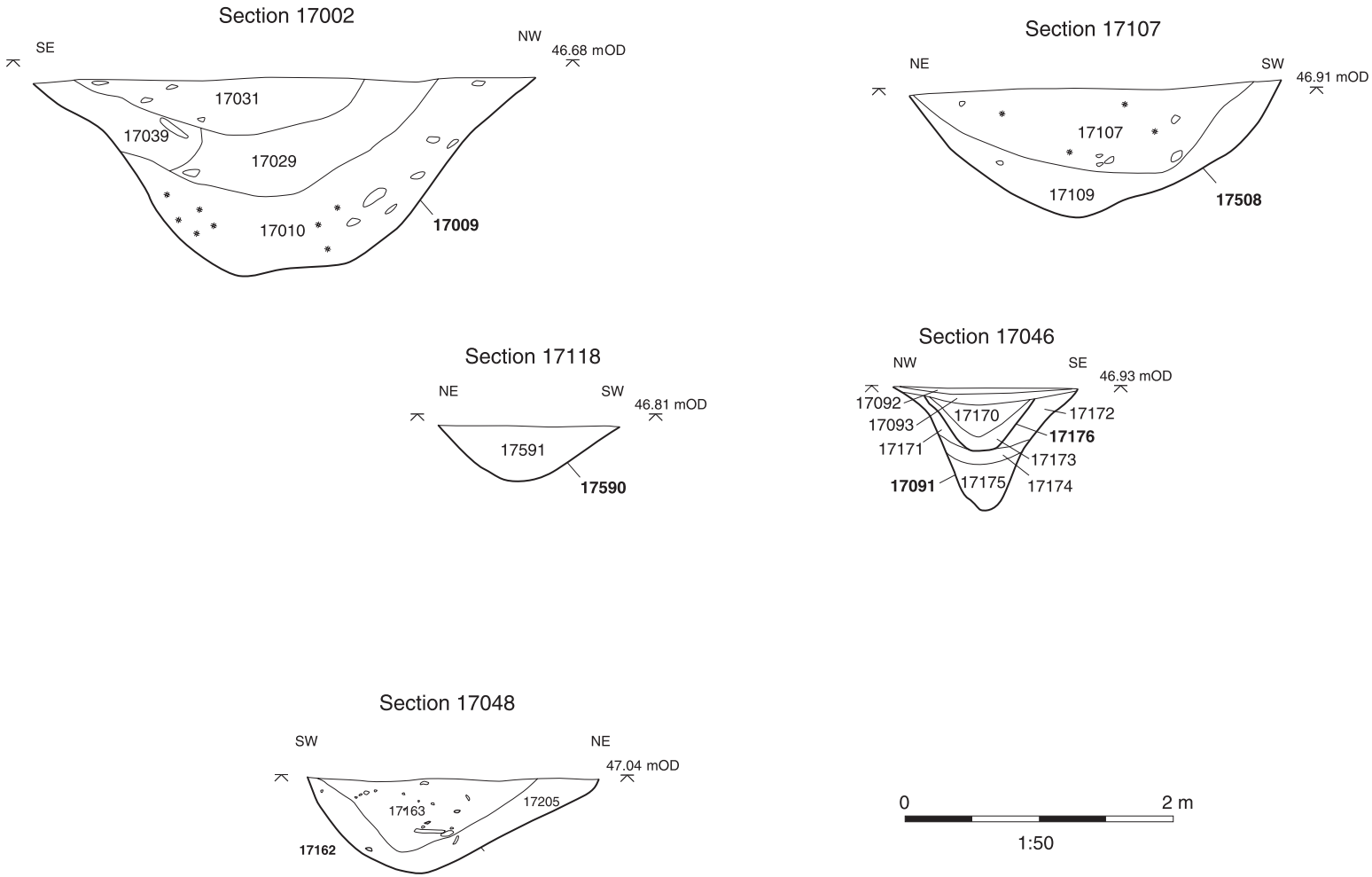


Fig. 2.61 Site 4 (Trench 54), sections through the ditches of the outer circuits of the middle Iron Age enclosure

Eastern side of the enclosure: ditch 17714

A single outer circuit, represented by ditch 17714, was present on the eastern side of the enclosure (Fig. 2.61, section 17002). The curvature of the ditch was not concentric to the enclosure but curved in the opposite direction. The ditch extended for *c* 17m, the northern terminal having been destroyed by the subsequent digging of Phase 3 ditch 17496. It was quite steep-sided, measuring 1.4-1.9m wide and 0.6-0.7m deep, and was filled by a sequence of deposits indicative of gradual silting.

Eastern entrance and ditch 17718

The eastern entrance into the enclosure lay between ditch 17714 and ditch 17725. It was defined on its northern side by the in-turned southern terminal of the latter ditch, but the form of the corresponding terminal of ditch 17714 is not known as it had been destroyed by the subsequent digging of Phase 3 ditch 17496. For this reason the width of the entrance could not be established with certainty, but it is likely to have been in the range of 5.0-5.5m wide.

Ditch 17718 was attributed to the second phase of the enclosure because it was stratigraphically earlier than the later ditch 17496, which cut its western side, and appeared to be associated with the eastern entrance into the enclosure. Its western terminal lay *c* 7m outside the eastern entrance, and from here the ditch extended obliquely outward from the enclosure for *c* 17m on a slightly dog-legged alignment. In so doing it cut a large, irregular hollow (17729) of uncertain origin. The ditch was quite substantial, with a width of more than 2m and a depth of up to 0.9m. The finds assemblage was not large, but included a highly fragmented cattle skull that was recovered from the secondary fill. It is possible that the ditch was designed to assist in directing livestock into the eastern entrance of the enclosure.

Southern side of the enclosure: ditch 17345

Ditch 17345 formed the outer circuit around the southern perimeter of the enclosure, at a distance of up to 20m from the inner enclosure. It measured 1.4-1.75m wide and its depth varied from 0.5m to 1.1m, the deepest measurement occurring at the eastern end, where the basal fill was a layer of slightly gleyed clay that may have been deposited in standing water. This end of the ditch had been truncated by the subsequent digging of pit 17466/17483/17597, which had destroyed the junction with ditch 17721, which extended outward from the enclosure. The coincidence of the ends of these two ditches, however, strongly suggests that they were originally dug as a single feature.

South-eastern entrance and antenna ditch 17721

The south-eastern entrance through the outer ditch circuit was located between ditches 17714 and 17345 and comprised a causeway *c* 8.5m wide. It was not aligned concentrically with the corresponding entrance through the inner circuit, and the off-set alignment of the ditches of the outer circuit had the effect of creating an entrance that was turned toward the inner entrance.

Ditch 17721 extended outward from the southern side of the south-eastern entrance. It was a relatively modest feature with a depth of 0.35-0.40m and extended for *c* 43m on a relatively straight alignment. A separate length of ditch (17722) then continued the boundary on a more southerly orientation, eventually continuing beyond the southern edge of the excavation area. The artefacts recovered from this feature were limited to only a few scraps of pottery and animal bone.

Phase 3: ditches 17343, 17496 and 17719

The eastern side of the enclosure was re-instated during the late Iron Age by the digging of three substantial ditches (17343, 17496 and 17719), which cut the outer ditches of the original enclosure (Fig. 2.62). The ditches were substantially larger than those of the original enclosure, both in width and in depth, and enclosed the eastern side of the enclosure but did not appear to extend around the south-western side, perhaps indicating that the earthworks of the original enclosure were still sufficiently well preserved to serve this function

Ditch 17719

Ditch 17719 extended into the excavation area from the north-west extending for 16m to the south-east before turning towards the south-west and extending for a further 12m to form the northern side of the in-turned entrance, where it cut pit 17526/17680. Its width varied from *c* 2m near the northern edge of the site to 4.2m near its southern terminal, and it was 1.2m deep (Fig. 2.63, sections 17080 and 17102 and Fig. 2.64). The sides sloped relatively gradually to a concave base. Two phases were identified at the southern end of the ditch. A shallower earlier terminal (17526) projected for *c* 2.6m beyond a more substantial recut terminal. The ditch contained a simple sequence of primary and secondary fills indicating that it had silted up gradually, overlain by an upper layer of darker soil of less certain origin that could represent either a tertiary fill or deliberate infilling of the hollow formed by the partly-silted ditch. The only substantial find from the lower deposits was a near-complete slack-profiled jar or bowl (SF 17023) that was recovered from the primary fill (17275) in an intervention *c* 3m from the later phase of the southern terminal. The upper layer was the source of the majority of the assemblage of nearly 1.5kg of pottery and more than 3.5kg of animal bone that was recovered from the feature, including a cattle skull (17473) that lay in an inverted position near the change in the alignment of the ditch. A group of five cranial vault fragments was also recovered from the upper fill.

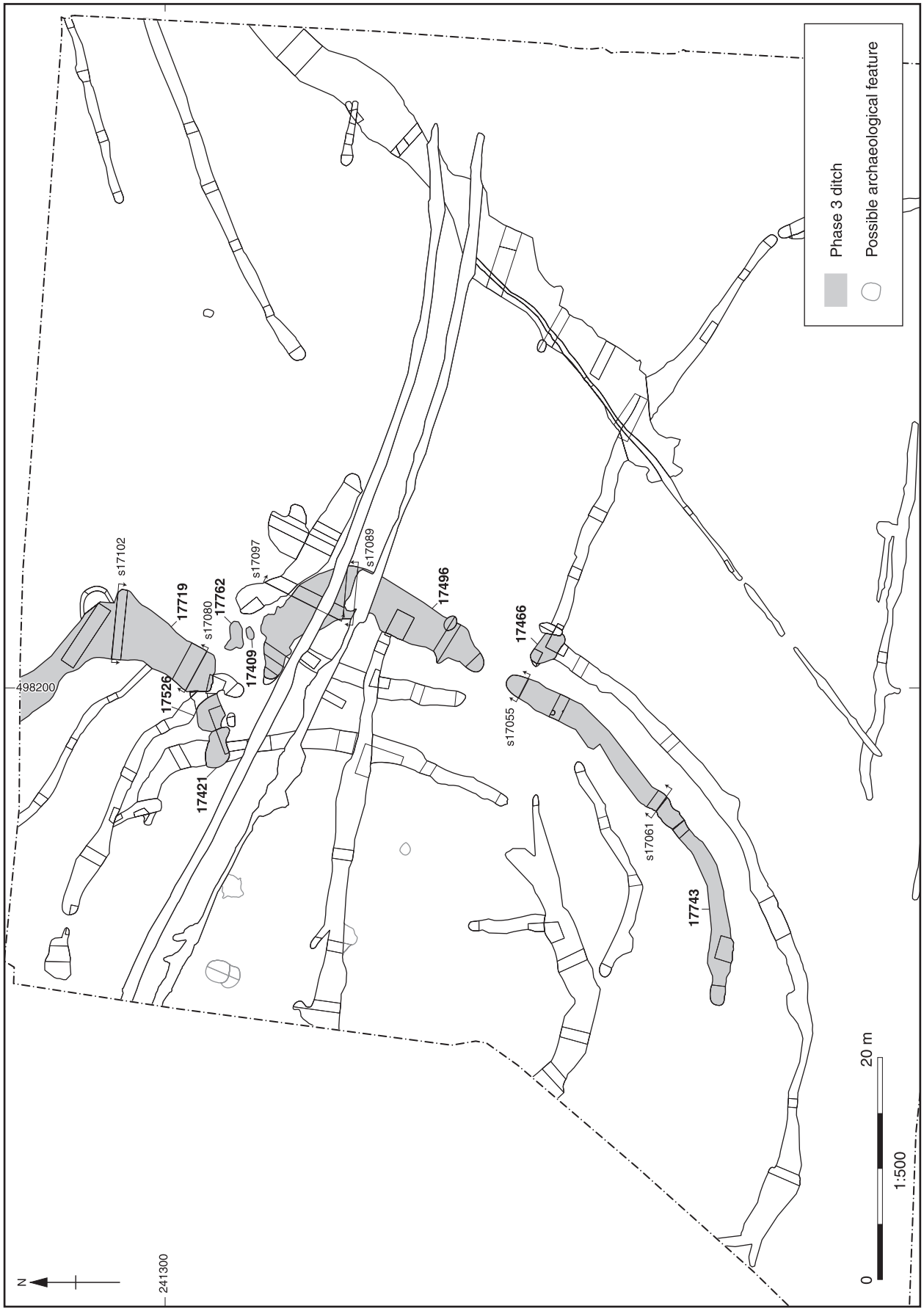


Fig. 2.62 Site 4 (Trench 54), outer ditch circuit of the middle Iron Age enclosure

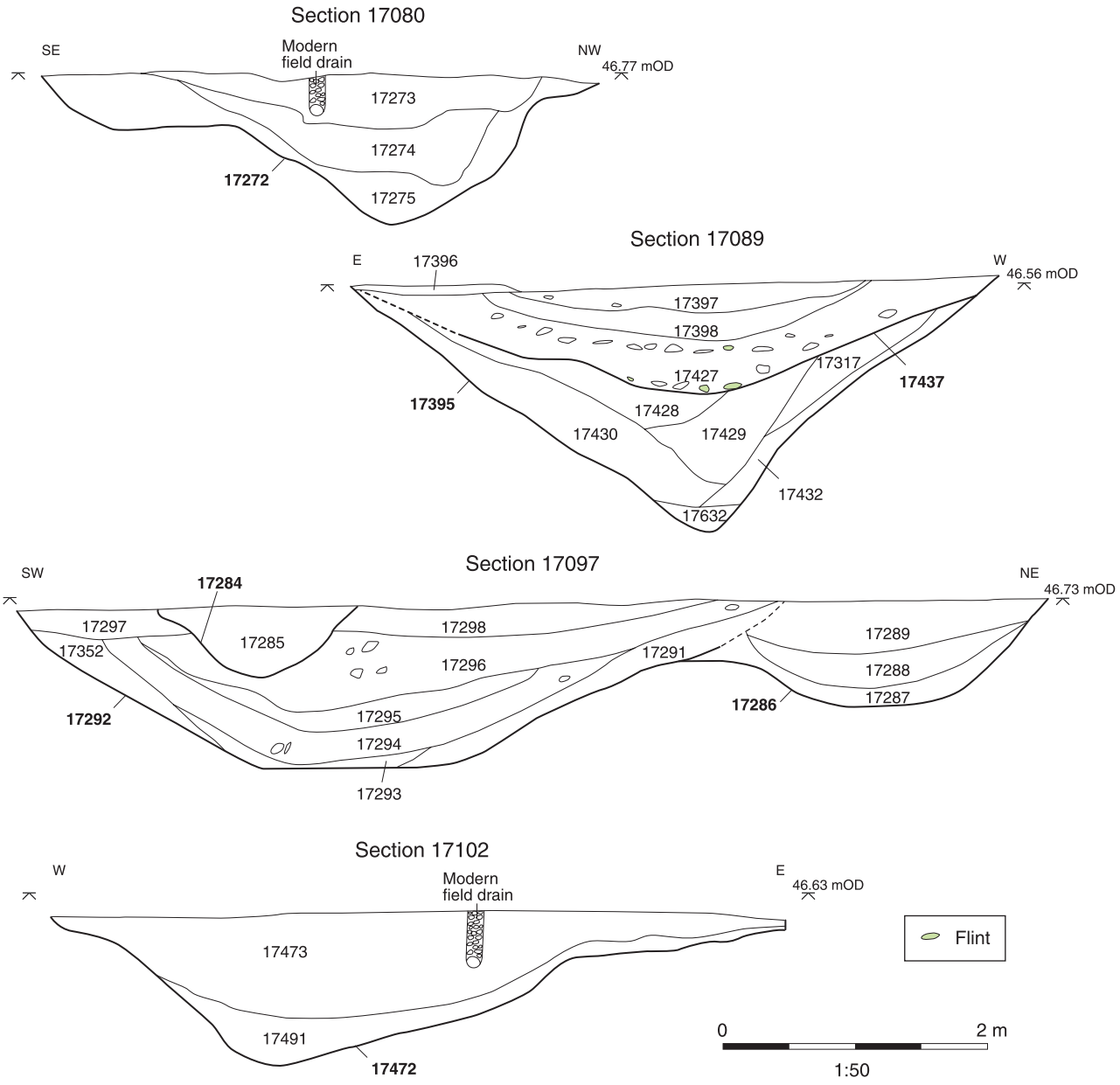


Fig. 2.63 Site 4 (Trench 54), sections through ditches 17496 and 17719

Fig. 2.64 Site 4 (Trench 54), section through ditch 17719

Fig. 2.65 Site 4 (Trench 54), section through ditch 17496, showing layer of sandstone cobbles 17427

Fig. 2.66 Site 4 (Trench 54), horse skull on the base of ditch 17496

Fig. 2.67 Site 4 (Trench 54), cattle skull on the base of ditch 17496

Ditch 17496

Ditch 17496 was dog-legged in plan, enclosing part of the eastern side of the enclosure and turning inward at its northern end to form the southern side of the inturned entrance. It was typically 4.0-4.5m wide and 1.25m deep (Fig. 2.63, sections 17089 and 17097), although it became narrower and shallower toward both terminals. The sequence of fills was similar to that recorded in ditch 17719 and indicated that the ditch had been allowed to silt up for some time. However, a layer of sandstone cobbles (17427) in the lower part of the upper fill clearly did not occur there through natural agency, suggesting that some element of deliberate backfilling may have been involved in the in-filling of the upper part of the feature (Fig. 2.63, section 17089 and Fig. 2.65). The artefactual assemblage from this ditch was quite substantial, comprising more than 4kg of pottery, including a substantial part of an ovoid jar from secondary fill 17027, and more than 7.5kg of animal bone. Two skulls, one horse and one bovine, were located *c* 0.5m apart on the base of the ditch in the central part of the feature (Figs 2.66-67), where they may have been placed deliberately. A radiocarbon determination of 200 cal BC-cal AD 10 (SUERC-30619; 2080±35) was obtained for a sample from the horse skull.

A second cattle skull was recovered from the upper fill of the ditch, as were a copper alloy strip incised with a geometric motif (SF 17003), a pin or needle of the same material (SF 17013) and a two-piece Colchester style brooch. The latter item is likely to date from the immediate post-conquest period, in the middle of the 1st century AD. A distinctive element of the assemblage from this feature was a group of 20 nodules of chalk flint, most of which had flake removals and which appeared to represent contemporary working of flint, although the precise use to which the material was put is unknown.

Ditch 17343

Ditch 17343 was *c* 40m long and curved around the south-western quadrant of the enclosure. It was steep-sided and generally V-shaped in profile,

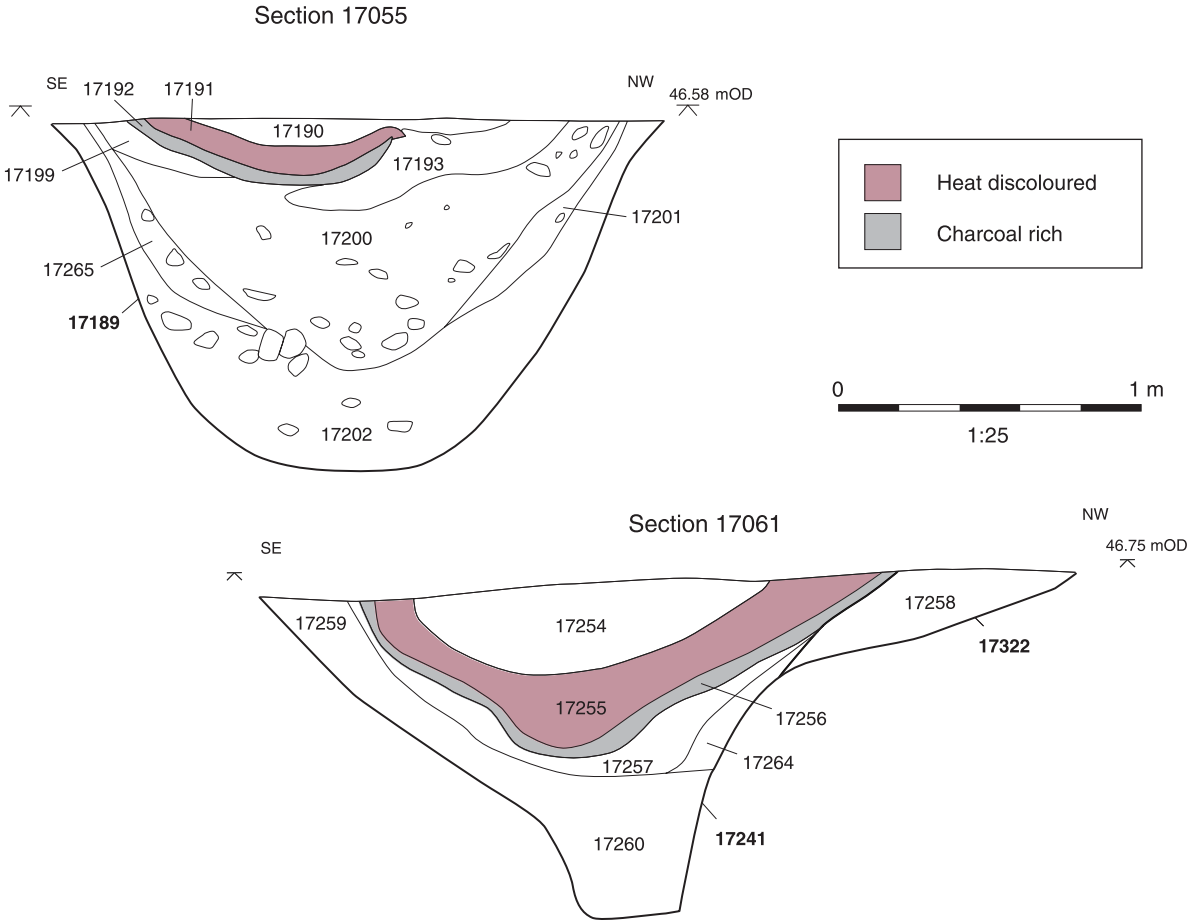


Fig. 2.68 Site 4 (Trench 54), sections through middle Iron Age enclosure ditch 17343

Fig. 2.69 Site 4 (Trench 54), burnt layers exposed in the central part of ditch 17343

although the eastern terminal was more U-shaped. The ditch measured up to 2.2m wide and 0.8-1.1m deep, but became progressively shallower toward the western end, where the terminal was only 0.35m deep. The lower part of the ditch had silted up gradually, during which time a layer of sandstone cobbles accumulated within the lower part of the secondary fill (17200; Fig. 2.68). Samples of charred grain from the latter deposit yielded radiocarbon determinations of 370-90 cal BC (SUERC-30629; 2165±40) and 380-120 cal BC (SUERC-30630; 2185±35). The gradual silting of the ditch was interrupted, however, by the deposition of material derived from a significant episode of burning that had apparently occurred in the vicinity of the ditch. This event was represented by a thin layer of black, charcoal-rich soil (17256) overlain by a more substantial layer of pink, heat-discoloured soil that was up to 0.23m thick (17255; Figs 2.68-69). These layers extended throughout most of the length of the ditch, although they were most clearly defined, and the pink layer was thickest, in the central part. They became less substantial toward the eastern terminal (Fig. 2.70) and were absent from the western terminal. Layer 17256 was relatively insubstantial but clearly resulted from burning *in situ*, and is most likely to have derived from burning of vegetation that was growing within the partly silted ditch. A single sherd of middle Iron Age pottery was recovered. The overlying layer, 17255, appeared to represent burnt material that was deposited in the ditch at some time shortly after the burning event had taken place. It consisted almost entirely of burnt soil, with only a small quantity of minute charcoal particles identified in the four soil samples that were collected, and contained 20 sherds of pottery. This included a barrel-shaped jar in a mixed-tempered fabric, and body and base sherds in sandy, shelly and grog-tempered fabrics. None of the pottery showed obvious signs of burning. The layer produced a total of 29 fragments of animal bone, only seven bones of which were burnt. Samples of burnt bone from this layer yielded radiocarbon determinations of 380-120 cal BC (SUERC-30620; 2185±35) and 390-160 cal BC (SUERC-30624; 2195±35). The upper part of the ditch was filled by a layer (17254) that contained small quantities of sandstone cobbles.

Eastern entrance

Although the construction of the Phase 3 ditch circuits entailed the slighting of some of the earlier earthworks, the location of the eastern entrance was retained. The entrance itself, however, was redesigned on a more substantial scale; rather than a simple break in the the enclosure ditch, the causeway, which measured 4.8m wide, was emphasised by the in-turned ends of ditches 17719 and 17496.

South-eastern entrance

The south-eastern entrance, like the eastern entrance, retained the location of its Phase 2 equivalent. Due to the re-alignment of the ditch circuits it was no longer off-set, but comprised a simple causeway across the enclosure ditch, defined by the terminals of ditches 17343 and 17496, measuring 2.65m wide.

Pits

Two large pits (17421 and 17466) had been dug into the infilled ditches of the earlier phases and so have been attributed to Phase 3 (Fig. 2.62). Pit 17421 had been dug through the infilled ditch 17715, which had formed part of the inner circuit of enclosure ditches, and the pit also intersected slightly with the terminal of the earlier phase of ditch 17719. It was irregular, though approximately oval in shape, and measured 3.6m by 2.0m across and 1.1m deep. The initial fill comprised a layer of orange-mottled grey clay (17518) that may have accumulated through natural silting processes, which was overlain by a sequence of more humic soil layers that may have derived from deliberate backfilling. It is from the latter deposits that the majority of the artefactual assem-

Fig. 2.70 Site 4 (Trench 54), the eastern terminal of ditch 17343

blage was recovered. This comprised a little over 1kg of pottery and a similar quantity of animal bone.

Pit 17466 was situated a short distance outside the south-eastern entrance and had been dug into the junction of outer enclosure ditch 17345 with antenna ditch 17721, a location that is unlikely to have resulted from mere chance. The pit was distinctly irregular in plan, although the same fills extended throughout and so it was clearly dug as a single feature. It was slightly larger than pit 17421, measuring 4m by across 3m, and was steep-sided with a depth of 1.1m. An initial accumulation of soil 0.2m thick (17484/17603) was overlain by a layer of sandstone cobbles (17464) that tipped into the pit at a steep angle from the north side (Fig. 2.71). This layer was overlain by further fills that contained a little over 0.5kg of middle Iron Age pottery and an assemblage of animal bone that included five pieces of red or fallow deer antler, one of which had been sawn.

Other middle Iron Age features

Hollows associated with the eastern entrance

Two shallow hollows (17262 and 17409; Fig. 2.72) situated within the eastern entrance were both filled by a large quantity of sandstone cobbles that may represent the remains of metalling associated with the entrance. The hollows may have originated as discrete potholes within the entrance that were filled in using the cobbles, or the metalling may have been a more extensive layer that elsewhere has been destroyed by truncation caused by medieval and modern ploughing. No artefactual or stratigraphic evidence was found to indicate with which phase of the enclosure the metalling was contemporaneous.

Pits within the enclosure

A number of possible features within the enclosure were investigated, but most proved to be extremely shallow and lacking in artefactual material, and are likely to represent natural hollows or tree-throw holes. Only five pits were definitely archaeological in origin (17122, 17282, 17317, 17618, 17622; Figs 2.72-73). It was not possible to attribute these features to a specific phase of the development of the enclosure on either stratigraphic or ceramic grounds. The pits were distributed apparently randomly across the interior of the enclosure. Pits 17618 and 17622 intersected, but the others were isolated discrete features.

Pits 17618 and 17622 both measured *c* 2.2m in diameter. Pit 17618 was the earlier and, at 0.57m deep, slightly the shallower of the two. It yielded only four sherds of pottery, and its northern side was cut by pit 17622. The latter pit was somewhat more substantial, with a depth of 0.8m. The presence within its fill of a small number of cobbles, including one large piece of sandstone measuring *c* 0.25m across, suggests that the pit was deliberately backfilled. Artefactual evidence was scarce, comprising only a small quantity of pottery and animal bone recovered from the uppermost fill (17625).

The deepest pit within the enclosure was pit 17317, which measured 2m in diameter and 0.92m deep and had steep, if somewhat irregular sides (Fig. 2.74). A primary fill of orange mottled clay (17316) was overlain by a thin layer of charcoal-flecked material (17433). The main fill comprised a deliberate back-fill (17434) that contained more than 500g of sherds from at least five vessels including slack-profiled jars and one sherd with characteristic middle Iron Age scored decoration,

Fig. 2.71 Site 4 (Trench 54), pit 17466, with layer of sandstone cobbles tipping in from the north side

as well as a small quantity of animal bone. This deposit also contained a large single-platform core and two non-refitting flakes. Soil samples taken from fills 17433 and 17434 contained abundant charcoal, but the fragments was too comminuted to be identifiable.

Pit 17122 was a slightly irregular, flat-based feature 0.35m deep, the northern half of which had been destroyed by modern ditch 17717, leaving only the southern part intact (Fig. 2.73, section 17035). No artefactual material was recovered from the pit but it may have been the original source of an assemblage of 948g of pottery that was recovered from the adjacent part of ditch 17717.

Pit 17282 was the least substantial of these features, measuring 1.2m in diameter and only 0.24m deep, and contained a fill of sandstone rubble (17283).

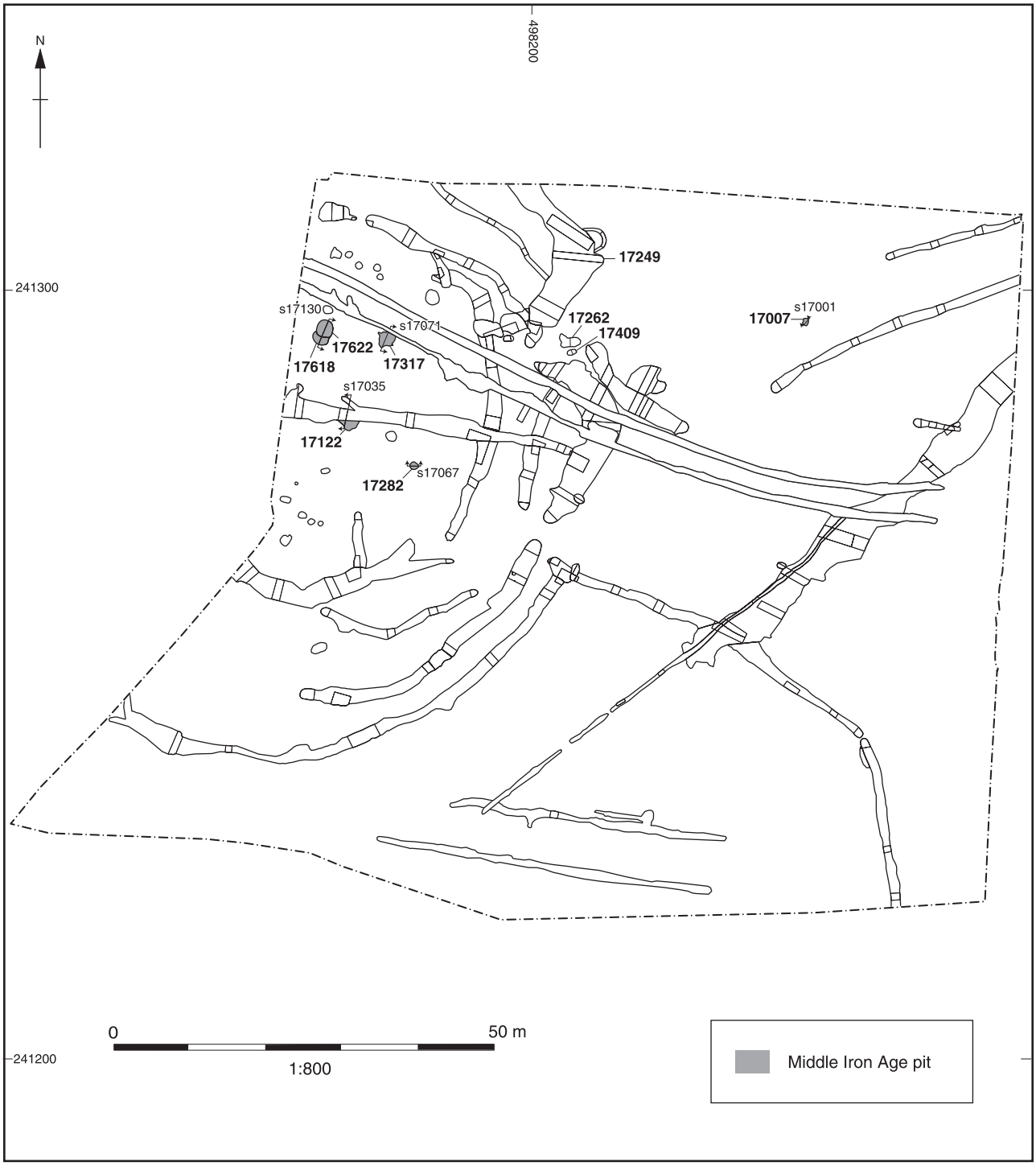


Fig. 2.72 Site 4 (Trench 54), pits associated with the middle Iron Age enclosure

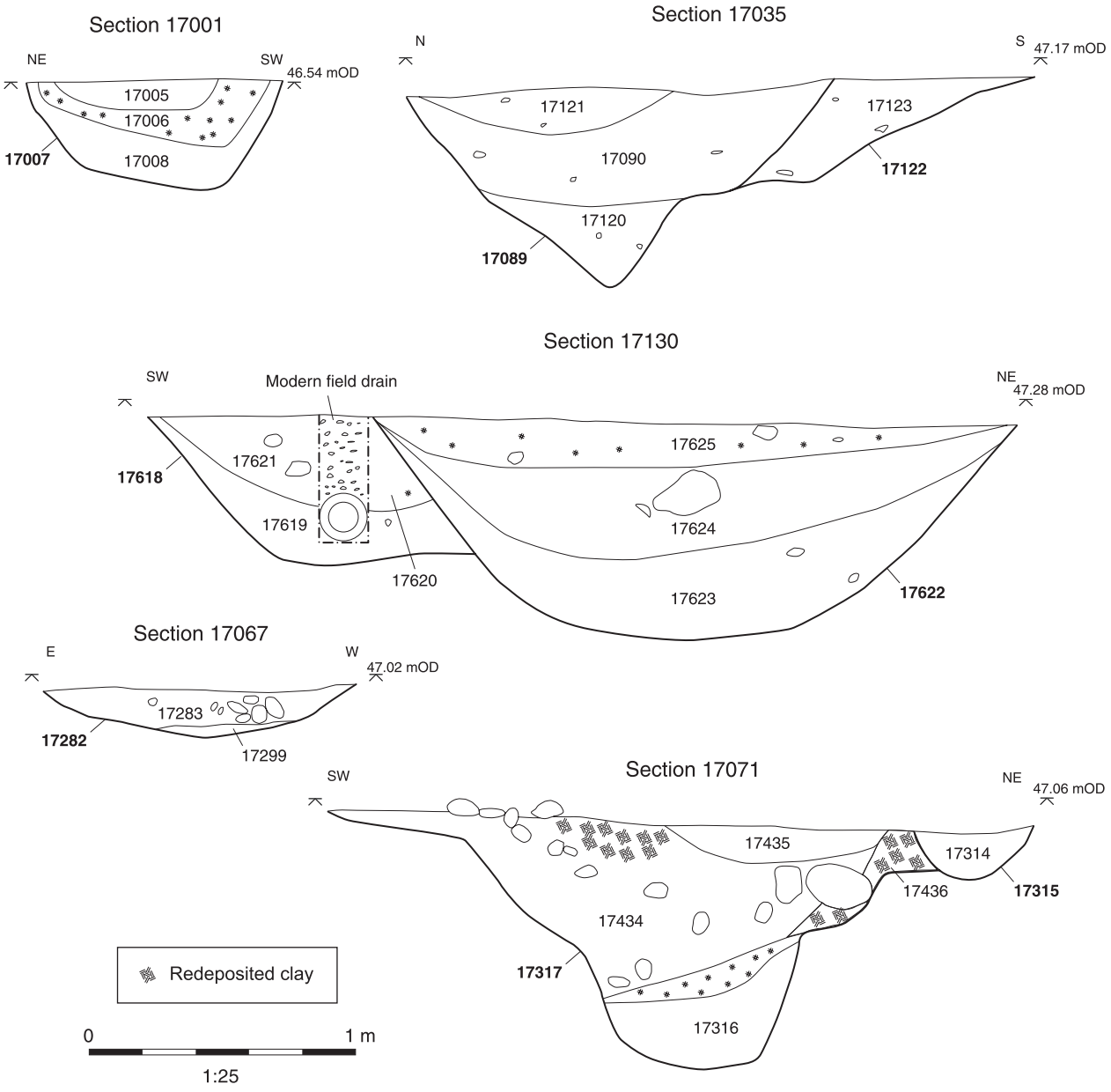


Fig. 2.73 Site 4 (Trench 54), sections through pits within the middle Iron Age enclosure

Pit 17007

A single pit (17007) was situated outside the enclosure (Figs 2.72-73, section 17001, and 2.75). This feature lay in an isolated location in the north-eastern part of the excavation area, some 25m from the enclosure. The pit was approximately circular and measured 1.0m in diameter and 0.4m deep. Following the accumulation of a layer of redeposited natural clay 0.2m thick (17008), a dump of soil (17006) that was rich in oak charcoal and included a bowl in a fabric tempered with organic material, most likely shell was deposited in the pit (Fig. 2.75). The bowl itself, however, was not burnt.

Ring gully 17249

Part of a curving gully (17249) was identified. It may have been the eastern half of a small ring gully, the western part of which had been destroyed by the digging of ditch 17719. The relationship with the latter ditch suggests that it was associated with the original enclosure. The gully was located outside the enclosure, *c* 15m north of the eastern entrance, and had a diameter of only *c* 2.5m. Clearly, it was not substantial enough to represent the remains of a roundhouse gully, but it may have served to enclosure some other feature. The gully was 0.7m wide and 0.38m deep, and contained a few sherds of middle Iron Age pottery.

Fig. 2.74 Site 4 (Trench 54), pit 170317

Fig. 2.75 Site 4 (Trench 54), dump of charcoal-rich soil and middle Iron Age bowl exposed in pit 17007

Post-medieval features

Hollow-way 17712 and ditch 17713

Hollow-way 17712 extended across the south-eastern part of the excavation area on a NE-SW alignment (Fig. 2.76). It was exposed for a total length of 60m, petering out at the south-western end and extending beyond the edge of the excavation at the north-eastern end. It measured *c* 4m wide and 0.1-0.3m deep, and cut across the antenna ditch of the middle Iron Age enclosure. No artefactual evidence was recovered to indicate the date of this feature, the ceramic assemblage comprising only a handful of small, abraded sherds of Iron Age pottery that are likely to have been residual, derived from activity associated with the enclosure. The western side of the hollow-way was cut by a shallow ditch (17713) that lay on the same alignment and presumably defined an associated boundary that persisted after the hollow-way had passed out of use. The ditch extended for *c* 35m beyond the south-western end of the hollow-way before petering out in the southern part of the excavation area.

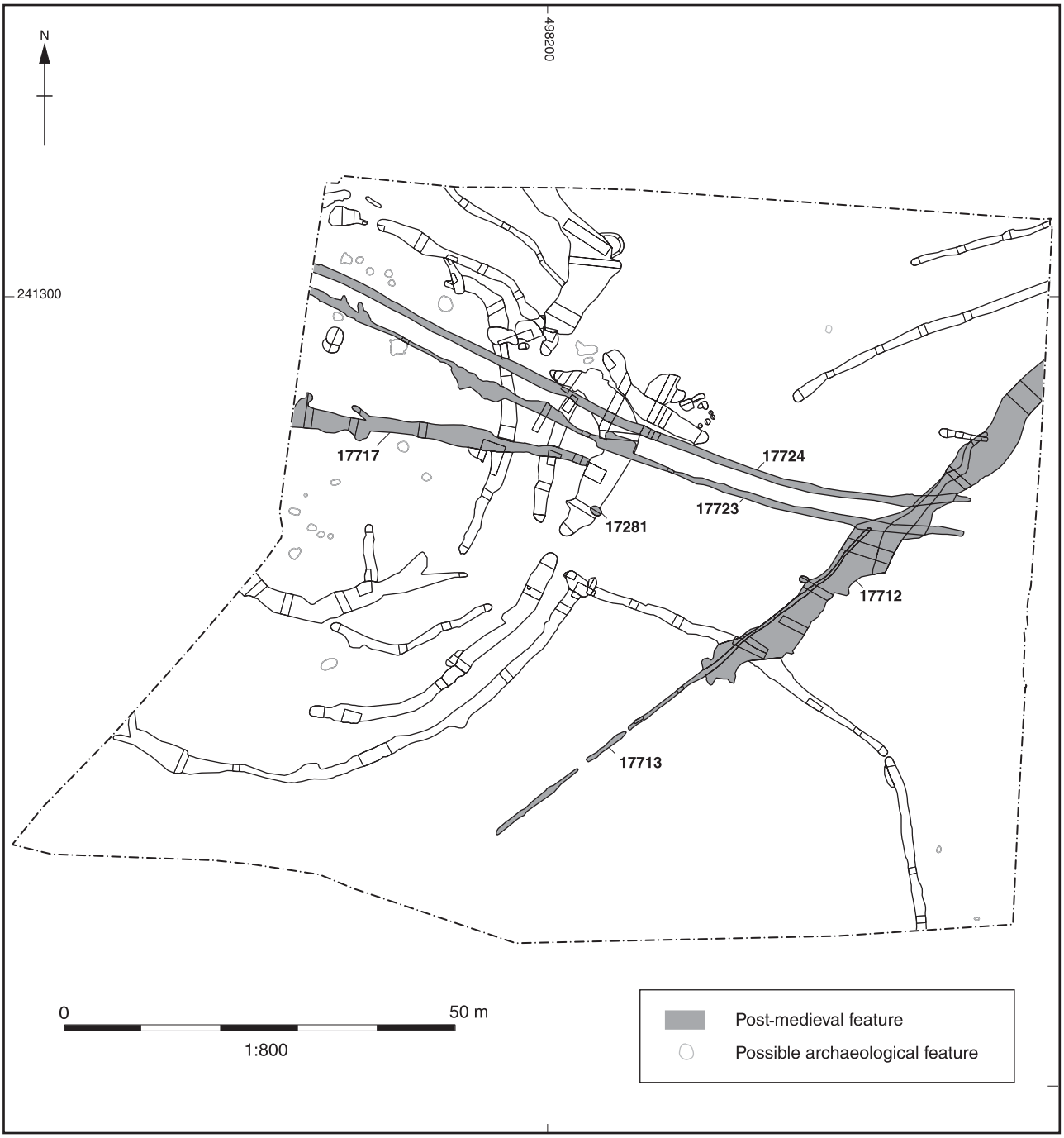


Fig. 2.76 Site 4 (Trench 54), features that post-date the middle Iron Age enclosure

Ditches 17723 and 17724

Ditches 17724 and 17724 extended across the excavation area on parallel, slightly curving alignments, and cut across the middle Iron Age enclosure (Fig. 2.76). Ditch 17724 was the more substantial of the two, and was a V-profiled feature up to 0.6m deep, whereas ditch 17723 was no more than 0.25m deep. Five crumbs of 18th-19th-century pottery were recovered from the fill of ditch 17724, and it is likely that the ditches represented a post-medieval field boundary, probably with a bank or hedgerow between them.

Ditch 17717

Ditch 17717 extended across the middle Iron Age enclosure on an E-W alignment (Fig, 2.76). It was originally recorded as being cut at its eastern end by ditch 17496, and thus representing a phase of activity between the original occupation of the enclosure and the subsequent re-instatement of its eastern side. However, this relationship was problematic as the character and alignment of the feature is clearly at odds with the other Iron Age features and, although the ditch contained an

assemblage of more than 1.8kg of middle Iron Age pottery, it also yielded a post-medieval dress pin and small, but securely stratified, fragments of Roman brick and tile. Furthermore, a sample of charred grain from fill 17090 that was submitted for radiocarbon dating proved to be modern (SUERC-30628; Griffiths and Naysmith, this volume). It seems likely therefore that the feature is of recent, probably post-medieval origin and that the recording of the relationship with ditch 17496 was erroneous. Approximately half the Iron Age pottery from the ditch came from the intervention dug where it cut through pit 17122, and it is possible that the pit may have been the origin of this material.

Pit 17281

Pit 17281 (Fig. 2.76) cut the upper fill of ditch 17496, which formed part of the re-instatement of the eastern side of the middle Iron Age enclosure. It contained a small assemblage of animal bone but nothing that could assist in assigning a date.

SITE 4 (TRENCH 61)

Site location

Site 4 (Trench 61) was located north-west of the village of Marston Moretaine, west of the junction of the existing A421 with Beancroft Road (NGR SP 989 417; Fig. 2.77). It was situated on level ground, at *c* 41m OD. A roughly trapezoidal area of 4253m^2 was excavated (Figs 2.77-78), centred on Evaluation Trench 61, in which two pits, one containing Iron Age pottery, had been recorded.

Middle Iron Age features

The Iron Age features at Site 4 (Trench 61) were few in number but may represent the remains of a settle-

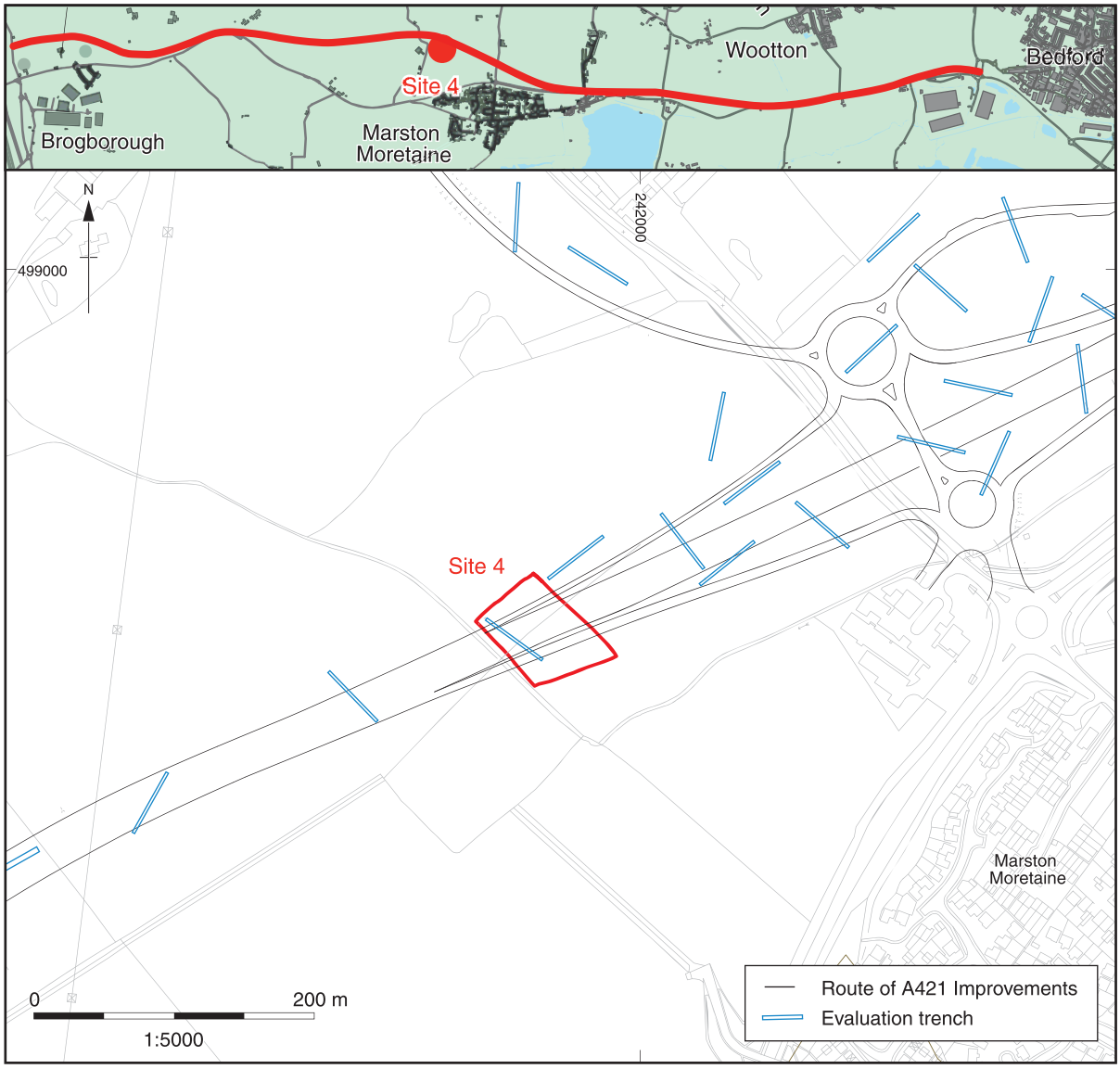


Fig. 2.77 Location of Site 4 (Trench 61). (© Crown copyright. All rights reserved. Licence no. 100005569)

Fig. 2.78 General view of Site 4 (Trench 61)

ment the evidence for which has largely been destroyed by the effects of subsequent agriculture. They comprised part of a ring gully (5092) and six pits (5023, 5030, 5035, 5043, 5044, 5084) of definite or possible Iron Age date. A small quantity of Iron Age pottery also occurred as residual material in later features (Fig. 2.80).

Ring gully 5092

The ring gully (Figs 2.80-81) was represented by an arc of gully (5092) that delimited its north-eastern quadrant. The gully measured *c* 9m in length and defined a regular curve with a projected diameter of *c* 12m. It was 0.3-0.35m wide, with a slight bulge a short distance from its western end where the width increased to 0.5m, and had a depth of 0.2m. The western end of the gully ended abruptly in a square-ended terminal (Fig. 2.81, section 5021), and although the eastern end sloped more gradually (Fig. 2.81, section 5020) this may also have been an original terminal. A handful of very small sherds of pottery were recovered from its fill, as well as 12 fragments (26 g) of animal bone. No other features were identified that might have formed part of this putative structure.

Iron Age pits

The pits were quite widely distributed across the area of the excavation, pits 5044 and 5084 being situated near the southern corner of the site, pit 5043 lying a few metres north-east of the ring gully, and pits 5023, 5030 and 5035 forming a discrete group in the northern part of the excavation (Fig. 2.80). Pits 5043 and 5044 were by far the most substantial of these features, the others being rather ephemeral in character, and these two larger pits also had similar sequences of fills. Pit 5044 (Figs 2.82, section 5017 and Fig. 2.83) had a somewhat irregular shape, both in plan and in profile, and measured 1.3m by 0.86m across and had a depth of 0.38m. Its basal fill was a deposit of black, charcoal-rich soil (5046), although the fragments of charcoal were comminuted and offered no potential for species identification. Small quantities of pottery were recovered from both this and the overlying backfill (5045), including a rimsherd from a slack-profiled shouldered jar from the latter deposit. Pit 5043 (Fig. 2.82, section 5016) was very similar in size to pit 5044, although its shape was more regular and it was slightly deeper, with a depth of 0.45m. It, too, contained a charcoal-rich bottom fill (5042) overlain by backfill (5040, 5041). The uppermost fill (5044) contained six very small fragments of pottery. Pit 5084, which lay a short distance west of pit 5044, was a shallow hollow only 0.1m deep, and similarly contained a small quantity of middle-late Iron Age pottery. The three pits in the northern part of the excavation were all quite small, the most substantial being pit 5030,

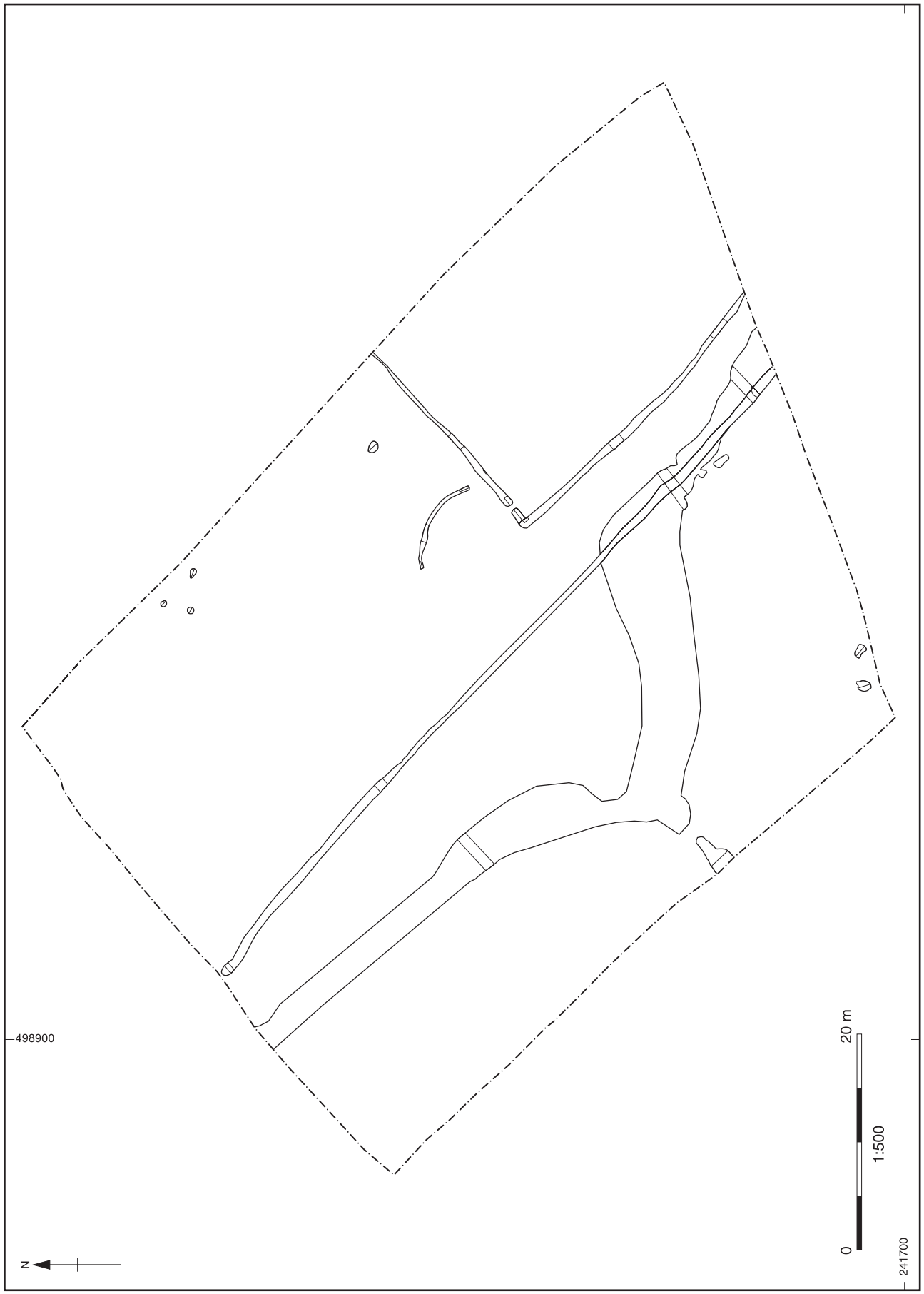


Fig. 2.79 Site 4 (Trench 61), plan of all archaeological features

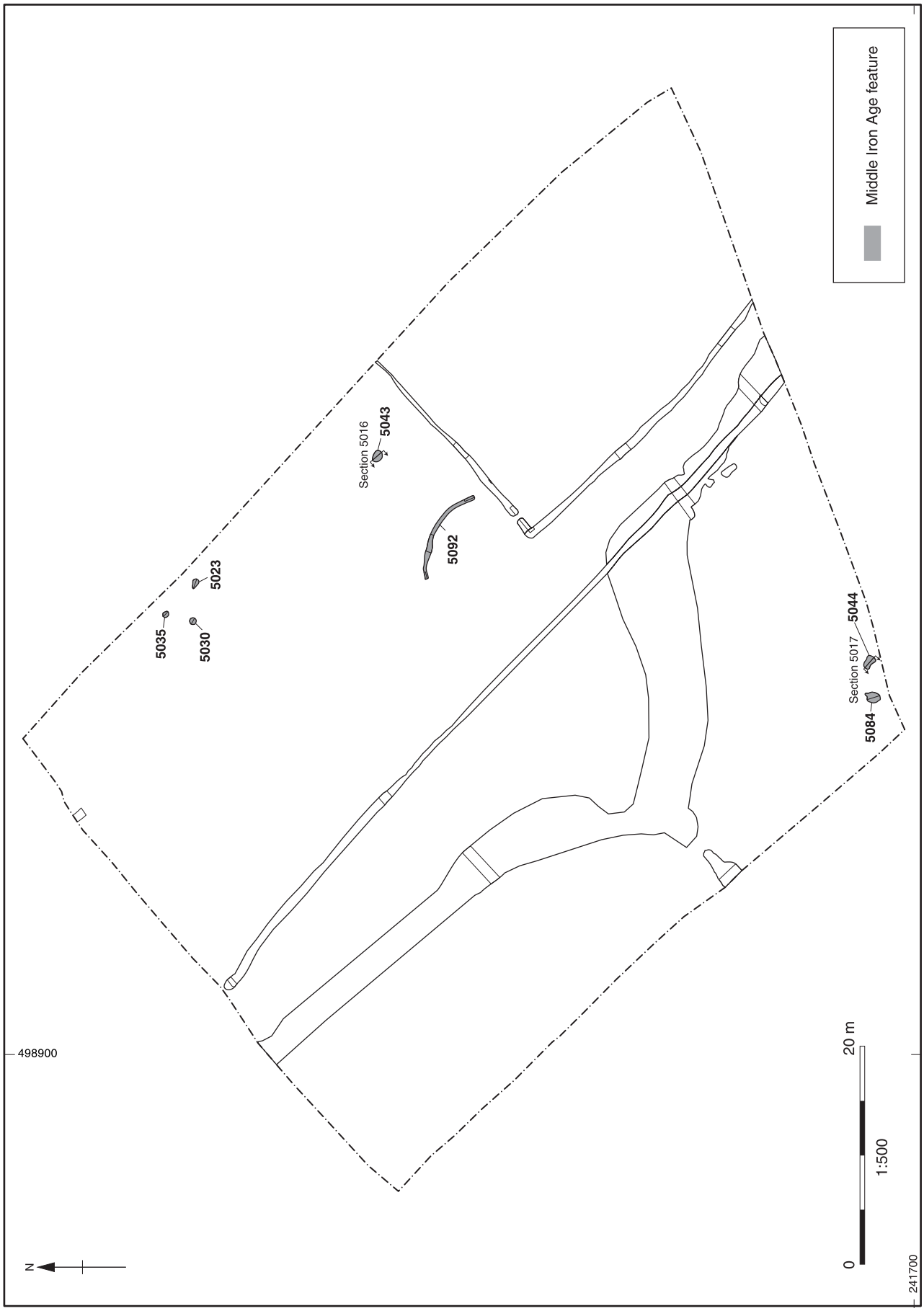


Fig. 2.80 Site 4 (Trench 61), plan of middle Iron Age features

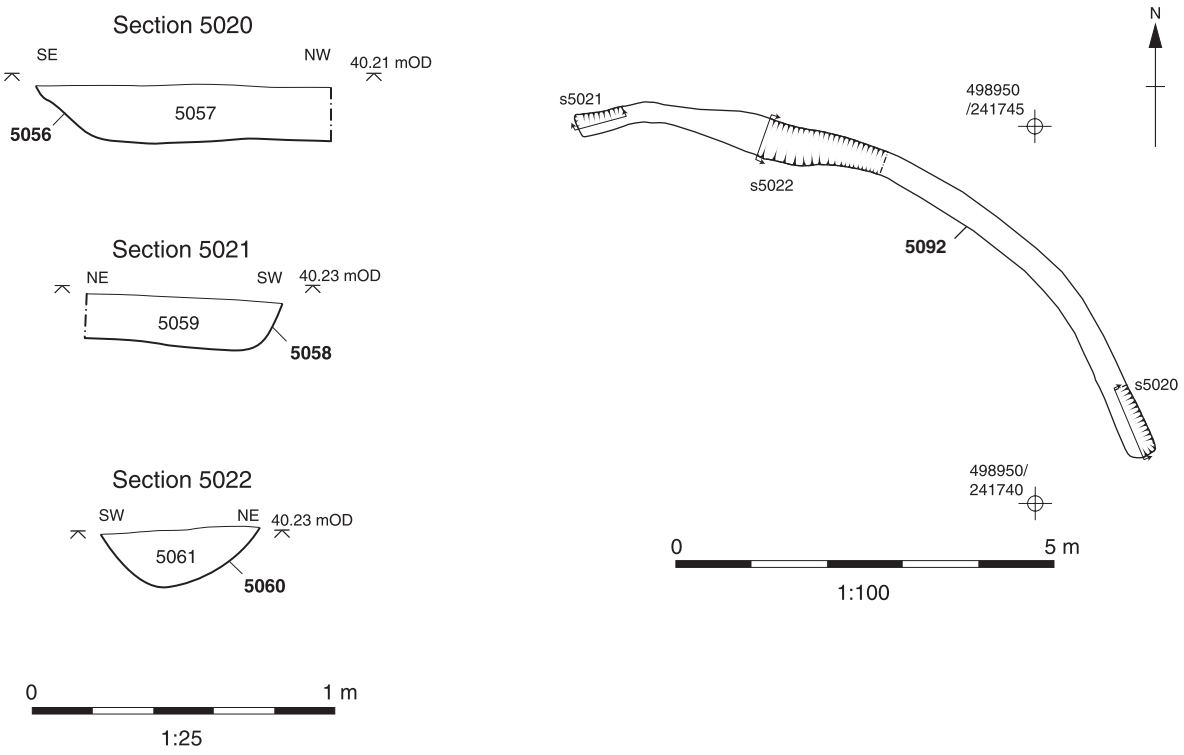


Fig. 2.81 Site 4 (Trench 61), plan and sections of middle Iron Age ring gully 5092

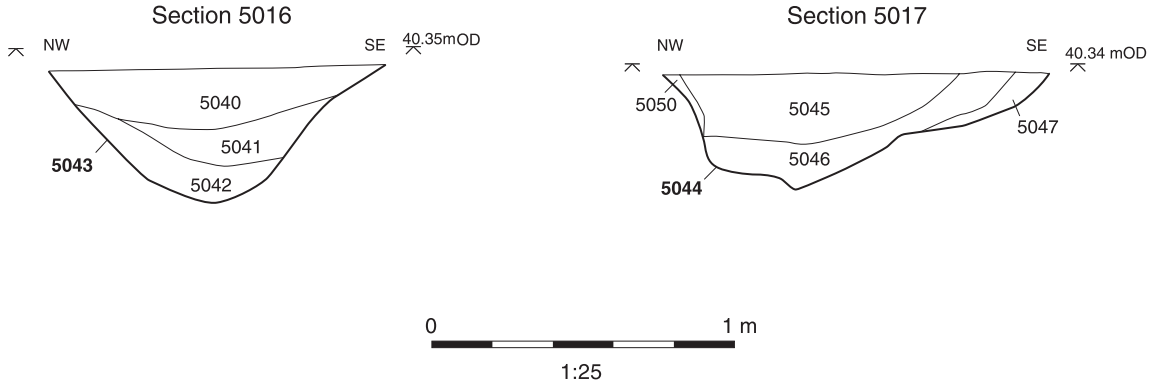


Fig. 2.82 Site 4 (Trench 61), sections through middle Iron Age pits 5043 and 5044

Fig. 2.83 Site 4 (Trench 61), middle Iron Age pit 5044

which was 0.28m deep. The latter feature yielded three small sherds of Iron Age pottery, as well as a single sherd of glazed earthenware of 17th-19th-century date that is probably intrusive. Iron Age pottery was also recovered from pit 5023, and although pit 5035 contained no artefactual material its similarity to the other pits suggests that it was also Iron Age in origin.

Medieval and post-medieval features

Hollow-way 5099

A wide, shallow hollow (5099) interpreted as a hollow-way extended across the site on a rather dog-legged NW-SE alignment (Figs 2.84-85). Toward the north-western end of the site the feature

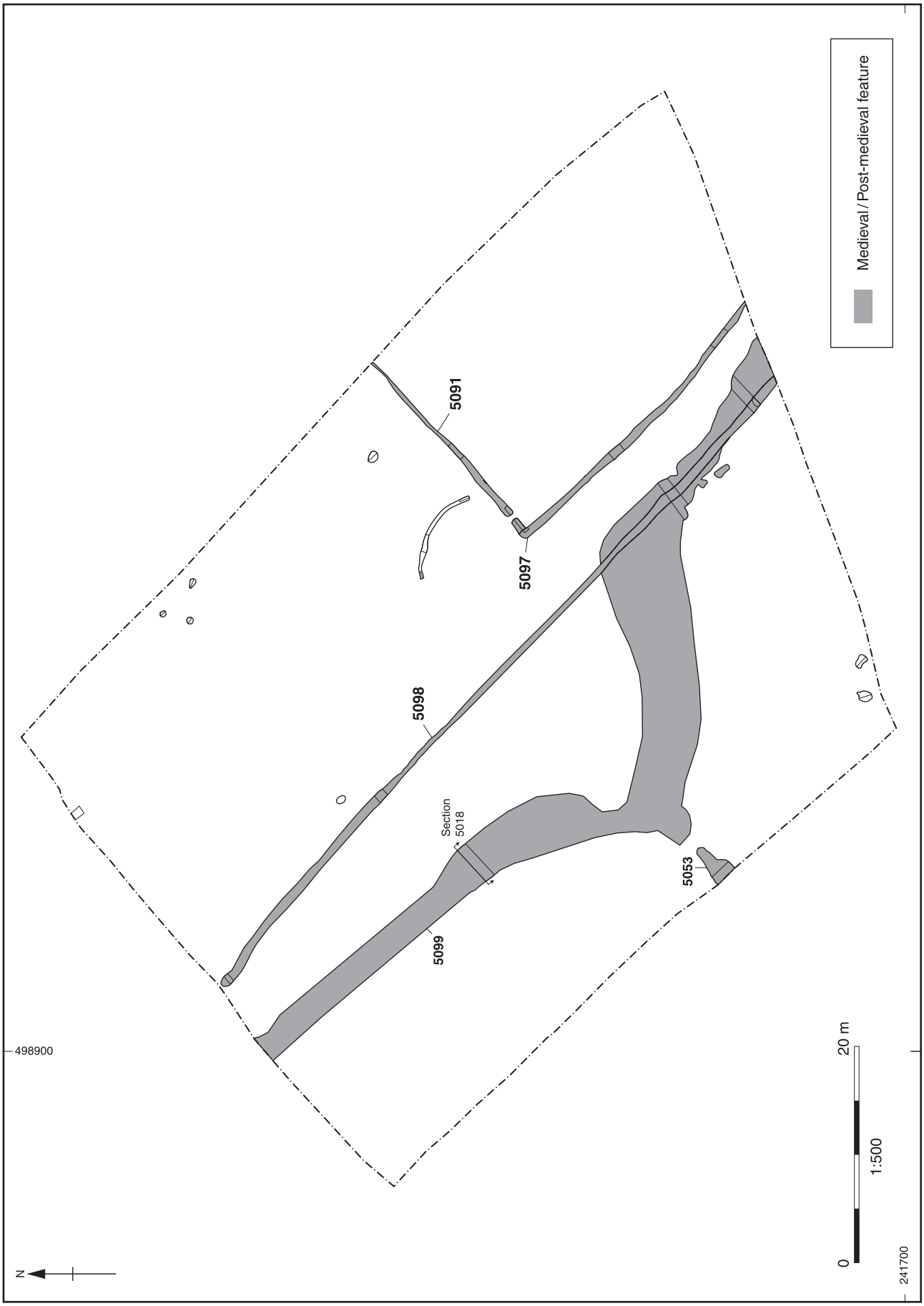


Fig. 2.84 Site 4 (Trench 61), plan of medieval/post-medieval features

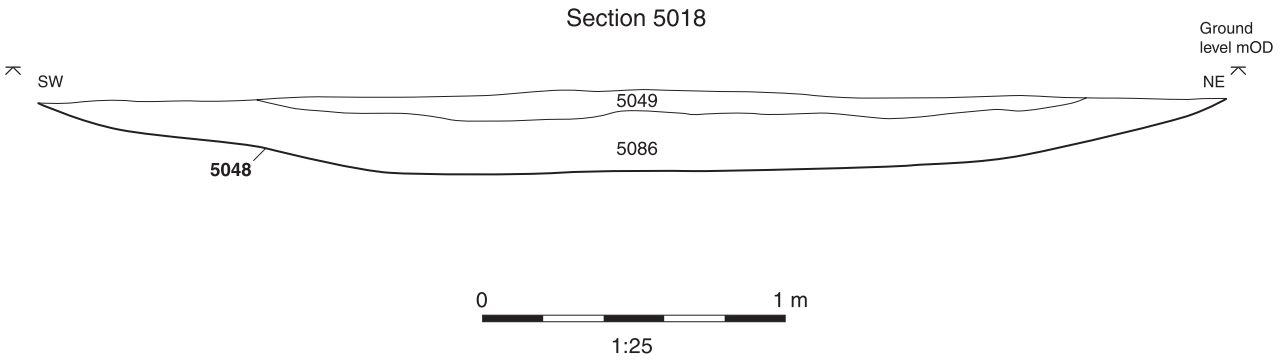


Fig. 2.85 Site 4 (Trench 61), section through hollow-way 5099

was quite straight and measured *c* 2.5m wide, but to the south-east both its alignment and its width were more varied, with the width extending up to a maximum of *c* 7.5m. Throughout its length the hollow-way was shallow and had a wide, flat base with a fairly consistent depth of 0.22-0.26m. It was filled by mottled brown clay soil (5049, 5086). It appeared to be joined from the south-west by a similar, subsidiary hollow (5053) although the junction lay close to the edge of the excavation area and had been partly truncated by more recent ploughing. The irregular alignment of these features may indicate that they were formed by trampling by livestock rather than having been deliberately created features. If so they may have formed adjacent to boundaries that were defined by features for which no other archaeological evidence has survived.

The date of these features was uncertain. The only artefactual evidence recovered from hollow 5099 fills was a small assemblage of Iron Age pottery, amounting only to a little over 50 g, but it is likely that it's common alignment with furrows 5051, 5052 and 5026 indicate a medieval or later date. Its southern part was cut by ditch 5098 (below), perhaps indicating that it defined a boundary during the medieval or post-medieval period that was perpetuated in a more straightened form by the alignment of the ditch.

Post-medieval field boundaries

Field boundaries of probable post-medieval date were represented by a ditch (5098) that extended across the entire length of the excavation on a NW-SE alignment and two ditches that appeared to delimited two sides of a rectilinear field or enclosure that lay on a similar orientation (Fig. 2.84). Although these features did not yield any datable artefacts other than small pieces of Iron Age pottery that are likely to be residual, their orientations are consistent with those of the surrounding modern boundaries, probably indicating that they date from the enclosure of Marston Moretaine in *c* AD 1797.

SITE 5

Site location

Site 5 was located *c* 50m north-east of the junction of the A421 with Lower Shelton Road, which extends north-west through the village of Lower Shelton (NGR TL 000 426; Fig. 2.86). It comprised parts of two small adjoining fields that were situated alongside the existing carriageway, in an area that was proposed for landscaping. The site consisted of a rectangular area that was partly bisected by a ditch (Fig. 2.87). The site encompassed a total area of 1867m^2 and lay on level ground at *c* 38m OD.

Early Iron Age

The only early Iron Age feature identified on Site 5, or indeed on the entire project, was a cremation burial (6067/6070) that was located at the northern end of the site (Fig. 2.88). The burial comprised a shallow, oval pit that measured 0.92m x 0.40m and only 0.14m deep, and which contained a deposit of charcoal-rich soil mixed with a small quantity of cremated bone. The bone was from a single adult of indeterminate sex and yielded a radiocarbon determination of 770-400 cal BC (SUERC-30618; 2406±35 BP). The burial contained a single fragment of pottery that was undiagnostic and could be dated no closer than Iron Age.

Late Iron Age

The distribution of late Iron Age features was restricted to the southern half of the site and comprised two partial ring gullies (6021 and 6042) and eight pits or postholes, although some of the less certain features (below) may also have been of this date (Fig. 2.89). Ring gully 6021 cut two pits that contained late Iron Age pottery (6052 and 109105), indicating that occupation dating from this period may have lasted for some time.

Pits 6052 and 109105

Pit 6052 was a very shallow hollow, only 0.1m deep,

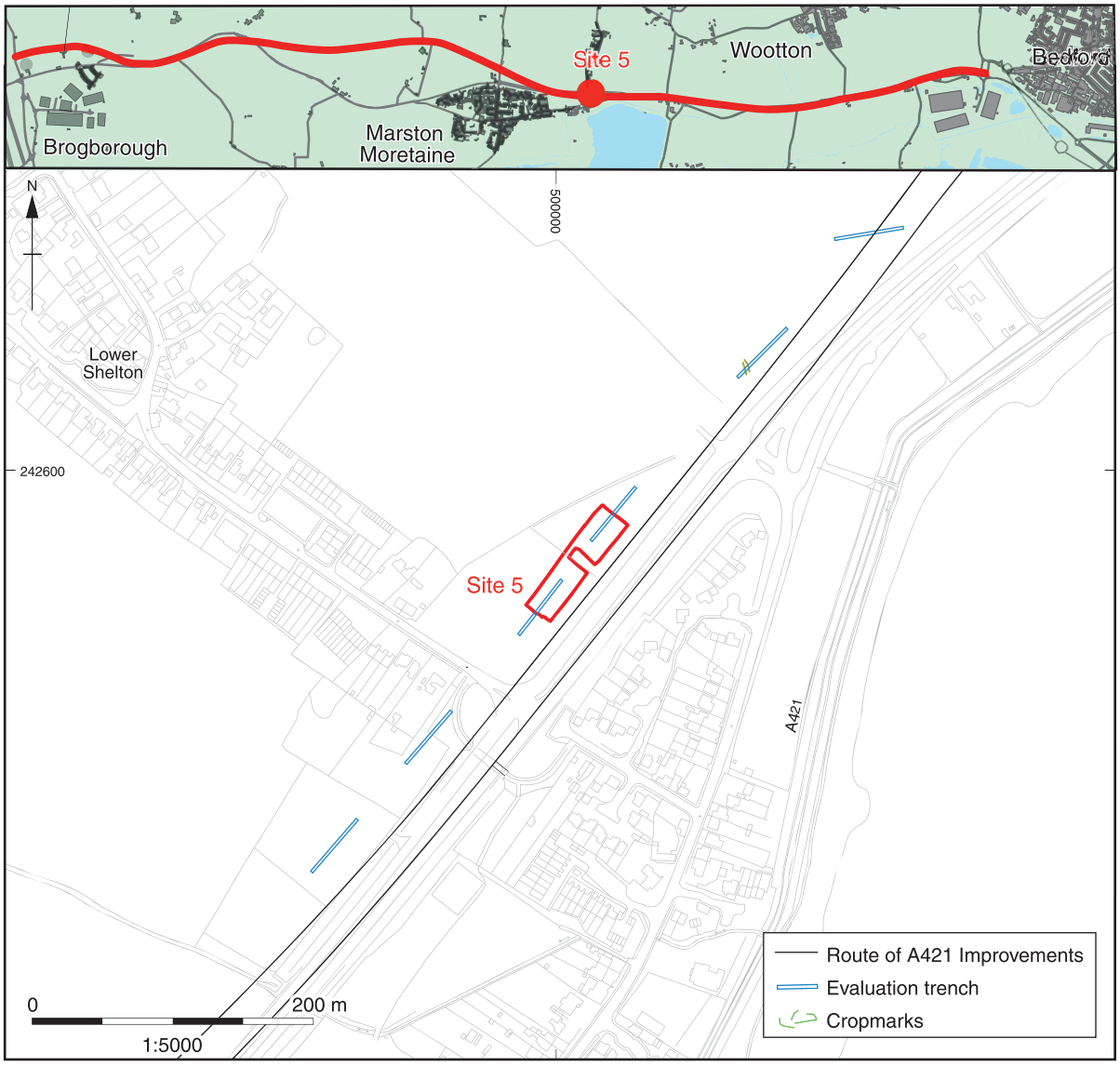


Fig. 2.86 Location of Site 5. (© Crown copyright. All rights reserved. Licence no. 100005569)

from which a small assemblage of 92g of pottery was recovered, but pit 109105 was more substantial. The latter feature was investigated in Evaluation Trench 91. It measured a little over 1.0m in diameter and had steep sides that were slightly undercut on the northern side (Figs 2.89-90). A sequence of four fills was recorded, from which were recovered a small group of pottery sherds, a single piece of animal bone and part of the shaft of an adult human right femur.

Ring gully 6021 and associated features

Gully 6021 cut the south-western side of pit 109105 (Figs 2.89-90, sections 6000 and 109102). The feature comprised a curving length of gully *c* 4m long, the curvature of which suggested that it represented part of the southern side of a ring gully. The gully had a maximum depth of 0.3m, but petered out at either end. A thin primary fill was overlain by a main fill of dark, charcoal-flecked soil that contained a small assemblage of late Iron Age pottery in a variety of grog-tempered fabrics, as well as some small fragments of animal bone. It also contained the upper two thirds of a human left femur, although the bone was much smaller and less robust than the piece from pit 109105 and so is unlikely to have come from the same individual.

A group of discrete features was recorded in the vicinity of ring gully 6021 which might have been associated with this structure, although they could equally have pre-dated it, like pits 6052 and 109105 (Figs 2.89). Small quantities of pottery were recovered from pits 6009 and 109103, the latter of which was excavated during the evaluation stage of the investigation. Both features were shallow, concave hollows that had clearly been subject to considerable plough-truncation, with pit 109105, which was

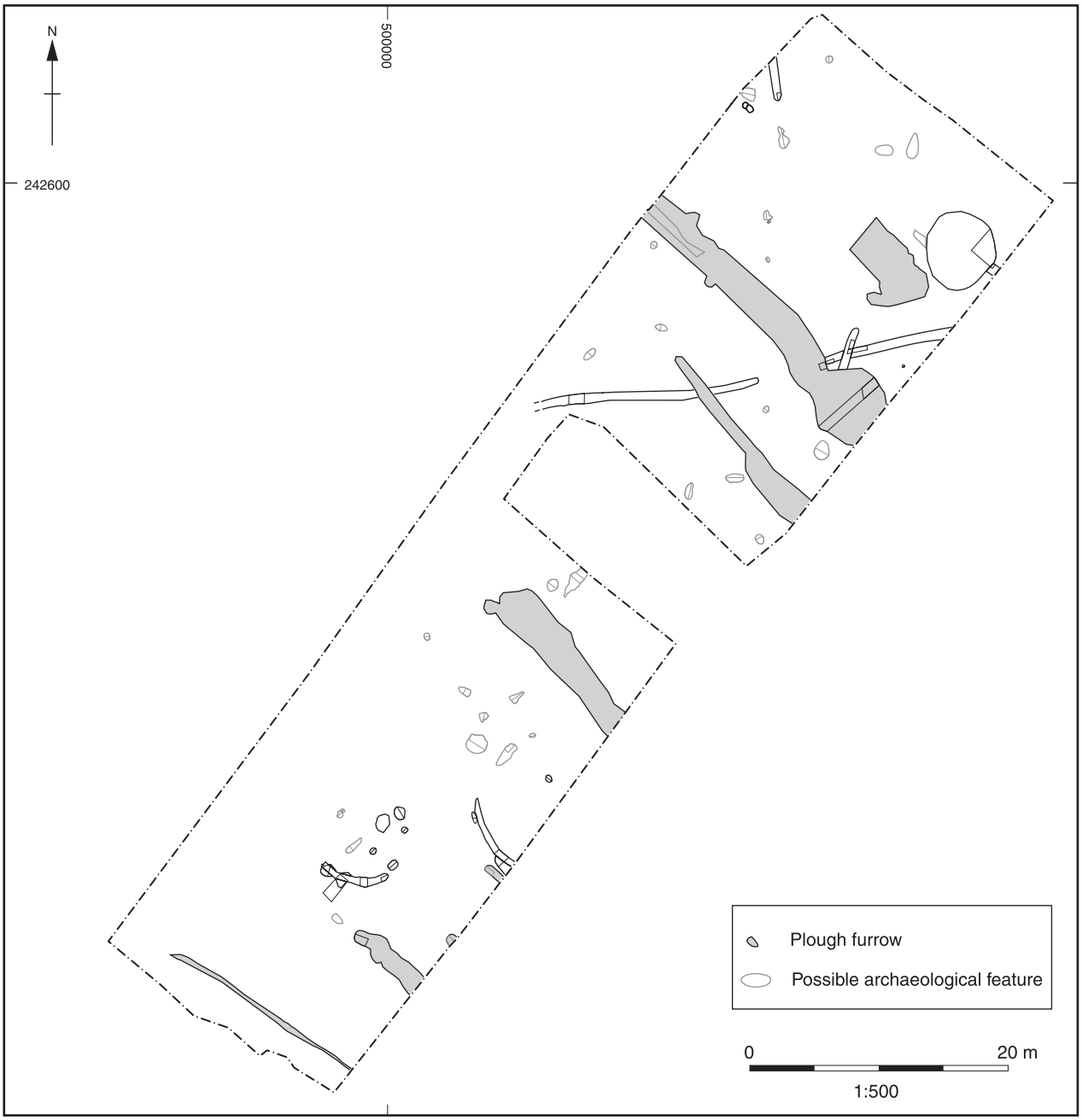


Fig. 2.87 Site 5, plan of all archaeological features

marginally the deeper of the two, measuring only 0.18m deep. Pit 6009 (Fig. 2.91, section 6002 and Fig. 2.92) contained a single fill of dark grey, charcoal-flecked soil that was similar to the main fill of the adjacent ring gully, and pits 6016 (Fig. 2.91, section 6004) and 6025 (Fig. 2.91, section 6006), which were located in the same cluster of features, were also attributed to this phase on the basis of being filled by similar deposits. The latter features were also shallow, with pit 6016 measuring 0.10m deep and pit 6025 surviving to a depth of only 0.03m.

Ring gully 6042

A second ring gully (6042; Figs 2.89-90, section 6014) lay *c* 8m east of ring gully 6021. Like the latter feature, it was not completely preserved but was represented only by an arc of gully that, in this instance, defined the south-western part of the perimeter. The south-eastern part of the feature lay beyond the limit of the excavation. The part of the gully that lay within the excavation area was exposed for a length of *c* 6m, and measured 0.5m wide and 0.19m deep. Its northern end was not investigated by excavation but appeared to become narrower and peter out rather than ending in a definite terminal, suggesting that the northern part of the feature had been destroyed by plough-truncation. A single posthole (6037; Fig. 2.91, section 6013)

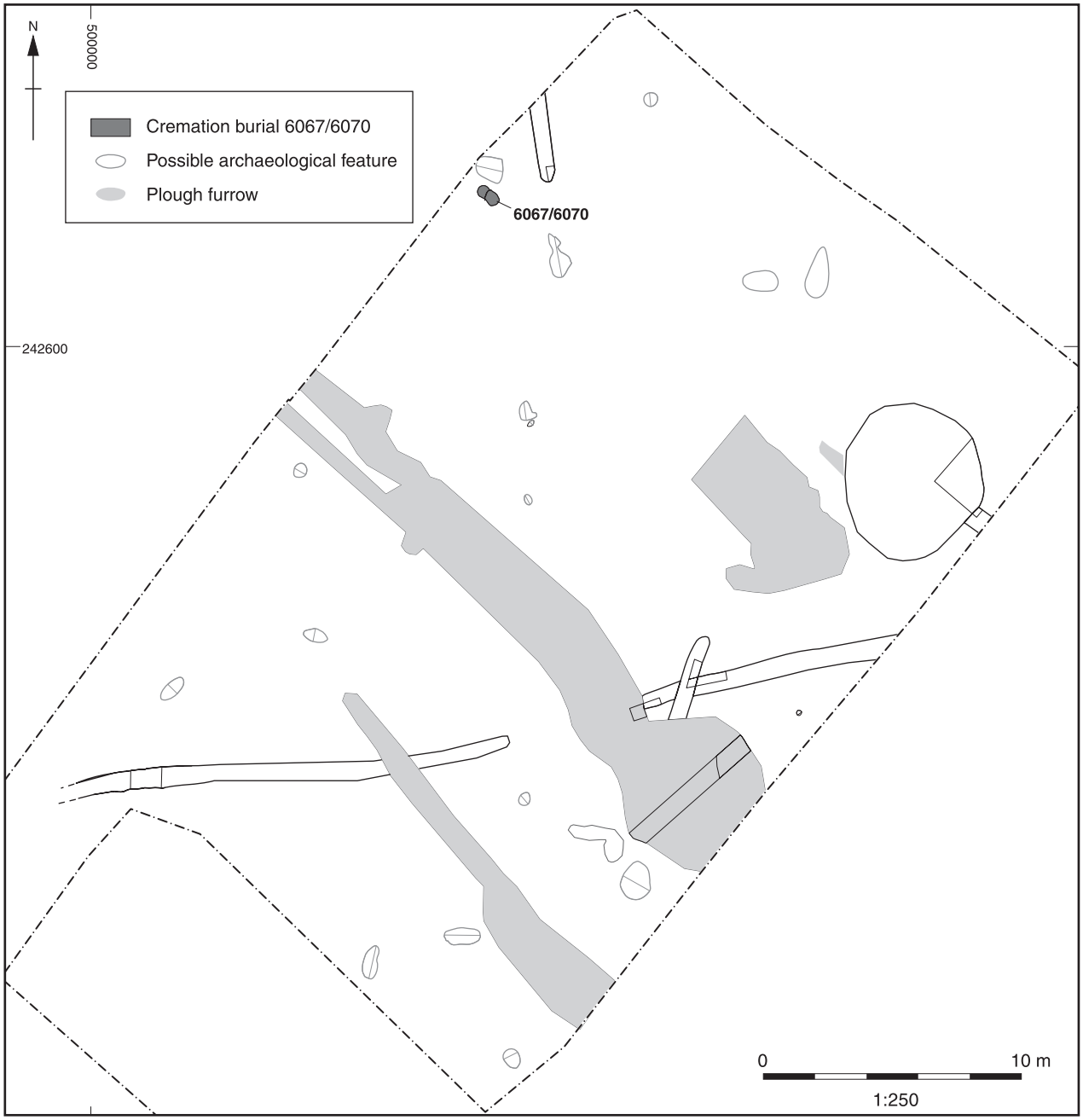


Fig. 2.88 Site 5, location of early Iron Age cremation burial 6067/6070

was identified that may have been associated with this ring gully.

Early Roman period

Evidence was identified for land division during the early Roman period in the form of two boundary ditches that were exposed in the northern part of the excavation area (6094 and 6137; Figs 2.93-94).

Ditch 6137

Ditch 6137 extended across the site on an E-W alignment. It was no more than 0.2m deep, and a break in the middle part of the feature may have been the result of localised truncation rather than representing an original entrance through it. The western end of the ditch petered out, while to the east the feature continued beyond the edge of the excavation area. A single small body sherd of South Gaulish samian ware dating from the late 1st or early 2nd century was recovered from its fill.

Ditch 6094

The southern end of ditch 6094 was exposed at the northern corner of the site. No dating evidence was recovered from this feature, but it was of similar dimensions to ditch 6137 and lay on a N-S alignment, at right angles to that of the latter ditch,

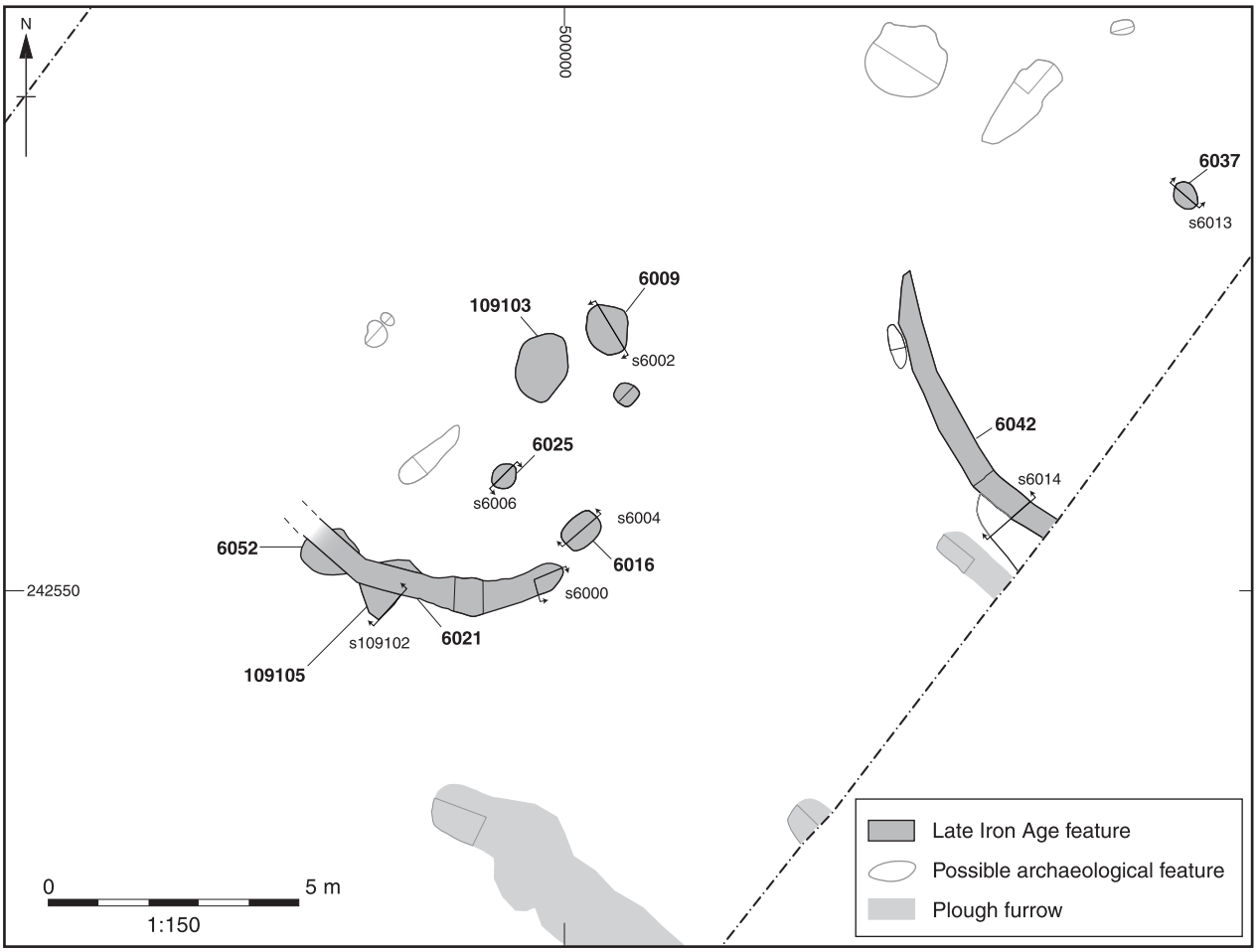


Fig. 2.89 Site 5, late Iron Age features in the southern part of the site

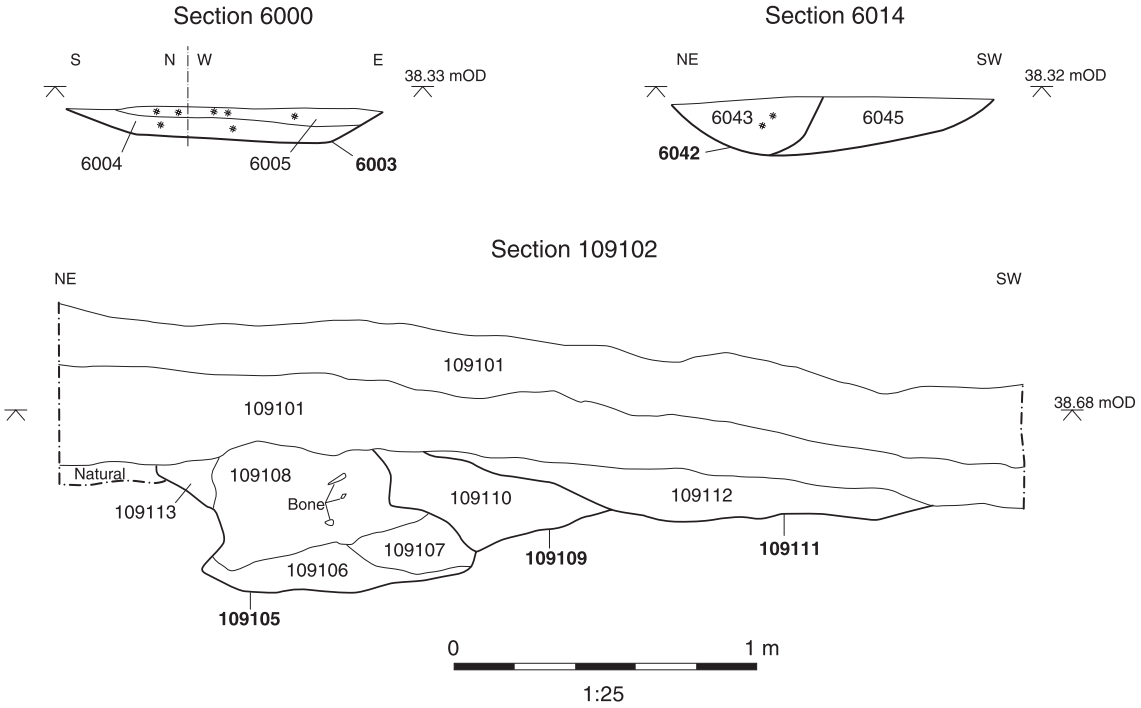


Fig. 2.90 Site 5, sections through late Iron Age ring gullies 6021 and 6042

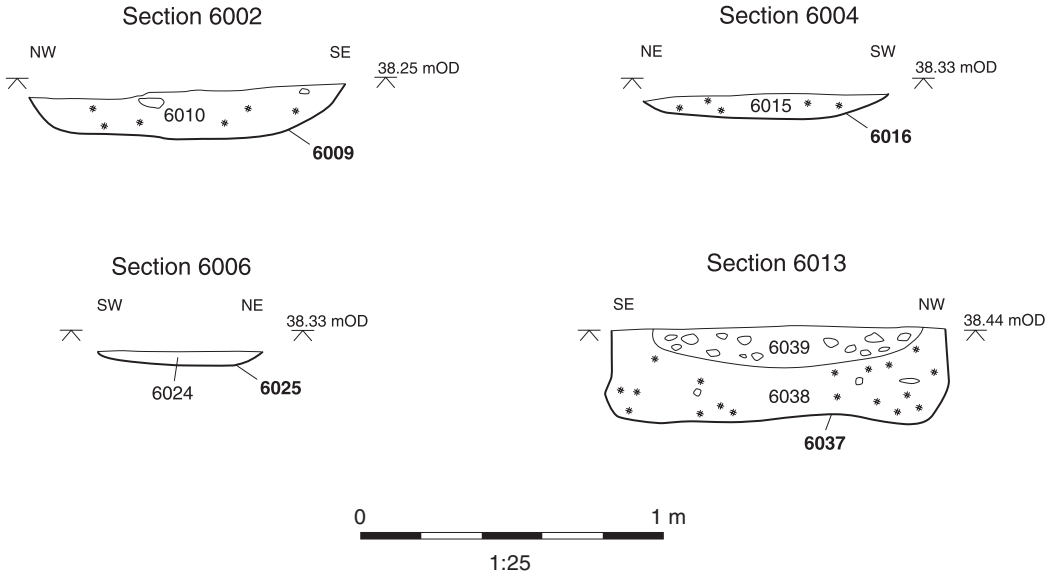


Fig. 2.91 Site 5, sections through late Iron Age pits

Fig. 2.92 Site 5, late Iron Age pit 6009

suggesting that the two ditches defined contemporaneous boundaries.

Ditch 6099

Ditch 6099 (Fig. 2.93) was an insubstantial feature, only 0.08m deep, that cut early Roman boundary ditch 6137 and was itself truncated by a medieval furrow. Apart from these stratigraphic relationships, no evidence was found to indicate the date or function of this feature.

Medieval

A series of plough furrows extended across the site on parallel NW-SE alignments (Fig. 2.87) and are likely to derive from ridge and furrow cultivation dating from the medieval period.

Modern

A large, shallow feature (6119) that was situated near the north-eastern end of the site was cut through a medieval furrow and so is likely to have been post-medieval or modern in origin (Fig. 2.93). It measured *c* 5.5m in diameter and 0.3m deep. Its shallow profile suggests that it may have been a pond.

Other possible archaeological features

In addition to the definite archaeological features, a number of features of less certain origin were also recorded. These comprised shallow hollows of varying shape that were typically filled with light grey clay soil. It is possible that some of these features were the bases of plough-truncated pits, but the irregular shapes of many examples suggested that they were more likely to have been natural hollows or tree-throw holes. One of these features contained two small fragments of Romano-British pottery, and one had a heat-discoloured fill.

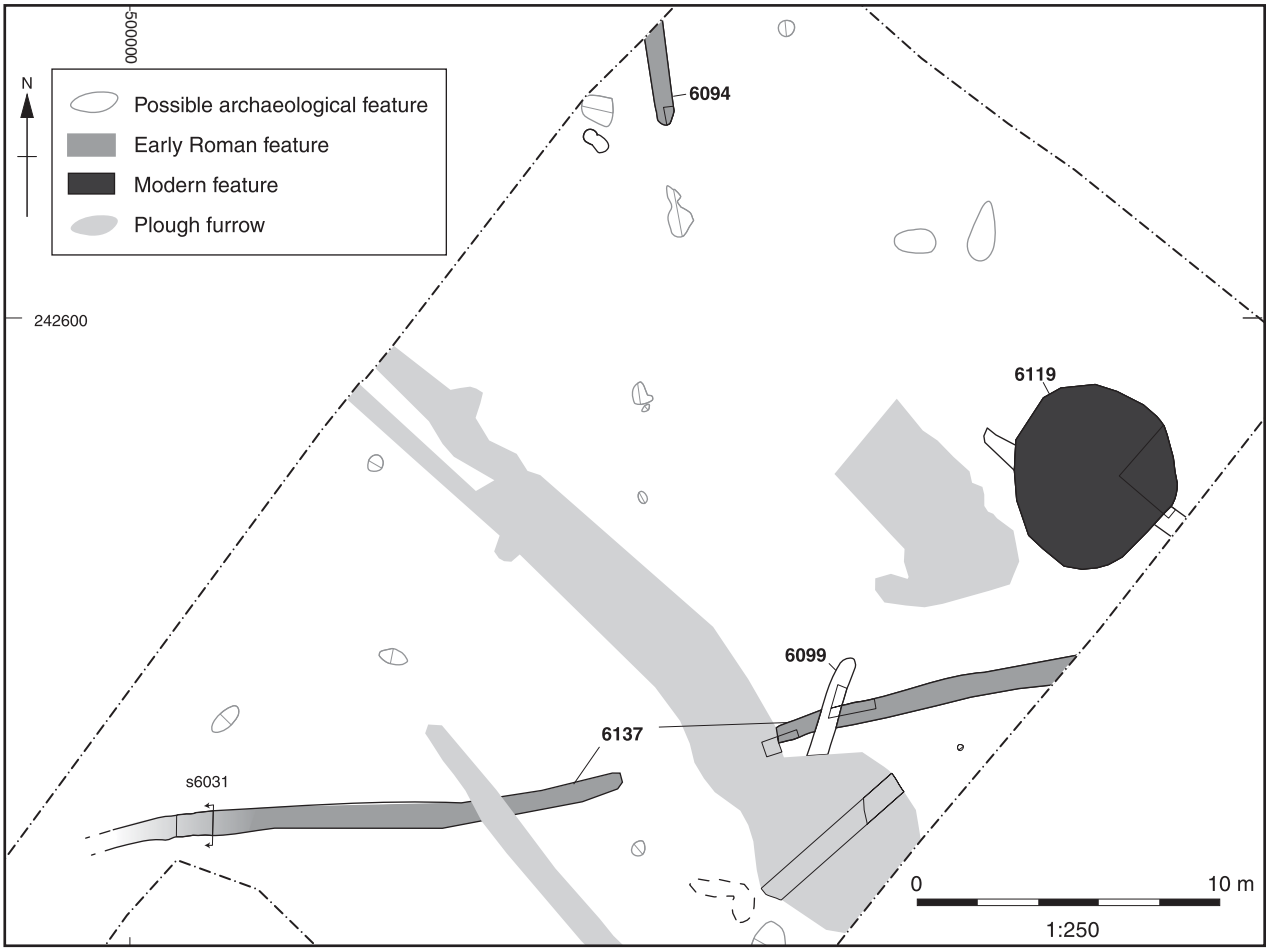


Fig. 2.93 Site 5, early Roman boundary ditches in the northern part of the site

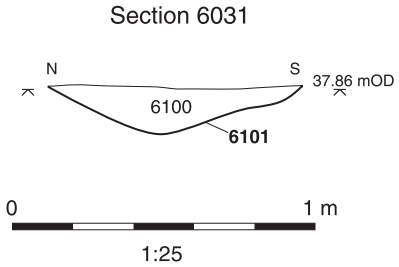


Fig. 2.94 Site 5, section through early Roman ditch 6137

SITE 6 (TRENCHES 97-99)

Site location

Site 6 (Trenches 97-99) was located beside the junction of the A421 with Hoo Lane (NGR TL 006 432; Figs 2.95-6). It comprised a rectangular area covering 7478m², situated on level ground at *c* 38m OD.

The excavation area was targeted on the locations of Evaluation Trenches 97, 98 and 99. These trenches had exposed a number of ditches, although no dating evidence had been recovered from the features in Trench 97 and flooding had precluded any detailed investigation of the features in Trenches 98 and 99. The excavation resulted in the recovery of very little artefactual evidence, but it is likely that all the ditches revealed were post-medieval or modern in origin.

Boundary ditch 7205/7208

The earliest feature encountered was a ditch that defined a rather sinuous boundary (7205/7208) that extended for a distance of *c* 85m on a NE-SW alignment (Fig. 2.97). The ditch was broken in two places, although as the feature was very shallow, typically measuring only 0.12-0.22m deep, this may have been the result of truncation by subsequent ploughing rather than representing the locations of original entrances through the boundary. Similarly, the ends of the ditch may represent the points beyond which it had been truncated rather than its original extent. No artefactual evidence was recovered from the ditch, but it lay on a similar orientation to ditch 7204, which dated from the 18th-19th century, and may have defined an earlier version of the same boundary.

18th-19th-century boundary ditches

A group of linear field boundary ditches were recorded that are likely to have formed part of a

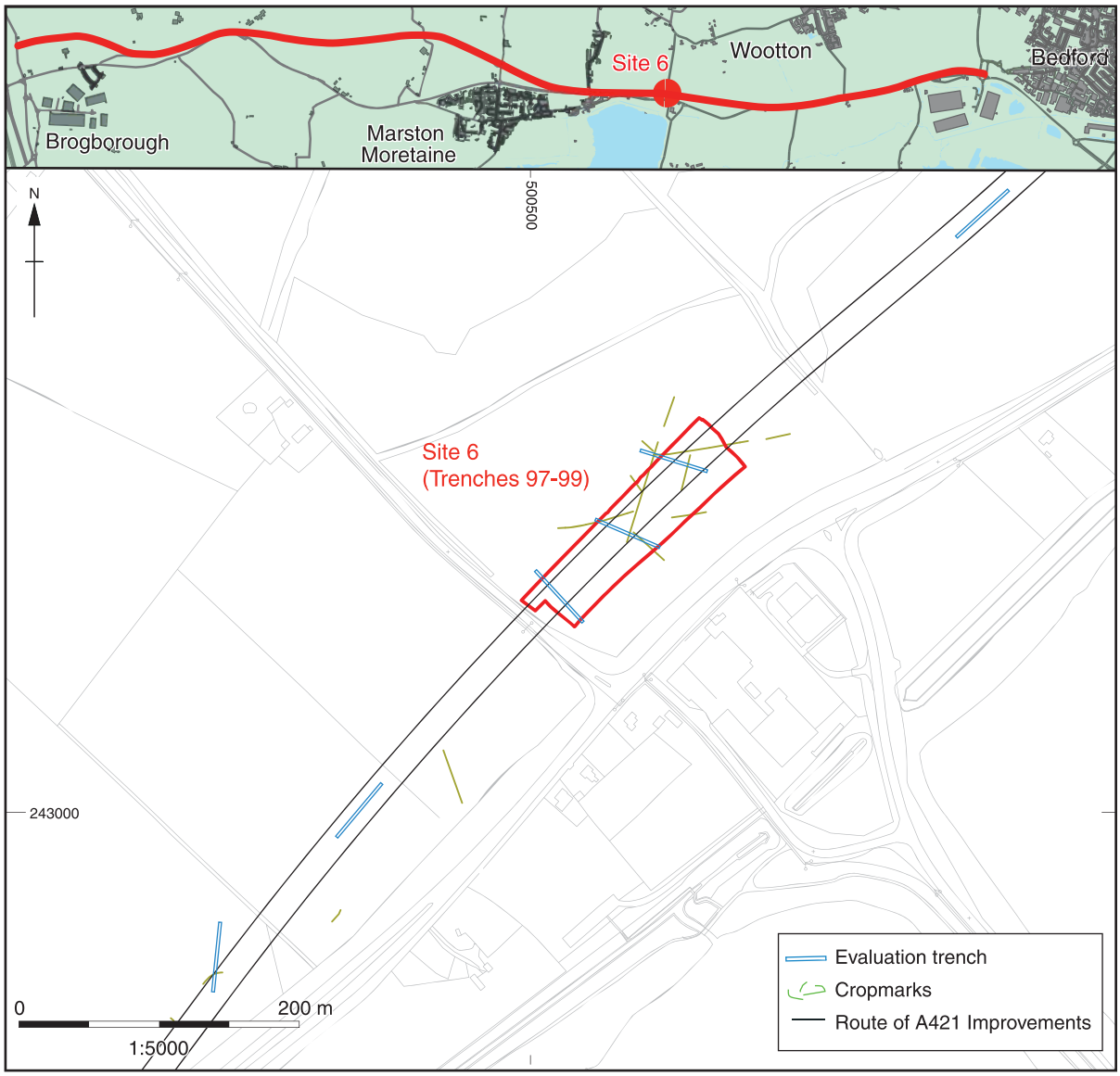


Fig. 2.95 Location of Site 6 (Trenches 97-99). (© Crown copyright. All rights reserved. Licence no. 100005569)

single, integrated complex of boundaries (Fig. 2.97). These features were more substantial than ditch 7204/7208, with depths of 0.3-0.5m. Ditch 7204/7209 extended on a NE-SW alignment for the entire length of the excavation area, and cut ditch 7204/7208. A narrow break in this ditch, measuring only 0.55m wide, was recorded *c* 40m from the northern end of the site. Ditch 7207 branched off the north-western side of this boundary at an oblique angle and extended towards the north, continuing beyond the edge of the excavation area. At the north-eastern end of the site, ditch 7211 extended across the exposed area on a NW-SE alignment, at right angles to ditch 7204/7209, but the relationship between the two features was not established. An L-shaped ditch (7206) at the south-western end of the site may have formed the corner of a rectilinear field or enclosure adjacent to boundary ditch 7204/7208.

Very little artefactual material was recovered from the ditches, but a small sherd of black-glazed earthenware from the fill of ditch 7204/7209 indicated that they dated from the 18th-19th centuries.

Other features

The terminals of two ditches (7210 and 7212) each extended a short distance into the site (Fig. 2.97), but insufficient of either feature was exposed within the excavation area to establish their functions.

A number of discrete features were excavated that were interpreted as tree-throw holes on the basis of their irregular morphology (Fig. 2.97). Very small quantities of Iron Age pottery were recovered from two of these features, and four were cut by 18th/19th-century boundary ditches.

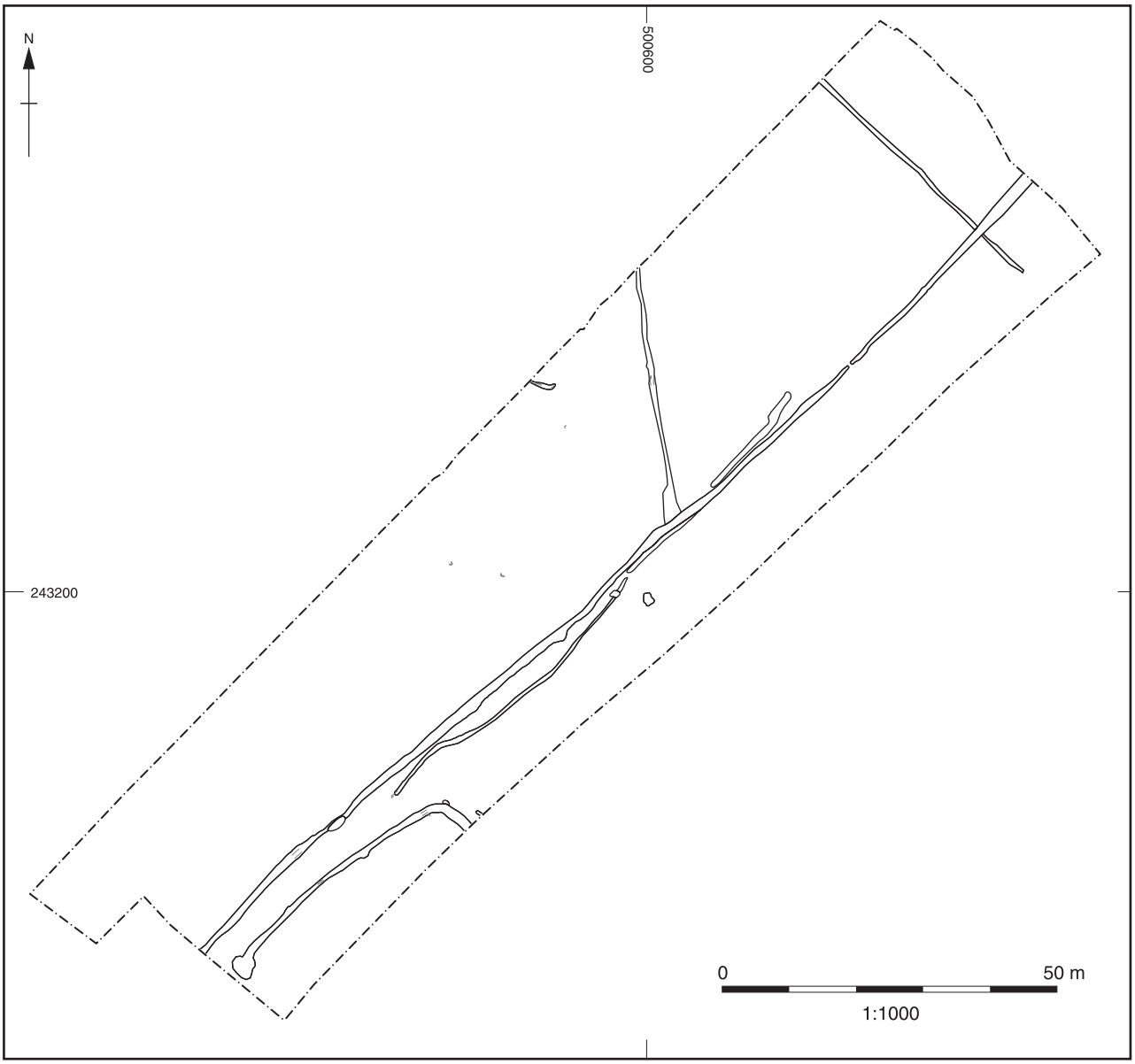


Fig. 2.96 Site 6 (Trenches 97-99), plan of all archaeological features

SITE 6 (TRENCH 105)

Site location

Site 6 (Trench 105) was located half way between Hoo Lane and Fields Road, on the north-western side of the existing carriageway (NGR TL 012 438; Fig. 2.98). It lay adjacent to the north-eastern end of the Construction Compound B watching brief area and *c* 400m east of Berry Farm Borrow Area. The site comprised a rectangular area that was centred on the location of Evaluation Trench 105, in which three pits, two of late Iron Age or Roman date, had been recorded. It encompassed 3048m^2 and was situated on level ground at *c* 38m OD (Fig. 2.99).

Middle-late Iron Age pits 7507/7510/7512 and 7525

Two features of definite archaeological origin were identified. Pit 7507/7510/7512 (Figs 2.99 and 2.100, section 7502) was somewhat irregular in plan, as a result of which it was initially interpreted as being a group of intercutting pits. It was a shallow, flat-bottomed feature and measured 2.0m by 1.7m across and 0.2m deep. The fill comprised a single deposit of dark grey soil from which were recovered 14 sherds of Iron Age pottery, weighing 98 g. The feature had previously been investigated during the evaluation, when it was recorded as feature 110505, and a single very small fragment of pottery was recovered.

Pit 7525 (Figs 2.99-100, section 7509, and Fig. 2.101) was very similar to pit 7507/7510/7512, although it was slightly less substantial, measuring 1.60m by 1.05m across and 0.18m deep. The dark grey colour of the fill suggested that it included a significant quantity of comminuted

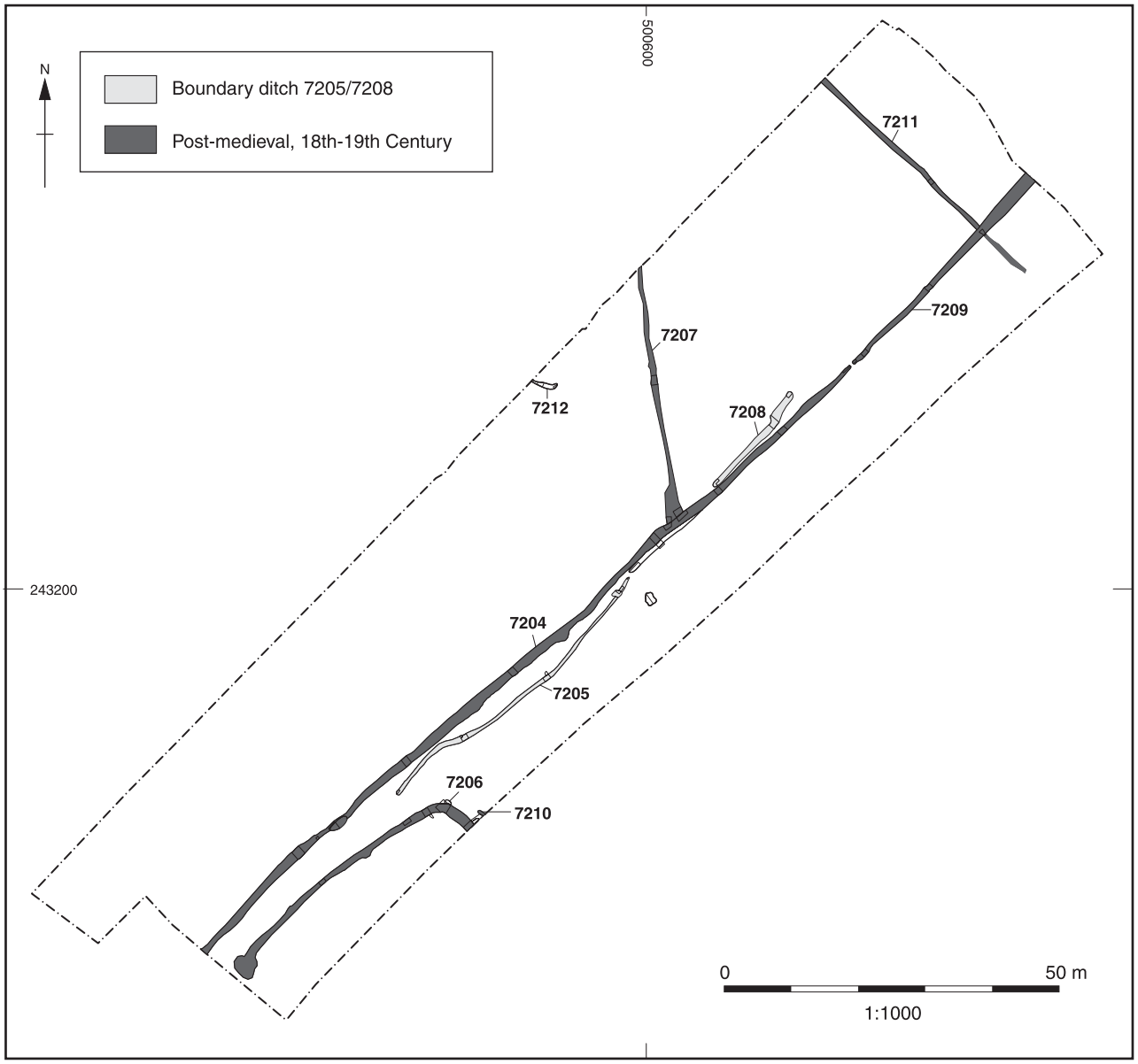


Fig. 2.97 Site 6 (Trenches 97-99), ditch 7205/7208

charcoal. It contained an assemblage of 112g of pottery and a fragmented cattle tooth as well as gravel, some of which was burnt. The composition of this deposit is consistent with the disposal of domestic waste.

Ditch terminal 7517

Possible ditch terminal 7517 was rather insubstantial, measuring 0.9m wide and only 0.1m deep (Fig. 2.99). It extended into the excavation for a distance of 1.5m from the south-eastern edge of the excavation area and ended in a square terminal. No artefactual evidence was recovered.

Other possible archaeological features

In addition to pits 7507/7510/7512 and 7525, a further 26 discrete features were excavated (Fig. 2.99). These features were concentrated in the south-western half of the site and appeared to be distributed randomly. They were uniformly shallow, typically measuring 0.1-0.3m in depth, and all had flat bases. Each was filled by a deposit of homogenous grey clay that lacked the dark colour and charcoal inclusions that characterised pits 7507/7510/7512 and 7525, and generally contained no artefactual material. The only exceptions to this were pits 7506 and 7547, which contained fragments of Iron Age pottery, and pit 7530, from which part of a cattle tooth was recovered, but these items were very small and may have been intrusive. It is uncertain whether these features were archaeological in origin or whether they should be interpreted as tree-throw holes or other natural hollows.

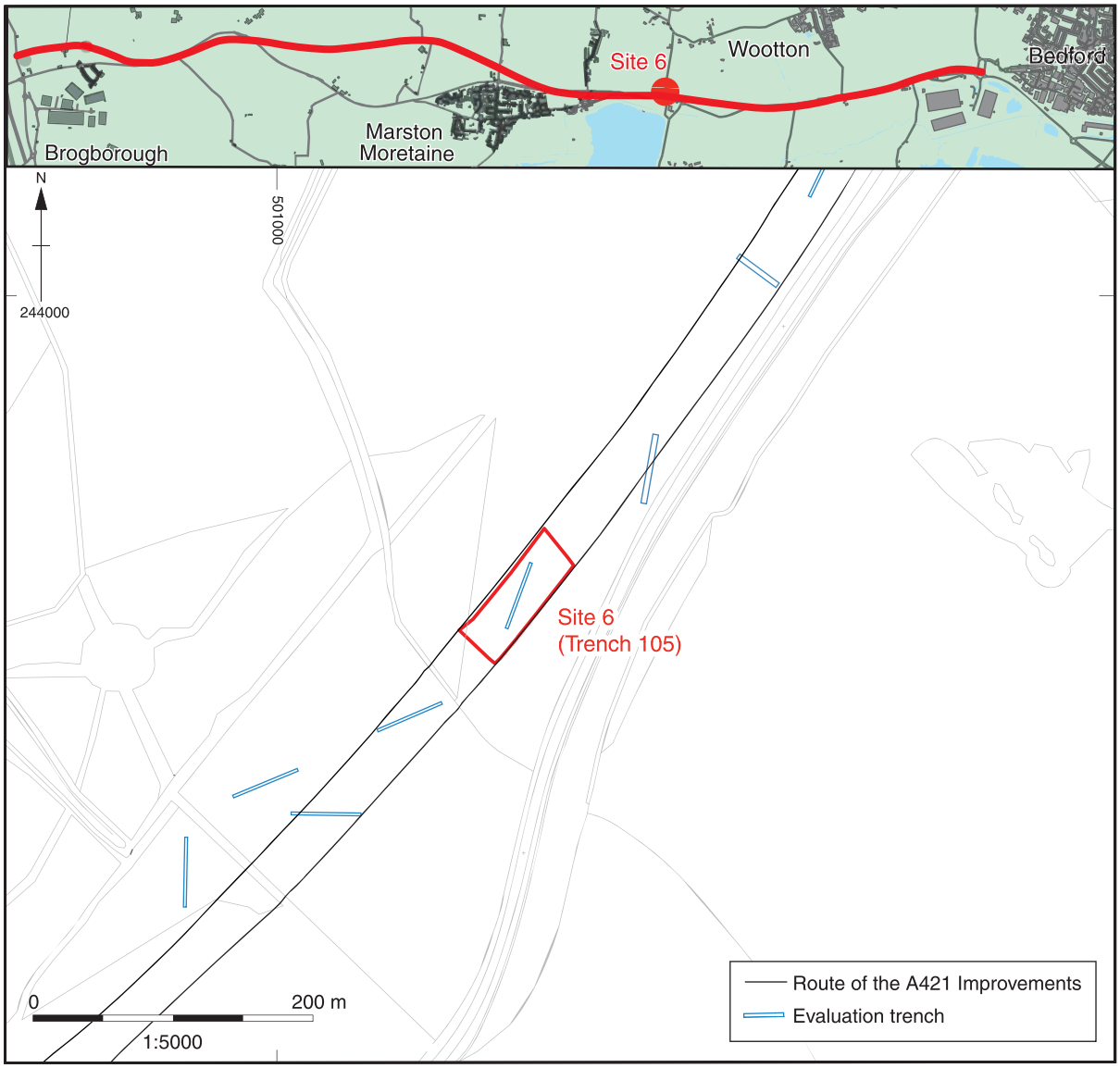


Fig. 2.98 Location of Site 6 (Trench 105). (© Crown copyright. All rights reserved. Licence no. 100005569)

SITE 7

Introduction

Site 7 was located between the villages of Wootton and Kempston Hardwick, in two former arable fields to the east of the existing A421 carriageway (NGR TL 020 448; Fig. 2.102). It encompassed the footprint of a new junction comprising two new roundabouts and a realignment of Fields Road. The geophysical survey had identified a complex of linear anomalies in the southern part of this area, with two large discrete features to the north, and the evaluation had confirmed that these features were Roman in date. The excavation area was approximately triangular in plan and encompassed a total area of 21,356m² (Figs 2.103-104). It was situated on ground that lay between 30-35m OD and sloped gently towards the south-east, where the Elstow Brook passed within 270m of the site.

Middle Roman enclosure complex (mid-late 2nd century)

The site comprised a complex of rectilinear enclosures that were established during the third quarter of the 2nd century on a site that did not appear to have been previously occupied (Fig. 2.105). The complex lay parallel to the adjacent Elstow Brook and encompassed an area of at least 100m by 80m. It was bounded to the north-west by ditch 15986 and to the north-east by ditch 15750. It is uncertain whether ditch 15358, at the south-western end of the excavation area, represented the limit of the complex in this direction or whether a feature that had extended beyond this point had been destroyed by medieval and modern ploughing. No definite south-eastern limit was identified within the limits of the excavation.

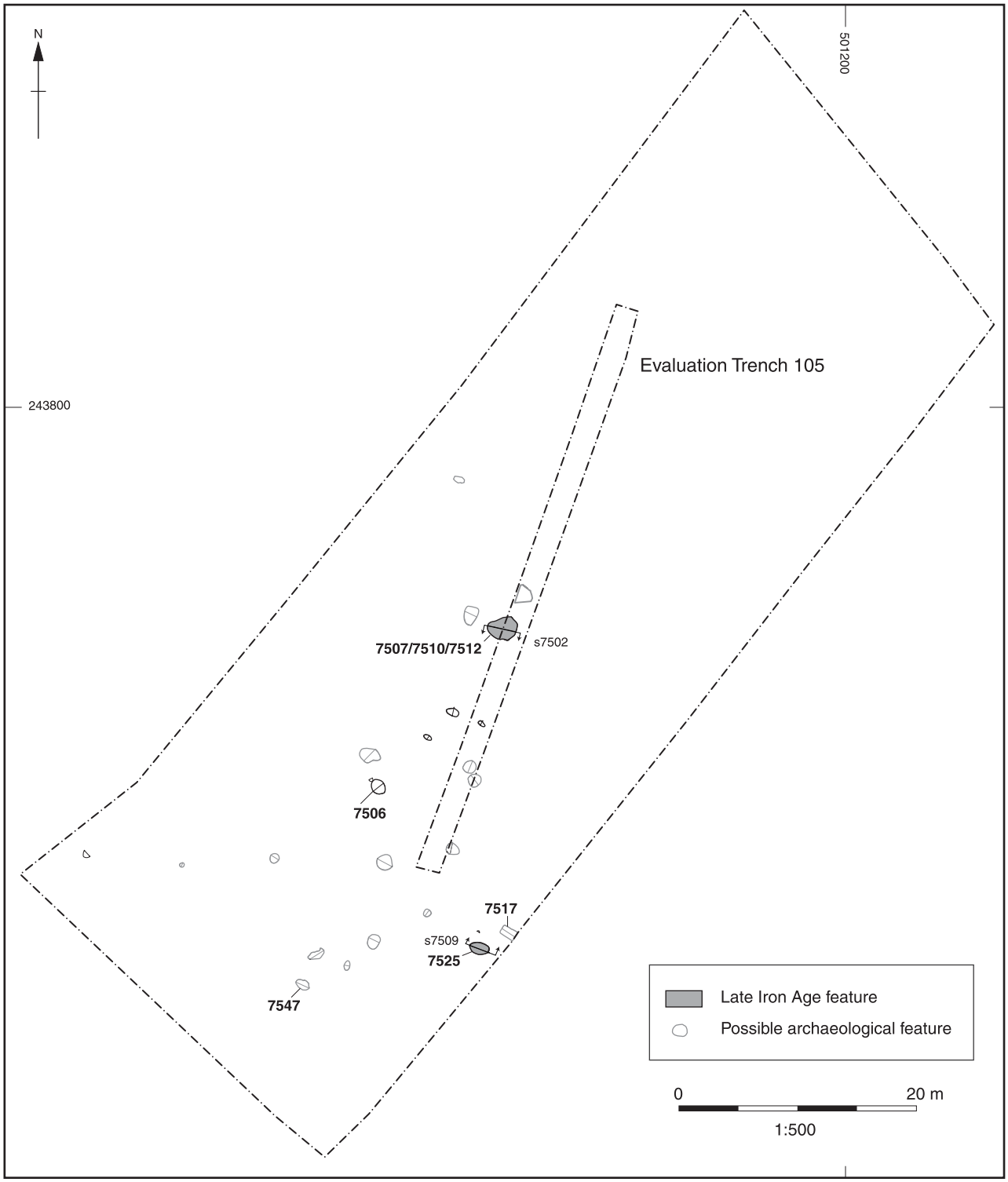


Fig. 2.99 Site 6 (Trench 105), plan of all archaeological features

Boundary ditches 15750 and 15986

The north-western limit of the enclosure complex was bounded by ditch 15986 (Figs 2.105-107), which extended for at least 80m, and it is likely that ditch 15350, which lay on the same alignment a short distance to the south-west, was originally part of the same boundary, increasing its overall surviving length to *c* 95m. Both the gap between ditches 15986 and 15350 and the south-western end of the latter feature appeared to be the result of truncation by later ploughing rather than representing original elements of the ditch, and so the boundary may originally have extended further to the south-west.

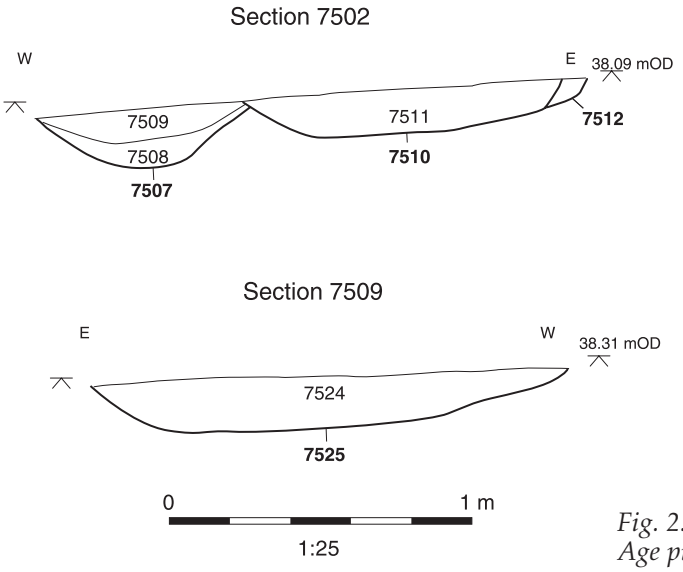


Fig. 2.101 Site 6 (Trench 105), late Iron Age pit 7525

Fig. 2.100 (left) Site 6 (Trench 105), sections through late Iron Age pits 7507/7510/7512 and 7525

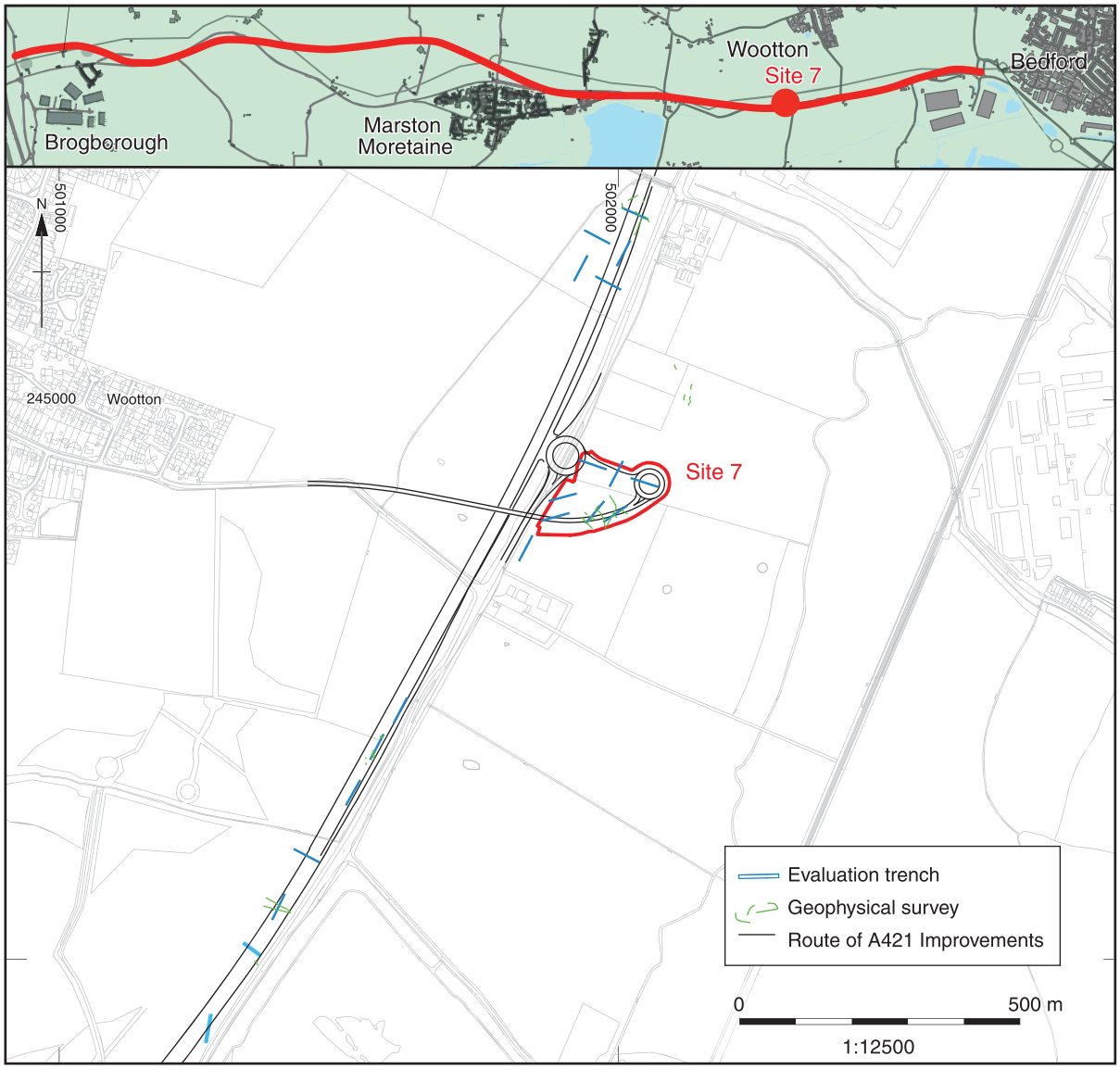


Fig. 2.102 Location of Site 7. (© Crown copyright. All rights reserved. Licence no. 100005569)

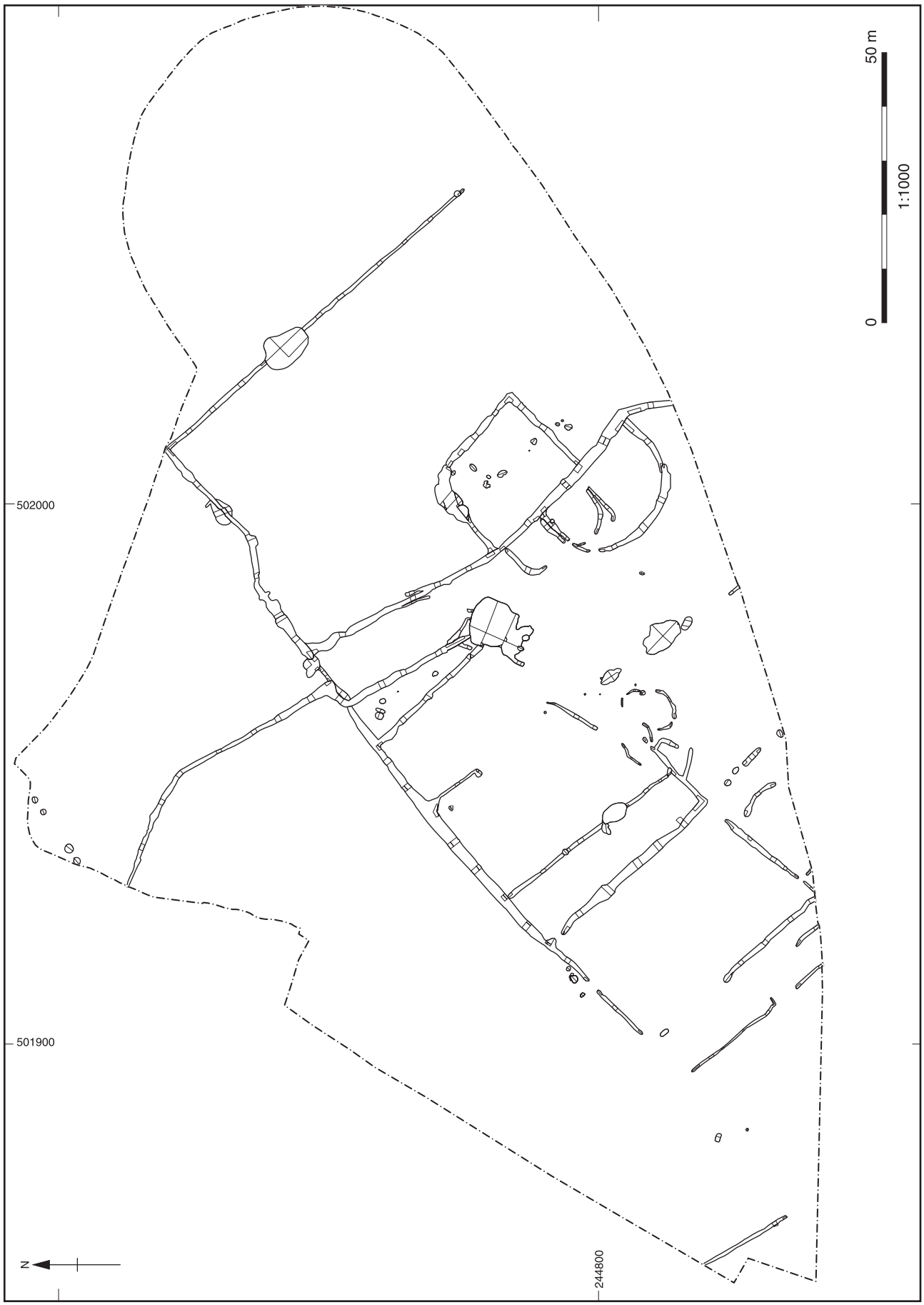


Fig. 2.104 Site 7, plan of all archaeological features

Fig. 2.103 Site 7, view toward south-west across the southern part of the excavation

The north-eastern end of the ditch had been destroyed when the boundary was subsequently extended by the addition of ditch 15987, resulting in the loss of the stratigraphic relationship between this feature and ditch 15750, but it is likely that they were originally of a single construction. Most of the interventions excavated through ditch 15986 revealed evidence for two phases of ditch (Fig. 2.107, section 15018), although toward the south-western end, where the feature began to peter out, only one cut could be identified. The two phases of the ditch were very consistent in form, measuring *c* 1.5m wide and 0.3m deep with a very open, concave profile.

From its inferred junction with the north-eastern end of ditch 15986, ditch 15750 extended in a south-easterly direction for at least 81m, eventually continuing beyond the southern edge of the excavation. Enclosures 7 and 8 adjoined opposing sides of the south-eastern part of the ditch. The ditch followed a slightly irregular alignment that comprised three straight segments demarcated by changes of alignment immediately north of Enclosure 7 and immediately south of Enclosure 8. There was no indication that these segments were not contemporaneous, and this irregular shape may have resulted from construction by separate gangs of workers. Like ditch 15986, ditch 15750 exhibited evidence for two phases of construction in the form of two cuts identified in interventions toward the south-eastern end of the feature (Fig. 2.107, section 15214). In the northern part of the ditch only a single phase was identified (Fig. 2.107, section 15247), but two possible ditch terminals were recorded that diverged slightly from the main alignment approximately half way between Enclosure 7 and the north-western end of the ditch. Ditch 15750 was similar in form to ditch 15986, being quite shallow in relation to its width. It measured 0.8-1.2m wide and up to 0.4m deep. Two of the three coins that were recovered during the excavation came from the latest fill of ditch 15750. These comprised a sestertius (SF 15006) and the core of a plated denarius (SF 15005), both of mid-2nd-century date, and both were recovered from parts of the ditch that lay adjacent to Enclosures 7 and 8 (below). The skeleton of a dog was also recovered from the fill of this ditch, from a point roughly half way between Enclosure 7 and the junction with ditch 15986. The leg of a horse was recovered from the ditch a short distance south-east of Enclosure 8.

Pit/posthole row parallel to ditches 15986 and 15987

A row of four pits or postholes (15925, 15937, 15939 and 15945) was identified at the north-western limit of the excavation area which may have formed part of a fenceline that lay on an alignment parallel to the boundary defined by ditches 15986 and 15987. The features were arranged in two pairs, each *c* 2.75m apart, with a gap between the pairs that measured *c* 8m, perhaps indicating the location of an entrance through the fenceline. The individual pits measured 1.10-1.45m in diameter and 0.24-0.6m deep, had concave, bowl-shaped profiles, and were each filled by a single deposit of grey soil. None contained any artefactual material.

Conjoined rectilinear enclosures abutting ditch 15986

A series of four conjoined rectilinear enclosures abutted the south-eastern side of boundary ditch 15986 (Enclosures 1-4; Fig. 2.105). With the exception of ditch 15362, which survived to a depth of up

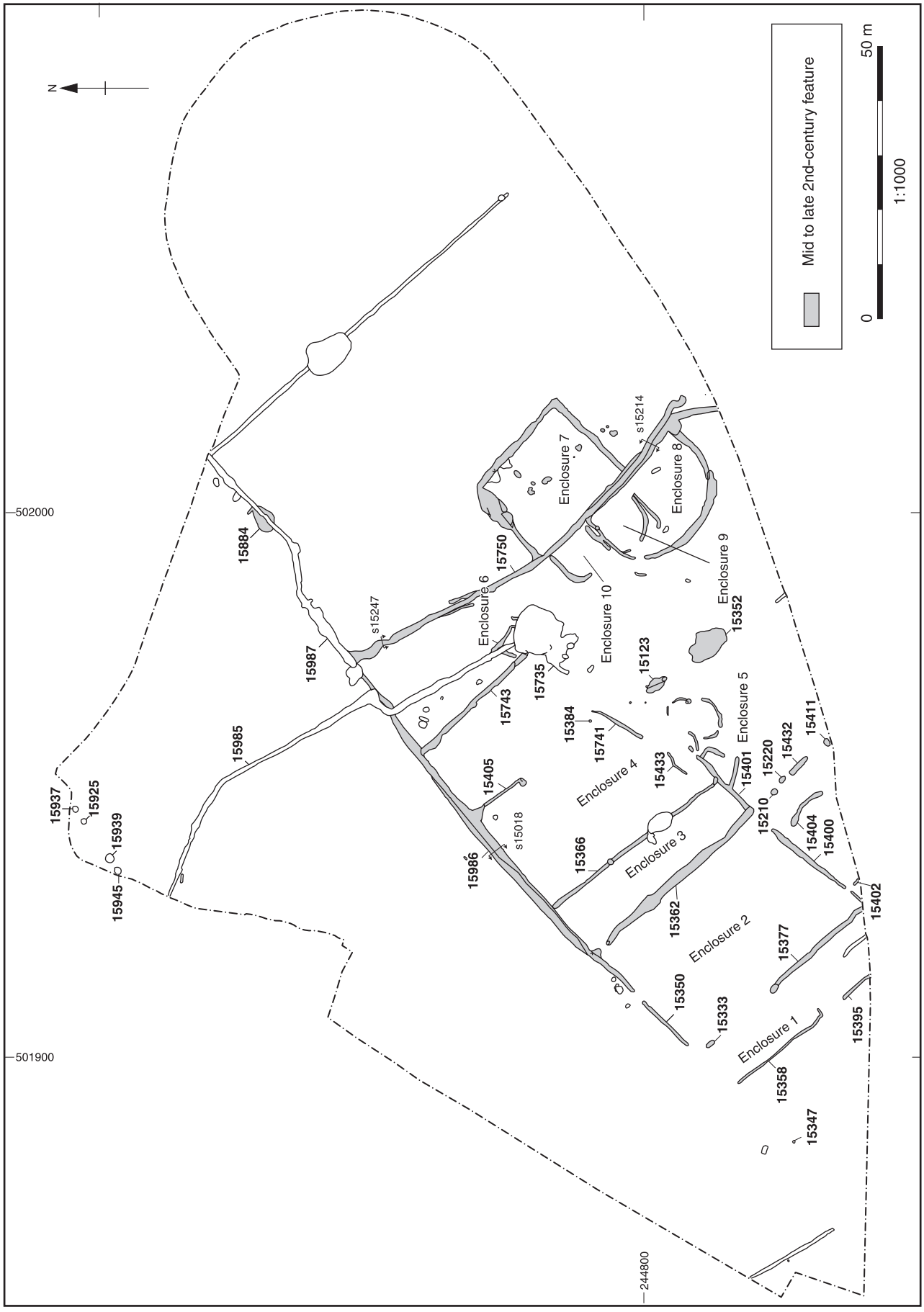


Fig. 2.105 Site 7, plan of mid-late 2nd-century features

Fig. 2.106 Site 7, view toward south-west along mid-late 2nd-century ditch 15986

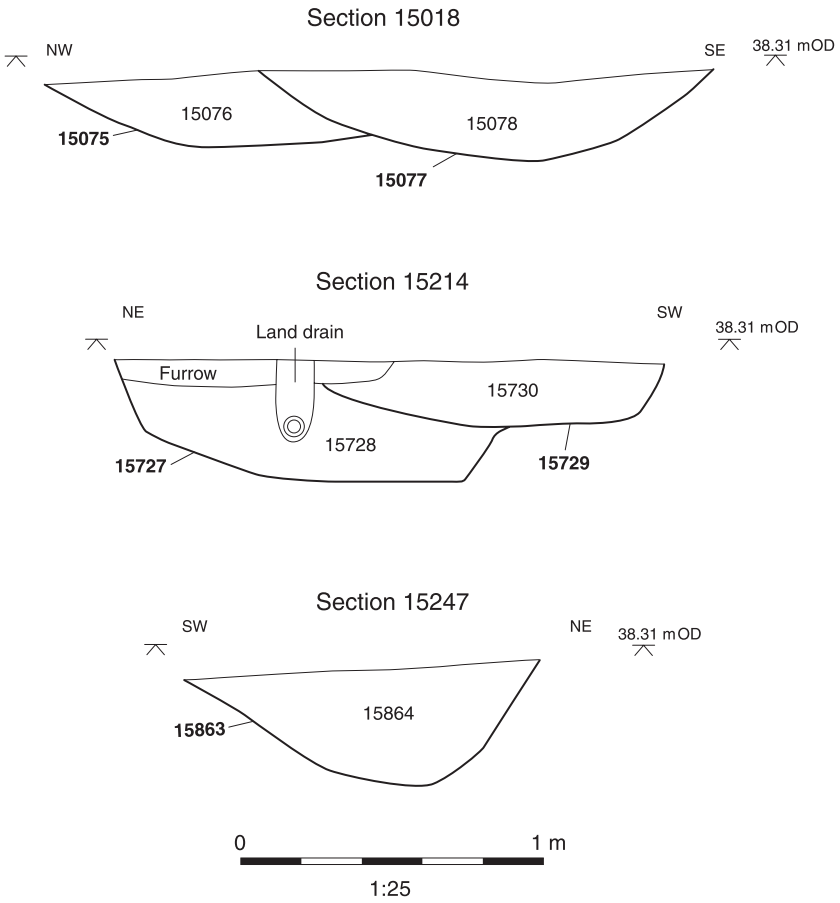


Fig. 2.107 Site 7, sections through mid-late 2nd-century boundary ditches 15986 and 15750

Fig. 2.108 Site 7, section through ditch 15362

to 0.5m (Fig. 2.108), the ditches that defined the enclosures were all very insubstantial, having been severely affected by truncation by medieval and modern ploughing. It is therefore likely that some of the ditches were originally more extensive, and that some or all of the breaks in these boundaries are the result of such truncation rather than evidence for original entrances into the enclosures. Few stratigraphic relationships between these features survived, but there was no reason to think that they did not represent a single, integrated complex.

Enclosures 1-4, situated in the south-western part of the complex, were bounded to the south-east by ditches 15400 and 15401, which defined a boundary that extended approximately parallel to boundary ditch 15986. The full extent of the boundary defined by these two ditches is uncertain, as the north-eastern end of ditch 15401 simply petered out, probably due to plough truncation; it is possible that it originally continued as far as ditch 15750, which defined the north-eastern limit of the enclosure complex. The enclosures that were situated between ditches 15986 and 15400/15401 each measured *c* 40m NW-SE and appeared to comprise two narrow enclosures (1 and 3) alternating with two rather larger and wider examples (2 and 4). None of these enclosures contained contemporaneous features.

Enclosure 1

Enclosure 1 was a long, narrow enclosure located at the south-western limit of the enclosure complex. It was defined by two parallel ditches (15358/15395 and 15377) which formed its north-eastern and south-western sides. Ditch 15377 only extended for a little more than half the length of the enclosure, its north-western part having presumably been destroyed by medieval and modern ploughing. A similar fate had befallen the north-western end of the enclosure, which may originally have been defined by ditch 15350/15986. The south-eastern end of the enclosure lay beyond the southern edge of the excavation area, but the alignment of ditch 15400 suggests that it probably defined this end of the enclosure, giving it dimensions of 40.0m by 9.5m.

An oval pit (15333) measuring 1.80m by 0.85m across and 0.5m deep that lay on the alignment of ditch 15377 near the north-western end of the enclosure contained a quite large assemblage of pottery dating from the late 2nd-3rd century. The lower two thirds of the feature were filled by a sequence of artefactually sterile layers, which were overlain by a layer of darker grey soil (15338) which contained an assemblage of more than 1kg of pottery including three nearly complete vessels, as well as some small fragments of sheep/goat bone.

Enclosure 2

Enclosure 2 measured 40m by 25m and abutted the north-eastern side of Enclosure 1. In addition to the truncated part of ditch 15377, breaks in the ditches defining the enclosure that may have represented original entrances were identified in the north-western and south-eastern sides and at the northern corner, the latter providing access between his enclosure and Enclosure 3. Only the latter break was demonstrably an original element however, the north-western end of ditch 15362 ending in a definite terminal, whereas the other breaks may have resulted from plough truncation. A corresponding terminal that projected from the south-eastern side of ditch 15986 restricted the entrance to a width of 1.6m.

Enclosure 3

The second narrow enclosure, Enclosure 3, was similar to Enclosure 1. It measured 40m NW-SE and 9.5m wide at its north-western end but tapered somewhat to a width of 7.5m at its south-eastern end. It was the only one of the group whose component ditches survived unbroken, and was accessed by means of the entrance that communicated with Enclosure 2 (above).

Enclosure 4

Enclosure 4 abutted the north-eastern side of Enclosure 3 and was bounded to the north-west by ditch 15986. Its remaining sides were partly defined by ditches 15401 and 15405, although neither of these feature was very extensive and consequently much of the eastern part of the enclosure was not enclosed. It is possible that ditches 15401 and 15405 originally extended to complete the enclosure, in which case its projected dimensions would have been 40m by 25m, identical to those of Enclosure 2. Alternatively, ditch 15741 may have formed part of the south-eastern side, giving the enclosure a more trapezoidal shape.

The area between Enclosure 4 and boundary ditch 15750

It was uncertain whether the area between Enclosure 4 and boundary ditch 15750 was enclosed, perhaps by a continuation of ditch 15401, or remained open on its south-eastern side. The area

was bisected by a single ditch (15743) that branched off boundary ditch 15986. The south-eastern end of the ditch was truncated by a 3rd-4th-century water-hole (15735) and it is uncertain how far the ditch originally extended.

Enclosure 5

A small trapezoidal enclosure (Enclosure 5) abutted ditch 15401, adjacent to Enclosures 3 and 4. The enclosure was quite small, measuring *c* 7.0m by 3.5m, and may have possessed an entrance on its south-eastern side, although the break in the ditch could also have been caused by later ploughing. The ditch that defined the enclosure was very slight, measuring only 0.15m deep. No features were identified within the enclosure

Enclosure 6

Enclosure 6 was very similar in form to Enclosure 5 and abutted ditch 15743. It was defined by a shallow ditch with a depth of 0.15m. The enclosure was *c* 4m wide, NE-SW, but its length could not be established due to the destruction of its south-eastern end by later features. Late 2nd-early 3rd-century boundary ditch 15985 cut across the middle of the enclosure, and the southern half had been destroyed by the digging of 3rd-4th-century water-hole 15735. No internal features were identified.

Discrete enclosures abutting boundary ditch 15750

The south-eastern part of ditch 15750 was abutted on either side by discrete enclosures. Rectangular Enclosure 7 adjoined its north-eastern side and D-shaped Enclosure 8 adjoined its south-western side. The latter may have been superseded by the smaller D-shaped Enclosure 9 (Figs 2.109-110).

Enclosure 7

Enclosure 7 adjoined the north-eastern side of boundary ditch 15750. The enclosure was rectangular in plan and measured 21m by 17m. It was defined by a single ditch (15753) that measured up to 1.4m wide. The depth of the ditch was quite variable, ranging from 0.26m to 0.60m, and abrupt changes in depth at the corners suggested that they had been dug as separate elements (Fig. 2.110, section 15167 and Fig. 2.111). A significant quantity of charred plant remains had been deposited in the eastern part of the enclosure ditch (15604, 15605, 15606; Fig 2.110 section 15167). This material extended along the adjacent part of the ditch defining the south-eastern side of the enclosure for a distance of at least 8.5m but was less extensive to the north-west and did not extend as far as the adjacent intervention, which was located less than 3m from the corner of the enclosure (Figs 2.110-111). The fill above this layer (15408, 15604), although less black in hue, was nevertheless similarly rich in charred material, and was more extensive, extending approximately half way along the north-eastern side of the enclosure. These deposits appear to have represented a gradual accumulation of material that was deposited within the ditch over an extended period of time rather than a single dump of material, and are likely to indicate that waste material from crop processing was being burnt nearby, probably within the enclosure, and the remains disposed of in the ditch. In contrast to these dumped deposits, the fills encountered throughout the rest of the enclosure ditch consisted of material derived from natural silting processes. A group of eight fragments of burnt human bone, mostly from the cranial vault, was recovered from the upper fill of the northern-western arm of the enclosure ditch close to the junction with boundary ditch 15750. Near the northern corner of the enclosure, part of the enclosing ditch was subsequently affected by quarrying (below).

The only features identified within the enclosure were six pits (15557, 15559, 15566, 15567, 15569 and 15718). These were generally shallow hollows that measured 1.2-2.0m across and 0.1-0.2m deep, although pit 15566 was rather more well defined than the others, had steep sides, and was a little deeper, measuring 0.32m. Pits 15557, 15567, 15569 and 15718 produced small quantities of Roman pottery but these were the only artefacts recovered from this group of features.

A small group of three shallow pits (15631, 15633 and 15635) were located beyond the south-eastern side of the enclosure. All three features were very insubstantial, measuring no more than 0.18m deep, and it is possible that they were tree-throw holes or natural hollows rather than features of archaeological origin, although a single small sherd of Roman pottery was recovered from the fill of pit 15631.

Enclosure 8

Enclosure 8 adjoined the south-western side of boundary ditch 15750, and was off-set somewhat in relation to Enclosure 7 (Fig. 2.109). In contrast to the rectangular shape of the latter structure, Enclosure 8 was D-shaped in plan and had overall dimensions of 22m by 14m. The boundary ditch formed the straight, north-eastern side and the rest of the enclosure was defined by three shallow ditch segments (15746, 15747 and 15749). There was some evidence that the ditch segments had not all been dug in a single event, as the eastern end of the segment that defined the curving south-western side of the enclosure (15746) appeared to cut the terminal of the segment that formed the south-eastern side (15747). Both these ditch segments measured 0.3-0.4m in depth, and ditch segment 15749, which formed the north-western side of the enclosure, was even less substantial, measuring no more than 0.2m deep. It is likely that both the shallowness of these ditches and the two discontinuities between segments result from truncation by medieval and later ploughing. A denarius of Septimius Severus (SF 15013), minted in AD 200-201, was recovered from the upper fill of the enclosure ditch, near to the northern junction with boundary ditch 15750.

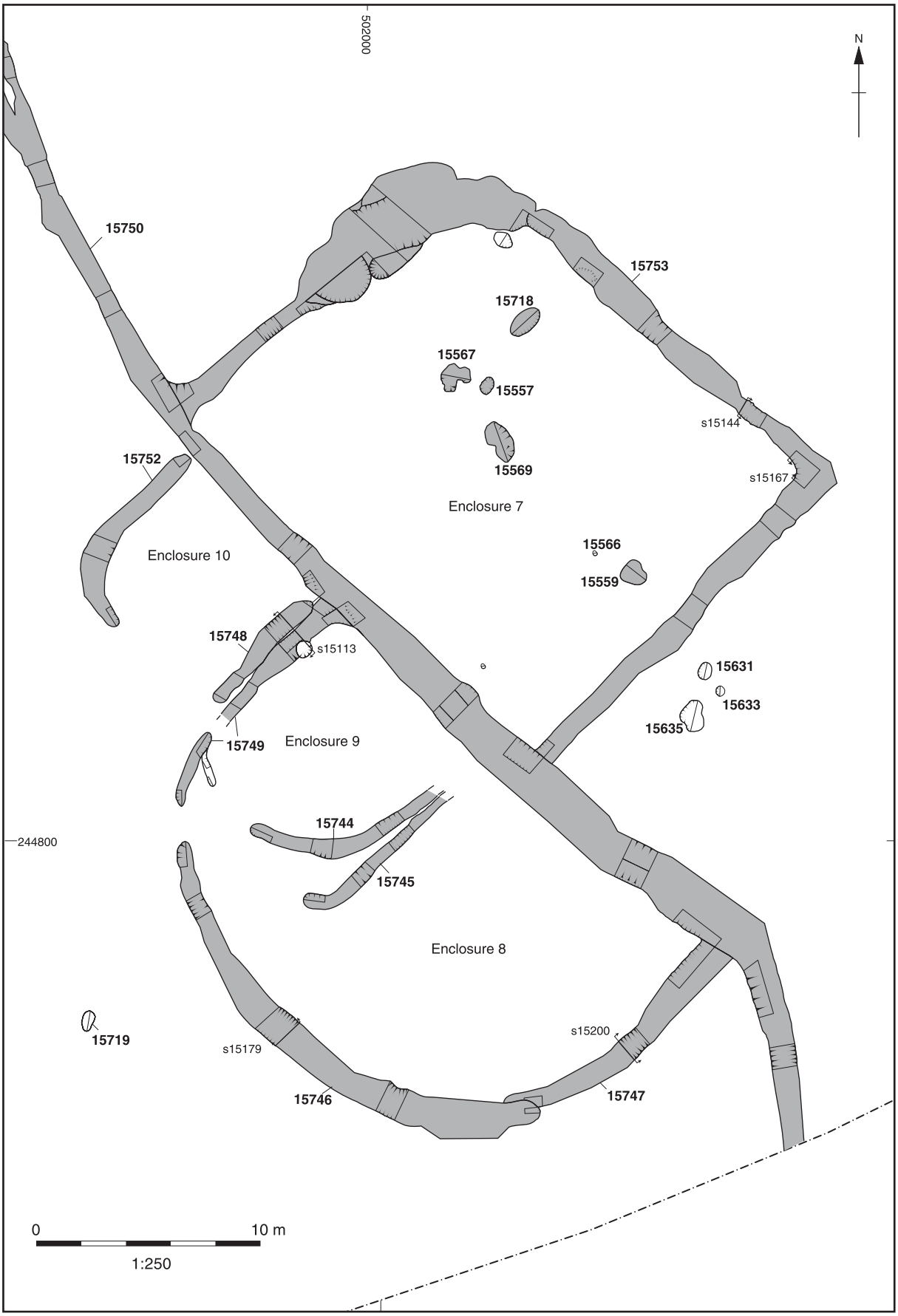


Fig. 2.109 Site 7, plan of mid-late 2nd-century Enclosures 7 and 8 and associated features

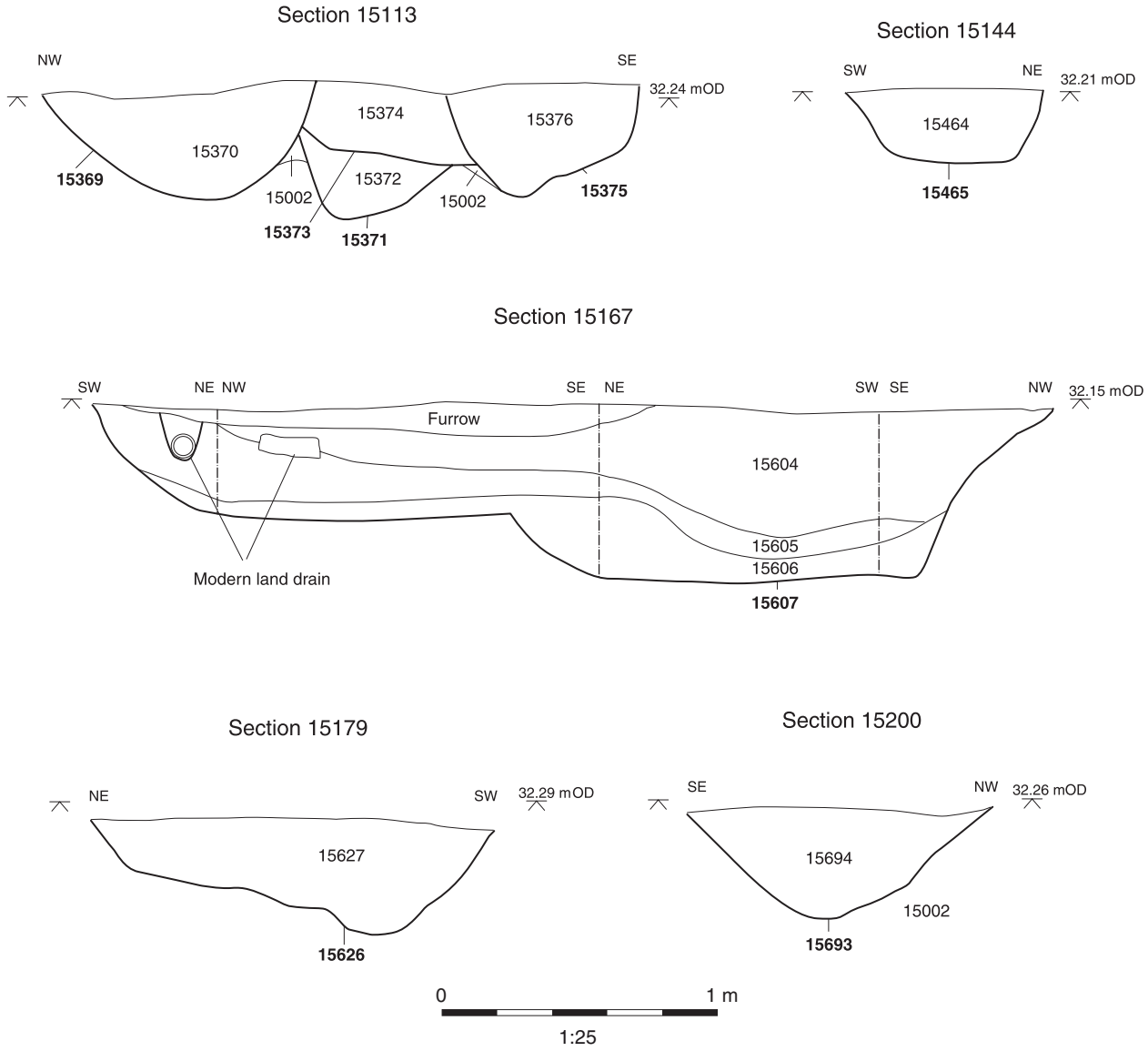


Fig. 2.110 Site 7, sections through the ditches of Enclosures 7 and 8

Fig. 2.111 Site 7, the eastern corner of mid-late 2nd-century enclosure ditch 15753

The enclosure may have been subdivided internally by ditch 15745. This feature probably branched off boundary ditch 15750, although the junction with this ditch had been destroyed by a medieval plough furrow, and extended towards the south-west for *c* 10m. Its south-western end curved slightly towards the west before petering out, perhaps indicating that it formed part of a subsidiary enclosure against the north-western side of Enclosure 8.

Enclosure 9

When Enclosure 8 passed out of use, a smaller, though similarly D-shaped enclosure was constructed in its place (Enclosure 9; Fig. 2.109). The ditch that defined the enclosure was again very slight, measuring no more than 0.4m deep. The new enclosure, like its predecessor, abutted boundary ditch 15750, although the junction of its south-

eastern side with the boundary had been destroyed by a medieval plough furrow. The same furrow was responsible for the break in the western part of ditch. A break measuring 2.5m wide was situated at the centre of the curving south-western side of the enclosure, but it was not possible to be certain whether this was an original entrance or the result of truncation as the enclosure ditch was very slight at this point. The enclosure measured 9.3m by 9.3m and occupied the same space as, and may therefore have been a direct replacement for, the putative subsidiary enclosure within the north-western part of Enclosure 8. The pottery recovered from this feature was generally of 2nd-century date, but two very small sherds of Hadham oxidised ware were also recovered, perhaps suggesting that the enclosure persisted into the 3rd century.

Enclosure 10

Ditch 15752 was L-shaped in plan and appeared to define the north-western side and part of the south-western side of a rectangular enclosure that abutted either Enclosure 8 or Enclosure 9, although the stratigraphic and artefactual dating evidence was not sufficient to establish with which of these enclosures it was contemporary (Fig. 2.109). Its north-eastern end respected the line of boundary ditch 15750, from which it extended south-westward for *c* 8m before turning toward south-east and ending in a clearly defined terminal. The enclosure thus defined was approximately square, measuring 8m by 8m. No evidence was identified for a feature that enclosed the remainder of the south-western side of the enclosure, which was presumably closed by means of a hedge or hurdles, if it was not left open.

Features at the southern edge of the excavation area

A number of features were identified near the southern edge of the excavation area which indicate that features associated with the enclosure complex continued beyond the edge of the investigation (Fig. 2.105).

Three pits (15210, 15220 and 15411) and a short length of ditch (15432) appeared to define a boundary that continued the alignment of ditch 15362 in a south-eastern direction beyond the boundary defined by ditches 15400/15401. The pits were circular and measured 1.2-1.5m in diameter. They were generally shallow, concave features. Small quantities of 2nd-century pottery were recovered from pits 15220 and 15410, and the former also contained some fragments of animal bone and a bone point (SF 15002). Ditch segment 15432 was 4.4m long and 0.35m deep. It yielded some small sherds of 2nd-century pottery as well as a single large piece from an Oxford white ware mortarium dating from the mid 3rd-4th century, although the latter was recovered from its surface and so it was uncertain how confidently it could be attributed to the ditch.

A short distance west of the boundary defined by the ditch and pits lay a length of curvilinear gully (15404). The gully extended for a little over 8m and was 0.3-0.4m deep with steep sides and sharply defined terminals. Pottery recovered from the ditch indicated that it dated from the 2nd century, but its function was uncertain. It may have formed part of an enclosure abutting the boundary defined by ditch 15400, with the gap between the two features serving as an entrance, but it is also possible that it was part of a discrete enclosure similar to oval Enclosure 11 (below). The relatively narrow, steep-sided profile may indicate that the feature was a foundation trench for a palisade rather than an open gully.

Ditch terminal 15402 was only 0.1m deep and extended into the excavation area for a distance of 1.5m from its southern edge. It may have been the north-western end of a ditch that lay on an alignment parallel to that of the boundary defined by ditch 15432 and the associated pits, or it may have been associated with gully 15404, defining the opposing side of an enclosure.

Oval enclosures 11 and 12

Two oval enclosures (Enclosures 11 and 12) that were situated at the south-eastern edge of the complex of conjoined enclosures that abutted boundary ditch 15986 (Fig. 2.112). Both structures had been substantially truncated by ploughing and survived only as very slight and incomplete ditch circuits.

Oval enclosure 11

The better preserved of these enclosures, was Enclosure 11, which was represented by a shallow discontinuous ditch (15742) which defined its southern and eastern sides and part of the northern side (Fig 2.112). The north-western part of the enclosure was not preserved, having presumably been completely truncated by medieval and modern ploughing. The enclosure was oval or subrectangular in shape, aligned NNE-SSW, and measured *c* 10m by 7m. At its deepest, the enclosure ditch survived to a depth of 0.36m, but it was generally much less substantial than this and in some places became so shallow that it simply petered out. It is likely therefore that some of the breaks in the ditch result from the complete truncation of shallower sections and do not represent original elements of the enclosure. This certainly appeared to be the case for the break at the north-eastern corner, and for the western end of the northern ditch segment. The deepest part of the ditch was the eastern end of the south-eastern segment, which, although partly truncated by a modern land drain, appeared to be a clearly defined terminal, as did the western end of this ditch segment, which was 0.23m deep. This raises the possibility that the adjacent breaks, on the eastern and southern sides of the enclosure respectively, were original entrances. In both cases, however, the opposing ditch terminal was too slight

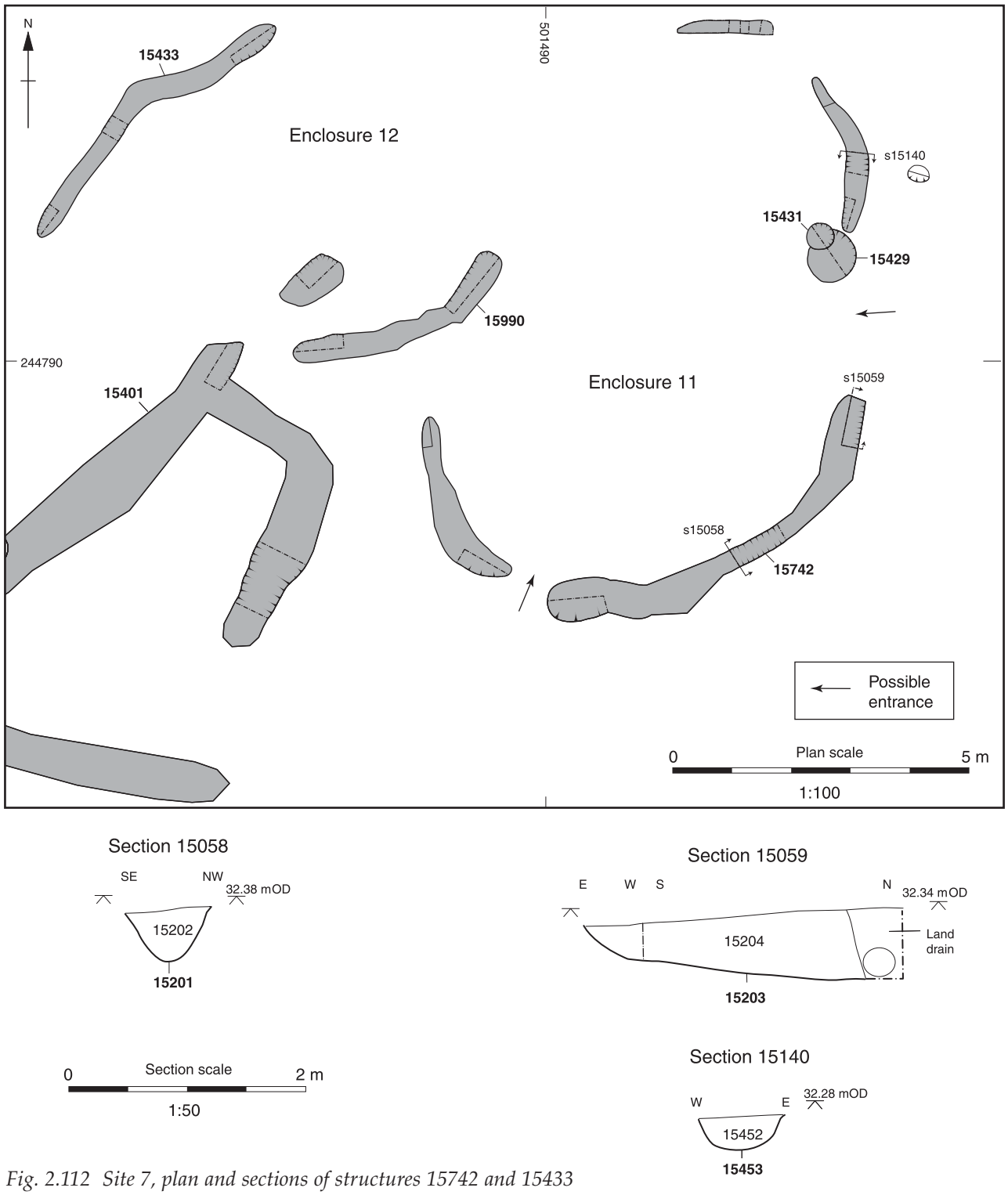


Fig. 2.112 Site 7, plan and sections of structures 15742 and 15433

to definitely ascertain whether it represented a deliberate terminal. Where the ditch survived to a sufficient depth to enable its profile to be established it was steep-sided. The feature was too insubstantial to have formed a practical barrier and it is perhaps more likely that it was a foundation trench rather than an open gully, though insufficient evidence survived to indicate whether it was a building or a palisaded enclosure.

Two intercutting pits (15429 and 15431) were situated just inside the enclosure's putative eastern entrance, and this juxtaposition suggests that they were associated with the use of the structure. The earlier of the two was pit 15429, which was quite shallow, measuring 0.8m in diameter and 0.3m deep. It was cut on its north-western side by pit 15431, which measured 0.5m in diameter and 0.35m deep and had been backfilled with a deposit of

burnt material including charcoal and heat-discoloured soil. It is possible that this material derived from activities that took place within the enclosure.

Enclosure 12

Immediately adjacent to Enclosure 11 were two ditch segments (15433 and 15990) that may have formed part of a similar, though less well-preserved, enclosure (Enclosure 12; Fig 2.112). If this is correct, the putative enclosure would have lain on a NE-SW alignment and measured *c* 5m wide, although no evidence survived to indicate its length. Ditch 15433, which defined the north-western side and had a slightly dog-legged alignment, was very slight, surviving to a depth of no more than 0.08m. The south-eastern side was represented by a rather more curved ditch segment (15990) which was 0.45m wide and up to 0.22m deep. The eastern end of this segment appeared to form a definite terminal, but the western end was much shallower and simply petered out.

The projected alignment of boundary ditch 15401 would have cut through this enclosure, which also intersected with the projected line of the truncated north-western part of Enclosure 11. This suggests that these features were not contemporaneous but were in use successively. Unfortunately the surviving parts of them did not intersect and so it was impossible to determine which was the earlier.

Clay quarries

Quarrying of the Oxford Clay on which the settlement was situated was recorded at several locations. The exposure of this material in the sides of the ditch of Enclosure 7 appeared to have been exploited (Fig. 2.109), and two quarry pits (15123 and 15352) were dug in the southern part of the excavation, as well as a further possible example (15884) further north (Fig. 2.105). The ceramic and stratigraphic dating evidence indicates that all four quarries were backfilled during the latter part of the 2nd century.

Quarrying of ditch of Enclosure 7

The quarrying associated with Enclosure 7 extended for a total distance of 10m along the ditch that defined the north-western side of the enclosure (Fig. 2.109). It was rather irregular in shape and depth and had the appearance of a series of small-scale *ad hoc*, opportunistic excavations rather than a single episode. The central part of the quarrying had been dug to a depth of 1.4m and at its widest point it measured 3.5m wide, although it became both less extensive and less deep towards either end. A modest assemblage of *c* 1kg of pottery was recovered from its fills, as well as a slightly larger quantity of animal bone that included the skeleton of a dog. The ceramic evidence indicated that the quarrying occurred during the late 2nd-early 3rd century.

Fig. 2.113 Site 7, the south-eastern part of quarry 15352

Quarry pits

The largest area of quarrying was represented by a substantial, rather amorphous quarry (15352) which was situated in the southern part of the excavation area (Fig. 2.113). The quarry measured 8m by 5m and had mostly been dug to a depth of *c* 0.9m, but some individual areas had been dug to a greater depth of up to *c* 1.2m. The most notable of these irregularities was a crescent-shaped trench *c* 0.65m deep that had been dug around the south-eastern end of the feature, separated from the main hollow by a baulk of undisturbed clay. The irregular character of the quarry is likely to indicate that the feature was the result of episodic and *ad hoc* excavation, with the exposure of the natural clay by the initial quarrying being exploited by subsequent excavators. That the hollow was left open between these excavations and was not a palimpsest of discrete intercutting pits was demonstrated by its fills, which were consistent throughout the feature. The water-lain clay that characterised the late Roman waterholes (below) was notably absent from this feature, which presumably therefore did not contain standing water. The feature appeared to have been left open, and material eroded from the sides had accumulated in its base, before it was backfilled with a single large deposit of dark grey gravelly soil (15516). The backfill included domestic debris, including the bones of cattle, sheep/goat, pigs and horse, a small fragment from a tegula, and a lead weight (SF 15009). The ceramic assemblage from this deposit amounted to nearly 3kg and was generally well preserved, with a relatively large mean sherd weight of 24g. The chronologically diagnostic material all points to a date for the backfilling toward the end of the 2nd century.

A smaller hollow (15123) which was located a short distance north-west of quarry 15352 was also probably a quarry. The feature measured *c* 3.5m by 2m across and 0.95m deep and had a similarly irregular shape. The presence of a primary fill (15124) indicated that, like quarry 15352, it was left open for

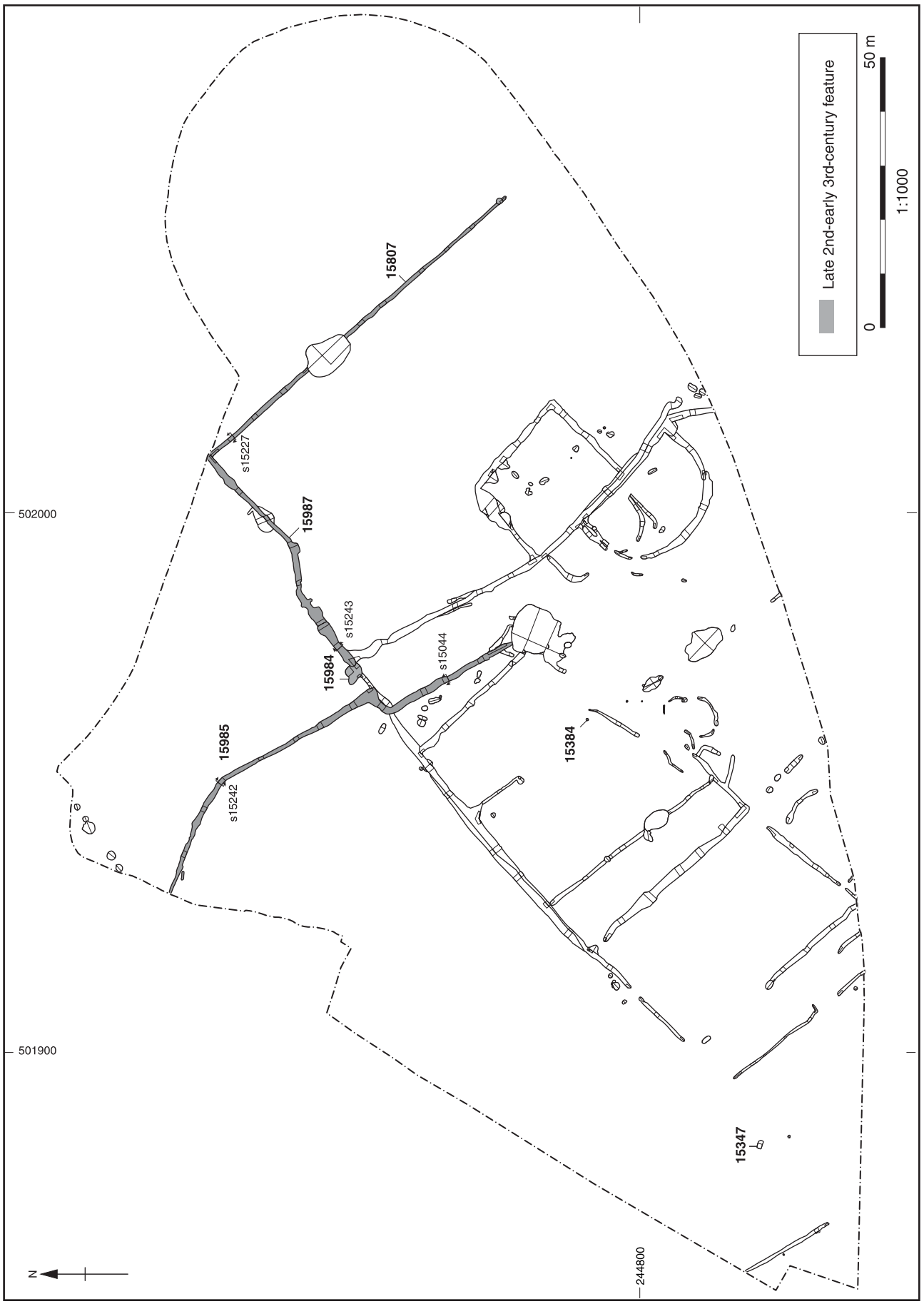


Fig. 2.114 Site 7, plan of late 2nd-early 3rd-century features

some time before it was ultimately backfilled with a single deposit of grey soil (15125) that contained a small quantity of late 2nd-century pottery.

Pit 15884, which may also have been a quarry hollow, was situated in an isolated location *c* 25m beyond the north-eastern limit of the original layout of the enclosure complex. It had been backfilled by the time the complex was extended by the construction of ditches 15807 and 15987 (below), as the latter ditch cut across it. The quarry comprised a substantial oval pit measuring 5.6m by 3.3m across, with a flat base and a depth of 0.45m. The only artefactual evidence recovered from its single fill (15883) was part of a lid-seated jar, which had been fragmented into six sherds.

Alterations to the north-eastern end of the enclosure complex (late 2nd–early 3rd century)

The north-eastern end of the complex of enclosures was subsequently extended and altered by the digging of ditches 15807, 15985 and 15987 to create a large, rectilinear enclosure (Figs 2.114-115). The dating of this reorganisation is uncertain. Very little artefactual material was recovered from the ditch fills, and the pottery that was present was not chronologically distinct from the material that had been recovered from the original enclosure ditches. It is possible that most, if not all of this material was residual in origin. However, the features were unquestionably later than the original establishment of the enclosure complex during the 2nd century, and ditches 15807 and 15985 were both cut by waterholes that dated from no earlier than the middle of the 3rd century, indicating that the reorganisation occurred during the late 2nd century or the first half of the 3rd century. It is not possible to be certain how much of the existing complex remained in use following these alterations, or indeed which other features may have been contemporary with them, due to the wide date ranges attributed to the associated ceramic material. It may, however, be relevant in this respect that the alignment of the southern part of ditch 15985 lay parallel to the corresponding part of ditch 15750 but rather obliquely to ditch 15743, perhaps suggesting that the former was still a significant feature of the immediate landscape whereas the latter was no longer extant.

Ditch 15987 (Figs 2.114-115, section 15243) was a north-eastward extension of the boundary that was originally defined by ditch 15986. Ditch 15807 was aligned at right angles to this, and was parallel to ditch 15750 (which had formerly defined the north-eastern limit of the enclosure complex). Because the junction of the two ditches was situated at the edge of the site it was not possible to be certain whether they represented a single, L-shaped feature, or whether ditch 15987 continued further to the north-east, with ditch 15807 defining a subsidiary boundary that branched off its south-eastern side. The stratigraphic relationship between the two ditches had been destroyed by a medieval plough furrow, but their alignments suggest that they related and may have been constructed as part of a single design.

Ditch 15987 followed a slightly irregular alignment that cut across earlier pit 15884 and extended for at least 47m, as far as the northern edge of the

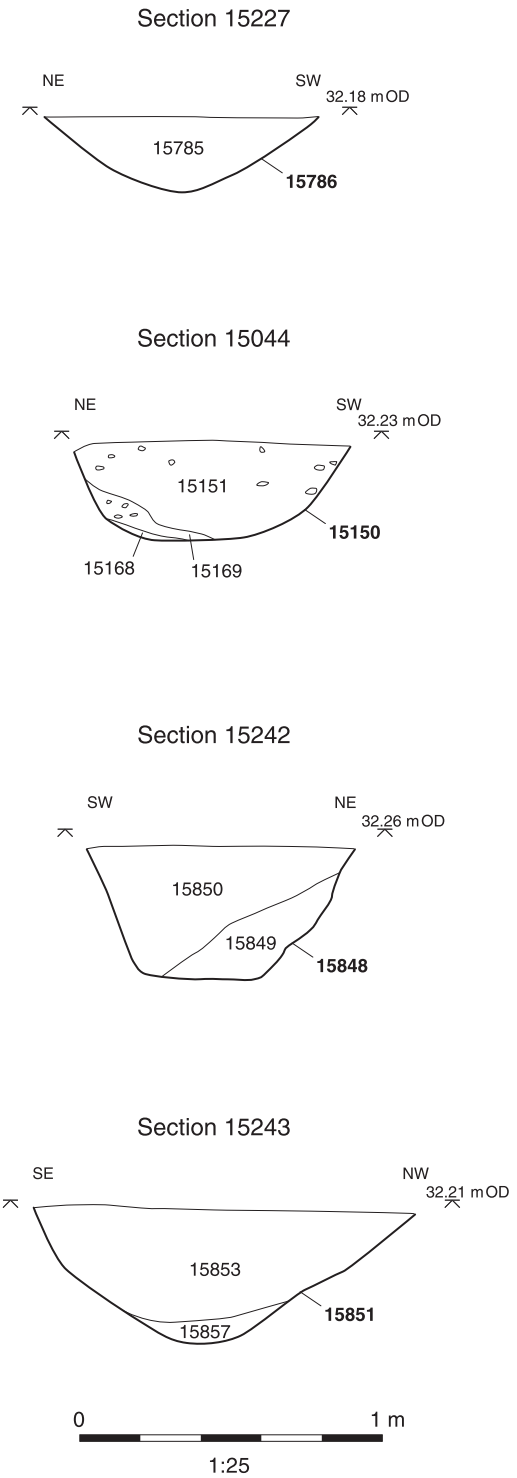


Fig. 2.115 Site 7, sections through late 2nd-early 3rd-century boundary ditches 15987, 15807 and 15985

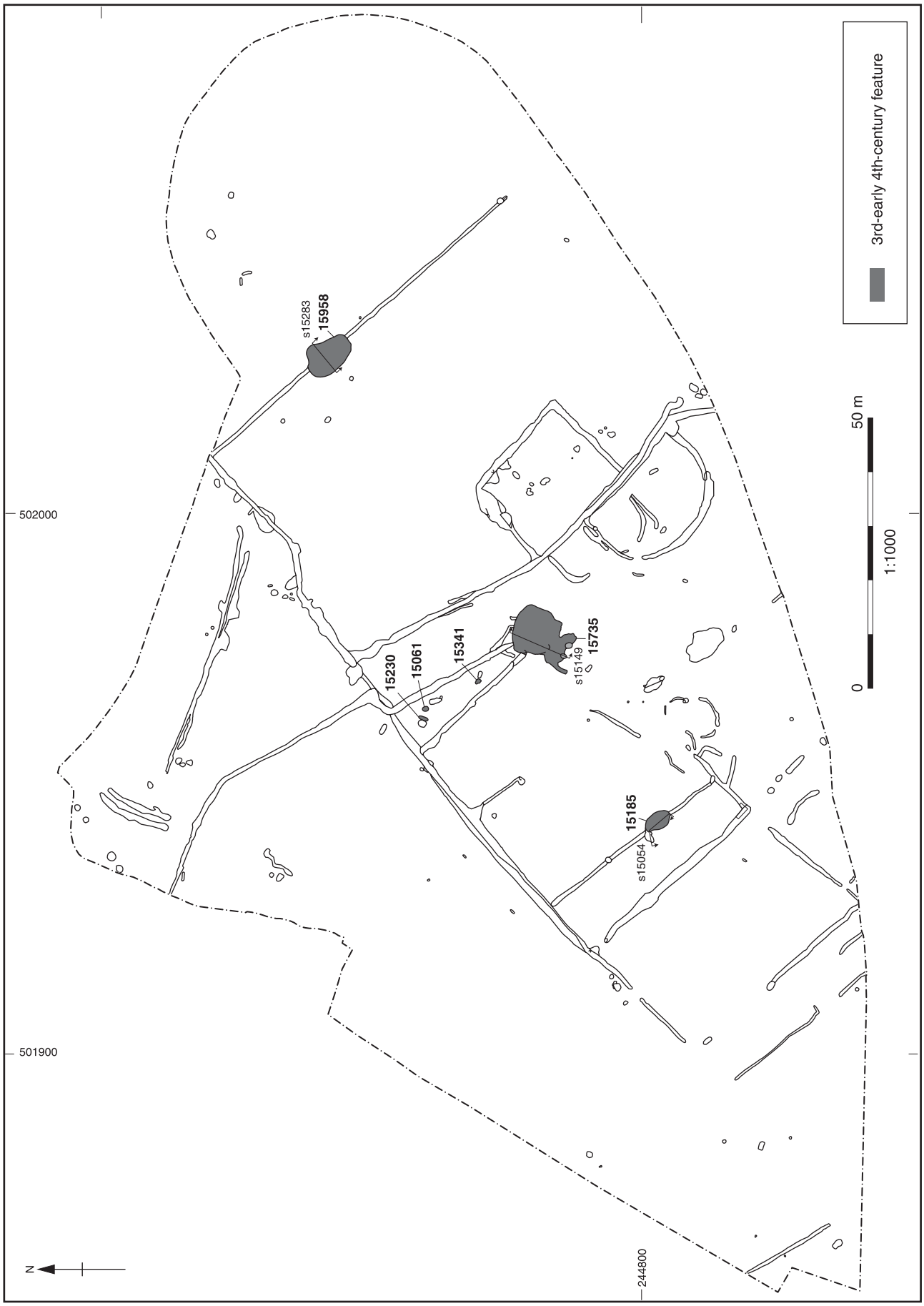


Fig. 2.116 Site 7, plan of 3rd-early 4th-century features

excavation area. It had moderately sloping sides and a rounded base, and generally measured 0.8-1.3m wide and 0.40-0.55m deep, although where it had been dug through the soft fill of pit 15884 it was somewhat deeper, with a depth of 0.72m.

Ditch 15807 (Figs 2.114-115, section 15227) was rather less substantial, measuring only *c* 0.25m deep. It extended in a south-easterly direction for *c* 70m before becoming shallower and petering out. It was unclear whether this represented the original end of the ditch or whether this was merely the point beyond which it had been completely truncated away by ploughing.

Ditches 15987 and 15807 defined two sides of a large rectilinear enclosure, the south-western side of which was bounded by ditch 15985. The enclosure measured *c* 60m NE-SW, but no measurement could be established for its NW-SE extent as the south-eastern side was not identified. From its south-eastern end, which was truncated by a later waterhole, ditch 15985 (Figs 2.114-2.115, sections 15044 and 15242) extended towards the north-west for *c* 25m on an alignment that was approximately parallel to that of ditch 15807 before turning sharply towards the north-east to form the western corner of the enclosure. After extending for a further 5m it turned sharply again to resume its former orientation, and between this dog-leg and the south-western terminal of ditch 15987 lay an entrance 5.2m wide. An amorphous hollow (15984) within the entrance may have been the result of disturbance caused by human or animal traffic passing through it. Ditch 15985 continued towards the north-west beyond the enclosure, defining a boundary that extended beyond the edge of the excavation area.

Late Roman period (3rd-early 4th century)

During the 3rd-4th century three large waterholes (15185, 15735 and 15958) were dug and three inhumation burials were interred. The waterholes were dug through boundary ditches 15366, 15807 and 15985, at distances of 25-30m from the boundary defined by ditch 15986 (Fig. 2.116). The ditches had clearly silted up by this time, but the consistent positioning of the waterholes on these boundaries suggests that they were still of some significance. Precise dating of the waterholes was hampered by the uncertain, but potentially long, lifespan of such features and by the long date ranges of the pottery from many of the context groups. They were clearly stratigraphically later than the enclosure ditches, and pottery from waterholes 15185 and 15958 suggests that they were infilled during the early-mid 3rd century, with the latter not fully filled until the end of that century or the early part of the 4th century. Waterhole 15958 produced a smaller and less diagnostic assemblage, but its similarity to the other waterholes suggests that it was of a similar date.

Waterholes

Waterhole 15735

Waterhole 15735 was located near the centre of the excavation area and had been dug through 2nd-early 3rd-century boundary ditch 15985, the southern end of which it truncated (Figs 2.116-117). The waterhole was extremely large and rather irregular in plan, measuring *c* 10.5m by 8.5m across, but with depth it became more circular, with

Fig. 2.117 Site 7, view toward south across the southern part of the excavation, with 3rd-early 4th-century waterhole 15735 in the centre of shot and ditch 15750 to the left

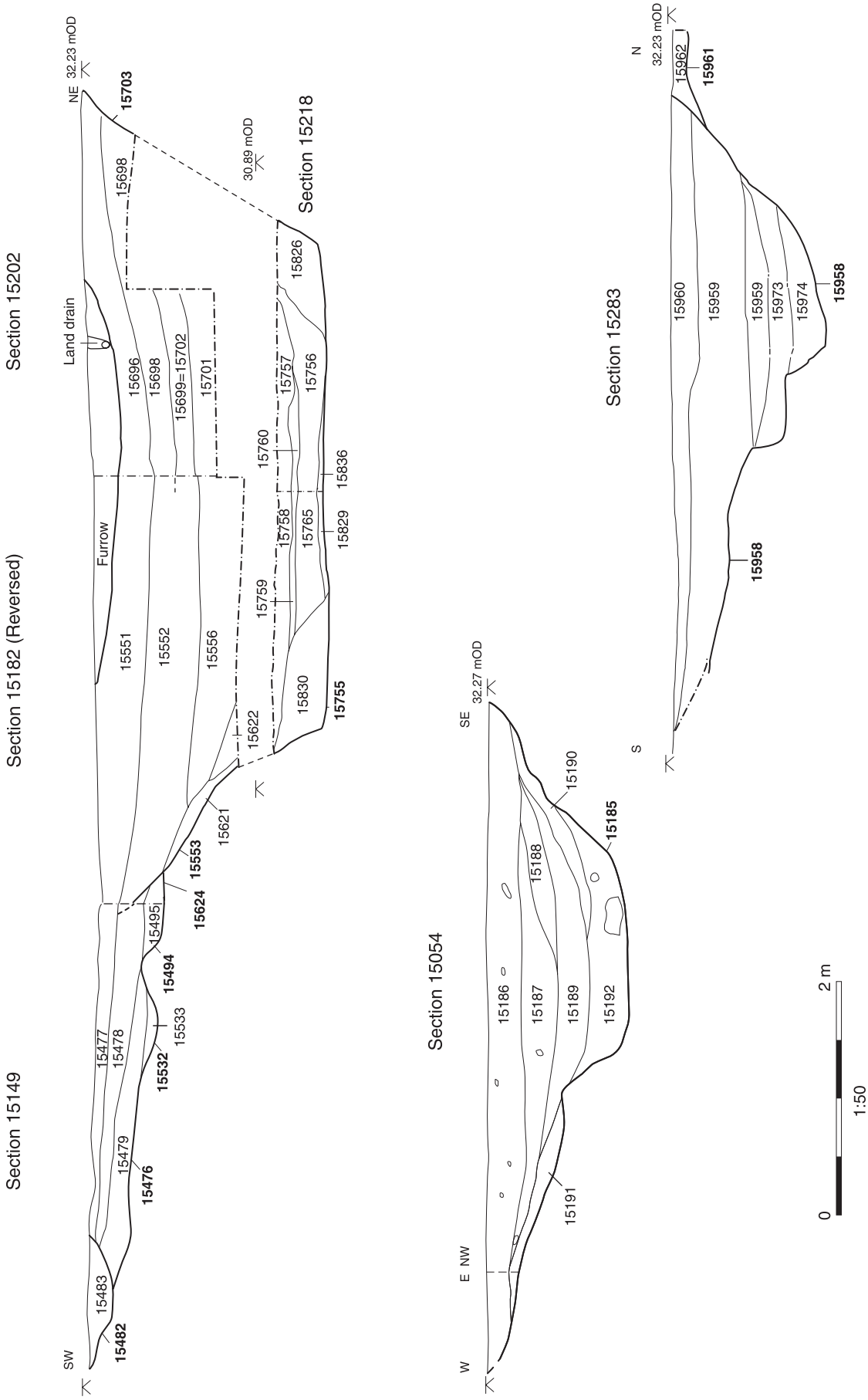


Fig. 2.118 Site 7, sections through 3rd-early 4th-century waterholes

Fig. 2.119 Site 7, excavation of the lower part of 3rd-early 4th-century waterhole 15735 in progress following machine excavation of the upper part of the feature

Fig. 2.120 Site 7, excavation of the lower silts of 3rd-early 4th-century waterhole 15735

a diameter of *c* 5.5m (Fig. 2.118, sections 15149, 15182, 15202 and 15218). Much of its extent on the south-western side comprised a shallow step that had been dug to a depth of 0.5m, presumably to facilitate access when collecting water. A short length of curving gully (15731) extended into this part of the feature, and although its precise function and relationship with the waterhole were unclear, the pottery assemblage was consistent with that recovered from the feature's backfill deposits, indicating that the two were contemporaneous. The shaft of the waterhole had near vertical sides and a flat base and was 1.8m deep. The feature penetrated the modern water table, and organic remains were preserved in the lower fills in the form of both flecks of plant material and larger items. Following an initial accumulation at the edges of the feature of a primary fill (15830), a sequence of layers began to build up that were composed of grey silty clay characteristic of deposition within standing water (15821=15836, 15756=15765, 15759-15760, 15757=15758; Figs 2.119-120). The assemblages of waterlogged plant and insect remains recovered from these layers indicated that the feature contained standing water more or less permanently at this stage, although there were probably seasonal fluctuations in water level. From an early stage these layers contained a large quantity of refuse, mostly comprising an assemblage of nearly 5kg of pottery but also including smaller quantities of animal bone and

Fig. 2.121 Site 7, worked wood preserved by waterlogging within the lower silts of 3rd-early 4th-century waterhole 15735

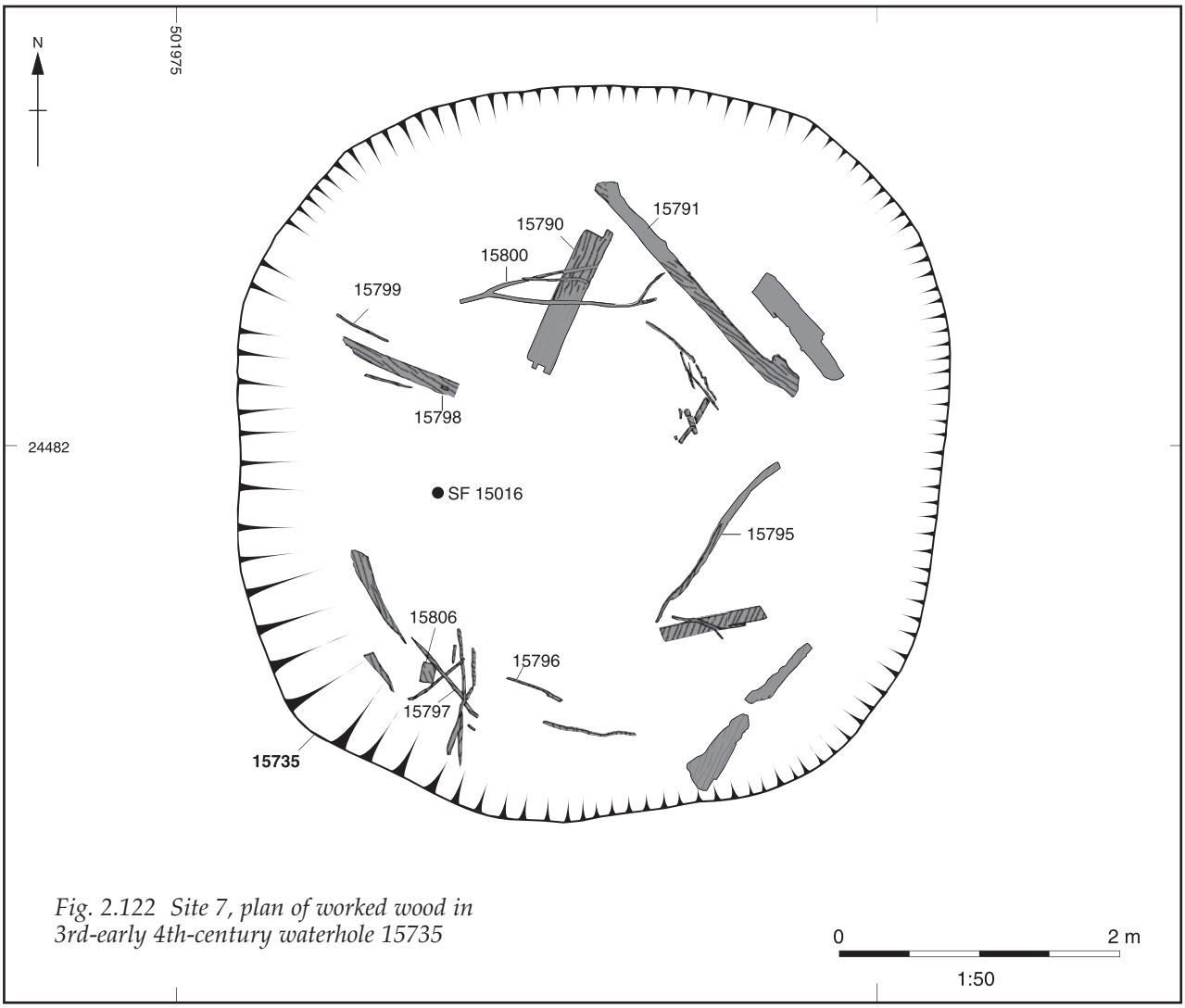


Fig. 2.122 Site 7, plan of worked wood in 3rd-early 4th-century waterhole 15735

oyster shell and a small fragment from a rotary quern. The pottery generally dated from the late 2nd-early 3rd century but also included sherds from a funnel-necked beaker that should date from the late 3rd-early 4th century, although a slightly earlier date for this piece is possible. In addition to this material, the skeleton of a dog was recovered from fill 15765 and a collection of worked timbers from fill 15759=15760. The timbers included a group of fence pales, a plank and a trimmed log, as well as other off-cuts and several small clusters of roundwood (Figs 2.121-122). A rake head (SF 15016) comprising part of an antler with two tines and a neatly cut rectangular hole to accommodate the handle also lay among these pieces (Fig. 2.123). The dumping of the timbers appeared to signal the end of the use of the feature as a water source, and following the accumulation of a little more silt (15757=15758) the rest of the feature was filled by more substantial layers that are likely to result from deliberate backfilling, and which contained a very large quantity of dumped domestic refuse. The lower part of the backfill lay within the zone of waterlogging in the lower part of the feature, which facilitated the preservation of the highly fragmentary remains of a leather shoe and a piece of waste leather deriving from the cutting out of pattern pieces during the leather working process. A cluster of 25 hobnails recovered from higher up, in fill 15699=15702, is likely to indicate that at least one further shoe was deposited in this feature but was not preserved.

Fig. 2.123 Site 7, antler rake SF 15016 exposed within the lower silts of 3rd-early 4th-century waterhole 15735

Waterhole 15185

Waterhole 15185 lay in the south-western part of the excavation area and had been dug through boundary ditch 15366 (Fig. 2.116). It measured 8.3m by 3.2m across with its long axis lying on the same NW-SE alignment as the ditch. The feature was 1.2m deep, with a flat base and steep sides that lipped out somewhat toward the top. It was accessed by means of a step located on the north-western side (Fig. 2.118, section 15054 and Fig. 2.124). The slightly irregular profile of the step may indicate that was originally two steps, dug to depths of 0.25m and 0.6m, which have merged together as a result of erosion during the course of their use. A layer of bluish grey clay (15192) that was 0.3-0.35m thick had accumulated in the base of the feature. The feature also appeared to have been used for the disposal of domestic refuse, as this deposit contained a substantial artefactual assemblage. The pottery from this layer was indicative of a deposition date during the early 3rd century, and included two near-complete vessels: a folded beaker (SF 15007) and a beaker-sized necked jar (SF 15008). The deposit also contained an assemblage of animal bone that weighed nearly 3.5kg and included a highly fragmented cattle skull. A single large piece of unworked limestone that may have been used as building stone had also been dumped into the feature. The necked jar lay on the base of the waterhole, along with a cattle skull and mandible (Fig. 2.125). It is possible that these items were deliberately placed, although the quantity of other material in his deposit could also be taken to

Fig. 2.124 Site 7, 3rd-early 4th-century waterhole 15185

Fig. 2.125 Site 7, possible placed deposit of a cattle skull and mandible and beaker-sized necked jar (SF 15008) on the base of waterhole 15185

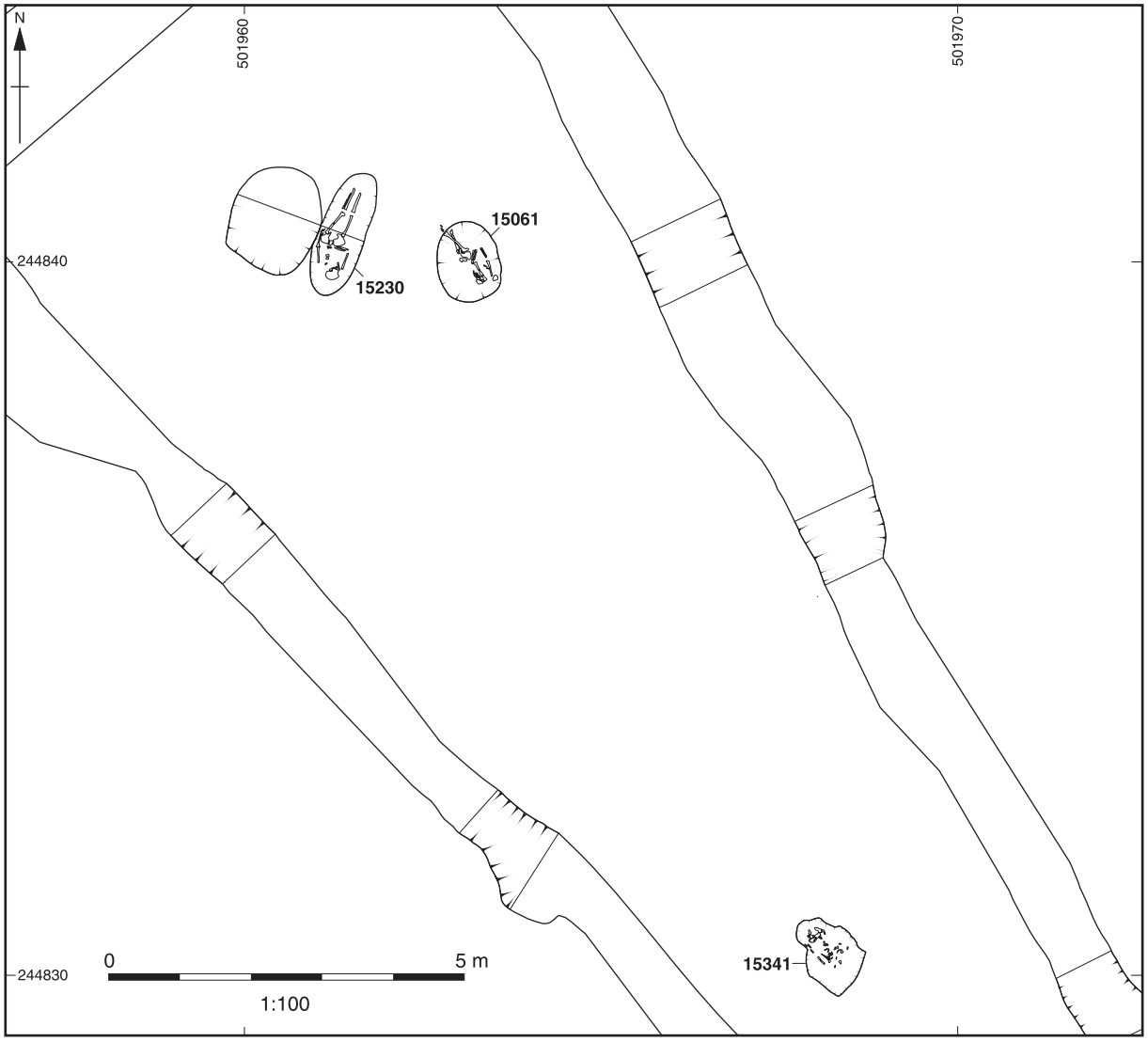


Fig. 2.126 Site 7, 3rd-early 4th-century burials 15061, 15230 and 15341

suggest that they were refuse and that their position on the base of the feature was coincidental. The rest of the waterhole had been backfilled with a sequence of layers of gravelly soil (15186-15191) that similarly contained a large quantity of domestic refuse.

Waterhole 15958

Waterhole 15958 (Figs 2.116 and 2.118, section 15283) was dug through ditch 15807, which defined the north-eastern limit of the complex of enclosures that had been established during the 2nd and early 3rd centuries (Fig. 2.116). The waterhole was roughly oval in plan, measuring *c* 9.2m by 6.5m across, but much of the length was accounted for by a ramp on the south-eastern side by means of which the feature was accessed (Fig. 2.118, section 15283). The ramp sloped gently down to a depth of 0.7m, below which the waterhole comprised a circular and steep-sided shaft with a diameter of *c* 3.6m. The shaft had a rather concave base and was 2.05m deep, easily penetrating the modern water table. The lower part of the feature was filled by an accumulation of bluish grey silty clay (15974, 15973) that had been deposited in standing water. These deposits were flecked with small pieces of preserved vegetable matter, including small twigs. Most of the feature was backfilled with a substantial layer of gravelly clay (15959), which was overlain by a deposit (15960) that had accumulated in the hollow that was formed as the underlying deposits settled.

The artefactual assemblage recovered from this feature was much smaller than that from waterholes 15735 and 15185 and came almost exclusively from the two upper fills (15959 and 15960). It is likely that this represents material that was incorporated incidentally during infilling in contrast to the delib-

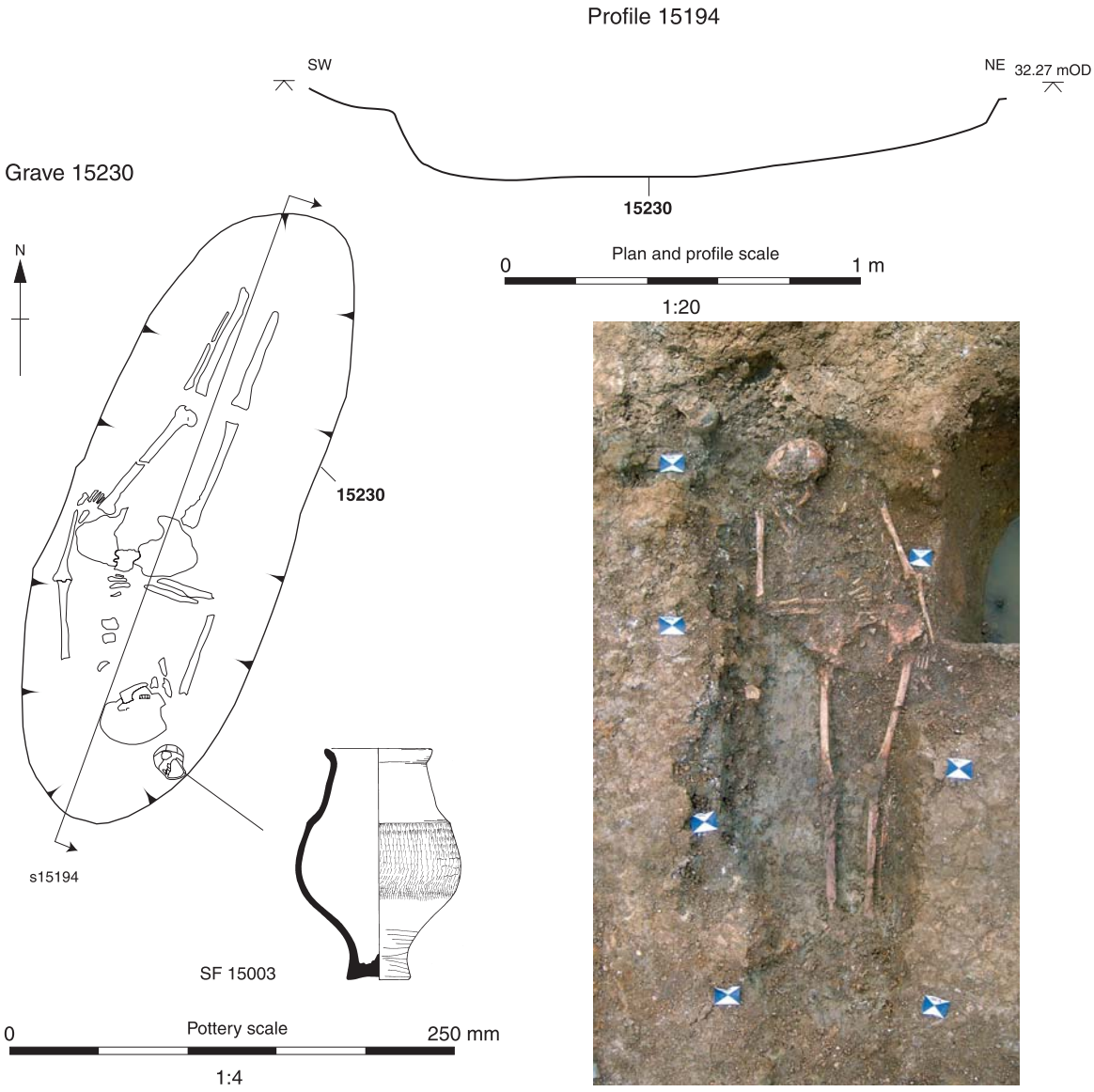


Fig. 2.127 Inhumation burial 15230

erate dumping of domestic refuse that took place in the other waterholes. The pottery comprised a total of a little less than 0.5kg and consisted of groups with long date ranges that indicated only that the feature was infilled some time after the late 2nd century. Two fragmented cattle skulls were recovered from fill 15960, but otherwise the animal bone assemblage comprised only a few small fragments.

Inhumation graves

A group of three graves (15061, 15230 and 15341) was situated a short distance north-west of waterhole 15735, and may have been associated with the southern part of boundary ditch 15985 (Figs 2.116 and 2.126). Grave 15230 contained by a Nene Valley colour-coated ware beaker (SF 15003) that dates from the late 3rd-early 4th century, and the spatial proximity of the other burials suggests that they should be of a similar date. The graves were very shallow and all three had been significantly truncated by medieval and modern ploughing, with none surviving to a depth of more than 0.2m.

Grave 15230

The best preserved of the burials was grave 15230 (Fig. 2.127), which lay a little over 3m from boundary ditch 15986. The grave was aligned SW-NE and cut the edge of an earlier pit (15288). It contained the burial of a probable male aged at least 18 years who lay in an extended, supine posture. The left arm was extended beside the body and the right arm was flexed across the stomach. A pentice-moulded beaker (SF 15003) in Nene Valley colour-coated ware had been placed to the right of the head. The beaker indicates a date for the burial in the late 3rd-early 4th century.

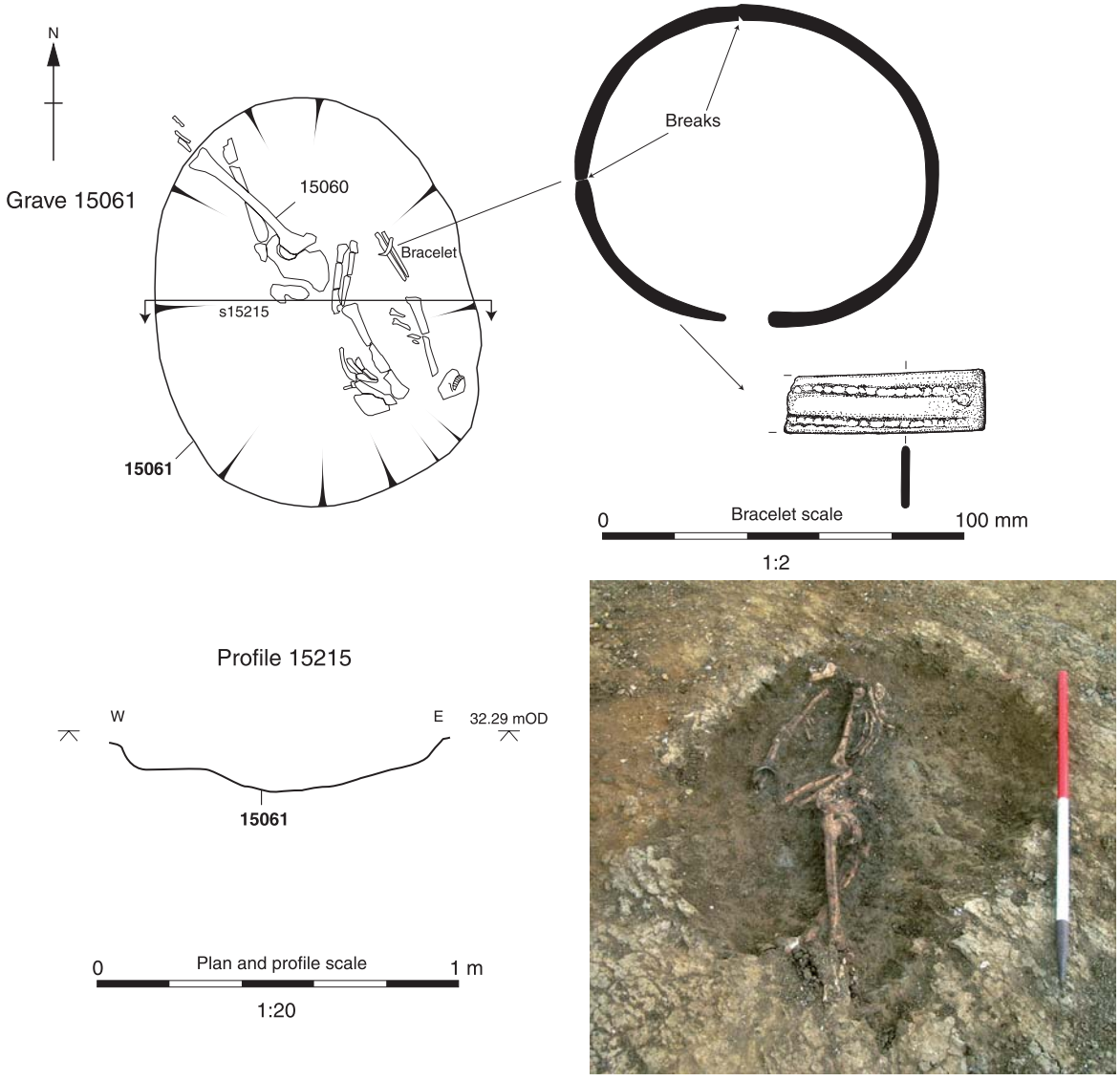


Fig. 2.128 Inhumation burial 15061

Grave 15061

Grave 15061 was the burial of a probable female aged 30-40 years which lay immediately east of grave 15230, separated from it by a distance of only 1m (Fig. 2.128). The burial had been interred in a large, subcircular pit rather than a more conventionally shaped grave. The posture was also somewhat unusual, the body lying extended on her right side. Both arms were extended in front of the body. The head and the lower parts of the legs had lain slightly higher than the rest of the body, against opposite ends of the pit, and had consequently been truncated by ploughing, although the mandible survived *in situ*. A copper alloy bracelet or armlet (SF 15001) was worn on the right arm and had caused some staining on the bones of the lower arm and wrist.

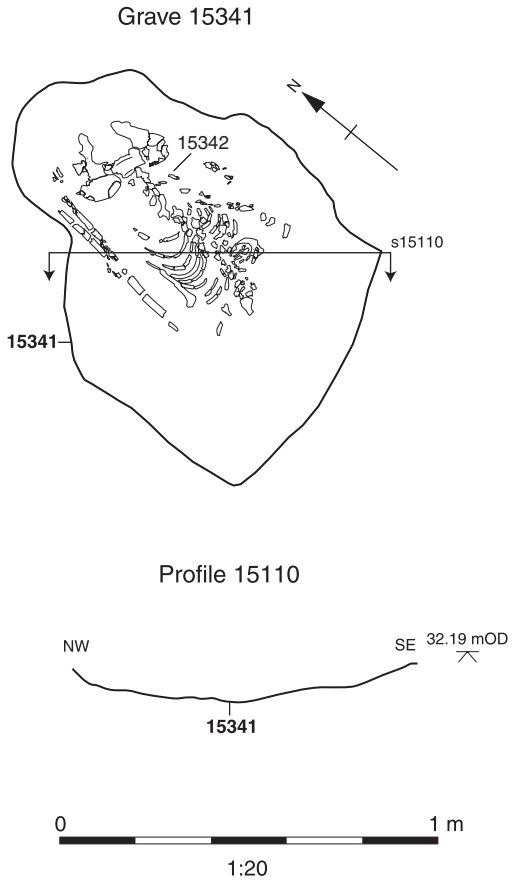


Fig. 2.129 Inhumation burial 15341

Grave 15341

This grave was located *c* 10m from graves 15061 and 15230. This burial had suffered more truncation than the other graves, resulting in the complete loss of the skull and legs, as well as much of the right arm (Fig. 2.129). The individual, a possible female aged 40-44 years, had been buried in an extended, supine posture with the left arm extended beside the torso. Although the skull was absent seven loose teeth were recovered. The position of the right arm was uncertain as only the humerus survived, although this lay beside the torso and so the position may have been similar to that of the left arm.

Other features

A number of small pits and postholes were identified, scattered widely across the site, which produced little or no artefactual material and so could not be attributed to a specific phase but are nevertheless likely to have been Roman in date and associated with the enclosure complex. None were of any great depth, and the distinction between pits and postholes was not clear-cut. Of particular note were posthole 15347, located in the western part of the site, which was the only example that exhibited a post-pipe, and posthole 15384, which was more centrally situated and had a flat piece of limestone placed as a post pad at its base.

SITE 9

Introduction

The site was located toward the north-eastern end of the Improvements, on the opposite side of the existing carriageway from Marsh Leys Industrial Estate (NGR TL 022 457; Fig. 2.130). It extended alongside the carriageway for a total distance of 480m and encompassed a total area of 19,688m^2, which was divided into two areas by a modern drainage ditch. It was situated on level ground at *c* 30m OD on a geology of stiff, bluish grey Oxford Clay. A prevalence of periglacial features in-filled with orange-brown gravels, sand and clay contrasted with this and gave the surface of the site a mottled appearance. The site was targeted for investigation because anomalies interpreted as possible enclosure or field boundary ditches had been identified by the geophysical survey. The excavation confirmed the presence of such a complex, although it could not be assigned a definite date as the only artefact recovered was a single small fragment of clay pipe stem.

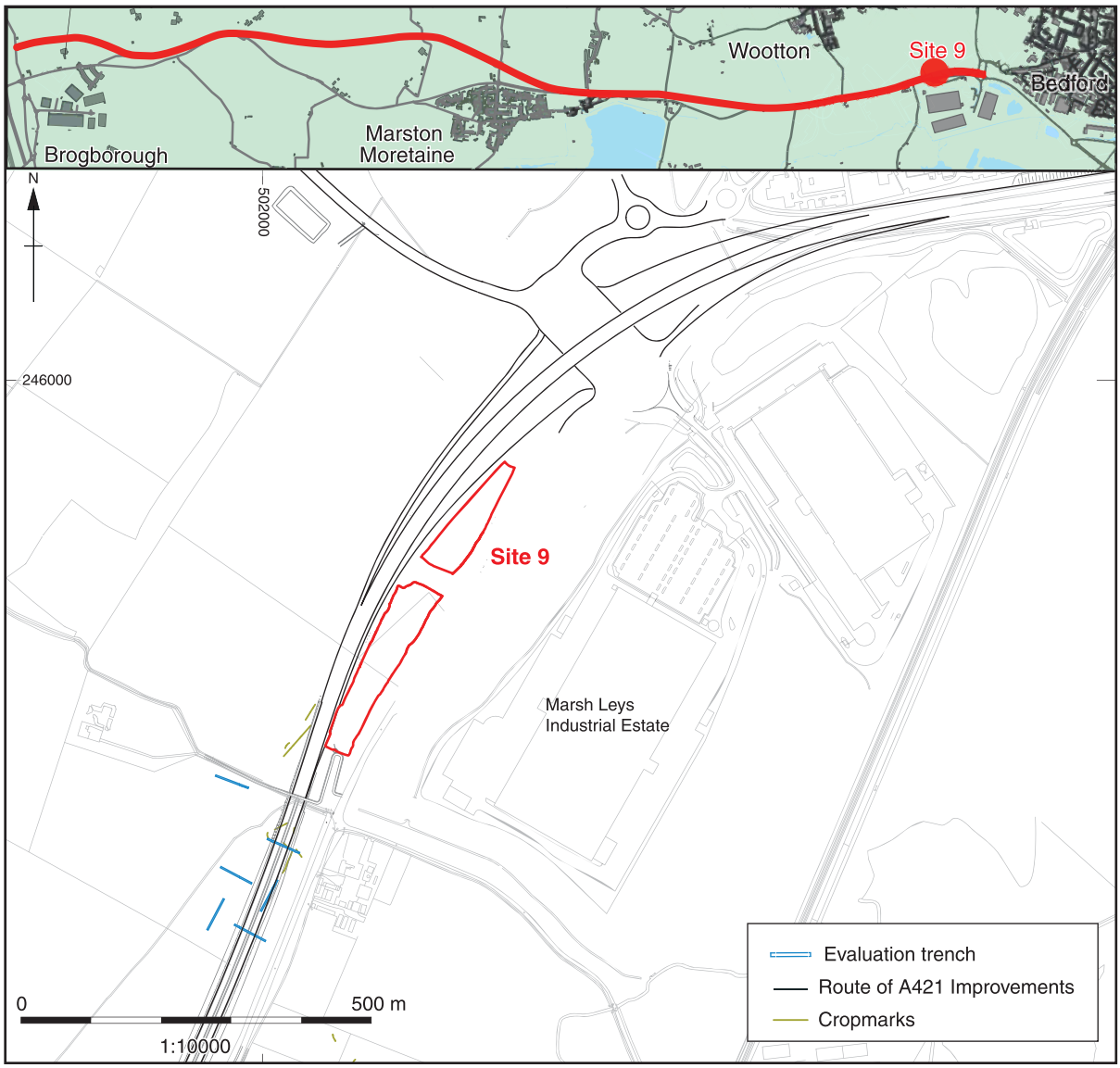


Fig. 2.130 Location of Site 9. (© Crown copyright. All rights reserved. Licence no. 100005569)

The enclosure complex

The excavation revealed a series of ditches that defined the boundaries of part of a complex of rectilinear fields (Fig. 2.131). Most of the features were located in Area 1, but two boundaries were also identified in Area 2. The ditches were generally quite shallow, with depths typically in the range of 0.2-0.3m, and had clearly been truncated by more recent ploughing. They were filled by homogenous deposits of greyish brown clay that was derived from the surrounding geology, and appeared to have silted up naturally.

Features in Area 1

The principle axis of the field system was established by three ditched boundaries (19107/19108, 19085 and 19101) that extended across the south-western part of Area 1 at 30m intervals on parallel NNW-SSE orientations (Fig. 2.132). Ditches 19085 and 19101 were very slight, measuring no more than 0.15m and 0.23m deep respectively. The former ditch extended for only 26m from the southern edge of the excavation area, but may have been shortened by truncation.

The boundary represented by ditches 19107 and 19108 (Figs 2.132-134) appeared to be of particular significance, as it was the only boundary that had definitely been recut, and these two ditches were by some margin the most substantial ditches on the site. Ditch 19107, the earlier of the two, measured 1.2-1.6m wide and up to 0.68m deep. The lower part of the ditch had a steep profile that probably retained the original shape of the ditch, whereas the upper part had been more subject to erosion while the feature was open and so sloped more gradually. After ditch 19107 had silted up the boundary was redefined by the digging of ditch 19108, which was of similar proportions and had a similar profile. A

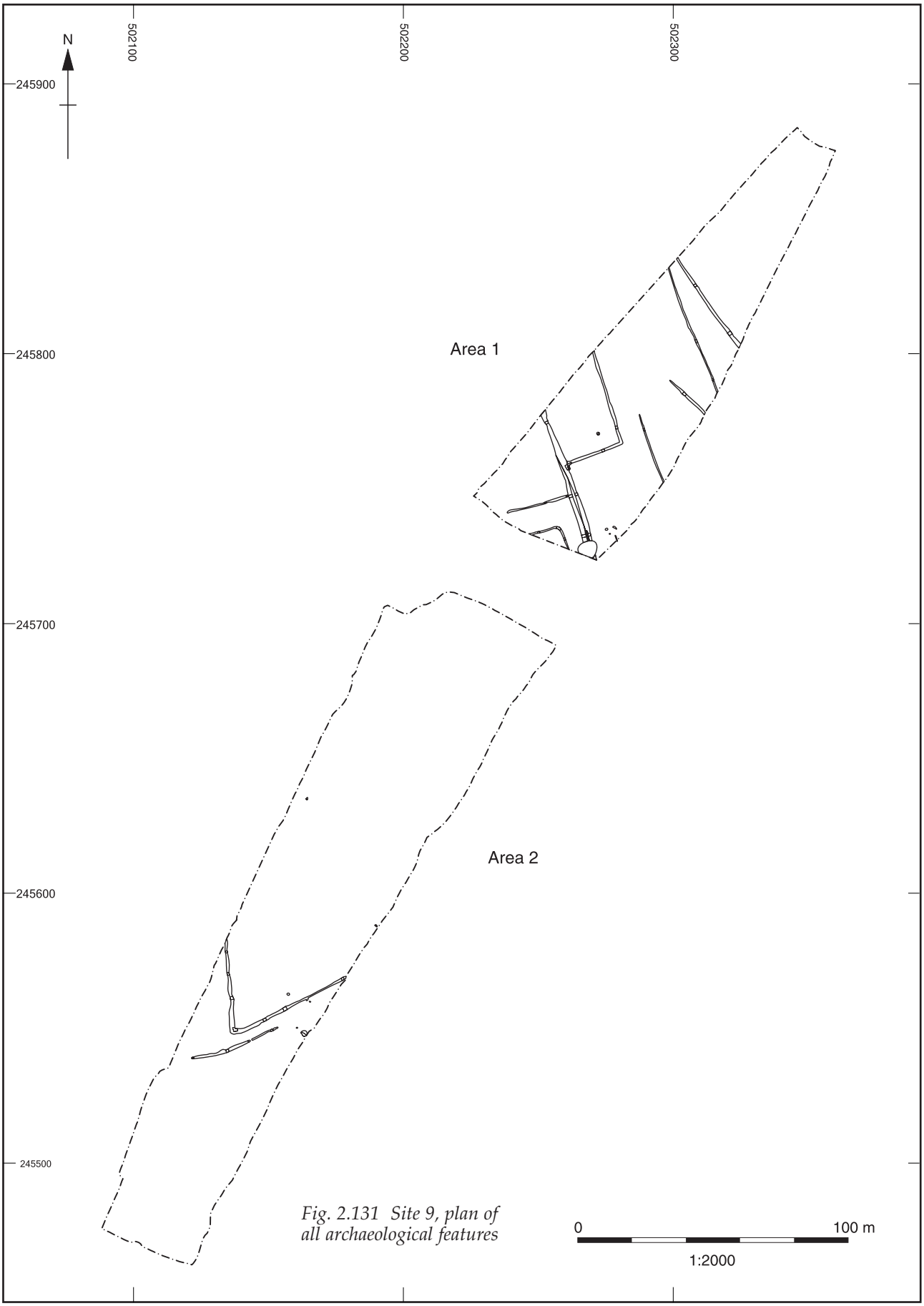


Fig. 2.131 Site 9, plan of all archaeological features

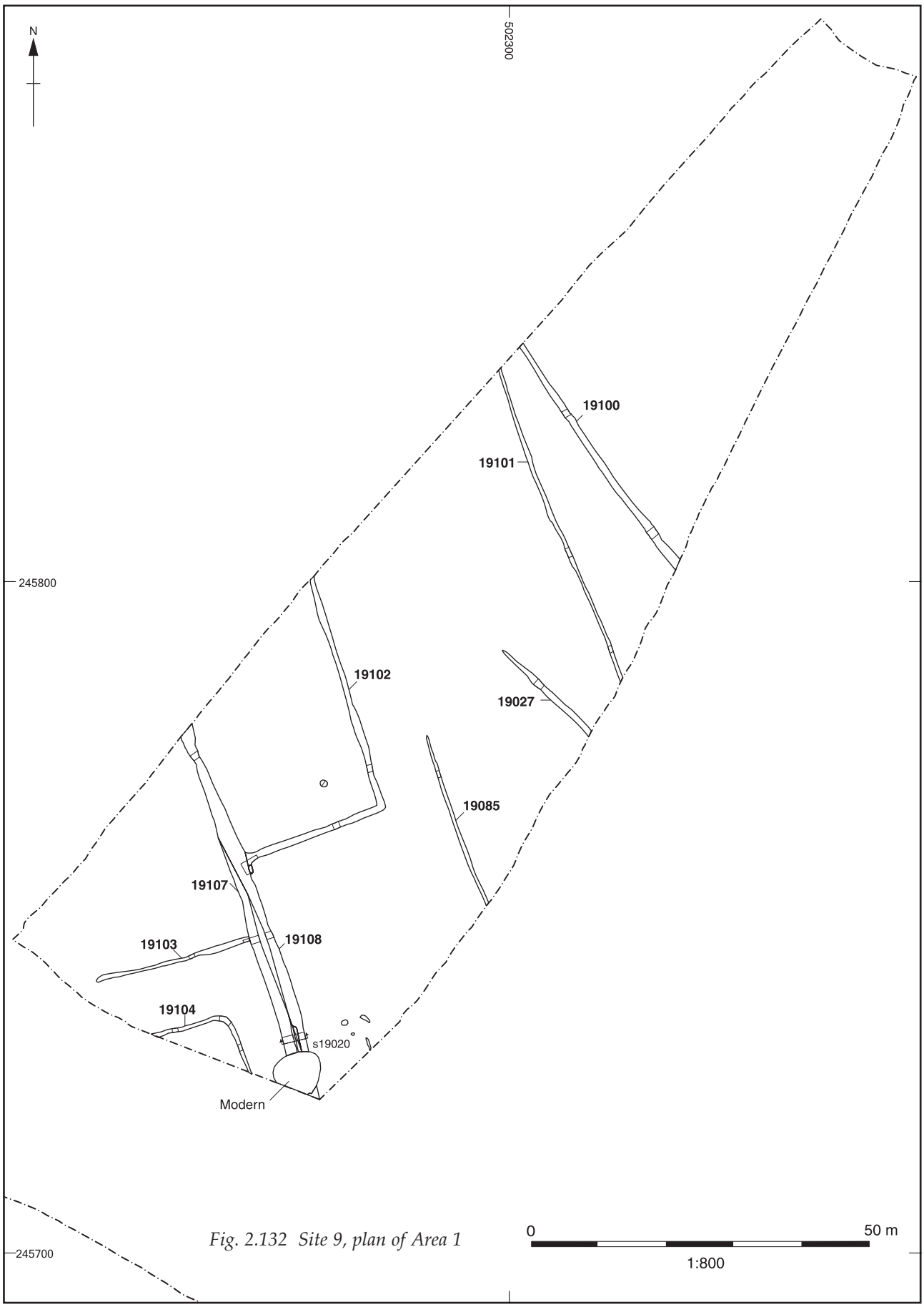


Fig. 2.132 Site 9, plan of Area 1

Fig. 2.133 Site 9, view along ditches 19107 and 19108 during excavation

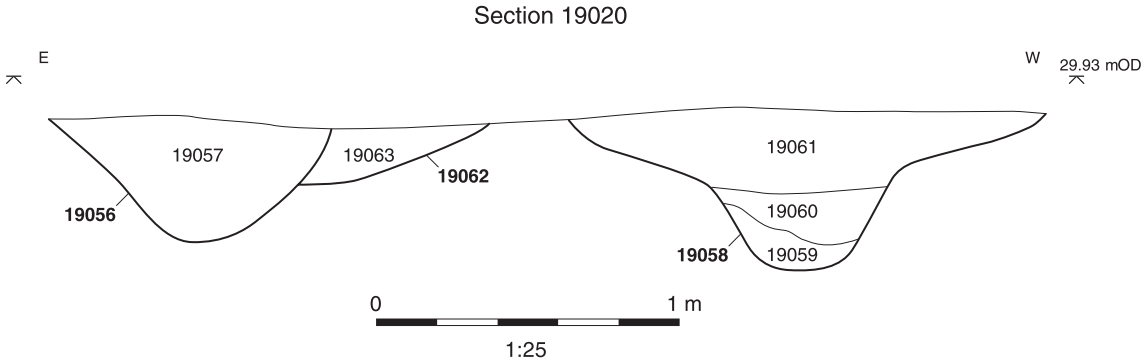


Fig. 2.134 Site 9, section through ditches 19107 and 19108

single small fragment of clay pipe stem was recovered from its primary fill. The pipe had a bore diameter of 2.5mm, which suggests an 18th-century date. At the southern tip of Area 1 both ditches were truncated by a large modern pit.

Smaller rectilinear fields were situated on either side of the boundary defined by ditches 19107 and 19108. A rectangular field was situated against the eastern side of ditch 19108. It was bounded on its south-eastern and north-eastern sides by ditch 19102, which branched off ditch 19108. The north-western end, however, lay beyond the edge of the excavation area. The field measured *c* 22m wide and was at least 35m long. No entrances into the field were identified, and no features were present within it. A slightly larger field may have lain adjacent to this one, on its south-eastern side, bounded to the south-west by ditch 19108 and to the north-east by ditch 19085. Ditch 19103 branched off the western side of ditch 19107 and extended for *c* 25m, presumably dividing two fields that abutted the boundary. Part of an L-shaped ditch (19104) was exposed at the south-western edge of Area 1. It may have been the north-eastern corner of a rectilinear field which had sides that lay parallel to ditches 19103 and 19107.

Ditches 19027 and 19100 lay on parallel, NW-SE alignments at the north-eastern end of the distribution of ditches. Their alignment differed from that of

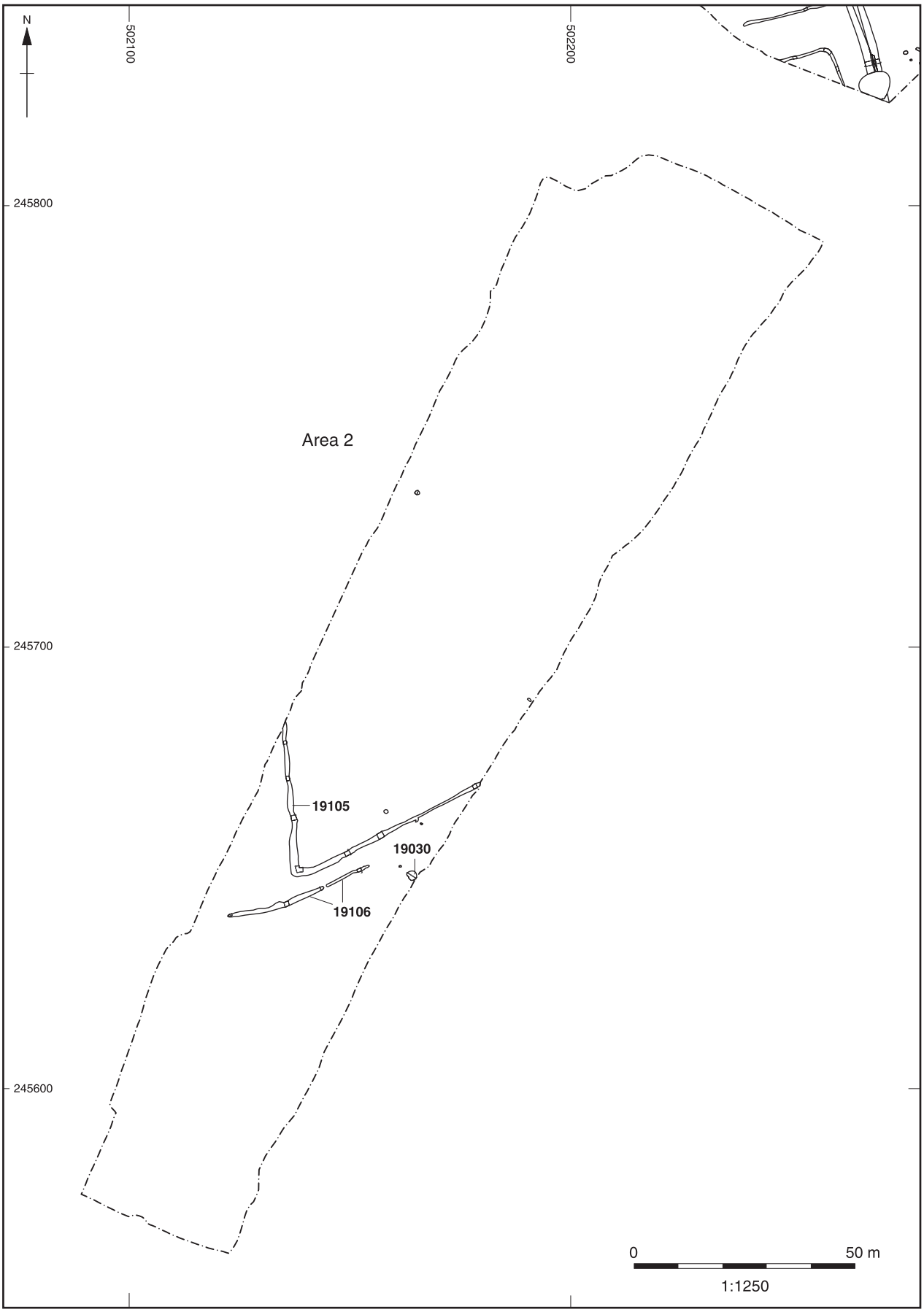


Fig. 2.135 Site 9, plan of Area 2

the rest of the boundaries and would have caused them both to converge with ditch 19101, although in both instances the points of convergence lay beyond the limits of the excavation area. In the absence of either stratigraphic relationships or artefactual dating evidence it was not possible to be certain whether they formed part of the same field system as the rest of the boundaries, although their dimensions and the character of their fills were consistent with those of the other ditches.

Features in Area 2

Two boundary ditches (19105 and 19106) were identified in Area 2 (Fig. 2.135). Although they lay some 180m from the ditches in Area 1, the similarity of their alignments suggested that they were likely to have formed part of the same system of land division. The part of ditch 19105 that was exposed within the excavation area was L-shaped in plan and appeared to define the south-western corner of a rectilinear field. The ditch survived to a depth of only 0.2-0.34m, and it is possible that evidence for the opposite side of the field had been completely destroyed by truncation caused by subsequent ploughing.

Ditch 19106 extended for *c* 35m on a NNE-SSW alignment, parallel to the adjacent part of ditch 19105. The two ditches may have defined the limits a trackway that measured 3.5m wide, but the destination of the trackway could not be established as ditch 19106 petered at both ends, probably having been truncated by ploughing, which was also responsible for a break in the ditch.

The only discrete feature identified on Site 9 was a circular pit (19030) which was situated at the edge of the excavation area, to the south of the two

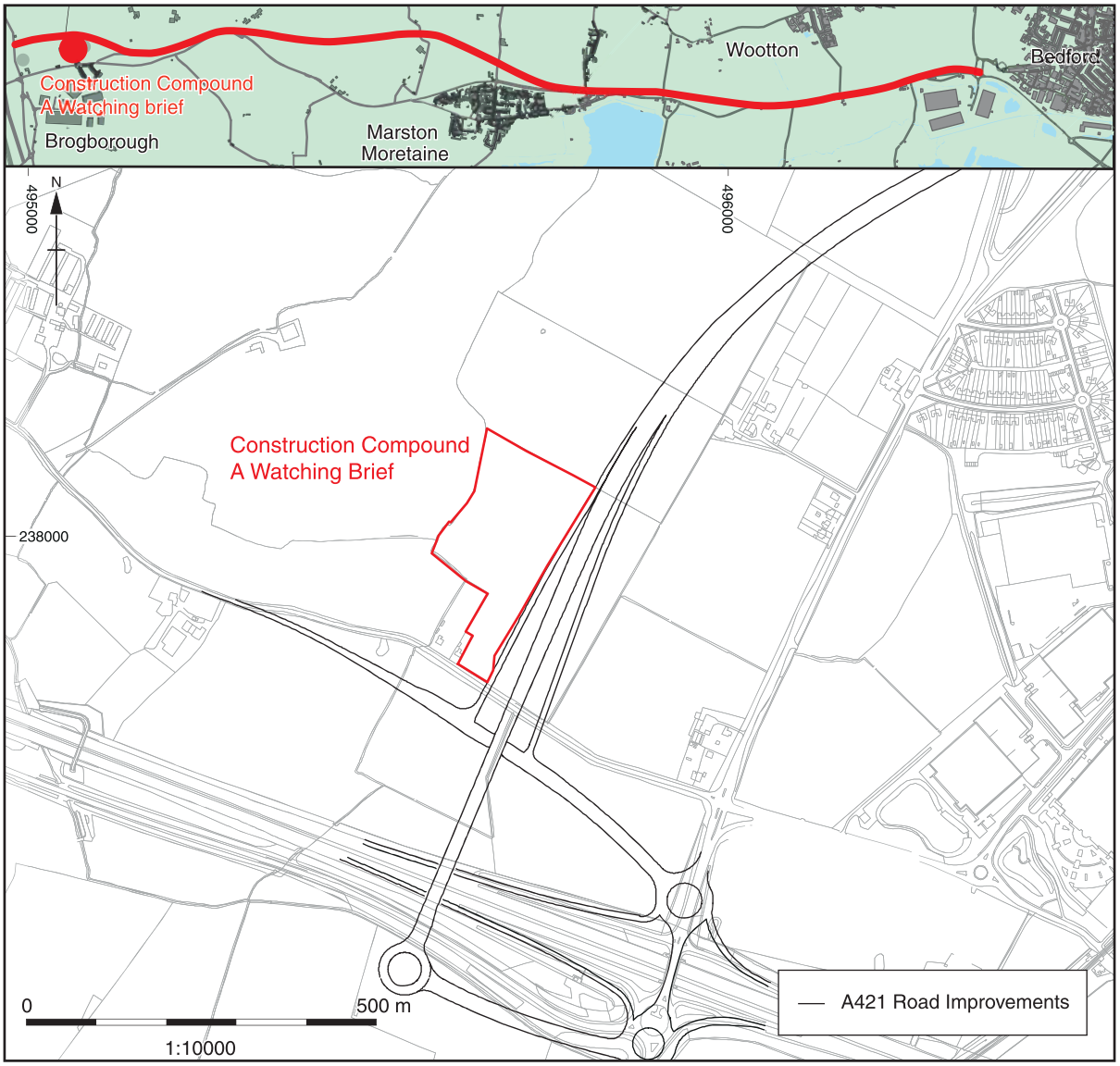


Fig. 2.136 Construction Compound A watching brief, location plan. (© Crown copyright. All rights reserved. Licence no. 100005569)

ditches. The pit measured 2.3m in diameter, its sides sloping quite gradually to a concave base at a depth of 0.7m. The lower part and eastern side of the feature were filled by deposits that contained a moderate quantity of charcoal, but no finds.

WATCHING BRIEFS

Construction Compound A

A watching brief was carried out during machine-stripping of topsoil prior to the surfacing of Construction Compound A. The site was located at the south-western end of the project, and comprised part of a former arable field adjoining the northern side of Salford Road (NGR SP 957 380; Fig. 2.136). A total area of 38,967m² was stripped, exposing the surface of the underlying subsoil, but no archaeological features or artefacts were observed.

Construction Compound B

A watching brief was also carried out during machine-stripping of topsoil prior to the surfacing of Construction Compound B and during the excavation of associated service trenches. The site comprised an area of 82,247m² that extended for a distance of *c* 1 km between Site 6 (Trenches 97-99) and Site 6 (Trench 105), adjacent to the northern side of the existing carriageway, a short distance north of Stewartby Lake (NGR TL 010 435; Fig. 2.137). The topsoil stripping exposed the surface of the subsoil,

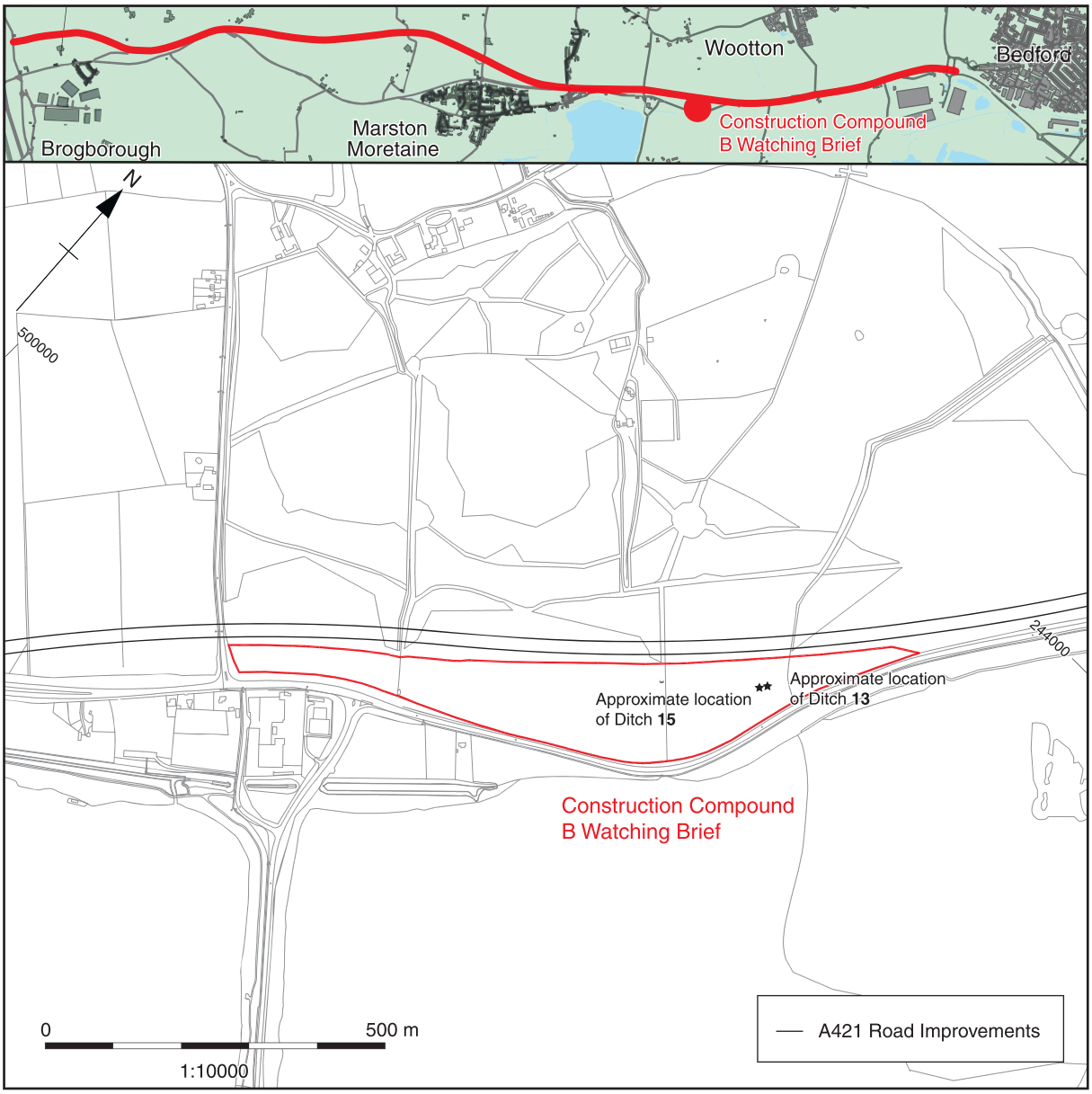


Fig. 2.137 Construction Compound B watching brief, location plan. (© Crown copyright. All rights reserved. Licence no. 100005569)

through which patches of the underlying natural clay occasionally outcropped. No archaeological features were seen in plan, but two ditches were exposed during excavation of a drainage trench along the south-western edge of the area. Ditch 13 measured 0.8m wide and 0.1m deep, and ditch 15 measured 2.65m wide and 0.24m deep. The wide, shallow profile of the latter feature suggested that it may have been a furrow rather than a ditch. Neither feature contained any artefactual material.

Wootton Pond Borrow Pit

A watching brief was carried out during machine-stripping of topsoil and subsoil in advance of the excavation of a borrow pit a short distance east of the village of Wootton, toward the north-eastern end of the project (TL 020 455; Fig. 2.138). The borrow pit was located adjacent to the western side of the carriageway, in a former arable field next to Wootton Sewage Treatment Works. It measured *c* 165m by 110m and encompassed a total area of 17467m^2. A single ditch (21005) was recorded in the north-eastern part of the watching brief area, where it extended for *c* 36m on a NNW-SSE alignment. The ditch was not particularly substantial, measuring 1.2m wide and 0.4m deep, and contained two fills, the upper of which (21003) contained four sherds of pottery dated to the 2nd or early 3rd century AD.

Cowbridge Junction

A watching brief was carried out during machine-stripping of topsoil in advance of carriageway

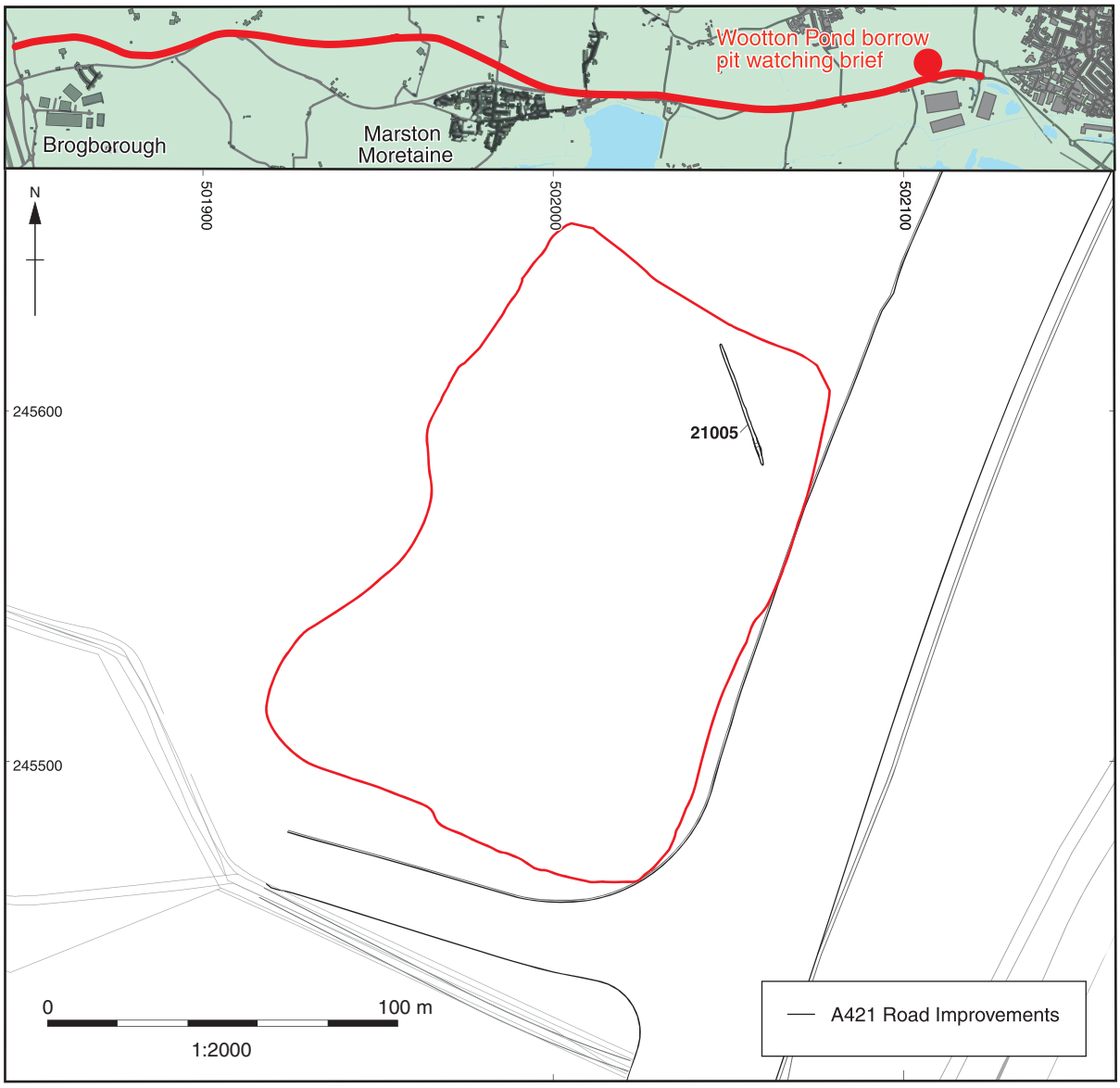


Fig. 2.138 Wootton Pond Borrow Pit watching brief, location plan. (© Crown copyright. All rights reserved. Licence no. 100005569)

widening of and improvements to the A6 between Progress Park Junction and Cowbridge Junction, and adjacent parts of the A15134 Ampthill Road (TL 044 470; Fig. 2.139). The stripping exposed only deposits of made ground associated with the construction of the existing carriageways. No archaeological remains were revealed.

BERRY FARM BORROW AREA EVALUATION

by Hefin Meara

Site location

Berry Farm Borrow Area was located between the existing carriageway of the A421 and Cranfield Road, immediately west of Berry Farm (NGR TL 006 436; Fig. 2.140). It lay on level ground at *c* 42m OD, from which the topography rose gradually to the north-west toward the edge of Marston Vale.

Geophysical survey

A geophysical survey of the Borrow Area carried out by Stratascan Ltd (2008) identified parts of two complexes of ditched enclosures, located *c* 100m apart at the north-eastern and southern edges of the survey area (Fig. 2.141). Few anomalies were detected in the intervening area other than a network of linear features that are likely to represent modern land drains. The northern complex appeared to comprise a main enclosure with a possible annex on its western side and a linear boundary parallel to its south-western side. The latter boundary may have been part of a second enclosure. The western part of the southern complex appeared to consist of a rather irregular arrangement of enclosures with a more rectilinear group to the east.

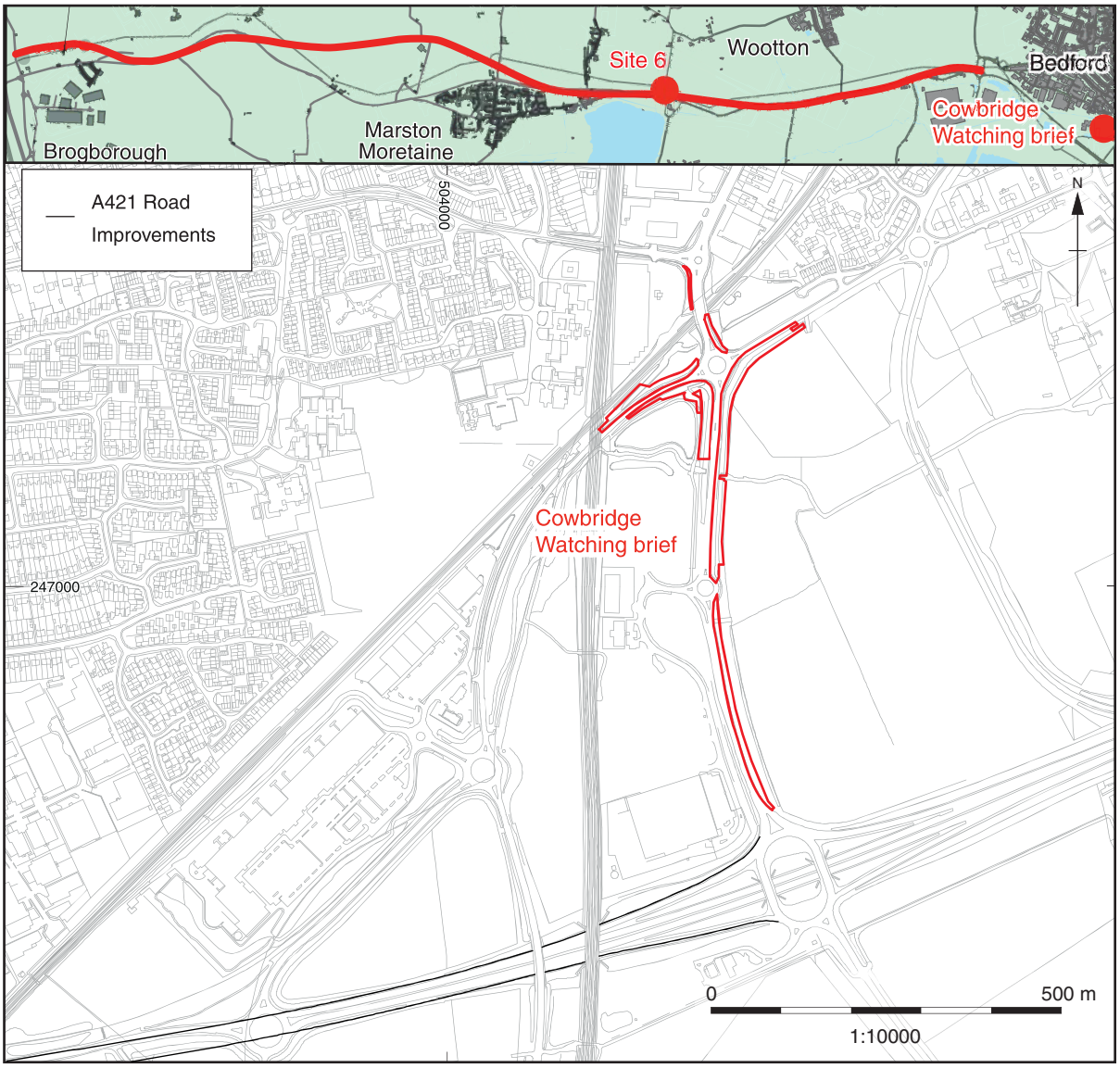


Fig. 2.139 Cowbridge watching brief, location plan. (© Crown copyright. All rights reserved. Licence no. 100005569)

Evaluation trenches

A total of 10 trenches each measuring 50m by 2m were excavated and recorded (Fig. 2.141). Seven of the trenches were located so as to evaluate the anomalies that had been identified by the geophysical survey. The remaining three trenches were located in the central part of the site to investigate the area that appeared blank in the geophysical survey.

The soil profile was generally consistent across the site. The trenches had an average depth of 0.4 m, but the depth of overburden was noticeably shallower towards the south of the site. Overburden consisted of a homogeneous topsoil layer overlying a thin buried ploughsoil. The buried ploughsoil was thinner towards the south of the site, and became patchy and intermittent in the southernmost trenches.

Due to heavy rainfall in the week prior to the evaluation the level of the water table was high throughout the evaluation area, and groundwater flooded all of the trenches to some extent. This prevented hand excavation of more than a sample of the features exposed in the trenches. However, it was possible to record the unexcavated features in plan and to collect artefactual material that was exposed on their surfaces. Thus, although full excavation of all features was not possible, it was nevertheless possible to broadly characterise and date the archaeological remains and to establish their distribution and their correlation with the results of the geophysical survey.

The northern complex (Trenches 141 and 142)

Trenches 141 and 142 were arranged to form an offset T-shape in order to investigate the southern and

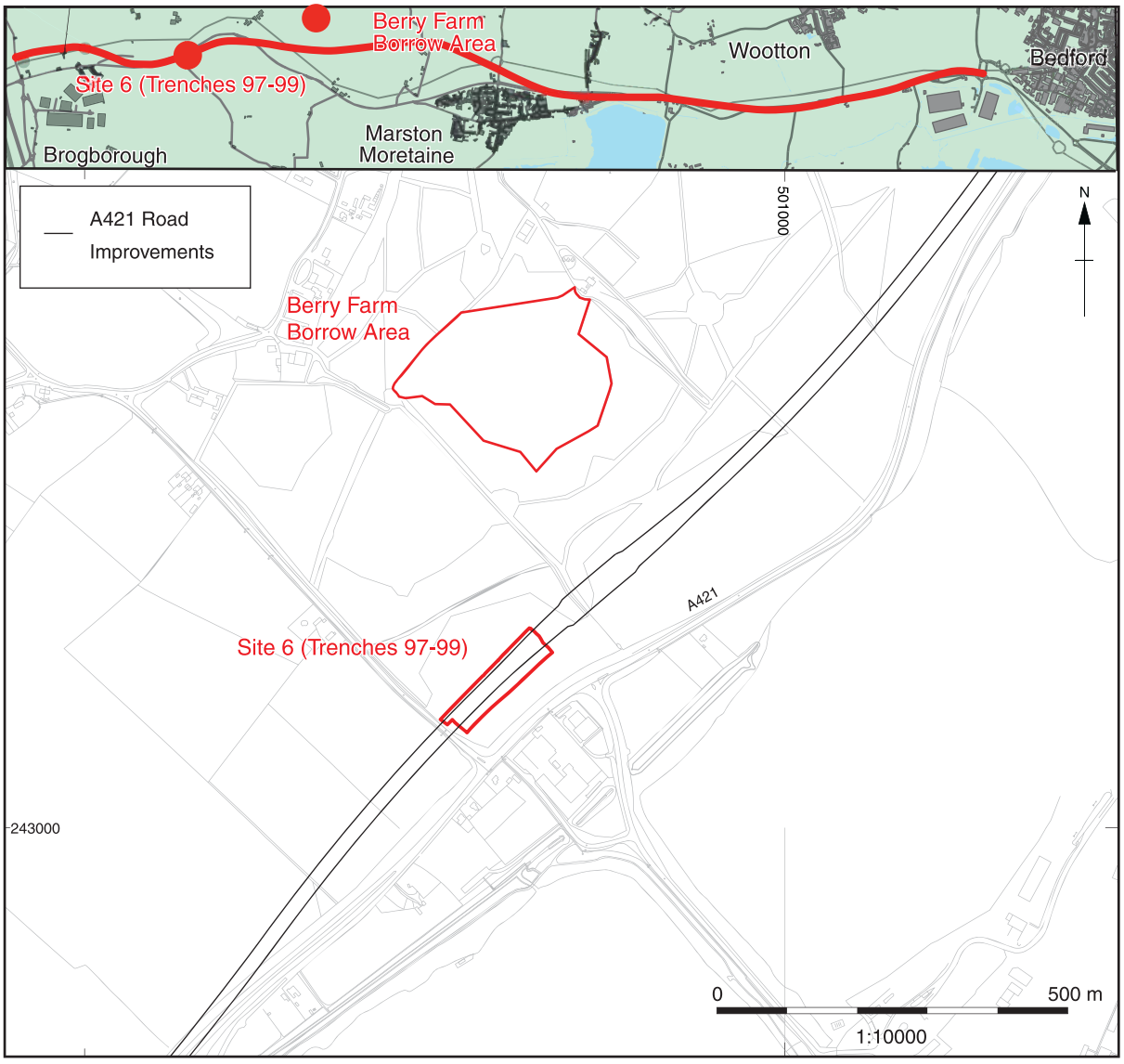


Fig. 2.140 Berry Farm Borrow Area, site location. (© Crown copyright. All rights reserved. Licence no. 100005569)

western sides of the main enclosure and annex and a sample of its interior (Figs 2.142-143). Trench 141 revealed six ditches, a pit and a modern land drain, and Trench 142 contained ten ditches, five pits and one amorphous feature.

Trench 141 (Figs 2.142-143)

Two ditches (141012 and 141014) were identified which lay on parallel NNE-SSW alignments and defined either successive phases of the western boundary of the enclosure or the boundary of the enclosure and that of an annex that abutted its western side. The more westerly of these boundaries was defined by ditch 141014, which was a substantial feature that measured *c* 3.5m wide. The ditch was not excavated, but late Iron Age pottery was recovered from the upper surface. Ditch 141012 (Fig. 2.143, section 141002) was located *c* 10m east of ditch 141012 and measured 1.4m wide and 0.54m deep, and had a U-shaped profile and was filled by a deposit of dark, charcoal rich soil (141013) from which a single sherd of late Iron Age pottery was recovered. A third substantial ditch (141006) was recorded that lay on a similar NNE-SSW alignment and may have defined a subdivision within the enclosure. Ditch 141006 measured *c* 4m wide and was not excavated, but three separate fills (141007, 141017 and 141016) were visible at its surface, possibly indicating that it had several phases. A sherd of pottery of late Iron Age-early Roman date was recovered from the surface of fill 141007.

Four other features were exposed in this trench within the interior of the enclosure. Two small ditches were recorded (141010 and 141018), although their precise functions were uncertain. Ditch 141010 (Fig. 2.143, section 141001) extended across the trench on a NE-SW orientation and measured 1m wide and 0.2m deep, and ditch 141018 was orientated N-S and measured 0.7m wide. The latter feature was not excavated and no finds were

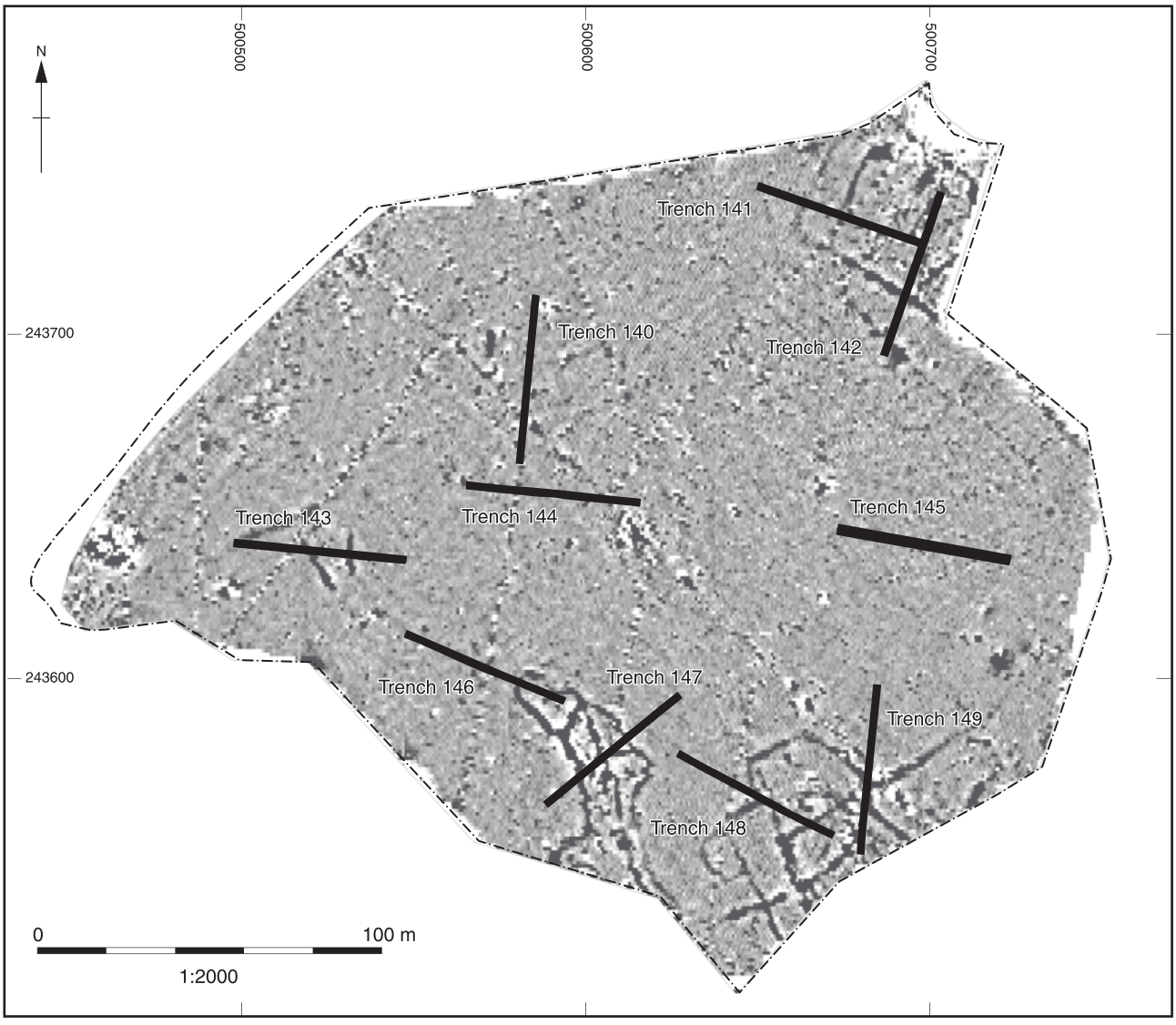


Fig. 2.141 Berry Farm Borrow Area, geophysical survey results and evaluation trench locations

recovered from either ditch. Pit 141008, which was not excavated, measured *c* 1m in diameter. The fill of the pit (141009) was a dark brown-grey silty clay, with charcoal inclusions, and may have been the result of a deliberate dump of domestic waste. Seventeen sherds of pottery dating from the Romano-British period were recovered from its surface.

Feature 141004 may have been a ditch terminal or a large pit. It measured at least 4m NW-SE and 1.5m wide. The feature was not excavated but late Iron Age-early Roman pottery was recovered from the surface.

Trench 142 (Figs 2.142-143)

Trench 142 exposed the southern boundary of the enclosure and a large number of features within the interior.

Ditch 142031 may have been the earliest feature, as it was cut by ditch 142029, which defined the southern boundary of the enclosure, and appeared to correspond with a feature identified by the geophysical survey that extended obliquely across the enclosure. The ditch was 2.4m wide but was not excavated, and no artefactual evidence was exposed on its surface.

The southern boundary of the enclosure was represented by ditch 142029, which was located in the southern part of the trench. The ditch was orientated NW-SE, and measured *c* 3m wide. It was not excavated, but pottery of Roman date was recovered from the surface.

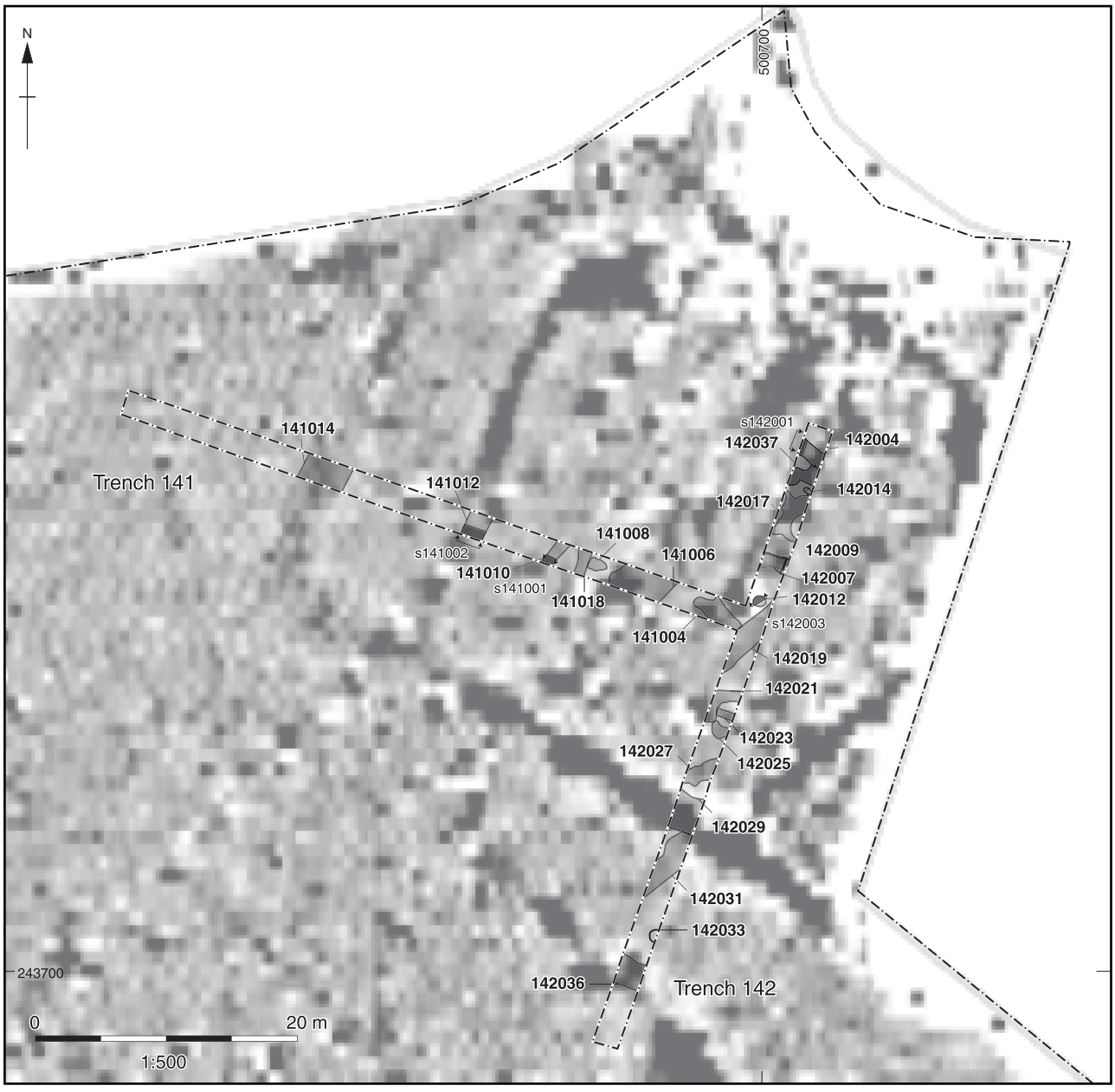


Fig. 2.142 Berry Farm Borrow Area, plan of the northern feature complex (Trenches 141 and 142)

Ditch 142036 was situated outside the enclosure and lay on an alignment that was approximately parallel with that of ditch 142029 and *c* 10m further south. It measured *c* 2.3m wide. It was not excavated but a large sherd of Roman pottery was recovered from its surface. Pit 142033 was also located outside the enclosure. The pit measured 1.1m in diameter and contained a dark brown silty clay fill. The feature was not excavated and no finds were recovered from its surface.

A large number of features were exposed within the interior of the enclosure, but their interpretation was hampered by the limited confines of the evaluation trench. Indeed, pit 142012 (Fig. 2.143, section 142003) was the only feature that was completely exposed within the trench. The pit was circular, with a flat base and near vertical sides. It measured 0.68m in diameter and 0.18m deep. A small quantity of animal bone and Roman pottery was recovered from the fill of the pit. A soil sample from the pit produced an assemblage of wheat grains that is likely to be associated with crop processing or storage.

The majority of the features exposed within the trench were ditches or other linear features which extended beyond the limits of the trench.

Ditches 142037 and 142004, which were located at the northern end of the trench, intersected but the relationship between them was not investigated. Ditch 142004 (Fig. 2.143, section 142001) was orientated NW-SE and measured 1.02m wide and 0.27m deep. It had an irregular profile. It contained two distinct fills, a natural silting layer (142005) overlain by a deliberate backfill of blackish-grey charcoal-rich clay (142006). The latter deposit contained animal bone as well as late Iron Age-early Roman pottery. Ditch 142037 was orientated E-W, and measured 1.5m wide. The feature was not excavated.

Ditch 142014 had an irregular profile and measured 0.57m wide and 0.1m deep. It extended into the trench for 0.75m before terminating. It contained two fills, a grey clay layer (142015) overlain by a dark grey-black silty clay (142016). The upper fill contained a single fragment of fired clay that may be a fragment of oven plate.

Feature 142017 may have been either a large, amorphous feature or a group of intercutting features. It was not excavated but late Iron Age-early Roman pottery was recovered from its surface, along with a single fragment of fired clay that may be a piece of oven furniture. This fragment, along with the piece recovered from feature 142014, suggests that there may have been an oven in the immediate vicinity of the trench.

Pit 142007 was an insubstantial feature that measured 0.5m in diameter and 0.07m deep. It was cut by ditch 142009, which extended across the trench on a NW-SE alignment. The ditch had a U-shaped profile and measured 0.5m wide and 0.39m deep. It contained two distinct fills: a natural silting

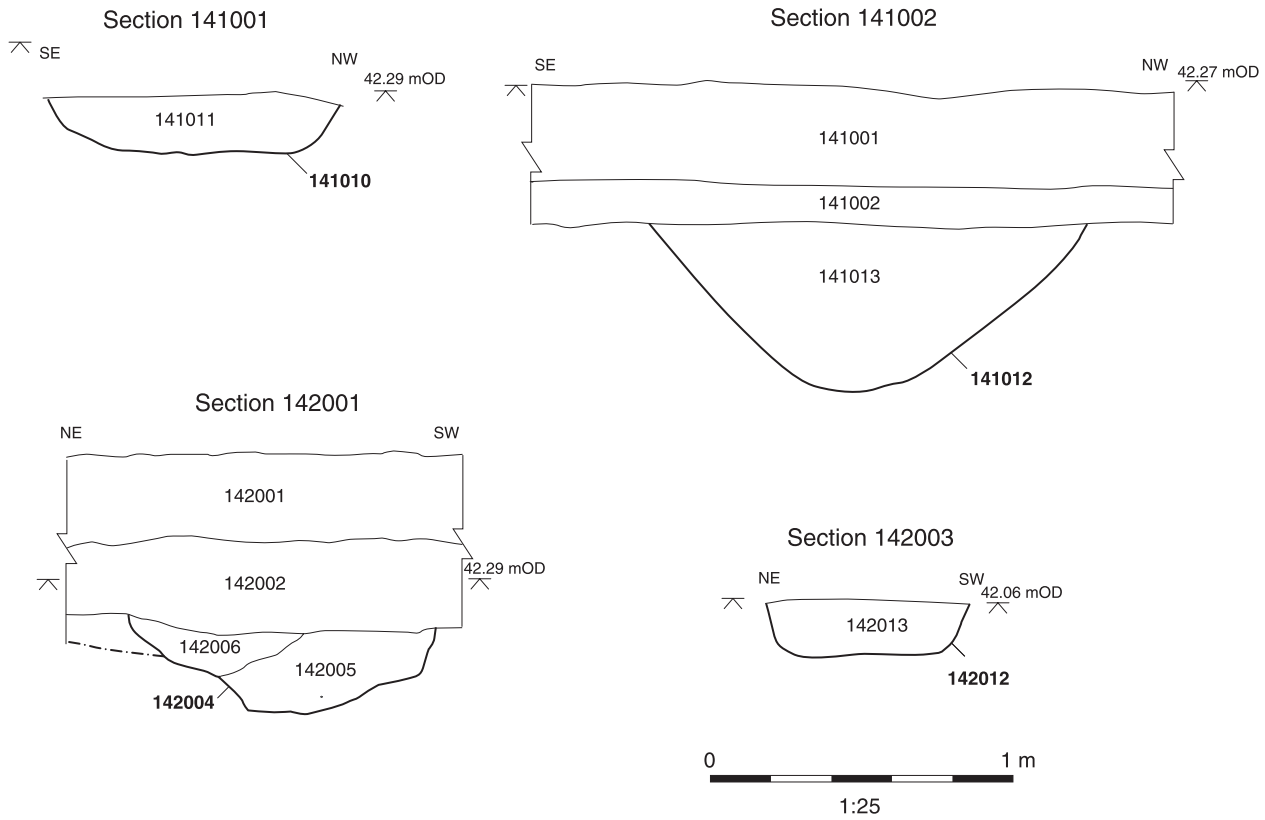


Fig. 2.143 Berry Farm Borrow Area, sections through features in the northern feature complex

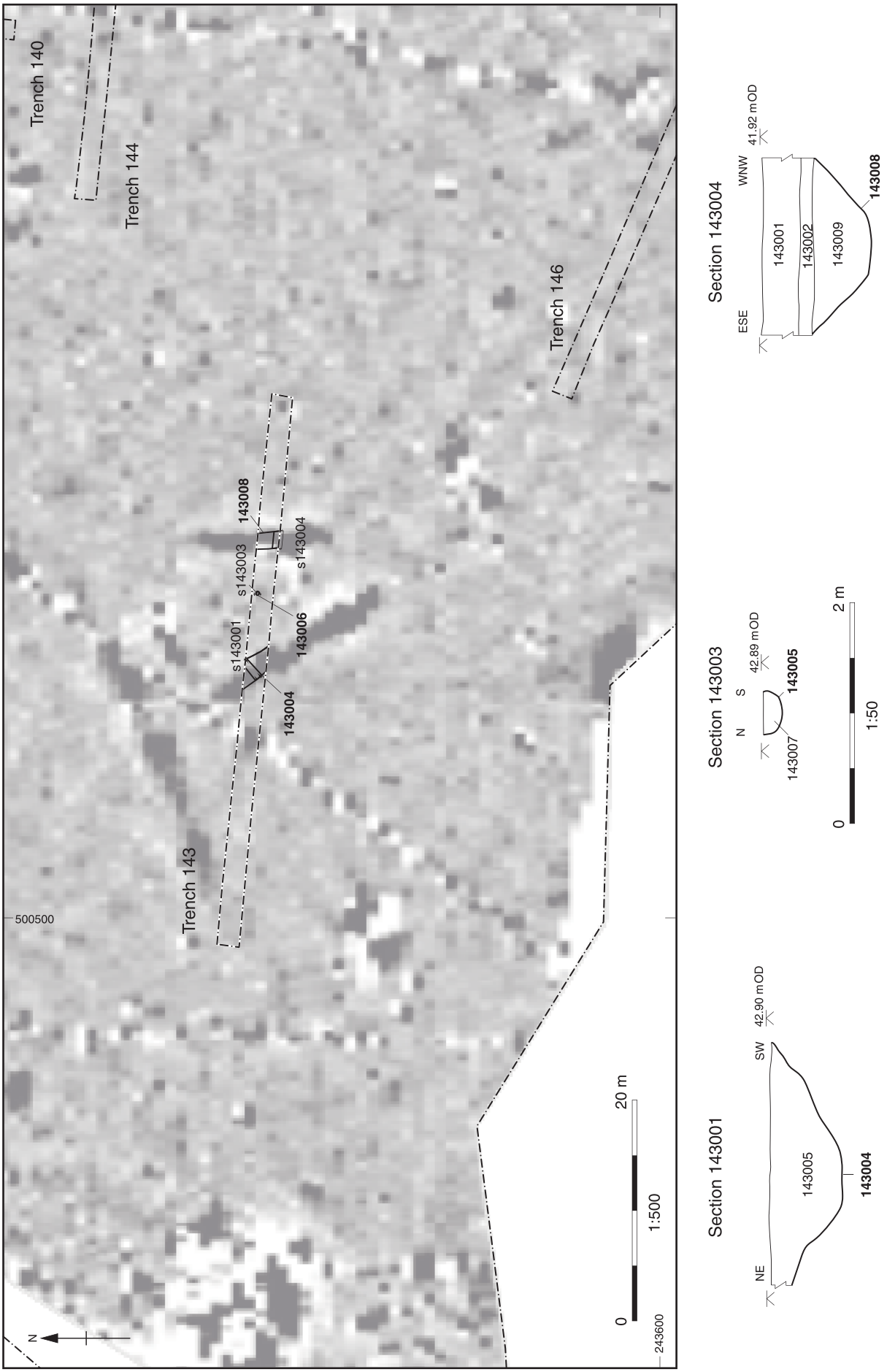


Fig. 2.144 Berry Farm Borrow Area, plan and sections of features in the western part of the site (Trench 143)

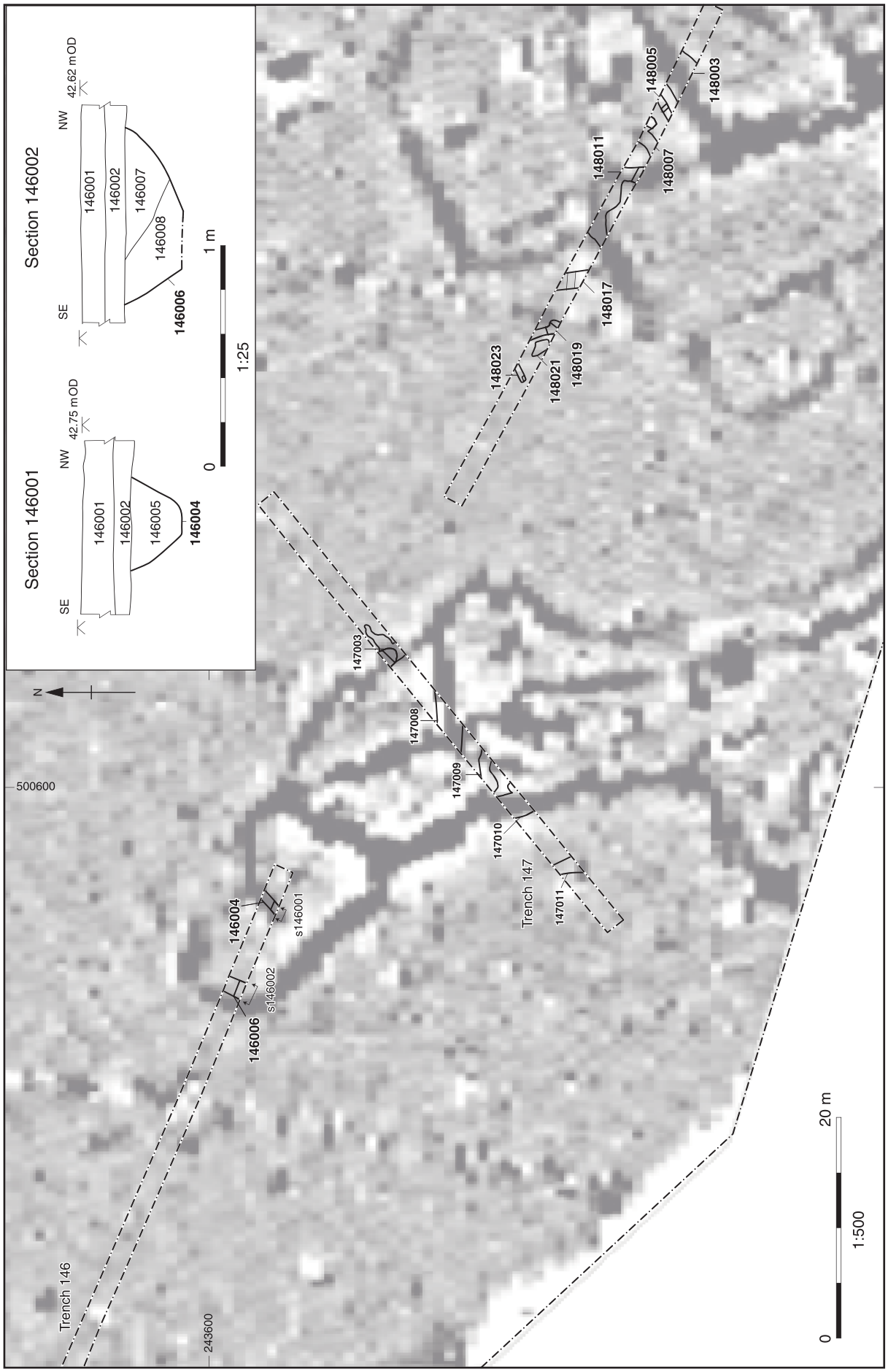


Fig. 2.145 Berry Farm Borrow Area, plan and sections of features in the western part of the southern complex (Trenches 146 and 147)

layer (142010) overlain by a deliberate dump deposit (142011). A small quantity of undated pottery was recovered from the lower fill.

Ditch 142019 was a quite substantial feature that measured 1.9m wide and extended across the trench on a NE-SW orientation. It was not excavated and no artefactual material was exposed on its surface.

Ditch 142023 was 0.88m wide and extended across the tench on a NW-SE alignment. It was cut by ditch 142021, which was rather irregular in plan and had an unclear relationship with pit 142025. None of these features was excavated, and no finds were exposed on their surfaces.

Ditch 142027 was rather irregular, with a width of up to 2.1 m. It was not excavated and no artefactual material was exposed on its surface.

The central area (Trenches 140, 144 and 145)

Trenches 140, 144 and 145 were located in the central part of the site, where the geophysical survey had identified only features interpreted as modern field boundaries (Fig. 2.141). This interpretation was confirmed by the results from the trenches. The only feature exposed was a single ditch that extended across Trenches 140 and 144. The ditch was not excavated, but was also exposed in Trench 149, where it was recorded as ditch 149004 and a modern brick was recovered from its fill. The ditch is therefore likely to be a field boundary of modern origin. No features were exposed in Trench 145.

The western area (Trench 143)

Trench 143 was positioned to investigate two linear anomalies that had been identified by the geophysical survey in the western part of the site (Fig. 2.144). In addition to these two features, the trench also exposed a posthole. Ditch 143004 was orientated NW-SE. It had a U-shaped profile and measured *c* 2m wide and 0.66m deep. It was filled by a deposit of dark brown-grey silty clay (143005) from which no artifactual material was recovered. Ditch 143008 lay on a more N-S alignment. It also had a U-shaped profile, and measured 1.6m wide and 0.6m deep. Its fill was a dark grey, charcoal-rich silty clay (143009) from which two sherds of Roman pottery were recovered. Posthole 143006 measured 0.4m in diameter and 0.18m deep. It was filled by a deposit of dark grey, charcoal-rich silty clay (142007). No finds were recovered from this feature.

The southern complex (Trenches 146-9)

Trenches 146-149 were located to investigate an area of possible ditched enclosures that had been identified in the southern part of the site by the geophysical survey (Figs 2.145-146). Trenches 146 and 147 were targeted on a rather irregular group of conjoined features on the western side of this area, and Trenches 148 and 149 were excavated across part of an apparently more regular arrangement of enclosures in the eastern part of the complex.

Trench 146 (Fig. 2.145)

Trench 146 exposed two ditches. Ditch 146006 corresponded with a feature identified by the geophysical survey that defined an enclosure at the western edge of the complex. The ditch extended across the trench on a NNE-SSW orientation and measured 1.6m wide. It was excavated to a depth of 0.52m (Fig. 2.145, section 146002), beyond which further excavation was impossible due to flooding. The ditch contained two fills, comprising a layer of dark grey silty clay (146008) resulting from natural silting that was overlain by a deliberate dump of redeposited clay (146007). No finds were recovered from either of these fills. Ditch 146004 (Fig. 2.145, section 146001) was located at the SE end of the trench, within the enclosure defined by ditch 146006. It measured 0.92m wide and 0.48m deep and was filled with a deposit of dark grey, charcoal-rich silty clay (146005) which contained late Iron Age pottery.

Trench 147 (Fig. 2.145)

The trench contained four ditches and an irregularly shaped feature that was interpreted as a tree-throw hole. The ditches could not be excavated due to flooding of the trench. No artefactual material was exposed on the surfaces of any of these features.

Ditch 147010 corresponded with a feature identified by the geophysical survey that defined the western limit of the enclosure complex. It extended across the trench on a NW-SE orientation and measured 2.5m wide. Ditch 147008 was also quite substantial, measuring 2.4m wide. It was oriented E-W and formed a significant subdivision within the complex. Ditch 147009 was located within the enclosure complex and was rather irregular in plan. It was orientated E-W and measured 1.1m wide. Ditch 147011 was located *c* 5m west of ditch 147010, and thus apparently lay outside the complex. No corresponding feature was identified by the geophysical survey. The ditch was orientated NNW-SSE and measured 1.25m wide.

Tree-throw hole 147003 measured 1.7m wide and 0.54m deep. No finds were recovered from its fills.

Trench 148 (Figs 2.146-147)

A total of eight ditches and two pits were exposed in Trench 148. Some of these ditches corresponded clearly with enclosure boundaries that had been identified by the geophysical survey, but additional features were also revealed both within and outside the enclosures.

Ditches 148011 and 148015 were oriented N-S and E-W respectively and met at a right angle which the results of the geophysical survey indicated defined the north-eastern corner of a substantial rectilinear enclosure. Ditch 148011 was excavated but ditch 148015 was not. Ditch 148011 (Fig. 2.147, section 148006) had steep, slightly irregular sides and a flat base and measured 2m wide and 0.5m deep. It

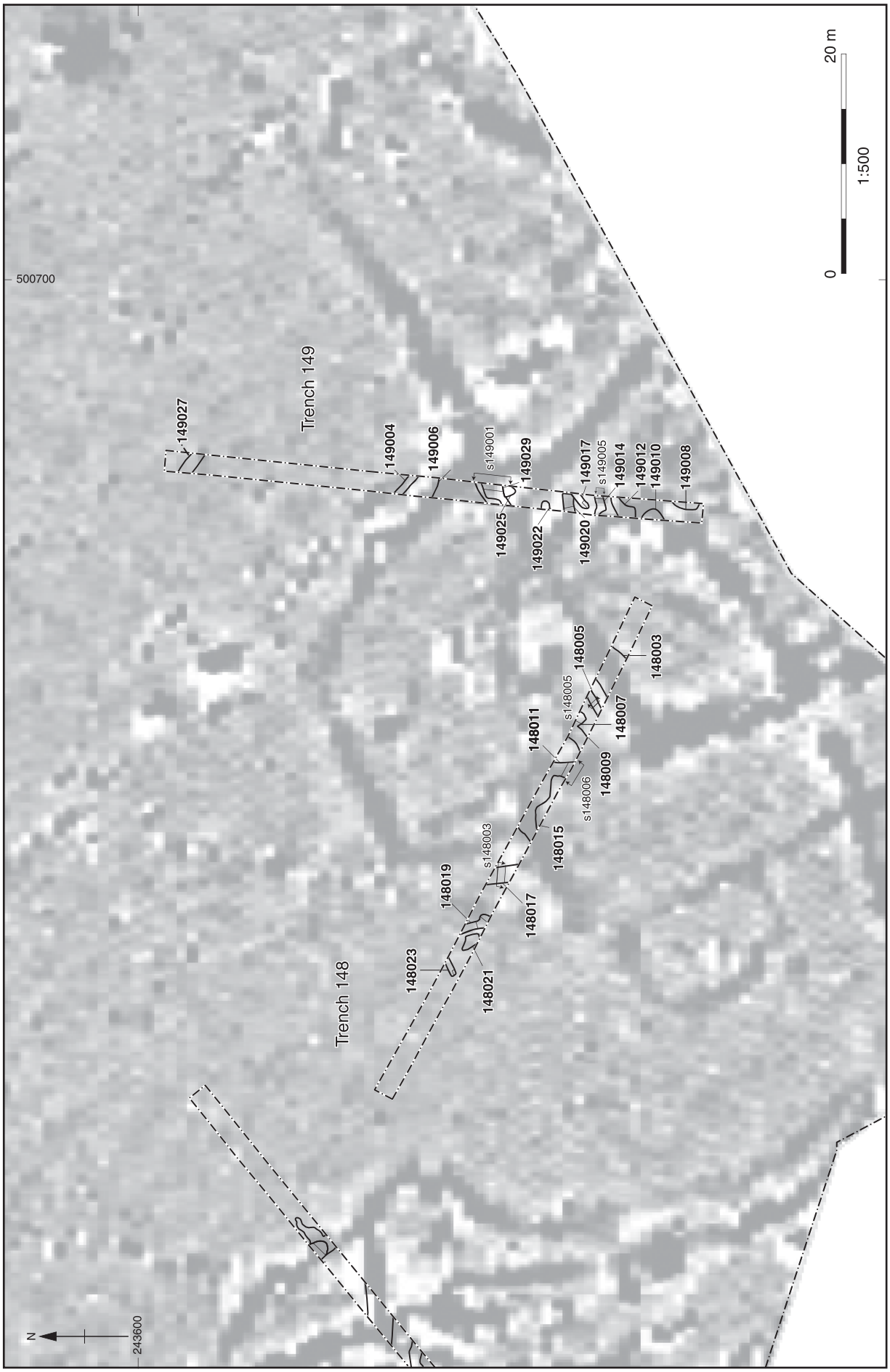


Fig. 2.146 Berry Farm Borrow Area, plan of features in the eastern part of the southern complex (Trenches 148 and 149)

contained three fills, comprising an initial layer of natural silting (148025), a layer of dark grey soil (148026) which may have been be a deliberate infill, and an uppermost fill of grey silty clay (148012). Two sherds of late Iron Age-early Roman pottery were recovered from fill 148026 and pottery dating from the late 1st-early 2nd century was recovered from fill 148026. Ditch 148015 was 1.5m wide and a sherd of late Iron Age-early Roman pottery was recovered from its surface.

Ditch 148003 was extremely substantial, measuring 4m wide, and corresponded with a feature identified by the geophysical survey as the south-eastern side of a trapezoidal enclosure that abutted the enclosure represented by ditches 148011 and 148015. The ditch was not excavated, but a

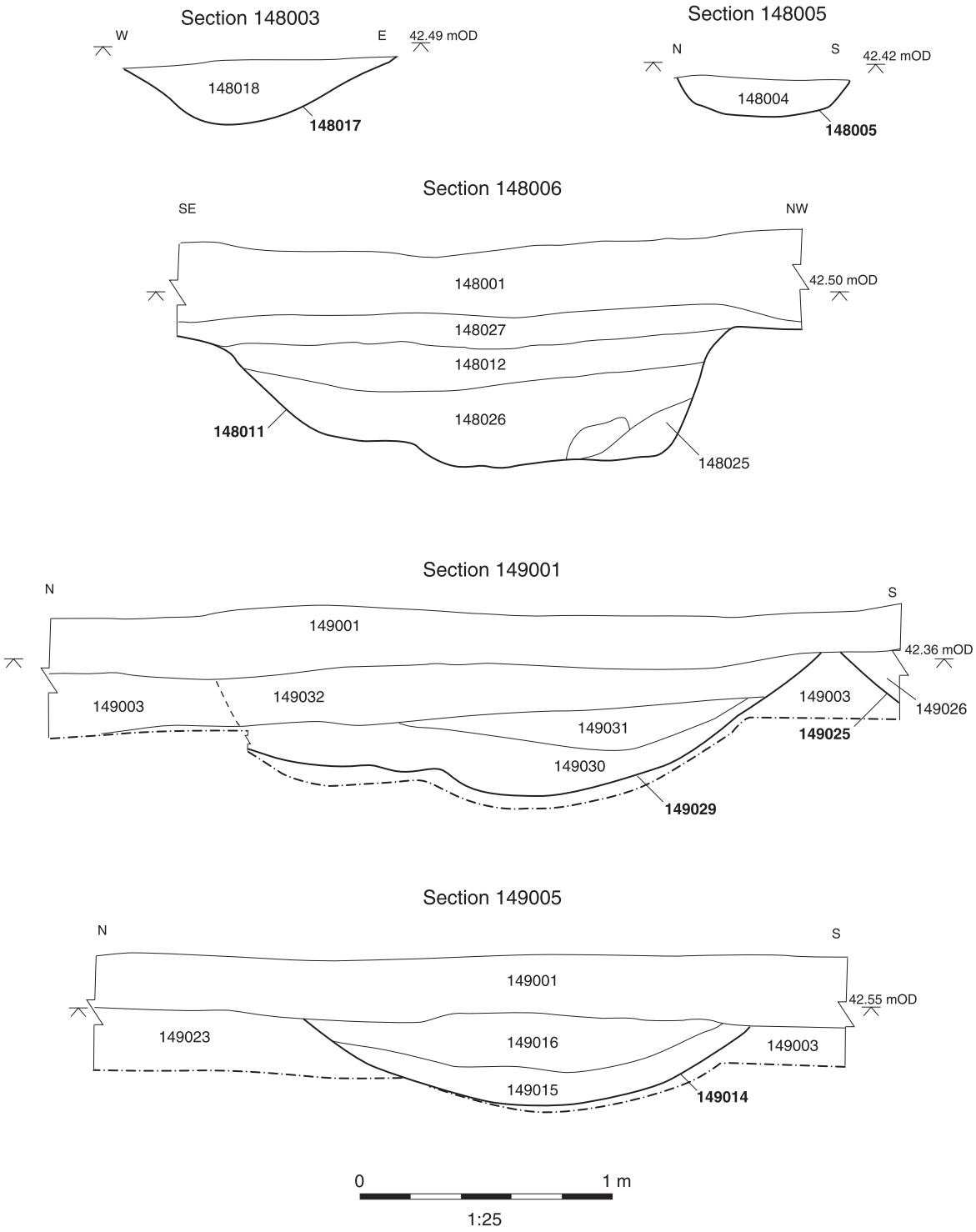


Fig. 2.147 Berry Farm Borrow Area, sections through features in the southern feature complex

sherd of late Iron Age-early Roman pottery was recovered from its surface. Ditch 148017 is likely to have defined the western side of the same enclosure, although its correlation with the relevant feature from the geophysical survey is not exact. Ditch 148017 had a U-shaped profile and measured 1.1m wide and 0.26m deep (Fig. 2.147, section 148003). It contained a single fill (148018) from which was recovered a sherd of late Iron Age-early Roman- pottery.

Two less substantial ditches (148005 and 148009) and a small pit (148007) were exposed within the trapezoidal enclosure. None of these features corresponded with features that were identified by the geophysical survey. Ditch 148005 (Fig. 2.147, section 148005) was orientated NE-SW, parallel to the adjacent ditch 148003. It had a U-shaped profile and measured 0.6m wide and 0.25m deep. The fill was a blackish-grey silty clay (148004) from which late Iron Age-early Roman pottery was recovered. Ditch 148009 lay on a similar orientation but had a slightly curvilinear alignment and was 1m wide. It was not excavated and no finds were recovered from its surface. It intersected with pit 148007, but the relationship between the two features was not established. Pit 148007 measured 1.6m in diameter and 0.25m deep. It was filled by a deposit of dark blue-grey silty clay (148008) from which no finds were recovered.

A small group of features were identified to the west of ditch 148017, in an area that lay outside the enclosure complex and where no features had been indicated by the geophysical survey. Ditch 148019 was oriented NNW-SSE, and ditch 148023 lay at a right angle to it. Both measured 0.6m wide and were shallow, flat-based features with depths of 0.1m and 0.13m respectively. A small fragment of Roman pottery was recovered from ditch 148019. It is possible that these features defined two sides of a small rectilinear enclosure or structure. An irregularly-shaped pit or tree-throw hole (148021) was located within the area defined by these two ditches. It measured *c* 2m by 1m across and was filled by a deposit of dark brown-grey clay. The feature was not excavated and no finds were exposed on its surface.

Trench 149 (Figs 2.146-147)

The trench contained nine ditches and three pits.

Ditch 149006 was an extremely substantial feature that was 5.1m wide at the western edge of the trench but tapered to the east and was only 3.2m wide at the eastern edge. It corresponded with a feature identified by the geophysical survey as being the south-eastern corner of the large enclosure the southern and western sides of which were exposed in Trench 148 as ditches 148003 and 148017. The ditch was not excavated in Trench 149, and no finds were recovered from its surface.

Two intersecting ditches (149025 and 149029) which were exposed immediately south of ditch 149006 corresponded with features identified in the geophysical survey that defined the boundaries of adjacent enclosures. Ditch 149029 (Fig. 2.147, section 149001) was the only one of these features that was excavated. It was orientated NE-SW and was slightly irregular both in plan and in profile. The ditch was 2m wide at its widest point and 0.34m deep. The feature contained three distinct fills. The lower fill was a deposit of dark grey silty clay with a high charcoal content (149030) which contained a small assemblage of Roman pottery, along with a few fragments of animal bone. A soil sample taken from this fill contained a few charcoal fragments and a single charred seed of the cabbage family. The second fill was a layer of mid blueish grey silty clay (149031). Sherds of late Iron Age-early Roman pottery were recovered from this deposit. The upper fill (149032) contained only a single sherd of late Iron Age-early Roman pottery. Ditch 149029 intersected with ditch 149025, which was aligned approximately at a right angle to it, on a NW-SE orientation. Ditch 149025 was 1.5m wide and had a curving alignment. It corresponded with a feature identified by the geophysical survey as the north-eastern corner of an enclosure that abutted the enclosure represented by ditches 148003, 148017 and 149006. It was not excavated and no artefacts were recovered from its surface.

A further seven features were identified in the southern part of the trench, none of which corresponded precisely with features identified by the geophysical survey, although the survey did indicate that at least two ditches intersected in this area. Two ditches (149014 and 149020) extended across the trench on E-W alignments. Ditch 149014 (Fig. 2.147, section 149005) was the more substantial feature, measuring 1.7m wide and 0.36m deep with a rounded profile. The feature contained two fills. The first was a deposit of mid grey-black silty clay (149015) and the second was a grey-brown silty clay (149016) that contained pottery sherds of late Iron Age-early Roman pottery. Ditch 149020 measured 0.92m wide and only 0.12m deep. It contained a single fill of dark brown clay silt (149021) from which no finds were recovered. This feature was cut by ditch 149017, which lay on a NE-SW alignment and terminated within the trench. The ditch was 0.6m wide and 0.12m deep and contained an earlier fill of dirty orange-yellow-grey mottled silty clay (149018), overlain by an upper fill of grey-brown silty clay (149019). Neither of these deposits contained any finds. Ditch 149012 had a rather irregular shape in plan and may have corresponded with a curving feature that was identified by the geophysical survey. It crossed the trench on a NE-SW alignment and measured 1.55m wide. It was not excavated, but three sherds of Roman pottery were recovered from its surface.

Three features (149008, 149010 and 149022) which were partly exposed within the trench were interpreted as pits. Pits 149008 and 149010 were fairly large features that each measured more than 2m

across. Neither feature was excavated, but a sherd of early-middle Iron Age pottery was recovered from the surface of pit 149010. Pit 149022 was rather smaller. It was subcircular in plan with steep sides, and measured 0.8m in diameter and 0.3 m deep. No finds were recovered from it.

Ditch 149004 crossed the middle of the trench on a NW-SE orientation and measured 0.65m wide. The geophysical survey indicated that this was the same feature as the ditch that extended through Trenches 140 and 144. It was not excavated but a large fragment of modern brick was recovered from the surface.

Ditch 149027 was located at the northern end of the trench, some 18m from the other features in an area where no features were indicated by the geophysical survey. It extended across the trench on a NW-SE orientation and measured 1.15m wide. It was filled by a mixed deposit of orange-brown and yellow-grey silty clay and was not excavated.

Chapter 3: Artefactual evidence

THE IRON AGE AND ROMAN POTTERY *by Edward Biddulph, with a contribution by Dan Stansbie*

Introduction

The excavations along the route of the road scheme produced some 15,000 sherds of Iron Age and Roman pottery, weighing over 180kg. Pottery was collected from ten sites (Table 3.1). The largest of the site-assemblages was from Site 2, which contained over 5500 sherds. Site 7 was not far behind, however, with 3500 sherds. Site 4 (Trench 54) contained 2500 sherds, while marginally less (2000 sherds) was retrieved from Site 3. The remaining sites contained less than 500 sherds each. Together the assemblage spanned the middle Iron Age to late Roman period; pottery from Site 4 (Trench 54) and Site 4 (Trench 61) was predominantly middle to late Iron Age, that from Site 2 and Site 3 was early Roman, while Site 7 completed the sequence with mid to late Roman pottery.

An indication of the ceramic potential of these sites was given by the pottery recovered from the archaeological evaluation (OA 2009). Pottery collected from the evaluation trenches of eight sites pointed to occupation along the development route that spanned the Iron Age and Roman period, although there was a particular emphasis on the late Iron Age and early Roman phases. Relatively large assemblages were recorded from Site 3, Site 6 and Site 7, and the Berry Farm Borrow Pit site (Table 3. 2).

Recording followed methods standard to Oxford Archaeology (Booth nd). Each context-group was sorted into fabrics, individual vessels identified from rims, and any other useful grouping (for example, sherds with graffiti). Sherd groups were recorded by count, weight, vessel count (from rims only) and estimated vessel equivalents (also based

Table 3.1: Quantification of pottery by site

Site	*Sherds*	*Weight (g)*	*MV*	*EVE*
Site 2 East	5776	67798	448	52.56
Site 2 West	196	2655	28	3.78
Site 3	2268	15775	89	11.35
Site 3 (Trench 48)	335	1388	5	2.02
Site 4 (Trench 54)	2688	29390	172	13.52
Site 4 (Trench 61)	121	387	5	0.45
Site 5	183	677	1	0.05
Site 6 (Trench 105)	38	216	0	0
Site 6 (Trench 97-99)	14	32	0	0
Site 7	3485	64703	392	59.09
Wootton Pond	4	767	2	0.25
Total	15108	183788	1142	143.07

Table 3.2: Quantification of pottery from the evaluation by sherd count and weight (g). (IA – Iron Age, LIA – late Iron Age, ER – early Roman, MR – mid Roman, LR – late Roman)

Site	*IA*	*LIA*	*LIA/ER*	*ER*	*E/MR*	*MR*	*M/LR*	*LR*	*Roman*	*Undated*	*Totals*
Berry Farm (sherds)	1	9	25	3	2		12		22	3	77
Berry Farm (weight)	60	184	393	31	16		163		367	2	1216
Site 1 (sherds)									1	1	2
Site 1 (weight)									7	2	9
Site 3 (sherds)		6		70	255						331
Site 3 (weight)		120		315	979						1414
Site 4 (sherds)		20	10	1					5		36
Site 4 (weight)		523	50	18					28		619
Site 5 (sherds)	5		182								187
Site 5 (weight)	58		397								455
Site 6 (sherds)	8		150								158
Site 6 (weight)	126		1435								1561
Site 7 (sherds)					19	77	1	25	23		145
Site 7 (weight)					378	723	12	348	204		1665
Site 8 (sherds)									1		1
Site 8 (weight)									253		253
Total sherds	14	35	364	74	276	77	13	25	52	4	937
Total weight	244	827	2255	364	1373	723	175	348	859	4	7192

on rims and recording the surviving percentage, expressed as a fraction, of a rim), with each group being entered as a separate record in the database. Where possible, the database records were given a date-range, and the date-ranges for all the records belonging to a context-group were considered before assigning a ceramic date for the group as a whole.

Forms were given Oxford Archaeology codes, but were identified using relevant corpora, such as Dawson's Bedfordshire review (Dawson 2004), Marney's Milton Keynes volume (Marney 1989), Young's Oxford series (Young 1977), and standard samian typologies (cf. Webster 1996). Wares and fabrics were assigned codes from the Bedfordshire fabric series, which is described by Dawson (2004, 443-55) and maintained by Albion Archaeology. This allowed the data to be compared with sites along the A421 (notably Webley 2007a and Stansbie 2007) and others in Bedfordshire. The fabric series for the Milton Keynes region (Marney 1989) was routinely consulted, but no formal cross-referencing between the two series was attempted. There were three additions to the Bedfordshire series: fabric R05D (white-slipped oxidised ware), R06V (Verulamium-region grey ware), and R22D (Hadham white-slipped grey ware). These should be regarded as temporary fabric codes devised in the course of recording for use with the A421 assemblage only. In the list of fabrics below, codes from the National Roman Fabric Reference Collection (Tomber and Dore 1998) have been added in parentheses where possible.

This report describes the general composition of the site assemblages (arranged in chronological order) and identifies the main trends in pottery supply using data from well-dated ceramic groups or 'key groups', defined as groups with a relatively narrow ceramic date, which is in agreement with the stratigraphic phase given to the feature that contained the group. For example, context 15338 from Site 7, which has a ceramic date of AD 170-200 and stratigraphic date of mid Roman, is selected as a key group. Context 15202, which has a ceramic date of AD 100-410 and a stratigraphic date of mid Roman, is rejected as a key group. This helps to identify groups with low residuality and ensures that the picture of pottery supply and assemblage composition is as reliable as possible. In this report, comparison is also made between the sites to draw out similarities and differences in site status, function, and patterns of deposition, and the pottery is put into its wider context with reference to sites beyond the road scheme. Aspects of pottery use and manufacture are considered, and a catalogue of illustrated vessels is presented.

Fabrics

E/P Iron Age fabrics

F	Unidentified later prehistoric fabrics
F01A	Coarse flint-tempered fabric
F01B	Fine flint-tempered fabric
F01C	Quartz and flint-tempered fabric
F02	Grog and flint-tempered fabric
F03	Grog and sand-tempered fabric
F04	Organic-tempered fabric
F05	Grog and shell-tempered fabric
F06A	Grog-tempered fabrics (SOB GT)
F06C	Coarse grog-tempered fabrics (SOB GT)
F08	Shell and grog-tempered fabric
F09	Sand and grog-tempered ware
F14	Fine mixed temper (sand, shell, grog, organic, occasional ironstone)
F15	Coarse mixed temper (sand, shell, grog, organic, occasional ironstone)
F16	Coarse shelly fabric (Iron Age)
F16A	Vesicular shelly fabric
F16B	Fine shelly fabric (Iron Age)
F18	Fine sand and shell-tempered fabric
F19	Sand and organic-tempered fabric
F20	Calcareous- (limestone/chalk) tempered fabric
F21	Shell and organic-tempered fabric
F22	Grog and organic-tempered fabric
F28	Fine sand-tempered fabric
F29	Coarse sandy fabric
F30	Sand and calcareous-tempered fabric
F32	Sand and flint-tempered fabric
F34	'Belgic' sandy ware
F38	Glauconitic fabrics
F40	Black mineral inclusions

A Amphorae

R19A	South Spanish (Dressel 20) amphorae (BAT AM 1)

S Samian wares

R01	Samian ware, not identified to source
R01A	Central Gaulish samian ware (LEZ SA 2)
R01B	South Gaulish samian ware (LGF SA)
R01C	East Gaulish samian ware (includes RHZ SA)
R01D	British samian ware (exclusively PUL SA)

W White wares

R03	White ware (source unknown)
R03A	Verulamium-region white ware (VER WH)
R03B	Gritty white ware
R12C	Nene Valley parchment ware (LNV PA)

F Fine wares

R02	Mica-dusted ware
R04A	Rhenish ware (exclusively CNG BS)
R04E	Colchester colour-coated ware (COL CC 2)
R11D	Oxford red colour-coated ware (OXF RS)
R12B	Nene Valley colour-coated ware (LNV CC)

O Oxidised wares

R05A	Sandy orange ware
R05B	Fine orange ware

R09A Pink-grogged ware (PNK GT)
R11 Oxford oxidised ware
R18B Fine pink ware
R22A Hadham oxidised ware (HAD OX)
R36 Orange gritty ware

Q White-slipped wares

R05D White-slipped oxidised ware
R06H White-slipped grey ware
R22D Hadham white-slipped grey ware

R Reduced coarse wares

R06A Nene Valley grey ware
R06B Sandy grey ware
R06C Fine grey ware
R06E Calcareous grey ware
R06V Verulamium-region grey ware
R07B Sandy black ware
R07E Coarse black ware
R22B Hadham grey ware (HAD RE 1)
R22C Hadham reduced (burnished) ware (HAD RE 2)
R30 Fine sandy micaceous ware

B Black-burnished wares

R07A Black-burnished ware, category 1 (DOR BB 1)
R07G Black-burnished ware, category 2

M Mortaria

R11E Oxford white ware mortaria (OXF WH)
R11F Oxford red colour-coated mortaria (OXF RS)
R12A Nene Valley white ware mortaria
R20 Mancetter/Hartshill mortaria (MAH WS)
R33 Verulamium-region white ware mortaria (VER WH)

C Shelly wares

R13 Shelly fabrics (late Iron Age/early Roman and later Roman) (includes ROB SH)

Z Post-Roman wares

C Miscellaneous medieval wares
P Miscellaneous post-medieval wares

Site 4 (Trench 54) (middle Iron Age)

Assemblage composition

Seventy per cent of pottery recovered from Site 4 (Trench 54; Table 3.3), quantified by EVE, belonged to groups dated between 400-100 BC and from features dated to the middle Iron Age (*c* 400-100 BC; Table 3.4). Shelly fabrics (F16, F16A-B) took a 21% share of the phased assemblage by EVE and were present as jars. The commonest types in the fabric were ovoid jars (CO) and slack-shouldered jars (CS). The former were usually characterised by bead- or short everted-rims, while the latter had plain upright or slightly everted rims which sometimes barely overhung the shoulder, giving the vessels the appearance of bowls, rather than jars. A single example of a tripartite-angled jar (CT) recalls jar types typical of the early Iron Age, although no conclusively earlier Iron Age material was identified. Other jar types include a barrel-shaped jar (CB), which was probably a variant of CO type, a bucket-shaped jar (CA), and storage jars (CN). Scoring, a characteristically middle Iron Age trait (Webley 2007a, 226), was recorded on body sherds, while the rim of a slack-shouldered jar was notched.

A number of otherwise disparate fabrics were united by the inclusion of grog. The introduction of grog to the region is conventionally dated to the late 1st century BC or early 1st century AD (Marney 1989, 89; Webley 2007a, 231; Wells 2008b, 231), and its earlier appearance here and at other sites, such as Biddenham Loop (Wells 2008a, 181), may be better attributed to the use of argillaceous sediments.

Table 3.3: Site 4 (Trench 54), quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F	2	27		
F01A	25	200	1	0.06
F01B	1	11		
F01C	11	117	2	0.1
F02	1	12		
F03	54	718	12	0.94
F04	37	144	1	0.05
F05	179	2042	15	1.27
F06A	99	771	15	0.92
F06C	315	2425	7	0.52
F08	18	370	2	0.13
F09	19	190	1	0.08
F14	341	2678	24	1.73
F15	379	4914	9	0.64
F16	384	6662	33	2.12
F16A	17	388	3	0.25
F16B	36	298	3	0.25
F18	202	1547	6	1.05
F19	117	1272	5	1.07
F20	15	100	2	0.14
F21	27	128		
F22	16	103	2	0.18
F28	87	562	11	0.86
F29	221	2535	11	0.7
F30	28	401	4	0.31
F32	24	429	1	0.07
F34	1	11	1	0.04
F38	11	250		
P	14	56		
R05B	1	5		
R06B	6	42	1	0.04
Total	2688	29408	172	13.52

Table 3.4: Site 4 (Trench 54), pottery from features phased to the middle Iron Age. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*H Bowl*	*Total EVE*	*% EVE*
F01A			*	
F01C			*	
F02			*	
F03	0.65		0.65	7%
F04		0.05	0.05	1%
F05	0.62		0.62	7%
F06A	0.2		0.2	2%
F06C	0.33		0.33	3%
F08			*	
F14	1.55		1.55	16%
F15	0.61		0.61	6%
F16	1.61		1.61	17%
F16A	0.22		0.22	2%
F16B	0.2		0.2	2%
F18	0.8		0.8	8%
F19	0.85	0.04	0.89	9%
F20	0.14		0.14	1%
F21			*	
F28	0.38	0.27	0.65	7%
F29	0.7		0.7	7%
F30	0.18		0.18	2%
F32	0.07		0.07	1%
F38			*	
R05B			*	
Total EVE	9.11	0.36	9.47	
% EVE	96%	4%		

However, in some fabrics, such as F05, F14 and F15, the grog was deliberately added to the clay. Mixed tempered fabrics (F14 and F15), which contributed 22% to the assemblage, usually contained sand, shell and grog in varying proportions. The grog was identified as the crushed fragments of shelly vessels. Slack-shouldered jars were well represented in this fabric, and better so than they were in fabric F16. Three other jar types in the fabric – constricted necked jars (CC), barrel-shaped jars and ovoid jars – could be regarded as variants of the same basic oval-bodied jar with bead or short everted rim. Scoring and notched-rim decoration was noted on these types. A globular jar (CG) was also recorded. Forms recorded in fabric F03 (grog and sand), which accounted for 7% by EVE, were similar to those encountered in shelly and mixed-tempered fabrics – slack-shouldered and ovoid/barrel-shaped jars. Scored decoration was recorded on body sherds. Standard middle Iron Age types (ovoid and slack-shouldered jars) were also seen in fabric F05 (grog and shell), which contributed 7% to the assemblage. As with F14/F15, the grog contained shell fragments, indicating that it had derived from shelly vessels. Fabrics F06A and F06C, which contained grog exclusively or predominantly, similarly comprised ovoid and slack-shouldered jars (some examples showing scored decoration), although other forms, such as the constricted necked jar, were present. Given the forms and surface treatments, and the use of shelly pottery to create grog, the grog-based fabrics F05, F06 and F14/F15 appear to have their origins in the middle Iron Age and have no obvious connection with late Iron Age or 'Belgic' ceramic traditions.

Fabrics in which sand was the principal inclusion type accounted for 34% of the phased assemblage. Ovoid jars were recorded in sand and shell fabric F18. One vessel was scored, while another had a frilled rim. An ovoid jar and barrel-shaped jar were seen in fabric F19 (sand and organic (possibly shell)), and were joined by a curving-sided bowl (HC). Body sherds in the fabric were scored. A wider range of forms was evident in fine and coarse sandy fabrics F28 and F29. Ovoid or barrel-shaped jars (occasionally with scoring and frilled- or notched rims) and slack-shouldered jars were present as usual, but they were joined by globular jars and bowls and a storage jar. Fabric F30 (sand and calcareous) and F32 (sand and flint) were minor contributors to the assemblage. A slack-shouldered jar was recorded in the former; an unidentified jar in the latter.

The remaining 30% of pottery by EVE not assigned to key groups was generally consistent with that described above. It included a curving-sided neckless bowl (cf. Webley 2007a, fig. 8.3.12) and a slack-shouldered jar in flint-tempered fabrics F01A and F01C. A small amount of pottery was recovered from contexts assigned a late Iron Age ceramic date. Forms includes necked jars with everted rims (CD) in mixed-tempered, sandy, and grog-tempered fabrics. One such jar in fabric F06A had a corrugated shoulder reminiscent of *Camulodunum* type 229 (Hawkes and Hull 1947). A wheel-thrown platter (JC) in a sandy fabric (F34) was also recorded.

A variety of decorative styles and techniques were recorded. Impressed decoration on the rim, recorded on 19 vessels, was achieved with a finger, fingernail or thin tool to create notches or a frilled, pie-crust or twist-like pattern. The rims of ovoid and slack-shouldered jars – and to a lesser extent barrel-shaped jars, constricted necked jars and storage jars – were modified in this way. The technique was applied to vessels in shelly fabrics (F16 and F16a) and mixed-tempered fabrics (F14), but grog-tempered fabrics (F05 and F06C) and sandy fabrics (F18 and F29) were also represented. Scoring was characterised by thin, lightly-incised lines drawn diagonally or horizontally across the body or vertically down the wall. The technique was largely restricted to ovoid jars – at least four examples were recorded – but it was also recorded on one slack-shouldered jar. Scoring was not an especially prolific technique at Site 4 (Trench 54), but it is known within the region. Other sites that have produced scored pottery include Biddenham Loop (Wells 2008a, 181) and Stagsden (Slowikowski

2000, 84) to the west of Bedford, Flitwick (McSloy 1999, 70) to the south, and Site 2 near Roxton (Webley 2007a, 236) on the Great Barford Bypass to the east of Bedford. Other decorative techniques included burnishing, particularly on the shoulder, neck and rim, and combing (rather than scoring). Combed decoration was recorded on pottery recovered from Phase 2 enclosure ditch 17718 and phase 3 enclosure ditch 17343. On one vessel, a necked bowl (Fig. 3.1, no. 2), the burnished zone was combined with a combed-chevron pattern.

It is worth highlighting the pottery recovered from contexts associated with radiocarbon dates at Site 4 (Trench 54; Table 3.5). Overall, there is a good correlation between the pottery and the scientific dates. The pottery groups were dated on ceramic grounds to 400-100 BC, with the exception of 17187, part of burnt clay layer 17255 in ditch 17343, which had a spot-date of 400 BC-AD 43. The radiocarbon dates match the ceramic dates rather well. They generally span the 4th to 2nd centuries BC, and the date from the horse skull on the base of ditch 17496 suggests that deposition may have occurred in the 1st century BC. This suggests that the ceramic dating across the site can be considered to be reliable. The radiocarbon dates also provide a point of chronological reference for a range of fabrics (sand-and-grog (F09), mixed temper (F14/F15), shelly (F16), sand-and-shell (F18), and sandy (F28/F29)), slack-shouldered, ovoid, and barrel-shaped jars, and scored decoration.

Pattern of pottery deposition

The site comprised a concentric arrangement of enclosure ditches in the western half of the excavation area, an antenna ditch (17721 and 17722), which joined an outer entrance and extended away from it, a number of east-west-aligned post-medieval ditches (including 17723 and 17724) cutting across the enclosure, and pits within the enclosure. Unsurprisingly, most pottery (77% by EVE) was collected from the enclosure ditches, which dominated the site. Nine per cent was recovered from pits, with the remaining pottery coming from the antenna ditches, other linear features, surfaces and tree-throw holes. The pottery deposited in and around the enclosure ditches was generally better preserved than that recovered from features beyond the enclosure. The mean sherd weight (weight divided by sherd count) of pottery from the enclosure ditches was 57g. Pits, which were located inside the enclosure or cut into its ditches, contained a relatively small proportion of the pottery from the site. However, the pottery was similar to that from the enclosure ditches, having a mean sherd weight of 49g. These values compare with 9g from the antenna ditch, and 9g from a hollow-way (17712) recorded towards the eastern extent of the site. The obvious conclusion to draw from this is that the enclosure was the focus for pottery discard, while outlying areas remained marginal in terms of settlement and deposition activity. The pottery from the enclosure had undergone relatively few episodes of disturbance and redeposition, and in some cases had been deposited whole or soon after initial breakage. Such material included a near-complete slack-shouldered jar (SF 12023) from outer enclosure ditch 17719, a jar perforated through the base for use as a strainer and two near-complete or substantially surviving barrel-shaped jars from inner ditch 17716, and a largely complete vessel (probably a jar or bowl) from outer ditch 17345. These vessels can potentially be seen as structured deposits, especially vessel 12023, which was recovered from the terminal of ditch 17719, although given that the enclosure was in any case the focus of pottery deposition, it is reasonable to suggest that the pottery was domestic waste which was deposited soon after breakage.

Pottery use

Forms were almost exclusively confined to jars and bowls (the only other type represented being a

Table 3.5: Site 4 (Trench 54), pottery from contexts with associated radiocarbon dates

Context	*^{14}C date*	*Fabric*	*Sherds*	*Weight (g)*	*EVE*	*Form*	*Decoration*
17181	380-110 cal BC / 400-200 cal BC	F16	37	633			
		F28	3	20			Scored
17187	390-160 cal BC	F09	3	41			
		F29	1	8			
17200	370-90 cal BC / 380-120 cal BC	F16	6	42			
		F18	28	138	0.14	CO	Scored
17255	380-120 cal BC	F03	2	21			
		F14	2	33	0.08	CB	
		F16	1	7			
		F28	1	4			
17293	200 cal BC-cal AD 10	F15	7	102			Scored
		F16	5	69	0.1	CS	
		F28	2	3			

single example of a platter). The narrow repertoire suggests that all the uses to which pottery was put – including storage, dining and cooking – were fulfilled by the jar and bowl. Within the two classes, however, analysis of vessel diameters offers some evidence for functional differentiation. With a mean diameter of 310 mm (and a mean sherd weight of 62g), vessels identified as storage jars (CN) were large, voluminous vessels with a wide opening that would allow convenient storage of, and access to, items such as grain. Looking at the more common types, the mean diameter of barrel-shaped jars (CB) was 150 mm. Values ranged from 110 to 180 mm, but generally there were relatively few small versions; the diameters of just four out of 13 vessels (31%) fell below the average. Ovoid jars (CO) were on average 163 mm in diameter, but this figure encompassed a wider spread of values (from 100 to 250 mm). Slack-shouldered jars (CS) were wider still, with a mean diameter of 172 mm. The range here was 100 to 310 mm. For both CO and CS types, over 60% of diameters fell below the average. Slack-shouldered and ovoid jars were made in a variety of sizes and therefore were suitable for a variety of functions, from individual dining vessels requiring small jars to drink or eat out of, to deep and wide cooking or serving vessels (one slack-shouldered jar was burnt on the external surface of the rim and neck, probably from its placement on a hearth). Barrel-shaped jars were more restricted in size and presumably function. These vessels may have been regarded principally as a single-function vessel, perhaps, for example, used for cooking. It should be noted that the variation in diameters may be as much or more related to gradual change or evolution over time (for example, from small to large vessels or vice versa), than to the vessels serving multiple functions. That is not to say that any changes through time could not be driven by changes in pottery use, but rather, that we cannot detect such changes because close dating of pottery within the period is not possible using the conventional battery of recording and analytical techniques.

Catalogue of illustrated pottery (Fig. 3.1)

Enclosure ditch 17343, middle Iron Age

1 Slack-shouldered jar (CS), fabric F06A. Ctx 17311, ditch 17309
2 Necked bowl (HD) or wide-mouthed jar, fabric F03. Oxidised surfaces; combed decoration on shoulder. Ctx 17529, ditch 17527

Enclosure ditch 17496, middle Iron Age

3 Ovoid jar (CO), fabric F28. Scoring on body. Ctx 17296, ditch 17292
4 Curving-sided bowl (HC), fabric F19. Ctx 17296, ditch 17292
5 Globular bowl (HG), fabric F28. Scoring on body. Ctx 17333, ditch 17160
6 Globular bowl (HG), fabric F28. Scoring on body. Ctx 17333, ditch 17160

Enclosure ditch 17715, middle Iron Age

7 Ovoid jar (CO), fabric F15. Scoring on body. Ctx 17221, ditch 17220
8 Ovoid jar (CO), fabric F16. Ctx 17221, ditch 17220
9 Slack-shouldered jar (CS), fabric F14. Ctx 17221, ditch 17220
10 Slack-shouldered jar (CS), fabric F14. Ctx 17221, ditch 17220
11 Slack-shouldered jar (CS), fabric F29. Ctx 17221, ditch 17220

Enclosure ditch 17716, middle Iron Age

12 Barrel-shaped jar (CB), fabric F19. Ctx 17387, ditch 17388
13 Barrel-shaped jar (CB), fabric F28. Ctx 17387, ditch 17388
14 Constricted necked jar (CC), fabric F06C. Ctx 17387, ditch 17388
15 Constricted necked jar (CC), fabric F14. Ctx 17387, ditch 17388
16 Slack-shouldered jar (CS), fabric F15. Shell fragments visible in grog; taken from crushed shelly vessel. Ctx 17387, ditch 17388
17 Slack-shouldered jar (CS), fabric F15. Shell and sand fragments visible in grog; taken from crushed shelly and sandy vessels. Ctx 17387, ditch 17388
18 Slack-shouldered jar (CS) or bowl, fabric F16. Ctx 17387, ditch 17388
19 Slack-shouldered jar (CS), fabric F16A. Ctx 17387, ditch 17388
21 Jar base perforated by at least four holes after firing. Fabric (F16) includes occasional black glassy fragments – ?sand. Ctx 17387, ditch 17388

Enclosure ditch 17719, middle Iron Age

21 Storage jar (CN), fabric F29. Ctx 17319, ditch 17304

Site 4 (Trench 61) (Iron Age)

Approximately half the pottery recovered from Site 4 (Trench 61) by sherd count was recovered from contexts attributed to the Iron Age (Table 3.6). The remainder was found as residual occurrences in medieval and post-medieval features. The pottery from Iron Age contexts was consistent with a middle or late Iron Age date. Sandy fabrics (F19, F20, F28, F29 and F30) dominated, although shelly fabric F16 was

Table 3.6: Site 4 (Trench 61), quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F06C	3	17		
F16	6	26		
F19	1	7	1	0.05
F20	4	9		
F28	44	131	1	0.1
F29	4	23		
F30	58	165	3	0.3
P	1	9		
Total	121	387	5	0.45

also present. Slack-shouldered jars (CS) were recorded in a sand and organic fabric (F19) and a fine sandy fabric (F28). The pottery was recovered from pits 5023, 5030, 5043, 5044 and 5084, while 12 sherds of fine sandy fabric F28 were collected from ring-gully 5092. The pottery from medieval and post-medieval features, largely hollow-way 5099, ditches 5097 and 5098, and furrow 5026, was dominated again by sandy fabrics (mainly sand and calcareous fabric, F30). A bucket-shaped jar (CA) and slack-shouldered jar were recorded.

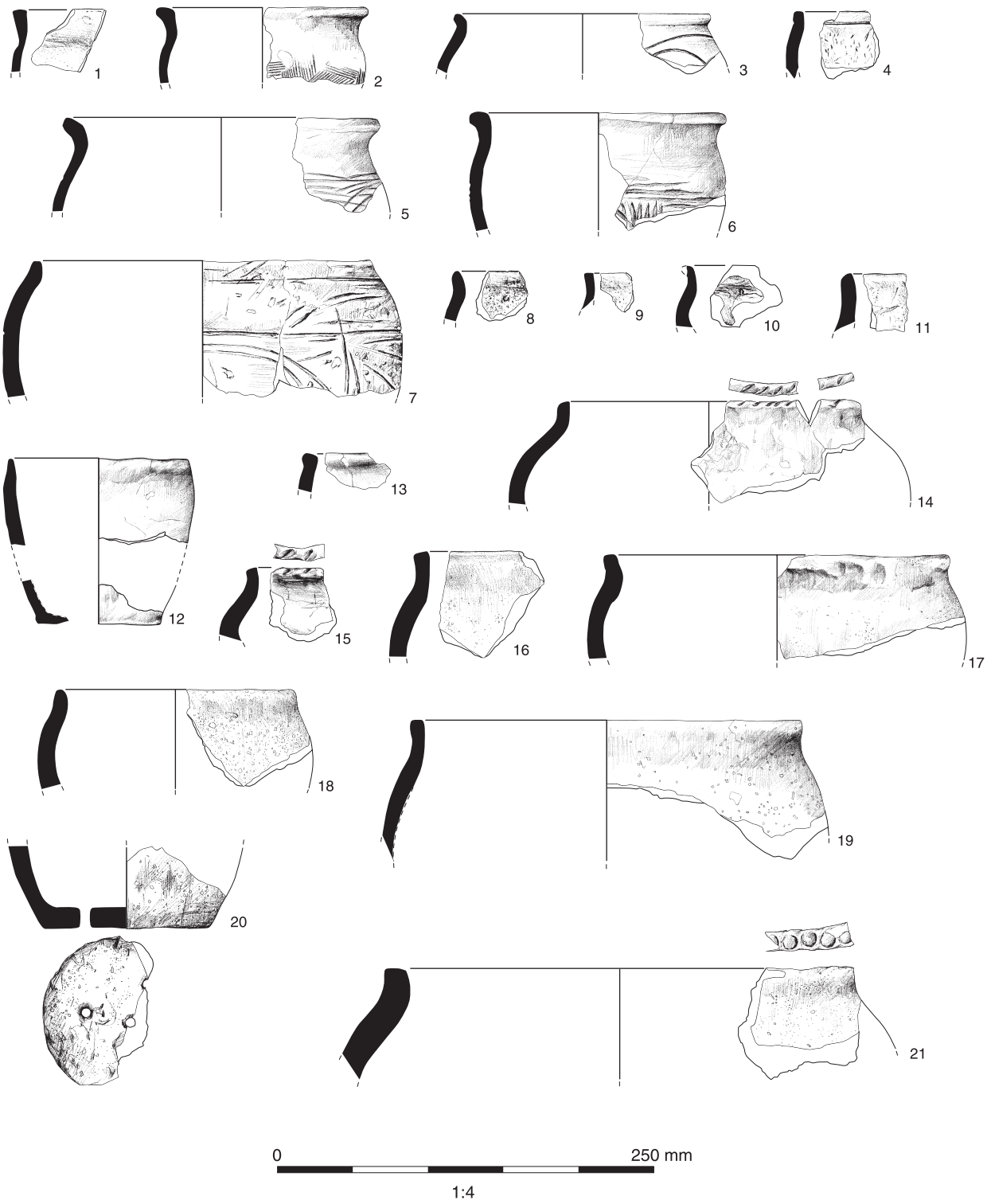


Fig. 3.1 Pottery from Site 4 (Trench 54), catalogue nos 1-21

Table 3.7: Site 6 (Trench 105), quantification of Iron Age and Roman pottery

Fabric	*Sherds*	*Weight (g)*
F03	1	1
F06A	19	105
F09	3	5
F14	3	18
F16	5	21
F28	3	2
F29	4	64
F06A	2	4
F09	1	1
F16B	1	3
F22	1	7
R06B	1	2
Total	44	233

Table 3.8: Site 5, quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F	9	5		
F03	9	81		
F06A	109	326	1	0.05
F09	41	125		
F22	7	16		
F29	1	56		
R01B	1	5		
R05A	4	50		
R07B	2	13		
Total	183	677	1	0.05

Site 6 (Trench 105) (Iron Age)

A total of 44 sherds, weighing 233g, was recovered from Trench 105 (Table 3.7). Thirty-four sherds were recovered from pits (7507, 7510, 7512, and 7525) dated to the middle to late Iron Age. The pottery is consistent with this date range. Grog-tempered ware (F06A) took the largest share. Smaller quantities of sandy fabrics (F28 and F29), shelly ware (F16), and a mixed-tempered fabric (F14) were also recovered. No forms were identified. A further ten sherds of pottery, which included a sherd of Roman sandy grey ware (fabric R06B), were collected from unphased tree-throw holes or post-Roman deposits.

Site 5 (late Iron Age/early Roman)

A total of 183 sherds of pottery were recovered from Site 5 (Table 3.8). Most belonged to context groups dated to the late Iron Age or early Roman period. Grog-tempered pottery (fabrics F03, F06A, F09 and F22), took the largest share of the assemblage – 81% by weight – and was responsible for the only form, a beaker, to be identified by rim. In addition, handle scars were recorded on sherds in fabrics F06A and F22. Pottery dating after AD 43 was represented by a fragment of South Gaulish samian ware (R01B), four sherds of sandy oxidised ware (R05A), and two sherds of black-surfaced ware (R07B). Overall, the assemblage can be attributed to the period spanning the end of the 1st century BC to the late 1st century AD (cf. Marney 1989, 89; Wells 2008b, 231).

The few features from which the pottery was collected included ring-gully 6021. This feature contained 40 sherds of mainly grog-tempered pottery, suggesting a late Iron Age date for deposition. Almost 60 sherds of pottery (similarly grog-tempered) were recovered from pits 6009, 6050 and 6052. Ditch 6137 contained a sherd of South Gaulish samian ware, which dates from the second half of the 1st century AD. Early Iron Age cremation burial 6070 contained a single fragment of pottery that was undiagnostic and can be dated no closer than to the Iron Age.

Berry Farm Borrow Pit (late Iron Age/early Roman)
by Dan Stansbie

A total of 77 sherds, weighing 1216g, was recovered from evaluation trenches that targeted areas of enclosures and settlement across the site. The mean sherd weight of the assemblage was 16g, and the assemblage included some large sherds with well-preserved surfaces. Overall, then, the general condition of the assemblage was good.

The assemblage consists almost exclusively of late Iron Age to early Roman material, although there are several groups comprising body sherds only, which have been assigned a broadly Roman date, and single groups dating to the early Roman period and the late Roman period. The late Iron Age to early Roman assemblage is dominated by body and base sherds in medium grog-tempered fabric F06B, although two jar rims are also present in this fabric. Supplementing this material are body sherds and a barrel-shaped jar in a grog-and-shell-tempered fabric (F05), and two bead-rimmed jars, a lid-seated jar, and a barrel-shaped jar with finger tip impressions on the rim in late Iron Age or Roman shelly fabric F16/R13. The early Roman group, dating to between AD 70 and AD 130, comprises body sherds of grog-and-shell-tempered fabric F05 and part of a plain rimmed carinated bowl in fine grey ware (R06C). The late Roman group comprises sherds of Roman shelly fabric R13, including a fingertip decorated rim sherd from a jar, body sherds of sandy grey ware (R06B), body sherds of medium grog-tempered fabric F06B and a flanged dish or bowl in sandy black fabric R07B dating to between AD 180 and AD410. In addition there is a barrel-shaped jar in a fine sand and shelly fabric (F18). The barrel-shaped jar probably dates to the middle Iron Age and the grog-tempered material dates to the late Iron Age; both must be residual. The groups dated broadly to the Roman period largely comprise body sherds of Roman shelly

Table 3.9: Site 2, north-eastern complex, quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F	1	2		
F05	104	1722	12	1.3
F06A	2044	18309	145	15.08
F06C	322	12431	21	2.98
F09	729	7832	68	7.55
F16	33	322	2	0.13
F16B	72	108		
F29	14	85		
F30	38	316	4	0.49
F34	583	5639	45	6.23
F38	5	55		
F40	3	7		
R01A	2	7	1	0.05
R01B	4	45	1	0.1
R03	4	13		
R03A	22	355	2	0.92
R03B	1	19		
R05A	96	555	7	0.86
R05B	17	29		
R06B	392	3953	48	5.38
R06C	22	118	2	0.21
R06E	2	7		
R07B	1	31	1	0.05
R09A	3	94		
R11E	1	74	1	0.1
R13	1244	15534	86	10.66
R22A	8	30	1	0.18
R30	1	6		
R33	1	34	1	0.08
R36	2	37		
C	5	29		
Total	5776	67798	448	52.35

Table 3.10: Site 2, north-eastern complex, pottery from features phased to the late Iron Age or late Iron Age/ early Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*E Beaker*	*H Bowl*	*L Lid*	*Total EVE*	*% EVE*
F05	0.19				0.19	6%
F06A	0.37	0.1	0.16	0.08	0.71	22%
F06C	0.03				0.03	1%
F09	0.1	0.23	0.06		0.39	12%
F16			0.13		0.13	4%
F29					*	
F30					*	
F34	0.05				0.05	2%
F40					*	
R13	1.35		0.4		1.75	53%
Total EVE	2.09	0.33	0.75	0.08	3.25	
% EVE	64%	10%	23%	3%		

fabric, but there are also some sherds in sandy grey ware (R06B)

The material indicates the presence of a settlement in the late Iron Age to early Roman period. Some activity is also indicated in the late Roman period, although the late Roman pottery is in relatively poor condition and is mixed with material of earlier date; it may therefore derive from episodes of redeposition, possibly through agricultural activities.

Site 2 north-eastern complex (late Iron Age-mid Roman)

Assemblage composition

Some 5700 sherds, representing almost 450 vessels or 52 EVEs, were recovered (Table 3.9). Pottery groups dated to the late Iron Age or late Iron Age/early Roman period and belonging to contexts phased to the same period accounted for 6% of the Site 2 north-eastern complex assemblage by EVE (Table 3.10). Jars dominated the phase, contributing 64% to it by EVE. The remainder was taken up by bowls and lids. In terms of fabrics, almost 60% of the assemblage by EVE consisted of shelly fabrics (R13/F16). These were available mainly as lid-seated or channel-rimmed jars (CJ). Other forms recorded in the ware included a jar with an everted rim (CI), and a bead-rimmed bowl or dish. Another shelly fabric, F16, was recorded, but this is likely to have been residual; curving-sided bowls with everted or flat rims (HC) that were seen in the fabric were middle Iron Age forms. Fine or medium-coarse grog-tempered fabrics (F06A/F06C) took a relatively large share of the assemblage, over 20% by EVE. The range of vessels was limited, though different to that offered by shelly fabrics. Instead of the shelly ware channel-rimmed jars, grog-tempered ware provided necked jars. One example had oxidised surfaces. A necked bowl (HD) and a domed lid were also recorded. A coarser grog-tempered ware (F06C) was present, and was reserved for storage jars. Grog was also present in fabrics F05 and F09. However, in these cases, the grog was combined with other tempering agents, shell and sand respectively. Together the fabrics accounted for almost 20% of the assemblage by EVE. Just one form was recorded in fabric F05 – a barrel-shaped jar (CB) with impressed- or notched-rim decoration. Fabric F09 was a fine fabric usually with oxidised surfaces. A carinated bowl (HA) and a high-shouldered necked jar (CE), or possibly a butt-beaker, were recorded. Sand was used exclusively in fabric F34. Two globular jars (CG), both with notched-rim decoration, were made in this fabric.

Some 35% of the Site 2 north-eastern complex assemblage by EVE belonged to contexts dated by both ceramic and stratigraphic means to the early Roman period (*c* AD 43-120; Table 3.11). Compared with the late Iron Age, this phase was more diverse in terms of both form and fabric. Jars still dominated, but a wider range of vessel types was

Table 3.11: Site 2, north-eastern complex, pottery from features phased to the early Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*B Flagon*	*C Jar*	*E Beaker*	*H Bowl*	*J Platter*	*L Lid*	*Total EVE*	*% EVE*
F05		0.17					0.17	1%
F06A		3.92	1.08	0.41	0.05	0.16	5.62	30%
F06C		0.65					0.65	3%
F09		1.51	0.22	0.14		0.1	1.97	11%
F29							*	
F30			0.1				0.1	1%
F34		2.49		0.53	0.09		3.11	17%
F38							*	
R01B							*	
R03							*	
R03A	0.82						0.82	5%
R03B							*	
R05A			0.14				0.14	1%
R05B							*	
R06B	0.09	2.64	0.36	0.19	0.17		3.45	19%
R06C							*	
R13		1.96		0.33			2.29	12%
Total EVE	0.91	13.34	1.9	1.6	0.31	0.26	18.32	
% EVE	5%	73%	10%	9%	2%	1%		

now available, and a decline in the proportion of bowls was met by a rise in the proportion of dining forms – beakers, platters and flagons. Shelly fabrics became less important, with grog-tempered fabrics and wheel-thrown post-conquest sandy grey wares taking their place. Grog-tempered fabrics (mainly F06A) contributed 45% of the phased assemblage by EVE. They were largely available as jars, and a much wider range than was seen in the late Iron Age assemblage was recorded. Necked, high-shouldered jars (CE) and narrow-necked jars with cordoned or corrugated shoulders (CC) were well represented in finer grog-tempered fabrics (F03, F06A and F09). The storage jar (CN) was the principal type in the coarser fabric (F06C). Other jars recorded included necked jars (CD), globular jars (CG) and bead-rimmed jars (CH). Beakers, seen mainly in fabric F06A, largely comprised butt-beakers (EA), but globular beakers (ED) and beaker-sized jars (EH) were also present. Bowls consisted mainly of carinated bowls (HA), necked bowls (HD) and curving-sided bowls (HC). Carinated bowls are attested in the Milton Keynes area (eg Marney 1989, fig. 36.71-73), and derive from samian prototypes, probably via Gallo-Belgic copies (eg Hawkes and Hull 1947, type *Cam* 68). Types HC and HD are perhaps better regarded as wide-mouthed or squatter versions of standard jar forms. Shelly ware R13 made a relatively large contribution of 12% of the assemblage by EVE, but this was considerably smaller than the proportion recorded for the late Iron Age phase. The lid-seated jar (CJ) remained the principal form, though necked jars (CD) and curving-sided bowls (HC) were also recorded.

Post-conquest, wheel-thrown, sandy wares were recorded alongside the late Iron Age fabrics. Of these, grey wares (R06B) were commonest, taking a 19% share of the entire phase assemblage by EVE. The forms – high-shouldered necked jars (CE), globular jars (CG), lid-seated jars (CJ) and necked bowls (HD) among them – largely replicated those in grog-tempered and shelly fabrics. It is likely that the potters responsible for the late Iron Age-style fabrics gradually adopted the new fabrics and used them for existing repertoires, although the potters no doubt saw new forms in the wider cultural environment, and began to make these too. One of these was the necked jar (CD), which was better represented in grey ware R06B than in grog-tempered or shelly fabrics (the versions in which were presumably imitations of the sandy ware versions). Another was the platter (JC), which may in part have met the decline in the proportion of bowls. Jar-shaped beakers (EH) were recorded in grey wares, while butt-beakers (EA) were recorded in sandy oxidised fabrics (R05A). Pottery arrived from the Verulamium region in the form of flagons. A small amount of South Gaulish samian ware also reached the site. Fragments from a Drag. 15/17 platter, Drag. 27 cup and a decorated bowl were recorded.

The level of activity – and therefore the level of deposition – dropped at the north-eastern complex at Site 2 in the 2nd century AD onwards (Table 3.12). Consequently, just 2% of pottery from the entire assemblage by EVE was recovered from contexts dated ceramically and stratigraphically to the mid Roman period (2nd and 3rd centuries AD). Given the small amount present and the obviously residual material (F fabrics), the pottery in this

Table 3.12: Site 2, north-eastern complex, pottery from features phased to the middle Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*H Bowl*	*J Dish*	*K Mortarium*	*L Lid*	*Total EVE*	*% EVE*
F05						*	
F06A	0.05					0.05	5%
F06C						*	
F34		0.05				0.05	5%
R01A						*	
R05A			0.05			0.05	5%
R06B	0.1		0.03		0.05	0.18	18%
R11E				0.1		0.1	10%
R13	0.49					0.49	49%
R33				0.08		0.08	8%
Total EVE	0.64	0.05	0.08	0.18	0.05	1	
% EVE	64%	5%	8%	18%	5%		

phase group is not necessarily representative of supply to the site. It nevertheless indicates the ubiquity of shelly ware jars – necked (CD) and, inevitably, lid-seated (CJ) – and sandy grey wares, in which a lid-seated jar, dish and lid were recorded. In addition, the group shows that pottery was reaching the site from regional or continental sources, including Central Gaulish samian ware (a sherd from a dish was noted), and white-ware mortaria from the Oxford (Young 1977, type M6) and Verulamium regions.

Decoration typically seen on the middle Iron Age pottery of Site 4 (Trench 54) was evident on the late Iron Age and early Roman pottery of the north-eastern complex at Site 2. Scored decoration was not seen on any late Iron Age or early Roman pottery of the north-eastern complex at Site 2, but diagonal notches cut into the rim, creating a twist-like pattern, were recorded on 17 vessels. The decoration was applied to barrel-shaped jars, which closely resembled middle Iron Age ovoid types (vessels that commonly carried the decoration), but forms introduced in the late Iron Age – bead-rimmed jars (CH), globular jars (CG) and lid-seated jars (CJ) – were also decorated in this way, demonstrating continuity of the decorative style beyond the middle Iron Age. These forms, however, had been made in fabrics whose origins lay in the later Iron Age (fabrics F05, F06A, F09 F34 and R13), and overall the style of decoration did not survive far into the second half of the 1st century AD. Apart from notched decoration, the commonest types of motifs were grooves and cordons. Of the 30-odd cordoned vessels recorded, most had a single cordon at the base of the neck. These were applied mainly to high-shouldered necked jars (CE) and narrow-necked jars (CC), but storage jars (CN) and butt-beakers (EA) were cordoned too. Grooves were recorded on high-shouldered necked jars, but more usually on narrow-necked jars, globular jars and storage jars. Thirty-nine examples of grooved vessels were recorded. Other types of decoration included rilling, applied with a comb dragged horizontally around the shoulder. Four of the six rilled vessels recorded were lid-seated jars. A grog-tempered butt-beaker had rouletted decoration around its body in between cordons in imitation of Gallo-Belgic prototypes, and impressed decoration was recorded on a storage jar and narrow-necked jar.

Pattern of pottery deposition

Few features received pottery during the late Iron Age. A relatively large group of pottery (over 200 sherds) was recovered from ditch 2617, while some 60 sherds of pottery were collected from roundhouse ditch 2907. Smaller quantities were recovered from ditches 2710 and 2732. In the early Roman period, pottery deposition was concentrated in the ditches of roundhouse 2708/9 and its enclosure (ditches 2476, 2477, 2732 and 2766). Each of these ditch groups contained over 300 sherds of pottery. Other ditches dated to the early Roman period saw little deposition, with each group containing fewer than 100 sherds. Relatively large assemblages (over 100 sherds) were recovered from two pits (2430 and 2457) located in a group of pits north-east of roundhouse 2708/9.

Overall, 57% of the Site 2 north-eastern complex assemblage by sherd count was recovered from ditches. Pits contained 30% of pottery, while gullies contained 7%. The remaining feature types – among them beamslots, postholes, layers and surfaces, and tree-throws – each held less than 2%. The mean sherd weight for the entire assemblage was 11.7g. There was little difference in mean sherd weight across the feature types. The value for ditches was 12.2g, while that for pits was 11.2g. The lowest values were recorded in structural features – postholes (10.7g) and beamslots (9.8g) – while relatively high values (up to 16.9g) were recorded for pottery from furrow, land-drains and tree-throw fills, although as noted the proportions of pottery from these features were very small.

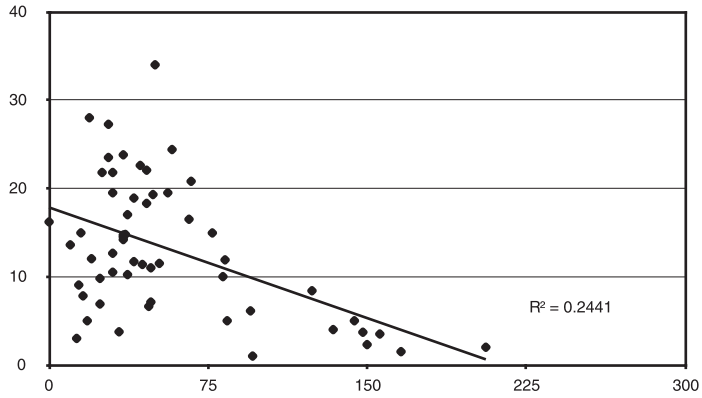


Fig. 3.2 Site 2 north-eastern complex: regression analysis showing decrease of mean sherd weight with increased distance from roundhouse 2708/9

Values for the volumes of soil taken from interventions through ditches, pits and other features have not been calculated. The figures would help to provide standardised data on pottery deposition across the site, reducing biases introduced by different features types (for instance, more pottery may have been recovered from a pit compared with a segment of a ditch, but overall the ditch may have seen more deposition, with a greater amount of pottery being distributed thinly across its entire length). However, other measures – context groups size and mean sherd weight – nevertheless provide a useful indication of pottery deposition. It is clear that the largest groups of pottery – that is, groups of over 100 sherds – were generally found in the vicinity of roundhouse 2708/2709 and its enclosure. Over 900 sherds were recovered from the roundhouse itself, while a further 1000 fragments were collected from the enclosure ditches. Some 350 sherds were recovered from the pits and other features within the enclosure. Groups of between 10 and 100 sherds were also recovered from this area, but were also found outside the enclosure, particularly in ditches and pits towards the north-east. The smallest groups (each containing fewer than 10 sherds) were scattered across the site.

Turning to mean sherd weight (weight divided by sherd count), pottery from the roundhouse and features near the roundhouse generally had higher means than pottery from more distant features (that is, sherds were larger and had undergone fewer episodes of disturbance and deposition, and by implication were deposited closer to the area of original use and discard). Thus, the mean sherd weight of the pottery from ditch 2672, 200m north-east of the roundhouse, was 2g, while the mean for ditch 2479, 150m away, was 3.7g. Ditch 2475, 70m north-east of the roundhouse, contained pottery with a mean sherd weight of 20.8g, and 2766, one of the enclosure ditches surrounding the roundhouse, contained pottery with a mean of 23.8g. Pottery from the roundhouse itself had a mean sherd weight of 16.2g. The drop in mean sherd weight with distance from the roundhouse enclosure is clear from Figure 3.2. Over 50 points are shown on the scattergram, with each representing the value from a ditch or pit and the feature's distance from the centre of the roundhouse. In general, pottery sherds from the roundhouse and surrounding features were larger and better preserved than those recovered further away. However, the fall in weight with increased distance was not a steady one (applying regression analysis, the coefficient of determination (r^2) suggests that just 24% of the variation in means is explained by distance alone), and for features up to *c* 70m away from the roundhouse, the trend is much flatter (indeed, the mean weight appears to rise slightly with distance). It is only after *c* 70m that the mean sherd weight falls sharply. This extends the focus of pottery deposition – and the centre of activity – wider than the roundhouse and its enclosure, but also provides a reasonably well-defined settlement boundary. Land east of ditch 2475 appears to have been marginal in terms of settlement activity, and the pottery argues against there having been domestic occupation immediately beyond this area of excavation.

Comparison of pottery groups from the roundhouse (2708/9), enclosing ditches, and other features inside the enclosure hints at differences between them (Table 3.13). The roundhouse ditches contained comparatively more flagons, beakers, bowls and platters, and conversely fewer jars, than the other feature types. The differences are small, but overall, the roundhouse assemblage has a greater emphasis on dining compared with the enclosure ditch assemblage, which has a stronger cooking or storage element. The internal features sit spatially and functionally between the two. The composition of the three assemblages identifies the roundhouse, somewhat obviously, as the location for a range of domestic functions, but given also that ditches 2708/9 contained the largest single pottery group from the entire site, the possibility that pottery in the roundhouse ditches was deliberately selected and deposited cannot be dismissed.

Table 3.13: Site 2, north-eastern complex, percentages of vessel types from feature groups. Quantification by EVE

Feature	*B Flagon*	*C Jar*	*E Beaker*	*H Bowl*	*J Platter*	*L Lid*	*Total EVE*
Enclosure		91	4	4		1	100%
Internal features	3	79	13		2	3	100%
Roundhouse	9	61	15	10	4	2	100%
Total EVE	1.01	17.65	2.45	1.42	0.45	0.39	23.37

With its emphasis on dining, the assemblage recalls a trend noted in late Iron Age ceramic pit groups in south-eastern Britain for the deposition of 'ceramic consumption refuse' and the commemoration of feasting and communal social practices (Pitts 2005, 157).

There appears to have been more deliberate deposition in pit 2444. The feature contained the lower body and footring base of a jar in an oxidised grog-tempered ware. A complete or near-complete shelly-ware lid-seated jar (grey or black in colour) was placed inside it. The vessels were broadly dated, but generally suggest a range for deposition within the 1st century AD. Other pottery was recovered, but all represented little more than unremarkable fragments.

Pottery use

As was noted in the discussion of assemblage composition, the late Iron Age dominance of jars and bowls gave way to a more diverse assemblage in the early Roman period (Tables 3.10-11). This may reflect a change in dining and cooking habits. The bowl bore the brunt of this change. The proportion of jars was little reduced after AD 43 compared with the late Iron Age, whereas bowls declined from 20% of vessels in the late Iron Age to 9% in the early Roman period, with the gap being filled by flagons, beakers and platters. The inhabitants of the north-eastern complex at Site 2 still needed jars to cook with (and store goods), but were using bowls less frequently for dining. Changes in eating and drinking habits affected jars too. In the late Iron Age phase, the mean diameter of jars was 148.7 mm. In the early Roman period, the mean had increased to 164.4 mm. Also, the jars with the smallest average diameter in the late Iron Age – barrel-shaped jars (CB, mean 110 mm), high-shouldered necked jars (CE, 125 mm), and jars with everted rims (CI, 120 mm) – all made comparatively smaller contributions to the early Roman assemblage. This suggests that there were fewer small jars, which may have been used for drinking in the later Iron Age, available in the early Roman period. What is more, the emergence of beakers suggests that small jars were being replaced by specialist drinking vessels.

Most jars were presumably used for cooking, but it was only in five vessels that evidence for cooking in the form of external or internal burning was recorded. Two lid-seated jars (CJ), an everted-rimmed jar (CI) and a narrow-necked jar (CC) were burnt on their exterior surfaces, a result, perhaps, of being placed on the hearth. Another lid-seated jar contains a burnt deposit, which may be food residue. A number of vessels show evidence of re-use or adaptation. The bases of six jars – in shelly ware, grog-tempered fabrics or grey ware – had been perforated multiple times, allowing the vessels to be used as strainers. As a reflection of their being well used, their intrinsic value, or the vagaries of supply, some vessels had been repaired. A repair hole was noted under the rim of a South Gaulish Drag. 27 cup. A sherd in a fine oxidised ware had a repair hole, and like the samian, the vessel it belonged to was presumably of some value to the owner. However, a rivet hole under the rim of a 'Belgic' sandy fabric jar shows that coarse wares were also repaired.

Catalogue of illustrated pottery (Figs 3.3-3.4)

Ditch group 2907, context 2300, late Iron Age

22 Narrow-necked jar (CC), fabric F06C. Decorated with small semicircles impressed in two parallel horizontal bands below a shoulder groove
23 Lid-seated jar (CJ), fabric F34. Burnt externally around the neck
24 Lid-seated jar (CJ), fabric R13. As Marney 1989, fig. 5, nos 1 and 3
25 Storage jar (CN), fabric R13, oxidised surfaces
26 Dome-like lid, fabric F06C, oxidised surfaces

Ditch group 2454, context 2338, early Roman

27 Narrow-necked jar (CC), fabric F09
28 Globular jar (CG) or large beaker, fabric F09. Decorated with chevron motifs made with the points of a comb, as Marney 1989, fig. 31, nos 26 to 30
29 Lid-seated jar (CJ), fabric R13
30 Carinated bowl (HA), fabric F34. Cordoned or rippled neck, as Marney 1989, fig. 37, no. 79

Ditch group 2477, early Roman

31 Barrel-shaped jar (CB), fabric F05. Notched decoration on the rim. Ctx 2287, ditch 2335
32 Globular jar (CG), fabric F09. Ctx 2443, ditch 2442
33 Lid-seated jar (CJ), fabric R13. Ctx 2287, ditch 2235
34 Lid-seated jar (CJ), fabric R13. Ctx 2287, ditch 2235
35 Lid-seated jar (CJ), fabric R13. Ctx 2443, ditch 2442
36 Carinated bowl (HA), fabric F34. Ctx 2442, ditch 2442
37 Necked bowl (HD), fabric F06A, oxidised surfaces. Ctx 2442, ditch 2442

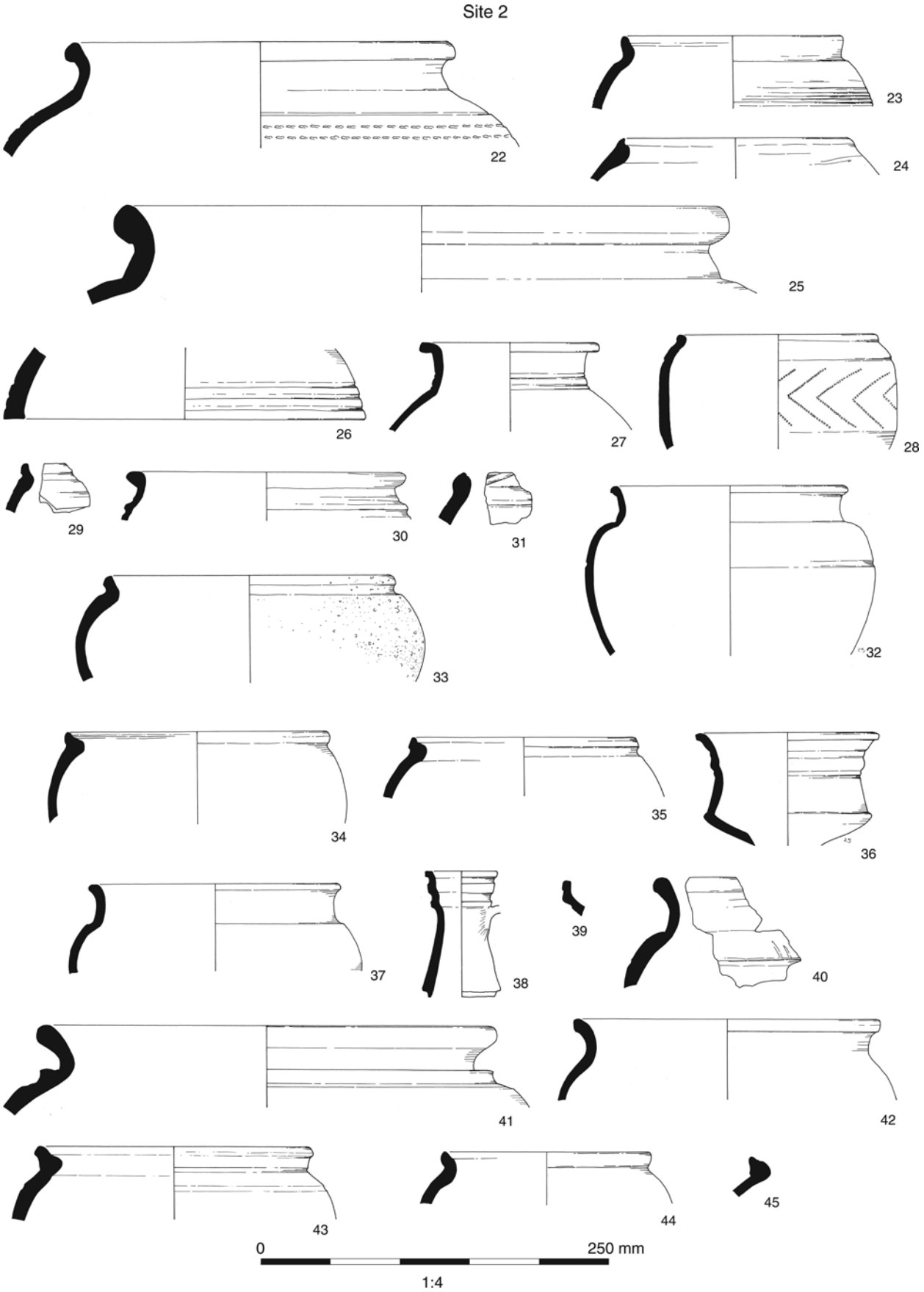


Fig. 3.3 Pottery from Site 2 north-eastern complex, catalogue nos 22-45

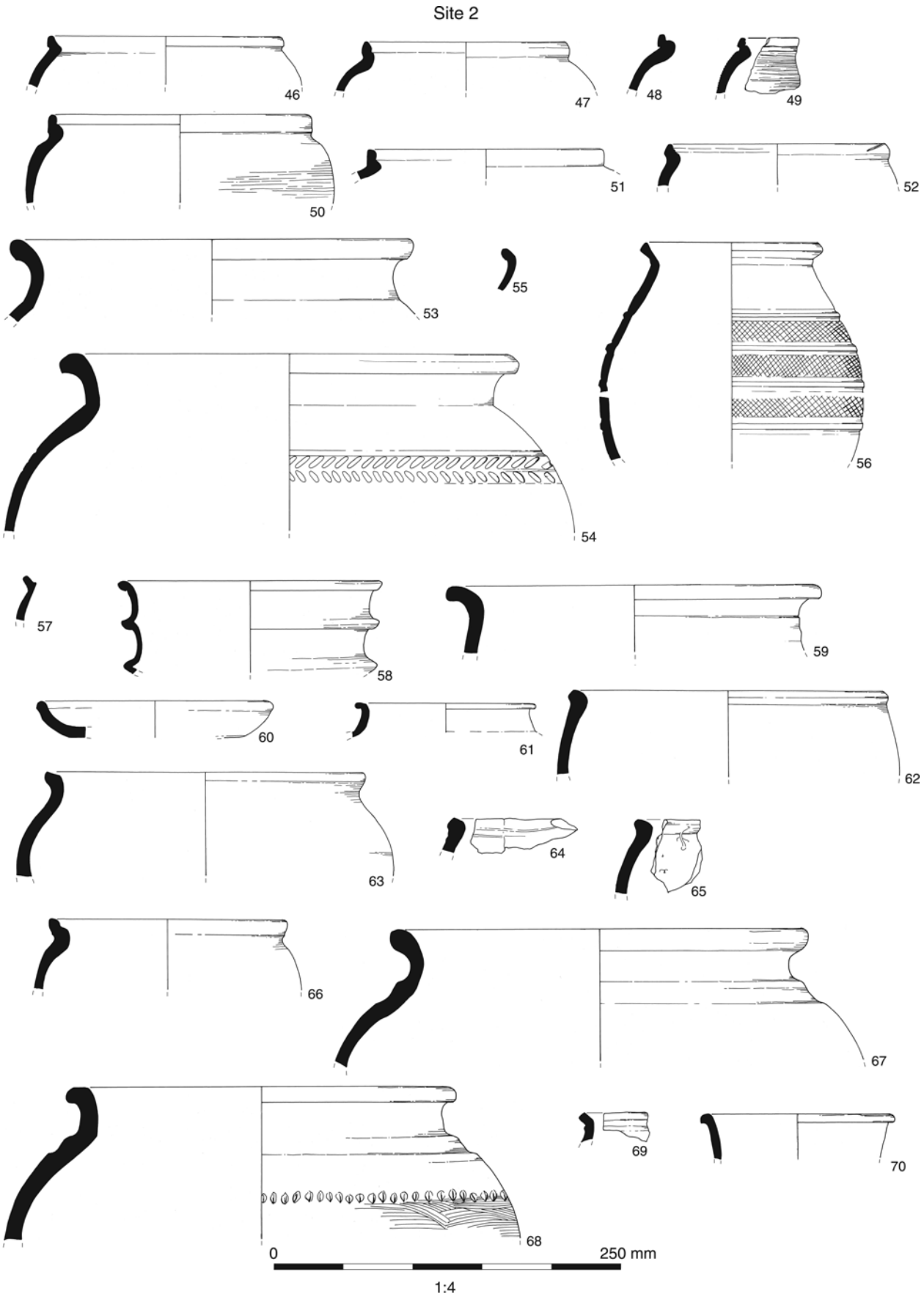


Fig. 3.4 Pottery from Site 2 north-eastern complex, catalogue nos 46-70

Ditch of roundhouse 2708, early Roman

38 Ring-necked flagon (BA), fabric R03A. Ctx 2511, ditch 2510
39 ?Cup-mouthed flagon (BB), fabric R06B. Ctx 2511, ditch 2510
40 Globular jar (CG), fabric F06A. Ctx 2377, ditch 2365
41 Globular jar (CG), fabric F06A, oxidised surfaces. Ctx 2609, ditch 2608
42 Necked jar (CD), fabric F06A. Ctx 2511, ditch 2510
43 Lid-seated jar (CJ), fabric F34. Ctx 2511, ditch 2510
44 Lid-seated jar (CJ), fabric F34. Ctx 2511, ditch 2510
45 Lid-seated jar (CJ), fabric R13, oxidised surfaces. Ctx 2511, ditch 2510
46 Lid-seated jar (CJ), fabric R13. Ctx 2511, ditch 2510
47 Lid-seated jar (CJ), fabric R13. Ctx 2511, ditch 2510
48 Lid-seated jar (CJ), fabric R13. Ctx 2511, ditch 2510
49 Lid-seated jar (CJ), fabric R13. Ctx 2511, ditch 2510
50 Lid-seated jar (CJ), fabric R13. Ctx 2609, ditch 2608
51 Lid-seated jar (CJ), fabric R13. Ctx 2609, ditch 2608
52 Lid-seated jar (CJ), notched rim, fabric R13. Ctx 2609, ditch 2608
53 Wide-mouthed jar (CM), as Marney 1989, fig. 30, no. 4. Fabric R06B. Ctx 2609, ditch 2608
54 Storage jar (CN), fabric F06C. Decorated with a band of impressed chevrons around the girth below a body groove. Ctx 2377, ditch 2365
55 Butt-beaker (EA), fabric R05A. Ctx 2377, ditch 2365
56 Butt-beaker (EA), fabric F06A, oxidised surfaces. Decorated with incised lattice between cordons. Ctx 2609, ditch 2608
57 Globular beaker (ED), fabric F06A, oxidised surfaces. Ctx 2377, ditch 2365
58 Carinated bowl (HA), fabric F09. Ctx 2609, ditch 2608
59 Platter (JC), fabric R06B. Reminiscent of Going 1987, type A4. Ctx 2511, ditch 2510
60 Platter (JC), fabric R06B. Ctx 2511, ditch 2510

Ditch group 2766, context 2754, fill of ditch 2753, early Roman

61 Necked jar (CD), fabric F00, oxidised surfaces
62 Bead-rimmed jar (CH), fabric F06A
63 Bead-rimmed jar (CH), fabric F06A
64 Bead-rimmed jar (CH), fabric F06A
65 Bead-rimmed jar (CH), fabric F06A
66 Lid-seated jar (CJ), fabric R13
67 Storage jar (CN), fabric F06C
68 Storage jar (CN), fabric F06C, oxidised surfaces. Decorated with a cordoned shoulder, and combed decoration on the body
69 Beaker, fabric F06A, oxidised surfaces
70 Bowl, fabric F05

Site 3 (Late Iron Age-early Roman)

Assemblage composition

Pottery recovered from contexts dated to the late Iron Age on ceramic and stratigraphic grounds accounted for 27% of the Site 3 assemblage by EVE (Tables 3.14 and 3.15). The phase assemblage was dominated by grog-tempered fabrics, which took a 67% share by EVE. Most fragments contained grog exclusively (fabrics F06A/C). A smaller proportion of grog-tempered fabrics also contained shell and sand (fabrics F05 and F09). The fabrics were available mainly as jars. Ovoid jars with everted rims (CO/CI) were best represented in fabrics F06A and F05, followed by slack-shouldered jars (CS). Both types were strongly associated with the middle Iron Age, but remained current into the late Iron Age. Two bowls recorded in fabrics F06A and F09 were related to type CS, as they had a slack shoulders. Bead-rimmed jars (CH) were present in fabric F06A, and single examples of a pedestal jar (CP) and lid-seated jar (CJ) were also recorded. Storage jars (CN) were seen only in coarse grog-tempered ware (F06C), while a necked medium-mouthed jar was recorded in a sand and grog-tempered fabric (F09).

Shelly ware (R13) made a significant contribution to the late Iron Age assemblage, taking a 30% share by EVE. Jars only were made in the fabric, and of these lid-seated jars (CJ) dominated. The form was variable, though, and included versions with very slight or narrow grooves at the top of the rim. Bead-

Table 3.14: Site 3, quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F05	66	790	6	0.47
F06A	631	5446	28	2.89
F06C	68	1143	2	0.1
F09	43	498	6	0.4
F16	2	77		
F29	5	95		
F30	8	142		
F34	143	1075	8	0.87
R01B	10	100	2	0.54
R05B	135	59	1	0.09
R06B	752	2137	5	1.93
R06C	25	148	2	0.58
R07B	5	31		
R13	347	3850	28	3.08
R18B	28	184	1	0.4
Total	2268	15775	89	11.35

Table 3.15: Site 3, pottery from features phased to the late Iron Age. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*H Bowl*	*Total EVE*	*% EVE*
F05	0.3		0.3	10%
F06A	1.34	0.08	1.42	46%
F06C	0.05		0.05	2%
F09	0.22	0.07	0.29	9%
F16			*	
F29			*	
F30			*	
F34	0.07		0.07	2%
R13	0.93		0.93	30%
Total EVE	2.91	0.15	3.06	
% EVE	95%	5%		

rimmed jars (CH) were present in the fabric, and were similar to the CJ type in terms of shape and rim decoration, but lacked the groove or indentation at the top of the rim. An oval-bodied jar with an everted rim (CI) was also encountered. A bead-rimmed jar was recorded in 'Belgic' sandy ware (F34). Other sandy fabrics were recorded as F29 and F30, but no vessels were identified.

Another 27% of the Site 3 assemblage by EVE comprised pottery from contexts dated ceramically and stratigraphically to the early Roman period (*c* AD 43-120; Table 3.16). Grog-tempered fabrics, so important in the late Iron Age, declined significantly after the mid 1st century AD to take a 28% share of the phase assemblage. Just two forms were recorded: the bead-rimmed jar (CH) and high-shouldered necked jars (CE). The decline of grog-tempered fabrics was met by a rise in sandy fabrics, which contributed 27% of the early Roman phase. A jar (form uncertain) was present in 'Belgic' sandy ware, although outside the phased assemblage a high-shouldered necked jar (CE), bead-rimmed jar (CH), globular beaker (ED) and lid were recorded. A necked bowl or wide-mouthed jar (HD) and curving-sided bowl (HC) were available in post-conquest sandy grey ware (R06B), while fine sandy grey ware (F06C) provided a bowl and a plain-rimmed dish or platter (JB). Shelly ware (R13) remained important after the conquest period. Its principal product continued to be lid-seated jars (CJ), and these were joined by a curving-sided bowl with a grooved rim.

Fine oxidised ware R18B appeared in this phase. A hemispherical bowl (HC) with compass-inscribed decoration imitating a London-ware prototype (which imitated the samian decorated bowl, Drag. 37) was recorded. Samian itself reached the site. A Drag. 36 dish arrived from South Gaul during the later 1st century AD.

The use of notches or frilling to decorate rims, applied to the middle Iron Age pottery of Site 4 (Trench 54), was evident on the late Iron Age and early Roman pottery of Site 3. The decoration was recorded on bead-rimmed jars (CH) and lid-seated jars (CJ) only, all examples being in shelly ware (R13). The bead-rimmed jar may be regarded as a development of the constricted-neck or ovoid jar, which was typically given a frilled rim, as recorded in the Site 4 (Trench 54) assemblage.

Table 3.16: Site 3, pottery from features phased to the early Roman period (excluding funerary pottery). Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*H Bowl*	*J Dish*	*Total EVE*	*% EVE*
F05				*	
F06A	0.85			0.85	28%
F06C				*	
F09				*	
F30				*	
F34	0.1			0.1	3%
R01B			0.1	0.1	3%
R06B		0.14		0.14	5%
R06C		0.21	0.37	0.58	19%
R07B				*	
R13	0.79	0.09		0.88	29%
R18B		0.4		0.4	13%
Total EVE	1.74	0.84	0.47	3.05	-
% EVE	57%	28%	15%	-	

Funerary pottery

Two vessels from enclosure ditch 3351 were associated with a small amount of cremated human bone and therefore may represent the pottery from a disturbed cremation burial. One vessel (SF 3008) was a curving-sided bowl. The second vessel (SF 3009) was a jar, the base of which had been perforated to form a strainer. Both vessels were in a grog-tempered fabric and dated to the late Iron Age.

Eleven vessels had been placed deliberate into four graves (Table 3.17). Grave 3030 contained a sandy grey ware globular jar, which served as the cinerary urn. Two ancillary vessels were deposited: a globular beaker in a sandy fabric, and a sandy grey war platter. Grave 3031 contained three vessels. A large globular beaker in sandy grey ware was used as the cinerary urn. A South Gaulish samian ware platter and a fine oxidised globular beaker were deposited as ancillary vessels. Two vessels were recovered from grave 3050: a sandy

Table 3.17: Site 3, pottery ancillary and cinerary vessels from cremation burials. Quantification by vessel count based on all sherds

Ware	*Beaker*	*Bowl*	*Flagon*	*Platter*	*Unident.*	*Urn (beaker)*	*Urn (jar)*	*Total vessels*
E	1							1
O	1							1
R		1		1	1	2	2	7
S				1				1
W			1					1
Total vessels	2	1	1	2	1	2	2	11

grey ware narrow-necked jar, which contained cremated bone, and fragments from an unidentified ancillary vessel in grog-tempered ware. Grave 104802, recorded in Trench 48 of the evaluation, contained three vessels. The cinerary urn was a jar-sized poppyhead beaker in fine grey ware. A ring-necked flagon in Verulamium-region white ware and a fine grey ware necked bowl or small jar were deposited as ancillary vessels.

All the pottery is consistent with the early Roman phase ascribed to the graves. The samian platter in grave 3031, the globular beaker in grave 3030, and the grog-tempered vessel, in conjunction with the Roman-period pottery in grave 3050 suggest that the pottery groups were deposited in the second half of the 1st century AD. The group from grave 104802 may have been placed there during the later part of that period, or possibly during the early 2nd century. The flagon and poppyhead beaker are unlikely to date earlier than *c* AD 70 (cf. Davies *et al.* 1994, 42, 159).

Catalogue of funerary pottery

Enclosure ditch 3351, ditch cut 3124 (Fig. 2.40)

SF 3008. Curving-sided bowl (HC), fabric F06A. Ctx 3126.
SF 3009. Body and base sherds from a large jar, fabric F06A. The base was perforated after firing with three or more holes. Ctx 3127.

Grave 3030 (Fig. 2.49)

SF 3000. Globular jar (CG), cinerary urn. Fabric R06B. Ctx 3005
SF 3001. Globular beaker (ED). Fabric F34, black surfaces. Ctx 3014
SF 3002. Platter with convex profile (JC). Fabric R06B. Ctx 3015
Group date: Mid-late 1st century AD

Grave 3031 (Fig. 2.50)

SF 3003. Large globular beaker (ED), cinerary urn. Fabric R06B. Ctx 3009
SF 3004. Platter (Drag. 18), fabric R01B. Edge of name stamp present but not legible. The excavator noted that vessel was not found in situ, and speculated that it was used as lid. Ctx 3010
SF 3005. Small globular beaker (ED). Fabric R05B. Ctx 3016
Group date: Mid-late 1st century AD

Grave 3050 (Fig. 2.51)

SF 3006. Narrow-necked jar (CC), cinerary urn. Fabric R06B. Ctx 3045
No SF number. Unidentified vessel, fabric F06A. Ctx 3044 (not illustrated)
Group date: Mid-late 1st century AD

Grave 104802 (Fig. 2.52)

No SF number. Large poppyhead beaker (EF), cinerary urn. Fabric R06C. Ctx 104804
No SF number. Ring-necked flagon (BA). Fabric R03A. Ctx 104805
No SF number. Globular-bodied necked bowl or small jar (HD). Fabric R06C. Ctx 104806
Group date: Late 1st-mid 2nd century AD

Pattern of pottery deposition

Pottery was largely recovered from ditches and graves. Ditches contained 54% of the entire Site 3 assemblage by EVE, while 38% of pottery by EVE was attributed to graves. The remainder was recovered from pits. Some 330 sherds were collected from the late Iron Age ditch 3350-2/3359, with most pottery being concentrated in the central and northern parts of the feature; just 30 sherds came from interventions through the southern part of the ditch group (3359). Relatively large quantities of pottery were recovered from late Iron Age ditches 3362 and 3358/3361; *c* 100 sherds were collected from each. Deposition in the early Roman period was focused on enclosure ditch 3346/3364/3365, from which 450 sherds were recovered. The cemetery enclosure ditch 3344-5 produced a fairly small assemblage of 70 sherds.

The pottery recovered from the ditches is likely to have been domestic waste. Reduced coarse ware jars were dominant in the assemblages from ditches 3346/3364-5, 3350-2/3359, 3362, 3353/3357 and 3358/3361, contributing over 80% to those groups by EVE. The mean sherd weight of the pottery from the groups was relatively high, exceeding 10g in most cases. The best preserved pottery was from ditch 3353/3357, which had a mean sherd weight of 14.3g, which compares to an overall site average of 6.9g. The value, sufficiently low to suggest a degree of redeposition and fragmentation after initial discard, but high enough to point to domestic activity close by, reflects the absence of domestic structures on Site 3.

That said, mean sherd weight values should be treated with caution, as is demonstrated by comparison with the funerary pottery. The overall value obtained for the pottery from the graves is very low, 2.8g, despite the grave groups comprising vessels deposited whole in the ground and remaining, essentially, *in situ* until excavation. On lifting, the pottery, which had cracked in the stiff clay soil and been disturbed by ploughing, fragmented, resulting in very small sherds. A fairer way of comparing pottery condition across feature types is to use the EVE values, which are not affected by fragmentation, whether caused by the soil or episodes of redeposition; a complete rim has the same value of 1 EVE whether it is broken into two pieces or ten. The EVE value divided by the number of vessels represented (MV) gives us an average EVE per rim or 'completeness' value; the closer the value is to 1, the more complete is the pottery (Orton *et al.* 1993, 178). On this basis, the overall value for the site assemblage is 0.13 EVE (or 13% of a complete rim). The pottery from features which received much of the pottery have values reasonably close to the site average. For example, the value for ditch 3346/3364-5 is 0.10 EVE; that for ditch 3350-2/3359 is 0.08 EVE, while ditch 3353/3357 has a value of 0.13 EVE. In contrast, the value for the funerary pottery is 0.49 EVE, which is

much more in keeping with the deposition of whole vessels and a degree of post-depositional truncation. Relatively high values of 0.21 EVE and 0.40 EVE are also recorded for ditches 3344/45 and 3355 respectively. For the former, the value can be attributed to the deposition of a substantially complete hemispherical bowl (imitating samian form Drag. 37) in a fine oxidised ware. In the latter, with the exception of a single sherd of grog-tempered pottery, deposition was restricted to a near-complete lid-seated jar in shelly ware. Both vessels stand in contrast to the more usual small fragments of mixed forms and fabrics recovered from most features, and it is possible that they represent deposits made in a more deliberate and careful manner on the abandonment of the feature.

Pottery use

The range of forms available in the late Iron Age was restricted to jars and bowls, and it is likely that the vessels served a variety of functions. Jars may have served as drinking vessels, in addition to cooking and storage, with bowls being used for cooking and dining. Taking diameter as representative of vessel size, oval-bodied or barrel-shaped jars

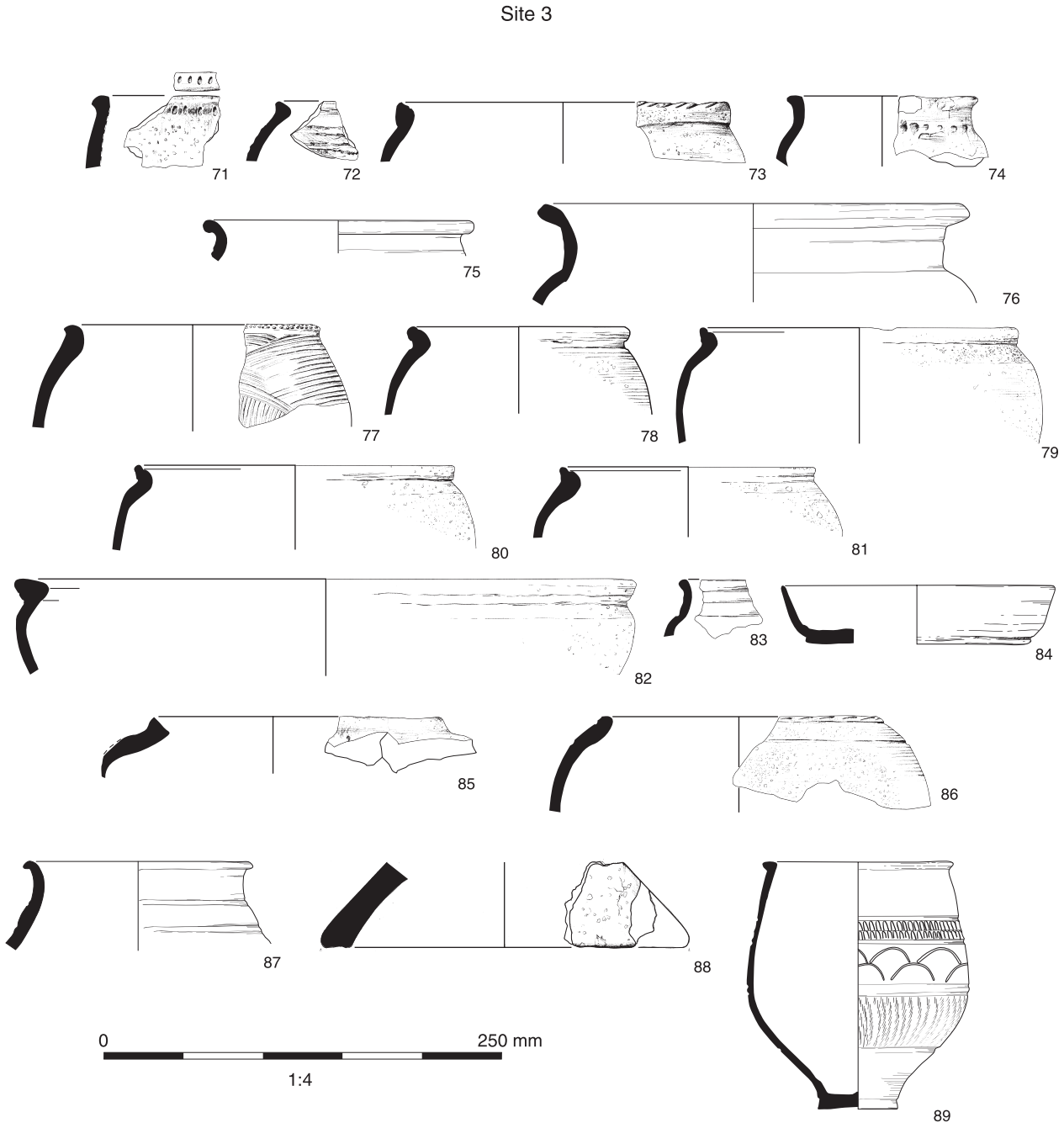


Fig. 3.5 Pottery from Site 3, catalogue nos 71-89

with everted rims (type CI) were among the smallest vessels. Their mean diameter was 163 mm, but the range started at 130 mm. A slack-shouldered jar (type CS) had a diameter of 120 mm, and the mean for the type as a whole was 140 mm. Type CI may have been used for drinking, but its overall mean points to larger vessels and other functions, such as cooking. Type CS, being more usually small, is likely to have been more restricted in function, probably serving as a small bowl or cup. The lid-seated jar (type CJ) tended towards the higher end of the diameter range, and its mean was 172 mm. Bead-rimmed jars, another relatively common type in the phase, were on average 163 mm in diameter, but were no less than 140 mm. Both CJ and CH seem less likely to have served the same functions as the small CI and CS types, and could have been used exclusively for cooking and storage. The second half of the 1st century AD saw diversification of pottery forms and the introduction of specialised dining forms – beakers, platters, and flagons. Lid-seated jars and bead-rimmed jars continued to be made and used, and were joined by globular (CG) and high-shouldered necked (CE) jars, which had average diameters of 133 mm and 210 mm respectively. Slack-shouldered jars and oval-bodied jars with everted rims virtually disappeared; the emergence of beakers had rendered drinking-jars obsolete. The use of lid-seated jars (type CJ) as cooking vessels is demonstrated by the evidence of burning and charred deposits on the surfaces of the jars. One vessel, from early Roman ditch 3346, had a burnt deposit under the rim.

Catalogue of illustrated pottery (Fig. 3.5)

Ditch group 3358, context 3107, ditch 3105, late Iron Age

71 Bead-rimmed jar (CH), fabric R13. Fingertip impressions on the top of the rim
72 Bead-rimmed jar (CH), fabric F06A. Possibly decorated with rusticated decoration

Ditch group 3352, late Iron Age

73 Lid-seated jar (CJ), with notched or frilly rim, fabric R13. Ctx 3235, ditch 3233
74 Slack-shouldered jar (CS), fabric F06A. Ctx 3235, ditch 3233

Ditch group 3346, early Roman

75 Necked jar (CE), fabric F06A, oxidised surfaces. Ctx 3082, ditch 3081
76 Necked jar (CE), fabric F06A. Ctx 3084, ditch 3086
77 Bead-rimmed jar (CH), fabric F06A. Decoration: combed body and stabbed dots on the rim. Ctx 3082, ditch 3081
78 Lid-seated jar (CJ), fabric R13. Ctx 3083, ditch 3086
79 Lid-seated jar (CJ), fabric R13. Ctx 3084, ditch 3086
80 Lid-seated jar (CJ), fabric R13. Ctx 3084, ditch 3086
81 Lid-seated jar (CJ), fabric R13. Ctx 3084, ditch 3086
82 Curving-sided bowl (HC), fabric R13. Ctx 3082, ditch 3081
83 Necked bowl (HD), fabric R06B. Ctx 3083, ditch 3086
84 Plain-rimmed dish (JB), fabric R06C. Ctx 3083, ditch 3086

Ditch group 3364, context 3266, ditch 3260, early Roman

85 Globular jar (CG), fabric F05
86 Bead-rimmed jar (CH) with notched rim, fabric R13
87 Butt-beaker (EA), fabric F09, oxidised surfaces
88 Lid, fabric F06C

Ditch group 3344, context 3054, ditch 3051, early Roman

89 Hemispherical bowl (HC), fabric R18B. Decorated with a thin band of rouletting under a plain zone below the rim, a deeper band of rouletting on the lower wall, and incised roundels. Imitating samian form Drag. 37

Wootton Pond (middle-late Roman)

Four sherds of pottery, weighing 767g, were recovered from context 21003. The small collection comprised two storage jars in shelly ware (R13), a sherd of grog-tempered pottery (F06A) and a sherd of sandy grey ware (R06B). The group as a whole has been assigned to the 2nd century or later.

Site 2 south-western complex (middle-late Roman)

Assemblage composition

Almost 200 sherds, representing 28 vessels or 3.78 EVEs, were recovered from the south-western complex at Site 2 (Table 3.18). Some 70% of the pottery by EVE belonged to contexts assigned middle Roman ceramic dates and phased by stratigraphy to the same period (*c* AD 120-250). The

Table 3.18: Site 2, south-western complex, quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F06A	4	27	1	0.03
F09	4	45		
R01A	1	2		
R01C	2	9	2	0.09
R03	1	7		
R03A	1	32	1	0.15
R04A	1	1		
R04E	1	4		
R05A	4	48	1	0.07
R05B	8	34	2	0.18
R05D	3	12		
R06B	37	571	9	1.87
R06C	10	109		
R07A	1	15	1	0.03
R07B	17	272	4	0.39
R07E	1	27		
R09A	21	270	1	0.1
R12B	16	92	1	0.2
R12C	5	47		
R13	53	1003	5	0.67
R22A	3	13		
P	2	15		
Total	196	2655	28	3.78

Table 3.19: Site 2 , south-western complex, pottery from features phased to the middle Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*E Beaker*	*F Cup*	*J Dish*	*L Lid*	*Total EVE*	*% EVE*
F06A					0.03	0.03	1%
F09						*	
R01A						*	
R01C			0.03	0.06		0.09	3%
R03A	0.15					0.15	5%
R04A						*	
R04E						*	
R05B						*	
R05D						*	
R06B	1.36			0.3		1.66	60%
R06C						*	
R07A				0.03		0.03	1%
R07B				0.18		0.18	7%
R09A	0.1					0.1	4%
R12B		0.2				0.2	7%
R12C						*	
R13	0.33					0.33	12%
Total EVE	1.94	0.2	0.03	0.57	0.03	2.77	-
% EVE	70%	7%	1%	21%	1%	-	-

assemblage was dominated by sandy grey wares (R06B). These were represented as jars and dishes. Oval-bodied necked jars (CD) and plain-rimmed and bead-rimmed dishes (JB) were slightly more numerous than wide-mouthed (CM) and narrow-necked (CC) jars, which were also recorded in the fabric. The wide-mouthed jar and its fabric can be paralleled among the products of the Caldecotte kilns, Milton Keynes (Marney 1989, fig. 30.4; 193), pointing to a local source for the vessel. Shelly ware (R13) also made an important contribution to the assemblage. A necked jar (CD) and storage jar (CN) were represented in this fabric. A plain-rimmed dish in black-burnished ware (R07A) from Dorset was identified; more plain-rimmed dishes were made in black-surfaced fabrics (R07B) of local origin. Oxidised wares accounted for 9% of the assemblage by EVE. The Verulamium region (R03A) was the source of a white-ware jar with a reeded rim, which reached the site in the mid 2nd century, while storage jars in pinked-grogged ware (R09A) arrived from the Alchester-Towcester area (Taylor 2004) from the mid 2nd century onwards. Local oxidised fabrics and Nene Valley parchment ware were present, though in small quantities, and were recorded as body sherds only. The site saw greater quantities of the Nene Valley industry's colour-coated ware (R12B), which first reached the site during the late 2nd and first half of the 3rd century AD, although forms appear to have been restricted to folded beakers. Samian ware arrived from Central Gaul in the 2nd century and East Gaul between *c* AD 140 and 240. No forms were identified in the former, but a cup (Drag. 33) and a dish were recorded in the latter.

Table 3.20: Site 2, south-western complex, pottery from features phased to the late Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*C Jar*	*E Beaker*	*H Bowl*	*J Dish*	*Total EVE*	*% EVE*
F06A					*	
R05A					*	
R05B	0.05	0.13			0.18	20%
R06B	0.16				0.16	18%
R07B				0.21	0.21	24%
R13	0.18		0.16		0.34	38%
R22A					*	
Total EVE	0.39	0.13	0.16	0.21	0.89	-
% EVE	44%	15%	18%	24%	-	-

The level of pottery deposition declined in the late Roman period (*c* AD 250-410); pottery from contexts dated to this period on ceramic and stratigraphic grounds accounted for 24% of the site's assemblage by EVE (Table 3.20). Given the small quantities attributed to this period – less than 1 EVE – it is reasonable to question how representative the group is with regard to supply to the region. The group nevertheless highlights the forms and fabrics that were important during this period. These included sandy grey ware (R06B), although only a single jar was recorded. A plain-rimmed dish and a dropped flanged dish were made in black-surfaced ware (R07B). Shelly ware (R13) was represented by two oval-bodied necked

jars, and a dish with an incipient flange (as Going 1987, type B5.3). A funnel-necked beaker was made in a fine oxidised ware (R05B). Hadham oxidised ware (R22A) was present, but no forms were identified.

Pattern of pottery deposition

Ditch 20235 contained some of the earliest pottery groups recovered from the site. The pottery from the feature was consistent with a 1st-century date. However, the date is provided by a single sherd of a sand and grog-tempered fabric, which could well have been residual. Discounting ditch 20235, ditch 20237 was among the earliest features to be filled. Pottery from it can be attributed with greater certainty to the mid to late 2nd century AD. Pottery helps to confirm a middle Roman date for ditches 20223 and 20224, waterhole 20167, hollow 20049 and pit 20071, although ceramic groups were too broadly dated to demonstrate any changes in the level of deposition within the period. Deposition was generally concentrated inside the enclosure to the north-east and along its ditches. The largest groups of pottery belong to waterhole 20167, which contained a total of 66 sherds. Its mean sherd weight of 22g and 'completeness' value (EVE/MV) of 0.17 EVE were relatively high – the overall site average was 13.5g and 0.13 EVE – suggesting reasonably large sherds that had undergone relatively few episodes of disturbance and relocation. The next largest group of 18 sherds was recovered from hollow 20049. The condition of the pottery was consistent with the open nature of the feature; the mean sherd weight of 7.9g and completeness value of 0.09 EVE suggest that the pottery was subject to a greater degree of disturbance and weathering compared to the pottery from 20167.

Deposition in the late Roman period was concentrated along ditches 20225, 20226 and 20233. Pottery groups were broadly dated, and it is not possible to pinpoint the abandonment of the site to a date before the nominal AD 410, or detect changes in the intensity of deposition within the period. The largest group of pottery, 38 sherds, was collected from section 20014 of ditch 20026. This was somewhat anomalous as the other interventions along the length of the ditch contained a total of just 15 sherds. The mean sherd weight (14.4g) and completeness (0.11 EVE) of the pottery from the ditch is close to the overall site averages, but again reflects the relatively large group in section 20014; the remaining pottery was in poorer condition. Six sherds were collected from ditch 20225, while 11 sherds were recovered from 20233. The condition of the pottery was below the site average; for both features, the mean sherd weight was 8g and the completeness value 0.05 EVE.

In general, the assemblage from the south-western complex at Site 2 is characterised by small context-groups of moderately to highly fragmented and abraded pottery. This is consistent with pottery deposited in marginal areas of settlement (for example, outlying fields or paddocks reserved for livestock) and away from the focus of domestic occupation.

Catalogue of illustrated pottery (Fig. 3.6)

Waterhole 20167, context 20165, middle Roman

90 Narrow-necked jar (CC), fabric R06B
91 Wide-mouthed jar (CM), fabric R06B, as Marney 1989, fig. 30.4.
92 Storage jar (CN), fabric R13
93 Folded beaker (EE), fabric R12B, as Perrin 1999, fig. 61.165-7
94 Plain-rimmed dish (JB), fabric R06B
95 Dish or bowl, fabric R01C

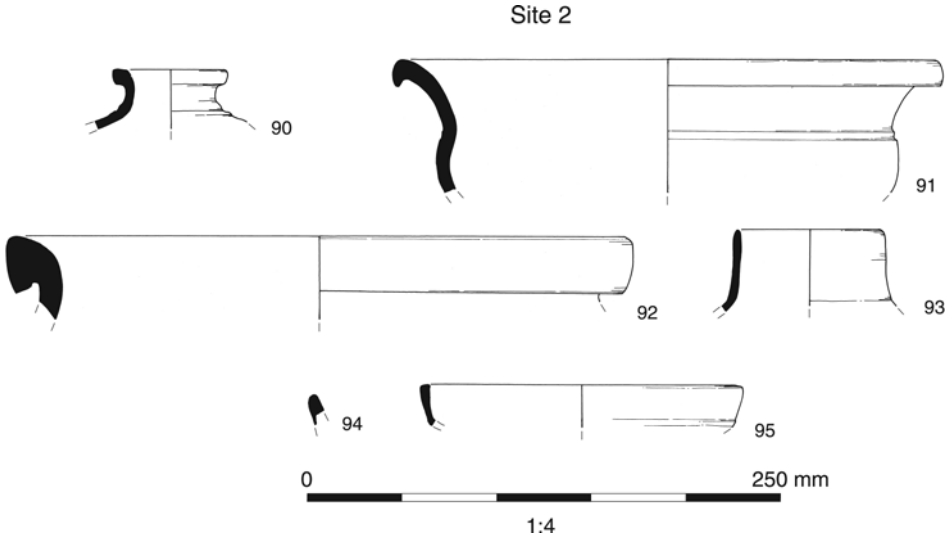


Fig. 3.6 Pottery from Site 2 south-western complex, catalogue nos 90-95

Site 7 (middle-late Roman)

Assemblage composition

Almost 3500 sherds, representing 392 vessels or 59.09 EVEs, were recovered from Site 7 (Table 3.21). The majority of the assemblage (70% of the pottery by EVE) could not be considered in the discussion of composition and pottery supply to the site. This pottery belonged to groups that had a ceramic date that was wider than the stratigraphic phase to which they were assigned, or groups whose ceramic dates were earlier than their stratigraphic phase. Some 10% of pottery by EVE belonged to context-groups phased by pottery and stratigraphy to the middle Roman period (*c* AD 120-250; Table 3.22). Two fabrics dominated: sandy grey ware (R06B) and shelly ware (R13). The latter was more important, representing 35% of the phased assemblage. The fabric was mainly represented by jars, the principal types being lid-seated jars (CJ), oval-bodied necked jars (CD), and wide-mouthed jars (CM). A small jar or beaker (similar to Marney 1989, fig. 25.24) was also recorded. Another reasonably common shelly-ware form was the curving-sided bowl (HC), usually large and with lid-seated, dropped flanged or bead rims. Sandy grey ware took a 20% share of the assemblage by EVE. It was present as dishes and jars only. Dishes (JA/JB) were bead-rimmed, though plain-rimmed and grooved dishes were seen in a fine grey ware (R06C). As with shelly ware, necked jars, wide-mouthed jars and lid-seated jars (type CJ, not as well represented in grey ware as in shelly ware) were recorded. One necked jar had a bifid rim, while in another the neck was very short. A small lid-seated jar, or beaker, was recorded in black-surfaced ware (R07B). Black-burnished ware arrived from Dorset, but in small quantities, and no forms were recognised.

Oxidised and white wares accounted for 18% of the phased assemblage. A cup-mouthed flagon was identified in a fine sandy white ware (R03), possibly from the Nene Valley. Certain Nene Valley products arrived in the form of a carinated bowl (HA) and hemispherical bowl with flanged rim (HC) in parchment ware (R12C). A bowl with a reeded rim and mortarium with a stubby flange and high bead (Davies *et al.* 1994, fig. 40.213) in Verulamium-region white ware (R03A/R33), pink-grogged ware (R09A) from the Alchester-Towcester area, and a necked bowl or wide-mouthed jar (HD) in a local gritty orange fabric were also encountered. Other oxidised wares arrived from the Oxford region (R11) and local sources (R03B and R05A).

Fine wares were restricted to bag-shaped and folded beakers in Nene Valley colour-coated ware (R12B), and Hadham oxidised ware, although no form was recognised in the latter. Samian wares accounted for 12% of the phased assemblage. A Drag. 36 dish arrived from South Gaul, but, dating to the later 1st century AD, this is likely to have been residual. Two Drag. 31 dishes, a Drag. 31R rouletted dish, a Curle 11 flanged bowl, and decorated bowls Drag. 30 and 37 were recorded in Central Gaulish samian ware, which reached the site during the 2nd century. Two dishes – Drag. 31 and Drag. 32, both dating from the late 2nd to mid 3rd century – were present in East Gaulish samian ware. A body sherd from a decorated bowl, probably Drag. 37, was identified as Pulborough samian (R01D) on account of its overfired fabric (cf. Tomber and Dore 1998, 186).

Table 3.21: Site 7, quantification of fabrics

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
F06A	5	30		
F16	4	99		
F18	1	24		
R	1	1		
R01	5	6		
R01A	45	1126	13	1.98
R01B	27	154	6	0.59
R01C	19	644	5	0.61
R01D	1	5		
R02	4	61	1	0.16
R03	13	405	6	2.03
R03A	45	1152	4	2.23
R03B	24	309	3	0.24
R04A	4	6		
R05A	52	501	2	0.2
R05B	105	437	8	1.52
R05D	17	96	1	0.29
R06A	24	355	2	0.21
R06B	702	10674	87	12.61
R06C	272	2348	35	5.97
R06H	1	14		
R06V	4	71	2	0.3
R07A	9	54	2	0.11
R07B	257	2927	22	3.62
R07G	24	735	6	1.42
R09A	19	1580		
R11	1	3		
R11D	14	420	2	0.25
R11E	9	433	2	0.26
R11F	6	216	2	0.17
R12A	15	141	1	0.12
R12B	156	1351	9	2.75
R12C	59	549	4	0.64
R13	1448	35499	158	18.46
R19A	1	554		
R20	4	175	2	0.3
R22A	3	7		
R22B	15	572	2	0.7
R22C	15	395	2	0.7
R22D	7	26	1	0.2
R33	1	239	1	0.1
R36	9	132	1	0.35
R38	12	30		
P	16	146		
Total	3485	64703	392	59.09

Table 3.22: Site 7, pottery from features phased to the middle Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*B Flagon*	*C Jar*	*E Beaker*	*H Bowl*	*J Dish*	*K Mortarium*	*Total EVE*	*% EVE*
F06A							*	
R01A				0.18	0.17		0.35	6%
R01B					0.05		0.05	1%
R01C					0.32		0.32	5%
R03	0.21						0.21	4%
R03A				0.07			0.07	1%
R03B							*	
R05A							*	
R06B		0.96			0.24		1.2	20%
R06C					0.61		0.61	10%
R07A							*	
R07B			0.12				0.12	2%
R09A							*	
R11							*	
R12B			0.08				0.08	1%
R12C				0.41			0.41	7%
R13		1.62	0.08	0.33			2.03	35%
R22A							*	
R33						0.1	0.1	2%
R36				0.35			0.35	6%
Total EVE	0.21	2.58	0.28	1.34	1.39	0.1	5.9	-
% EVE	4%	44%	5%	22%	23%	2%	-	-

Pottery from context-groups dated by the ceramics and stratigraphy to the late Roman period (*c* AD 250-410) accounted for 20% of the entire assemblage (Table 3.23). A much wider range of forms and fabrics, compared with the middle Roman phase, is evident. Sandy grey wares continued to dominate the assemblage, contributing 30% to the group by EVE, although the fine fabric (R06C) increased its share, while that of the sandy fabric decreased (R06B). There were changes in the proportions of vessel classes, too. Dishes became more important at the expense of jars; well over half of all vessels in sandy grey ware were dishes, usually dropped flange or plain-rimmed types. In contrast, too, with the middle Roman phase, no lid-seated jars were recorded, only oval-bodied necked jars and wide-mouthed jars in fabric R06B and narrow-necked jars or flasks in R06C. Other forms included carinated and curving-sided bowls in R06B, and a funnel-necked beaker and 'jar-beaker' in R06C. A sandy grey ware candlestick (MB) was also recorded. The grey wares were largely, if not totally, of local origin. Other grey wares reached the site from the Nene Valley (R06A), the Verulamium region (R06V), and Hadham (R22C/D). With the exception of a plain-rimmed dish in fabric R22C, no forms were identified.

Shelly wares (R13) contributed a significant 24% share of the phase by EVE, although this is a smaller amount than was present in the middle Roman period. Lid-seated jars remained the principal form. Oval-bodied necked jars and large curving-sided bowls with dropped flange rims were also important. Storage jars and a 'jar-beaker' were also recorded.

Black-burnished ware from Dorset was slightly better represented in the late Roman period, compared with the middle Roman period. A plain-rimmed dish was recorded. The locally-made black-surfaced ware (R07B) also increased its proportion. Plain-rimmed dishes were available in the fabric, along with oval-bodied necked jars and a lid-seated jars. Another plain-rimmed dish was seen in fabric R07C.

Oxidised and white wares took a 13% share of the assemblage, a slight drop from the middle Roman phase. A funnel-necked beaker in a fine sandy white ware and a bowl may be attributed to the Nene Valley, but the identification is uncertain. A reed-rimmed bowl in a gritty white ware (R03B) is possibly from the Verulamium region, and is likely to have been residual. Plain-rimmed dishes and a (residual) bag-shaped beaker were available in a fine oxidised ware (R05B), and a ring-necked flagon (again probably residual) was recorded in a sandy orange fabric (R05A). A Nene Valley parchment ware flanged dish or bowl was also present. Storage jars in pink-grogged ware (R09A) continued to arrive from the Alchester-Towcester area.

In terms of fine wares, Oxford red colour-coated ware (R11D) joined Nene Valley colour-coated ware (R12B) from the late 3rd century onwards. Two forms (other than mortaria) were identified in the former: a flanged dish (Young 1977, type 47) imitating samian form Drag. 36, and a deep bead-

Table 3.23: Site 7, pottery from features phased to the late Roman period. Quantification by EVE. Asterisks denote fabrics that are present but have no surviving rims

Fabric	*B Flagon*	*C Jar*	*E Beaker*	*H Bowl*	*J Dish*	*K Mortarium*	*L Lid*	*M Misc.*	*Total EVE*	*% EVE*
R01									*	
R01A					0.06				0.06	<0.5%
R01B					0.05				0.05	<0.5%
R01C			0.11		0.07				0.18	1%
R03			1.03	0.03					1.06	9%
R03A									*	
R03B				0.06					0.06	<0.5%
R04A									*	
R05A	0.1								0.1	1%
R05B			0.1		0.08		0.04		0.22	2%
R05D									*	
R06A									*	
R06B		0.58		0.08	1.37			0.03	2.06	17%
R06C		0.55	0.67		0.29				1.51	13%
R06H									*	
R06V									*	
R07A					0.08				0.08	1%
R07B		1.2			0.18				1.38	11%
R07G					0.19				0.19	2%
R09A									*	
R11D					0.25				0.25	2%
R11E									*	
R11F						0.17			0.17	1%
R12A									*	
R12B	0.29		1.03						1.32	11%
R12C					0.05				0.05	<0.5%
R13		2.47	0.09	0.32					2.88	24%
R20						0.1			0.1	1%
R22C					0.35				0.35	3%
R22D									*	
Total EVE	0.39	4.8	3.03	0.49	3.02	0.27	0.04	0.03	12.07	-
% EVE	3%	40%	25%	4%	25%	2%	<0.5%	<0.5%	-	-

rimmed dish (Young 1977, type C44/45) imitating samian form Drag. 31. Fabric R12B was available as a funnel-necked pentice beaker, a bag-shaped beaker, and as a spouted jug. The Gaulish imports, Central Gaulish 'Rhenish' ware beaker (R04A) and samian from South, Central and East Gaul, were recovered as residual occurrences. A Drag. 18/31R dish was recorded in fabric R01A, while a Drag. 36 dish was seen in fabric R01B. East Gaulish samian potters, probably from Rheinzabern, were responsible for a Drag. 31 dish and Drag. 72 beaker. Body and base sherds representing a Drag. 18/31 dish, Drag. 33 cup (a product of the Antonine potter, Quintus), and decorated bowl Drag. 30 were recorded in fabric R01A, while a Drag. 30 bowl was present in fabric R01C. The numbers of mortaria increased in the late Roman period. A bead-and-flanged mortarium (Young 1977, type C100) arrived from the Oxford region (R11F). A wall-sided mortarium was available in a Nene Valley fabric (R11A), while a hammerhead mortarium reached the site from the Mancetter-Hartshill potteries (R20).

Funerary pottery

Late Roman inhumation grave 15230 contained a single deliberately deposited pot (SF 15003). This was a funnel-necked, pentice-shouldered beaker in Nene Valley colour-coated ware (fabric R12B). Single body sherds of black-burnished ware and sandy grey ware were also recovered from the grave.

Pattern of pottery deposition

In the 2nd century pottery was deposited across the site. Over half the assemblage by sherd count was recovered from ditches. Ceramic groups were, however, relatively small; on average, 29 sherds were collected from each ditch. Ditch 15366 received much of the pottery, some 180 sherds. Another large group of 89 sherds was collected from oval enclosure 15742. Pottery groups of fewer than 50 sherds were recovered from the remaining 2nd-century ditches. Some 24% by sherd count of the pottery

from features phased to the 2nd century was recovered from pits. Pit groups contained on average 18 sherds. The largest pit group was from 15333 at the eastern end of the site, which contained 118 sherds. The remaining pit groups contained fewer than 40 sherds. A relatively large group of 150 sherds was recovered from waterhole 15352; other feature types that received pottery in the 2nd century included quarry pits (a total of 52 sherds was recovered) and postholes (just eight sherds were recorded). A small amount of pottery (31 sherds) was deposited in features phased to the late 2nd-early 3rd century; much more pottery, over 2000 sherds, was deposited in features phased to the later 3rd and 4th centuries. Ditches and gullies accounted for 9% of this pottery by sherd count, with the bulk (198 sherds) coming from gully 15731. Pottery from pits contributed 2% to the late Roman assemblage. However, most of the pottery (85% by count) was recovered from three waterholes, 15185, 15735 and 15958, although 15735 was responsible for the largest proportion of this, with 1400 sherds being recovered.

The condition of the pottery was good on the whole. Pottery from ditches and waterholes was characterised by large sherds; the mean sherd weight (weight / sherd count) was 23.6g for both feature types, which compares with the mean for the entire Site 7 assemblage of 18.5g. Pottery sherds from pits and quarry pits was slightly above the site average, with a mean of 19g, while that from gullies was below average at 15.2g, as was the pottery from natural and post-Roman features (10.9g). The generally well-preserved character of the pottery suggests that it had not undergone repeated episodes of disturbance and deposition, but had been deposited in its ultimate locations reasonably close to areas of original discard and settlement activity. The smaller means from natural and post-Roman features are to be expected, as the pottery is likely to have lain exposed to the elements and subsequent disturbance for longer periods of time, or had been ultimately deposited and sealed some considerable time after original discard.

That said, analysis of the completeness statistic (EVE / vessel count; 1 EVE representing a complete vessel or assemblage) across feature types reveals a greater degree of difference between them. The pottery from ditches and waterholes remains the best preserved, with completeness values of 0.17 EVE and 0.18 EVE respectively (comparing with an overall site mean of 0.15 EVE). As with the mean sherd weight, these values suggest that the pottery derived from a similar process or sequence of deposition from original to final disposal. The pottery from pits and quarry pits was, in contrast, rather more poorly preserved, having a completeness value of 0.11 and 0.07 EVE respectively. These point to relatively small sherds, each around 10% of the whole rim, and potentially a sequence of deposition after original breakage different from that of ditches and waterholes. Gullies, too, contained pottery with a small completeness value – 0.09 EVE. In some cases of deposition in pits and gullies, the pottery may have been fairly incidental to the act of deposition, being carried accidentally in soil or other material to be dumped. The condition of the pottery from ditches and waterholes suggests that deposition in those features was more deliberate, possibly involving the deposition of freshly-broken pottery from household dumps or a form of structured deposition. All complete or near-complete vessels were from ditches and waterholes. Two jars, two beakers and a bowl, all complete or near-complete, were collected from waterhole 15735. Waterhole 15185 contained two more near-complete beakers, while a fourth near-complete beaker was recovered from enclosure ditch 15742. In addition, these features contained the complete bases of dishes, beakers and jars, each representing a substantial proportion of the vessel. These factors reinforce the suggestion that areas of pottery use and original discard were located very close to features from which pottery was recovered.

Like the funerary pottery from Site 3, the pottery from grave 15230 in Site 7 was highly fragmented, having the lowest low mean sherd weight among Site 7 features of 5.25g, but, due to being deposited as a whole vessel, the highest completeness value of 0.9 EVE.

Pottery use

A comparison of vessel classes shown in Tables 3.22 and 3.23 reveal that jars were dominant throughout the middle and late Roman periods, suggesting that they remained critical to important domestic functions, such as cooking and storage. However, jars were challenged as the dominant form by the emergence of dishes and mortaria, which also found a place in the kitchen as food preparation vessels. Additionally, dishes could be used as dining vessels. There are two main points of difference between the middle and late Roman assemblages. Firstly, beakers, used as drinking vessels, are better represented in the late Roman period. This reflects the rise of the Nene Valley pottery industry in the 3rd and 4th centuries, the chief product of which was the colour-coated beaker. This reached the Milton Keynes/Bedford region in quantity, and was also imitated by local potters. In contrast, bowls were better represented in the middle Roman period. These included vessels in shelly ware, which was present in higher quantities in the middle Roman period compared with the late Roman period, and vessels in samian wares, which were not imported after the mid 3rd century.

Evidence for cooking in the form of external or internal burning was recorded on 18 vessels. These included eight shelly ware (R13) vessels, which were exclusively lid-seated (CJ) or necked (CD) jars. The burning affected all parts of the external surfaces, but was usually concentrated on the shoulder, neck or rim. On one jar (no form identi-

fied), there was a thickly-encrusted deposit of charcoal or other burnt matter around the upper part of the vessel. A near-complete necked jar in black-surfaced ware (R07B) had been heavily used as a cooking pot, possibly for boiling water. It had a thick burnt deposit on its external surface, and a limescale-like deposit across its internal surface. Three plain-rimmed dishes (JB) in locally-produced grey ware (R06C/B) and Hadham reduced ware (R22C) were also burnt. In two vessels, the burnt deposit was on the external surface of the base. A Drag. 36 dish in Central Gaulish samian ware (R01A) had been burnt before breakage, but the piece was small and the precise pattern of burning could not be discerned. A funnel-necked globular beaker in a sandy white ware (R03) had been burnt externally around its girth, and a bead-rimmed bowl, also in fabric R03 was burnt extensively across the base and lower wall both externally and internally. A burnt deposit was recorded around the lower half of a bowl (reminiscent of Marney 1989, fig. 29.1) in fabric R06B. Two white-ware mortaria, one from the Verulamium region (R33) and the other (Young 1977, type M18) from Oxford (R11E), were both burnt across the flange and rim, as if inverted over cooking vessels set on the hearth in the manner of a *testum*. In this form of cooking, reconstructed by experimental cooking from descriptions in *Apicius*, an oven is created by heaping hot embers on top of and around a vessel inverted and placed over an upright vessel (Grocock and Grainger 2006, 77-82).

Internal wear from use was evident on three vessels, all in samian ware. A dish (Drag. 36) in Central Gaulish samian ware (R01A) was worn across the base. The wear extended up the side, terminating around the vessel neatly and level with the bottom of the flange. A small flanged bowl, probably Ritterling 1, in South Gaulish samian ware (R01B) was worn across the centre of the base. A third vessel, from Central Gaul, was worn across the base and vessel wall. The vessel was not identified to type, but it is likely to be a bowl. Something of the longevity of use or value of the pottery is hinted at by repairs made to the vessel. Two vessels, both in samian ware, have evidence of repair. One, a Drag. 18 platter from South Gaul, has a small perforation, which was probably a repair hole to take a lead rivet. The base of a Drag. 18/31 dish, from Central Gaul, has a repair hole near its footring. A third vessel, a beaker or small jar in sandy grey ware (R06B) had a single perforation, made after firing, through the centre of the base. This is unlikely to relate to repair, but rather a change of function from a containing vessel to a use requiring drainage.

Returning to shelly ware R13, an interesting aspect of the fabric is its surface colour. Some vessels are oxidised or a yellow-brown colour, while other vessels are reduced or black. Examining the entire assemblage, it is possible to detect an association between surface colour and form. Although most vessels were available in both oxidised or reduced versions, necked jars (CD) and lid-seated jars (CJ), as well as the minor forms of 'jar-beaker' and dish, tend to be more strongly associated with black surfaces, while all wide-mouthed jars (CM), storage jars (CN), and large curving-sided bowls (HC), usually with dropped-flange rims, are yellow-brown (Table 3.24). The association is statistically significant (the χ^2 value obtained from the counts in Table 3.24 – excluding unspecified jars and bowls and types J and M – exceeds the critical value of the χ^2-distribution at the 5% level with 9 degrees of freedom). This suggests that surface colour was not an accidental product of firing, and that potters were to a large extent choosing the surface colour of their vessels on the basis of form. Potters deemed a reduced surface appropriate for some vessels; for other forms an oxidised surface was preferred. The reason for this choice appears to relate to function. The evidence of burning and scorching identifies shelly ware necked jars and lid-seated jars as cooking vessels. The tradition of using reduced fabrics (whether sandy, grog-tempered or shelly) for jars was long-established. The jars of the middle Iron Age assemblage from Site 4 (Trench 54) were generally grey or black, as were the jars from the late Iron Age to early Roman assemblage from the north-eastern complex at Site 2. In contrast, oxidised surfaces tended to be reserved for finer vessels, such as beakers and bowls. Potters making shelly-ware cooking jars were likely to maintain this distinction, as the cooking pots they saw around them and used were usually grey or black, while the dining forms were orange or white. Shelly ware with reduced surfaces was equivalent to sandy grey ware. And with each new batch of predominantly reduced-ware jars, the association between surface colour and function was in turn reinforced. Conversely, storage jars, wide-mouthed jars, and bowls were generally not used for cooking, but were instead vessels meant for display (for example, in the corner of a room holding grain, or on the table for communal dining). The oxidised

Table 3.24: Comparison of the proportions of vessels in shelly ware (fabric R13) by surface colour, expressed as percentage of the number of vessels (MV) per type

Type	*Oxidised*	*Reduced*	*No. vessels*
C Jar (unspecified)	60%	40%	10
CD Oval-bodied necked jar	36%	64%	33
CJ Lid-seated jar	24%	76%	29
CM Wide-mouthed jar	100%		3
CN Storage jar	83%	17%	23
EH Jar-beaker		100%	2
H Bowl	100%		1
HC Curving-sided bowl	50%	50%	8
JA Dish		100%	1
M Misc.		100%	1
No. vessels	52	59	111

shelly fabric was the equivalent to other oxidised fabrics in which display vessels (including flagons, beakers, bowls and dishes) were typically made.

Catalogue of illustrated pottery (Figs 3.7-3.11 and 2.127)

Pit 15710, context 15653, mid Roman (2nd century)

96 Bowl (Drag. 37), fabric R01A. The two fragments show, on the left-hand side, a pipe-playing satyr, and, facing him, a probable Hercules figure (what appears to be a lion skin, an attribute of Hercules, is draped over his right arm). A charioteer is shown to his right

Waterhole 15735, late Roman (3rd-early 4th century)

97 Amphora or large flagon, fabric R03A. Ctx 15556, cut 15553

98 Disk-necked flagon (BA), fabric R05B. Ctx 15740

99 Jug (BC), fabric R12B. Ctx 15556, cut 15553

100 Flagon or jug (BC), fabric R12B. Ctx 15478, cut 15476

101 Base and body of flagon. Fabric R06C; very fine grey ware, with dark grey core and internal surface, and lighter blue-grey external surface. Slightly powdery to the touch. Possibly Marney 1989, fabric 25/30. Ctx 15740

102 Necked, oval-bodied jar (CD), fabric R06B. Ctx 15740

103 Necked, oval-bodied jar (CD), fabric R13, reduced external surfaces. Ctx 15556, cut 15553

Fig. 3.7 Pottery from Site 7, decorated samian bowl (Drag. 37), catalogue no. 96

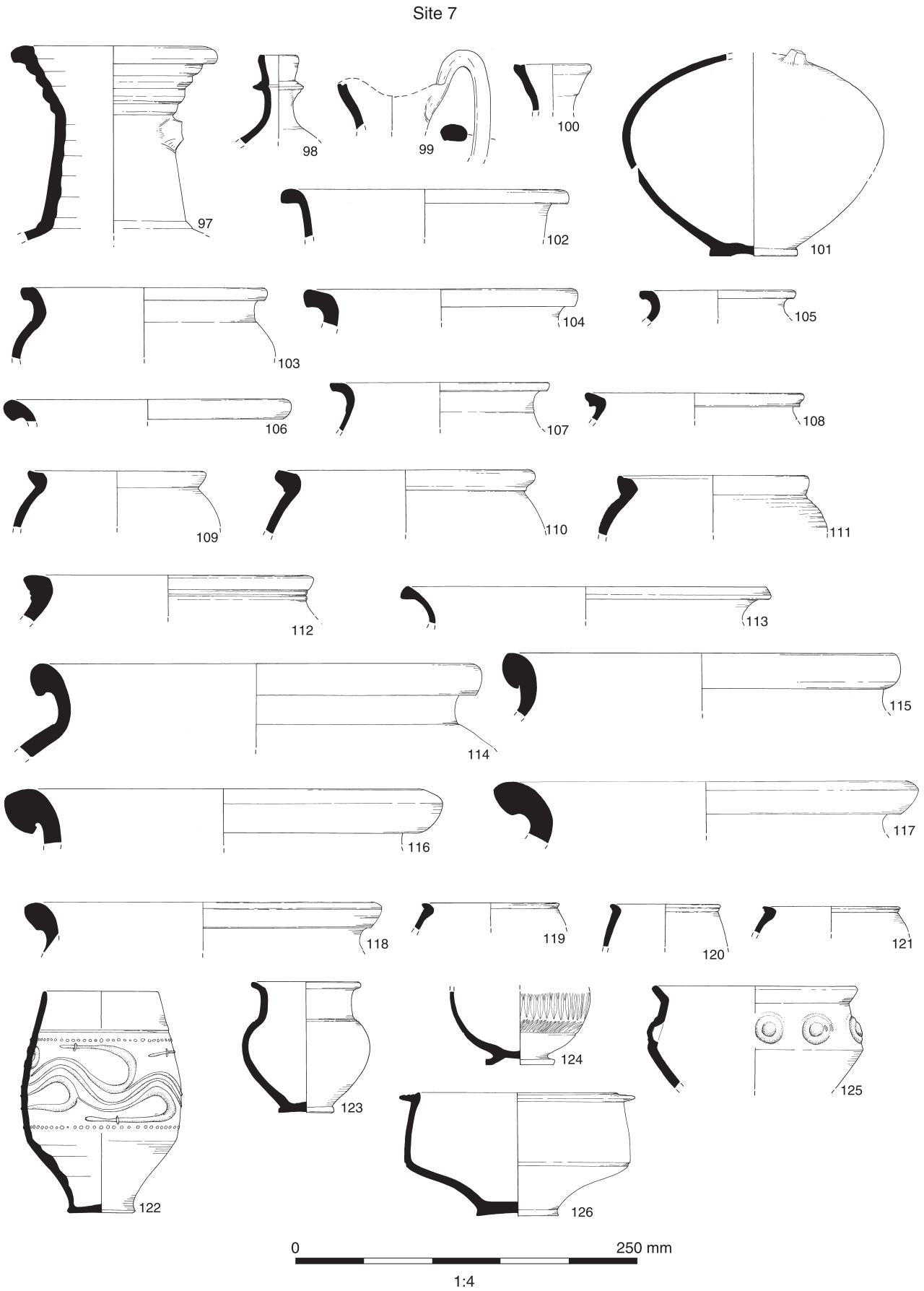


Fig. 3.8 Pottery from Site 7, catalogue nos 97-126

104 Necked, oval-bodied jar (CD), fabric R13, reduced external surfaces. Ctx 15478, cut 15476
105 Necked, oval-bodied jar (CD), fabric R13, oxidised surfaces. Ctx 15478, cut 15476
106 Necked, oval-bodied jar (CD), fabric R13, reduced external surfaces. Ctx 15478, cut 15476
107 Necked, oval-bodied jar (CD), fabric R13, reduced external surfaces. Ctx 15740
108 Necked, oval-bodied jar (CD) with bifid rim. Fabric R07B; gritty off-white fabric with smoky-black external surface. Ctx 15740
109 Lid-seated jar (CJ), fabric R13. Reduced external surfaces. Ctx 15556, cut 15553
110 Lid-seated jar (CJ), fabric R13. Reduced external surfaces. External burnt deposit under rim. Ctx 15478, cut 15476
111 Lid-seated jar (CJ), fabric R13. Reduced external surfaces. Ctx 15740
112 Lid-seated jar (CJ), fabric R13. Reduced external surfaces. Ctx 15740
113 Wide-mouthed jar (CM), fabric R06B. Ctx 15556, cut 15553
114 Storage jar (CN), fabric R13. Oxidised surfaces. Ctx 15556, cut 15553
115 Storage jar (CN), fabric R13. Oxidised surfaces. Ctx 15478, cut 15476
116 Storage jar (CN), fabric R13. Oxidised surfaces. Ctx 15478, cut 15476
117 Storage jar (CN), fabric R13. Oxidised surfaces. Ctx 15740
118 Storage jar (CN), fabric R13. Oxidised surfaces. Ctx 15740
119 Bag-shaped beaker (EC), fabric R05B. Ctx 15478, cut 15476
120 Bag-shaped beaker (EC), fabric R05B. Ctx 15740
121 Bag-shaped beaker (EC), fabric R05B. Ctx 15740
122 Bag-shaped beaker (EC), fabric R12B. Near-complete vessel. Ctx 15740
123 'Jar-beaker' (EH). Beaker-sized high-shouldered necked jar. Complete vessel. Fabric R06C. Ctx 15740
124 Beaker (Drag. 72) with cut-glass decoration. Fabric R01C (Rheinzabern). Ctx 15556, cut 15553
125 Carinated bowl (HA) with impressed-boss decoration and mica-dusting. Fabric R02. Ctx 15556, cut 15553
126 Carinated bowl (HA) with reeded rim. Fabric R03B. Ctx 15556, cut 15553
127 Carinated bowl (HA), fabric R06B. Ctx 15478, cut 15476
128 Near-complete curving-sided bowl (HC) with bead rim, fabric R03. Burnt externally and internally across the base and lower wall. Ctx 15556, cut 15553

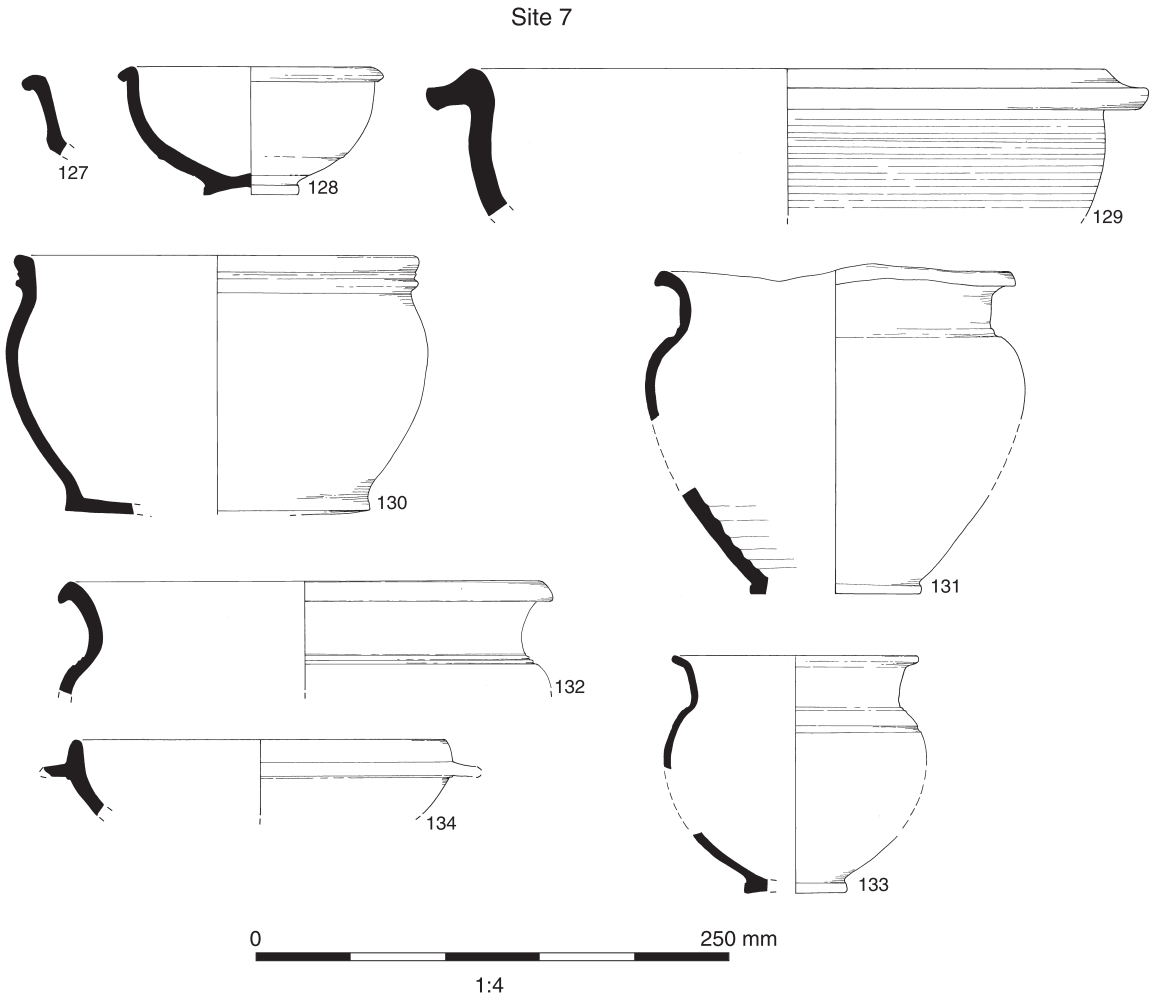


Fig. 3.9 Pottery from Site 7, catalogue nos 127-134

Fig. 3.10 Pottery from Site 7, decorated samian bowl (Drag. 30), catalogue no. 135

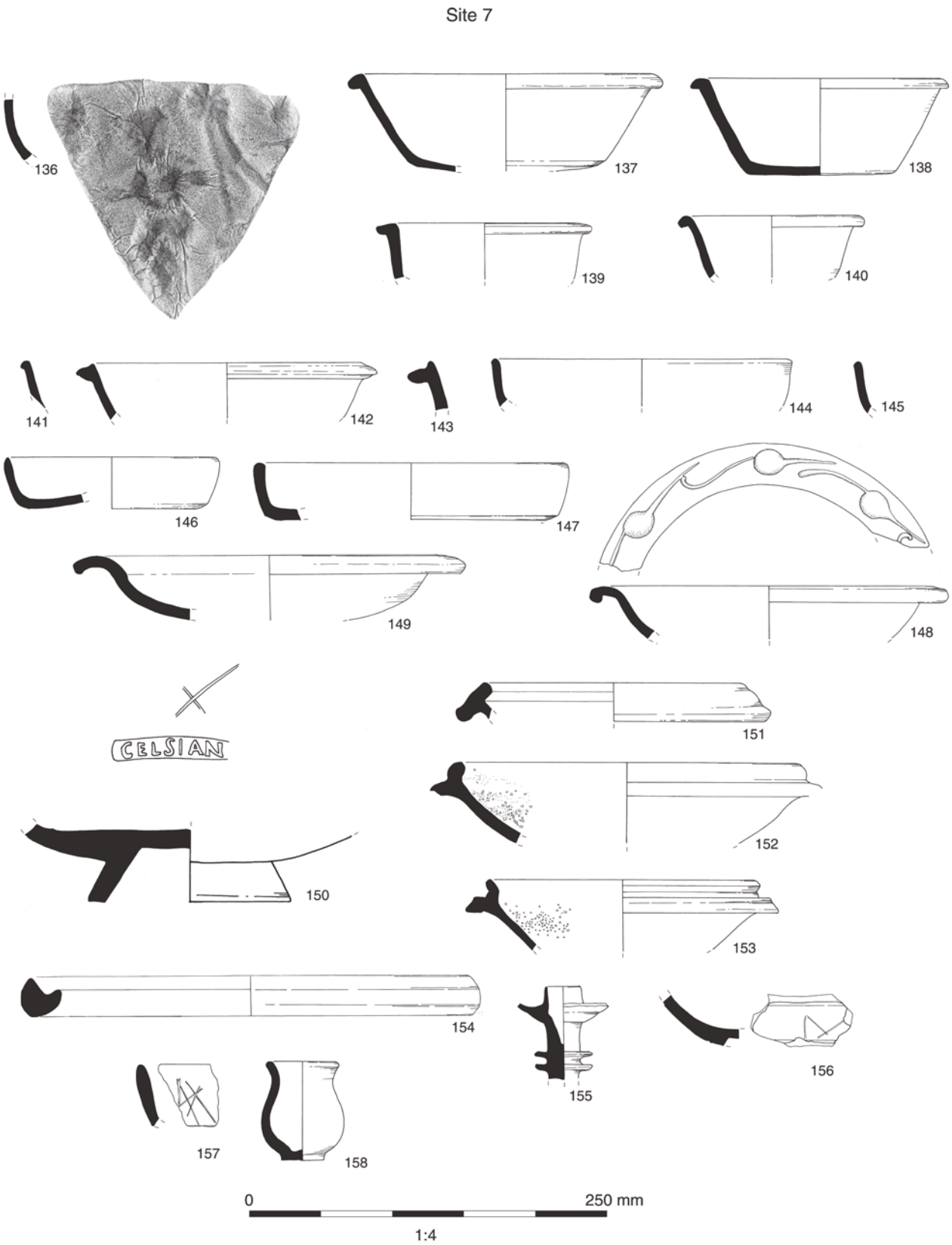


Fig. 3.11 Pottery from Site 7, catalogue nos 136-158

129 Curving-sided bowl (HC), fabric R13. Reduced surfaces. Ctx 15478, cut 15476
130 Curving-sided bowl (HC), fabric R06B. Form and fabric recalls Marney 1989, fig. 29.1. ?Caldecotte product. Near-complete vessel. Burnt deposit on external surface of lower wall. Three notches scored after firing on external junction of wall and base. Ctx 15844, cut 15755
131 Necked bowl (HD), fabric R06B. Rim warped before or during firing; probably a local product. Ctx 15740
132 Necked bowl (HD), fabric R06B. Ctx 15740
133 Necked bowl (HD), with grooved globular body. Fabric R06B. Ctx 15556, cut 15553
134 Flanged bowl (Curle 11), fabric R01C. Ctx 15740
135 Decorated bowl (Drag. 30) from Les Martres-de-Veyre, fabric R01A. Four warrior figures are extant. On the far left, only the edge of a shield and tip of a spear survive. A figure holding a similarly positioned spear and shield has been recorded on a bowl by Donnaucus (Terrisse 1968, plate 32, no. 1056). To the right of this figure is a nude warrior holding a sword and shield. The type (Oswald 1936-7, O.210) is used by a number of potters, including X-2 and Ioenalis (Stanfield and Simpson 1958, plate 38, no. 443; Terrisse 1968, plate 38, nos 1504 and 1012). The figure of a man felled by a spear is depicted to the right. He wears a kilt and arm and neck ornaments, and recalls a figure, lacking the spear, on an Ioenalis-style bowl (Terisse 1968, plate 38, no. 802). To his right is a little naked figure (O.688) that has also been recorded on bowls in the style of Ioenalis (Terrisse 1968, plate 38, no. 1019). The ornamentation includes a pelta, which is used on bowls by Donnaucus (Stanfield and Simpson 1958, plate 44, no. 513), those decorated in the Ranto-Medetus style (potters X8-9; Stanfield and Simpson 1958, plate 29, no. 345), and bowls in the style of Ioenalis (Terrisse 1968, plate 38, no. 1019). The basal wreath is similar to those of Ioenalis style (Terrisse 1968, plate 38, no. 354). Date: *c* AD 100-130. Ctxs 15556, 15478 and 15740
136 Body sherd from Drag. 37 decorated bowl made at Lezoux, fabric R01A. The figure of Venus is shown, and attested on bowls of Cinnamus ii (eg Stanfield and Simpson 1958, plate 160, no. 35). Date: *c* AD 150-180. Ctx 15740
137 Bead-rimmed dish (JA), fabric R06B. Ctx 15740
138 Bead-rimmed dish (JA), fabric R22B. Ctx 15740
139 Bead-rimmed dish (JA), fabric R13. Reduced surfaces. Ctx 15740
140 Bead-rimmed dish (JA), fabric R06B. Ctx 15478, cut 15476
141 Bead-rimmed dish (Drag. 31), fabric R01C. Ctx 15478, cut 15476
142 Dropped-flange dish (JA), fabric R06B. Ctx 15478, cut 15476
143 Dropped-flange dish (JA), fabric R06B. Ctx 15478, cut 15476
144 Plain-rimmed dish (JB), fabric R06C. Ctx 15740
145 Plain-rimmed dish (JB), fabric R06C. Ctx 15740
146 Flanged dish (Drag. 36), fabric R01A. Worn internally through use. Ctx 15740
147 Flanged dish (JB), Young 1977, type C47. Fabric R11D, a little sandier than is typical of Oxford red colour-coated ware. Ctx 15748, cut 15476
148 Plain-rimmed dish (JB), fabric R06C. Burnt deposit on external surface. Ctx 15556, cut 15553
149 Plain-rimmed dish (JB), fabric R22C. Ctx 15740
150 Footring base from dish, fabric R01A. Stamped CELSIAN[..] – Celsianus, a Lezoux potter working c AD 160-200+. X-graffito next to stamp. Ctx 15699, cut 15703
151 Hammerhead mortarium (KC), fabric R20. Ctx 15478, cut 15476
152 Mortarium with bead rim and stubby flange (KE), probably Young 1977, type M17. Fabric R11E. Ctx 15556, cut 15553
153 Mortarium with bead rim and stubby flange (KE), Young 1977, type C100. Fabric R11F. Ctx 15478, cut 15476
154 Ring with L-shaped cross-section. ?Triple vase ring. Fabric R13, oxidised surfaces. Ctx 15740
155 Candlestick (MB). Fabric R06B, with distinctive dark grey core, medium/fine sandy fabric, lighter grey surfaces and white/grey margins. Ctx 15479, cut 15476

Waterhole 15352, context 15516, mid Roman (2nd century)

156 Bowl, fabric R01A. Worn internally across the base and wall. X-graffito scored after firing on the wall of the vessel

Waterhole 15185, context 15189, late Roman (3rd-early 4th century)

157 Plain-rimmed dish (JB), fabric R07G. Graffito incised after firing on the wall of the vessel. [...]A or complex X-graffito

Enclosure ditch 15745, context 15648. cut 15647, late Roman (3rd-early 4th century)

158 Small globular beaker (ED), complete. Fabric R03, fine sandy white ware

Fig. 2.127
Inhumation grave 15230, late Roman (3rd-early 4th century)

159 SF15003. Grave good. Funnel-necked, pentice-shouldered beaker (ED), fabric R12B.

Site 6 (Trench 97-99)

Fourteen sherds, weighing 32g, were recovered from Site 6 (Trench 97-99). With the exception of three post-medieval sherds, all the pottery was Iron Age or Roman and collected as incidental or residual occurrences from unphased natural features or deposits dated to the 18th or 19th century. The small assemblage included body sherds in grog-tempered fabrics (F06A, F09 and F22), a fine shelly fabric (F16B), and a fragment of Roman-period sandy grey ware (R06B), which, taken as a whole, spans the middle Iron Age to Roman period. The very low mean sherd weight of 2g is consistent with pottery that has been subject to a high degree of weathering and redeposition.

Discussion: the pottery in its wider context

Summary of ceramic phasing

The pottery indicated occupation along the A421 Improvements that spanned the middle Iron Age to the end of the Roman period. The earliest sites

within this broad period – Site 4 (Trench 54), Site 4 (Trench 61) and Site 6 (Trench 105) – were grouped together in the central part of the scheme. Pottery was deposited here in the middle Iron Age (*c* 400-100 BC). It is not possible to determine when in the middle Iron Age the pottery was deposited, but the presence at Site 4 (Trench 54) of a tripartite-angled jar in a coarse shell fabric (F16), and flint-tempered fabric, both typical of the early Iron Age (cf. Wells 2008a, 181), potentially takes occupation to the period of the early-middle Iron Age transition. However, such material is rare, and the pottery otherwise fits more comfortably within the middle Iron Age. The pottery suggests that occupation at Site 4 (Trench 54) was abandoned by *c* 100 BC, although a relatively small number of bead-rimmed and necked jars, necked and globular bowls, and a platter suggest that the site saw limited deposition in the later 1st century BC or 1st century AD. The pottery from Site 4 (Trench 61) and Site 6 (Trench 105) potentially extended into the late Iron Age (*c* 100 BC-AD 43), but the low quantities and poor condition of the pottery offered by those sites prevented a late Iron Age phase from being identified. There was, however, pottery deposition in the late Iron Age at Site 5, with activity continuing there until the late 1st century AD. Contemporaneous activity was recorded at the north-eastern complex at Site 2 at the southern end of the improvement scheme route. Middle Iron Age bowls were recorded here, too, but these suggest only minor activity before the 1st century BC. The level of pottery deposition at Site 2 increased during the second half of the 1st century AD, falling sharply after *c* AD 100. Pottery continued to be deposited as late as the 4th century AD, but this material is likely to have derived from the later Roman settlement at the neighbouring the south-western complex at Site 2. The ceramic dating suggests that the main period of activity at the north-eastern complex at Site 2 was contemporary with Berry Farm Borrow Pit, located towards the north end of the route, and Site 3, some 2.5 km north-east of the north-eastern complex at Site 2; all saw deposition in the late Iron Age and early Roman period. There was some deposition in the mid or late 2nd century at the north-eastern complex at Site 2, but otherwise the focus of occupation had shifted again by this time to the south-western complex at Site 2 and to Site 7, at the northern end of the scheme route. The earliest context group at the south-western complex at Site 2 dates to the period AD 100-160, but this amounts to just three sherds, which cannot reliably be used to indicate deposition in the first half of the 2nd century. It is more likely that the earliest deposition dates to the second half of the 2nd century, when much more pottery was deposited. The level of pottery deposition declined at the south-western complex at Site 2 in the late Roman period (*c* AD 250-400), but increased at Site 7, relative to the amount of pottery assigned to the mid Roman period at the site. The latest pottery at Site 7 pointed to 4th-century deposition, although it has not been possible to determine how late in the 4th century this occurred. The latest pottery included bead-and-flanged mortaria in Oxford red colour-coated ware, which have a 4th-century date (Young 1977, 174).

Sources of pottery and local production

Throughout the period of Iron Age and Roman occupation along the A421 improvement scheme route, the majority of the pottery used and discarded by the inhabitants was likely to have been largely of local manufacture. That is, the pottery was made in the vicinity of the sites in which it was found. Potters could exploit the mudstone of the Oxford Clay that lies under much of the A421 improvement scheme route. Local areas of sand-bearing and occasionally argillaceous head or river terrace deposits and alluvium also provided clay suitable for pottery manufacture. Fossiliferous clays were available locally, too. Production of shelly fabrics have been attested at Stagsden (Dawson 2000c) and Bromham (Tilson 1973), both situated some 10 km north-west of the northern end of the scheme. The nearest source of greensand, used for the small amount of glauconitic pottery (fabric F38) recovered from the scheme lies about 5 km south-east of Marston Moretaine (and of Site 2 and Site 4 (Trench 54), where the pottery was found).

Given the availability of resources, and the fact that no pottery certainly originating from regional or continental sources was identified, the source of most, if not all, the middle and late Iron Age pottery can reasonably be seen as local. The dominance of local pottery continued into the early Roman period. As much as 97% of the early Roman groups from the north-eastern complex at Site 2 and Site 3 by EVE was local. The small amount of non-local material arrived from Verulamium and South Gaul (Tables 3.11 and 3.16). In the 2nd and earlier 3rd centuries, inhabitants were becoming less dependent on local sources, which now accounted for up to 80% of mid Roman groups from the south-western complex at Site 2 and Site 7 by EVE (Tables 3.19 and 3.22). Pottery continued to be supplied from the Verulamium region, but towards the end of the middle Roman period, sites along the scheme started to receive pottery from the Nene Valley and the Alchester-Towcester area. Central and East Gaulish factories replaced South Gaul as suppliers of samian. The late Roman period saw little change in the quantity of local pottery – up to 79% at Site 7 by EVE (Table 3.23) – but the sources of regional pottery were more diverse. Nene Valley and Alchester/Towcester products were joined by those from the Oxford region, Dorset, Hadham (east Hertfordshire), and Mancetter-Hartshill (Warwickshire). Imports from Gaul were recorded, but these were residual. One uncertain aspect is the proportion of shelly-tempered pottery from Harrold in the assemblage. The Bedfordshire workshops, some 15 km north-west of Site 7, expanded and exported

widely in the 3rd and 4th centuries (Brown 1994). Some of their products, for example lid-seated jars and necked jars, were standard types in the region and were produced at other kiln sites, among them Site 8 on the Great Barford Bypass (Stansbie 2007, 251-2). This makes it difficult to identify Harrold products with certainty. Harrold pottery was no doubt an important component of the A421 assemblage, and it is possible that the proportion of local wares in the mid and late Roman groups of the south-western complex at Site 2 and Site 7 can be reduced to around 40-50% by EVE. However, a more realistic proportion of local wares probably lies somewhere in the 40/50%-80% range.

The bulk of the grey wares (fabrics R06B and R06C) are likely to be of local manufacture. No kilns were found along the route, although kiln bars were collected from Site 3, and three vessels, all from Site 7, displayed signs of being wasters or seconds that probably did not travel far. One vessel (form unknown) was overfired, while the other two, a necked bowl and oval-bodied necked cooking jar, had warped rims, no doubt a manufacturing or firing fault. A proportion of the pottery, however, may have arrived from production sites away from the A421. The case may be made for some of the forms which match those seen at other sites. Caldecotte, on the eastern edge of Milton Keynes, may have been the source of a bowl with a multiple-beaded rim from Site 7 (Fig. 3.9, no. 132), a narrow-necked jar, again from Site 7, and a wide-mouthed jar from the south-western complex at Site 2 (Fig. 3.6, no. 94). All can be paralleled among the vessels found at Caldecotte (Marney 1989, figs 29.1, 30.4 and 32.49). Other forms that find matches at sites around Milton Keynes, and therefore hint at production in that area, include a large poppyhead beaker from Site 3's grave 104802 (Fig. 2.52), a wide-mouthed jar from Site 7, and a high-shouldered necked jar from the north-eastern complex at Site 2. These are similar to vessels found in south Milton Keynes (Marney 1989, fig. 30, nos 5, 7 and 12). Similarly, a storage jar in coarse grog-tempered ware (with lesser quantities of sand and shell) from the north-eastern complex at Site 2 resembled, in both form and decoration, storage jars fired in the 1st-century kilns found along the Stagsden Bypass, west of Bedford (Slowikowski 2000, 73-84), although the curious potters' marks seen at that site (Slowikowski 2000, fig. 53) were not recorded in the A421 groups. Other known areas of pottery production close to sites along the A421 sites include Biddenham Loop, west of Bedford, responsible mainly for late Iron Age/early Roman lid-seated jars and storage jars in both sandy and shelly fabrics (Luke 2008, 201-4).

We should be careful, though, not to assume that the existence of pottery that resembles pottery found or made in Milton Keynes or the Bedford region identifies those regions as the source of that and other pottery. The movement of potters and the pots themselves through trade or as personal possessions helped to spread the shapes, and knowledge about them, wider than the original production area. The shapes were then available to be copied in the new areas and subject to further dissemination. The standard lid-seated and necked jar forms (for example) were ubiquitous finds on Roman-period settlement and kiln sites in the region. The forms were long-lived – on the A421, lid-seated jars originated in the late Iron Age and continued to be made into the late Roman period, while oval-bodied necked jars were used mainly in the mid and late Roman periods – and this raises the possibility of a mechanism, such as apprenticeships, that allowed the information about those shapes to be passed on through successive generations of potters. But in any case, by virtue of being among the commonest forms on settlement sites across the region, existing and new potters were already more likely to produce those forms, rather than others, further increasing the frequency of the forms in the region. Inevitably, the same forms appeared in different settlements and were included in the repertoires of different potters across the region.

Functional comparison and implications for site type

A comparison of the proportions of vessel class and ware groups along the route of the Improvements shows the extent to which pottery assemblages evolved in terms of composition and supply over time. In the middle Iron Age, as suggested by the Site 4 (Trench 54) assemblage, almost all the ceramic vessels were jars. Bowls took only a minor share of the assemblage, and no other vessel type was recorded. The jar was available in number of shapes and sizes and is likely to have fulfilled multiple functions, such as cooking, storage, communal food containers, and drinking. Webley (2007a, 226) makes a similar point, citing analysis of pottery from Haddenham, Cambridgeshire, with regard to the middle Iron Age pottery of the Great Barford Bypass. By the late Roman period, as shown by the assemblage from Site 7, the range of pottery available had changed utterly. Jars remained important, but were well-matched by dishes, which functioned both as food serving vessels and cooking vessels. There was a high degree of specialisation in terms of drinking and food preparation, notably with the provision of the beaker and mortarium. In the intervening time, the evolution from a ceramic culture based almost entirely on jars to one that was diverse was gradual. Despite fluctuations, the overall trend was for proportion of jars to decrease over time. The late Iron Age/early Roman period saw the introduction of new forms, among them the platter or dish and beaker, whose proportions generally increased over time. In the later Roman period, the adoption of the mortarium added to the range of specialist cooking forms. The changing proportions of ware groups over time is less marked than those of vessel class, and to a large extent reflected the

fortunes of potters or industries and what was available in any given time. A range of handmade fabrics were present during the later Iron Age, but were rapidly replaced with wheel-made grey wares in the early Roman period. Shelly fabrics were ubiquitous throughout the period of occupation along the route. There is a hint that the proportions of reduced and shelly wares increased over time, but also that they competed for market share. This is suggested by the mid Roman assemblages of the south-western complex at Site 2 and Site 7, in which a change in the proportion of one fabric was met by an opposite change in the other. This returns us to the correlation, as shown in the Site 7 assemblage, between surface colour and vessel form in shelly ware (above). Potters fired their jars black because these vessels were equivalent to sandy grey ware jars and intended to be used alongside or instead of them. Apart from a little South Gaulish samian in the early Roman period, sites did not see much more than shelly and grey wares until the mid-Roman period. Even so, low proportions of oxidised wares, white wares and fine wares were generally maintained until the end of the Roman period.

The changes in assemblage composition through time did not solely arise within the A421 sites, but to a large extent were in response to patterns evident in the wider cultural environment. It should be noted that assemblages across the region have not been quantified by means that allow for easy comparison. Few Bedfordshire pottery reports, even recent ones, use EVEs, and the favoured methods of quantification (sherd count, weight and vessel count) are not consistently presented. In addition, while the presentation of fabric quantification is reasonably standard, that for data relating to vessel form is partial, and some reports present no such information. That said, sufficient data can be obtained to give a general view of the ceramic background in which to place the A421 assemblages. The Iron Age assemblages of Biddenham Loop (Wells 2008a, table 8.12), Ruxox (Parminter 2004a, table 9.18), the Great Barford Bypass (Webley 2007a, 224) and Salford (Slowikowski 2005), among others, consisted of jars and bowls (the former dominating), just as on the A421. And, in common with the A421 pottery, the early Roman assemblages of Biddenham Loop (Wells 2008b, table 9.9), Marsh Leys, Kempston (Wells 2011a, 103-4), and the Great Barford Bypass (Stansbie 2007, tables 8.26-7, 8.29) saw the introduction of Gallo-Belgic-derived tablewares, principally the flagon, beaker and platter, and in colours other than grey or black. The mid Roman period in the region is characterised by an increase in the proportion of dishes, which is met by a decline in the proportion of jars. This continued into the late Roman period – the trend has been recorded at Kempston Church End (Parminter 2004b, 495) and the Great Barford Bypass (Stansbie 2007, table 8.29) – with sites in the region also receiving higher proportions of regional wares, such as Oxford products.

The implication of these observations is that the inhabitants of sites along the A421 were not culturally isolated. The impetus for the changes from, say, a jar-based culture to one that was more diverse and specialised, cannot be pinpointed to specific sites. There was little change in the middle to late Iron Age ('pre-Belgic' Iron Age), as a paucity of vessel types other than jars or bowls in the region meant that there was nothing other than those forms for potters to copy, though there were variations in terms of jar or bowl shape, which may be chronologically significant, but which cannot be detected at the scale of ceramic phasing presented here. In the ('Belgic') late Iron Age and early Roman period, new forms and technology (for example the potter's wheel and improved kilns), arriving from Gaul, were imitated, and these spread by trade, movement of people or other means of contact. As the forms and technology gained in popularity – possibly attributable to greater variation and consistency of shape or colour that was attractive and novel – potters were increasingly likely to reproduce the forms, because those were the forms that the potters saw around them or used themselves. There were other influences, notably black-burnished ware, which arrived into eastern and south-eastern England from Dorset in the mid 2nd century onwards. Once established, the forms – cooking jars, but especially dishes – were copied to the extent that the copies were themselves copied, allowing dishes to take a more significant share of the region's assemblages over time, despite the small proportions of the prototype black-burnished ware which were available.

That is not to say that all assemblages in the region were culturally uniform. We can employ a number of useful measures to highlight differences and similarities between sites. Jeremy Evans (2001, 26-31) explored the relationship between open tablewares and jars, and the use of the resulting ratio as an index of site types. He found that basic rural sites have relatively high proportions of jars (suggesting continuation of Iron Age cooking and dining practices) and low proportions of dishes/bowls (denoting specialist dining vessels). Urban sites tended to have higher proportions of dishes/bowls and fewer jars, while villas lay in between the two site types. On this basis, in the early Roman period (if we include platters with dishes), Site 3 (57% jars/15% dishes by EVE) is of comparable status to Great Barford Site 8 (54% jars/15% dishes by EVE), a nucleated settlement (Stansbie 2007, table 8.29). Contemporary farmsteads at Biddenham Loop offered proportions of 73% jars and 7% dishes by vessel count (Wells 2008c, table 10.5). In the mid Roman period, the south-western complex at Site 2 and Site 7 differed in terms of jars (70% jars, 21% dishes; 44% jars, 23% dishes respectively); the values for the south-western complex at Site 2 are similar to those for Great Barford Site 8 (67% jars, 16% dishes). The lower proportion of jars

in Site 7 is evident again in the late Roman period (40% jars, 25% dishes). This compares with 61% jars/19% dishes at Great Barford Site 8, and 68% jars/4% by vessel count at Kempston Church End (Parminter 2004b, table 9.21).

Corresponding ratios of vessel types cannot be calculated from the data presented in the Marsh Leys pottery report (Wells 2011a), but it is nevertheless instructive to compare the proportions of wares of the 2nd century or later assemblages from Farmsteads 4 and 5 with the middle Roman pottery from the Site 2 south-western complex and Site 7 (Table 3.25). The Site 2 assemblage is perhaps a little too small to be particularly meaningful when compared with the much larger Marsh Leys assemblage, but it may be significant that oxidised wares and fine wares provide the biggest differences; both are better represented at the Site 2 south-western complex. Conversely, shelly wares are better represented at Marsh Leys. Site 7 and Marsh Leys, on the other hand, are more closely matched. A good degree of correspondence between Site 7 and Marsh Leys is to be expected, given they are adjacent to each other. No doubt they experienced similar pottery supply patterns.

Samian is an obvious means by which site type can be assessed. The amount of decorated pottery compared with plain forms provides a useful index. Steve Willis (1998, 105-111; 2005, section 7.3.2) records higher than average proportions of decorated samian at military and urban sites, and lower than average proportions at basic rural sites. The north-eastern complex at Site 2 and Site 7 appear to be of middling rank (Table 3.26). No decorated samian was recovered from the south-western complex at Site 2 or Site 3, putting both in a lower rank.

The comparisons given above are not exact because of differences in quantification, and the small size of some of the assemblages, reducing their statistical reliability (Dickinson 2000, 86; 2004, 503). However, the values nevertheless offer some grounds for differentiating the A421 sites in terms of site status or type. Samian potentially puts the north-eastern complex at Site 2 in a relatively high-ranking category, and compares well with Bancroft villa, although for a villa site, the value given for Bancroft appears to be low compared with two other villa sites (Aston Well and Stantonbury), which offered noticeably higher proportions of decorated samian. Site 7 is comparable to Marsh Leys, Ruxox and Kempston Church End. Both Ruxox and Kempston Church End may be identified as planned or focused settlements (cf. Dawson 2007, 73), and potentially, too, Site 7 can be ranked higher than basic rural settlement or farmstead; indeed, the ratio of jars to dishes obtained for Site 7 is consistent with this. That said, the similar proportions of decorated samian at the rural Marsh Leys and Site 7 suggests that the sites are of reasonably equal status, and this is supported by the overall percentage of continental imports by sherd count – 3% at Site 7 compared with 2% at Marsh Leys (Luke 2011, 166). The value for the Site 2 south-western complex is also 2%. The jar:dish ratio and the proportion of decorated samian suggest that the south-western complex at Site 2 and Site 3 were of similar status to Great Barford Site 8, from which low amounts of decorated samian were recorded.

Table 3.25: Comparative proportions of ware groups from 2nd/3rd-century assemblages from Site 2 south-western complex, Site 7 and Marsh Leys (Wells 2011, table 7.3). Quantification by sherd count.

Ware	*Marsh Leys*	*Site 2 S-W complex*	*Site 7*
A Amphorae	<1%		
B Black-surfaced/burnished wares	2%	9%	7%
C Shelly	52%	23%	50%
F Fine ware	<1%	14%	3%
M Mortaria	<1%		1%
O Oxidised	7%	20%	5%
R Grey wares	37%	26%	23%
S Samian	<1%	2%	3%
W White wares	2%	5%	8%
Total sherds	4029	125	1110

Table 3.26: Comparative proportions of samian ware from sites in Bedfordshire and Milton Keynes. Settlement type after Dawson (2007, 73) and Radford and Zeepvat (2009, 57). Data: Pengelly 1989, tables 16-19 (MK sites); D Stansbie, unpublished archive data (Great Barford Bypass); Dickinson 2000, table 70 (Stagsden); Dickinson 2004, tables 9.23-5 (Kempston Church End, Ruxox and Aston Well); Wild 2011, 102-3 (Marsh Leys).

Site	*Settlement type*	*% of samian that is decorated*	*Total no. vessels*
A421 Site 2, south-western complex	Farmstead	0	3
A421 Site 3	Farmstead	0	3
Gt Barford Site 8	Nucleated	3	40
Gt Barford Site 4	Linear	11	9
MK297 Woughton	Farmstead	11	92
Ruxox	Linear row	12	308
Kempston Church End	Planned	13	617
A421 Site 7	Farmstead	14	58
Gt Barford Site 1	Farmstead	14	7
Marsh Leys	Farmstead	14	93
A421 Site 2, north-eastern complex	Farmstead	17	6
MK105 Bancroft	Villa	17	120
Stagsden		19	26
Aston Well	Villa	20	5
MK301 Stantonbury	Villa	26	95

Table 3.27: Comparison of ancillary vessels from Bedfordshire cemeteries by percentage of vessel count

Site and period	*Beaker*	*Bowl*	*Cup*	*Flagon/flask*	*Jar*	*Lid*	*Platter*	*Total no. vessels*
A421 Site 3 (1st/2nd C)	33	17		17			33	6
Biddenham (1st C AD)	12	36	4	4	28	4	12	25
Gt Barford Site 4 (1st/2nd C)			75				25	4
Gt Barford Site 8 (1st/2nd C)	12	22			33		33	12
Ruxox (2nd/3rd C)	53	12		12	23			17
Kempston Church End (3rd/4th C)	17	17		17	32		17	6
Dunstable (3rd/4th C)	60			20	20			5

Funerary pottery

Late Iron Age funerary pottery is represented by two vessels from a disturbed burial recovered from ditch 3351 in Site 3. The vessels, both grog-tempered, comprised a jar with a perforated base, and a pedestal jar. These appear to have been selected as accessory vessels, rather than urns to contain the cremated bone, though this is not certain, given that the vessels were not found *in situ*. Nevertheless, the pottery is consistent with ceramic grave goods found in other late Iron Age graves in the region, such as grave S357 at Biddenham Loop, where seven accessory vessels, including two pedestal jars, were recorded (Luke 2008, fig. 9.13). The tradition of selecting pedestal jars for burials also recalls the considerably larger groups in high-status late Iron Age burials, notably that from Welwyn Garden City, in which seven pedestal jars were recovered (Stead 1967, 12), and it is reasonable to suggest that pottery deposition in graves in Site 3 and Biddenham Loop and others was carried out in imitation of elite funerary practices. Interestingly, the Welwyn burial included a bronze strainer (Stead 1967, 23-5). Strainers have been recorded in other high-status burials, among them the Doctor's Burial at Stanway, Essex (Crummy 2007, 322-6), and have been viewed as drinking equipment; Paul Sealey (1999, 122-3) suggests that they were used for mead or ale (rather than wine), although the Stanway example contained a medicinal concoction. We could regard the perforated jar in ditch 3351 as the ceramic equivalent of a metal strainer, and, as with the pedestal jar, potentially deriving from traditions expressed in elite burials.

Marston Vale and surrounding areas offer a number of funerary assemblages that bear comparison with the Roman-period grave goods from Site 3. Cinerary vessels from Site 3 comprised two beakers and two jars. The beakers are an unusual choice – urns are predominantly coarse ware jars selected for utilitarian purposes – but the beakers here were both larger than usual and therefore able to hold the cremated bone just as well as the jars. Beakers have been used as urns in other cemeteries in the region (Table 3.27), including Great Barford Bypass, Sites 4 and 8 (Stansbie 2007, 244, 248), Kempston (Dawson 2004, 231), and Biddenham Loop (Duncan 2008, 213-8), although in none of these cases was the beaker a large version. Bowls, as well as the more usual jars, were also used as the urns in the Biddenham

Table 3.28: Quantification of coins

SF	*Cxt*	*Site*	*Feature*	*Date*	*Denomination*	*Reverse*	*Mint*
2009	2577	2	Roundhouse gully 2708	270-295	antoninianus 18-20mm	IN]VICTU[S Sol advancing left	Cologne?
2011	2002	2	Modern topsoil	316	AE3 18-20mm	SOLI INVICTO COMITI	? PLG Lyons
3007	3082	3	Ditch 3346, upper fill	1-2C	sestertius, 34mm	?	
15005	15539	7	Ditch 15750, upper fill	148-160?	?core of plated denarius	] AUG PII FIL simpulum, lituus, ewer (handle r), sprinkler and knife	
15006	15332	7	Ditch 15750, upper fill	2C	sestertius 31mm	figure standing l, S C	
15013	15374	7	Enclosure ditch 15754, upper fill	200-201	denarius	RESTITUTOR URBIS	

cemetery. The accessory vessel assemblage at Site 3 is characterised by dining forms – platters, beakers and a flagon – as well as a bowl, which, judging by its shape, may have been accorded jar-like functions by the potter or users. The vessels were available in coarse reduced wares, a white ware, oxidised ware, and samian ware. It is striking that the profile of the funerary assemblage, in terms of form and fabric, is markedly different from that of the non-funerary early Roman assemblage (Table 3.16), which lacks the range of dining forms and oxidised or fine wares. The difference can be seen at Sites 4 and 8 on the Great Barford Bypass (Stansbie 2007, tables 8.27-30), and the 2nd- and 3rd-century phases of Ruxox (Dawson 2004, 131-43; Parminter 2004a, table 9.19). Here dining forms, such as dishes, platters, beakers, or cups are better represented in funerary assemblages than they are in contemporaneous non-funerary groups. The phenomenon has been recognised elsewhere in eastern England, for example, at Strood Hall (Biddulph 2007, table 3.2; Biddulph *et al.* 2007, table 4.23) and Great Dunmow (Going and Ford 1988, fig. 52; Wickenden 1988, 12-21), both in north Essex. This suggests that the pottery selected for deposition in the grave did not represent a typical household group and was unlikely to have been available in the household to be taken out of domestic use when an individual died. Instead, the existence of a market for funerary pottery or burial clubs which acquired pottery on the behalf of subscribers is suspected (Biddulph 2005, 37). The possibility is not such a remote one. Though from a later Roman cemetery at Dunstable, a beaker inscribed 'Regillinus presented the pot of the *dendrophori* of Verulamium' suggests that a burial club was at work there (Hassall 1981, 47-8).

The preponderance of dining forms and what can be termed fine and specialist wares (Booth 2004) in the Site 3 cemetery and other sites is, however, not shared by all sites. The cemetery at Biddenham Loop dates to the later 1st century AD and is largely contemporary with Site 3. Its ancillary vessel assemblage, though, included jars, which Site 3 lacked, and a much higher proportion of bowls: nine out of 25 ancillary vessels, compared with one out of seven at Site 3 (Duncan 2008, 213-8). Jars were also well represented in the cemetery at Great Barford Site 8, dated to the 1st and 2nd centuries (Stansbie 2007, 248-9). The difference may be a matter of separate cultural influences. The Biddenham and Great Barford Site 8 assemblages recall late Iron Age funerary assemblages – among them nearby Salford (Dawson 2005, 78-81), Allington in Kent (Thompson 1978), Westhampnett in Hampshire (Fitzpatrick 1997a), and North Shoebury in Essex (Thompson 1995) – characterised by a predominance of jars and bowls. In contrast, we must turn to the sort of assemblages seen at King Harry Lane, St Albans for the origins of the Site 3 group. These are characterised by platters, flagons and beakers and other table wares (cf. Stead and Rigby 1989). The assemblages from the later Roman cemeteries of Kempston, Ruxox and Dunstable (Matthews 1981) also have relatively high proportions of jars (Table 3.27), which suggests that the tradition of depositing jars as accessory vessels, which may have derived from late Iron Age practices, continued into the late Roman period. The cultural traits of that tradition, expressed as the pottery groups in the graves, had been transmitted through successive generations of the region's inhabitants (from, say, parent to child) with sufficient fidelity to be recognisable well into the Roman period (Biddulph 2005, 40-2). However, we must note the generally small size of all assemblages, which may not be fully representative of funerary practice at those sites.

Obverse	*Reference*	*Comment*
..VI]CTORINUS PF AUG	RIC Vii, 114	Irregular?
CONSTANTINUS AUG	?RIC VII Lyons, 56	mm characters in field lost
head r		Extremely worn and corroded. Size suggests 1C rather than later
young head r, legend illegible		Probably the young Marcus Aurelius.
] N…..		The reverse legend here suggests. 'Aurelius Caesar Aug Pii Fil', usually an obverse legend
?female head r		Very worn; perhaps Faustina I (*c* 138-160)
SEVERUS AUG PAR[T MAX Severus standing i	RIC IV, 167	

ROMAN COINS *by Paul Booth*

Six Roman coins were recovered from three sites: two later Roman coins from Site 2, a single early Roman coin from Site 3 and three 2nd-3rd-century pieces from Site 7 (Table 3.27). The coins were in variable condition and consequently were identified at different levels of precision.

The two coins from Site 2 are typical later Roman issues and require no comment. The large sestertius from Site 3 was very worn. While this was probably a 1st-century piece the degree of wear makes it very likely that it was lost in the 2nd century, if not later.

The three coins from Site 7 span the period from the middle to the end of the 2nd century, though only a denarius of Septimius Severus can be identified with complete confidence. The most interesting coin in this group is a core of a plated denarius (SF 15005), probably of Marcus Aurelius as Caesar under Antoninus Pius. Unfortunately only occasional letters of the obverse legend can be read. The incomplete reverse legend clearly ends in AUG PII FIL, which

suggests AURELIUS CAESAR AUG PII FIL (or less likely AURELIUS CAESAR ANTONINI AUG PII FIL). These are, however, obverse rather than reverse legends, of the period AD 148-156, used in combination with a variety of reverse types, including that present here – a group of sacrificial implements normally associated with the legend PIETAS AUG, as for example on RIC (Antoninus) 422, struck for Marcus in the period AD 140-144. The present coin seems therefore to have a hybrid reverse, but its full character is uncertain in the absence of a legible obverse. A date in the period AD 148-160 seems likely.

The absence of late Roman coins (except at Site 2) is unusual for Roman rural settlements, but is consistent with the other dating evidence for these sites. The significance of such low levels of coin loss is difficult to assess, but suggests minimal use of coinage within the settlement sites. This is characteristic of such sites where occupation is confined to the early Roman period.

METALWORK *by Ian Scott*

Site 2

The finds from Site 2 comprise 25 objects (29 fragments), consisting of 18 iron objects (21 fragments), 6 copper alloy objects (7 fragments) and one lead object (one fragment). The iron finds included nine miscellaneous pieces of plate, bar or strip, and four nails. There is also a late Saxon prick spur (Fig. 3.12, no. 1) and a large blade (SF 20000, context 20008) probably of modern date which was intrusive in a late Roman ditch (20226). The copper alloy finds include three brooches (Fig. 3.12, nos 2-4) and a leaf-shaped mount (Fig. 3.12, no. 5). The single lead object is a probable circular weight with a small central hole (SF 2014, context 2180). The limited number and range of finds is noteworthy, especially the absence of any significant household items – the only object in this category is a knife (SF 20000, context 20008) that is certainly neither Iron Age or Roman in form and probably much more recent in date, although it came from the top of a late Roman ditch. The very small number of nails is also unusual for a site of this date.

The presence of three mid-1st-century brooches (Fig. 3.12, nos 2-4) from contexts of late Iron Age or early Roman date is interesting. The Hod Hill brooch is a type common on the Continent and not found in Britain in pre-conquest contexts (Bayley and Butcher 2004, 153). The one-piece Colchester brooches are a British type that is found in pre-conquest contexts but is more common in slightly later mid 1st-century contexts (*ibid*., 149). They are found mainly in the south south-east and East Anglia (Bayley and Butcher 2004, fig. 169).

The Saxon prick spur (Fig. 3.12, no. 1) is a puzzle since there is no other evidence for Saxon occupation, but there is no doubt about the dating of the object; its form is quite distinctive. The spur is a good example of a Saxon spur dating from 10th or 11th century. The straight arms and short prick on a straight expanded neck are diagnostic features (see late Saxon spurs from Thetford (Ellis 1984, 101-104, figs 140-41), and an example from Billingsgate Lorry Park (Ellis 1995, 130, fig. 90, no. 36), also examples from Winchester (Ellis 1990, 1038-39, fig.331, nos 3860-3863) and from York (Ottaway and Rogers 2002, 2956-57, fig. 1522, 12735)).

Site 3

There are only two metal finds from Site 3. These comprise one nail stem fragment (context 3099) and a fragment of decorated copper alloy bracelet (Fig. 3.13, no. 6). The almost total lack of metal finds from a site with evidence of Roman activity is of interest and suggests little or no domestic occupation. The only find of intrinsic interest is itself a puzzle since its form and decoration are unparalleled in a late Iron or early Roman context. It is highly unlikely to be an Iron bracelet or armlet. A narrow band such as this is more likely to be of late Roman date, although the form and decoration do not fit into any known style or type.

Site 4 (Trench 54)

There are 13 metal objects (26 fragments) from Site 4 (Trench 54). These include a single brooch (Fig. 3.14, no. 7), a strip of decorated copper alloy (Fig. 3.14, no. 8) and a cast copper alloy toggle (Fig. 3.14, no. 9). There are also seven fragments from a socketed sickle blade (SF 17009, context 17288), very little of which now survives. Other finds comprise a small late medieval or post-medieval dress pin with wire-wound head (context 17015), a fragment of a copper alloy pin or needle (SF 17013, context 17397), and a melted fragment of copper alloy (SF 17007). The range of finds is very limited. There are also three nails (five fragments), a possible fragment of tap slag (SF 17016, context 17387), a plain iron ring (SF 17006, context 17181) and fragments of iron plate (SF 17005, context 17079).

Although the decorative strip of copper alloy is only a small fragment, it is securely stratified in the fill of a middle Iron Age enclosure ditch. The strip was presumably part of an appliqué or binding attached to a larger object, probably of wood. The geometric pattern on the strip comprises lightly incised but distinctive interlocking arcs with hatched background. Although the fragment is only small, it is clear that the pattern was produced with the aid of a compass. Abstract compass-drawn patterns form a large element of Iron Age Celtic art (Frey with Megaw 1976, 51). Although compass-drawn patterns and hatched backgrounds are associated generally with later insular Iron Age metalwork and in particular with late mirrors (Frey with Megaw 1976, 60-3), they are not found exclusively on late objects. For example, decoration of compass-drawn arcs and other elements are found on the dagger scabbard from Minster Ditch, Oxon

(Jope 2000, 21-22, pls 18-19, 20a; Cunliffe 2005, 515, fig. 18.23), which is thought to be one of the earliest examples of insular Iron Age art (Cunliffe 2005, 515; dated to the early 4th century – Harding 2007, 1070). The decoration on this sheath includes near the top a quatrefoil or star of hatched 'petals' formed by four overlapping arcs (Jope 2000, plate 19b) as well as compass drawn arcs (eg Jope 2000, plates 18a and d). The decoration on the A421 fragment is closely comparable to the decoration of a panel on the chape of a sword scabbard from Hunsbury, Northants (Stead 2006, 179, no. 89 and fig. 68; Jope 2000, plates 205h and j; Cunliffe 2005, fig. 18.32, 1; Piggott 1950, fig. 3, no.1). The Hunsbury sword scabbard is one of group dating to the middle Iron Age according to Harding (2007, 112). Jope (2000, 122-29) however dates these swords to the 1st century BC. Stead (2006, 34) includes most of the Hunsbury swords in his Group B, which he dates between the second half of the 3rd century BC and the second half of the 2nd century BC. However, he places the Hunsbury sword under consideration in his Group C, which he dates to the period from the second half of the 2nd century BC to the first half of the 1st century BC (*ibid*. 40-41). None of the swords from Hunsbury was securely stratified. Similar patterns of arcs are found on some Iron Age pottery types including Glastonbury ware, Stanton-Harcourt style pottery and Sleaford-Dragonby ware (Cunliffe 2005, figs A:20, A:23, A:25 and A:28). These styles range in date from the 3rd century to the 1st century BC.

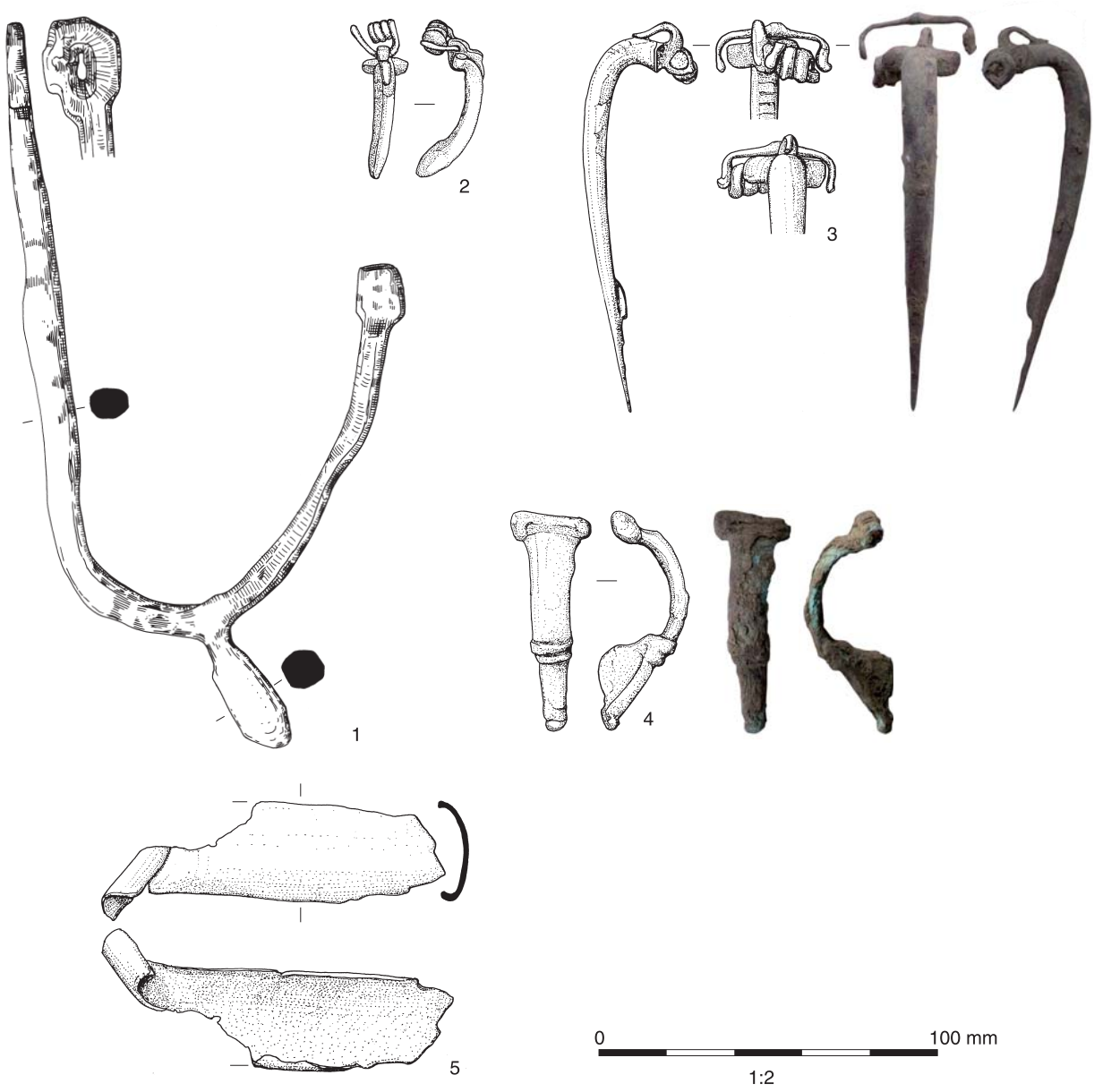


Fig. 3.12 Metalwork from Site 2

Fig. 3.13 Metalwork from Site 3

The cast copper alloy toggle (Fig. 3.14, no. 9) is also a good Iron Age form. The precise purpose of these objects is uncertain, but they may have been used in harnesses.

The two-piece Colchester brooch (Fig. 3.14, no. 7) dates to the immediate post-conquest period in the mid-1st century AD. Brooches of this type are found mainly in the Midlands and eastern counties and south of the Humber (Bayley and Butcher 2004, fig. 170).

Site 7

There are 56 small finds (84 fragments) from Site 7. These comprise 53 iron objects (87 fragments) two copper alloy objects (four fragments) and one lead object (one fragment). The iron objects include 16 nails (21 fragments) and 27 hobnails. Twenty five of the hobnails came from context 15699.

Three tools or possible tools were identified. These comprise an awl (Fig. 3.15, no. 10), a fragment of a possible whittle tang knife (context 15874), a possible iron binding (context 15695) and a probable weight (Fig. 3.15, no. 11). There are eight other pieces that are not diagnostic.

The individual buried in grave 15061 wore a bracelet or armlet on her right arm. This is an early Roman form found in mid 1st-century contexts, so if the grave is correctly attributed to the 3rd-4th century the object was of some antiquity when buried. The armlet was a little worn, but complete. The distribution of this type centres on Essex and the southern part of East Anglia with further examples across the Midlands and in the south (Crummy 2005, fig. 2). Crummy has recently studied these armlets and has argued that they were military awards for soldiers – *armillae* – rather than jewellery for women. Crummy bases her argument in part on the dating and geographical distribution of the armlets, but more specifically on the similarities between the decorative motifs on the armlets and those found on some 1st-century military fittings, (*ibid*., 96-101). The suggestion is tantalising but not completely compelling.

Catalogue of illustrated metalwork (Fig. 3.12-3.15)

Site 2

1 **Prick spur** with plain straight sides. These have an

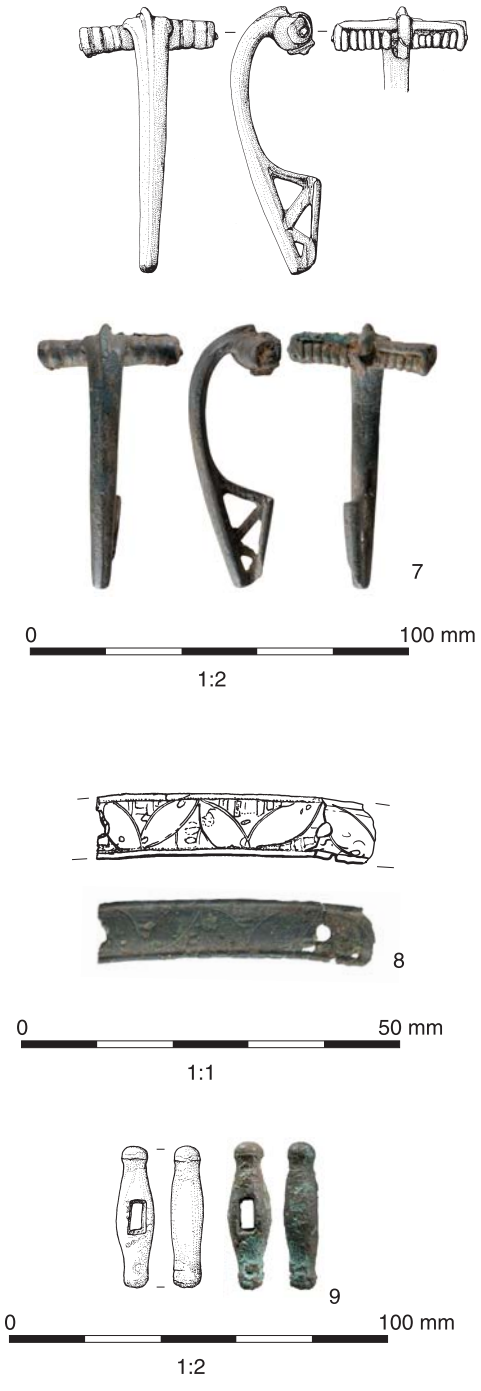


Fig. 3.14 Metalwork from Site 4 (Trench 54)

almost circular section which is, however, slightly flattened on the inner face. One side is incomplete and ends in a flat subsquare expansion with an apparent slot at its centre. The spur prick is straight, with a circular section. Iron. L: 150mm; W: 75mm. Ctx 2193, pit 2192, SF 2001. 10th-11th century.

2 Small **one-piece Colchester** brooch, incomplete. This brooch is very small. The brooch has small wings, but the catch plate is largely missing. The pin and much of the spring survive displaced but still secured by the hook at the top of the bow. Cu alloy. L: 24mm. Ctx 2303, SF 2005. Metal detector find. Mid 1st century AD.

3 **One-piece Colchester brooch**, poorly preserved. Cu alloy. L: 76mm. Ctx 2725, pit 2896, SF 2008. Mid 1st century AD.

4 **Hod Hill brooch**, with hinged pin. Poorly preserved. Cu alloy. L: 45mm. Ctx 2427, pit 2426, SF 2007. Mid-late 1st century AD.

5 **Binding** formed from sheet. One possible nail or rivet. Cu alloy. L: 69mm; W: 20mm. Ctx 2217, ditch 2475, SF 2010. Early Roman.

Site 3

6 **Penannular bracelet**, comprising narrow band with two parallel grooves running around the band. Inside the grooves are transverse punched markings. The bracelet is broken and only one decorated terminal survives. Cu alloy. L: 56mm. W: 3mm. Ctx 3265, ditch 3362, SF 3010. Late Iron Age.

Site 4 (Trench 54)

7 Large **two-piece Colchester brooch**, catch plate with three triangular cut outs. Cu alloy. Form of brooch with crest at the top of an otherwise plain bow, openings in the catch plate and no foot knob. L: 69mm. W: 38mm. Ctx 17398, enclosure ditch 17496, SF 17012. Mid 1st century

8 **Decorative strip** with narrow plain border. The decoration comprises interlocking arcs forming a band of leaf-shapes with traces of hatched background pattern. The fragment has two small nail or pin holes. Cu alloy. L: 37mm. W: 8mm. Ctx 17161, enclosure ditch 17496, SF 17003. Middle Iron Age.

9 **Cast toggle**, with knobbed ends and fattened centre. There is a rectangular hole or eye at the centre. Cu alloy. L: 38mm. W: 11mm. Ctx 17217, enclosure ditch 17716, SF 17002. Middle iron Age.

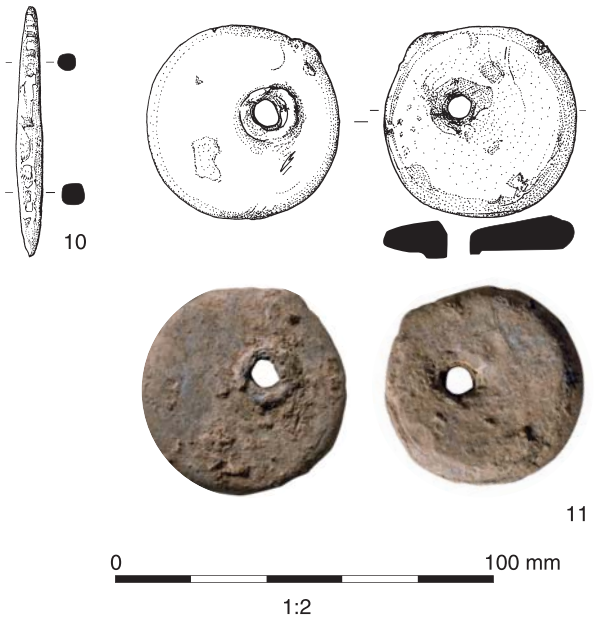


Fig. 3.15 Metalwork from Site 7

Site 7

10 **Awl**. Probable small awl or bradawl. One end has a tapering square section point; the other end a tapering circular section point. May have been mounted in a wooden handle. Possibly Bronze Age (L Webley pers. comm.). Cu alloy. L: 45mm. Ctx 15734, tree-throw hole 15733, SF 15012.

11 Probable **weight**, formed from lead disc with chamfered edge, crudely pierced with off-centre hole for suspension. Possibly a loom or net weight. Lead. Dia: 35mm. Ctx 15516, quarry pit 15352, SF 15009. Middle Roman.

Fig 2.128

Broad penannular bracelet or **armlet** with decorative grooves running along its length. The band is lightly broader at each terminal. Cu alloy. Dia: 69mm x 57mm: Th: 12mm. W of terminals: 13mm. Ctx 15062, grave 15061, SF 15001. Late Roman.

BONE AND ANTLER *by Ian Scott*

The head of a rake cut from an antler and a bone point were recovered from Site 7. The rake (Fig. 3.16, no. 1) is remarkably well preserved. It was presumably used as an horticultural tool for raking between plants to remove weeds. There is some polishing or wear at the tips of each tine. It would have been mounted on a wooden handle. The square eye would have help to prevent the head twisting or turning on the handle when in use. The bone point (Fig. 3.16, no. 2), cut from a long bone, is not well preserved. The precise use of this object is uncertain. It is certainly not a bone needle, and is probably best thought of as bone point or awl.

Catalogue of illustrated bone and antler (Fig. 3.16)

1 Two tined rake cut from antler. The tips of the tines are polished through use. The head shows some slight cutting to shape. Neat rectangular eye. Extremely well preserved. L: 203mm. B: 125mm. Context 15765, waterhole 15735, SF 15016. Middle Roman.

2 Point cut from small long bone. Rough end of bone forms head of tool. Bone. L: 108mm. Context 15221, pit 15220, Sf 15002. Middle Roman.

GLASS *by Ian Scott*

The glass assemblage comprises ten sherds, all from Site 7. The glass is largely modern or undiagnostic, with the exception of three small sherds of a square blue green bottle from fill 15552 of late Roman waterhole 15735.

Fig. 3.16 Bone and antler objects from Site 7

FIRED CLAY AND CERAMIC BUILDING MATERIAL *by Dan Stansbie*

Fired clay

Introduction

A total of 1272 fragments of fired clay, weighing 18,201g, were recovered from seven sites: 2, 3, 4 (Trench 54), 5, 6 (Trenches 97-99), 6 (Trench 105) and 7. The largest concentrations of fired clay occurred at the north-eastern enclosure complex at Site 2 and at Site 4 (Trench 54), with smaller amounts from the south-western complex at Site 2 and Site 3. The remaining sites produced negligible quantities (Table 3.28). The sites are dated to the Iron Age and Roman period and the bulk of the fired clay belongs to these periods. All of the material was recovered from secondary contexts, with the majority coming from the fills of ditches and pits.

Fabrics

The fired clay was rapidly scanned and three broad fabric types were noted. The majority of the material was made in one of two sandy fabrics, the first containing only sand and the second also containing inclusions of chalk and flint. The third fabric contained frequent inclusions of plate-like fossil shell, and some of this material may derive from the Harrold area of Bedfordshire, which is known to have produced fabrics of this type. Where necessary, the fired clay was examined under a binocular microscope at x20 magnification to aid in identification of the fabric. Objects were assigned to a type where they were identifiable. All other material was assigned to one of two categories: structural, deriving from oven superstructures or wall daub and unidentified. Preservation was relatively poor, with no complete objects being preserved.

The assemblages

Site 2

The two enclosure complexes at Site 2 produced a total of 633 fragments of fired clay weighing 8149g.

Fired clay from the north-eastern complex, dating from the late Iron Age-early Roman period, consists of 483 fragments weighing 5043g. The assemblage is dominated by structural material. In addition there are several non-structural objects, including fragments of a triangular loomweight or oven brick and fragments from six oven plates, four of which are made in a shelly fabric.

The fired clay from the south-western complex, dating from the middle and late Roman period, comprises 150 fragments weighing 3106g. The assemblage largely consists of structural material. Several large fragments that may be parts of either triangular loomweights or oven bricks or pieces of wall daub came from fill 20165 of pit 20167.

Site 3

The fired clay assemblage from Site 3 comprises 37 fragments, weighing 1876g. The assemblage is dominated by structural clay, with some unidentifiable material. Objects include fragments of two kiln bars (Fig. 3.17) and two fragments of plate, one of which was made in a shelly fabric.

Site 4 (Trench 54)

Fired clay from Site 4 (Trench 54) comprises 504 fragments weighing 6588g and is the largest assemblage from the A421 Improvements. The assemblage is overwhelmingly dominated by structural material in a shelly fabric, several pieces of which show wattle impressions, with one fragment having finger marks. In addition, there are small amounts of structural clay in sandy fabrics. The objects from this assemblage are in many ways the most interesting from the entire scheme. They consist of a single fragment of triangular loomweight or oven brick, two fragments of

Table 3.29: Summary of fired clay

	Structural/ Unid.	*Triangular oven brick/ loomweight*	*Oven plates*	*Perforated oven plates*	*Kiln bars*	*Perforated oven/kiln floor*	*Wall daub or Triangular oven brick/ loomweight*	*Total*
Site 2 (SWC)	60 (340g)						90 (2766g)	150 (3106g)
Site 2 (NEC)	467 (3864g)	3 (390)	13 (789g)					483 (5043g)
Site 3	29 (172g)		6 (173g)		2 (1531g)			37 (1876g)
Site 4 (Trench 54)	494 (6066g)	1 (253g)	4 (89g)	3 (118g)				504 (6588g)
Site 5	12 (65g)							12 (65g)
Site 6 (Trenches 97-99)	7 (7g)							7 (7g)
Site 6 (Trench 105)	26 (112g)							26 (112g)
Site 7	47 (793g)		5 (442g)			1 (169g)		53 (1404g)
Total	1142 (11419g)	4 (643g)	28 (1095g)	3 (118g)	2 (1531g)	1 (169g)	90 (2766g)	1272 (18201g)

Fig. 3.17 Kiln bars from Site 3

perforated plate and a fragment of plate, all in a shelly fabric.

Site 5

The fired clay assemblage from Site 5 consists of 12 fragments of structural material weighing 65g.

Site 6 (Trenches 97-99)

Fired clay from Site 6 (Trenches 97-99), consists of seven fragments of unidentifiable material weighing 7g.

Site 6 (Trench 105)

Fired clay from Site 6 (Trench 105) consists of 26 fragments weighing 112g. The material comprises small abraded fragments.

Site 7

The fired clay assemblage from Site 7 comprises 53 fragments weighing 1404g. The assemblage is dominated by structural clay. Objects consist of four plates, one of which was made in a shelly fabric, along with a fragment of perforated kiln or oven floor.

Discussion

Although the assemblage is relatively large it consists predominantly of broken up and heavily abraded structural material, which provides relatively little insight into aspects of everyday life such as cooking, craft activities or building. Having said this, the structural fragments from all the sites could be interpreted as base, floor lining or superstructure from ovens. Some material with larger wattle impressions from the southern enclosure complex at Site 2 may represent wall daub, although some of this material might be from triangular loomweights or oven bricks. The objects, including fragments of plate, perforated plates and triangular bricks or loomweights, are typical of later prehistoric/Roman assemblages of this type and could also be interpreted as relating to food preparation if an interpretation of oven brick is preferred over that of loomweight for the triangular objects. The presence of perforated plates made in a fossil shell fabric is notable, as such objects are known to have been produced in the Harrold area during the Roman period and traded over much of Bedfordshire (Brown 1994, 90). The fragment of oven or kiln floor and the fragmentary kiln bars are interesting in indicating potential pottery manufacture, although elaboration of this theme is limited by the secondary context of the material. Fired clay objects of a similar type, including perforated plates and a bar, have been found near to the A421 Improvements at Keeley Lane, Wootton (Pollard and Baker 1999, 95). Perforated plates were also found at Ursula Taylor Lower School, Clapham (Dawson 1988, 18) and plates, both perforated and unperforated, were recovered from late Iron Age and early Roman contexts at Biddenham Loop (Slowikowski 2008, 235-6). Similar material was also recovered during excavations at Marsh Leys, Kempston (Wells 2011b, 112).

Ceramic building material

Introduction

A total of 82 fragments of ceramic building material, weighing 5174g was recovered. This comprised 69 fragments (3778g) of Roman material, as well as some fragments of post-medieval brick and floor tiles from Site 3 and fragments of modern field drain from Site 4 (Trench 54). Medieval and post-medieval material is not discussed The largest concentrations of ceramic building material occurred on Sites 2 and 7, with negligible quantities from Sites 3, 4 (Trench 54), 5 and 9 (Table 3.29). The tegula was identified by the presence of part or all of the flange or the groove at the base of the flange. 'Tile' refers to all other flat, plain fragments, although it is likely that many of these pieces are from tegulae.

Fabrics

The majority of the Roman ceramic building material (60% by weight) was made in sandy fabrics, which also occasionally included fragments of chalk or limestone. The remainder was made in a fabric containing frequent inclusions of fossil shell. It is likely that the sandy fabrics derive from the boulder clay of the uplands around the Vale, while the shelly fabric is consistent with an origin at the

Table 3.30: Summary of Roman ceramic building material

	Imbrex	*Tegula*	*Flat tile*	*Brick*	*Tile/brick*	*Unid.*	*Total*
Site 2	2 (221g)	2 (405g)	19 (625g)		2 (100g)	5 (27g)	30 (1378g)
Site 3					4 (32g)	4 (32g)	
Site 4 (Trench 54)		3 (68g)	1 (12g)			4 (80g)	
Site 5		3 (78g)	1 (73g)			4 (151g)	
Site 7		6 (549g)	15 (775g)	4 (795g)		1 (5g)	26 (2124g)
Site 9					1 (13g)	1 (13g)	
Total	2 (221g)	8 (954g)	40 (1546g)	6 (880g)	2 (100g)	11 (77g)	69 (3778g)

Harrold tile kilns, which supplied much of the northern part of the county (Brown 1994), although a source elsewhere on the Lias clay is also possible (C Poole pers. comm.).

The assemblages

Site 2

The assemblage from Site 2 comprised 30 fragments of Roman material, weighing 1378g. A total of 21 fragments (1086g) came from late Iron Age/Roman contexts in the north-eastern enclosure complex of the site. The assemblage is dominated by fragments of tile. There are also fragments of brick along with two fragments of imbrex and a fragment of tegula.

The middle-late Roman assemblage, from the south-western enclosure complex, consisted of a total of nine fragments (292g), most of which were fragments of tile. A single fragment of tegula was also present.

Site 7

The assemblage from Site 7 comprises 26 fragments weighing 2124 g. The assemblage consists mainly of fragments of Roman tile, supplemented by small quantities of brick. In addition there are three fragments of tegula.

Discussion

The quantities of ceramic building material were too small to suggest the presence of buildings roofed with tile at any of the sites. Only a single imbrex was recovered, in the form of two re-fitting fragments from Site 2, reflecting a clear preference for tegula and other flat tile, which were presumably used in the construction of structures such as ovens, kilns and corndriers.

WORKED AND UTILISED STONE *by Ruth Shaffrey*

Worked and utilised stone was recovered from Site 2, Site 3, Site 4 (Trench 54) and Site 7. It came from contexts ranging in date from middle Iron Age to late Roman.

Site 2

The only worked stone from Site 2 is 250g of small weathered lava quern fragments from fill 2826 of late Iron Age pit 2808.

Site 3

Site 3 produced two pieces of worked stone, both with surviving worked surfaces. One fragment of heavily burnt and blackened quartz sandstone was recovered from fill 3093 of ditch 3346 and a second sandstone fragment was found in fill 3266 of ditch 3364. Both ditches date from the early Roman period. Both fragments of stone are likely to be from saddle querns and thus represent domestic activity but are not individually catalogued here due to their fragmentary state.

Site 4 (Trench 54)

Excavations at Site 4 (Trench 54) produced a small assemblage of worked and utilised stone of a disparate nature. Domestic activity is represented by two items. A single quartzite processor/hammerstone could have been used for flint knapping or for processing other materials such as food stuffs, while a burnt flat stone is possibly related to cooking. Other items of stone are unworked but may have been used in a domestic or other setting. These include a flint sphere that could have been used either as a slingshot or as a domestic 'toy' and a naturally perforated flint that could have been used as a weight. In addition, nearly 14kg of heat affected stone – both heat-cracked stones (used for cooking) and burnt/blackened stones (exposed to direct heat in the form of flames) were also recovered. This is a significant quantity of burnt stone and indicates that cooking and other fire related activities were taking place nearby.

One other piece of stone resembles a pointed roof-stone although it does not have a perforation (the area where a perforation would be is missing). Its presence in a middle Iron Age ditch fill is intriguing as it is a shelly limestone that is not local to the site. It contains, amongst other fossils, unusual star-shaped crinoid fragments as well as crinoid stems. It is slightly worn on one side, which may be through wear, perhaps in a floor, but how and why it ended up in a middle Iron Age enclosure ditch is uncertain.

The worked and utilised stone from this site is small and varied. Some of the stone derives from domestic occupation, particularly the burnt stone, whilst others could be incidental losses.

Site 7

Four pieces of worked stone were recovered from fills of waterhole 15735, comprising two rotary quern fragments, one millstone fragment and a possible rubber. Both rotary quern fragments and the millstone fragment are types of Millstone Grit. Two fragments have been reused as sharpening stones or other processors, the millstone extensively, indicating that their original used as querns occurred much earlier than the middle Roman fills in which they were deposited. The fourth stone item retrieved from the well is a quartzite pebble that has been so extensively used as a rubber that the form of the pebble has been modified. Quartzite pebbles were ideally suited for use as processors and are common finds on sites of Roman date, although it is often difficult to determine their precise function. Millstone Grit querns were imported to the area and although a detailed survey of their provenance and distribution has not been published, they are

usually thought to have originated in and around Derbyshire, where there are known millstone sources. They are common finds in this region during the Roman period, particularly north of the site (Shaffrey 2007, fig 8.17). Some of these finds will be of mechanically operated millstones of the type found here and, although few are recorded in the immediate vicinity, a possible example was found 18 km to the north-east during excavations on the route of the Great Barford Bypass (Shaffrey 2007, 281). Millstone Grit millstones are relatively frequent finds in the wider local area with finds to the east at Great Staughton and St Neots, Love's Farm (Greenfield *et al*. 1994; Percival and Shaffrey forthcoming) and to the west at Broughton Manor Farm, Milton Keynes (Shaffrey forthcoming). As only one millstone fragment was found, which had been heavily reused, it is likely that it was collected as a fragment elsewhere and used here only for its secondary purpose.

Two other large pieces of stone may well have been used as building stone although neither has been shaped. One is a large slab of Totternhoe stone (similar to chalk), and the other a block of oolitic limestone.

Assuming that the millstone was brought onto site as a fragment, the worked stone from Site 7 is generally indicative of domestic activity with some possible evidence for the use of stone structurally.

Catalogue of worked stone

Site 4 (Trench 54)

Possible hotplate. Slice of quartzitic sandstone cobble with clear bedding planes along which it has broken. Circular blackened and burnt mark on one face suggesting it was exposed to a fire while something was sat on it. L: 94mm. B: >85. Th: 24 mm. Wt 426g. Ctx 17318, enclosure ditch 17719. Middle Iron Age.

Possible processor/hammerstone. Quartzitic sandstone. Cobble with some percussion wear on one side and damaged on another. Its shape has not been modified. L: 120mm. B: 98mm. Th: 65mm. Wt: 900g. Ctx 17413, enclosure ditch17496. Middle Iron Age.

Ball. Flint. Slightly pointed sphere. Dia: 37-39mm. Wt: 84g. Ctx 17244, enclosure ditch 17715. SF 17008. Middle Roman.

Shaped stone. Shelly limestone. One pointed end survives and two straight edges. L: >240mm. B: >210mm. Th: 20mm. Wt: 1200g. Ctx 17019, enclosure ditch 17343. Middle Iron Age

Natural, possibly used as weight. Flint with a natural perforation. Not obviously worn inside perforation but could have been used as any sort of natural weight. Angled perforation measures 15mm on one wide and 36mm on the other. L: 98-110mm. Th: 40mm. Wt: 435g. Ctx 17094, enclosure ditch 17714. Middle Iron Age.

Site 7

Upper rotary quern fragment. Millstone Grit. Thick fragment, tapered to centre with grinding surface worn into concentric grooves. The upper surface has a slight, poorly defined rim round the circumference measuring 50mm wide x 8mm high. Dia: 440mm. Th: 76mm on edge. Wt: 1537g. Ctx 15552, waterhole 15735, SF 15011. Late Roman.

Rotary quern, reused as hone. Quartz sandstone, probably Millstone Grit. Part of original curved edge and pecking on grinding surface survives. Both main faces have been heavily used for subsequent grinding/smoothing and are dished and worn. Dia: 900mm. Th: 50mm. Wt: 1653. Ctx 15697, waterhole 15735. Late Roman.

Rubber. Quartzite. Very uniform pebble, circular with one flat face and one slightly convex, both worn smooth through use. Bevelled arrises. Heavily burnt/blackened. Dia: 80mm. Th: 54mm. Wt: 533g. Ctx 15738, waterhole 15735. Late Roman.

Upper rotary quern fragment reused as hone. Probably Millstone Grit. Slightly tapered to edges. Grinding surface is worn smooth and has a deep groove where it has been reused as a hone. Top is also worn smooth. Th: 48mm max thickness towards edge. Wt: 290g. Ctx 15782, waterhole 15735. Late Roman.

WORKED WOOD *by Damian Goodburn, with roundwood species identifications by Dana Challinor and dendrochronological dating by Dr Daniel Miles (Oxford Dendrochronology Laboratory)*

Introduction

This report is intended to provide a summary description of the key features of the assemblage of waterlogged worked wood excavated from waterhole 15735 on Site 7 and provide a brief discussion of what can be inferred from the material. None of the woodwork appeared to be securely *in situ*, performing a structural function such as revetting the sides of the cut. The waterlogging of some of the sticky clay/silt deposits within the feature preserved the ancient woodwork. These conditions of preservation of ancient woodwork, whilst not unique, are still relatively unusual in the region. Although moderately well preserved, the material had suffered some weathering in antiquity.

Iron Age and Roman woodworking

Other assemblages of waterlogged woodwork found in Iron Age and Roman wells and waterholes are known from a number of sites in south east England (eg Tongham in the Blackwater Valley, Surrey; Brockley Hill, Herts). Excavations in London have also provided much evidence of formal and rustic Roman period woodwork (eg Goodburn 2006; 2011a; 2011b, 124-9). Outside the strict limits of what has been found in such contexts, detailed recording of late Iron Age woodwork in the Severn Estuary and Roman woodwork in the London region have provided us with an overview

of typical techniques of woodworking in both periods (Brunning *et al*. 2000; Brigham *et al*. 1995). While some working methods remained the same after the Romans arrived many radically new ways of working timber were introduced by them, as were a range of new types of tools such as cross-wise and long-wise saws. Other changes included the use of large iron nails, and standardised straight timber. All in all this constituted a revolution in woodworking technology in fully Romanised settlements, but one that effected the more rustic areas less significantly.

Methodology

In total 20 labelled bags of material were salvaged from the waterhole fills, containing 45 separate items of roundwood or converted timber and some fragments of charcoal (which are not discussed further here). The sticky grey clay adhering to the items was gently removed with water. Despite this, a combination of ancient weathering, slight decay and some damage incurred during excavation was found to have abraded most of the tool marks. All the material was examined in good raking light, and pro-forma timber sheets were completed for all but the smallest, most fragmentary items. A representative selection of the material was selected for drawing to scale on gridded film. The processes summarised here are commensurate with the national standards for recording waterlogged wood (Brunning 1996).

A total of five tree-ring samples were taken but only plank 15789 produced a datable sequence of rings. A total of 25 samples was also taken for microscopic species identification.

The assemblage

Technological dating

After careful cleaning, three technological features of this woodwork assemblage could be seen which indicated a Roman date. Firstly, there was clear evidence of the use of both cross-cut and long-wise sawing in the clear saw marks on the oak block off-cut 15780a. Secondly, iron nails were found remaining in some of the timbers, such as plank 15790. Finally, the very thin but regularly edge-trimmed, cleft oak pales are well known from a number of Roman waterlogged sites in London and at St Albans, where they were most commonly used for overlapping, vertically set, pale fencing (Goodburn *et al.* 2011, 432-3). This basic dating conclusion was confirmed by the tree-ring date obtained for plank 15790.

Plank from a box-like structure

The most substantial piece of structural woodwork lifted was plank 15790 (Fig. 3.18). This measured 1.11m x 215mm x 35mm, in three parts. The plank was not sawn out but was a radially cleft 1/32nd section from a large, oak log at least 0.65m in diameter. The narrow tree-rings and straight grain suggests that the log probably derived from a tree growing in wildwood conditions. It had the remains of broken bridle joints at each end and a pair of square iron nail shanks. These fastenings and joints suggested that it had been nailed to a pair of thicker planks or beams set at right angles to it. That is, it was part of a fairly crude box frame of some kind, such as have been found in some of the more rustic well linings in the suburbs and hinterland of Roman London (Wilmott 1982, 29; Goodburn 2006; 2011a; 2011b, 124-129). It is also possible that the nails are derived from another phase of use. Thus, it could be that it was one last remnant of a largely robbed out well lining, perhaps abandoned because the joints were broken.

The plank had a last measured ring date of AD 87. As it did not have any obvious sapwood or heartwood/sapwood boundary, this provides only a *terminus post quem* or felled-after date. The earliest it could have been felled is AD 96, and a date sometime in the early 2nd century AD is more likely.

Fence pales

With the excavation and systematic recording of quite large quantities of woodwork from Roman sites in Britain, many finds of regular, trimmed, very fine cleft pales have now been made (Goodburn 2011c and 2012). These narrow boards were less than 2m long between *c* 100-175mm wide with maximum thicknesses of *c* 8-15mm. The edges were axe-trimmed straight and sapwood was sometimes removed. Most commonly they were used for vertically set pale fencing, not totally unlike that seen in some suburban areas today. The oak used had to be very straight grained and the radial cleaving process ensured that the fibres of timber ran the whole length of the pale, providing strength with light weight and minimal material use. Radial conversion also ensured that they expanded and contracted less with the weather than sawn oak. They were also much more rot resistant than wattlework made of roundwood. These qualities made the material much used for higher quality fences, particularly where privacy and wind-proofing were required, but in this case it may have originally been used for fencing or roofing the well opening.

Fine, radially split oak pale fragments from the A421 site include 15780b, 15789 (Fig. 3.19a), 15794, 15798 and several slightly charred fragments (15801). The thickness varied between *c* 9-15mm and the width between *c* 100-120mm, ignoring what look like broken edges. The easiest explanation as to how this particular material ended up in the waterhole is that it had formed part of a fence around the top, but it may have derived from other fences close by. The material was cleft from medium growth parent oaks and was 1/64th or even 1/128th split

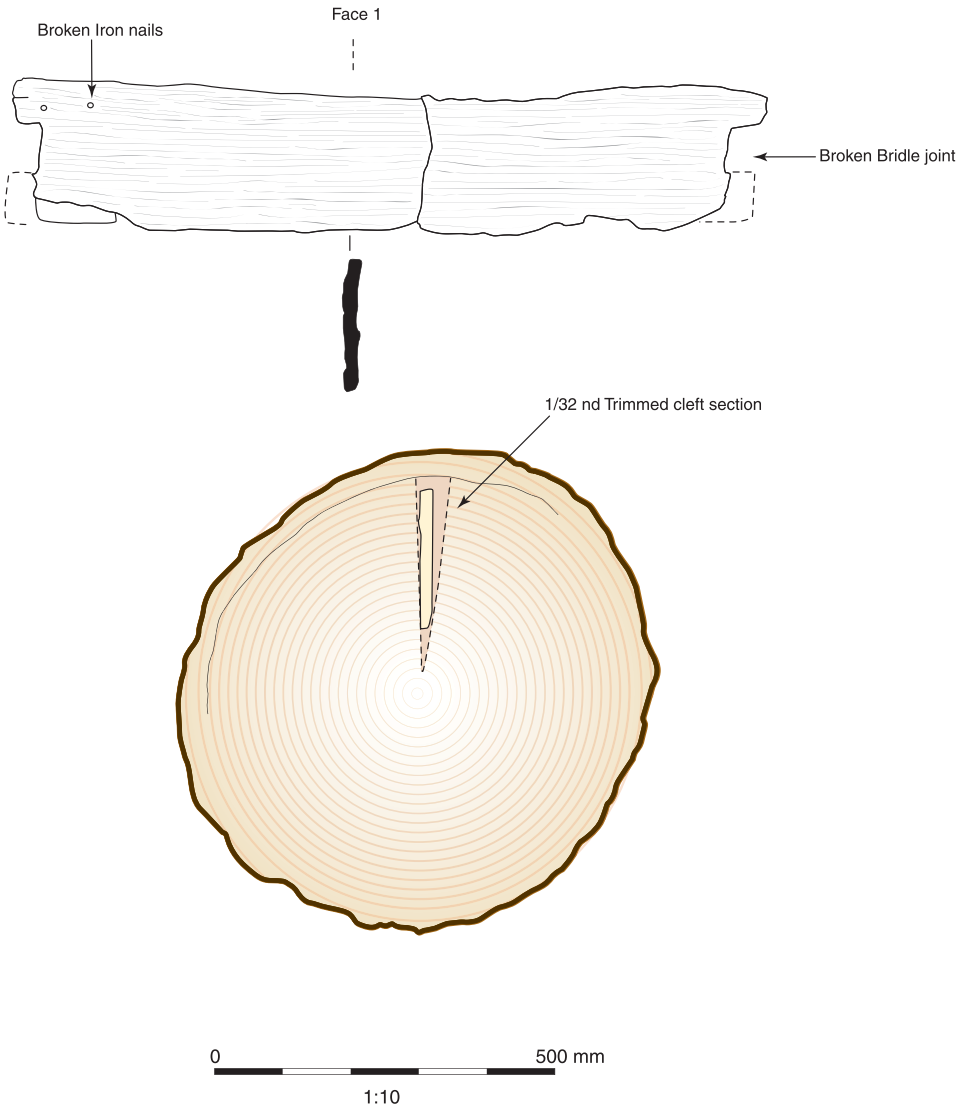


Fig. 3.18 Reused cleft oak plank 15790 with broken bridle joints at each end, possibly once part of a well lining

sections. The very thin boards were slightly wedge-shaped in cross-section and could only have been made with specialised tools called most commonly in modern English a 'froe' and a 'break'. The froe is a cleaver-like tool with a handle set at 90° to the blade, known from at least one Roman tool hoard (Goodburn 2011c). The break is a simple holding device used to hold the poles or billets to be cleft, in which they can be subject to pressure on one side which directs the line of the split.

The woodland exploited to make these pales would have been moderately open, probably managed to produce a mix of timber and underwood for fuel. In such a woodland the pale maker would have to have selected only the straightest and largest oaks.

Woodworking off-cuts

Other diagnostic material included two oak woodworking off-cuts (15806 and 15780a) that had been sawn to length. Off-cut 15780a (Fig. 3.19b) was particularly diagnostic, measuring 90 x 95mm and 35mm thick. It had been cross-cut with a saw at each end and both faces also bore saw marks. It is likely that it was an off-cut from a sawn plank of oak *c* 35mm thick that had been used for producing a piece of joinery or simple furniture. This material is typical of Roman, but not Iron Age, woodworking debris. Some very small, broken and abraded oak wood chips were also retained but provide little information and are not discussed further here.

Trimmed log

Another fairly substantial timber was a slightly knotty, trimmed oak log (15791; Fig. 3.20a). It measured 2.02m long and up to 120mm in diameter and the axe-cut branch removals showed that it was the 'top' log from a small, fast-grown oak. Such trees would have been common in managed woodland where small timber and

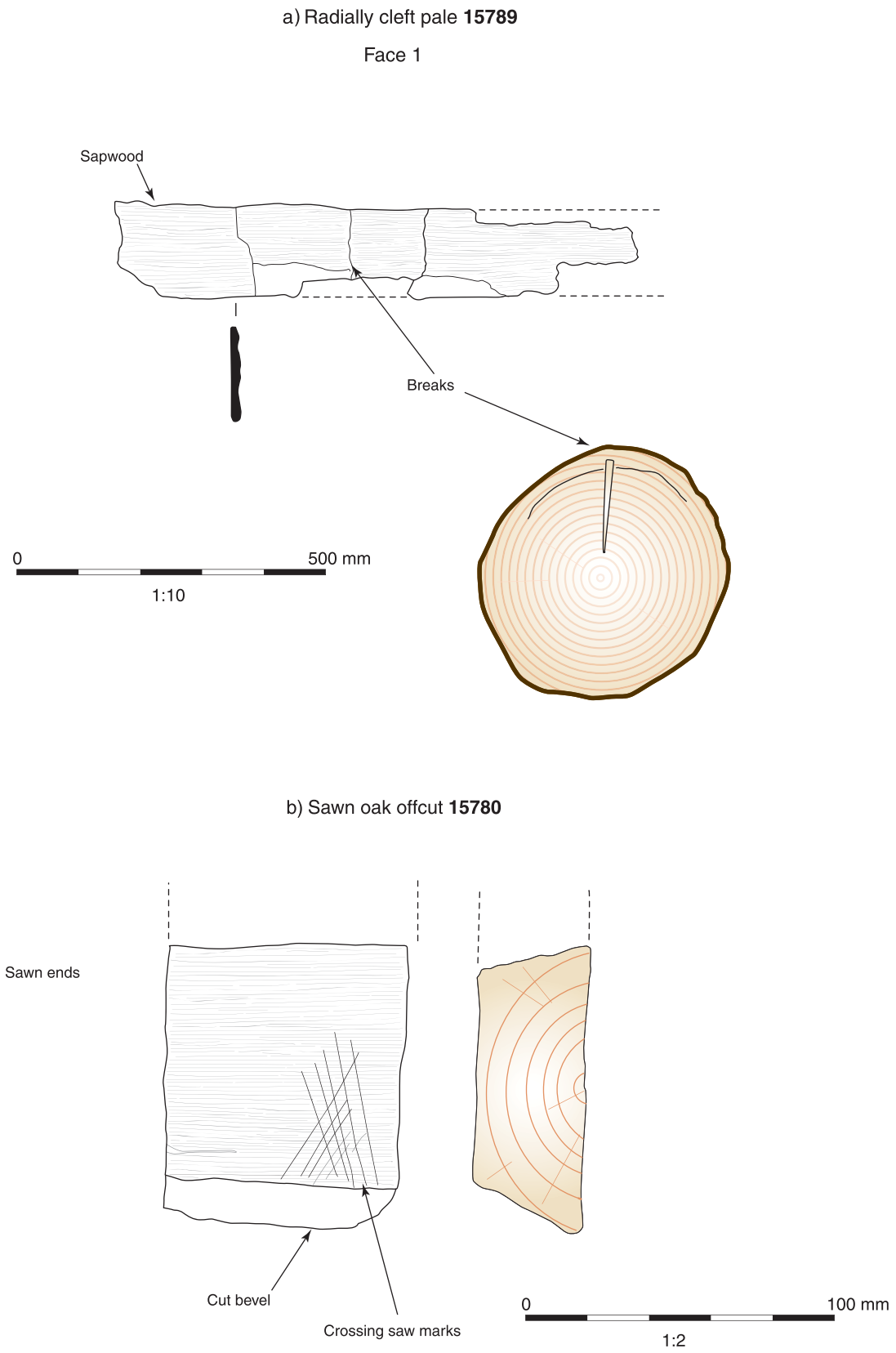


Fig. 3.19 a) Radially cleft oak fence pale fragment 15789; b) Sawn plank off-cut with saw marks from fill 15780

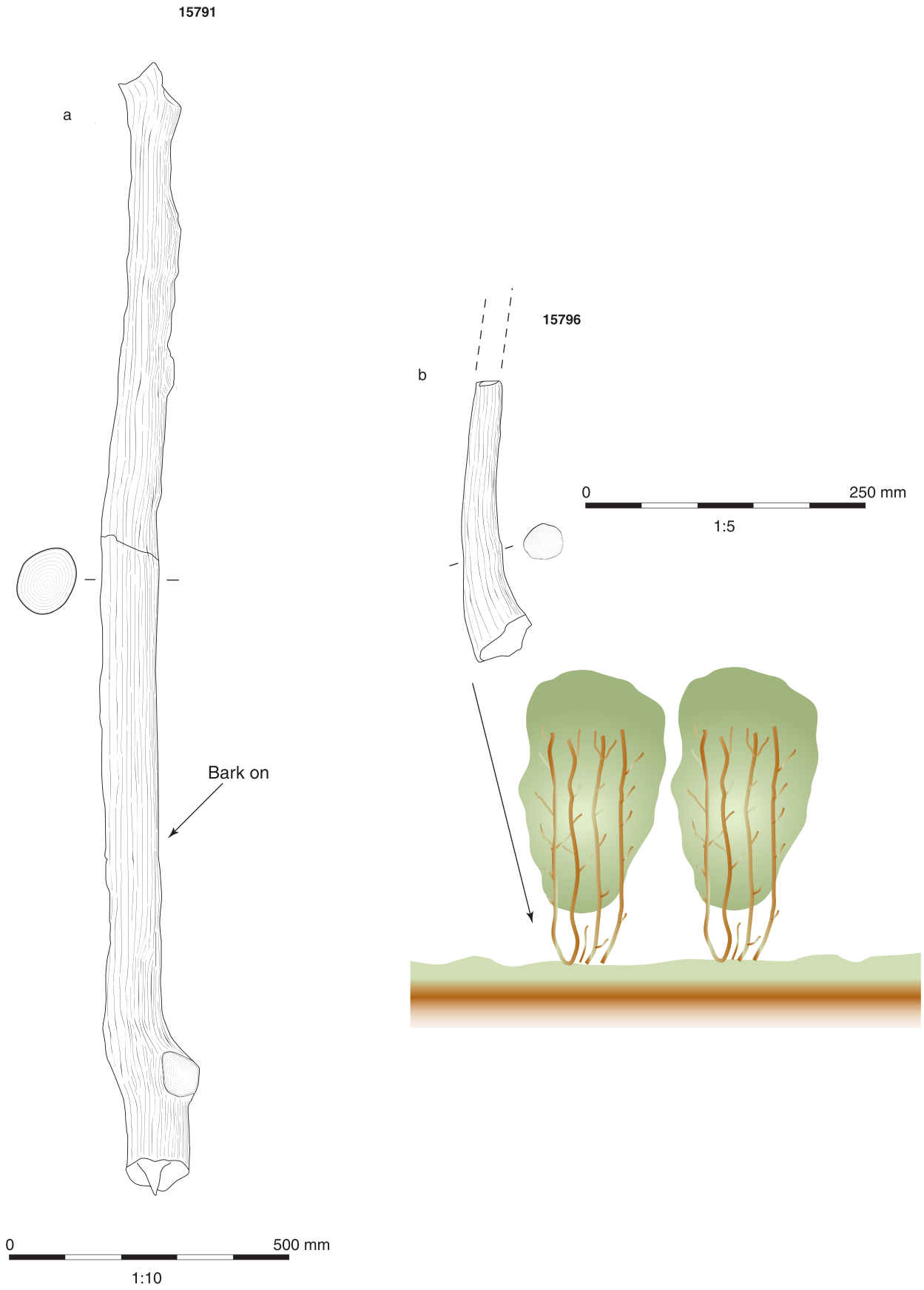


Fig. 3.20 a) Oak log 15791 with axe trimmed ends and branch stubs from the crown of a young tree; b) Possible coppice stem 15796

firewood was regularly cut. This log must have been at the lowest quality end of what might have been considered usable for structural purposes, being mainly knotty sapwood. Alternatively the log may have been cordwood, firewood cut to standard lengths, commonly from 'top' and larger side branches. In historic times cordwood was cut to standard lengths of around 3-4 ft (1-1.3m) depending on the region. This log seems a little long for the Roman equivalent so another possibility is that it was intended for low quality fencing work.

Assorted cut roundwood

The waterhole contained fill deposits in which several spreads of small diameter roundwood with cut ends were deposited. None of it formed a clearly woven section of wattle work, as might have been the case with a wattle fence or well lining revetment. However, most of it lay in loose groups in a rough circle around the centre of the partially silted feature. Therefore the material may have been the disturbed remains of some form of casually made 'dead hedge'. In a dead hedge stakes are driven in to clasp prunings of assorted, light material between them. They are currently still used to protect seedlings from grazing deer.

Microscopic examination of the roundwood confirmed the use of a mix of species, principally willow/poplar (*Salix/Populus*) and ash (*Fraxinus*) but including one stem of field maple. One of the items was a weathered stake of ash (15797) but the rest was mainly small, fairly regular material closely similar in age. A group of rods (15796) comprised a mix of willow/poplar and ash with 4-8 annual rings. This close scatter of ages and the form of the rod ends with a sweep suggest that a coppice or pollard origin is likely (Fig. 3.20b). The same features occurred in willow/poplar group 15799. Group 15800, also composed of willow/poplar, included more branched material possibly suggesting an origin in less formally managed willow pollard or scrub. The use of managed woodland close to the farmstead seems very likely, for the convenience of the farmers, with supplies of large timber set further away. This roundwood study together with the study of the larger timbers, charcoal and pollen provides a snapshot of parts of the local landscape around the settlement.

LEATHER *by Quita Mould*

A very small amount of leather was recovered from late Roman waterhole 15735 at Site 7. The leather came from one of the waterlogged lower fills (15758/15781) of the waterhole. It comprises highly fragmentary remains of a shoe, or possibly shoes, of nailed construction, and a single piece of waste leather. Shoes of this type are the most commonly found type throughout the Roman period. All the leather was bovine in origin.

Seven fragments of shoe were recovered, the largest of which measured 108mm x 43mm and was 1.4mm thick. This piece appears to come from the nailed lasting margin from the left seat area of the shoe upper, with nail holes and torn bracing thread holes present along the surviving edge. Five fragments broken from bottom unit components were also recovered, the largest of which comes from the edge of the insole and has two tunnel stitches running parallel to the edge on the flesh side (under side). A further fragment was the left side of a small low heel stiffener with remains of the broken lasting margin, worn grain side inward to the foot. Eight very small fragments broken from a shoe of nailed construction were also present, including one with a single original edge from the side of the component surviving and three holes worn by nailing.

The waste leather comprised a roughly triangular-shaped piece of waste, now torn into two pieces, with two tapering cut edges, all other edges torn. A marking-out line is present running 2mm from one of the cut edges. A second faint linear mark runs parallel to the opposite cut edge, 17mm from it. This is not a marking out line.

The highly fragmentary nature of the shoe remains suggests that it had not been thrown away directly into the waterhole but had been incorporated into the feature with other material when it was backfilled. The recovery of a shoe of nailed construction and a piece of waste leather, deriving from the cutting out of pattern pieces during the manufacture or repair of leather goods, does provides evidence, however limited, that the occupants of the farmstead were able to access such typical Roman goods and material.

IRON SLAG AND OTHER HIGH-TEMPERATURE DEBRIS *by Lynne Keys*

Introduction and methodology

Material that had been initially identified as slag was recovered from Sites 2, 3, 4 (Trench 54) and 7. Each object was examined by eye and categorised on the basis of morphology. Each material type was weighed by context, except smithing hearth bottoms, which were weighed individually and measured for statistical purposes.

The assemblages

Site 2

A small assemblage weighing just over 3.3kg was recovered from Site 2 by hand and from soil samples. A total of 3280g of material was recovered from early Roman features in the north-eastern enclosure complex and 944g from late Roman features in the south-western complex.

The material from the north-eastern complex was recovered from the upper fill (2206) of ditch 2475

and from pit 2207, which cut the ditch. Context 2006 contained two smithing hearth bottoms, a piece of what might be another, as well as some undiagnostic slag. Pit 2207 also contained two smithing hearth bottoms, but nothing else beyond a little vitrified hearth lining.

The late Roman material came from two interventions in enclosure ditch 20233, and comprised three smithing hearth bottoms and a tiny amount of undiagnostic slag. No hammerscale was recovered from either period, so the focus of smithing cannot be ascertained.

Site 3

A very small amount of material (228g) was recovered from Site 3, mostly by hand (although 2g came from a soil sample). The assemblage cannot be assigned to either iron smelting or iron smithing processes. The one small fragment that has been tentatively identified as very weathered iron slag could alternatively be a natural iron deposit and so is of no great significance. Other types of debris in the assemblage may derive from a variety of high temperature activities, including domestic fires, and cannot be taken on their own to indicate that iron-working was taking place. These include fired clay and fuel ash slag.

Site 4 (Trench 54)

A small amount of material (678g) was recovered from Site 4, including 2g from two soil samples. Only 10g of this material proved to be iron slag, from a medieval furrow, and this could not be assigned to either smelting or smithing activities because it had been broken up during deposition, re-deposition or excavation. The rest of the material was fuel ash slag.

Site 7

A very small assemblage (184g) was recovered by hand on site. Small quantities of iron slag were recovered from late Roman waterhole 15735 and from two tree-throw holes, but could not be assigned specifically to either smelting or smithing because it had been broken up during deposition, re-deposition or excavation. Other types of debris in the assemblage may derive from a variety of high temperature activities, including domestic fires, and include vitrified hearth lining and fuel ash slag. The assemblage appears to be Roman in date but is likely to be redeposited material. No hammerscale was recovered from the bulk samples so it is highly unlikely that the iron slag was produced on or near the site.

WORKED FLINT *by David Mullin*

A total of 142 lithic items were recovered. In addition 147 burnt unworked flints were recovered and a further 133 flint chips from sieving. The material was dominated by undiagnostic waste flakes and was largely residual within later features, but it was possible to identify a late Mesolithic/early Neolithic element in the assemblage.

Raw materials

A variety of raw materials were exploited at the site, including good quality chalk flint and what appears to be a gravel flint, which may occur locally. Chalk flint occurs in the south of Bedfordshire in the area around Luton, roughly 30km to the south of the A421 sites.

The assemblage

The evaluations

In addition to the material recovered from the excavations, seven pieces of worked flint were recovered from areas which were evaluated but did not go on to be excavated and a further three pieces from the evaluation at Berry Farm Borrow Area. None of the material was particularly diagnostic, but the assemblage included three core trimming flakes and two utilised flakes.

Site 2

A total of 47 pieces of worked flint were recovered from Site 2, with an additional 100 chips and 25 pieces of burnt unworked flint retrieved from sieving. The flints were recovered in small numbers from a variety of contexts, the largest amount from a single feature being three flakes from context 2630, part of early Roman soil spread 2743. The majority of the material from the site consists of undiagnostic waste flakes, but a small number of narrow blades were recovered, as well as a microblade of Mesolithic date from fill 2337 of ditch 2454. Virtually no formal tools were present in the assemblage, but three miscellaneous retouched flakes, as well as a broken retouched flake which is possibly a scraper, were present. A large, discoidal flake from fill 2757 of enclosure ditch 2766 is notably different from the rest of the assemblage and may be a flake from a flint axe.

Site 3

A total of eight worked flints, four chips and 28 burnt, unworked flints were recovered from Site 3. This comprises undiagnostic waste flakes recovered as residual material from a variety of features.

Site 4 (Trench 54)

A total of 56 worked flints were recovered from Site 4, along with 13 chips and 58 burnt flints. A distinctive element of the assemblage from this site was the presence of 23 tested nodules of chalk flint, most

of which have flake removals. A total of ten tested nodules were recovered from context 17427 and a further ten from context 17429, both fills of enclosure ditch 17496. In addition, a tested nodule with a long, blade-like flake scar was recovered as a surface find.

A large single-platform core and two non-refitting flakes were recovered from context 17434, a fill of a pit (17317) within the enclosure. This is of good quality flint similar to the tested nodules recovered from the site, but the core has been more formally flaked in a more controlled manner.

Although much of the material is undiagnostic, two end and side scrapers, one from enclosure ditch 17345 (Fig. 3.21, no. 1) and the other unstratified (Fig. 3.21, no. 2), are Neolithic. Blades of probable Mesolithic date were recovered from three features: fill 17101 of ditch 17240, fill 17269 of cobble-filled hollow 17262 and fill 17387 of inner ditch circuit 17716 (Fig. 3.21, no. 3). A blade-like flake was recovered from fill 17104 of antenna ditch 17721 (Fig. 3.21, no. 4).

Site 4 (Trench 61)

A total of seven flints were recovered from Site 4, including a narrow blade and a core trimming flake with narrow blade scars, both of probable Mesolithic date. A flake from subsoil layer 5002 was removed with a soft hammer and may also be of this date.

Site 5

A total of three flakes and four chips were recovered from Site 5. Two of the flakes are blade-like and may date to the late Mesolithic or early Neolithic period.

Site 6 (Trenches 97-99)

A single serrated narrow blade of probable early Neolithic date was recovered from context 7048 and two chips from context 7004, both from fills of post-medieval ditches.

Site 7

A total of 20 worked flints, 10 chips and 36 burnt flints were recovered from Site 7. Although the majority of the material is undiagnostic waste flakes, a Neolithic end and side scraper was recovered from fill 15005 of ditch 15989 (Fig. 3.21, no. 5) and a narrow blade from fill 15184 of tree-throw hole 15183. A piece from a narrow blade core was also recovered from fill 15539 of boundary ditch 15750.

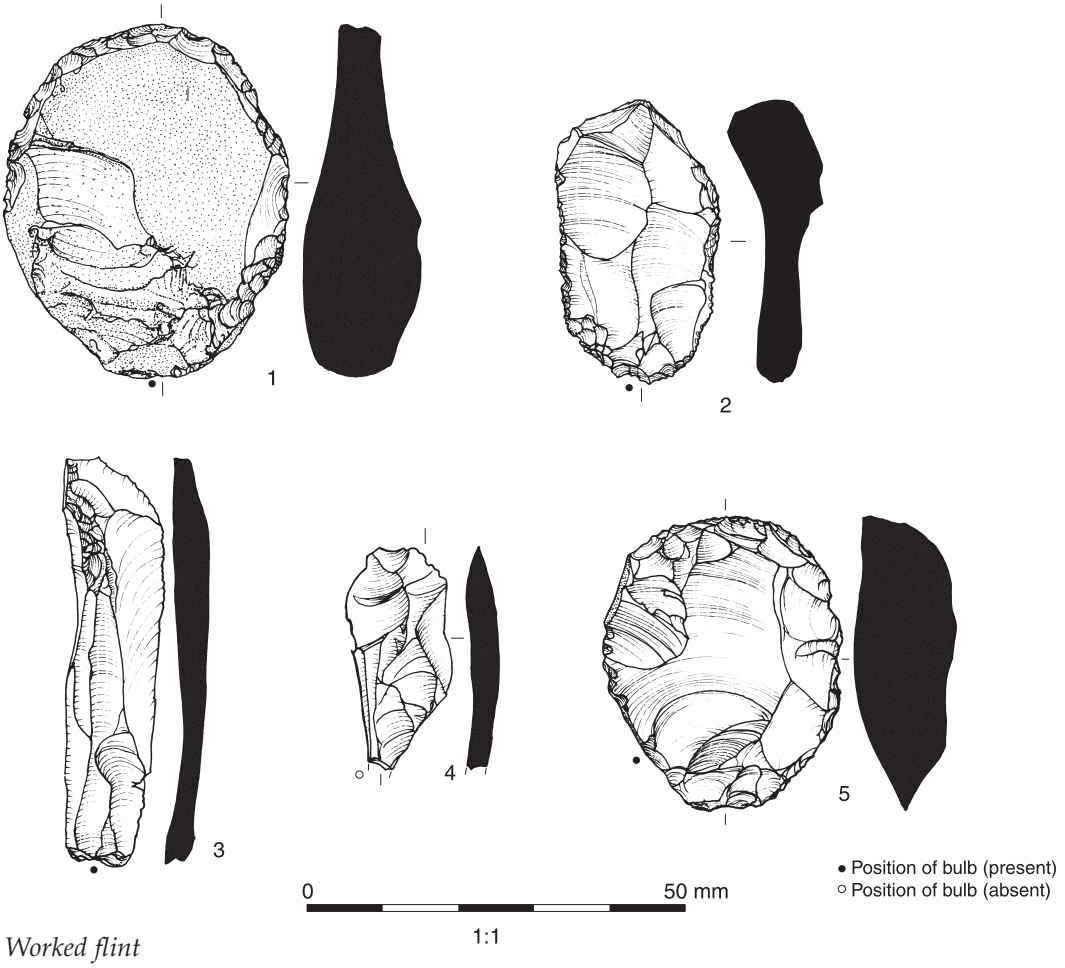


Fig. 3.21 Worked flint

Discussion

The total quantity of Mesolithic material from the A421 Improvements was relatively small and difficult to distinguish from early Neolithic material, especially the narrow blades and blade cores. The topographical situations of the sites within the low-lying Marston Vale does not fit easily into the pattern observed by Dawson (2000a, fig. 6.1) that Mesolithic sites in Bedfordshire generally occupy the major river valleys or locations with good views. The only exception to this was Site 2, which was located on the southern slope of Brogborough Hill, but even this location does not have particularly long-reaching views.

While it is difficult to distinguish between late Mesolithic and early Neolithic narrow blades and the cores from which they were struck, distinctively Neolithic scrapers were recovered from Site 4 (Trench 54) and Site 7. A serrated blade that is probably Neolithic came from Site 6 (Trenches 97-99) and the miscellaneous retouched flakes from Site 2 may also be of this date. The modest amount of material from the A421 Improvements adds a small part to the larger picture of activity in this part of the Great Ouse Valley which includes a major Neolithic and later monument complex located to the east of Bedford in the Cardington-Cople-Willington area (Malim 2000, 75-9) and Neolithic activity from the Biddenham Loop (Luke 2008).

The tested nodules from Site 4 (Trench 54) are from secure Iron Age contexts and may date from this period. It is notable that large tested nodules do not occur on any of the other sites along the line of the A421 excavations, and the technology used here is distinctive and different from the carefully controlled flaking and conservation of raw materials utilised in the Mesolithic and Neolithic. The material is in a fresh condition, does not appear to have been lying on the surface for an extended period of time and was probably deposited relatively soon after being utilised. It is, however, difficult to be certain about the precise character of the use of these nodules. Flint-tempered pottery occurred in the region in the early Iron Age, but was largely replaced by grog-tempered wares during the middle Iron Age, and it is difficult to directly relate the nodules to pottery manufacture. It is also difficult to reconcile this material with the expedient use of flint for the manufacture of tools, as the material must have been imported from at least 30km away. The same applies to the large core and flakes from context 17434, a fill of pit 17317, located within the middle Iron Age enclosure. Although the flaking here is more controlled, the size of the core, which was discarded well before it was worked-out, suggests a lack of regard for the conservation of raw materials. As such, the technology of the flint from these contexts conforms to other examples of Iron Age flint use in southern Britain (Young and Humphrey 1999).

Catalogue of illustrated flint (Fig. 3.21)

1 End and side scraper. Ctx 17171, ditch 17345. SF 17004.
2 End and side scraper. Ctx 17001, ploughsoil.
3 Blade. Ctx 17387, ditch 17716. SF 17015.
4 Blade-like flake. Ctx 17104, ditch 17721.
5 End and side scraper. Ctx 15005, ditch 15989.

Chapter 4: Human Remains

by Sharon Clough and Helen Webb

Introduction

The human remains comprised an early Iron Age cremation burial from Site 5, four early Roman cremation burials from Site 3 and three late Roman inhumation burials from Site 7, as well as a small quantity of disarticulated bone from Sites 2, 4 (Trench 54) and 5. The material was analysed in accordance with national guidelines (Brickley and McKinley 2004; McKinley 2004; Mays *et al.* 2004) and with reference to standard protocols (Buikstra and Ubelaker 1994; Cox and Mays 2000).

The assemblage

Site 2

The human remains from Site 2 comprised four fragments of disarticulated bone from early Roman pit 2465. Fill 2467 contained a left distal humerus and a right rib fragment of a perinatal infant aged between 36 and 38 weeks. Fill 2468 contained a small fragment of cranial vault and a left distal tibia of a probably perinatal infant. Although these remains were recovered from two different fills, there are no repeated elements and the age is the same, and they are therefore likely to come from a single individual.

Site 3

Four early Roman urned cremation burials were excavated, including one (104802) that was recovered from the evaluation (Table 4.1). A small quantity of burnt human bone was also recovered from a soil sample taken from the soil (3129) within a broken but substantially complete jar (3127) that may have been a disturbed or redeposited cinerary urn within the fill of late Iron Age enclosure ditch 3351.

Early Roman cremation burials 3030, 3031, 3050 and 104802

All the cremation burials were of adult individuals. Burial 3030 has been tentatively identified as a young female but the others could not be sexed. No pathologies were observed. The percentage of material in the <10 mm fraction ranged from 31-58% with 26-62% in the 10-4 mm fraction. This level of fragmentation has hindered identification.

The bone from all four burials was predominantly white and well calcined, with a small number of black, grey and blue fragments from different parts of the body, indicating that efficient cremation had taken place. A small quantity of animal bone (8.7 g) was present in burial 104802.

Burnt bone from enclosure ditch 3351

The burnt human bone recovered from the possible disturbed cremation deposit in ditch 3351 came from the <2mm fraction residue of wet-sieved soil sample 3011 and amounted to less than 0.2g in weight. Only one fragment of bone was identifiable. This was a partial distal phalanx, probably of the hand. The fragment was largely unburnt, displaying a normal, light beige colour, although a small blackened area at the proximal end indicated charring. The other, unidentified fragments, were white (completely oxidised) or grey (incompletely oxidised) in colour.

Site 4 (Trench 54)

A total of five unburnt human cranial vault fragments were recovered from context 17319, a fill of middle Iron Age enclosure ditch 17719. The remains were adult but there was no indication as to the sex of the individual. The presence of part of an open suture on one of the fragments may, very

Table 4.1: Site 3, summary of cremation burials

Burial	*Wt (g)*	*Colour*	*Max. fragment size (mm)*	*<10mm (g)*	*10-4mm (g)*	*4-2mm (g)*	*Age/sex*
3030	466.6	White 90%, black and grey 8%, brown and pink 2%	19 x 33	164	287.2	15.4	Adult, possible young female
3031	208.4	White 90%, black 10%	32 x 23	64.5	92.5	51.4	Adult
3050	455.1	98% white. 2%black and grey	41 x 15	200	176.1	79	Adult
104802	520.7	White 90%, grey, blue black and brown 10%	30 x 16	301.2	134.4	85.1	Adult

Table 4.2: Summary of cremation burial 6067/6070

Burial	*Wt (g)*	*Colour*	*Max. fragment size (mm)*	*<10mm (g)*	*10-4mm (g)*	*4-2mm (g)*	*Age/sex*
6067/6070	96.5	98% white, 2% black and grey	40 x 14	0	96.5	unsorted	Adult

tentatively, imply that this was not an elderly individual. No pathological lesions were observed.

A single fragment of human bone was recovered during the evaluation from the middle fill (105406) of enclosure ditch 17345. The bone was the middle third of a probable right adult femur.

Site 5

An un-urned cremation burial and two disarticulated human bones were recovered from Site 5. The cremation burial (6067/6070) was dated by radiocarbon to the early Iron Age (770-400 cal BC; SUERC-30618: 2406±35 BP). The deposit is summarised in Table 4.2.

The majority of fragments were in the 5-10 mm fraction with the remainder in the smaller unsorted fractions. There were a lot of fissures and cracking observed on the bone, which may have contributed to the small size of fragments which impeded bone identification. The warping and circular fragmentation observed is indicative of wet fleshed bone that has been subjected to intense heat.

The bone weighed 96.5g in total and only 15.8% was identifiable (mainly skull followed by lower limbs). Hand and foot phalanges and tooth roots were also identified, perhaps indicating that some care was taken in the collection of burnt bone from the pyre.

The cremated bone was predominantly buff white in colour, with very minor areas of black and grey. Iron staining on one small fragment suggests close proximity to an iron object. However, no grave goods were found with the burial.

The deposit was an adult of indeterminate sex. An intermediate and a distal foot phalanx had fused together, suggesting that the joint had become damaged due to injury or through degeneration. If it was caused by erosion of the joint then it is possible that this was an older individual, as the prevalence of osteoarthritis increases with age (Rogers and Waldron 1995, 32).

There was no evidence for deliberate selection of particular body parts. Very little was identifiable but all parts seemed to be represented, including small bones.

The temperatures achieved on the pyre were evenly distributed and resulted in full oxidation of the entire skeleton. It is unclear how far later land use had affected the depth of the feature containing the cremated bone and therefore the weight of bone recovered.

Disarticulated bone

The proximal third of the shaft of an adult right femur was recovered from the fill (109108) of late Iron Age pit 109105 during the evaluation phase of the investigation. It had a prominent linea aspera and large gluteal attachment site. There was less surface erosion than had affected the other disarticulated bone (McKinley 2004, score 2/3). The platymeric index was 85 (moderate or eurymeric).

The upper two thirds of a left adult femur came from the fill (109110) of possible roundhouse gully 6021. The surface of the bone was quite badly eroded (McKinley 2004, score 4) and where it was broken midshaft the ends were weathered suggesting it had fragmented in antiquity. This bone was much smaller and less robust that that from context 109108, as well as exhibiting more evidence for erosion. The platymeric index was 71 (flattened or platymeric). The enormous difference in size and index between the two bones make it extremely unlikely that they are from the same individual.

Site 7

Three late Romano-British inhumation burials were recovered from within discrete earth-cut graves, and a small quantity of burnt human bone was recovered from the upper fill (15325) of enclosure ditch 15753.

Inhumation burials 15061, 15230 and 15341

Two of the graves (15061 and 15230) were located near a boundary ditch and the third (15341) lay a further 10m to the south-west. The latter was very shallow and had been plough-truncated. Skeleton 15060, in grave 15061, was extended on her right side while the other skeletons were supine. Skeleton 15229, in grave 15230, was wearing a bronze bracelet that had caused staining in the region of the lower arm and wrist.

Skeleton 15060 was a probable female aged 30-40 years. She was approximately 1.48m (4′ 8″) tall. Of the 26 teeth present, eight had calculus flecks and four sockets had periodontal (gum) disease. Very slight vertebral degeneration was observed.

Skeleton 15229 was a probable male aged upwards of 18 years. There were nine loose teeth, six of which had slight calculus. There was extra wear (attrition) on the lingual side of an incisor which may be related to an overbite or extra-masticatory use. There were marginal osteophytes around the bodies of thoracic and lumbar vertebrae,

but due to fragmentation these were unquantifiable.

Skeleton 15342, in grave 15341, was a possible female aged 40-44 years. The skull and lower limbs had been destroyed by ploughing subsequent to burial. There were seven loose teeth, one with medium calculus and one with a dental enamel hypoplastic line indicating an episodic disruption during dentine growth (Hillson 1996, 165) which could be related to any of a variety of factors including malnutrition, disease and dietary deficiency. Seven lumbar vertebral fragments had osteophytic growth on the facets which is indicative of joint degeneration.

All three skeletons were highly fragmented and less than 75% complete, which limited data recovery. Mean stature for females in the Roman period is 1.59m (Roberts and Cox 2003). Skeleton 15060 is much shorter than this. The dentition present had no caries, and limited calculus (mineralised dental plaque). This may indicate a diet low in starches, sugars and casein (Hillson 1996).

Burnt bone from enclosure ditch 15753

Eight fragments of burnt human bone were recovered, totalling 9.3g. Six of the fragments were from the cranial vault; the other two were unidentified. The largest fragment was from the cranium and measured 32mm in length. All the fragments were mottled in colour, ranging from white to bluish-grey and black. The remains appeared to be of an adult. One of the cranial fragments incorporated part of an open suture so it may, very tentatively, be suggested that the individual was not elderly. Sex could not be ascertained due to the absence of any sexually dimorphic features. No pathological lesions were observed.

Discussion

The discovery of an early Iron Age cremation burial at Site 5 is unusual, although this may be partly because un-urned burials of this type are difficult to date. Two un-urned cremation burials were recovered from Biddenham Loop (Luke 2008, 143). They were located *c* 20m from the settlement. Un-urned Iron Age cremations have also been found in the ring ditch of a Bronze-Age barrow at Broom (Cooper and Edmonds 2007).

No burials of middle or late Iron Age date were identified, but disarticulated remains were recovered from non-funerary features at Site 4 (Trench 54) and Site 5. The bones comprised three incomplete adult femora and were in both instances associated with evidence for domestic settlement; the bone from Site 4 (Trench 54) came from an enclosure ditch and those from Site 5 from a pit and a possible roundhouse gully. The presence of isolated, disarticulated human bones within settlement-related features dating to the Iron Age is far from uncommon and has been discussed by numerous authors (eg Cunliffe 2005, 543; Whimster 1981; Wilson 1981; Wait 1985). An explanation that may account for the frequent presence of disarticulated and fragmentary human bones within occupation deposits, is that the dead may have been exposed rather than buried (Cunliffe 2005, 554; Wilson 1981, 148). Bones may then have been incorporated into rubbish deposits either accidentally (either having washed into them, or being deposited by scavengers), or as part of a deliberate, secondary burial rite. The latter is perhaps more likely given the quantity known and the apparently formal placement of some of the bones within the features. Wait (1985, 117) suggested that the presence of single bones, usually with no cut marks or similar evidence for deliberate dismemberment, may be evidence for some form of secondary manipulation of the corpse after the flesh had decomposed.

The presence of only femora in the current assemblage may represent deliberate cultural selection of elements for burial. Wilson (1981, 150) states that long bones are usually the most 'representative' of the skeleton. It should also be remembered, however, that these bones, particularly femora, are robust, and may have survived preferentially over more fragile elements such as ribs and vertebrae. It is also possible that skulls and long-bone fragments tend to be reported with greater frequency than other isolated skeletal elements because they are more robust and are often more easily identified (Whimster 1981, 183). In a number of instances, these bones were buried in apparently formal votive contexts: at Broadstairs, Kent, for example, arm and leg bones, and a number of skulls, had been carefully deposited in a number of shallow chalk-cut depressions (Hurd 1909, 427-435).

Evidence for formal burial reappears in the early Roman period, with the small cremation cemetery at Site 3. All the remains were of adults, but only a single young female could be sexed. There is some evidence from this group that the buried remains did not include all of the cremated material from the pyre. The weights of the cremation burials ranged from 208.4-520.7g and these fall short of the average weight of an entire cremated adult skeleton, which is typically 1000-3600g (McKinley 2000, 404). This would suggest that the entire individual was not present in the urn. This may in some part be due to later truncation by ploughing, as the cinerary urns in burials 3031 and 3050 were noted to have some damage. However, commonly there is only a token amount of the individual buried in the urn. The identified elements for each of the cremated bone deposits indicate that there appears to have been collection of all parts of the skeleton, with the exception of teeth and small bones, which were represented only by a single tooth root from burial 104802 and one distal phalanx from the same burial. Body part collection appears then to represent a token amount from each body, with larger elements preferred, probably due to ease of identification.

Infant burials such as the early Roman example at Site 2 are frequently found in and around settlement areas throughout the Iron Age and Roman

period (Pearce 1999, 155). At Kempston neonates were associated with Romano-British enclosure L11 and structure G4004 (Dawson 2004, 187) and infants under six months of age were recovered from the Roman villa at Totternhoe (Jones 1992, 92). It has been suggested that infants lacked the social persona that would entitle them to the burial rites that were accorded to other members of the community (Esmond Cleary 2000, 135).

The only inhumation burials were the three late Roman graves at Site 7.

These burials are typical of late Roman rural areas. Such small groupings close to enclosure ditches are a common occurrence on sites in southern England (Pearce 1999). A similar situation was recorded at Marsh Leys Farm, where two burials lay close to Farmstead 4 and one near Farmstead 5 (Luke 2011, 159).

Chapter 5: Environmental evidence

ANIMAL BONE *by Lena Strid*

Introduction

The analysis included a total of 10639 bones (125kg), comprising all hand-collected bones from securely dated features and a selection of bones from sieved samples. The majority of the bones came from Sites 2, 3, 4 (Trench 54) and 7, with only small quantities from the other sites. Bones recovered from evaluation trenches in areas that went on to excavation have been included in the quantification and analysis for the corresponding site. Small assemblages of faunal remains were also recovered from a Roman posthole in Evaluation Trench 60 and a late Iron Age/early Roman ditch in Evaluation Trench 100, as well as an assemblage of 25 bones from Evaluation Trench 31, from features associated with the deserted medieval village at Lower End.

Methodology

The bones were identified using comparative skeletal reference collections, in addition to osteological identification manuals. All animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Sheep and goat were identified to species, where possible, using Boessneck *et al.* (1964) and Prummel and Frisch (1986). They were otherwise classified as 'sheep/goat'. Ribs and vertebrae, with the exception of atlas and axis, were classified by size: 'large mammal' representing cattle, horse and deer; 'medium mammal' representing sheep/goat, pig and large dog; 'small mammal' representing small dog, cat and hare; and 'microfauna' representing animals such as frog, rat and mice.

The condition of the bone was graded on a 6-point system (0-5). Grade 0 equating to very well-preserved bone, and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable. The minimum number of individuals (MNI) was calculated based on the most frequently occurring bone for each species, using Serjeantson's (1996) and Worley's (forthcoming) zoning guides and taking into account left and right sides, as well as epiphyseal fusion. For the calculation of the number of identified fragments per species (NISP) all identifiable fragments were counted, although bones with modern breaks were refitted. The weight of bone fragments has been recorded in order to give an idea of their size and to provide an alternative means of quantification.

For ageing, Habermehl's (1975) data on epiphyseal fusion was used. Three fusion stages were recorded: 'unfused', 'in fusion', and 'fused'. 'In fusion' indicates that the epiphyseal line is still visible. Cattle horn cores were aged according to Armitage (1982), using texture and appearance of the horn core surface. Tooth wear was recorded using Grant's tooth wear stages (Grant 1982), and correlated with tooth eruption (Habermehl 1975). In order to estimate an age for the animals, the methods of Halstead (1985), Payne (1973) and O'Connor (1988) were used for cattle, sheep/goat and pig respectively.

Sex estimation was carried out on morphological traits on cattle and sheep/goat pelves, sheep and goat horn cores, and pig mandibular canine teeth, using data from Boessneck *et al*. (1964), Hatting (1983), Prummel and Frisch (1986), Schmid (1972) and Vretemark (1997). Mennerich's index for cattle metacarpals were also used for sexing this element (Mennerich 1968). The presence or absence of spurs on fowl tarsometatarsi and medullary bone in bird bones were used to sex avian remains.

Measurements were taken according to von den Driesch (1976), using digital callipers with an accuracy of 0.01 mm. Large bones were measured using an osteometric board, with an accuracy of 1 mm. Withers height of dog and horse were calculated using Harcourt (1974) and May (1985).

Sieved samples were scanned and bones from bird and fish extracted, as well as mammal bones suitable for ageing and sexing. The extracted bones amounted to 78 fragments (3.8% of the total fragment count from the sieved samples). The remaining bones mostly consisted of unidentifiable fragments.

Preservation

The bones were generally well or fairly well preserved, regardless of phase. Poorly preserved bone was mostly found in Site 5 and in the middle Roman features from Site 7. Burnt bones were only numerous in the middle Iron Age assemblage from Site 4 (Trench 54). With the exception of one rodent-gnawed bone from Site 4 (Trench 54), all gnawed bones had been gnawed by carnivores, probably dogs. The general scarcity of gnaw marks in the assemblages suggest that butchery and kitchen waste had been disposed of rapidly and securely.

Results

Site 2

The faunal assemblage from Site 2 comprised a total of 2096 fragments (22108g), dating from the late Iron Age and Roman period. The species present include cattle (*Bos taurus*), sheep/goat (*Ovis aries / Capra hircus*), pig (*Sus domesticus*), horse (*Equus caballus*), dog (*Canis familiaris*), red deer (*Cervus elaphus*), domestic fowl (*Gallus gallus domesticus*) and crow/rook (*Corvus corone / Corvus frugilegus*; Table 5.1). A single herring (*Clupea harengus*) vertebra from the uppermost fill (2267) of pit 2240 is extremely unusual for an inland site of this period and is likely to be intrusive (R Nicholson pers. comm.). While the majority of the assemblage derives from the early Roman features in the north-eastern part of the site, the middle Roman assemblage from the south-western area contained the greatest species diversity, including wild mammals, birds and dog. These taxa were represented by only a few bones each, with the exception of domestic fowl, of which a substantially complete individual was recovered from oven 20143.

Table 5.1: Site 2, Number of identified bones (NISP)/taxon by phase (MNI in parentheses)

	North-eastern complex		*South-western complex*	
	Late Iron Age	*Early Roman*	*Middle Roman*	*Late Roman*
Cattle	26 (2)	118 (5)	70 (2)	16 (2)
Sheep/goat	9 (2)	106 (5)	28 (2)	6 (1)
Sheep		4		
Pig		20 (2)	9 (1)	
Horse	7 (1)	18 (2)	12 (1)	1 (1)
Dog	1 (1)	4 (1)	2 (1)	
Red deer	1 (1)		2 (1)	
Deer sp.			3	
Domestic fowl			26 (1)	
Crow/rook			1 (1)	
Indet. bird			5	
Medium mammals	4	103	19	1
Large mammals	26	88	51	44
Indeterminate	259	512	97	97
Total	333	973	625	165
Identified to species	44	270	153	23
Weight (g)	2845	11253	5565	2445

Livestock

In the early Roman assemblage, cattle is the most numerous species (51.0%) followed by sheep/goat (40.1%). A predominance of cattle to sheep/goat is consistent with contemporary sites in the Milton Keynes area as well as sites south and south-west of Bedford (Dobney and Jaques 1996, 206; Hamilton-Dyer 2004, 296; Holmes and Dobney 1994, 207; Holmes and Rielly 1994, 517; Roberts 2004, 305; Strid forthcoming). Contrastingly, sites north and north-east of Bedford are dominated by sheep/goat (Chaplin and McCormick 1986, 397; Holmes 2007, 331). The middle and late Roman assemblages were too small for an analysis of the interspecies frequency to be considered reliable (Hambleton 1999, 39-40), although the relative scarcity of pig may be accurate, considering that a low representation of pig is common in contemporary assemblages in the region (Dobney and Jaques 1996, 206; Hamilton-Dyer 2004, 296; Holmes 1993, 136; Holmes 2007, 331; Holmes and Dobney 1994, 207; Holmes and Rielly 1994, 517; Roberts 2004, 305; Strid forthcoming).

There were only a small number of ageable livestock teeth from each phase (Tables 5.2-3). While both young and senile cattle were present, the sheep/goat mandibles were focussed on the 2-4 years age range. Bones with ageable epiphyses were also few in number, the only sizeable sample being from the early Roman phase, where both cattle and sheep/goat seem to have been mostly slaughtered as adults or subadults (Table 5.4). A small number of neonatal/juvenile bones of cattle, sheep/goat and pig were present in the early Roman and middle Roman assemblages. Butchery marks are absent, but as the bones are disarticulated they probably represent kitchen waste. The total number of sexed bones was too small for analysis. The few measurable bones are within the same size range as bones

Table 5.2: Dental ageing of sheep/goat

Site	*Phase*	*No.*	*<6 months*	*6-12 months*	*1-2 years*	*2-3 years*	*3-4 years*	*4-6 years*	*6-8 years*
2									
	Late Iron Age	1				1			
	Early Roman	2				2			
	Middle Roman	3		1		1	1		
	Late Roman	1					1		
3	Late Iron Age	6		3	2		1		
	Early Roman	1							1
4 (Tr 54)	Middle Iron Age	6			1	1	1	2	1
7	Middle Roman	2			1		1		
	Late Roman	3				1	2		

from contemporary sites in Britain. Withers heights of 0.53m and 1.31m respectively could be calculated on one early Roman sheep metacarpal and one middle Roman horse tibia.

Other species

Horse and dog were found in small numbers in most phases. The fusion data and surface structure of the bones suggest that these animals were fully mature when they died. Horses were not normally bred for meat in the Iron Age or Roman periods, but were mainly utilised as riding animals or beasts of burden. None of the dog bones are characteristic of the more extreme dog types that occurred during the Roman period (Harcourt 1974, 164), and they probably represent dogs of medium size, used for guarding and/or herding. No cut marks or chop marks were observed on any of the horse or dog bones.

The deer remains comprise a sawn-off red deer antler tine in Iron Age pit 2151 and five bones from middle Roman features: an articulated red deer distal radius and ulna in pit 20071 and articulated phalanges in waterhole 20167. The phalanges could not be identified to species, but would be either the native red deer or the introduced fallow deer, most likely the former. Fallow deer have been identified on Roman sites (Sykes 2007a, 77-78), but are very rarely found compared to red deer. As the antler lack burr or pedicle it is not possible to tell whether the fragment derives from a shed antler or from an animal that had been hunted, but the bones clearly derive from hunting. Marks from butchery or bone/antler working could not be observed on any of the Roman deer fragments.

The avian remains include 26 bones of domestic fowl, all from the fill of oven 20143 and possibly representing a single bird, and one humerus from a crow or rook from pit/waterhole 20167. It is unclear whether the bones from oven 20143 were deposited in an articulated state or whether they represent kitchen and table waste. With the exception of one tarsometatarsus, all the bones came from meat-rich parts of the carcass, including legs, wings and axial

Table 5.3: Dental ageing of cattle

Site	*Phase*	*N*	*<8 months*	*8-18 months*	*18-30 months*	*30-36 months*	*Young adult*	*Adult*	*Old adult*	*Senile*
2	LIA	1								1
2	ER	4					1			3
2	MR	2				1				1
2	LR	1				1				
3	LIA	2				1				1
3	ER	1						1		
4 (Tr 54)	MIA	19			1	5	2	5	3	3
7	MR	8		1	1	2		2	2	
7	LR	10			1	3		4		2

Table 5.4: Site 2, epiphyseal closure of cattle, sheep/goat, pig and horse by phase

	Late Iron Age		*Early Roman*		*Middle Roman*		*Late Roman*	
CATTLE	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	1	0	10	10	6	0	1	0
Mid fusion	3	0	15	27	4	0	1	0
Late fusion			2	50				
SHEEP/ GOAT	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion			10	30	4	0		
Mid fusion	1	0	9	44	1	100		
Late fusion			5	80				
PIG	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion			3	0	1	100		
Mid fusion			1	100	1	0		
Late fusion								
HORSE	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	3	0	2	0	1	0	1	0
Mid fusion			1	0	1	0		
Late fusion	2	0	2	0	1	0		

skeleton. The origin of the crow/rook bone is less clear; while it may be kitchen waste, it may also come from a natural mortality or a deliberate killing.

Butchery

Almost all butchery marks in the assemblage comprise cut marks from disarticulation or filleting. They are most frequent on cattle, but also occur on sheep/goat, pig, and large mammal. Cut marks that are very likely to derive from disarticulation occurred on the distal humerus of single examples of early Roman cattle, sheep/goat and pig, one early Roman cattle distal tibia and on the vertical ramus of one early Roman and two late Roman cattle mandibles. Cut marks from skinning were found on only a single cattle proximal metatarsal from an Iron Age context. It is possible that the cut marks on one early Roman cattle proximal metacarpal and one early Roman cattle scapula also came from skinning, but as they were located at the joints they may have been caused during disarticulation. Only two bones, both from early Roman contexts, display chop marks from cleavers. These comprised one sheep/goat astragalus and one pig mandible, which had chop marks on the vertical ramus. Cut marks from filleting were recorded on four bones from the early Roman period: one cattle maxilla, one pig and one large mammal humerus shaft and on the horizontal ramus on one pig mandible. One early Roman sheep/goat tibia had a crude hole pierced through its distal metaphysis, possibly to extract marrow or to facilitate hanging of the joint for smoking (Hamilton-Dyer 2010, 17).

Pathology

Pathological conditions were recorded on one cattle and three sheep/goat bones in the early Roman assemblage and on one fowl bone in the middle Roman assemblage. The distal joint on one cattle femur was slightly deformed and also displayed lipping and eburnation, which may suggest muscle stress, wear and minor trauma from the use of the animal for traction. One sheep/goat metacarpal had raised parallel ridges posteriorly on the upper half of the shaft. The aetiology is uncertain, but similar pathologies have been observed on sheep/goat metatarsal shafts from Lincoln, York and Winchester, where they have been interpreted as possibly associated with infection or repeated minor trauma (Brothwell *et al*. 2005; Strid 2011). One sheep horn core had a depression at its base, which may be linked to malnutrition (Albarella 1995). Oral pathology was present as a very large swelling lingually on the horizontal ramus on a sheep/goat mandible; the fourth premolar had been lost premortem, indeed the alveole had been completely eroded on the lingual side, probably due to the infection. The middle Roman fowl scapula displayed a widening of the bone from the joint to mid-shaft. As the scapula was broken off mid-shaft it is not known whether the widening continued. The aetiology of this pathology is not known.

Table 5.5: Site 3, Number of identified bones (NISP)/taxon by phase (MNI in parentheses)

	Late Iron Age	*Early Roman*
Cattle	68 (3)	29 (3)
Sheep/goat	56 (5)	17 (2)
Sheep	2	
Pig	13 (2)	4 (1)
Horse	83* (3)	27 (2)
Dog	6 (2)	
Indet. bird	1	
Small mammals	3	
Medium mammals	33	22
Large mammals	153	9
Indeterminate	680	110
Total	1098	218
Identified to species	228*	77
Weight (g)	10526	3021

* including 60 fragments from a semiarticulated horse skeleton

Site 3

The excavation at Site 3 produced a total of 1316 bones (13.6kg). The majority of the assemblage (1098 fragments) dated from the late Iron Age and was dominated by cattle, sheep/goat and horse, with a small number of bones from pig, dog and bird (Table 5.5). Only two bones could be identified as sheep and none as goat, and considering the general rarity of goat bones on Iron Age sites (King 1991, 16), it is likely that most if not all of the sheep/goat bones are sheep. The smaller early Roman assemblage comprised 218 bones and was dominated by cattle and horse.

Livestock

Although the assemblage is too small to permit a full interspecies comparison, the low representation of pig in relation to cattle and sheep/goat has also been observed at several nearby sites (Dobney and Jaques 1996, 206; Hamilton-Dyer 2004, 296; Holmes 1993, 136; Holmes 2007, 331; Holmes and Dobney 1994, 207; Holmes and Rielly 1994, 517; Roberts 2004, 305; Strid forthcoming).

Dental ageing data for six late Iron Age sheep/goats indicate a range of slaughter ages, from 6-12 months to 3-4 years (Table 5.2). Two loose molars that could not be aged within Payne's age categories indicate an age at death of 4-8 years. The dental data suggest that sheep/goat were used for a multiple products, such as meat, dairy products, wool and manure. The sample sizes for epiphyseal fusion were small for all taxa in both the late Iron Age and early Roman periods (Table 5.6). Cattle and sheep/goat seem to have been slaughtered mostly as subadults or adults, whereas pigs were mostly slaughtered as subadults. A single late Iron Age sheep/goat metatarsal represents neonatal/juvenile mortality.

Table 5.6: Epiphyseal closure of cattle, sheep/goat, pig and horse

	Site 3 Late Iron Age		Site 3 Early Roman		Site 4 (Tr 54) Middle Iron Age		Site 7 Middle Roman		Site 7 Late Roman	
CATTLE	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	4	0	2	0	7	0	6	33.3	15	0
Mid fusion	8	0	3	0	26	30.8	23	26.1	27	48.1
Late fusion			1	100	8	37.5	8	50	21	47.6
SHEEP/ GOAT	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	4	25	2	50	3	0	4	50	3	0
Mid fusion			2	50	9	66.7			2	50
Late fusion					4	100	1	0	1	100
PIG	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	5	60			2	0				
Mid fusion	1	0			1	0			4	100
Late fusion									1	100
HORSE	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*	*N*	*% unfused*
Early fusion	3	0	4	0	4	0	2	0	11	0
Mid fusion	1	0	1	0	2	0	1	0	1	0
Late fusion	1	0	1	0	1	0	3	0	2	50

Only three bones could be sexed, which is too small a sample for an analysis of the sex ratio of the herds.

The number of bones that could be measured and/or sexed was too small to yield any useful information regarding animal size, sex ratio and breed.

Other species

All horse bones came from skeletally mature animals, which is consistent with other sites in the area. Horses were not generally bred for meat, although occasionally their flesh was utilised. Horizontal cut marks on the medial side of a distal humerus from a late Iron Age ditch (3358) indicates disarticulation of the elbow joint. It is, however, not possible to tell whether this represents processing for consumption or was done in order to facilitate disposal of the carcass. The horse assemblage also included one semi-articulated horse (below), for which a withers height of 1.20m was calculated on the metacarpal.

The majority of the dog remains come from skeletally mature animals. Due to fragmentation, it was not possible to estimate the size of these dogs, but most dog remains prior to the Roman period displayed no extreme form either in withers height or robusticity (Clark 1995; Harcourt 1974). They were probably bred for herding and guarding, although it is not certain to what extent they were specialists or all-round dogs.

Butchery

Butchery marks were recorded on five bones from late Iron Age cattle, one pig and one horse, and from two early Roman cattle and one sheep/goat. All butchery marks were made by knives. In addition to this there were several fragmented bones, but it was not possible to be certain whether these represent butchery or post-depositional damage. Cut marks suggesting disarticulation were found on two cattle mandibular joints and one cattle proximal radius, as well as on one distal horse humerus. Two cattle tarsal bones had cut marks from either disarticulation or skinning. Cut marks from filleting were noted midshaft on one cattle humerus and on the transverse process on one large mammal vertebra. One late Roman sheep/goat humerus had diagonal cutmarks supradistally and midshaft, which could be from either filleting or disarticulation.

Pathology

Pathologies were only present in the late Iron Age assemblage, where they affected bones from horse, dog and large mammal. One horse skull had patches of pathological bone growth internally and externally on the premaxilla, suggesting an infection of the periosteum. One dog tibia displayed small areas of smooth but lumpy bone growth on the lower third of the shaft on all sides. The aetiology for this is unclear, but it may be the remains of healed infections of the periosteum. Five thoracic vertebrae from a large mammal, possibly horse, displayed different pathologies associated with degenerative joint disease and muscle stress: eburnation on the cranial articulate surface were recorded on two of these vertebrae, one of which also had porosities on the polished surface. Another two vertebrae displayed eburnation on the caudal articulate surface and one vertebra had exostoses on the vertebral body.

Articulated remains

A semi-articulated skeleton of an adult horse was recovered from the fill of ditch 3360. Most post-cranial bones were present but the skull and mandible were missing, although some maxillary and mandibular teeth were present in the fill. The ditch was very shallow and the skull and mandible may have been removed by truncation although diagenesis cannot be discounted as a factor. The posture in which the animal lay within the ditch suggests that it was partially dismembered prior to deposition, although no butchery marks were observed. Such marks may, however, have been missed due to fragmentation of the bone during recovery. Articulated skeletons of horses and dogs form a distinct category of faunal remains: on one hand, these animals were generally not eaten and their remains were disposed of more or less intact. On the other hand, they could symbolise power and protection, and were on occasion deliberately sacrificed (Grant 1984, 223; Monikander 2010, 62-65; Smith 2006, 12-13).

Animal bones from cremation burial 104802

Two burnt bones, one a carpal/tarsal from a large mammal and the other a fragment of a medium mammal long bone, were found in cremation burial 104802. They may have been part of cuts of meat that were included in the cremation or they may represent waste from a funeral feast that was included in the pyre, whether accidentally or deliberately.

Site 4 (Trench 54)

Site 4 (Trench 54) produced 3594 bones from middle Iron Age enclosure ditches and associated pits (Table 5.7). Cattle (*Bos taurus*), sheep (*Ovis aries*), goat (*Capra hircus*), pig (*Sus domesticus*), horse (*Equus caballus*), dog (*Canis familiaris*), red deer (*Cervus elaphus*) and field vole (*Microtus agrestis*) were identified. The assemblage is dominated by domestic animals, typical for rural Iron Age assemblages. Deer remains were represented exclusively by antler fragments, one of which shows evidence of working, but since no burrs or pedicles were present it is not possible to establish whether they result from hunting or from gathering of shed antlers.

Livestock

Cattle is the most common species, regardless of quantification method. However, the difference between cattle and sheep/goat is less pronounced when using MNI. Since MNI tends to promote less numerical species in favour of more frequently occurring species (Hambleton 1999, 34-35), the increased representation of sheep/goat when using MNI is not entirely surprising. The local environment would, however, have favoured cattle rather than sheep/goat, suggesting that the number of identified specimens may be the more accurate quantification method for comparing livestock abundance in this instance.

There is little difference in species frequency between the different phases of the enclosure system. The earliest enclosure, represented by ditches 17715 and 17716, contains relatively more sheep/goat compared to cattle than the later enclosures, but the sample size is small and the species ratio must therefore be interpreted with caution. The remaining enclosure ditches have a similar species ratio to the assemblage as a whole: cattle bones are much more numerous than sheep/goat

Table 5.7: Site 4 (Trench 54), Number of identified bones (NISP)/taxon by feature type (MNI in parentheses)

	Total	*Inner ditch circuit*	*Outer ditch circuits*	*Ditches 17719 and 17496*	*Pits*
Cattle	441 (10)	71 (2)	140 (5)	128 (5)	28 (2)
Sheep/goat	202 (8)	66 (3)	49 (2)	49 (4)	20 (3)
Sheep	3	1			1
Goat	1				
Pig	46 (4)	7 (2)	23 (3)	10 (1)	1 (1)
Horse	76 (3)	11 (1)	21 (1)	29 (1)	6 (1)
Dog	15 (1)	5 (1)	6 (1)	2 (1)	
Red deer	13	1		2	8
Indet. bird	2				
Field vole	1	1			
Small mammals	1		1		
Medium mammals	178	30	57	51	21
Large mammals	693	121	197	195	40
Indeterminate	1922	366	639	514	108
Total	3594	680	1133	980	233
Total identified to species	798	163	239	220	64
Weight (g)	39932	4540	10900	15460	2480

bones, although when using MNI, the difference between the two taxa is not so large. The difference may also be due to taphonomic factors: the larger cattle bones may have had a better chance of survival than the sheep/goat bones, or the cattle bones may have fragmented more during butchery. However, if the difference were solely taphonomic, it should apply equally throughout the assemblage.

The dental ageing data for cattle and sheep/goat showed a range of slaughter ages from young, probably surplus animals, to very old animals past their prime (Table 5.6). The epiphyseal fusion indicates that cattle were slaughtered as subadults and adults, whereas the sheep/goat data suggested a predominance of subadult animals (Table 5.7). The sample size for pig was too small for interpretation but considering the great fecundity and rapid maturation of pigs, most were probably slaughtered before or at the time they reached their full growth. All horse bones belonged to adult animals, indicating that horses were normally slaughtered when they were past their prime as work animals.

Sexing could only be carried out on cattle and pig, but the sample size was too small to produce meaningful results. Measurable bones were scarce for most species other than cattle. The cattle bones are mostly within the same size range as bones from contemporary sites in Britain with the exception of one metacarpal that was taller than all contemporary bones, but not wider. Surprisingly, it does not belong to a bull or oxen; Mennerich's index indicates that it was female. Withers heights of 1.18m and 1.22m respectively could be calculated on two horse metacarpals.

Butchery

Butchery marks were recorded on 17 bones from cattle, three sheep/goat, two pig and one horse. The butchery marks consisted mainly of cut marks at the ends of long bones, indicating disarticulation. Cut marks from filleting were recorded on one cattle and one pig humerus. One cattle first phalanx displayed cut marks on the proximal end, which may have derived from either disarticulation of the foot or from skinning. Indication of marrow extraction was found on one cattle tibia, which had been split in half axially. Portioning of large mammal ribs and axial splitting of carcasses occurred on three ribs and three vertebrae. The butchery marks on horse consisted of a pelvis with transverse cut marks between ilium and pubis. This suggests that the femur was disarticulated from the pelvis, either to facilitate disposal of the carcass or to facilitate meat removal for human or canine consumption.

Indications of antler and horn working were also found in the assemblage. One deer antler fragment had been sawn off and one goat horn core had been chopped off mid-horn core. It is not clear from the faunal assemblage whether antler and horn working actually took place on site or whether these remains represent preparations of raw material which were finished elsewhere.

Pathology

The pathological conditions observed in the assemblage mainly derive from infections and the use of animals as beasts of burden. Eburnation occurred on one cattle femoral head and exostoses and lipping were found on one first and one second cattle phalanx, as well as on one large mammal vertebra. Thin layers of bone growth, indicating active or healed infection, occurred on two cattle mandibles and one large mammal rib. The aetiology is uncertain regarding a bone ridge on the posterior side of a sheep metacarpal shaft, although similar pathologies has been noted in other assemblages (below).

Articulated remains

Deposits of articulated animal bone groups (ABGs), possibly connected to ritual deposition, are commonly found at Iron Age settlements. Hill (1995, 27-28) has divided these deposits into three categories: complete skeletons, skulls with or without associated mandibles and articulated limbs. Five deposits at Site 4 (Trench 54) may represent instances of the second category. These comprise three cattle skulls in the latest circuit of enclosure ditches (17496 and 17719) and one in the adjacent ditch (17718), as well as one male horse skull in enclosure ditch 17496. Mandibles were absent in all cases. The horse skull and one cattle skull were placed on the base of ditch 17496, whereas the remaining skulls were found in the secondary or tertiary fills. The structure of the bone surface indicates that the cattle skulls came from adult or subadult individuals. The skull in ditch 17719 could be aged to 3-7 years on the basis of the horn core surface (Armitage 1982). The wear on the horse incisors match mandibular incisor wear for 4-7 year old horses (Habermehl 1975, 51). All skulls were very fragmented after recovery and neither butchery marks nor pathologies could be observed. It is debatable whether skulls in mid-fills of features are likely to represent ritual deposits rather than normal butchery waste. Initial and final deposits are more likely to be ritual, signifying beginnings and closure. It is therefore probable that only the horse and cattle skull in ditch 17496 represent ritual activity. The absence of mandibles suggests that some modification of the remains took place before deposition. While the skulls are fragmentary, no gnaw marks could be observed, indicating that they were rapidly covered after deposition.

Animal bone from ditch 17343

Burnt bone was found in a variety of features but was only frequent in ditch 17343, where it comprised 16.7% of all bones (from this feature). The entire ditch, including the unrecorded sieved samples, contained 93 burnt bones and 299 unburnt bones. Perhaps surprisingly, the burnt clay layer

that extends throughout this ditch produced only seven burnt bones, as well as 22 unburnt bones. If the unidentified bones from the unrecorded sieved samples are included, this is increased to a total of 149 bones, 35 of which are burnt. The burnt bone may derive from burning of rubbish, although since unburnt bone dominates the assemblage, either the rubbish burning was incomplete, or the burnt material was mixed with dumps of unburnt rubbish.

Site 4 (Trench 61)

The assemblage from Site 4 (Trench 61) comprises a total of nine fragments from a ring gully (5092) and two pits (5029 and 5046), all from the Iron Age. The only speciable fragments were two cattle teeth and one horse tooth.

Site 5

The assemblage from Site 5 contained a total of 74 animal bones, the majority of which were fragments of large mammal long bones from ring gully (6021). The only bones that could be identified to species were a tooth and an ulna, both from cattle.

Site 6 (Trenches 97-99)

The animal bones from Site 6 (Trenches 97-99) included one cattle tibia, seven bones from large mammals and one unidentifiable fragment, all from a 18th-19th-century ditch.

Site 6 (Trench 105)

The middle-late Iron Age pits (7512 and 7525) from Site 6 (Trench 105) contained a fragment of a cattle tooth and one unidentifiable fragment.

Site 7

The faunal remains from Site 7 comprise 3404 fragments from middle and late Roman contexts (Table 5.8). A further four bone fragments came from a medieval furrow (15696), but this small sample will not be discussed further. Animals present include cattle (*Bos taurus*), sheep/goat (*Ovis aries*/*Capra hircus*), pig (*Sus domesticus*), horse (*Equus caballus*), dog (*Canis familiaris*), unidentified deer, probably red deer (*Cervus elaphus*) and goose (*Anser anser*/*Anser domesticus*), the latter two taxa were only present in the late Roman phase. The scarcity of wild fauna follows the general trend for rural Roman settlements (Grant 1989, 144). Hunting cannot be proved, since the only wild faunal remains are two fragments of deer antler, which could have been collected as shed antlers during late winter. The middle Roman assemblage derives primarily from ditches, whereas the late Roman assemblage is dominated by bones from waterholes.

Table 5.8: Site 7, Number of identified bones (NISP)/taxon by phase (MNI in parentheses)

	Middle Roman	*Late Roman*
Cattle	146 (4)	256 (6)
Sheep/goat	40 (2)	41 (3)
Pig	2 (1)	13 (1)
Horse	36* (2)	24 (3)
Dog	164** (2)	50*** (2)
Deer sp.		2 (1)
Goose		1 (1)
Medium mammals	51	37
Large mammals	265	241
Indeterminate	1101	932
Total	1807	1597
Total identified to species	388	385
Weight (g)	15833	32016

*including 15 articulated fragments
**including 160 articulated fragments
***including 44 articulated fragments

Livestock

Regardless of quantification method, cattle are the most frequent animal in both phases, followed by sheep/goat. Only the late Roman assemblage is large enough for an interspecies comparison (Hambleton 1999, 39-40), but the predominance of cattle is consistent with Roman assemblages elsewhere in Marston Vale and its surroundings (Maltby 2008, 282-283; Maltby 2011, 125; Roberts 2004, 305), suggesting that the cattle dominance in the mid-Roman assemblage is accurate.

The relatively small sample of 18 ageable cattle teeth shows two concentrations of wear stages: subadult animals and adult/older adult animals (Table 5.2). The even smaller sample of five sheep/goat teeth are all in the 1-4 year range (Table 5.6). Epiphyseal fusion data for cattle show an increase in younger animals in the late Roman period (Table 5.7), which may indicate an increase in beef production or increase in trade of older animals to urban markets.

Sexable cattle remains were too few to permit an analysis of differences in sex ratios between the middle and late Roman periods, but overall males were somewhat more common than females.

Other species

The commonness of horse and dog remains is over-represented in the assemblage due to the presence of four semi-articulated skeletons (below), comprising 15, 67, 93 and 44 fragments. When these are excluded, the horse and dog remains from the site are of a similar frequency as those from other sites in the area. Dog is consistently less frequent than horse, but whether this is related to the actual ratio of live animals or whether it reflects different disposal patterns is unknown.

With the exception of one distal radius in the late Roman assemblage, all horse remains belonged to adult animals. The three long bones that could be measured show a range of withers heights: 1.29m (metacarpal, late Roman), 1.40m (metacarpal, late Roman) and 1.55m (metatarsal, mid-Roman). Calculations on horse metapodials in the ABMAP database show withers heights ranging from 1.14m to 1.65m, the average being *c* 1.33m (University of Southampton 2003). This indicates that the horses from Site 7 are of average to upper average height in comparison to horses of that period.

The remains of dogs from middle Roman contexts are dominated by bones from adult dogs, whereas the late Roman assemblage is dominated by subadult and juvenile remains. Due to the small sample size when excluding the articulated remains this difference is most likely incidental. A withers height of 393mm could be calculated on the tibia from one articulated middle Roman dog.

The two fragments of deer antler, probably red deer, showed signs of sawing and cutting, which suggests that antler working took place on the settlement. Since neither burr nor pedicle were present it is not possibly to tell whether they came from hunted animals or were collected as shed antlers.

The presence of a single goose bone indicates that poultry formed a very small part of the diet. Since domestic goose and its wild counterpart, the greylag goose, can interbreed, it is not possible to distinguish between them osteologically. However, while the Romans in continental Europe practised goose breeding, there is scant evidence for this in Britain. Due to the general scarcity of goose remains in Roman assemblages is is more likely that they come from wild populations (Albarella 2005).

Butchery

Butchery marks on bones in the middle Roman assemblage come from disarticulation, portioning and filleting. Blade marks from stripping the flesh from the carcass, a method which has been associated with professional butchers in Romano-British period (Maltby 2007), were found on the neck and the beginning of the spine on one cattle scapula. Another cattle scapula had its glenoid process chopped off, indicating disarticulation or portioning of the shoulder joint, and had longitudinal cut marks on the medial side of the blade from filleting. One cattle metatarsal had horizontal chop marks on the lower third of the shaft. This skeletal element is covered only in skin and tendons, so these marks do not derive from the portioning of a meat cut. The bone is almost complete, although lacking the unfused distal epiphyses, but it is possible that these cuts were a failed attempt to sever the toe bones from the metatarsal, perhaps in order to render the toe bones for glue.

One middle Roman cattle metatarsal exhibited marks that were difficult to interpret. The bone had several small cut marks on the top of the proximal joint surface on the anterior edge. Since this part of the bone is covered by tarsal bones, these would have to have been removed or moved out of the way before the cuts could be made. The location and the direction of the cuts would not suggest skinning or disarticulation, the more common reasons for cut marks on the tarsal joint.

A cut mark deriving from disarticulation or skinning was found on the medial side of a middle Roman horse calcaneus. Horses were not normally eaten in the Roman period, although it cannot be excluded that the flesh was used for ritual or medicinal purposes.

One middle Roman large mammal long bone splinter was split twice longitudinally, and another chop had occurred at an angle off one of the longitudinal splits. This seems excessive for marrow extraction, but has similarities with waste from medieval bone workshops (Erath 2002) and could therefore suggest that small scale bone working took place at the settlement during the middle Roman period.

The majority of the bones with butchery marks in the late Roman assemblage were cattle. Skinning was evidenced by transverse cut marks mid-shaft on a first phalanx. Cut marks on the diastema on two mandibles suggest skinning or filleting, and cut marks from skinning or disarticulation of the lower legs were found on one carpal bone, one tarsal bone, and just below the proximal joint surface on one metatarsal. Disarticulation of the joints was carried out with knives and cleavers in almost equal amounts. Blade marks were found on the beginning of the spine on one scapula. Chop marks from disarticulation were found on one calcaneus, the neck of one scapula, below the articulate process on a mandible – thereby severing the jaw from the skull – the rear-most part of a mandible and on an axis – the latter two examples indicating severing of the head. Cut marks near the glenoid articulation on one scapula indicate disarticulation of the shoulder, whereas a cut mark identified below the articulate process on a mandible would have facilitated severing of the jaw. Further evidence for portioning of meat cuts was indicated by longitudinal splitting of one scapula through the glenoid and neck. Cut marks from filleting were recorded on the shafts of two femora and one tibia, as well as on the neck of two scapulae. Cut marks on the diastema on two mandibles suggest skinning or filleting. One metacarpal was split longitudinally, possibly to facilitate marrow extraction.

Other butchery marks in the late Roman assemblage include disarticulating chop marks on the olecranon on a pig ulna and cut marks from skinning on a proximal sheep/goat metatarsal.

Pathology

The middle Roman assemblage included three bones with pathological conditions. A sheep/goat pelvis had small patches of smooth woven bone growth on the ilium – possibly a healed infection. A

horse tarsal joint displayed a number of pathologies: the tarsal III bone was fused to the metatarsal, the metatarsal joint surface to tarsal IV displayed coarse pitting, and the tarsal III joint surface to tarsi-centrale displayed small pitting. These pathologies suggest that the joint was affected by spavin, a condition that is associated with traction, heavy load carrying, repeated impact on hard surfaces and/or old age (Daugnora and Thomas 2005, 69; Grimm 2008, 52). Ossification of the attachments of the *infraspinatus* muscle occurred on a proximal dog humerus, possibly caused by muscle strain or an inflammation.

Pathological conditions in the late Roman assemblage were most common on cattle bones, which probably reflects the general older age of the cattle population in comparison to other animals. If a herd is mainly slaughtered at a young age, there is little chance of diseases developing to such a stage that they affect the skeleton.

Most late Roman cattle pathologies were associated with wear and tear from the use of cattle for traction. One carpal joint (carpal II+III, carpal IV, metacarpal) showed minor porosities and large erosion of the joint surface between carpals and metacarpal. A disarticulated tarsal bone (centrotarsal) had osteophytes anteriorly on its distal side. The joint surface that articulated with the metatarsal displayed coarse pitting and deformation, and the largest of the osteophytes were at this part of the bone. Both these pathologies are examples of degenerative joint disease, the tarsal deformation probably representing *chronica deformans tarsi* (ie severe deformation of the tarsal bones; Daugnora and Thomas 2005). Such deformation may be one of the first stages of spavin, a disease where the tarsal bones fuse to each other and to the metatarsal (Baker and Brothwell 1980, 117-120). As has just been mentioned, spavin is associated with the use of animals for traction, but also with old age (Daugnora and Thomas 2005) and lack of exercise (von den Driesch 1975). The latter possibility is, however, less likely to have occurred on an agricultural settlement like Site 7. Two calcanei had smooth exostoses at the medial *sulcus tendini*, along which a muscle connecting the distal tibia and the third phalanx runs. This condition is known from faunal assemblages from medieval Germany and mid 1st-century Sweden, where it has been interpreted as being connected to the use of cattle for traction (Grimm 2008, 52; Telldahl 2005, 65).

Thin patches of porous bone growth, suggesting infection, were found on one horse frontal bone near the orbit and on one sheep/goat mandible on the buccal side at the unerupted third premolar. Healed fractures occurred on one dog metatarsal 4, which had been broken at mid-shaft, and possibly on the neck of one cattle scapula, which had a small transverse bony ridge medially along the metaphysis. Above the ridge there was a 440x580mm area of smooth but 'bubbly' bone growth. The bubbly bone growth was also present on the lateral side, but only near the glenoid joint surface.

One cattle and one sheep/goat incisor displayed smooth wedges on the crown/root lateral border. The aetiology is uncertain, but may be connected to the eating of long abrasive grass (Miles and Grigson 1990, 494-495).

Articulated remains

The articulated remains from Site 7 comprise two mid-Roman and one late Roman dogs, as well as the hind leg of a horse from a middle Roman context and a cattle skull from a late Roman waterhole.

The dog in mid-Roman quarry pit 15580 was found in the upper part of the fill, which suggests that the deposit may not be ritual, but mere disposal of a dog carcass. Partial or complete dog skeletons are a common type of ABG in Roman Britain, particularly in urban assemblages, but became increasingly common on rural sites during the middle Roman period (Morris 2008, 207). The skeletally mature dog skeleton from ditch 15750 includes most of the hind limbs as well as the axial skeleton. A single ulna represents the fore limb. The remains are very fragmented and while many bones were difficult to side, both left and right sides are present in the deposit. While the ulna may represent a different animal, the presence of vertebrae and ribs suggest that the remains represent a whole dog that has suffered great post-depositional taphonomic loss, perhaps associated with plough truncation of this shallow feature. The dog from late roman waterhole 15735 was subadult (as indicated by fusing distal femur and tibia). Most body parts were present. Significant absences include skull and foot bones. As with the dog from ditch 15750, it is highly likely that the dog was complete upon deposition and suffered post-depositional taphonomic loss. An estimated greatest length of the humerus gave a withers height of 327mm. No butchery marks or pathological conditions were noted on either dog.

A cattle skull, an associated right mandible and a pottery vessel were recovered from the base of waterhole 15185 (Fig. 2.125). The fill also contained a left mandible with the same tooth wear pattern, suggesting that a complete head may have been originally deposited in the waterhole. Skulls are commonly associated with ritual activity (cf. Hill 1995; Morris 2008), and while it cannot be excluded that this skull and mandibles represent disposal of butchery waste, particularly as the remaining fill contained many bones from butchery and kitchen waste, the possibility of a ritual deposit must be considered.

The articulated horse leg in middle Roman ditch 15750 included femur, tibia, the tarsal joint and the metatarsal. All bones were fused, indicating that the animal was over 3.5 years old when it died. A deep diagonal cut mark was found on the medial side of the calcaneus. This is a common location for disarticulating cut marks, although skinning cannot be entirely ruled out. A withers height of 1.55m was

calculated on the metatarsal. Limb bones are the second-most common type of horse ABG in the Roman period after axial elements (Morris 2008, 197), which suggests that this may be a deliberate deposit, although this is by no means certain.

Three bone fragments were recovered from grave 15230, but since they comprise one very small unidentifiable fragment and two cattle teeth it is likely that they were accidental inclusions.

Discussion

The animal bone assemblage from the A421 Improvements suggests that a mixed subsistence economy was practised throughout the Iron Age and Roman periods, as do those from sites elsewhere in Marston Vale and the surrounding area (Holmes 2007; Maltby 2011). With the exception of the assemblages from Site 2 and Site 8 at Great Barford Bypass (Holmes 2007), cattle are the predominant species on all Iron Age and Roman sites in the area. This differs from the more typical pattern at Iron Age sites in southern England, which are generally dominated by sheep, with a slowly changes in the Roman period when cattle and pig become more important (King 1991). Iron Age sites in the Milton Keynes area are also generally dominated by cattle, and it has been argued that since the wet pastures on the Ouse flood plain rendered the area highly suitable for cattle grazing, the region may have been a centre for cattle breeding in the Iron Age, as well as in later periods (Holmes and Rielly 1994, 531).

Viewing the sites individually, only the middle Iron assemblage from Site 4 (Trench 54) and the late Roman assemblage from Site 7 are substantial enough for comparison. It is, however, clear that all sites show great similarity regarding species representation and general abundancy: domestic mammals dominate the assemblages, and cattle, sheep/goat and horse are generally the most common taxa. Soil conditions are similar across the area of the A421 Improvements, which would add further support to what appear to be the general similarities between the faunal assemblages.

Changes in animal husbandry are apparent when the assemblages are considered as a group (Table 5.9). The abundance of cattle is shown to decrease in the early Roman period and then increase through the subsequent Roman periods. However, the majority of the late Roman assemblage comes from from Site 7, so it is possible that the apparent increase in cattle during this period merely indicates that this particular settlement was more cattle-reliant. The pattern of cattle exploitation at other sites in the region varies. The Great Barford sites and Marsh Leys show no change in species frequency over time. At Broughton Manor Farm cattle increase from the mid Roman to the late Roman period and at Wavendon Gate there is a minor decrease in cattle and a corresponding increase in sheep/goat during the same period (Dobney and Jaques 1996; Holmes 2007; Maltby 2011; Strid forthcoming). The frequency of pig on the A421 Improvements is consistently low and is further reduced in the mid-Roman period. This suggests that while woodland would have been present in the area to provide pannage for pigs, the local environment was dominated by arable land and fields for pasture. The decreasing frequency of pig in the mid-Roman period may be a sign of reducing woodland, possibly a consequence of an increase in arable land during the middle and late Roman periods.

The greater prevalence of sheep/goat remains during the early Roman period may actually reflect a reduction of cattle rather than an increase in sheep. Livestock from the Marston Vale settlements may have been sold on the hoof to the market at the nearby small towns at *Magiovinium*, near Milton Keynes. While the information regarding animal bones from *Magiovinium* is somewhat limited, it is clear that cattle dominate the assemblage (Locker 1987, 109). The early Roman phase of Broughton Manor Farm, a rural settlement situated between the M1 and *Magiovinium*, had a similar frequency of sheep/goat, which changed to a predominance of cattle in the later Roman periods (Strid forthcoming). In contrast, Wavendon Gate, a rural settlement which lies near *Magiovinium*, had a consistently high frequency of cattle throughout the Iron Age and Roman periods (Dobney and Jaques 1996, 206).

Ageing data is overall scant, even when the sites are viewed together. Cattle husbandry seem to focus on 30-36 month old cattle and adult/elderly cattle, whereas the sheep data suggest a range of slaughter ages from 6-12 months to 3-4 years. Some older sheep are also present, particularly in the

Table 5.9: Number of identified bones (NISP)/taxon from the A421 Improvements by phase

Phase	*n*	*sp. id.*	*cattle*	*sheep/goat*	*pig*
Iron Age	19	8	3		
Middle Iron Age	3594	798	441 (63.6%)	206 (29.7%)	46 (6.6%)
Late Iron Age	1532	228	102 (44.7%)	70 (30.7%)	18 (7.9%)
Late Iron Age/early Roman	57	16	10	4	1
Early Roman	1189	347	147 (49.3%)	127 (42.6%)	24 (8.1%)
Middle Roman	2432	541	216 (73.2%)	68 (23.1%)	11 (3.7%)
Late Roman	1762	408	272 (81.9%)	47 (14.2%)	13 (3.9%)

middle Iron Age at Site 4 (Trench 54), probably representing breeding animals. Cattle epiphyseal data suggests that more cattle were culled prior to 2–2½ years of age in the later period, perhaps a reaction to shortage of pastures caused by an increase in arable, or an increased preference for prime beef.

The ageing data suggest that cattle and sheep/goat were kept for a variety of products. Cattle were mainly kept for secondary products such as milk and traction, the surplus animals being slaughtered for meat in their third year. Sheep were probably kept mainly for wool, but this was not an intense focus and the sheep would have yielded a few clips of wool before being slaughtered. Since sheep usually have 1-2 lambs and can be bred before they are one year old, it would be possible to keep the herd young and still have enough wool, milk and meat for household use. Goat was only identified at the middle Iron Age settlement at Site 4 (Trench 54) and it is assumed that goat were, if not entirely absent in the other settlements, very rare. Goats may have been used for their meat, milk, horn, coat and leather. Pigs were kept for meat and mainly slaughtered at a young age. Pigs have a high fecundity and grow quickly and so it is not necessary to wait until they are fully grown before slaughtering them. The presence of neonatal and juvenile animals indicates that breeding of cattle, sheep/goat and pig took place at the settlements. It is not clear whether these remains represent deliberate slaughter for consumption or are natural mortalities. In extensive sheep keeping natural losses may range from 10-30% of the newborn lambs (Noddle 1990, 34).

Horses were kept for their use as riding and pack animals, and were normally not slaughtered until they were either past their prime or had debilitating injuries or illnesses. Evidence for consumption of horse meat was only found in the middle Iron Age at Site 4 (Trench 54) and in the early Roman period at Site 3. The scarcity of skeletally immature remains in Iron Age assemblages has been interpreted as a lack of horse breeding, and Harcourt (1979) has argued that horses were kept in feral herds and caught and broken in when needed. There are, however, Iron Age sites in the region that contain a small number of juvenile horse bones (Dobney and Jaques 1996, 224-225; Holmes 1993, 141; Strid forthcoming), which suggests that horse breeding did occasionally occur on settlements. Horses at the A421 Improvements increased in size from the Iron Age to the Roman period, a pattern that has also been observed in nearby assemblages (Holmes 2007, 345, 358). Most horses were pony sized, with the exception of one middle Roman horse from Site 7, that stood at 15.3 hands. A middle Iron Age horse and cattle skull on the base of an enclosure ditch at Site 4 (Trench 54), are likely to represent ritual activity. The depositions of a late Iron Age semiarticulated horse at Site 3 and a late Roman horse leg at Site 7 may also have had ritual significance.

Dogs were kept for guarding, herding and hunting. Particularly small or large dogs, which started to occur in the Roman period (Harcourt 1974, 164), were not found at the A421 Improvements. One middle Roman dog from Site 7 had a withers height of 393mm, about the size of a modern bullterrier. Utilisation of dog flesh occurred occasionally in Britain during the Iron Age and Roman periods (Maltby 1996, 23-24; Sykes 2007b) but evidence for this practice was not found in any of the A421 assemblages. Two dogs at the base of a middle Roman ditch and a late Roman waterhole in Site 7 were probably deliberately deposited when the features went out of use, possibly as a closure ritual.

Domestic fowl was only found in the middle Roman phase at Site 2. The remains come from a single oven and may represent a single bird. Domestic fowl was introduced to Britain in the late Iron Age and is often found in small numbers on Roman settlements (Grant 1989, 143). Fowl was probably kept for eggs and feathers, with meat as a byproduct.

Game comprised a very small number of fragments in the assemblage, and was absent from most sites. This is also the case in the nearby sites, where game only occurred at Great Barford, Biddenham Loop, Ruxox, Salford and Stagsden (Hamilton-Dyer 2004; Holmes 2007; Maltby 2008; Roberts 2000; 2005). Red and roe deer were the most commonly found species on these sites, but roe deer could not be identified at any of the A421 Improvements sites. It is not clear whether the scarcity of game in the assemblages reflect the absence of a tradition of hunting or restriction of hunting rights. Roman villas usually contain a relatively large number of bones from wild fauna (King 1991, 18), suggesting that the owners may have controlled hunting in the local area. The majority of the wild mammal remains in the assemblage were deer antler, with no evidence of whether they represent hunted animals or naturally shed antlers. Post-cranial elements were only found in the middle Roman assemblage from Site 2. Wild birds only occurred at Site 2 and Site 7, where one fragment each of crow/rook and goose were found.

The measurable bones showed that very little change in animal size could be discerned. It is generally held that the Romans introduced breeding stock from the continent and changes in animal size have been evidenced from several sites (Dobney 2001, 38-9). Data from sites in the Milton Keynes region agree that an increase in cattle withers height occurred between the early and late Roman period (Dobney and Jaques 1996, 219). This has not been evidenced from any of the A421 Improvements sites, although this may be due to the small number of measurements. Of note is the very large middle Iron Age cattle metacarpal from Site 4 (Trench 54), which was larger than the largest bone in the comparative sites. One would assume that such a large specimen came from a bull or an

ox, but the biometrics indicate that it was female. The bone is not wider than other cattle metacarpals from Site 4 (Trench 54), and suggests that this is an unusually tall cow. Whether the bone represents a direct import from larger stock or a close descendant of an imported large animal is not certain.

The main difference between butchery methods in the Iron Age and the Roman period is the increasing use of heavy cleavers. Cleavers are closely associated with military and urban settings and probably represent professional butchers with a large turn-over of carcasses (Seetah 2006). During the Iron Age at the A421 Improvements knives were exclusively used for disarticulating the carcasses of cattle, sheep/goat, pig and horse and removing meat from them. In the Roman assemblages the use of cleavers was introduced on a small scale, but cut marks from knives continued to dominate. One cattle scapula from Site 7 had a blade mark near its spine, indicating removal of meat by cleaver, and one cattle metatarsal had been split axially, both methods characteristic of professional Roman butchery (Maltby 2007). The number of butchery marks per site and period were not of sufficient size to discern any changes in butchery practices in terms of placement of butchery marks or changes between different taxa. Contrastingly, the butchery at Great Barford and Marsh Leys Farm was mainly carried out with cleavers during all periods (Holmes 2007, 336, 342, 349, 353; Maltby 2011, 123, 127). This suggests that there was some very early influence from Roman military or civilian butchers – perhaps local men returning to settle after serving in the Roman army.

Evidence for bone, horn and antler working was scant – represented by one middle Iron Age sawn-off antler tine at Site 4 (Trench 54), a similar late Iron Age piece at Site 2, a middle Iron Age chopped-off goat horn core at Site 4 (Trench 54) and a middle Roman large mammal long bone at Site 7. Due to an absence of large build-ups of waste products the evidence for such crafts is likely to be unrepresentative of the scale of their actual occurrence, which are likely to have occurred on all sites regardless of period, albeit on a small scale.

Animal bone groups that were interpreted as ritual deposits occurred at Site 3, Site 4 (Trench 54) and Site 7, dating from the middle Iron Age to the late Roman period. The animals represented in these deposits were cattle, dog and horse. There is a great variety in deposit type: burials of articulated carcasses occurred at Site 3 (horse) and Site 7 (two dogs). At Site 4 (Trench 54) there was a deposit of one cattle skull and one horse skull on the base of an enclosure ditch. One articulated horse leg was found at Site 7, as well as a cattle skull at the base of a late Roman waterhole. It is difficult to compare ritual deposits from one site to another as there is a great variety of species, deposit types and feature types represented. In general most animal bone group deposits in Britain during the Iron Age are sheep, followed by dog but this is reversed in the Roman period (Morris 2008, 117, 153). In southern England, whether Iron Age or Roman, articulated burials of domestic mammals are rather scarce, and instead most animal bone groups consist of partial remains, such as the axial skeleton, limbs and heads (Morris 2008, 39, 117, 196-197).

CHARRED AND WATERLOGGED PLANT REMAINS *by Kathryn Hunter*

Introduction

A total of 170 bulk samples were collected for the extraction of charred plant remains. Following assessment of all samples (OA 2010), 32 samples from Site 2, Site 4 (Trench 54) and Site 7 were selected for sorting and analysis on the basis of the quantity and range of plant remains noted (Tables 5.10-11). These comprised 16 samples from Site 2, nine samples from Site 4 (Trench 54) and seven samples from Site 7. Although 46 samples were collected from Site 3, four samples from Site 4 (Trench 61), six samples from Site 5 and a single sample from Site 6 (Trench 105), none of these produced sufficient remains at the assessment stage to warrant full analysis. Three samples collected from Roman features at Berry Farm Borrow Area contained charred cereal remains, but were found to include a very high proportion of well-preserved modern, uncharred, hexaploid wheat chaff, including rachis fragments, as well as a relatively large number of modern weed seeds and roots. These may result from stubble burning from a modern crop, a common agricultural practice in Britain until 1993.

In addition to the samples processed for charred plant remains a single sample from late Roman waterhole 15735 at Site 7 was analysed for waterlogged plant remains.

Methodology

Samples were processed using a standard flotation technique (Siraf-style flotation tank), with 1mm and 0.5mm meshes used for the recovery of the residue and flot respectively. For the waterlogged sample 1 litre of soil was washed through a 0.25mm mesh. Where the quantity of fragmentary charred material, particularly chaff in the finer fractions, was particularly large the flots were riffled and only a proportion was examined. Some of the samples still contained considerable quantities of fragmentary chaff and this was not extracted where it was obvious that it would not facilitate a more in depth identification. In these instances partial counts were carried out and then estimates were made as to the quantity of this material. This is denoted by + following a number in the taxa tables. This practice was carried out with all oat (*Avena* sp.) awn and non-diagnostic floret fragments, and in some cases with glume base fragments. The identification of the plant remains was carried out using modern refer-

Table 5.10: Samples analysed for charred plant remains

Site	*Sample. no.*	*Context*	*Feature*	*Phase*
2	2009	2292	Ditch 2476	Early Roman
2	2010	2337	Ditch 2454	Early Roman
2	2014	2433	Pit 2430	Early Roman
2	2017	2436	Hollow 2435	Early Roman
2	2018	2437	Hollow 2426	Early Roman
2	2019	2427	Hollow 2426	Early Roman
2	2020	2428	Hollow 2426	Early Roman
2	2023	2461	Pit 2430/2460	Early Roman
2	2024	2754	Ditch 2766	Early Roman
2	2025	2967	Ditch 2732	Early Roman
2	2031	20020	Ditch 20224	Middle Roman
2	2032	20050	Working hollow 20049	Middle Roman
2	2037	20134	Oven 20139	Middle Roman
2	2041	20165	Pit/water-hole 20167	Middle Roman
2	2042	20168	Oven 20143	Middle Roman
2	2045	20051	Working hollow 20049	Middle Roman
2	2047	20186	Ditch 20236	Middle Roman
2	2060	2398	Ring gully 2709	Early Roman
4 (Trench 54)	17003	17029	Ditch 17714	Middle Iron Age
4 (Trench 54)	17010	17090	Ditch 17717	Middle Iron Age
4 (Trench 54)	17012	17725	Ditch 17725	Middle Iron Age
4 (Trench 54)	17013	17187	Ditch 17716	Middle Iron Age
4 (Trench 54)	17014	17180	Ditch 17716	Middle Iron Age
4 (Trench 54)	17015	17181	Ditch 17716	Middle Iron Age
4 (Trench 54)	17018	17255	Ditch 17343	Middle Iron Age
4 (Trench 54)	17019	17200	Ditch 17343	Middle Iron Age
4 (Trench 54)	17021	17191	Ditch 17343	Middle Iron Age
7	15036	15408	Ditch 15753	Middle Roman
7	15040	15503	Quarry pit 15500	Middle Roman
7	15042	15594	Quarry pit 15588	Middle Roman
7	15043	15604	Ditch 15753	Middle Roman
7	15044	15605	Ditch 15753	Middle Roman
7	15045	15606	Ditch 15753	Middle Roman
7	15057	15830	Waterhole 15375	Late Roman

ence material and standard reference texts (Beijerinck 1947; Berggren 1981; Jacomet 2006; Schoch *et al*. 1988; Capper *et al.* 2006). The nomenclature for the identification of the cereals follows Jacomet (2006) and for the rest of the plant remains follow Stace (2010).

Preservation

The preservation of charred and waterlogged remains was variable, with identification of some plant remains possible to subspecies while in others it could not be taken beyond family level. The generally vacuolated appearance of many of the cereal grains and fragments from all of the sites suggests that prior to burning they may have been 'green', that is containing too high a moisture content to be stored successfully.

Many of the analysed samples from the A421 sites were from enclosure ditches and pits and appear to be the result of secondary or tertiary dumping, so the absence of more fragile remains is not unexpected. However, even the samples from the ovens at Site 2 produced only relatively robust remains. This of course may also be due to factors such as the condition of the material prior to burning, the temperature of the fire, and the length of time for which the material was in contact with the high temperatures. No identifiable silicified or mineralised remains were noted in any of the samples, although some of the charred glume bases from sample 2042 at Site 2 had sandy concretions on the surface of some of the grains.

The robustness of remains can vary between species, particularly in waterlogged assemblages, and this may have affected waterhole sample 15057 from Site 7, as plants and insect remains associated with arable crops were found but not the cereals themselves.

Results

Site 2

Early Roman

Material from nine samples from features attributed to the early Roman period was fully analysed and material from a further two samples (2018 and 2020) was scanned (Fig. 5.1; Table 5.12).

Hollow 2426 contained three fills that were particularly rich in charred plant remains (samples 2018, 2019 and 2020). Since the assessment results indicated that these samples were of similar composition a decision was taken to fully sort and analyse sample 2019 and to scan the other two. The general characteristics of the three samples were indeed similar, with a dominance of wheat chaff over grain. Where identification was possible spelt wheat (*Triticum spelta*) predominated. Possible barley (cf. *Hordeum* sp.) was noted in sample 2018 and oat (*Avena* sp.) in sample 2020. Both barley and oat were represented in sample 2019. Overall the early Roman samples from this site had lower numbers of wheat chaff and grain than the samples from middle Roman features, with the highest number of chaff fragments per litre being 17.5 in sample 2019 from hollow 2426 (Table 5.11). On the whole the ratio of grain to chaff was also lower. This might suggest that spelt was being processed on a smaller scale than in the middle Roman period. The increase in incidence of spelt remains and cereals in general for this period appears to be a characteristic of Roman Britain, as are the lower counts for emmer (*Triticum dicoccum*), barley (*Hordeum* sp.), oat (*Avena* sp.), rye (*Secale cereale*), flax (*Linum* sp.) and various

Table 5.11: Intact cereal grain, wheat and wheat glume base fragments per litre of soil processed

Site 2 early Roman									
Sample no.	*2009*	*2010*	*2014*	*2017*	*2019*	*2023*	*2024*	*2025*	*2060*
Context no.	*2292*	*2337*	*2433*	*2436*	*2427*	*2461*	*2754*	*2697*	*2398*
Sample Vol (l)	*25*	*35*	*25*	*13*	*34*	*15*	*22*	*32*	*15*
% flot sorted	*100*	*100*	*50*	*100*	*100*	*100*	*100*	*100*	*100*
Cereal/l	0.12	1.1	4.7	5	4.8	0.4	0.5	1.1	1
Wheat/l	0.4	0.7	4.3	3.9	4.6	0.3	0.45	1	1
W Chaff/l	0.2	1.9	4.4	4.3	17.5	1.7	3	7.5	0.1

Site 2 middle Roman							
Sample no.	*2031*	*2032*	*2037*	*2041*	*2042*	*2045*	*2047*
Context no.	*20020*	*22050*	*20134*	*20165*	*20168*	*20051*	*20186*
Sample Vol (l)	*12*	*19*	*6*	*18*	*10*	*39*	*36*
% flot sorted	*12.5*	*100*	*100*	*25*	*100*	*50*	*50*
Cereal/l	42	5	0.16	57	10.2	4.4	2.9
Wheat/l	31.3	3.8	0.16	56	8.8	4.2	2.5
W Chaff/l	2360	147	15.6	386.6	300+	89.7	68.8

Site 4 (Trench 54) middle Iron Age									
Sample no.	*17003*	*17010*	*17012*	*17013*	*17015*	*17018*	*17019*	*17021*	*17014*
Context no.	*17029*	*17090*	*17725*	*17187*	*17181*	*17255*	*1720*	*17191/17121*	*17180*
Sample Vol (l)	*40*	*37*	*37*	*38*	*40*	*37*	*25*	*6*	
% flot sorted	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
Cerea/l	0.25	0.02	0	0	0	0	0	0	0
Wheat/l	0.25	0.02	0	0	0	0	0	0	0
W Chaff/l	0	0	0.05	0	0	0	0	0	0

Site 7 middle Roman						
Sample no.	*15036*	*15040*	*15042*	*15043*	*15044*	*15045*
Context no.	*15408*	*15503*		*15604*	*15605*	*15606*
Sample Vol (l)	*10*	*20*	*10*	*30*	*30*	*30*
% flot sorted	*100*	*50*	*100*	*50*	*25*	*100*
Cereal/l	6.8	2.3	0.4	21.3	43.6	1.6
Wheat/l	5.9	21.8	0.2	12.9	24.8	0.5
W Chaff/l	100+	244.6	20.8	200+	139.8	128

legumes. Legumes, including garden pea (*Pisum sativum*) and possibly common vetch (*Vicia* cf. *sativa*), are present in small quantities, which are not large enough to suggest large scale cultivation. However, they may be underrepresented, as the charring that is required in order to preserve such material is not a normal part of the processing of these species. Common vetch, though a weed of arable crops, may also have been utilised as a fodder crop. The garden pea might have be grown on a small scale for local consumption.

Middle Roman

Seven samples from middle Roman contexts from the south-western enclosure complex were analysed (Fig. 5.2; Table 5.13).

Samples 2037 and 2042 came from ovens 20139 and 20143. Sample 2037, from oven 20139, produced a relatively poor assemblage of charred plant remains compared with the other samples from this site and the other sites in this project. Only one possible wheat grain was identified, together with 94 glume bases and a few other weed seeds. Though this might suggest that the oven was being fuelled by something other than cereal remains, it is also possible that it had been cleaned out prior to going out of use. Sample 2042, from oven 20143, produced an assemblage rich in cereal chaff, dominated by spelt wheat (*Triticum spelta*). As with the assemblage from Site 7 (below), a number of well-developed detached coleoptiles were present, though in smaller numbers here than for the Site 7 samples. A few glume bases in sample 2042 and enclosure ditch sample 2047 have been tentatively identified as emmer wheat (*Triticum* cf. *dicoccum*). These are likely to be weeds of the spelt or relics of a previous crop. An individual example of a large legume fragment may hint at the presence of either garden pea (cf. *Pisum sativum*) or broad bean (*Vicia faba*). Oven sample 2042 also produced a rich assemblage of weed seeds, including 62 seeds from stinking chamomile (*Anthemis cotula*), an arable weed which prefers heavier, base-rich soils. The remaining samples were taken either from enclosure ditches (2031 and 2047) or from working hollow 20049 (2032 and 2045), with a single sample (2014) from

Table 5.12: Site 2, summary of charred plant remains from early Roman contexts

Key to habitat and relative quantity: B: Bankside; C: Cultivated; D: Disturbed ground; Da: Disturbed ground inc. Arable; Dc: Disturbed cultivated; G: Grassland; H: Hedge bank; M: Marsh; S: Scrub; W: Woodland; WM: Woodland margin.
: Rare 1-5; **: Occasional 6-20; *: Frequent 21-100; ****: Abundant 100+; 3000+: Estimated quantity; #: ?modern.*

Sample no.
Context no.
Sample vol/l
% flot sorted

Family	*Taxa*	*Common name*	*Component*	*Habitat*
	Triticum cf. *spelta*	possible spelt	grain	C
	Triticum sp.	wheat nfi	grain (sprouted)	C
	Triticum cf. *spelta/dicoccum*	spelt/emmer glume wheat type (sprouted)	grain	C
	Triticum sp.	glume wheat type	grain (sprouted)	C
	Triticum sp.	wheat	grain (sprouted)	C
	cf. *Triticum* sp.	possible wheat	grain (sprouted)	C
	cf. *Hordeum* sp	possible barley	grain (sprouted)	C
	Avena sp.	oat	grain	C
	cf. *Avena* sp.	possible oat	grain	C/G
	Avena /Bromus sp.	oat/brome	grain	C/G
	cf. *Secale cereale*	rye type	grain	C
	Cereal NFI	unidentified cereal	grain fragments (charred)	C
	Triticum spelta	spelt	spikelet fork	C
	Triticum spelta/dicoccum	spelt/emmer	spikelet fork	C
	Triticum spelta	spelt	glume base	C
	Triticum cf. *spelta*	possible spelt	glume base	C
	Triticum spelta/dicoccum	spelt/emmer	glume base	C
	Hordeum sp.	barley	rachis fragment	C
	Avena sp.	oat	floret base	
	Avena sp.	oat	awn fragments	C, Da
	Cereal NFI	unidentified cereal	detached embryo	C
	Cereal NFI	unidentified cereal	detached coleoptile bases (other frags)	C
	Cereal NFI	unidentified cereal	straw internode	
	Cereal NFI	unidentified cereal	straw culm node	
Ranunculaceae	*Ranunculus* sp.	buttercup type	achene	
Fabaceae		legume	pod fragments	
	cf. *Lotus* sp.	birdsfoot trefoil	seed	
	Vicia cf. *Sativa*	possible common vetch	seed	C
	Vicia/Lathyrus sp. (4mm)	vetch/pea	seed	Da, C
	Vicia/Lathyrus sp. (2mm)	vetch/pea	seed	Da, C
	cf. *Lathyrus* sp.	pea	seed	
	Pisum sativum L.	garden pea	seed	Da, C
	cf. *Pisum sativum* L.	possible garden pea	seed	
	large legume fragment		seed fragment	
	legume		seed fragment	
	Trifolium/Lotus sp. L	clover/birdsfoot trefoil	seed	
	Trifolium/melilotus sp. L	clover/medick	seed	
Rosaceae	*Prunus spinosa* L.	blackthorn	stone (fragments)	WS
	cf. *Prunus spinosa* L.	possible blackthorn	stone (fragments)	
	Crataegus monogyna Jacq.	hawthorn	stone	WM, S, H
	cf. *Crataegus monogyna*	hawthorn	stone	
	cf. *potentilla* sp.	possible cinquefoils	achene	
	cf. *Aphanes arvensis*	parsley-piert	achene	C
Urticaceae	*Urtica dioica*	common nettle	achene	W, nitrogen rich
Betulaceae	*Corylus avellana* L.	hazelnut	shell frags	SW

2009	2010	2014	2017	2018	2019	2020	2023	2024	2025	2060
2292	2337	2433	2436	2427	2427	2427	2461	2754	2697	2398
25	35	25	13	12	34	33	15	22	32	15
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	1	4	4						2	
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Table 5.12: Site 2, summary of charred plant remains from early Roman contexts (continued)

Family	*Taxa*	*Common name*	*Component*	*Habitat*
Violaceae	*Viola* sp.	violet type	seed	
	Viola tricolor L.	wild pansy	seed	Waste, marginal, cultivated land
Brassicaceae			seed	
	Brassica rapaspp. Campestris (L.) A R Clapham	wild turnip	seed	B
	Raphanus raphanistrum spp. *raphanistrum* L.	wild radish	mericarp fragment	C, Da
Polygonaceae	*Persicaria maculosa* Gray/ *Persicaria lapathifolia* (L.) Delarbre	redshank/pale persicaria	achene (frags)	Da
	Persicaria sp.	knotweeds	achene	
	Fallopia convolvulus (L.) Love	black bindweed.	achene	Da
	cf. *Fallopia convolvulus* (L.) Love	possibleblack bindweed.	achene	
	cf. *Persicaria* sp.	persicaria type	achene	
	Polygonum sp.	knotweed type	achene	
	Rumex sp.	dock type	achene	Da, G, M, S, W
	Rumex cf. *palustris* Smith	marsh dock	achene	B ditches marshy
Caryophyllaceae	*Stellaria media* (L.) vill	common stitchwort	seed	Da, open ground
	cf. *Stellaria* sp.	stichworts	seed	
	Agrostemma githago L.	corn cockle	seed capsule fragment	Da
	cf. *Silene* sp.	campion type	seed	
Amaranthaceae	*Chenopodium* sp.	goosefoots	seed	n
	Atriplex sp.	orache	seed	n
Montiaceae	*Montia fontana* spp. *chronrosperma* (Fenzl) Walters	blinks	seed	many kinds of damp places
Rubiaceae	*Galium aperine* L.	cleavers	nutlet	Da, H, S, other open land
Veronicaceae	*Veronica beccabunga*	brooklime	seed	Streams, ditches, marshes, pond/river sides
Plantaginaceae	*Plantago lanceolata* L.	ribwort plantain	seed	G short or grazed. Da
Scrophulariaceae	cf. *Scrophularia* sp.			
Laminaceae	*Prunella vulgaris* L.	self heal	seed	G, W (clearings)
	Lycopus europaeus L.	gypsywort	seed	B
	Mentha cf. *aquatica* L.	water mint	seed	M, P, wet fields
Orobanchaceae	*Euphrasia/Odontites* sp.	euphrasia/bartsias	seed	
Asteraceae			achene	
	cf. *Anthemis cotula* L.	Stinking chamomile	achene	Da
	cf. *Tripleurospermum inodorum*		achene	
Caprifoliaceae	*Sambucus nigra* L.	elder	seed	W, H
Apiaceae	*Anthriscus sylvestris* (L.) Hoff.	cow parsley	mericarp	G, WM
Juncaceae	*Juncus* sp.	rush	capsule/seeds	
	Juncus sp.	rush	fused seeds	
Cyperaceae	*Eleocharis palustris* (L.) Roemer & Schultes	common spike rush	nut	P (shallow). M, G (wet)
	Eleocharis sp.		nut	
	Carex sp. (Trigonus)	sedge	nut	M, B, W, G esp. damp/wet soils
	Carex sp. (bi-convex)	sedge	nut	M, B, W, G esp. damp/wet soils
poaceae		grass	caryopsis	
		grass	internode	
	cf. *Lolium* sp.	possible rye grass	caryopsis	
		moss stem		
	Unident		seed	
	Unident		rhizome/ tuber fragments	
	Unident		amorphous charred fragments	

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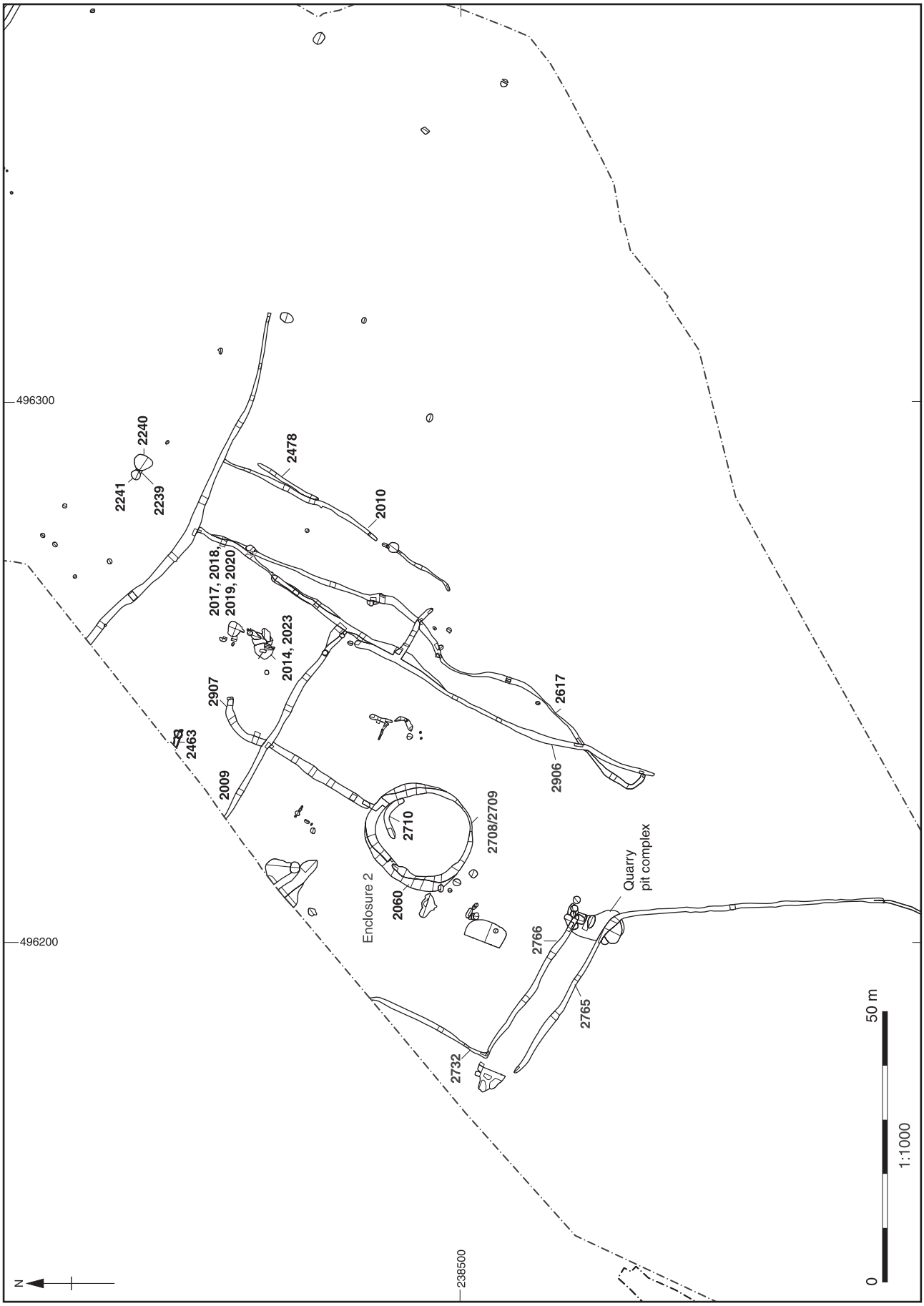


Fig. 5.1 Site 2, north-eastern enclosure complex, location of environmental samples

pit/waterhole 20167. Sample 2031, from enclosure ditch 20224, produced an extremely large quantity of wheat glume bases. The 12 litre sample contained approximately 28,000 fragments of wheat chaff, which equates to approximately 3000 fragments per litre of soil compared with only 386 fragments per litre from the next richest sample (2041; Table 5.11). This may indicate that this feature had been used for a prolonged period for dumping waste. The presence of rich counts of wheat chaff in all of the samples taken from close to the ovens may suggest that large quantities of material were being deposited and that there was probably a large spread of this waste material across the area which accumulated in the sunken features either deliberately or incidentally. As with the assemblages from Site 7 (below) there were significantly smaller numbers of cereal grains compared to chaff in all of the samples. Again, the dominant grain was wheat, with oat also present, but based on grain morphology alone it is not possible to identify which species of either crops the grains represent. One sprouted grain from sample 2032 exhibited characteristics that suggested it might be barley. A single degraded seed (sample 2045) has been attributed to flax (cf. *Linum* sp.). As with the naked varieties of

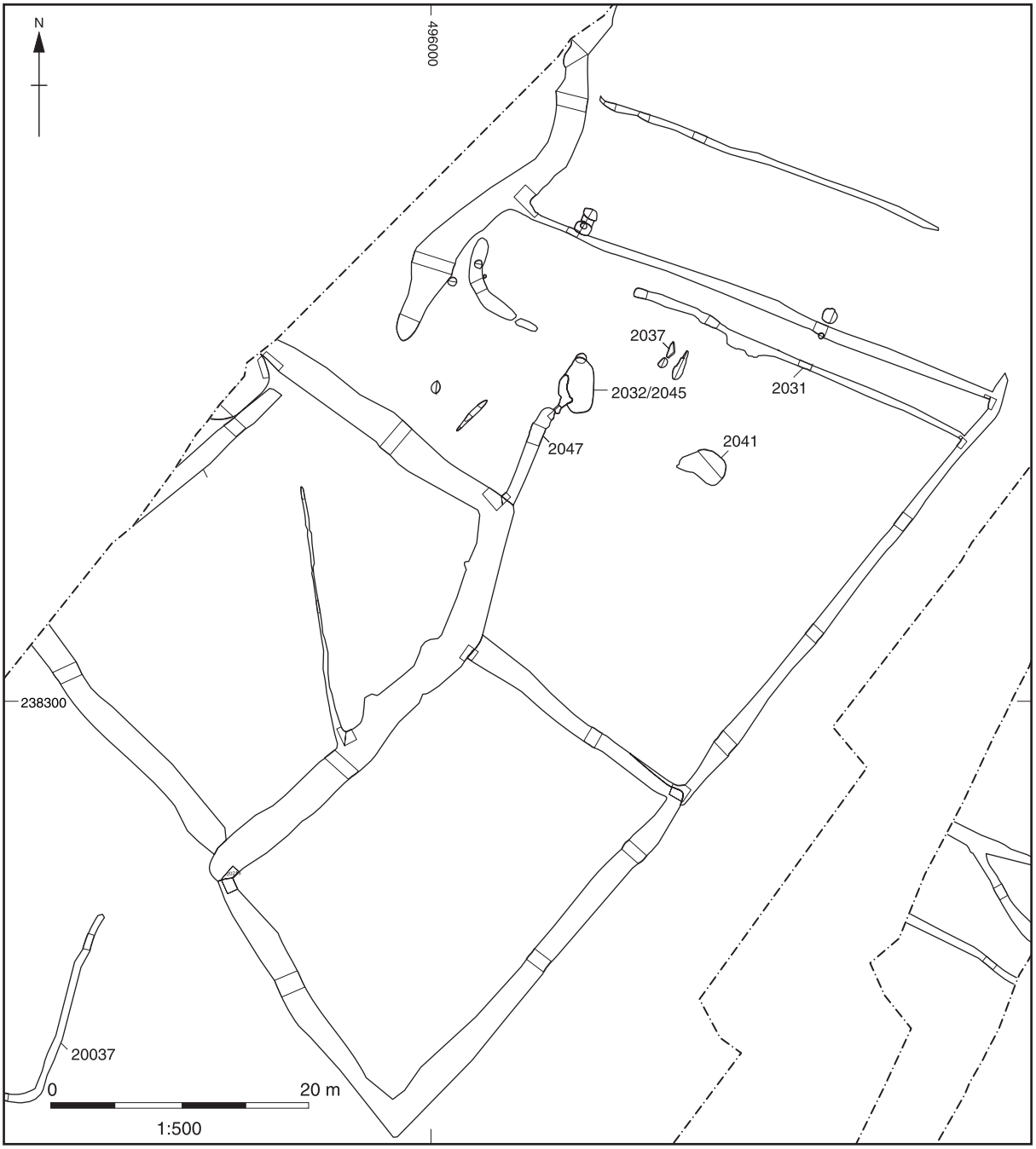


Fig. 5.2 Site 2, south-western enclosure complex, location of environmental samples

Table 5.13: Site 2, summary of charred plant remains from middle Roman contexts

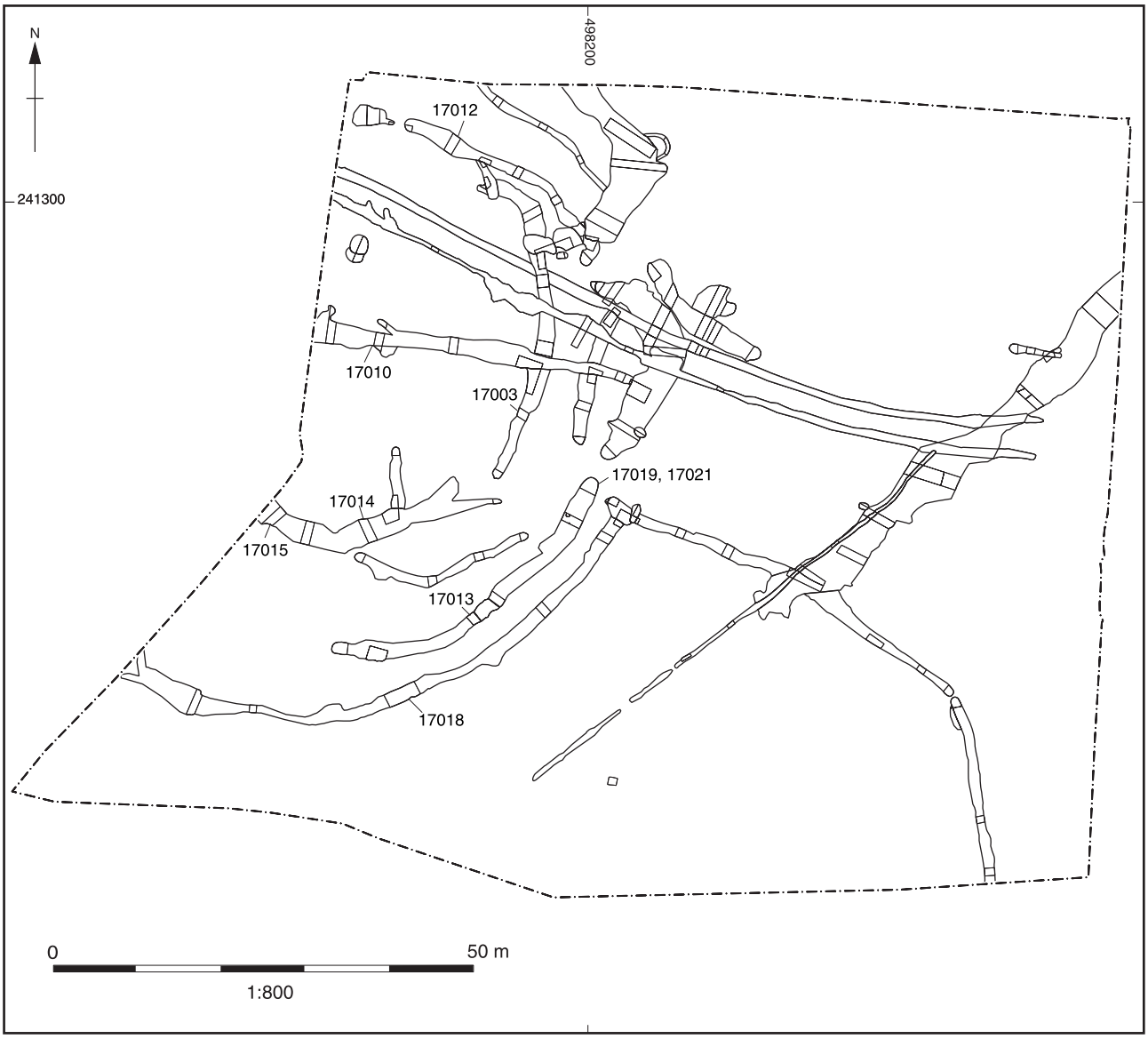
Sample no.
Context no.
Sample vol/l
% flot sorted

Family	*Taxa*	*Common name*	*Component*	*Habitat*
	Triticum sp.	free threshing wheat type	grain	C
	Triticum sp.	glume wheat type	grain(sprouted)	C
	Triticum sp.	wheat	grain (sprouted)	C
	cf. *Triticum* sp.	possible wheat	grain (sprouted)	C
	cf. *Hordeum* sp.	possible barley	grain(Sprouted)	C
	Avena sp.	oat	grain	C, Da
	cf. *Avena* sp.	possible oat	grain	C, Da
	Avena /*Bromus* sp.	oat/brome	grain	C/G
	Cereal NFI	Unidentified cereal	grain fragments (charred)	
	Triticum cf. *dicoccum*	possible emmer	spikelet fork	
	Triticum cf. *dicoccum*	possible emmer	glume base	
	Triticum spelta	spelt	spikelet fork	
	Triticum cf. *spelta*	possible spelt	spikelet fork	
	Triticum spelta/dicoccum	spelt/emmer	spikelet fork	
	Triticum spelta	spelt	glume base	
	Triticum cf. *spelta*	possible spelt	glume base	
	Triticum spelta/*dicoccum*	spelt/emmer	glume base	
	Triticum sp./*Secale cereale*	wheat/rye	rachis fragment	
	cf. *Hordeum* sp.	barley	rachis fragment	
	Avena cf. *sativa* L.	oat	floret base	
	Avena fatua L.	wild oat	floret base	
	Avena sp.	oat	floret base	C, Da
	Avena sp.	oat	awn fragments	C, Da
	Cereal NFI	unidentified cereal	detached embryo	
	Cereal NFI	unidentified cereal	detached coleoptile bases (other frags)	
	Cereal NFI	unidentified cereal	straw internode	
	Cereal NFI	unidentified cereal	straw culm node	
Ranunculaceae	*Ranunculus acris* L./*repens* L.	Buttercup meadow/creeping	achene	
	Ranunculus sp.	buttercup type	achene	
Fabaceae		legume	seed	
	cf. *Lathyrus* sp.	pea	seed	
	large legume fragment		seed fragment	
	legume		seed fragment absision scar	
	Trifolium/Lotus sp. L	clover/birdsfoot trefoil	Seed	
	Trifolium/melilotus sp. L	clover/medick	Seed	
Rosaceae	cf. *Crataegus monogyna*	hawthorn	stone	
	cf. *potentilla* sp.	possible cinquefoils	achene	
Linaceae	cf. *Linum usitatissium* L.	Flax	Seed	
Malvaceae	*Malva* sp.	mallow	nutlet	
Brassicaceae			seed	
	Raphanus raphanistrum spp. *raphanistrum* L.	wild radish	mericarp fragment	
	cf. *Raphanus raphanistrum* L.	wild radish	seed	
Polygonaceae			achene	
	cf. *Persicaria lapathifolia* (L.) Delarbre	pale persicaria	achene	
	Fallopia convolvulus (L.) Love.	black bindweed.	achene	
	Persicaria/Polygonum sp.	persicaria/ knotweed type	achene	
	Rumex sp.	dock type	achene	
	cf. *Rumex* sp.	dock type	achene	
Amaranthaceae	*Chenopodium* sp.	goosefoots	seed	
	Atriplex sp.	orache	seed	
	cf. *Atriplex* sp.	orache type	seed	
	Chenopodium/Atriplex sp.		seed	
Primulaceae	cf. *Anagalis* sp.	pimpernel	seed	

2031	2032	2037	2041	2042	2045	2047
20020	20050	20134	20165	20168	20051	20186
12	19	6	18	10	39	36
12.5	100	100	25	100	50	50
			1			
			99(37)			
34(1)	57(1)		103	65	82	24
12	16	1	12	23		22
	(1)					1
3	9			14		4
1	12				1	2
13			7		4	
100+	1218	13	143	265	665	84
				2		
				14		1
20			9	5	3	12
21	11			6		
9	30	5	62	11	52	81
490			81	30	13	61
	124					
3000+	2634	76	575	3000+ (est)	1017	1000+
2						
		1	3	2		1
					2	
				1		
1		1	3	3	1	
****	***	**	*	***	*	
5	7			3	45	3
27(29)	11(16)		148		9	7(10)
			3			
			3		1	
				1		
				1		
				1		
				1		
				1		
					1	
				1		
						1
						1
					1	
					1	
	1					
	1					
				1		
	1					
				1		
4	17		6	58	4	6
	3	1				2
			1			
2						
			1			
				4		
				1		

Table 5.13: Site 2, summary of charred plant remains from middle Roman contexts

Family	*Taxa*	*Common name*	*Component*	*Habitat*
Orobanchaceae	*Euphrasia/Odontites* sp.	euphrasia/bartsias	seed	
Asteraceae			achene	
	Cirsium sp.	thistle	achene	
	centaurea sp.	knapweed	achene	
	Anthemis cotula L.	stinking chamomile	achene	
	Glebionis segetum (L.) Fourr.	corn marigold	achene	
	Tripleurospermum inodorum (L.) Scultz-Bip	scentless mayweed	achene	
Caprifoliaceae	*Sambucus nigra* L.	elder	seed	
Apiaceae	*Anthriscus sylvestris* (L.) Hoff.	cow parsley	fruit	
Cyperaceae				
	Eleocharis sp.		nut	
	Carex sp. (Trigonus)	sedge	nut	
	Carex sp. (biconvex)	sedge	nut	
poaceae		grass	caryopsis	
	Unident		seed	
	Unident		amorphous charred fragments	
	bone fragments			



	3			2		2
	2					
	1					
				1		
	4			62	5	6
					2	
					3	
			1			
			1			
				2		
				2		
1		1		2		
				2		
2		1	1	1	3	2
		1			4	
		**				
		*	*			

cereal and the legumes, fire is not commonly used during flax processing so this plant would potentially also be underrepresented. Flax was commonly grown during the Roman period for the production of oil and for fibres for linen (Tomlinson and Hall 1996).

Site 4 (Trench 54)

While the recommendation made at assessment (OA 2010) was to not analyse any of the samples from this site due to the paucity of the remains, additional material was processed from some samples in the hope that even sparse plant remains would provide some level of information pertaining to agriculture at this middle Iron Age site. As a result nine of the 27 original sample flots were considered for this report (Fig. 5.3; Table 5.14). Several of the ditch samples (17021, 17013 and 17019) contained modern uncharred cereal chaff, and a sample from enclosure ditch 17717 included a wheat grain that has produced a modern C14 date (SUERC-30628 (GU-21950)), indicating a high risk of contamination. Given this evidence of modern contamination, any interpretation of the material should be treated with caution.

Charred cereal remains were present, albeit only in small quantities, in six of the nine samples (17003, 17010, 17012, 17015, 17019 and 17014). Four grains from pit sample 17003 were of a rounded shape suggesting a bread wheat type. However, given the difficulty of distinguishing wheat species by grain morphology alone and the absence of any diagnostic chaff, the identification must remain tentative. One sample (17014) contained oat grains, but again no diagnostic chaff was present and so it is not possible to distinguish whether this was a cultivated or weed type. Though present in small quantities in a few samples, the wheat chaff was not sufficiently well preserved to identify it beyond genus. Legume seeds were present in some samples but again it was not possible to identify them to genus or species and they were present in such small numbers that it is difficult to interpret them as a potential cultivated crop. All the samples contained a few weed seeds and they were on the whole species represented in the assemblages of the other sites in this report. One charred seed of henbane (*Hyoscyamus niger*) was present in sample 17013. This plant is often associated with manured ground and middens, so its presence hints at cultivation-related activity.

The four samples analysed from the burnt layer in enclosure ditch 17343 (17013, 17017, 17018 and 17021) contained very few identifiable charred remains.

Site 7

Middle Roman

Six samples were selected for analysis from the 31 assessed (Fig. 5.4; Table 5.15).

Very large quantities of glume wheat chaff were present in enclosure ditch samples 15036, 15040, 15044 and 15045 and quarry pit sample 15043, almost all of it consisting of glume bases. Where the preservation allowed detailed identification the assemblages were dominated by spelt wheat (*Triticum spelta*), with only a few emmer (*Triticum dicoccum*) spikelets being identified in sample 15040. The large quantities of glume wheat chaff compared with the quantities of cereal grains suggest that these assemblages are the result of the accumulation of crop processing waste on an industrial scale rather

Fig. 5.3 (opposite) Site 4 (Trench 54), location of environmental samples

Table 5.14: Site 4 (Trench 54), summary of charred plant remains

Sample no.
Context no.
Sample vol/l
% Flot Sorted

Family	*Taxa*	*Common name*	*Component*	*Habitat*
	Triticum cf. *aestivum*	bread wheat type (sprouted)	grain	C
	Triticum sp.	wheat	grain	C
	cf. *Triticum* sp.	possible wheat	grain	C
	Avena sp.	oat	grain	C
	Cereal NFI	unidentified cereal	grain fragments (charred)	C
	Triticum spelta/dicoccum	spelt/emmer	spikelet fork	C
	Triticum spelta/dicoccum	spelt/emmer	glume base	C
Fabaceae	cf. *Lotus* sp.	birdsfoot trefoil	seed	
	Vicia/Lathyrus sp. (4mm)	vetch/pea	seed	Da, C
	Vicia/Lathyrus sp. (2mm)	vetch/pea	seed	Da, C
	cf. *Lathyrus* sp.	pea	seed	
	Trifolium/Lotus sp. L	clover/birdsfoot trefoil	seed	
	Trifolium/melilotus sp. L	clover/medick	seed	
Urticaceae	*Urtica dioica* L.	common nettle	achene	N, D, C, Fens
Betulaceae	*Corylus avellana* L.	hazelnut	shell frags	SW
Polygonaceae	cf. *Polygonaceae*		achene	
	Persicaria maculosa/persicaria	redshank/pale persicaria	achene (frags)	Da
	Fallopia convolvulus (L.) Love.	black bindweed.	achene	Da
Amaranthaceae	*Chenopodium album* L.	fat hen	seed	Da, n
	Atriplex sp.	orache	seed	n
	Chenopodium/Atriplex sp.		seed	n
Montiaceae	*Montia fontana* spp. *chronrosperma* (Fenzl) Walters	blinks	seed	Many kinds of damp places
Rubiaceae	*Galium aperine* L.	cleavers	nutlet	Da, H, S, other open land
Solanceae	*Hyoscyamus niger*	henbane	seed	Rough, waste ground particularly manured
Laminaceae	cf. *Prunella vulgaris* L.	possible self heal	seed	G, W(clearings)
Orobanchaceae	*Euphrasia/Odontites* sp.	euphrasia/bartsias	seed	
Cyperaceae	*Eleocharis* sp.		nut	
	cf. *Bromus* sp.	brome type	caryopsis	
poaceae	Poaceae	grass	caryopsis	
	Unident		seed	
	Unident		amorphous charred fragments	

than small scale crop processing for domestic consumption. Even with the relatively small assemblage from sample 15042, there is still over twenty times as much chaff as wheat grains present. None of the samples analysed appear to be primary deposits and they are likely to be either the product of general accumulation of waste or deliberate dumping of spent fuel. The presence of cereal coleoptiles and detached embryos indicates that germination of at least some of the grain had occurred. It is not possible to discern which species the coleoptiles originated from and there is evidence of germination of wheat, barley and oat grains in the assemblage. The presence of grooves along the backs of the grain and of completely collapsed grain is indicative of germination. The fact that grooves were present on a relatively small number of the grains suggests that in these cases germination occurred while the grains were still contained within the glume or floret (W Carruthers pers. comm.). Although the coleoptiles were on the whole fragmentary, some were over 3mm in length and in a couple of cases over 5mm. For effective malting the process needs to be halted when the developing coleoptiles are relatively small and so these long coleoptiles, some with secondary root development, may well be evidence of spoilt grain being burnt along with the chaff rather than being evidence of malting. The presence of completely collapsed grain also suggests uncontrolled germination. Evidence for other crops is quite sparse, with cultivated oat (A*vena sativa*) and the possibility of barley (cf. *Hordeum* sp.) being present as grain and chaff in relatively small numbers. This may be because

17003	17010	17012	17013	17015	17018	17019	17021	117014
17029	17090	17725	17187	17181	17255	17200	17191/92	17180
40	37	37	38	40	37	25	6	
100	100	100	100	100	100	100	100	100
4								
6	1							
								6
17	10	***		4		4		10
								1
		2						4
				1				
							1#	
	2				1			
						1		
	5	2						
			8					
	1							
		1	17					
						2		
						1		
2								
								3
				2		3		
	2			2				
								1
			1					
				1				
								2
						1		1
				1				
	2		1			1		1
1		1	2	4				
					8			2

neither requires heat to process them beyond possibly drying a damp or 'green' crop. The weed assemblage from this site is generally consistent with the other sites in the area. The presence of corn cockle (*Agrostemma githago*) seed capsule fragments suggests that the weed was probably a contaminant of the crop, but the absence of the seeds suggest that either it was a minor weed or that the large poisonous seeds had been cleaned by hand from the crop at an earlier stage. Sample 15043 produced a richer weed assemblage than all the other samples apart from waterlogged sample 15057 (below) and contained the greatest number of corncockle capsule fragments, along with scentless mayweed (*Tripleurospermum inodorum*), and rye grass (*lolium* sp.). The latter two species are both cereal weeds, rye grass being particularly a weed of wheat. Single seeds of field/pot marigold (*Calendula arvensis/officinalis*) and mallow (*Malva* sp.) were also present.

Late Roman

Several waterlogged deposits were assessed (four samples) and one (sample 15057, context 15830) was selected for full analysis based on its stratigraphic position at the bottom of waterhole 15735 as well as the richness of material. The insect component from this deposit has also been analysed (Allison, below). The waterlogged assemblage consisted of the remains of plants representing several habitats, all probably local (Table 5.16). The relatively large number of duckweed (*Lemna* sp.) seeds would probably have originated from plants growing within the water, whilst other species such as common spike rush (*Eleocharis* cf. *Palustris*) and bog

Table 5.15: Site 7, summary of charred plant remains

Sample no.
Context no.
Sample vol/l
% flot sorted

	Taxa	*Common name*	*Component*	*Habitat*
	Triticum cf. *spelta*	possible spelt	grain (sprouted)	C
	Triticum sp.	wheat nfi	grain (sprouted)	C
	Triticum cf. *spelta/dicoccum*	Spelt/emmer glume wheat type (sprouted)	grain	C
	Triticum cf. *aestivum*	bread wheat type (sprouted)	grain	C
	Triticum sp.	wheat	grain (sprouted)	C
	cf. *Triticum* sp.	possible wheat	grain	C
	cf. *Hordeum vulgare*	barley, six row	tail grain (sprouted)	C
	cf. *Hordeum* sp.	possible barley	grain (sprouted)	C
	Avena sp.	oat	grain	C
	cf. *Avena* sp.	possible oat	grain	C/G
	Avena/Bromus sp.	oat/brome	grain (sprouted)	C/G
	cf. *Avena/Bromus* sp.	possible oat/brome	grain	C/G
	Cereal NFI	unidentified cereal	grain fragments	C
	Triticum dicoccum Schubl	emmer	spikelet fork	C
	Triticum cf. *dicoccum*	possible emmer	spikelet fork	C
	Triticum cf. *dicoccum*	possible emmer	glume base	C
	Triticum spelta	spelt	glume base	C
	Triticum cf. *spelta*	possible spelt	glume base	C
	Triticum spelta	spelt	spikelet fork	C
	Triticum cf. *spelta*	possible spelt	spikelet fork	C
	Triticum spelta/dicoccum	spelt/emmer	spikelet fork	C
	Triticum spelta/dicoccum	spelt/emmer	glume base	C
	Triticum cf. *Aestivum*	bread wheat	rachis fragment	C
	Triticum sp.	wheat	rachis fragment	C
	Avena i L.	oat	floret base	C
	Avena cf. *sativa* L.	oat	possible floret base	C
	Avena sp.	oat	awn fragments	C, Da
	Avena sp.	oat	floret fragment	C, Da
	Avena fatua L.	wild oat	floret base	C, Da
	Avena sp.	oat	floret base	C, Da
	cf. *Avena* sp.	oat	peduncle fragmenht	
	Cereal NFI	unidentified cereal	detached embryo	C
	Cereal NFI	unidentified cereal	detached coleoptile base fragments (otherfragments)	C
	Cereal NFI	unidentified cereal	straw internode	
Fabaceae	cf. *Lotus* sp.	birdsfoot trefoil	seed	
	Vicia/Lathyrus sp. (4mm)	vetch/pea	seed	Da, C
	Vicia/Lathyrus sp. (2mm)	vetch/pea	seed	Da, C
	Vicia cf. *Sativa*	possible common vetch	seed	?C
	Trifolium/melilotus sp. L	clover/medick	seed	
Rosaceae	cf. *Crataegus monogyna* Jacq.	hawthorn	stone	
	Potentilla sp.	cinquefoils	achene	
	cf. *Potentilla* sp.	cinquefoil type	achene	
Malvaceae	*Malva* sp.	mallow	nutlet	DG
Brassicaceae	*Raphanus raphanistrum* spp. *raphanistrum* L.	wild radish	mericarp fragment	C, Da
Polygonaceae	*Fallopia convolvulus* (L.) Love.	black bindweed	achene	Da
	Polygonum aviculare L.	knotweed	achene	all sorts of open ground
	Rumex sp.	dock type	achene	DaGMSW
	cf. *Rumex* sp.	dock type	achene	
	cf. *Rumex* sp.	dock type	tepal/perianth fragment	
Amaranthaceae	*Chenopodium* sp.	goosefoots	seed	n
	Chenopodium/Atriplex sp.		seed	n

15036	15040	15042	15043	15044	15045
15408	15503	15594	15604	15605	15606
10	20	10	30	30	30
100	50	100	50	25	100
			11	86(7)	
56				97	16(1)
3			81(2)		
				2	
	23	1(1)	4(1)		
			106		
	2				
	30(1)		2(1)	2	
	71		66(2)	131	
	91		54(1)	8	
6		2	10		11(2)
3					20
200+	300+	33	1000+	363	710
	6				
	1				
	2				
41	342	63	881	518	411
9	6		230		
	25		24	19	10
20	29		161		
7	31		6	247	27
1000+	2446	208	3000+	1049	3842
	2			1	
				6	6
					2
	1				
*	***		*****	*	***
	***		***	**	***
1	3		4		3
	2		7		8
			1		2
8	49	1	28	2	43
14(6)	43(132)	4(4)	131(184)	25(12)	90(162)
			2		
			1	1	
			2		
			1		
			1		
	2				
			1		
	2				
2					
			1		
			1		
		1	4	1	1
	27	1	36		4
	1				
	1				
			18		
2				7	1

stitchwort (*Stellaria alsine*) could have been growing around the edge of the water hole. Other plants in the assemblage such as lesser skullcap (*Scutellaria* cf. *minor*) and greater chickweed (S*tellaria neglecta*) prefer damp and shady conditions; this may indicate that shading from trees or shrubs occurred although there is no direct evidence for this in the plant assemblage (as is also indicated by the insect assemblage; Allison, below). Blinks (*Montia fontana* cf. *chronrosperma*) will also grow in many kinds of damp conditions. A number of seeds from plants associated with arable crops, in particular scentless mayweed (*Tripleurospermum inodorum*) and wild radish (*Raphanus raphanistrum*) were noted in the sample and there are also seeds from plants of disturbed or waste ground, in particular swine cress (*Lepidium coronopus*), nettle (*Urtica dioica*) and the oraches (*Atriplex* spp.), the last two preferring nitrogen rich soils, which are often associated with human activity. A single achene of a possible tansy (cf. *Tanacetum vulgare*) may represent a drier grassy environment such as a field margin or open grassland near by. Though no cereal remains or other agricultural crops were noted in the sample the presence of a grain weevil (a pest of stored grain) noted by Allison (below) together with the presence of arable weeds, suggests that cereals may have been growing and stored near by. It should be noted that cereal remains and other grasses are rarely preserved by waterlogging and so their absence in the waterhole fill is to be expected.

Discussion

The charred plant remains from Site 4 (Trench 54) were on the whole few in number and poorly preserved. This coupled with the evidence of modern contamination in a number of the samples has meant that any interpretation of these remains needs to be treated with caution. Other Iron Age sites in Bedfordshire have produced differing assemblages, with Salford (Robinson 2005) having low quantities of glume wheat chaff and grain while Marsh Leys (Robinson 2011) produced a relatively rich cereal assemblage.

The assemblages from Site 2 are suggestive of an increase in the processing of glume wheats from the early to the middle Roman periods, which may reflect a move from a more subsistence based economy to the larger scale production of spelt wheat. This large-scale processing of spelt is also reflected in the middle Roman samples from Site 7. Sites at Haynes Park (Robinson 2004), Yelnow villa (Pelling 2009) and possibly Ruxox (Scaife 2004) have similarly produced assemblages that are dominated by large quantities of glume wheat chaff, in particular spelt, suggesting that there too spelt may also have been grown and processed on an industrial scale. Roman sites near Stansted Airport, Essex, have also produced similar types of assemblage (Carruthers 2007; 2008). The dominance of spelt and/or glume wheat seems to be prevalent from the

Table 5.15: Site 7, summary of charred plant remains

	Taxa	*Common name*	*Component*	*Habitat*
Caryophyllaceae	*Agrostemma githago* L.	corn cockle	seed capsule fragment	Da
Montiaceae	*Montia fontana* spp. *chronrosperma* (Fenzl) Walters	blinks	seed	many kinds of damp places
Primulaceae	*Anagalis* sp.	pimpernel	seed	
Laminaceae	*Mentha* sp.	mint type	seed	
Orobanchaceae	*Euphrasia/Odontites* sp.	euphrasia/bartsias	seed	
Asteraceae			achene	
	Cirsium sp.	thistle	achene	
	Tripleurospermum inodorum (L.) Scultz-Bip	scentless mayweed	achene	Da
	Calendula arvensis/officinalis	field/pot marigold	achene	
Apiaceae	*Apium* cf. *Repens*	creeping marshwort	mericarp	open wet places
	cf. *Daucus carota*	carrot	mericarp	
Juncaceae	*Juncus* sp.	rush	(capsule)/seeds	
Cyperaceae	*Carex* sp. (Trigonus)	sedge	nut	M, B, W, G esp. damp/wet soils
poaceae	Poaceae	grass	caryopsis	
	Lolium sp.	rye grass	caryopsis	
	cf. *Lolium* sp.	rye grass type	caryopsis	
	cf. *Danthoniadecumbens* (L.) DC.	heath-grass	caryopsis	sandy or peaty soils
		?grass	rachis fragment	

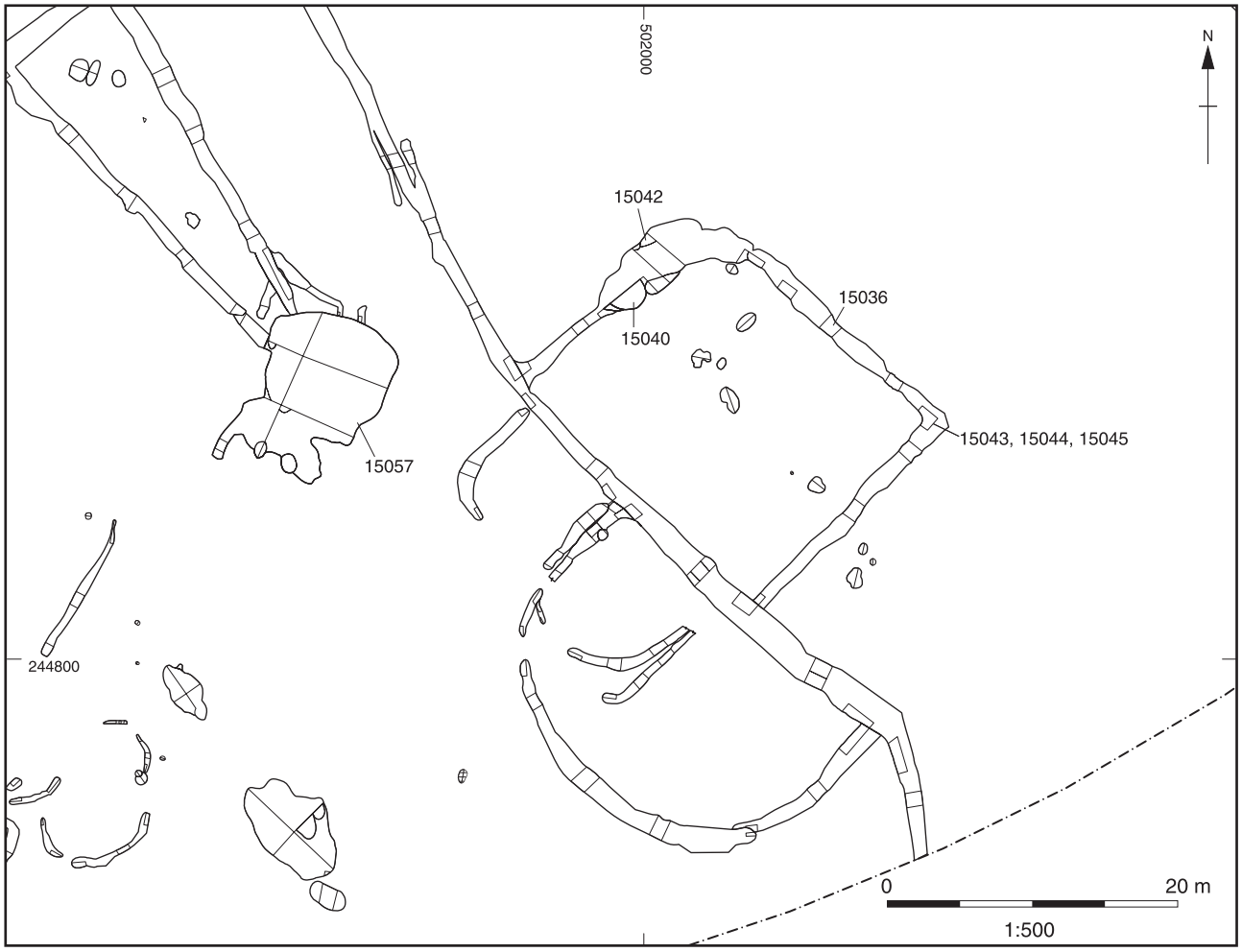


Fig. 5.4 Site 7, location of environmental samples

1	8		16		
			1		
			1		
			1		
1			1		
	1		2		
	1				
1	1	2	11	5	14
			1		
1	2		2		
	1				
			1		
			2		
1	108		194		66
	70		101		
21		4		80	60
	1				
	1				

middle Iron Age onwards in the area from the north west round to the east of modern Bedford. Sites such as Stagsden (Scaife 2000a), Fairfield Park (Pelling 2007) and Renhold Water End East and Roxton Road West on the Great Barford Bypass (Druce 2007), for example, all produced assemblages rich in glume wheat. A group of farmsteads within the area of the Biddenham Loop, to the north-east of the A421 Improvements, that were occupied continuously from the Iron Age into the Roman period have produced samples from kilns and ovens that are rich in spelt chaff. Particularly well-preserved samples containing glume bases were recovered from special deposit G125 at Farmstead 14, which was sealed by clay and would appear to have thus been protected from physical weathering (Pelling 2008, 285).

The appearance of stinking mayweed (*Anthemis cotula*) in the middle Roman samples may also be an indication of the move to cultivate the heavier clay soils that characterise the area. One of the indications of the stage of crop processing is the presence or absence of particular weed species. Corncockle (*Agrostemma githago*) is a large-seeded weed that is often retained beyond the initial processing stages, as the seed is of similar size to the grain. It is, however, toxic and should therefore have been removed by hand before the grain was used. If the spelt was initially being stored in the glume it is possible that the corncockle seeds would not have been removed until immediately prior to the drying process. The presence of the rigid tips of the seed capsule of this plant in some of the samples suggests the presence of the weed, which may have been removed. The capsule fragments might not have been so obvious, and therefore remained with the stored glumes. The larger seeds from plants such as black bindweed (*Fallopia convolvulus*) and cleavers (*Galium aperine*) may also have been retained during processing. There appears to be an increase in the production of spelt chaff from the early to the middle Roman period at Site 2, but the number of samples examined is relatively small and as such may not represent the whole picture.

The practice of storing spelt grains still encased within the glume – to protect them from damage from pests and the unpredictability of the British climate – is suggested by Robinson (2004) at Haynes Park and discussed by Campbell and Straker (2005), who suggest that spelt in the glume shows much less insect damage and is less susceptible to uncontrolled germination than the stored naked spelt grain. Evidence of this appears to be the case for a large deposit of stored hulled spelt that was burnt and preserved *in situ* in a reused bath house from Gloucestershire (OA 2011). This deposit showed no sign of insect damage or premature germination (OA 2011).

The other crops present in the assemblage do not need this secondary processing and their chaff may be considered to be a valuable resource for fodder, for example. The chaff from these crops was therefore less likely to have been burnt and incorporated into the archaeological record. Chaff from barley and oats and some legumes is more palatable to livestock and has a higher nutritional value than the wheat equivalent and so may be utilised as animal fodder. This may go some way to explaining why other crop waste appears only sparingly in the assemblages. If there was an increase in the production of spelt wheat for trade then there would have been a concomitant increase in the production of byproducts such as chaff, which could be utilised elsewhere. It is likely that the burnt chaff had been used to fuel ovens or hearths. The ovens at Site 2 clearly provide a focus for such activity, but none of the features from Site 7 represented by this analysis contained evidence for the actual charring of the chaff and so in this case it is likely that the focus of activity is located elsewhere, though probably not far away. The presence of completely collapsed grain and detached embryos and coleoptiles in many of the samples from Site 7 suggests the burning of spoilt grain.

The activity of malting on the site is difficult to identify as the characteristic detached embryos and coleoptiles are also indicative of accidental sprouting. Due to the fragmentary nature of the coleoptiles it is not possible to gauge whether the germination process was controlled, but the presence of secondary roots in some cases suggests that the germination was well advanced, and the occurrence of completely collapsed grains suggests that the germination process had gone beyond a stage that would be useful for malting. The spoilt grain might have been added back into the chaff for burning. If the high incidence of spelt chaff was a product of

Table 5.16: Site 7, summary of waterlogged plant remains from waterhole 15735

Sample No.			
Context No.			
Family	*Taxa*	*Common name*	
Ranunculaceae	*Ranunculus acris* L./*repens* L.	buttercup meadow/creeping	achene
	Ranunculus sp. *subgen batrachium*	water crowfoots	achene
	Ranunculus sp.	buttercup type	achene
Urticaceae	*Urtica dioica* L.	common nettle	achene
Brassicaceae			seed
	Lepidium coronopus (L.) Al-Sahbaz	swine-cress	fruit
	Brassica rapa spp. *Campestris* (L.) A R Clapham	wild turnip	seed
	Raphanus raphanistrum spp. *raphanistrum* L.	wild radish	mericarp fragment
	cf. *Raphanus raphanistrum* L.	wild radish	seed
Polygonaceae	*Polygonum aviculare* L.	knotweed	achene
	Rumex sp.	dock	achene
	Rumex sp.	dock	tepal
	Rumex acetosella spp *pyrenaicus* (Pourr.) Ackeroyd	sheep's sorrel	achene with tepal
	Rumex cf. *crispus* spp. *crispus* L.	curled dock	tepal
	Rumex cf. *Palustris* Sm.	marsh dock	tepal
Caryophyllaceae	*Stellaria neglecta* Weihe	greater chickweed	seed
	Stellaria alsine Grimm	bog stichwort	seed
Amaranthaceae	*Atriplex patula* Boucher ex DC./*prostrata* L.	spear-leaved/common orache	seed
	Atriplex sp.	orache	seed
Montiaceae	*Montia fontana* cf. spp *.chronrosperma* (Fenzl) Walters	blinks	seed
Laminaceae	*Scutellaria* cf. *minor* Huds	lesser skullcap	seed
Asteraceae			
	cf. *Soncus* sp.	sowthistle type	achene
	cf. *Tanacetum vulgare* L.	tansy	achene
	Tripleurospermum inodoum	scentless mayweed	achene
Apiaceae	cf. *Sium latifolium* L./*Apium inundatum* (L.) Rchb. f.	greater water-parsnip/ lesser marshwort	fruit
	cf. *Apium graveolens* L.	wild celery	fruit
Lemnaceae	*Lemna* sp.	duckweed	seed
Cyperaceae			nut
	Eleocharis cf. *Palustris* (L.) Roem.& Schult.	common spike-rush	nut
	Eleocharis sp.	spike-rush	nut
	Carex sp.		nutlet (trigonous)
	indet.		
	Moss	moss	leaf/stem
		dicotyledon	leaf frag.
		monocotlydon	leaf/stem frags
		charcoal	
		wood	

fuel utilisation rather than material falling in to a drying fire then the accompanying grain may either have simply fallen into the fire during whatever process was being carried out or be spoilt grain burnt deliberately.

The presence of emmer in several of the samples suggests that it may still have been grown as a crop in the middle Roman period; however, as the quantity of grain is small, it may be a relic of an earlier crop regime. Low quantities of barley and possibly oats, rye and legumes may represent other crops being grown or utilised in the area.

WOOD CHARCOAL *by Denise Druce*

Introduction

The assessment of 80 bulk samples taken during the excavations demonstrated the presence of abundant charcoal in samples from a number of Iron Age features from Site 3, Site 4 (Trench 54) and Site 5 (OA 2010). Ten samples from these sites were selected for full analysis in order to determine the taxonomic composition of the material and provide information about possible wood fuel selection and the

	15057
	15830
Habitat	
G (damp), B	5
P, R	4
	3
D, W	6
	1
W, (paths, around trodden gateways)	9
by streams and rivers	2
cultivated, rough ground, waste places	2
	1
all sorts of open ground	10
	7
	1
heathy open ground, acid soils	2
maritime and inland	1
edges of ponds, ditches, marshy fields	1
shady, usually damp places	2
streamside, ditches. Often on acis soils	4
waste, cultivated ground/disturbed, waste ground	24
	2
many kinds of damp places	1
wet heaths open woodland on acid soils	1
	5
	1
grassy places, waysides, rough ground.	1
waste, cultivated ground	7
ditches and fens/ usually shallow water and on bare mud near by	10
brackish	1
aquatic	100+
	3
in or by water, marshes, ditches , riversides	1
Wet, damp places	1
	1
	11
	*
	*
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	*

nature of the woody environment surrounding the three sites. They comprised four samples from late Iron Age enclosure ditches at Site 3, three from a middle Iron Age pit and ditched enclosure at Site 4 (Trench 54) and two from an early Iron Age cremation and a single fill from a late Iron Age pit from Site 5. The nature of the features, certainly from Site 3 and perhaps also Site 4 (Trench 54), plus a lack of charred cereal remains from these sites (Hunter, above), suggests that they may have formed part of an agricultural rather than a domestic setting. In addition to the cremation, Site 5 contained two possible roundhouses and associated features indicative of a probable late Iron Age settlement, but even this site produced very few charred cereal remains.

Methodology

The samples were processed using a modified Siraf flotation machine where flots were retained in a 0.25mm mesh sieve, and the residue on a 0.5mm mesh. Both the flots and residue were air-dried. Analysis of the samples followed standard procedure where *c* 100-150 fragments (or the entire sample if fewer than this were present) >2mm in size were extracted and identified. The charcoal was initially sorted into groups based on the features visible in transverse section using a Leica MZ6 binocular microscope at up to x40 magnification. Representative fragments of each group were then fractured to reveal both radial and tangential sections, which were examined under a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000), and modern reference material.

Results

The charcoal results for the ten samples are shown by fragment count in Table 5.17. Seven taxa/wood types were positively identified, including two to species level.

The taxonomic level of identification varied according to the observed genera/family and/or the state of preservation. In many cases the key diagnostic features that are needed to distinguish species were not observed and so the fragments could only be identified to subfamily level (eg *Alnus glutinosa*/*Corylus avellana,* alder/hazel, both in Betulaceae). In other cases the level of identification was limited due to the similarities of species within a family or genus (eg Maloideae, referred to as hawthorn-type in the text, which could be hawthorn, apple, pear or one of the whitebeams, and cannot be separated anatomically). The fragments identified as *Prunus* sp. (referred to as blackthorn-type in text) could include sloe/blackthorn and/or wild cherry, although the site is probably out of the geographical range of bird cherry (Gale 1996; Hather 2000). Some of the fragments exhibited the wide rays typical of sloe/blackthorn, but in most instances the intermediate size of many of the observed rays means that either sloe/blackthorn or wild cherry could be represented. In general, the preservation was good. The fragments categorised as indeterminate come from distorted knotty wood.

Site 3

The upper fills from enclosure ditches 3358, 3361 and 3362 contained similar assemblages, dominated by *Prunus* sp. (blackthorn-type) wood charcoal

Table 5.17: Summary of the charcoal analysis. Numbers given are actual counts

Period		LIA	LIA	LIA	LIA	MIA
Feature		Enclosure ditch (upper fill)	Enclosure ditch (upper fill)	Enclosure ditch (upper fill)	Enclosure ditch (lower fill)	Pit (intermediate fill)
Feature number		3358	3362	3361	3361	17007
Sample number		3010	3013	3015	3016	17000
Context number		3107	3227	3272	3273	17006
Site		3	3	3	3	4 (Trench 54)
Acer campestre	field maple			5r		
Alnus glutinosa/Corylus avellana	alder/hazel					2r
Fraxinus excelsior	ash	7hr	11r	cf 2r		
Maloideae	hawthorn type	8r	1r			4r
Prunus sp	sloe/blackthorn or wild cherry	57r	101r	32r	4r	28r
Maloideae/*Prunus* sp	hawthorn/blackthorn type	4r	8r	5r		
Quercus sp	oak	35hr	12hr	13r	61r	45hr
Salix sp/*Populus* sp	willow/poplar					
Indeterminate		4	9	5		26
Total		115	142	62	65	105

h = heartwood present, r = roundwood present

(Table 5.17). *Quercus* sp. (oak) was also well represented, especially in fill 3107 of ditch 3358, as was *Fraxinus excelsior* (ash). Other taxa include Maloideae (hawthorn type) in fill 3107 of ditch 3358 and fill 3227 of ditch 3362, and *Acer campestre* (field maple) in fill 3272 of ditch 3361. The lower fill (3273) from enclosure ditch 3361 differed from the upper fill (3272) in that it was dominated by oak, and it is therefore likely to represent a separate episode of dumping.

Site 4 (Trench 54)

The two samples from pit 17007, which was situated outside the confines of the ditched enclosure, were very similar and were both dominated by *Quercus* sp. (oak), with lesser amounts of *Prunus* sp.(blackthorn type). Like the assemblages from Site 3, Maloideae (hawthorn type) was also recorded. Fragments of *Alnus glutinosa/Corylus avellana* (alder/hazel), and *Salix* sp. /*Populus* sp. (willow/poplar) were also present in fill 17005. The dump (17112) from enclosure ditch cut 17176 differed in that it contained solely *Prunus* sp. charcoal.

Site 5

The samples (6000 and 6001) from cremation deposit 6068/6071 were dominated by *Quercus* sp. (oak) charcoal. Sample 6001 also contained one fragment of *Alnus glutinosa/Corylus avellana* (alder/hazel). The assemblage from fill 6010 of pit 6009, was similar to the charcoal assemblages from Site 3 and Site 4 (Trench 54), in that it contained abundant oak and blackthorn-type (*Prunus* sp.) wood charcoal.

Discussion

The charcoal assemblages were very similar in content and were dominated by blackthorn-type and/or oak. No distinction could be made between sloe/blackthorn or wild cherry, and either variety could be represented. The dominance of small roundwood or branchwood in many of the fills suggests that some of the material is likely to represent the burnt debris from hearths or bonfires, probably of locally collected material either from woodland floors or after land clearance or hedge trimming. Those features dominated by oak, including obvious oak heartwood, such as the lower enclosure ditch fill 3275 at Site 3, the fills of pit 17007 at Site 4 (Trench 54), and the fill of pit 6010 at Site 5 may, in part, represent the waste generated by a specific activity that required a more robust or longer burning wood, such as construction or smithing.

The dominance of oak in the cremation deposit at Site 5 is consistent with other Iron Age and Roman cremations in Britain, which are often dominated by a single taxon, usually oak or ash (Campbell and Robinson 2008; Challinor 2007a; 2007b; Challinor 2010; Druce 2010 and forthcoming a). It has been suggested that specific wood taxa, or even a specific tree, may have been selected for the cremation pyre, with the specific selection possibly linked to gender, age, or status (Challinor 2007a; Campbell and Robinson 2008).

The woody environment

The abundance of blackthorn-type wood charcoal, especially from Site 3 and Site 4 (Trench 54), and the presence of hawthorn-type wood and field maple,

MIA Pit (upper fill)	MIA Dump (in enclosure ditch?)	EIA Cremation burial		LIA Pit (single fill)
17007	17176	6067/6070		6009
17001	17009	6000	6001	6003
17005	17112	6071	6068	6010
4 (Trench 54)	4 (Trench 54)	5	5	5
1r			1r	
5r				12r
33r	81r			11r
				7r
80hr		103h	104hr	83hr
2r				3r
20	5	1	4	6r
141	86	104	109	12

suggest that some of the area surrounding the sites during the middle and late Iron Age consisted of open woodland or scrub. The equally abundant oak in many of the samples, however, suggests that mature oak woodland was also present and perhaps in plentiful supply. The sole presence in the late Iron Age deposits from Site 3 of ash, a light-demanding tree and coloniser of secondary woodland, may reflect a spatial/temporal pattern in woodland composition. However, this can only be a tentative suggestion given the limited dataset. The occasional fragments of willow/poplar suggest collection of wood from damp areas, and hence that some of the areas surrounding the sites may have been prone to waterlogging.

Many other Iron Age sites in the region have produced similar assemblages dominated by sloe/blackthorn, wild cherry, hawthorn-type, maple, ash and oak, including Oxley Park and Brooklands, both in the Milton Keynes area (Druce 2009 and forthcoming b), the A421 at Great Barford (Challinor 2007c), Shillington (Cartwright 2004), and Fairfield Park (Thompson and Francis 2007). It is possible that the taxa formed mixed deciduous woodland; oak, ash, maple and blackthorn type certainly form the usual woodland of most of the Midlands today (Rackham 2003). Sloe/blackthorn, wild cherry, maple and ash are, however, common in hedgerows and other non-woodland areas, the latter two being the commonest hedgerow trees in the east Midlands and the Chilterns (Rackham 2003).

In general, a fairly limited variety of woody taxa appear to have been growing locally and to have been cleared/utilised, and greater emphasis/reliance is shown towards blackthorn-type wood and/or oak. The dominance of oak over blackthorn-type in some of the features is interesting and may

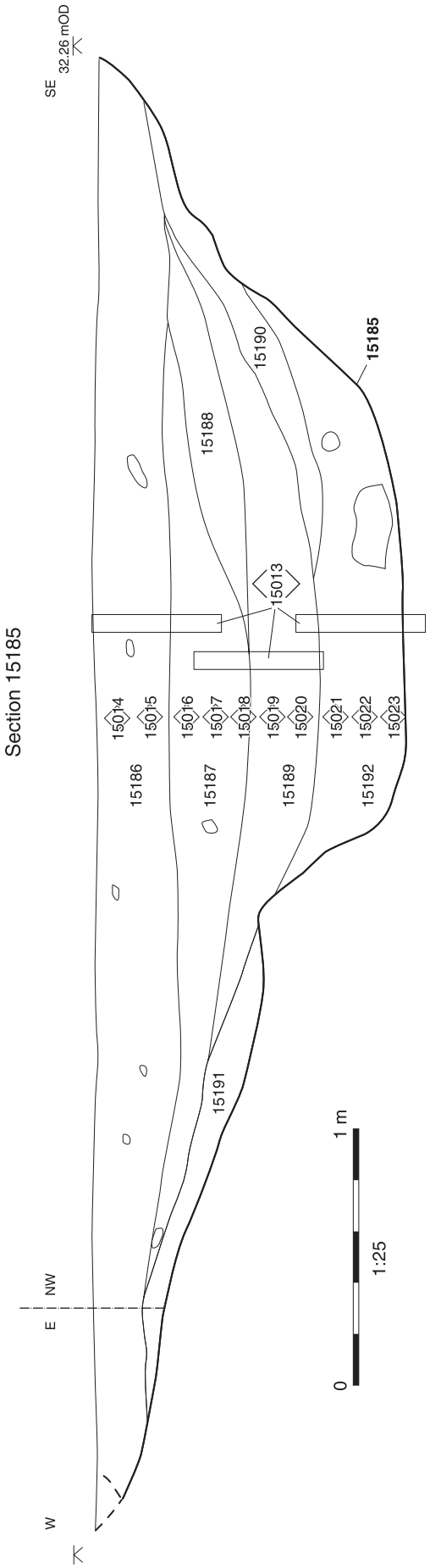


Fig. 5.5 Site 7, section through late Roman waterhole 15185 showing the locations of monoliths taken for palynological analysis

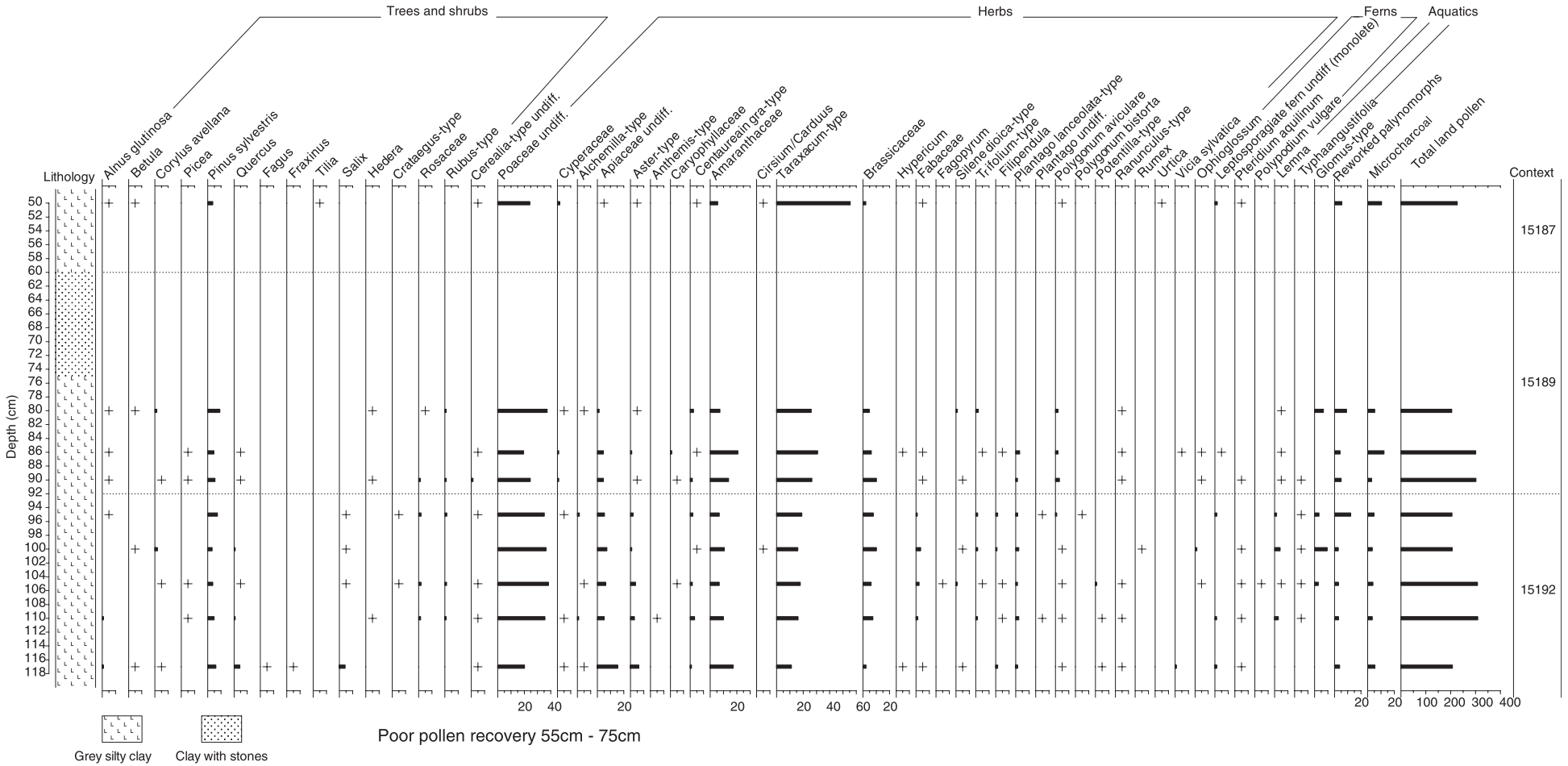


Fig. 5.6 Site 7, pollen diagram for late Roman waterhole 15185

Table 5.18: Summary of monoliths and subsamples taken for palynological analysis from waterhole 15185

Sample number	*Context number*	*Context boundaries (m)*	*Depth of pollen subsamples (m)*	*Lithology*
15013	15187	0.4-0.6	0.5, 0.6	Grey silt clay; stones
15013	15189	0.6-0.9	0.7, 0.8, 0.86, 0.9	Grey silt clay; stones
15013	15192	0.9-1.3	0.95, 1.0, 1.05, 1.10, 1.17	Grey silt clay with common chalk fragments and stones

indicate deliberate selection for construction or for activities that required oak's strength or sustained burning properties. Its presence in the assemblage and at other sites nearby suggests that oak was not in short supply in the region.

The abundant blackthorn-type wood and other typical hedgerow taxa in the samples, along and with the evidence from many other sites in the Bedfordshire area, indicate a well-managed agricultural landscape. The presence of hedged boundaries would also be consistent with the contexts of the features from which the assemblages came, namely nondomestic, agricultural enclosures, into which the debris from hearths or bonfires may have been dumped. It is possible that, like Cambridgeshire (Murphy 2001), the region was undergoing a process of agricultural intensification during the later prehistoric period, which involved the construction of ditched and hedged boundaries for the management of livestock.

POLLEN FROM LATE ROMAN WATERHOLE 15185 *by Mairead Rutherford*

Introduction

The preservation of pollen in monoliths taken through the sediments of a pit (20167) from Site 2 and three waterholes (15185, 15735 and 15958) from Site 7 was assessed. Only waterhole 15185 yielded sufficient pollen to be taken to full analysis (OA 2010), the pollen from the other features occurring at low concentrations and being poorly preserved.

Methodology

Three overlapping monoliths were taken from waterhole 15185 (Fig. 5.5). The pollen from eleven subsamples from the lower fills within the waterhole were analysed. These included three subsamples which had been shown to be productive for pollen during the assessment phase and eight new subsamples taken from three contexts within the lower part of the waterhole (Table 5.18). Closely spaced sampling of the two lower monoliths was targeted on depths where the results of the assessment had indicated that pollen recovery was good.

Volumetric samples (1cc) were taken from eight samples (Table 5.18) and two tablets containing a known number of *Lycopodium* spores were added so that pollen concentrations could be calculated (Stockmarr 1971). The samples were prepared using a standard chemical procedure (method B of Berglund and Ralska-Jasiewiczowa 1986), using hydrogen chloride, sodium hydroxide, sieving, hydrogen fluoride, and Erdtman's acetolysis, to remove carbonates, humic acids, particles >170 microns, silicates, and cellulose respectively. The samples were then stained with safranin, dehydrated in tertiary butyl alcohol, and the residues mounted in 2000cs silicone oil. Slides were examined at a magnification of x400 by counting pollen along equally-spaced traverses until a total of between 200-300 total land pollen grains (trees, shrubs and herbs) was counted. Pollen identification was made following the keys of Moore *et al.* (1991), Faegri and Iversen (1989), and a small modern reference collection. Andersen (1979) was followed for the identification of cereal grains. Plant nomenclature follows Stace (2010). Charcoal particles greater than 5μm were recorded (Peglar 1993). Fungal spore identification and interpretation followed Blackford *et al*. (in press).

Pollen data has been presented as a percentage diagram using the computer programs TILIA and TILIA-GRAPH (Grimm 1990; Fig. 5.6). The percentage values are based on a pollen sum of all land pollen but excludes fern spores, aquatic taxa and indeterminate grains. All palynomorphs excluded from the pollen sum are expressed as a percentage of the pollen sum plus the group sum in which they belong. Micro-charcoal values are expressed as a percentage of the pollen sum plus the charcoal counts. Fungal spore values are expressed as a percentage of the pollen sum plus the fungal counts.

Results

Pollen from the lowest context (15192) suggests a largely cleared landscape. Grasses (Poaceae) dominate the assemblage, with records of commonly occurring herbs associated with meadows, hedgerows and waste ground: for example, *Taraxacum*-types (dandelions), *Aster*-types (including daisies and thistles), *Centaurea nigra* (Common Knapweed), *Polygonum aviculare*-type (Knotgrass) and *Alchemilla*-type (Lady's Mantles).

Low counts of cereal-type pollen were recorded in all subsamples analysed from this context. This may indicate small-scale cereal cultivation nearby, which is additionally supported by records of pollen of weeds of cultivation. However, this inter-

pretation is tentative because of the similarity of pollen grains from cultivated cereals and some wild varieties of grass such as wild barley (eg *Hordeum murinum*) and sweetgrass (*Glyceria* sp.; Andersen 1979). There is also evidence for some arable landuse, supported by records of consistent quantities of pollen of Brassicaceae (cabbage family) and weeds associated with arable landuse and/or disturbed ground, such as *Plantago lanceolata* (Ribwort Plantain). Plant taxa represented by Apicaeae (carrot family) are known to occur in a wide variety of habitats.

Tree and shrub pollen account for 18% of the total land pollen counted in the deepest sample from context 15192. This value decreases upward through the deposit to around 10%. Counts for *Pinus* (pine) are higher than for other tree/shrub pollen counts, reflecting preferential dispersal by wind of pine pollen grains over long distances. Relatively common counts for *Quercus* (oak) in the deepest sample may indicate regional stands of oak woodland or woodland pasture. The oak values appear to diminish upwards through fill 15192 to the lower part of context 15189. There are no records of oak pollen above this.

Small quantities of aquatic pollen were also recorded throughout fill 15192, indicating that sufficient water was still present in the waterhole for growth of these plants. Spores of the fungus *Glomus* may provide evidence for soils being incorporated into the fill. Of interest is the record of a single specimen of *Fagopyrum* (Buckwheats). This plant type grows on waste ground, possibly escaped from cultivation. Buckwheat is cultivated for edible seeds and leaves.

The lower half of context 15189 contained similar pollen assemblages to context 15192, with minor fluctuations in the quantities of grasses, Amaranthaceae (goosefoots, formerly Chenopodiaceae) and dandelions. A relative peak in charcoal values was recorded in this context.

The uppermost fill (15187) was distinguished by an abundance of dandelion pollen which, in association with other herb taxa indicates an open, possibly disturbed area, for example, meadow land surrounded by hedges. This may, however, reflect the over-representation of the more robust dandelion pollen in a context in which pollen preservation was generally poor.

Discussion

The pollen profile from the fills of waterhole 15185 provides good evidence for grassland/pasture, open waste ground environments and possible arable environments. The aquatic flora observed mainly in the lowest fill indicates that the water was not kept clear of weeds, perhaps signalling that by the time the feature began to silt up the waterhole was no longer in use as a source of fresh water. The general absence of fungal spores of the types associated with animals may indicate that grazing animals were not present in the vicinity of the waterhole during the period of silting.

The micro-charcoal record provides evidence for fires in the surrounding area. Most microscopic charcoal pieces observed were small enough to have accumulated through windblown deposition. The diminishing values for tree pollen, in particular oak, coupled with steady and then rising values for micro-charcoal, may be interpreted as possible indicators of tree clearance, resulting in an almost treeless landscape. It is possible that there was some management of oak, aimed at conserving it, while the wood of other tree types was used more extensively, as suggested by Wiltshire (2005, 152) for a late Iron Age pollen sequence at Salford. Wiltshire (1994) has recorded similar events – the selective conservation and subsequent demise of oak – during the late Iron Age/early Roman period at Scole, in Suffolk.

Reworked palynomorphs of Jurassic (Oxford Clay) age including pollen, spores and dinoflagellate cysts occur throughout the fills of the waterhole. This shows that material from the substrate into which the feature was cut became incorporated into its fills.

Although pollen was only present at low concentrations in waterholes 15735 and 15958, the results of the assessment similarly indicated a very open landscape with ruderal communities as found around habitation sites and footpaths, together with some grassland, probably used for pasture, and, from waterhole 15958, possibly some growth of cereals. Pollen from the basal context (15765) of waterhole 15735 provided tentative evidence that there were more trees and shrubs, or hedges, growing in the vicinity when the waterhole was first dug, although the landscape was still predominantly open. There also appeared to be no pollen from aquatic taxa in either of these waterholes or evidence of faecal contents, suggesting that these waterholes were kept clean and clear of water plants. The lack of evidence for grazing animals from all these waterholes is, however, in contrast to the evidence provided by analysis of the Coleoptera from waterhole 15735 (Allison, below), which included a number of beetles primarily associated with herbivore dung, suggesting that grazing animals were present in the area.

INSECT REMAINS FROM LATE ROMAN WATERHOLE 15735 *by Enid Allison*

Introduction

The samples examined for insect remains were from waterlogged deposits from the lower part of waterhole 15735 at Site 7. Sample 15057 was taken from the earliest fill of the feature, context 15830, and sample 15056 from context 15757, a silting deposit that may date from after the feature ceased to be used as a water source (Fig. 5.7).

Methodology

Sediment samples with volumes of 5litres were wet-sieved with flotation by Oxford Archaeology staff. Residues and flots were collected on 0.25mm mesh and both fractions were submitted for insect analysis. Paraffin flotation was carried out to extract insect remains following the methods of Kenward *et al*. (1980) with remains recovered on 0.3mm mesh.

For analysis, beetles (Coleoptera) and bugs (Hemiptera) were removed from the paraffin flots onto moist filter paper for identification using a low-power microscope (x10 – x45). Identification was by comparison with modern insect material and reference to standard published works. Numbers of individuals and taxa of beetles and bugs were recorded, and taxa were divided into broad ecological groups for interpretation following Kenward *et al.* (1986) and Kenward (1997). The state of preservation of remains was recorded using the system of Kenward and Large (1998), where fragmentation (F) and erosion (E) are scored on a scale from 0.5 (superb) to 5.5 (extremely decayed or fragmented). The abundance of other invertebrates in the flots was recorded on a three point scale as present, common or abundant. Nomenclature follows Duff (2008) for Coleoptera, and Nau (2006) for Hemiptera.

Results

Context 15830, sample 15057

A large assemblage of over 300 beetles and bugs of 136 taxa was recovered in the paraffin flot (Tables 5.19 and 5.20). Preservation of insect sclerites was rather varied, with some well preserved and others showing greater or lesser degrees of erosion.

Water beetles accounted for a quarter of the beetle and bug assemblage, water flea ephippia (Cladocera: resting eggs) were very abundant and ostracod carapaces common, all indicating that the feature had contained water and could have functioned as a waterhole. Ephippia are produced at certain times of the year, particularly in the autumn or at times of environmental stress such as seasonal reductions in water level (Scourfield and Harding 1966, 3) so their presence does not necessarily indicate permanently standing water, although it was probably present for much of the time. The condition of the insect material may reflect fluctuating water levels and periods when parts of the fill were incompletely waterlogged. Several species of water fleas were represented by the ephippia and many were *Daphnia magna* group. *D. magna* occurs in small relatively warm water bodies or restricted bays of larger waters (Scourfield and Harding 1966, 10).

Helophorus species were by far the most common water beetles, making up 72% of the aquatic component, and because of their fragmented state this may well be an underestimate of their abundance. They

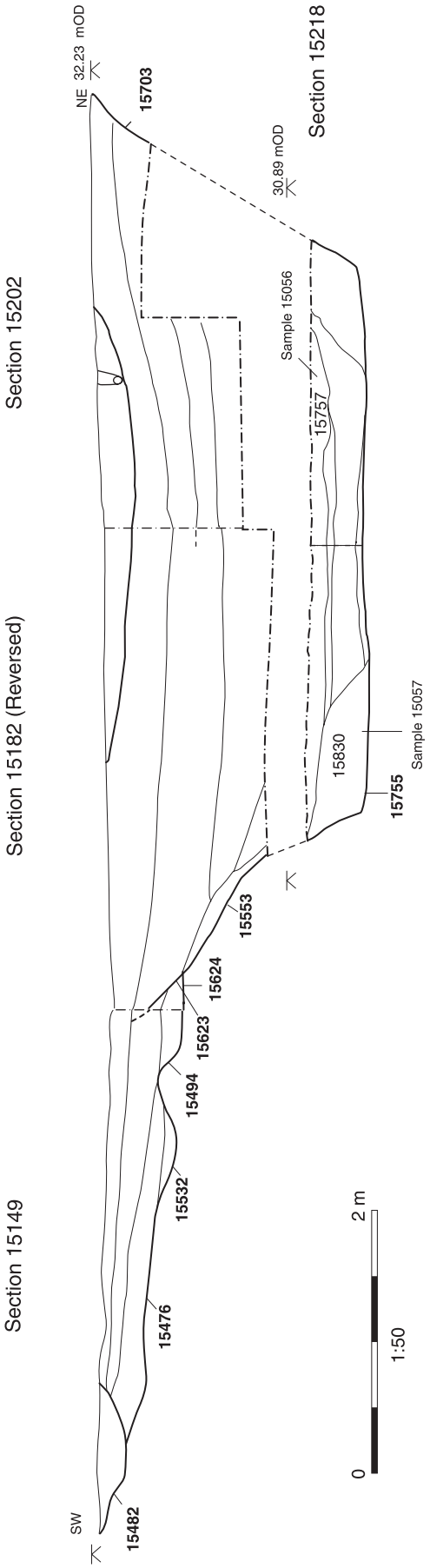


Fig. 5.7 Site 7, section through late Roman waterhole 15735 showing location of the deposits from which insect samples were taken

Table 5.19: Details of samples from late Roman waterhole 15735 examined for insect remains. Scores for fragmentation and erosion follow Kenward and Large (1998), using a scale ranging from 0.5 (superb) to 5.5 (extremely decayed or fragmented)

Ctx	Sample	Sample volume (l)	Volume paraffin flot (ml)	MNI beetles and bugs	Fragmentation of insect sclerites	Erosion of insect sclerites
15830	15057	5	20	308	3-4.5	3-4.5
15757	15056	5	25	610	2-4 (mode 3)	2- 5 (modes 2 (weak), 4.5)

are attracted to various water bodies even if small and temporary, often in considerable numbers. *Ochthebius minimus*, usually found in mud in shallow water, was quite common, with five individuals, and *O. dilatatus* is found in muddy water (Friday 1988, 149). Other water beetles included two *Hydrobius fuscipes*, *Agabus bipustulatus* and *Berosus*. The presence of several *Tanysphyrus lemnae* indicates that duckweed (*Lemna*) grew on the water surface.

Taxa characteristic of damp ground and waterside environments accounted for 30% of the terrestrial taxa and indicated that conditions around the feature were wet and muddy. The most numerous beetles in this component were *Platysthethus nitens* and *P. cornutus* group which are likely to have exploited organic-rich waterside mud. *Bembidion lunulatum*, which are found on damp bare ground near water (Luff 2007, 102), was common, with seven individuals. There was an indication of vegetation on damp ground from the weevil *Notaris acridulus*, which is found on reed sweet-grass (*Glyceria*) and perhaps other semi-aquatic grasses. One specimen was unexpanded, indicating an unemerged or newly emerged beetle.

The nettle ground bug *Heterogaster urticae* and *Brachypterus* indicated that there were stands of nettles (*Urtica*) growing close to the feature, and another ground bug, *Scolopostethus affinis*, is also often associated with nettles (Southwood and Leston 1959, 110). Other weedy vegetation was suggested by *Chaetocnema concinna*, which is found chiefly on *Polygonum*, and *Psylliodes* and *Ceutorhynchus*, which are found on cruciferous plants. The ground surrounding the feature was probably rather open. *Bembidion illigeri*, for example, is found in open, sunny sites near water (Luff 2007, 93) and a range of other insects were generally indicative of open and rather dry conditions nearby. Two bombardier beetles (*Brachinus crepitans*), which currently have a very local distribution on chalky and occasionally clayey soils in southern England and Wales in grassland, quarries and on waste ground (Luff 2007, 33; 1998, 82), are worthy of note. The beetles take their name from their ability to fire a defensive liquid from their anus which explodes audibly on contact with air (Harde 1984, 108). *Harpalus affinis* is also indicative of dry open situations such as waste or cultivated ground (Luff 2007, 153). *Drymus sylvaticus* is a very common lygaeid bug found in grass, moss or litter on relatively dry soils, feeding on mosses and fungal hyphae and possibly other foods (Southwood and Leston 1959, 107). There was a slight hint of the presence of shrubs and/or trees nearby, but perhaps not particularly close to the waterhole; the small longhorn beetle *Tetrops praeusta* is associated with recently dead or slightly decayed twigs and slender branches of various deciduous trees.

A number of bugs and beetles were indicative of dry grassland. *Paradromius linearis* is found in dry grassland and arable fields (Luff 2007, 191) and *Berytinus hirticornis*, a stilt bug, is a dry grassland species found among oat-grass and couch-grass. Until recently it was thought to be confined to Devon (Southwood and Leston 1959, 123) but there have been recent records from south-east England, suggesting that it is associated with grass vetchling (*Lathyrus nissolia*) (Essex Field Club 2011). Evidence for specific plants was provided by *Ceratapion carduorum*, which feeds on thistles (*Cirsium* and *Carduus*), and *Mecinis ?labilis*, which feeds on plantain (*Plantago*).

Shed skins from nymphs of the jumping plant louse *Craspedolepta nervosa* were very common (estimated 50+ individuals). These tiny insects are found chiefly on yarrow (*Achillea millefolium*) a common plant of dry grassland, but also occur on sneezewort (*A. ptarmica*) and mugwort (*Artemesia vulgaris*; Hodkinson and White 1979). The shed nymphal skins are commonly recorded from some occupation sites in association with a fauna from within buildings, where it has been suggested that they may have arrived in cut vegetation, in many cases probably as hay (eg Allison 1991a, 1991b; Kenward *et al*. 2011). Remains of the much more mobile adults might be expected if host plants were growing as close to the feature as the numbers of nymphs suggests. More likely alternatives are that the nymphs originated in dung from animals that grazed on local grassland, in stable manure brought to the site, or possibly even from a residue of a hay stack close to the feature.

There was evidence from a group of other insects that material derived from buildings had been introduced into the feature. Beetles associated with decomposing organic material made up 31% of the terrestrial assemblage and they included a group found in relatively dry mouldering material that are typical members of a fauna that would have formed

within ancient buildings (Hall and Kenward 1990; Kenward and Hall 1995). This group accounted for 18% of the decomposers and comprised *Latridius minutus* group, *Enicmus*, *Atomaria*, *Cryptophagus*, *Typhaea stercorea* and a spider beetle (*Ptininae*). *Xylodromus concinnus*, a decomposer with more general feeding habits, is also often associated with a building fauna, and woodworm beetle (*Anobium punctatum*), probably from structural timber, and a grain weevil (*Sitophilus granarius*) may also have formed part of the same group. Grain weevils are found in stored grain, not in cereals growing in the fields, and many of those seen in assemblages from archaeological deposits are thought to have originated in stable litter or manure, having been introduced in low-grade cereals used as fodder (Kenward 2009, 281). Beetles found in moist, open-textured, nutrient-rich decomposing material and often typical of stable manure (Kenward and Hall 1997) were not particularly well-represented in the sample, although *Acritus nigricornis* was present and fly puparia were common. The range of decomposer species represented is sufficiently distinctive to suggest that waste from buildings had been dumped into the feature or very close to it, perhaps relating to episodes of manuring.

About a third of the decomposers in the assemblage (10% of the terrestrial insects) were taxa associated with foul matter, many of them primarily associated with herbivore dung. Six species of *Aphodius* were represented together with Geotrupes. Other taxa attracted to foul organic matter including dung were *Cryptopleurum minutum*, *Cercyon haemorrhoidalis*, *Cercyon pygmaeus* and *Platystethus arenarius*. Some of these species may have come from stable manure, but the relative abundance of scarabaeids probably indicates the presence of fresh dung locally.

Context 15757, sample 15056

A very large assemblage of over 600 beetles and bugs was recovered, with individual sclerites rather variably preserved and a greater proportion of eroded material than in context 15830. Water beetles and an occasional water boatman (Corixidae) accounted for 29% of the assemblage and, together with freshwater snails, abundant water flea ephippia and ostracods, indicated aquatic conditions. Several nautilus ram's horn snails (*Gyraulus crista* (Linnaeus)), which do not appear to occur in habitats susceptible to drying (Davies 2008, 168), were noted among the freshwater molluscs, suggesting that water may have been present in the feature more or less permanently, perhaps with seasonal reductions in water level at least partly accounting for the varied preservation of insect remains. *Helophorus* species were by far the most numerous water beetles (67% of the aquatic assemblage). Both *Ochthebius dilatatus* and *O. minimus* were quite common (each with six individuals), the former in particular indicating that the water was quite muddy, with the remaining taxa each represented by up to four individuals. *Hygrotus confluens* is typical of open silt ponds with sparse vegetation (Nilsson and Holmen 1995, 38) and both it and *Helochares lividus* are efficient colonisers of sparsely vegetated ponds, dying out as aquatic plant and animal communities develop (Denton 2007, 108, 129). There were indications of some aquatic vegetation from *Bagous*, and *Tanysphyrus lemnae*, which is found on duckweed (*Lemna*), was common with thirteen individuals.

Taxa found on damp ground and waterside environments were also common, accounting for 30% of the terrestrial assemblage. As with context 15830, *Platysthethus nitens* and *P. cornutus* group were abundant and are likely to have exploited organic-rich waterside mud. The ground beetles *Bembidion* lunulatum, represented by eight individuals, and *Bembidion articulatum* also indicated bare damp ground. The latter is found in cracks in bare sand or mud near water (Luff 2007, 99). The weevil *Notaris acridulus*, found on reed sweet-grass (*Glyceria*), a leafhopper *Conomelus anceps*, found on rushes (*Juncus*), and *Prasocuris phellandrii*, a leaf beetle usually associated with waterside *Ranunculaceae* especially marsh marigold (*Caltha palustris*), all provided indications of vegetation on damp ground.

Plant-feeding insects from a variety of other habitats were also recorded. Nettles were indicated by the nettle ground bug *Heterogaster urticae*, a nymph of the nettle psyllid *Trioza urticae*, and *Brachypterus*. There was good evidence for cruciferous plants, *Polygonum*, and generally for herbaceous vegetation from *Phyllotreta* and *Ceutorhynchus* species, *Chaetocnema concinna*, *Longitarsus* and *Apion* species. Relatively dry, open habitats were indicated by a range of ground beetles including *Ophonus* ?*ardosiacus*, *Bradycellus harpalinus*, *Paradromius linearis* and *Syntomus truncatellus*. *Bembidion obtusum*, found on open ground and cultivated land (Luff 2007, 99), was represented by five individuals. Grassland vegetation was indicated by *Ceratapion carduorum*, which feeds on thistles (*Cirsium* and *Carduus*), and by *Mecinus pascuorum*, which is found on plantain (*Plantago*). Although conditions appear generally to have been rather open there were definite indications of the presence of trees or shrubs nearby, perhaps in hedgerows, from two species of bark beetle (*Scolytinae*). One was identified as *Scolytus rugulosus*, which usually attacks trees and shrubs of the Rosaceae family. Two unidentified Anobiidae species are also likely to have been associated with trees or shrubs.

Woodworm beetle (*Anobium punctatum*) can be found in natural situations but could have come from structural timber nearby. It may alternatively have entered the feature with material from within buildings, for which there were distinct suggestions. Dry decomposer beetles typically associated with ancient buildings made up 20% of the decomposer taxa (6% of terrestrial insects) and included *Latridius minutus* group, *Enicmus*, *Ephistemus globulus*, spider beetles (*Ptininae*), *Cryptophagus* and

Atomaria species. Shed skins of *Craspedolepta nervosa* nymphs were common and are more likely to have arrived in the deposit with material from within buildings than from plants growing in the vicinity, probably with either hay or dung. Two poorly preserved biting lice (Mallophaga) which infest various birds and mammals but not humans were recovered, but unfortunately because of their poor condition could not be identified to species. Again this group as a whole could represent dumping of waste from buildings into or close to the waterhole, and may include an element from manuring.

Beetles associated with foul organic material made up 34% of the decomposers in the sample (10% of the whole assemblage). Scarabeid dung beetles accounted for almost three quarters of the foul group with *Aphodius contaminatus*, *A. granarius* and *A. prodromus* or *sphacelatus* the most common species (each represented by 8-10 individuals). *Cryptopleurum minutum* and several *Cercyon* species that are associated with foul matter (*C. haemorrhoidalis*, *C. pygmaeus*, *C.* ?*quisquilius*) made up the rest of this group. Again this group may include some beetles from stable manure, but the abundance of scarabaeids is suggestive of some fresh dung locally.

Discussion

Insect remains from waterlogged features associated with ancient field systems have a considerable potential to provide information about land use, occupation and ecological conditions in rural areas (Kenward 2009, 251-3). The potential in some cases is limited by a lack of taxa representing terrestrial habitats, since a water-filled feature would, by its nature, often be dominated by aquatics, which would provide little clear indication of the character of the surrounding landscape. This was not the case for the samples from waterhole 15735 however, in which a considerable terrestrial component has been identified.

The two samples examined were from the lower fills of the feature. The insect assemblages recovered were very similar in most respects, although a greater concentration of remains was present in the upper fill. Both assemblages indicated that the feature contained standing water more or less permanently, although there were probably seasonal fluctuations in water level. Aquatic beetles recovered suggest that it was an open silt pond, with numerous waterside taxa indicating areas of bare damp ground with organic-rich mud immediately around it. The presence of several plant-feeding insect species indicated that vegetation on damp ground included reed sweet-grass (*Glyceria*), rushes (*Juncus*), and Ranunculaceae species. There was also insect evidence for nettles (*Urtica*) and vegetation typically found on disturbed or cultivated ground such as crucifers and *Polygonum*. Generally, much of the rest of the insect assemblage indicated an open, sunny site and in particular dry grassland habitats with vegetation that included thistles (*Cirsium* and *Carduus*) and plantain (*Plantago*). Shed skins (exuviae) of nymphs of a jumping plant louse *Craspedolepta nervosa*, usually associated with yarrow (*Achillea millefolium*), were common in both samples, but these are considered likely to have had a different origin to some of the other plant-feeders. There was some evidence for the presence of trees or shrubs, including members of the Rosaceae in the later sample. Since the ground appears to have been largely open this may have been in the form of a hedgerow.

A distinctive suite of insects typical of litter from buildings was represented in both samples, indicating dumping of such material either directly into or very close to the waterhole. Some species within the group suggest that the material deposited may have been, or included, stable manure, raising the possibility of manuring of the surrounding enclosures. Manuring using a variety of materials and domestic waste as well as dung appears to have been practised from the late Neolithic onwards in western Europe (Bakels 1997). The introduction of litter from buildings complicates the interpretation of plant-associated insects in the assemblage in particular, since some of them could originally have come from hay or other cut vegetation used in buildings rather than from vegetation growing around the waterhole. On some sites *Craspedolepta nervosa* exuviae are a frequent inclusion in deposits within buildings, often probably derived from hay. Here, an origin in fresh dung from grazing animals is also a possibility. Despite the possibility that some of the plant-associated insects could have arrived with litter from buildings, various ground beetles recovered are very likely to represent conditions in the vicinity of the waterhole and they provide considerable evidence for rather dry, open ground, with grassland or cultivated habitats nearby.

Taxa associated with foul organic matter, the majority of which were scarabaeid dung beetles, accounted for 10% of the terrestrial taxa in both samples. A recent modern study has suggested that the proportion of dung beetle remains in insect assemblages from small bodies of water have the potential to reflect the intensity of grazing (Smith *et al*. 2010). Dung beetles may make up more than 10% of the terrestrial fauna when large or dense populations of grazing animals are present nearby, and less than 5% when there are natural populations of grazing animals or 'naturalistic' grazing by domestic animals. The situation here is complicated by the introduction of material from within buildings but the size of the foul decomposer assemblages, and particularly the abundance of scarabaeid dung beetles, probably indicate a significant population of grazing animals in the area. It should be borne in mind, however, that the size of herbivore populations could be overestimated if they were congregating around a waterhole.

Finally, it is interesting to note that although the

Table 5.20: Insects and other invertebrates recorded from late Roman waterhole 15735

	Abundance		Species group
Context	15830	15757	
Sample	15057	15056	
Sample volume	5 litres	5 litres	
Oligochaeta sp. (earthworm egg capsules)	-	+	
Cladocera spp. (ephippia)	++++	++++	
Ostracoda spp.	++	++	
Dermaptera sp.	+	+	u
Mallophaga sp.	-	+	
Heterogaster urticae (Fabricius)	1	2	oa-p
Stygnocoris sp.	-	3	oa-p
Drymus sylvaticus (Fabricius)	1	-	oa-p
Scolopostethus affinis (Schilling)	1	-	oa-p
Lygaeidae spp.	1	-	oa-p
Berytinus hirticornis (Brulle)	1	-	oa-p
Corixidae spp.	-	1	oa-w
Heteroptera sp.	-	1	
Conmelus anceps Germar	-	1	oa-p
Delphacidae sp(p).	1	1	oa-p
Auchenorhyncha spp.	3	5	oa-p
Craspedolepta nervosa (Forster) (nymphs)	+++	++	oa-p
Trioza urticae (Linnaeus) (nymphs)	-	+	oa-p
Aphidoidea sp.	+	++	
Coccoidea sp.	+	-	
Trichoptera sp. (adult wing fragments)	-	+	
Trichoptera sp. (larval cases)	+	+	
Diptera spp. (puparia)	++	+	
Formicidae spp.	+	+	
Hymenoptera Parasitica spp.	+	+	
Haliplus spp.	-	1	
Agabus bipustulatus (Linnaeus)	1	1	oa-w
Agabus or *Ilybius* spp.	-	3	oa-w
Colymbetes fuscus (Linnaeus)	-	1	oa-w
Hygrotus confluens (Fabricius)	-	2	oa-w
Hydroporinae spp.	2	4	oa-w
Brachinus crepitans (Linnaeus)	2	1	oa
Carabus spp.	-	2	oa
Nebria brevicollis (Fabricius)	-	1	oa
Notiophilus sp.	-	1	oa
Trechus obtusus or *quadristriatus*	-	2	oa
Bembidion (Metallina) lampros or *properans*	-	3	oa
Bembidion (Nepha) illigeri Netolitzky	1	-	oa
Bembidion (Trepanes) articulatum (Panzer)	-	1	oa-d
Bembidion (Phyla) *obtusum* Audinet-Serville	-	5	oa
Bembidion (Philochthus) guttula or *mannerheimi*	2	2	oa
Bembidion (Philochthus) lunulatum (Geoffroy in Fourcroy)	7	8	oa-d
Bembidion spp.	1	1	oa
Poecilus sp.	1	-	oa
Pterostichus ?melanarius (Illiger)	1	-	ob
Pterostichus sp.	-	1	oa
Amara sp.	-	1	oa
Harpalus affinis (Schrank)	1	-	oa
?*Harpalus* sp.	-	1	oa
Ophonus ardosiacus Lutshnik	-	1	oa
Ophonus sp.	-	1	oa
Bradycellus harpalinus (Audinet-Serville)	-	1	oa
Acupalpus sp.	-	3	oa-d
Paradromius linearis (Olivier)	1	2	oa
Syntomus truncatellus	-	3	oa
Carabidae spp.	2	4	ob
Helophorus spp.	56	117	oa-w
Berosus affinis or *luridus*	-	1	oa-w
Berosus sp.	1	-	oa-w
Helochares lividus (Forster)	-	1	oa-w
Hydrobius fuscipes (Linnaeus)	2	2	oa-w
Laccobius sp.	-	1	oa-w
Hydrophilinae spp.	1	2	oa-w
Cercyon haemorrhoidalis (Fabricius)	3	3	rf-sf
Cercyon nigriceps (Marsham)	-	2	rf-st
Cercyon pygmaeus (Illiger)	1	1	rf-sf
Cercyon ?quisquilius (Linnaeus)	-	1	rf-sf
Cercyon ustulatus (Preyssler)	-	1	oa-d
Cercyon sp(p).	1	1	u
Megasternum concinnum (Marsham)	4	4	rt
Cryptopleurum minutum (Fabricius)	1	-	rf-st
Acritus nigricornis (Hoffman)	1	1	rt-st
Atholus bimaculatus (Linnaeus)	-	1	rt
Histerinae sp.	-	1	rt
Hydraena sp.	1	1	oa-w
Limnebius spp.	1	2	oa-w
Ochthebius dilatatus Stephens	1	6	oa-w
Ochthebius minimus (Fabricius)	2	6	oa-w
Ochthebius c.f. *Minimus*	5	7	oa-w
Ochthebius sp(p).	1	1	oa-w
Acrotrichis spp.	-	1	rt
Leiodidae sp.	-	1	u
Lesteva longoelytrata (Goeze)	5	3	oa-d
Lesteva ?longoelytrata	1	-	oa-d
Xylodromus concinnus (Marsham)	1	1	rt-st
Omaliinae or *Proteininae* sp.	1	1	u
Micropeplus fulvus Erichson	-	1	rt
Pselaphinae spp.	1	1	u
Tachinus sp.	1	1	u
Tachyporus spp.	1	6	u
Tachyporinae sp.	1	-	u
Cordalia obscura (Gravenhorst)	2	4	rt-sf
Falagria sp.	2	1	rt-sf
Aleochariinae spp.	16	31	u
Anotylus nitidulus (Gravenhorst)	4	11	rt-d
Anotylus rugosus (Fabricius)	4	4	rt
Anotylus sculpturatus group	1	2	rt
Oxytelus sculptus	-	1	rt-st
Platystethus cornutus group	14	39	oa-d
Platystethus nitens (Sahlberg)	31	57	oa-d
Platystethus ?nodifrons Mannerheim	1	1	oa-d
Platystethus arenarius (Fourcroy)	6	4	rf
Carpelimus ?bilineatus	-	7	rt
Carpelimus spp.	8	7	u
Stenus spp.	-	5	u
Euaesthetus sp.	1	1	oa

Table 5.20: Insects and other invertebrates recorded from late Roman waterhole 15735

	Abundance		Species group
Lathrobium spp.	1	1	u
Lithocharis sp.	-	1	rt
Rugilus sp.	1	1	rt
Paederinae spp.	-	2	u
?Philonthus sp.	-	1	u
Gyrohypnus angustatus Stephens	-	1	rt-st
Gyrohypnus fracticornis (Müller)	1	1	rt-st
Gyrohypnus sp.	-	1	rt
Xantholinus linearis or *longiventris*	1	-	rt-sf
Staphylininae spp.	6	16	u
Geotrupes sp.	1	-	oa-rf
Aphodius rufipes (Linnaeus)	-	1	oa-rf
Aphodius granarius (Linnaeus)	5	8	ob-rf
Aphodius prodromus or *sphacelatus*	-	8	ob-rf
Aphodius contaminatus (Herbst)	1	10	ob-rf
Aphodius spp.	5	3	ob-rf
Oxyomus sylvestris (Scopoli)	2	3	rt
Onthophagus sp.	-	1	oa-rf
Cyphon sp.	1	-	oa-d
Dryops sp.	1	2	oa-d
Heterocerus sp.	-	1	oa-d
Elateridae spp.	2	2	ob
Cantharidae sp(p).	1	1	ob
Ptinus sp.	-	1	rd-sf
Ptininae sp.	1	1	rd
Anobium punctatum (de Geer)	-	2	l-sf
Anobium ?punctatum (de Geer)	1	-	l-sf
Anobiidae sp.	1	1	l
?Anobiidae sp.	-	2	l
Brachypterus sp.	1	1	oa-p
Nitidulidae sp.	-	1	u
Monotoma sp.	1	-	rt-sf
Cryptophagus spp.	1	2	rd-sf
Atomaria spp.	1	9	rd
Ephistemus globulus (Paykull)	-	1	rd-sf
Coccinellidae sp.	-	1	oa-p
Corylophidae sp.	-	2	rt
Latridius minutus group	7	7	rd-st
Enicmus sp.	2	3	rd-sf
Corticaria sp.	5	2	rd-st
Corticariinae spp.	5	4	rt
Typhaea stercorea (Linnaeus)	1	-	rd-ss
Anthicidae sp.	-	1	u
Tetrops praeustus (Linnaeus)	1	-	l
Bruchinae sp.	-	1	u
*Prasocuris phellandrii (*Linnaeus)	-	1	oa-p-d
Chrysomelinae sp.	-	1	oa-p
Phyllotreta nemorum group	-	1	oa-p
Phyllotreta nigripes (Fabricius)	-	1	oa-p
Phyllotreta sp.	-	2	oa-p
Longitarsus spp.	2	9	oa-p
Chaetocnema concinna (Marsham)	3	3	oa-p
Psylliodes sp.	1	-	oa-p
Alticini spp.	5	15	oa-p
Ceratapion carduorum	2	2	oa-p
Apionidae spp.	4	9	oa-p
Sitophilus granarius (Linnaeus)	1	-	g-ss
Notaris acridulus (Linnaeus)	3	2	oa-p-d
Mecinus labilis (Herbst)	1	-	oa-p
Mecinus pascuorum (Gyllenhal)	-	3	oa-p
Bagous sp.	-	1	oa-p-w
Ceutorhynchus spp.	1	2	oa-p
Ceutorhynchinae spp.	-	2	oa-p
Phyllobius or *Polydrusus* sp.	1	1	oa-p
Sitona spp.	-	1	oa-p
Scolytus rugulosus (Müller)	-	1	l
Scolytinae sp.	-	1	l
Tanysphyrus lemnae (Paykull)	4	13	oa-p-w
Curculionidae spp.	5	2	oa-p
Coleoptera spp.	3	5	u
Insecta spp. indet. larval fragments	++	+++	
Acarina spp.	+++	+++	
Aranae sp.	+	+	
Mollusca spp. (freshwater snails)	+	++	
Total individuals beetles and bugs	308	610	

A minimum number of individuals was estimated for adult beetles (Coleoptera) and bugs (Hemiptera) and the abundance of other invertebrates was recorded on a four-point scale as + present, ++ common, +++ abundant, ++++ very abundant

Key to species groups:

d	Damp ground or waterside taxa
l	Wood-associated taxa
g	Grain-associated taxa
m	Moorland taxa
oa	Certain outdoor taxa (unable to live and breed within buildings or in accumulations of organic material)
ob	Probable outdoor taxa
rt	Generalized decomposers
rd	Dry decomposers
rf	Foul decomposers
p	Strongly plant-associated taxa
S	Total synanthropes, i.e. taxa favoured by human activity (ss+st+sf)
ss	Strong synanthropes (very rare in natural habitats)
st	Typical synanthropes (typically present in man-made habitats but capable of living in natural situations)
sf	Facultative synanthropes (found in man-made and natural habitats)
u	Uncoded taxa
w	Aquatics

proportions of the assemblage made up by the main ecological groups were very similar in both samples, insects that can be regarded as synanthropic to some degree were less well represented in the later sample, where they accounted for 8% of the terrestrial assemblage, whereas in the earlier sample the proportion was 14%. Although these proportions are based only on two samples it is tempting to suggest that there may have been a decline in human influence during the later part of the period represented.

PHYTOLITHS *by Adrian G Parker*

Introduction

Phytoliths (plant silica) preserve well under oxidising conditions and may be used as a tool for environmental reconstruction, especially in the absence of pollen. They may be used to differentiate different tribes of Poaceae (Grasses), generic woody taxa, and can, in certain instances, be used to differentiate cereals and crop processing sites (Hodson 2002).

Phytolith analysis was carried out on deposits from enclosure ditches at Site 4 (Trench 54) (Figs 5.8 and 5.9). Initially a total of five fills of the north-eastern terminal (17189) of enclosure ditch 17343 were assessed for phytoliths, the results of which demonstrated the success of this technique for identifying plant materials that had been deposited in this feature. Since charred plant remains were generally sparse in the middle Iron Age features excavated in Site 4 (Trench 54), three additional samples from middle Iron Age ditch fills were submitted for phytolith work. These comprised samples 17014 (context 17180) and 17027 (context 17179), a secondary and upper fill within ditch cut 17178, and sample 17022 (context 17217), which represents a tertiary fill within ditch cut 17206. Both ditch cuts were part of ditch 17716, part of the innermost circuit of enclosure ditches.

Methods

Phytolith preparation and extraction was undertaken using 3g of sediment from each context. Each sample was sieved using a 1mm mesh to remove the coarse sands and gravel prior to chemical analysis. All samples were first treated with 5% HCl to remove carbonates followed by the removal of organics using 6% hydrogen peroxide (H_2O_2). This was followed by deflocculation using 50ml 2% Calgon in 250ml distilled water and shaking continuously for 30 minutes. The samples were then

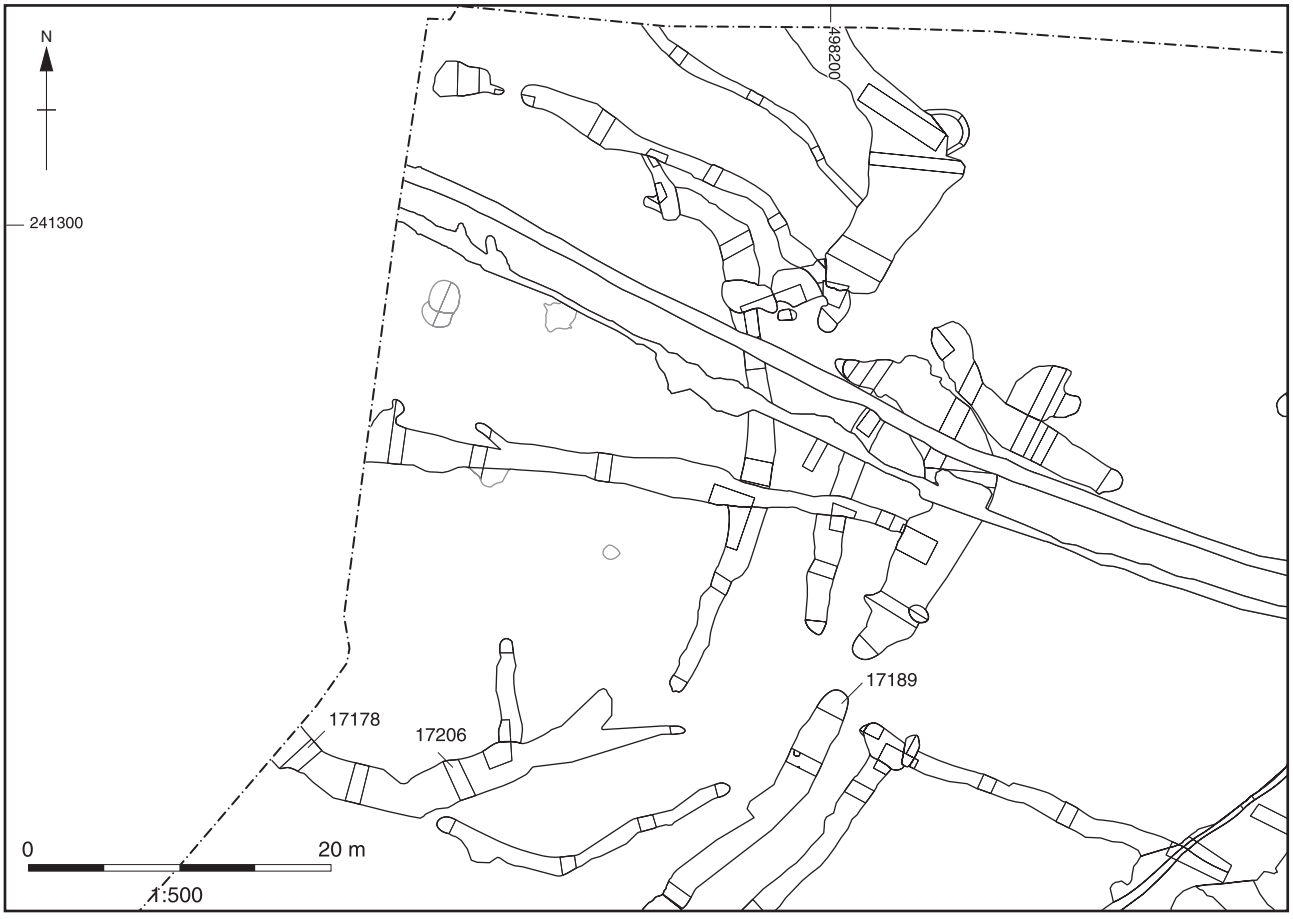


Fig. 5.8 Site 4 (Trench 54), location of phytolith samples

passed through a 212μm sieve, and the residues rinsed with distilled water and centrifuged. A floatation method using sodium polytungstate (2.35 s.g.) was implemented to extract the phytoliths from the denser, minerogenic fraction. Material less than 5μm in size was removed using the vacuum filtration method of Theunissen (1994). The residues were rinsed several times in distilled, de-ionised water and mounted onto microscope slides using Canada Balsam. Phytoliths from the same samples were identified at x400 and x1000 magnifications using a Nikon Eclipse E400 light microscope. The slides were first scanned to evaluate the level and nature of phytolith preservation. The phytolith morphotypes

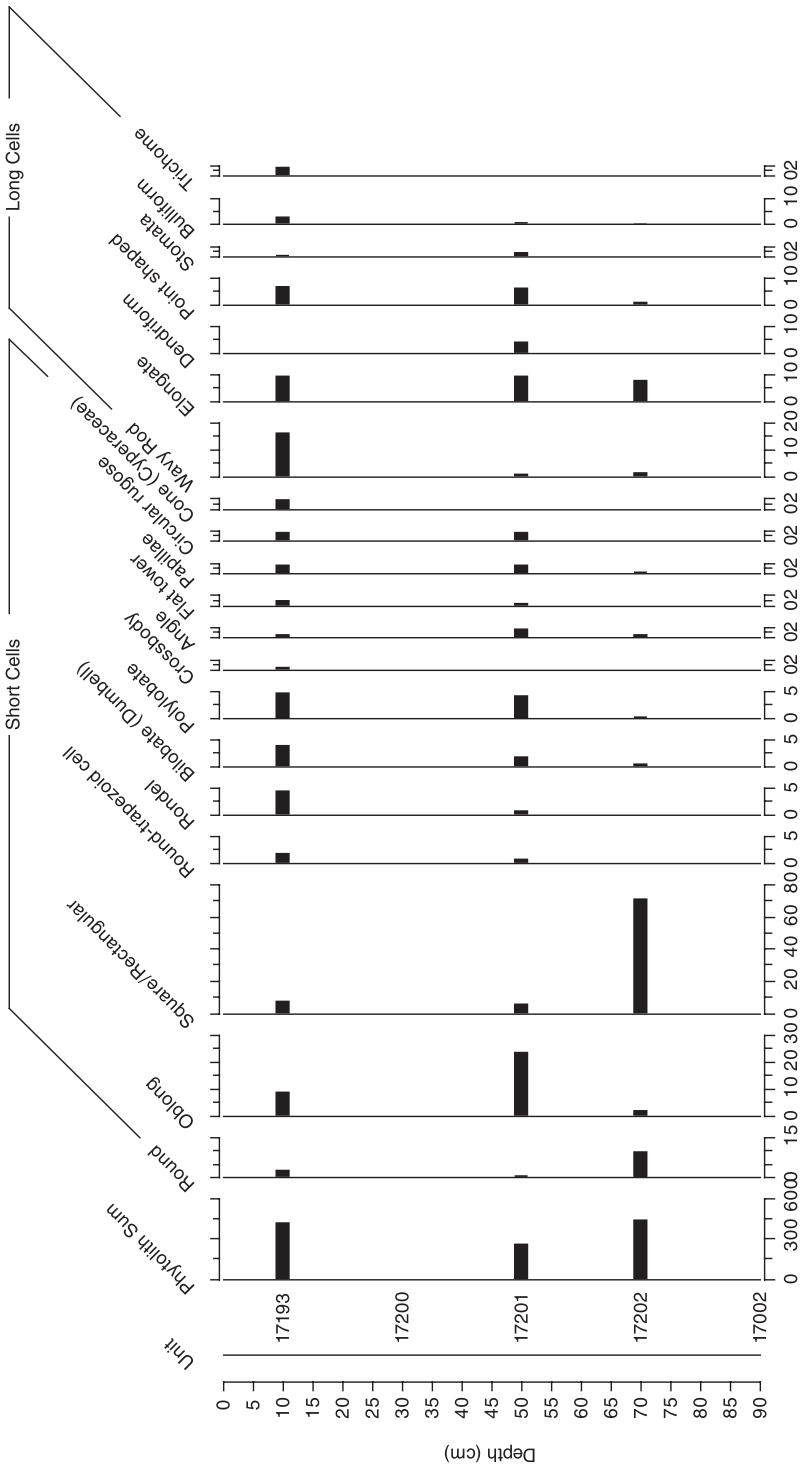


Fig. 5.9 Site 4 (Trench 54), percentage phytolith diagram from terminal 17189, ditch 17343

were compared with modern reference materials collected by the author and by comparison with phytolith keys including Cummings (1992), Mulholland and Rapp (1992), Piperno (1988) and Rosen (1993). Phytolith preservation varied in the samples from poor to excellent and counts ranged from 0-451 per sample.

The organic content of the five units was determined using loss-on-ignition (LOI; *sensu* Heiri *et al*. 2001). Samples were oven dried at 105°C, weighed and then placed into a muffle furnace at 550°C. The percentage loss was calculated and is used as a proxy measure for organic carbon.

Results

Ditch cut 17189, ditch 17343

A sample from the basal fill (17002) yielded no phytoliths and had a very low organic content (2%). This sample was from the natural bed into which the ditch feature had been cut.

The bottom fill of the ditch (17202) contained moderately well-preserved phytoliths. It should be noted that pitting and etching of phytoliths was noted in this sample, caused by partial dissolution of the plant silica bodies. Phytoliths are more susceptible to corrosion (pitting, etching and fragmentation) at pH levels greater than 8.5 (Piperno 2006). It was not sufficient, however, to affect identification or distort the results. The sample contained evidence for charring, with many microscopic charcoal fragments. A number of phytoliths also showed signs of charring. The burning of material with low oxygen availability will cause charring and the formation of inert carbon. This can be difficult to remove from samples during preparation but can provide useful insight into the depositional history of samples. The sample was dominated by Pooid short-cell grass morphotypes. Notably the square/rectangular forms comprised approximately 70% of the total phytolith sum. There morphotypes are predominantly found in the culms of grasses, especially cereals. It should be noted that they can be found in other plant organs including leaf sheaths, leaf blades and inflorescences, but these tend to be in low quantities compared to other morphotypes (eg long cell elongate forms). Another line of evidence that supports the notion of cereal culm material is the lack of long cell forms and in particular of dendriforms. These are formed in the inflorescence of grasses/cereals. The phytolith evidence from sample 17202 suggests the incorporation of cereal culm material, perhaps as waste. The presence of microscopic charcoal suggests the material had either been burnt *in situ* or had been burnt and then placed/tipped into the ditch. The lack of dendriform types indicates that any crop processing had been undertaken away from this feature. The organic content of this sample was relatively high at 14%.

Context 17201 contained a lower quantity of phytoliths when compared to the previous sample, but was still dominated by grass types. The sample contained a greater diversity of phytolith morphotypes. The presence of long cell elongate and dendriforms suggests mature grasses/cereals were present. The presence of circular rugose cells shows that woody taxa were also present in addition to grasses, although the genus or family could not be ascertained. The organic content was 10%.

The sample from secondary fill 17200 yielded very few phytoliths and a statistically reliable count was not feasible. This sample was rich in carbonates and liberated hydrogen sulphide on contact with HCl (acrid, rotten egg smell). The samples contained 5% organic material.

The uppermost fill (17193) yielded phytoliths that were in an excellent state of preservation. No edge abrasion or breakages were apparent, indicating that the sample was *in situ*, or at least it had not travelled far via colluvial processes. The sample comprised 30% organic matter and was dominated by grass/cereal short-cell and long-cell morphotypes. The sample contained no dendriforms, implying that no inflorescence materials were present, but it did contain a high number of wavy-rod long cells. The type found in this sample was very similar in size, shape and form to those contained in leaf sheath and leaf blade reference material from hulled barley. Whilst this evidence is not conclusive it does suggest that barley is a likely candidate for the source of these phytoliths. A small quantity of Cyperaceae cone phytoliths was also noted, indicating the presence of sedges. It is probable that the sample contains straw material from processed barley, largely derived from culm and leaf blade/sheath materials. The presence of circular rugose cells was also noted, suggesting the incorporation of woody taxa. Whether this was via deliberate burning or from decomposition is not known.

Ditch cuts 17178 and 17206, ditch 17716

The additional three samples analysed for this project, from samples 117014, 17027 and 17014 all contained well-preserved phytoliths with little evidence for edge abrasion and little sign of chemical pitting or etching. Woody taxa phytoliths comprise 1-2% of the total phytolith sums, suggesting that some tree/shrub material was incorporated into the sediments. Pooid C3 grass morphotypes (round, oblong short cells) dominate these samples (55% in 117014, 36% in 17027, and 43% in 17014). Panicoid short-cells account for 9-13% of the sums. Wavy-rod long cells vary between 3% (17027), 8% (17014) and 11% (117014). Dendriform phytoliths from grass inflorescence are high in sample 17014 (8%) with lower amounts in 17027 (3%) and 117014 (1%). Conversely, Cyperaceae (sedges) phytoliths were highest in 117014 (4%) and lowest in 17014 (0.5%).

Discussion

In the absence of other botanical indicators such as pollen and plant macrofossils the presence of phytoliths in some of the samples gives valuable insight into the flora and depositional history of the NE face of ditch terminus 17189. Whilst phytoliths were present in some contexts it is equally valuable to note contexts in which they were absent (17002 and 17200). This yields important taphonomic information. The phytolith analysis suggests that straw was discarded periodically in the middle Iron Age ditches and in at least one instance had been burnt. Sedge and woody ligneous dicotyledon material was also found in several samples. While sedges may be found growing in a variety of locations, may of them are typically found in damp areas or wetlands.

LAND AND FRESHWATER SNAILS

by Elizabeth Stafford

Introduction

A total of 26 samples from Site 2, Site 3 and Site 7 was submitted for the assessment of land and freshwater snails. The samples derived from a variety of settlement feature types: pits, waterholes and ditches, the majority dating from the late Iron Age to Roman period. The assessment outlined the broad character of the assemblages, the results of which a presented below. However, the generally low species diversity and abundance, together with the overall similarity between features and sites, indicated that further detailed analysis in the form of absolute shell counts would not provide a substantial amount of additional information and so such detailed analysis was not undertaken.

Method

A series of six incremental samples from middle Roman ditch 2891 at the south-western complex at Site 2 and a sequence of ten incremental samples from late Roman waterhole 15185 at Site 7 had been retrieved specifically for molluscan analysis. The samples were weighed out to between 1-2 litres, disaggregated in water, floated onto 0.5mm nylon mesh and air-dried. The residues were also retained to 0.5mm. For the purpose of assessment the flots were then scanned under a binocular microscope at magnifications of x10 and x20 and an estimate of abundance recorded. The flots from a selection of ten bulk samples (10-40 litres) from other features, primarily allocated for the retrieval of charred plant remains, were also examined in order to provide a more comprehensive assessment. The abundance of taxa was recorded. An estimate was also made of the total number of individuals in each flot. The identifications are divided into species groups in the table of results (Tables 5.21-22). Nomenclature follows Kerney (1999). For the freshwater molluscs, slum species are those able to live in water subject to stagnation, drying up and large temperature variations, catholic or intermediate species tolerate a wide range of conditions except the worst slums, and the ditch species require clean, slowly moving water, often with abundant aquatic plants. For the terrestrial fauna, habitat preferences consist of open-country, shade-loving, catholic or intermediate species tolerating a wide range of conditions, and marsh species. There are also some designated dry ground species that can tolerate a little dampness.

Results

The results of the assessment are presented in Tables 5.21 and 5.22. Overall preservation and abundance of molluscan remains was variable, although generally of low diversity with only a few species dominating. Preservation was poor to moderate within the incremental samples. A number of the bulk samples provided larger assemblages, although those from Site 7 clearly included large quantities of what appeared to be relatively recent shells (identified in Table 5.21 in parentheses).

Overall the assemblages were very similar in species composition. Dry ground open-country species were most abundant, mainly Vallonidae (*Vallonia excentrica* dominated). *Vertigo pygmaea* was also consistently present along with the catholic species *Trichia hispida*. Shade-demanding species were very sparsely represented; occasional specimens of *Aegopinella* cf. *nitidula* were noted in the middle and upper fills of the ditches at Site 2 and Site 3. Overall this suggests that the local environment of the features prior and during infilling was very open short-turfed grassland that had been established for quite some time. The association of *V. excentrica* and *T. hispida* in numbers perhaps suggests impoverished, heavily grazed grassland. The small number of shade-demanding species may be a reflection of slightly more mesic conditions prevailing within the base of the features, although this component would not suggest the growth of scrub or long grass. With reference to the ditches this may point to the base of the features being grazed as well as the immediate surroundings.

The exception to this is late Iron Age ditch 3324 at Site 3, and perhaps the middle to late Iron Age ditch at Site 4 (Trench 54). At Site 3 the assemblage is more diverse. The shade-demanding component included *Carychium* cf. *tridentatum*, *Ena obscura*, cf. *Clausilia bidentata* and *Vitrea contracta,* suggesting there may have been scrub or rank grass within or adjacent to the feature, perhaps a hedgerow or stand of trees. At Site 4 (Trench 54) this component is confined to *C. tridentatum*, which perhaps suggests long grass within the feature. It is possible that these shells represent residual components from a formerly more shaded environment. The sample, however, comes from an upper fill, which makes this less likely than if they were present in the primary fills.

It is notable that freshwater shells are consistently present in most of the features. Although this is mostly

confined to a single slum species, *Lymnaea truncatula, Anisus leucostoma* is also occasionally present. This would suggest that the features held standing water, although the predominance of *L. truncatula* would suggest this was seasonal and liable to drying in the summer months. The exception to this are samples from contexts 15172, 15580, 15588 and 15958 at Site 7, which produced assemblages of a very different character. Here, freshwater species dominated with virtually no terrestrial species. Most abundant were *Gyraulus crista* and *A. leucostoma* suggesting more permanently wet conditions. In 15958 *Lymnaea peregra* and the pea mussel *Pisidium* sp. are also present in large numbers. On a cautionary note, however, all of the shells from these features were very well preserved; many were translucent with periostracum intact and many of the *Pisidium* sp. still had the valves attached, which suggests that these shells may well have been of relatively recent origin and may indicate substantial contamination of the samples.

Table 5.21: Results of snail assessment, Site 2, Site 3 and Site 4 (Trench 54)

Site		Site 2						Site 3				Site 4 (Tr 54)
Phase		Roman						Roman	LIA	Roman	LIA	MIA
Feature type		Ditch						Ditch	Ditch	Ditch	Ditch	Ditch
Feature								3081	3124	3211	3324	17176
Sample		2051	2052	2053	2054	2055	2056	3007	3008	3012	3017	17008
Context		2892	2892	2892	2892	2892	2892	3082	3125	3210	3334	17093
Vol. Processed (L)		1.5	1.5	1.5	2	1.5	2	36	37	35	36	32
Taxa												
FRESHWATER												
Valvata cristata (Müller)	D											
Lymnaea truncatula (Müller)	Sl M		++	+++	++	++	++	+		++	+	++
Lymnaea peregra (Müller)	C							+				
Lymnaea sp.	Sl C											
Anisus leucostoma (Millet)	Sl											
Gyraulus crista (Linnaeus)	C											
Pisidium sp.												
TERRESTRIAL												
Open-country												
Vertigo pygmaea (Draparnaud)	(M)		+	+	++	+	++		(+)	+	+	(++)
Pupilla muscorum (Linné)				+				+		+		
Vallonia costata (Müller)		+	+	++	++	+++	+	+++		+	++	+
Vallonia excentrica (Sterki)		+	+	++	+++	+++	+++			++++	+++	+++++
Vallonia pulchella (Müller)	(M)	+										(+)
Vallonia sp.	(M)	++	+	+++	++++	++++	+++		(+)			
Catholic												
Cochlicopa sp.	(M)			+	+	+	+		(+)		++	
Puntum pygmaea (Draparnaud)									+			
Vitrina pellucida (Müller)								+				
Nesovitrea hammonis (Ström)									+			
Trichia hispida (Linné)	(M)	+	+	+++	++++	++++	+++	++	++	+	+	+++
Cepaea/Arianta sp.	(M)											
Cepaea sp.	(M)											++
Shade-demanding												
Carychium cf. *tridentatum* (Risso)												+++
++												
Ena obscura (Müller)											+	
Vitrea sp.	(M)							+			+	
Aegopinella cf. *nitidula* (Draparnaud)					+	+		+	++			+
cf. *Clausillia bidentata* (Ström)										+		
Estimated min. no. individuals/sample		11	23	100	150	100	80	30	11	50	50	250
Estimated min. no. individuals/litre		7	15	67	75	67	40	1	0	1	1	8

Table 5.22: Results of snail assessment, Site 7

Phase		*Late Roman*									
Feature type		Waterhole									
Feature		15185									
Sample		15014	15015	15016	15017	15018	15019	15020	15021	15022	15023
Context		15186	15186	15187	15187	15187	15189	15189	15192	15192	15192
Vol. Processed (L)		1.5	1.4	1.7	1.5	2	1.5	1.5	1.4	1.5	1
Taxa											
FRESHWATER											
Valvata cristata (Müller)	D										+
Lymnaea truncatula (Müller)	Sl M	+		+++	++++	+++		+		+	
Lymnaea peregra (Müller)	C										
Lymnaea sp.	Sl C										
Anisus leucostoma (Millet)	Sl			+		+				+	
Gyraulus crista (Linnaeus)	C								+		
Pisidium sp.											
TERRESTRIAL											
Open-country											
Vertigo pygmaea (Draparnaud)	(M)	+		++	++	+	+		+		
Pupilla muscorum (Linné)											
Vallonia costata (Müller)				+	+	+	+	++		+	
Vallonia excentrica (Sterki)				+++	++	++	++	++	+		
Vallonia pulchella (Müller)	(M)			++	+	+				+	
Vallonia sp.	(M)	++		+++	+++	++	++	+++	++	++	+
Catholic											
Cochlicopa sp.	(M)			+	+	+		+	+		
Puntum pygmaea (Draparnaud)											
Vitrina pellucida (Müller)								+			
Nesovitrea hammonis (Ström)											
Trichia hispida (Linné)	(M)			+++	+++	++	++	++	++	++	+
Cepaea/Arianta sp.	(M)										
Cepaea sp.	(M)										
Shade-demanding											
Carychium cf. *tridentatum* (Risso)											
Ena obscura (Müller)											
Vitrea sp.	(M)										
Aegopinella cf. *nitidula* (Draparnaud)											
cf. *Clausillia bidentata* (Ström)											
Estimated min. no. individuals/sample		8	0	100	100	70	19	40	20	25	5
Estimated min. no. individuals/litre		5	0	59	67	35	13	27	14	17	5

Late Roman	*Roman*	*Roman*	*Roman*	*Late Roman*
Grave	Ditch	Pit	Pit	Waterhole
15230	15172	15580	15588	15958
15012	15037	15041	15042	15063
15231	15170	15585	15594	15974
10	10	10	10	10
	+			
	++			(+++++)
		(+)		
	++	(+++++)	++	(+++++)
	++	(+++++)		(+++++)
				(+++++)
	++			(+)
(+)	++			
(+)	++	(+)		
	++	(+)		
++	+++			
15	70	550	4	1000
2	7	55	0	100

Chapter 6: Radiocarbon dates

by Seren Griffiths and Gordon Cook

INTRODUCTION

Ten samples were submitted for radiocarbon dating from Site 3, Site 4 (Trench 54) and Site 5 (Table 6.1). Radiocarbon results are discussed here with reference to the nature of the dated materials and the contexts from which they were recovered (cf. Waterbolk 1971).

METHODOLOGY

Samples were processed and measured at the Scottish Universities Environmental Research Centre Accelerator Mass Spectrometry (AMS) facility. Charred plant macrofossil samples were pretreated as described in Stenhouse and Baxter (1983). Cremated bone was pretreated as described in Lanting *et al.* (2001) and bone samples following a modified version of Longin (1971). CO_2 was extracted using the method outlined in Vandeputte *et al.* (1996) and graphitised as described in Slota *et al.* (1987). AMS dating followed the methods of Xu *et al.* (2004).

With the exception of a single modern sample (below) the results were calibrated using the Reimer *et al.* (2009) curve and the OxCal v4.1 computer program (Bronk Ramsey 1995; 1998, 2001; 2009a; 2009b). Ranges are quoted as described by Stuiver and Polach (1977), with error terms rounded out by ten years, but adapted for the increased precision now available.

Ranges in Table 6.1 were calculated using the maximum intercept method (Stuiver and Reimer 1986) and are cited at 95% confidence unless otherwise stated. Distributions calculated using the probability method are shown in Figs 6.1 and 6.2 (Stuiver and Reimer 1993). Posterior density estimates (see below) are shown in Fig. 6.4.

RESULTS

Site 3

The articulated tibia and metapodial from a dog burial in fill 3203 of ditch 3361 provided material for SUERC-30625 (Fig. 6.1). Because the bones from the dog burial were articulated, and the burial was therefore deposited while the remains were still fleshed, there is unlikely to be an offset between the date of death of the dog and the date of its burial in the ditch. The result therefore provides a robust *terminus ante quem* for the excavation of the ditch in 350–40 cal BC (95.4% confidence) or 200–90 cal BC (68.2% confidence)

Site 5

A sample of human bone from cremation burial 6067/6070 provided material for SUERC-30618 (Fig. 6.2). The sample was intended to establish a date for the burial and explore whether it was associated with late Iron Age settlement or the Roman field boundaries on the site. The cremation probably occurred in 770–400 cal BC (95.4% confidence) or 760-410 cal BC (68.2% confidence; SUERC-30618; cf.

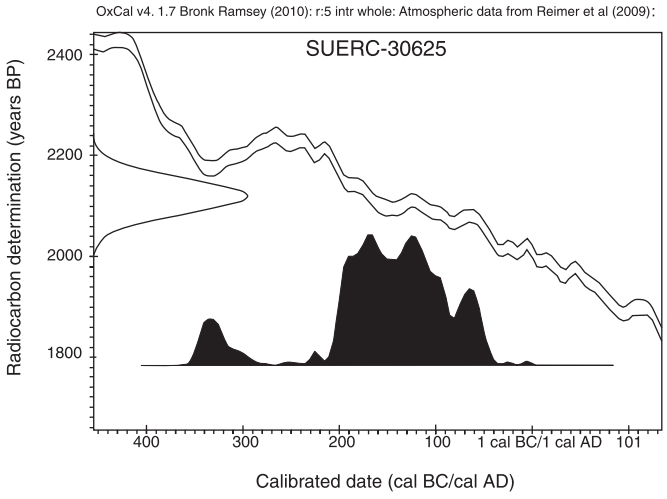


Fig. 6.1 Site 3, probability distribution of the radiocarbon result

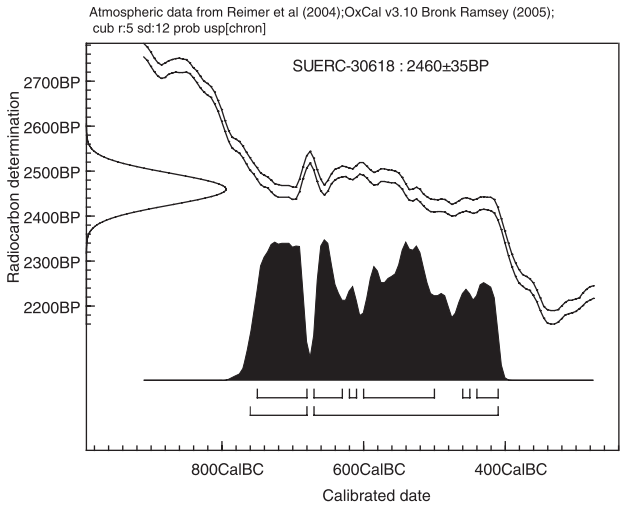


Fig. 6.2 Site 5, the calibrated radiocarbon result

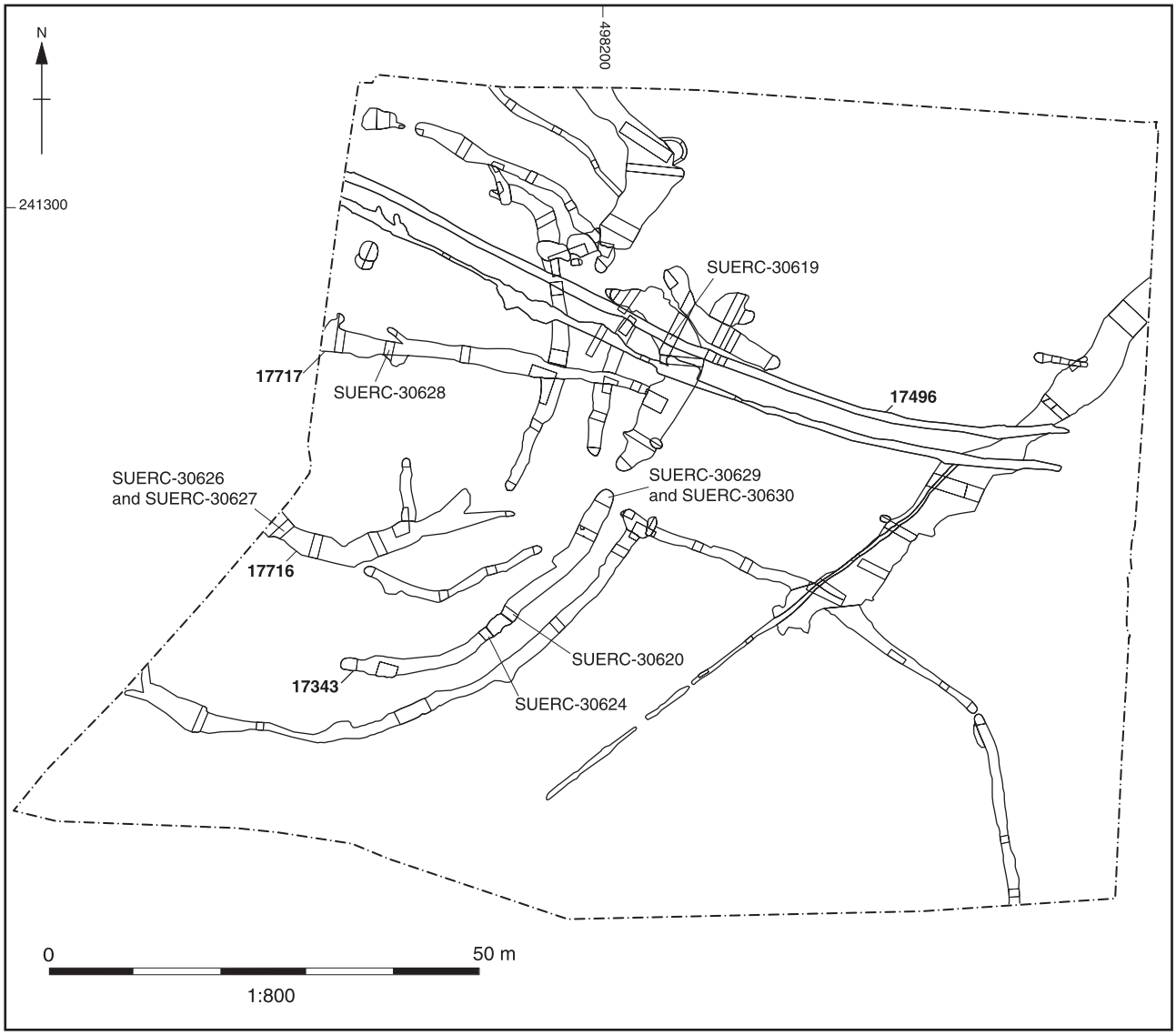


Fig. 6.3 Site 4 (Trench 54), location of samples submitted for radiocarbon dating

Table 6.1: Summary of radiocarbon dates

Lab. ID	*Site*	*Feature or deposit*	*Ctx*	*Material*
SUERC-30625	Site 3	Dog burial in ditch 3361	3203	Bone from an articulated dog burial
SUERC-30619	Site 4 (Trench 54)	Ditch 17496	17293	Horse skull on base of ditch
SUERC-30620	Site 4 (Trench 54)	Burnt clay layer in ditch 17343	17255	Cremated medium mammal long bone shaft fragment
SUERC-30624	Site 4 (Trench 54)	Burnt clay layer in ditch 17343	17187	Cremated large mammal bone fragment
SUERC-30626	Site 4 (Trench 54)	Ditch 17716	17181	Charred grain (cf. *Triticum* sp.)
SUERC-30627	Site 4 (Trench 54)	Ditch 17716	17181	Charred nutshell (*Corylus avallana*)
SUERC-30628	Site 4 (Trench 54)	Ditch 17717	17090	Charred grain (*Triticum* sp.)
SUERC-30629	Site 4 (Trench 54)	Terminal of ditch 17343	17200	Charred grain (Poaceae)
SUERC-30630	Site 4 (Trench 54)	Terminal of ditch 17343	17200	Roundwood charcoal, species indet.
SUERC-30618	Site 5	Cremation burial 6067/6070	6068	Cremated human bone

van Strydonck *et al.* 2010) and so dated from the early Iron Age, predating the late Iron Age or Roman-British activity at the site by several centuries.

Site 4 (Trench 54)

Dating aims

Radiocarbon samples from Site 4 (Trench 54) were submitted in order to provide a chronology for the enclosure ditches (Figs 6.3-4).

Key research questions at Site 4 (Trench 54) included:

- whether the multiple ditch circuits were established contemporaneously, early in the history of activity, or whether the enclosure developed sequentially;
- whether the burnt clay deposit in ditch 17343 (including contexts 17187 and 17255) represented a single archaeological event, and when in the history of the enclosure it occurred;
- whether ditch 17717 was contemporary with the Iron Age activity at the site or was a more recent feature.

Sample associations

Four samples were submitted from ditch 17343 (Fig. 6.3): two from secondary fill 17200 and two from the overlying burnt clay layer (17187=17255). The two single entity, short-lived samples from the fill 17200 (SUERC-30629 and SUERC-30630) were intended to provide *termini ante quos* for the ditch excavation and estimate the date of the secondary infilling of the ditch, as well as providing *termini post quos* for the burnt clay deposit.

Context 17200 comprised a thin band of charcoal that was interpreted as representing vegetation burnt *in situ* in the ditch. This was immediately overlain by a pink, heat-discoloured burnt clay deposit. The burnt clay deposit was not burnt *in situ* in the location from which it was recovered; it was interpreted as either soil from an associated bank, which was heat effected during the burning event and collapsed or slipped into the ditch, or material from the burning event that was tipped into the ditch during 'clean up' of the site after the fire. Two results (SUERC-30620 and SUERC-30624) were produced on cremated bone from the burnt clay layer. In order to have been cremated the bone must have been subject to high-temperature burning (>600 ºC; Naysmith *et al.* 2007). In order to confirm that material from the burnt clay layer recorded in different interventions represented the same archaeological event, material for dating was selected from two separate interventions.

Two results were commissioned on short-lived, single entity material from fill 17181 of ditch 17716 (SUERC-30626 and SUERC-30627). These measurements were produced on charred plant remains from a discrete charcoal-rich deposit immediately overlying the primary silts in the ditch. The discrete nature of this deposit suggests that the collection and burning of the material, and its deposition in the ditch took place over a short duration, with no significant offset between the burning of the material and its deposition. If this interpretation is robust, these results provide estimates for the infilling of the ditch and *termini ante quos* for the ditch excavation.

A result from ditch 17717 (SUERC-30628) was commissioned in order to explore the date of this feature. According to the stratigraphic relationships recorded on site, this feature should be middle Iron Age, but it contained a modern iron nail and dress pin as well as quantities of Iron Age pottery.

A further date was obtained for a horse skull that appeared to have been deliberately placed on the base of enclosure ditch 17496 (SUERC-30619). There may be an offset between the date of death of the horse and the date of deposition in the ditch. The result on the horse skull from 17496 is probably best understood as a *terminus post quem* for the deposition of the overlying ditch fills.

$\delta^{13}C$	*Radiocarbon age (BP)*	*Calibrated date (95.4 % confidence)*	*Posterior density estimate (95.4% probability)*
-21.1 0/00	2120 ± 35	350-40 cal BC	-
-22.7 0/00	2080 ± 35	200 cal BC-cal AD 10	360–290 cal BC (29.9%) or 210–130 cal BC (65.5%)
-28.0 0/00	2185 ± 35	380-120 cal BC	350–160 cal BC
-29.1 0/00	2195 ± 35	390-160 BC	350-170 cal BC
-21.9 0/00	2180 ± 35	380-110 cal BC	360-170 cal BC
-24.4 0/00	2250 ± 35	400-200 cal BC	380-200 cal BC
-23.9 0/00	See text	See text	-
-23.8 0/00	2165 ± 40	370-90 cal BC	370-190 cal BC
-25.1 0/00	2185 ± 35	380-120 cal BC	370-190 cal BC
-23.2 0/00	2460 ± 35	770-400 cal BC	-

Results

Excluding SUERC-30628, all the results from Site 4 (Trench 54) are just statistically consistent (T'=12.4;T'5%=12.6; =6; SUERC-30639, -30630, -30620, -30624, -30626, -30627, -30619; Ward and Wilson 1978), indicating that it is possible that they are of the same actual age.

The duplicate radiocarbon measurements are statistically consistent:

- SUERC-30629 and SUERC-30630 from context 17200 in ditch 17343 (T'=0.1; T'5%=3.8; =1);
- SUERC-30624 and SUERC-30620 from 'burnt deposit' 17187=17255 in ditch 17343 (T'0.0; T'5%=3.8; =1);
- SUERC-30627 and SUERC-30626 from context 17181 in ditch 17716 (T'=2.0; T'5%=3.8; =1).

The consistency of the duplicate results suggests that they reliably date the formation of their parent contexts, or in the case of SUERC-30624 and SUERC-30620 the formation of the 'burnt clay layer'. The consistency of these results, and the interpretation that the duplicate results were produced on material from deposits representing single archaeological events, has been used in the model described below to produce estimates for the formation of these contexts.

The measurement from ditch 17717 (SUERC-30628) produced a fraction modern result of 1.1537 ± 0.0049. The result calibrates to either AD 1957-58 (up-slope of the bomb peak) or AD 1989-1992 (down-slope of bomb peak; cf. Reimer *et al.* 2004; calibrated using the CALIBomb calibration curve; http://calib.qub.ac.uk/CALIBomb). If the ditch is regarded as Iron Age, this result confirms the presence of intrusive material in the fill. Alternatively the result and the modern material culture in the ditch may indicate that the feature is of modern origin and that the Iron Age pottery from the fill was redeposited.

Bayesian model

Sufficient radiocarbon results were obtained from Site 4 (Trench 54) to produce a Bayesian model of the data which uses archaeological or 'prior' information regarding the stratigraphic sequence (Fig. 6.4). The model uses Markov Chain Monte Carlo sampling, applied in OxCal v4.1, details of which can be found on the online manual (http://c14.arch.ox.ac.uk/; Bronk Ramsey 1995; 1998; 2001; 2009a; 2009b).

Ditches 17716 and 17343 have produced internally consistent radiocarbon dates. Assuming that there is no significant offset between the events sampled by these results and the formation of the ditch fills, the model presented here provides a chronology for the archaeological phase of ditch infilling. From this model *termini ante quos* for the excavation of the two ditches are calculated.

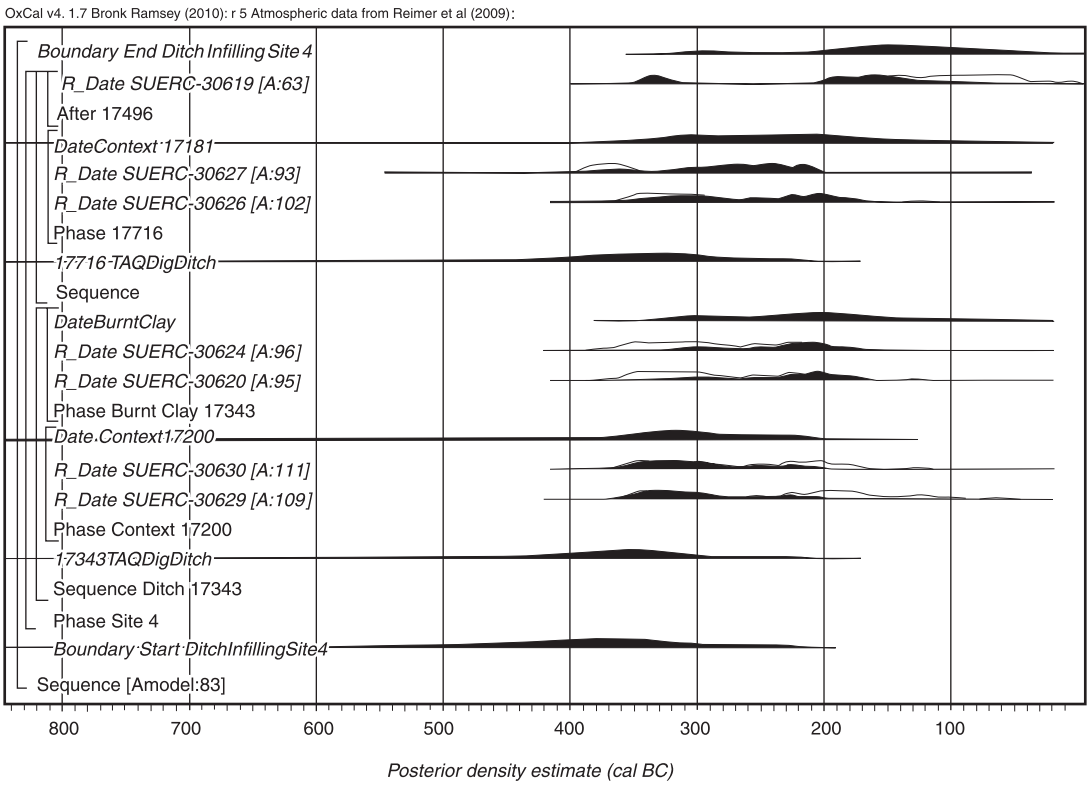


Fig. 6.4 Site 4 (Trench 54), probability distributions of results

A *terminus ante quem* for the excavation of ditch 17343 is estimated as *530-200 cal BC (95.4% probable;* or *430-290 cal BC 68.2% probable; 17343DigDitch*).

The estimate for the formation of context 17200 in ditch 17343 is *440-190 cal BC (95.4% probable* or *360-220 cal BC 68.2% probable; DateContext17200*). It is most probable that context 17200 formed in the second half of the 4th century cal BC or the first 80 years of the 3rd century cal BC, although there is a one in three chance it lies outside this range. The formation of the burnt clay deposit occurred in *340-70 cal BC (95.4% probable;* or *310-150 cal BC 68.2% probable; DateBurntClay*).

A *terminus ante quem* for the excavation of ditch 17716 is estimated as *520-200 cal BC (95.4% probable;* or *410-270 cal BC 68.2% probable; 17716TAQDigDitch*).

In ditch 17716, context 17181 formed in *430–50 cal BC (95.4% probable;* or *340-170 cal BC 68.2% probable; DateContext17181*).

The estimate from the horse skull from ditch 17496 (SUERC-30619) dates its death in *360-300 cal BC (23.0% probable)* or *210-50 cal BC (72.4% probable; 350-320 cal BC 17.0% probable,* or *200-1*30 cal BC (51.2% probable) and provides a *terminus post quem* for the infilling of the ditch 17496.

Chapter 7: Earthwork surveys

by Leo Heatley

Surveys were carried out in order to record three historic earthworks that were to be unavoidably destroyed by the Improvements. The earthworks comprised the boundary between the parishes of Lidlington and Marston Moretaine, an area of ridge and furrow at Lower Shelton, and the boundary between the parishes of Wootton and Kempston.

The surveys were carried out using a Leica GX1230 SmartRover GPS. The data was downloaded and processed using LEICA Geo Office 4.0 before being exported into AutoCAD 2004. ArcGIS 9.3 was used to produce a surface model, enabling the survey area to be viewed 'three dimensionally'. A contour plot of each surveyed area was added with contour intervals of 0.1m and 0.2m, derived from the surface model. The contour plot was imported into CAD to aid the completion of a hachure plan of the earthworks. Interpolating a line across the surface model enabled profiles to be created.

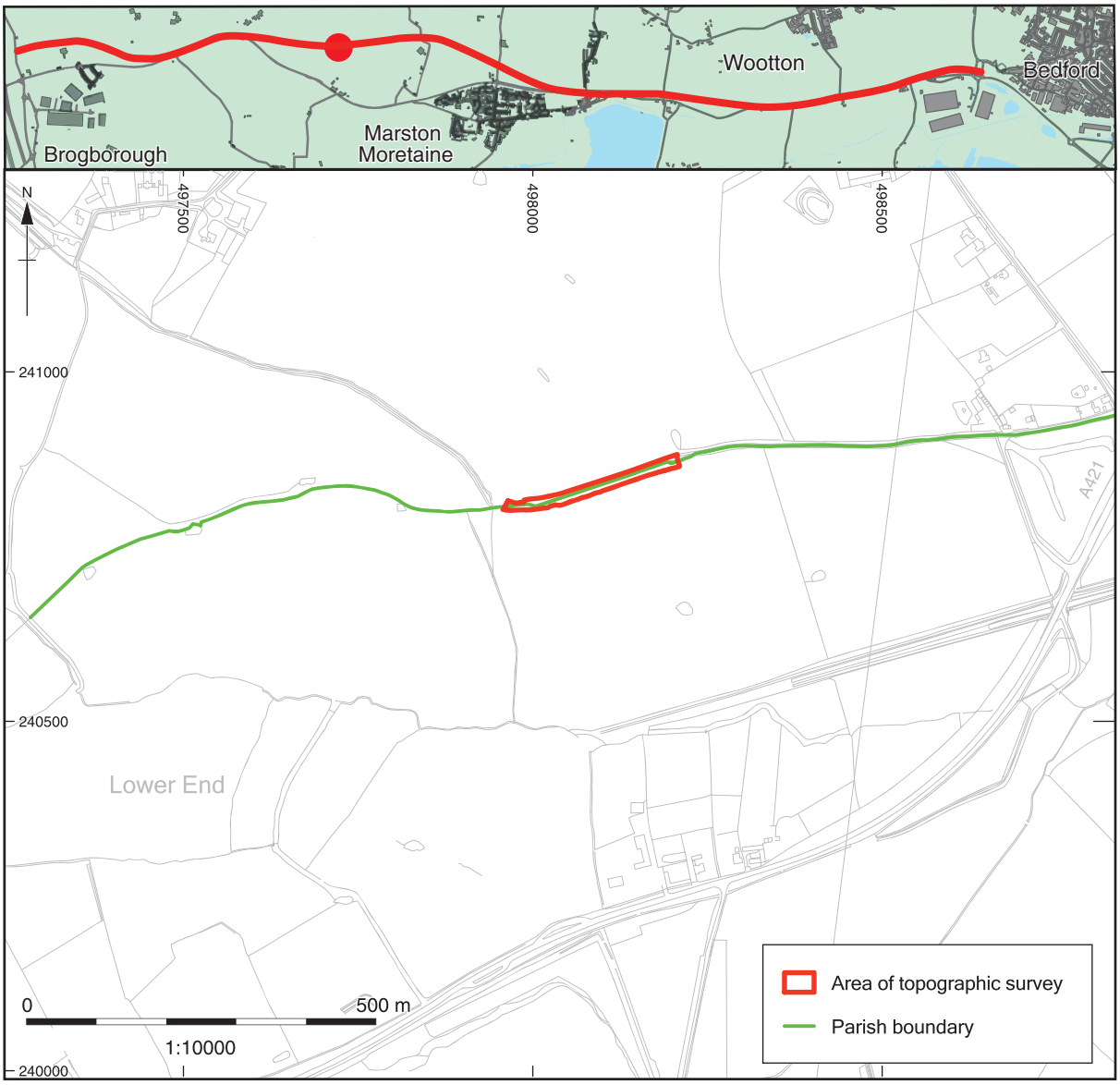


Fig. 7.1 Parish boundary between Lidlington and Marston Moretaine, location of survey area. (© Crown copyright. All rights reserved. Licence no. 100005569)

Fig. 7.2 Parish boundary between Lidlington and Marston Moretaine, general view

Fig. 7.3 Parish boundary between Lidlington and Marston Moretaine, view of the eastern end of the survey area

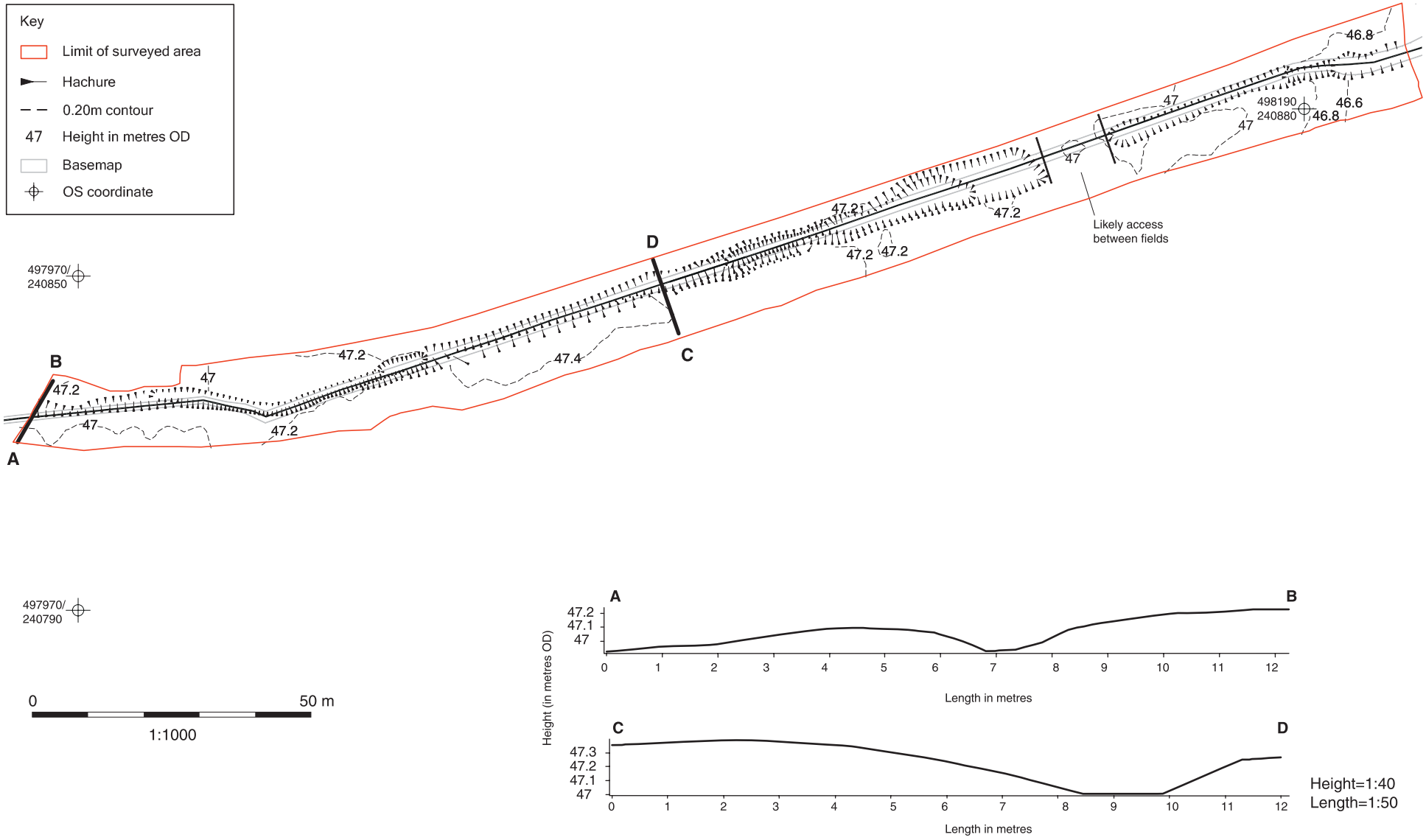


Fig. 7.4 Parish boundary between Lidlington and Marston Moretaine, hachure plan and profiles

Lidlington/Marston Moretaine parish boundary

The survey comprised a 255m length of the boundary between the historic parishes of Lidlington and Marston Moretaine. The survey area was located *c* 1km south-west of the modern village of Marston Moretaine in an area of agricultural land, where, at the time of the survey, the earthwork still defined the boundary between two fields (Fig 7.1). The boundary was defined by a ditch within which grew a species-rich hedgerow (Fig. 7.2), although at the eastern end of the survey area the hedgerow had been grubbed out and the ditch was consequently more readily visible (Fig. 7.3). Where the hedge survived it hampered access to the ditch and made surveying difficult, with the result that measurements could only be taken at irregular intervals. Nevertheless, it was possible to take enough readings to record the alignment and form of the ditch (Fig. 7.4).

The ground elevation gradually rose to a level of 47.51m OD in the central part of the survey area before steadily falling away, forming a natural ridge. The profiles (A-B and C-D) indicate the varying width and depth of the boundary ditch. In profile A-B the ditch was approximately 2.5m wide and 0.15m deep, whereas profile C-D shows that at that point the ditch was approximately 5.5m wide and 0.25m deep. The edges to the ditch were not uniform, something that can be attributed to the disturbance caused by the tree line and hedgerow growing either within it or along its sides. Some segments of the ditch were deeper than others and gaps in the ditch were evident, including a possible entrance through the earthwork near the eastern end of the survey area. It was not possible to be certain whether this entrance was an original feature or a later modification to provide access between the fields on either side.

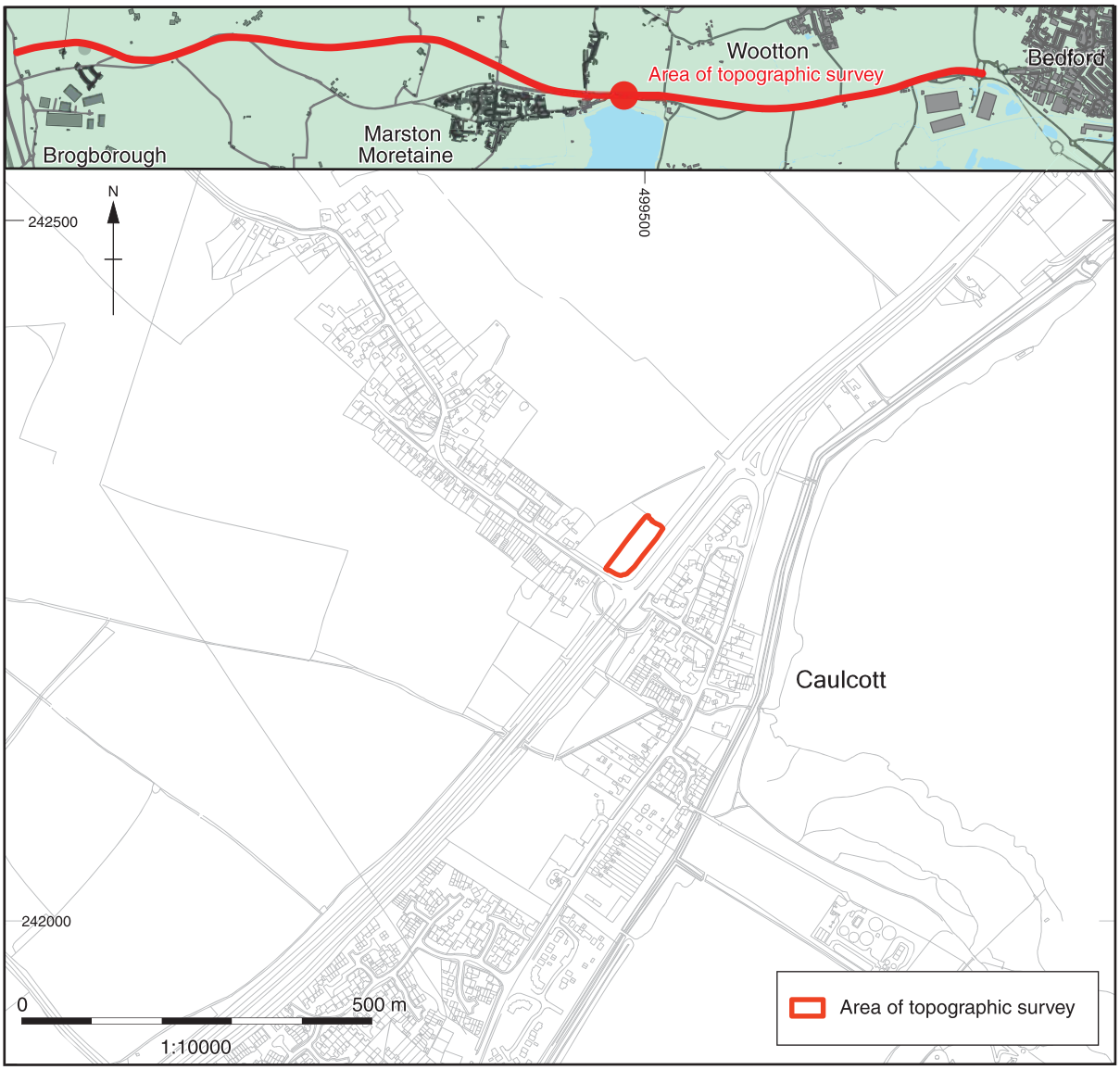
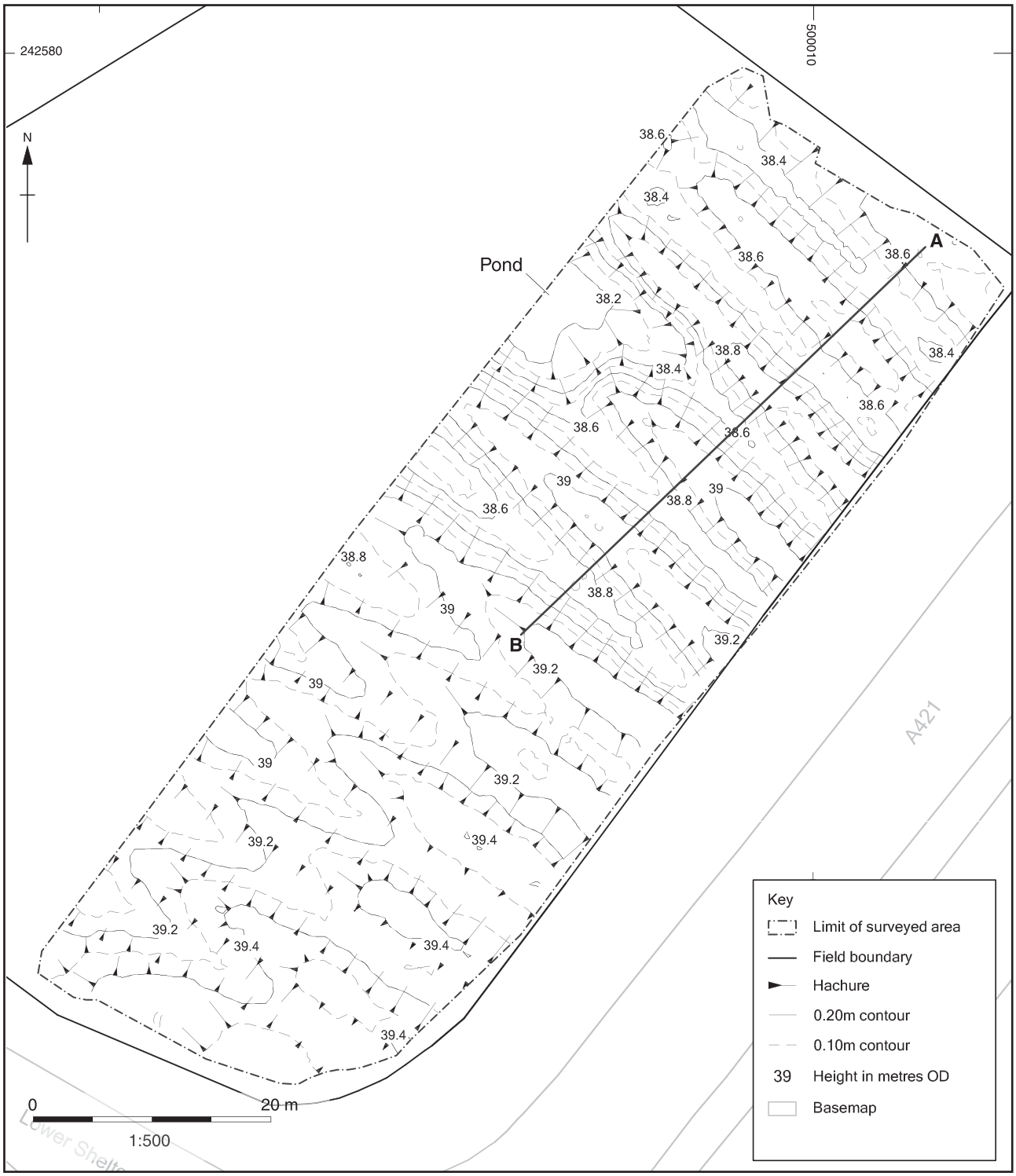
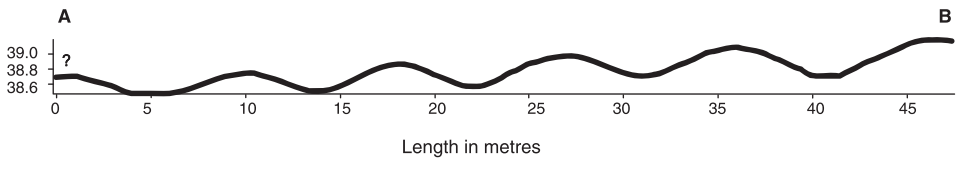


Fig. 7.5 Ridge and furrow at Lower Shelton, location of survey area. (© Crown copyright. All rights reserved. Licence no. 100005569)





Height=1:100
Length=1:400

Fig. 7.6 Ridge and furrow at Lower Shelton, hachure plan

Ridge and furrow earthworks at Lower Shelton

An area of ridge and furrow earthworks located in a pasture field at the south-eastern end of the village of Lower Shelton was surveyed (Fig. 7.5). Although the results of both the geophysical survey and the excavations along the route have demonstrated that such cultivation was wide-spread, it has been levelled in most locations by more recent ploughing, and survival as earthworks is rare.

The total area of the survey was *c* 0.28ha. The earthworks ran roughly NW-SE, and extended beyond the area of the survey to both north-west and south-east (Fig. 7.6). The earthworks measured 8-9m wide and up to *c* 0.4m high from top of ridge to base of furrow. The ridges were slightly better defined in the north-eastern half of the survey area than the south-western, the ridges having more prominent slopes. In addition to this difference in preservation, the alignment of the earthworks in the two halves of the survey area diverged somewhat. It may not be entirely coincidental that the land sloped from the south-east to the north-west, but as this difference in height from one end of the survey area to the other was only *c* 0.85m, the impact that it had was likely to be minimal.

The ridge and furrow earthworks were truncated in the northern part of the survey area by a hollow that measured 18.3m wide and 0.45m deep (Fig. 7.6). The nature of this feature was uncertain, but it may have been a pond associated with the subsequent use of the field as pasture.

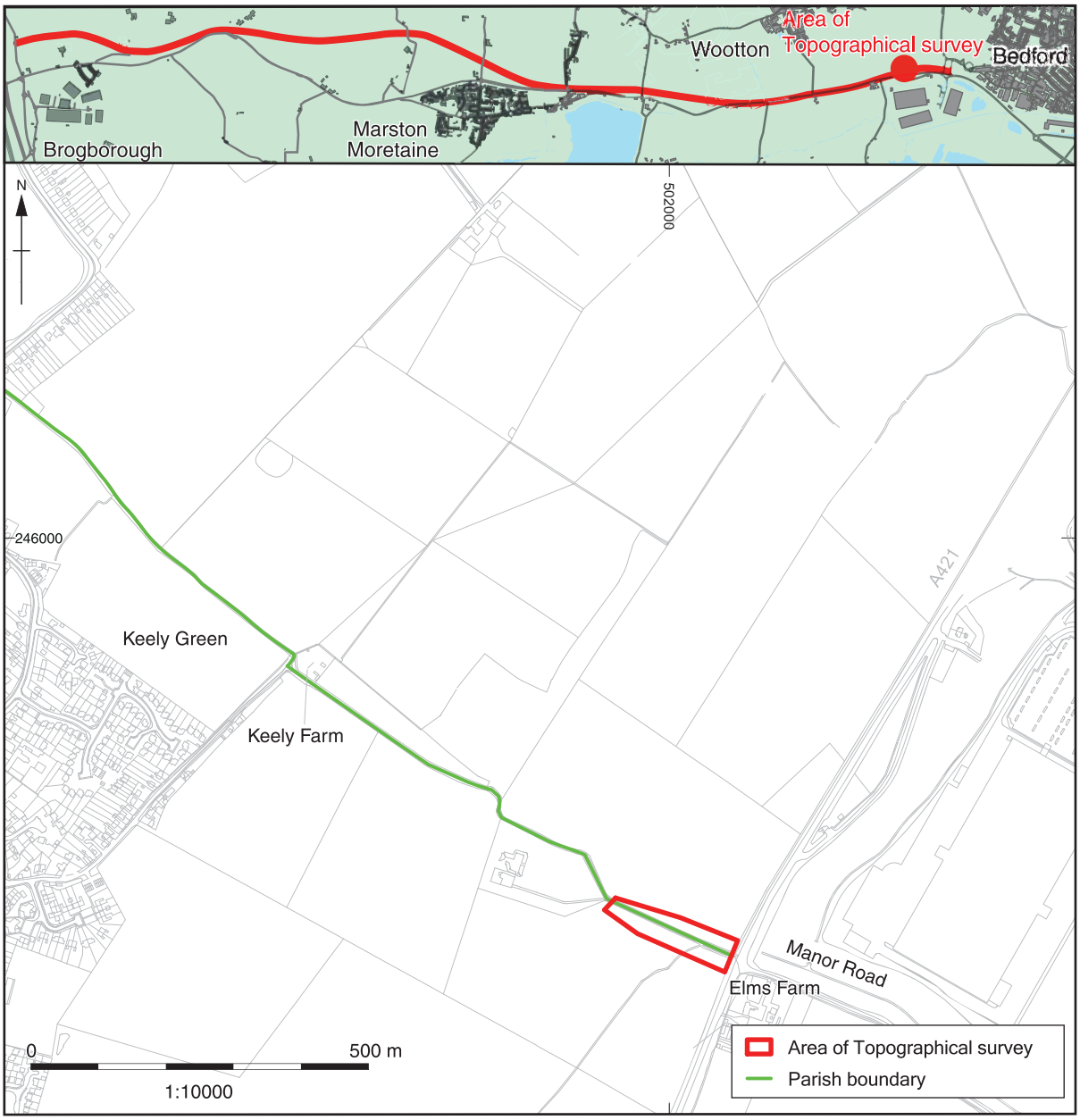


Fig. 7.7 Parish boundary between Wootton and Kempston, location of survey area. (© Crown copyright. All rights reserved. Licence no. 100005569)

Fig. 7.8 Parish boundary between Wootton and Kempston, hachure plan

Wootton/Kempston parish boundary

A survey was carried out to record part of the boundary between the historic parishes of Wootton and Kempston that would be destroyed by the Improvements. The boundary was preserved in the alignment of a bridleway that extended north-west from the carriageway of the existing A421 to Keeley Farm, where it crossed the Portway – a medieval route between Wootton and Bedford – before continuing in the direction of Wood End (Fig. 7.7). The survey encompassed a section of the boundary measuring 190m in length (Fig. 7.8). The boundary was indistinguishable in the survey results and consequently it would appear that this part of the boundary was defined only by the alignment of the bridleway, with no associated earthwork. At the south-eastern end of the survey area a drainage ditch extended alongside the bridleway for a distance of 40m before turning south-westward across the adjacent field (Fig. 7.8), but this appeared to be a modern feature and not directly associated with the parish boundary.

Chapter 8: Discussion

Introduction

The A421 Improvements extended for a distance of 13km across the clay landscape of Marston Vale to the south-west of the valley of the River Great Ouse at Bedford. The project afforded an opportunity to investigate a landscape that was not well known, particularly in comparison with the archaeology of the river gravels. Whereas the valley has seen many investigations, not least the recent large-scale excavations in advance of construction of the Southern and Western Bypasses and housing developments at Biddenham Loop, development within the Vale has been less frequent and, with the exception of Marsh Leys, has comprised only small investigations. Understanding of the archaeology of the Vale has also been hampered by the poor visibility of cropmarks on landscapes of Oxford Clay (Mills 2007, 142-3; 2003, 17). The transect across the Vale that was provided by the A421 Improvements therefore represented a linear sample across the landscape that was particularly welcome.

Needless to say, the A421 Improvements suffered from the same disadvantages that affect all such projects: the alignment was not selected on archaeological grounds and the investigations were restricted to the footprint of the development. In fact, none of the settlements that were investigated were completely explored, as all extended beyond the limits of the Improvements. In addition to this, all the remains had been affected by truncation by medieval and modern ploughing, as was attested by the evidence for ridge and furrow cultivation that was recorded throughout the investigations.

Following a thorough programme of geophysical survey and field evaluation a total of nine sites were selected for further investigation, either as open area excavation or strip, map and sample excavation. Although Site 6 (Trenches 97-99) produced no significant archaeology and Site 6 (105) and Site 9 were also disappointing, comprising only a small group of pits and an undated field system respectively, the remaining six investigations produced evidence for activity during the Iron Age and Roman period. Useful information was also provided by the geophysical survey and field evaluation of the proposed borrow area at Berry Farm, although the site was ultimately not investigated further because extraction of the proposed borrow pit was deemed unnecessary. The remains recorded at these sites formed a particularly coherent group as a result of their common geographical and topographical settings and their similar chronology and have provided significant evidence for the occupation of the Vale during these periods.

Chronology

Issues of chronology are of course fundamental to all archaeological studies, and particularly to a project such as the A421 Improvements, where a chronological framework is necessary in order to correlate between the individual sites, comprehend contemporary similarities and differences, and analyse developments and trajectories. This is all the more important as there are clearly a number of distinct horizons involved, including the initial colonisation of Marston Vale and the impact of the Roman conquest as well as evidence for other episodes of reorganisation of the landscape (below). The principal sources of chronological information for the individual excavations were provided by stratigraphic relationships and ceramic dating evidence. These were supplemented by radiocarbon dates at Site 3 and Site 5, and more particularly at Site 4 (Trench 54), where the establishing of eight radiocarbon determinations enabled Bayesian modelling to be used to refine the chronology of the middle Iron Age enclosure (Griffiths and Naysmith, Chapter 6).

Worked flint was recovered from most of the sites, albeit only in small quantities, but derived entirely from residual contexts within later features or from the ploughsoil, and although a distinct late Mesolithic/early Neolithic element was identified in this assemblage little more could be concluded from this evidence than that some low-level activity had taken place within the area of the Improvements during this period. No features of this date were identified.

The recovery of six Roman coins from Site 2, Site 3 and Site 7 added little beyond confirming the dates already obtained from the associated pottery. Although a few other artefacts that were recovered were chronologically diagnostic, such as the brooches from Site 2 and Site 4 (Trench 54), they were few in number and their contribution to the understanding of the chronology of the sites was of very minor significance in relation to that of the ceramic evidence.

Medieval ridge and furrow cultivation was ubiquitous throughout the area of the Improvements, surviving as earthworks at Lower Shelton (Heatley, Chapter 7) and elsewhere as plough-levelled subsurface features that were detected by the geophysical survey and exposed by the stripping of each excavation area. The furrows were dated by their form and generally were not associated with any artefactual material. Features of more recent date were present on several sites, including boundary ditches at Site 2, Site 4 (Trench 54), Site 4

(Trench 61) and Site 6 (Trenches 97-99), a large pond at Site 3, and hollow-ways at Site 4 (Trench 54) and Site 4 (Trench 61). These features contained little artefactual evidence as they were agricultural in function and situated away from areas of habitation, but small quantities of pottery or building material provided dates in most cases.

Most of the remains uncovered, however, spanned the Iron Age and Roman period (Fig. 8.1). The first part of this period is particularly problematic in terms of dating, both in the Bedfordshire region and nationally (Dawson 2007, 59; Haselgrove *et al*. 2001, 2-3; Willis 2006, 89). This is due to several factors, including the conservatism of pottery traditions, the paucity of metalwork finds, the scarceness of datable imported artefacts before the late Iron Age, and the problems with the radiocarbon calibration curve between *c* 800-400 cal BC. This report, like most published projects from the region, adopts a tripartite division of the Iron Age based ultimately on Knight's (1984) dating scheme, and based predominantly on ceramic evidence. Pottery assigned to the middle Iron Age (*c* 400-100 BC) was characterised by ovoid jars and slack-shouldered jars or bowls, which were usually made in sandy or shelly fabrics. Pottery assemblages of late Iron Age date (*c* 100 BC-43 AD) were characterised by grog-tempered fabrics, though sandy and shelly fabrics were still important. Across the A421 Improvements these were present mainly as jars and bowls, including new, often wheel-thrown forms such as bead-rimmed jars, lid-seated jars, necked jars, and carinated bowls. The beginning of the Roman period was signalled by the importation of continental wares such as samian and amphorae and the widespread local manufacture of kiln-fired, wheel-thrown pottery. In practice, the divisions between the periods are less clear-cut than this implies, and correlating the relative dates provided by the pottery with calendrical dates is problematic; technologically middle Iron Age pottery continued in use during the late Iron Age, and there is likely to have been a lag of unknown duration between the Roman invasion and the adoption of Roman ceramics, particularly at rural farmsteads such as those investigated here.

As regards the individual sites, the earliest dated feature was a cremation burial at Site 5 dated by radiocarbon to the early Iron Age, but this was an isolated feature and was not associated with the main phase of occupation. Site 4 (Trench 54), Site 4 (Trench 61) and Site 6 (Trench 105) all produced middle Iron Age pottery. The pottery at Site 4 (Trench 54) suggested that the site was abandoned by *c* 100 BC, although a small quantity of material continued to be deposited in the upper fills of the enclosure ditches into the later 1st century BC or 1st century AD. Bayesian modelling of the radiocarbon dates produced results that were consistent with the ceramic dating and indicated that the site was occupied between the mid 4th century and the 2nd century BC. The pottery at Site 4 (Trench 61) and Site 6 (Trench 105) indicated that occupation potentially extended a little later, into the late Iron Age (*c* 100 BC-AD 43), although no specifically late Iron Age phase of occupation was identified.

Four sites appear to have been first occupied during the late Iron Age. The sites at Site 3, Site 5, and Berry Farm Borrow Area all began at this time, and although a small quantity of middle Iron Age bowls were recorded at the north-eastern complex at Site 2 they occurred only as residual material in later features, and it is likely that the main phase of occupation started during the late1st century BC. A radiocarbon date of 350-40BC was obtained for a dog burial within a ditch at Site 3 which formed part of the late Iron Age enclosure complex, and the ceramic evidence indicates that the true date of deposition lies in the latter part of the range. Occupation at all these sites continued into the early part of the Roman period before they were abandoned during the late 1st century, with the exception of the north-eastern complex at Site 2, where activity continued on a much reduced scale into the early part of the 2nd century.

The south-western complex at Site 2 was established around the middle of the 2nd century, and it is possible that it was a direct replacement for the north-eastern complex. The settlement at Site 7 was also established at this time, and for the remainder of the Roman period these were the only settlements that were occupied. At Site 2 the level of deposition declined during the late Roman period, and at the same time the ditches of the enclosure complex at Site 7 appear to have been completely silted up, although the overall level of deposition here actually increased at this time as the waterholes were used for the disposal of refuse from a domestic focus that lay beyond, but presumably

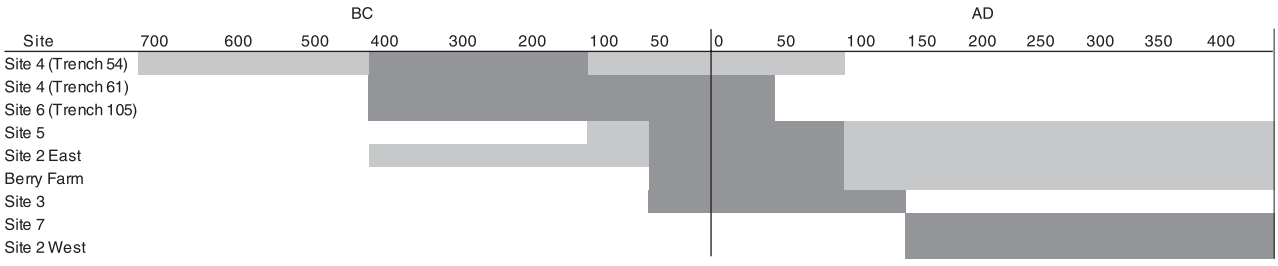


Fig. 8.1 Summary of the main periods represented at each site

close to, the excavation area. The latest deposition at Site 7 was dated to the 4th century by the presence of products of the Oxford pottery industry, but the complete absence of 4th-century coins, which are usually a common site find, suggests that occupation did not last long into the century.

Settlement forms

The sites excavated as part of the A421 Improvements included a range of settlement forms, exemplifying both variations in form between contemporary settlements and changes in the character of settlement over time. The fact that only a narrow slice of each site was excavated, due to the linear character of the project, makes classification of their forms somewhat problematic, as in no instance was the entire extent of the settlement exposed. A further difficulty is caused by the fact that even where Iron Age sites in the south Midlands have been excavated on a larger scale, they defy simple classification, often combining enclosures with areas of unenclosed occupation or oscillating over time between enclosed and unenclosed phases (Rees 2008, 64-8). Clearly a range of settlement forms was in use, and this is reflected in the characters of the sites excavated at the A421 Improvements. The settlements encountered encompassed a possible single discrete enclosure at Site 4 (Trench 54), open settlements at Site 2, Site 4 (Trench 61), Site 5 and possibly Site 6 (Trench 105), complexes of conjoined enclosures at Site 2 and Site 3 and a larger complex of enclosures at Site 7. The site at Berry Farm was less extensively investigated but appeared to consist of parts of two neighbouring complexes of conjoined enclosures, and Site 9 comprised an undated field system.

Discrete enclosure at Site 4 (Trench 54)

The middle Iron Age site at Site 4 (Trench 54) has been characterised as a discrete enclosure settlement, although it is possible that ditch 17721 integrated the enclosure into a wider enclosure/boundary system. Even if this were the case, however, the size of the ditches that defined the enclosure, and the provision of multiple circuits, mark out the enclosure as a distinct entity, as the size of the ditches encircling the settlement enclosure at Flitwick (Luke 1999) similarly distinguished it from its subsidiary enclosures.

The enclosure possessed several concentric ditch circuits and appeared to be subcircular or oval in form, although its full plan was not exposed as its western and northern extents lay beyond the limits of the excavation area. The shape and multiple ditch circuits make this site rather dissimilar from most of the contemporary enclosed settlements in Bedfordshire, where subrectangular enclosures appear to have been more common, as at Biddenham Gold Lane (Dawson 2004, 9-12) and Willington (Pinder 1986), the latter abutted by a smaller triangular enclosure, while at Shillington (Dawson 2004, 12-17) a pair of subrectangular enclosures flanked a trackway or boundary ditch, and the site at Topler's Hill (Luke 2004) comprised a group of conjoined enclosures more reminiscent of the late Iron Age/early Roman farmsteads at Site 2 and Site 3 (below). In general, the small number of middle Iron Age settlements in Bedfordshire and the surrounding region the plans of which are known in detail, and their varied character, make definition of a 'typical' form problematic. Although no direct parallel can be cited for the enclosure at Site 4 (Trench 54), individual characteristics of the enclosure are shared with other sites: an oval enclosure of similar dimensions to the inner ditch circuit and similarly enclosed by a discontinuous ditched boundary has been recorded by a combination of geophysical survey and evaluation trenching at Flitwick (Luke 1999), and contemporary settlements with multiple concentric enclosure ditches have been excavated at Draughton and Blackthorn in Northamptonshire (Grimes 1958; Williams 1974). The unexcavated part of the enclosure at Site 4 (Trench 54) lay within the area of the geophysical survey but no features were detected here, as indeed had been the case for the site as a whole. This is surprising in view of the substantial size of some of the ditches, particularly those that defined the eastern side of the enclosure in its final phase, and presumably indicates that the fills of the ditches were very similar in composition to the surrounding Oxford clay substrate from which they were ultimately derived. The site had been subject to ploughing during the medieval and modern periods, as a result of which few internal features survived.

Enclosures of this type are typically interpreted as the farmsteads of individual family or kin groups (Cunliffe 2005, 262; Speed 2010, 43; Willis 2006, 101). No evidence for buildings or other structures survived within the enclosure but the domestic character of the site was apparent from the material recovered from the ditches, which included bones from the usual domestic species, some of which bore butchery marks indicative of both primary dismemberment of the carcass and division into individual portions, and pottery vessels that may have served a range of functions including storage, cooking and serving. One jar exhibited burning that probably resulted from its placement on the hearth, and a flat slab of limestone that may have been used as a hotplate also provided evidence for domestic activities. The only features identified within the enclosure were a handful of pits, several of which were of substantial depth and would have been suitable for use as grain silos, although no definite evidence for such a function was found. Some indication of the features that existed within the enclosure may be obtained by analogy with the similar enclosure at Flitwick. The interior of the latter site was investigated only by means of two evaluation trenches, but the two large roundhouses

identified, comprising ring gullies and in one instance a number of internal features (Luke 1999, 82), may provide some indication of the sort of evidence that has been lost to ploughing at Site 4 (Trench 54).

The discontinuous and overlapping form of the enclosure ditches that characterise the site presented particular problems relating to the number and sequence of circuits. In the south-western quadrant, for example, there were only two circuits, but in the south-eastern quadrant there were four, and the ditch segment that formed the inner circuit on the northern side of the enclosure wrapped around the outside of the ditch that defined the eastern part of the inner circuit and thus became part of the second circuit. With the exception of the final phase of the enclosure, which comprised two particularly substantial ditches that enclosed its eastern side and cut across several of the earlier circuits, only a single stratigraphic relationship existed to elucidate the sequence of ditch circuits on the northern side of the enclosure. In the absence of such relationships, the sequence on the southern side was inferred by analogy with the northern sequence. The enclosure appears to have originated as a much simpler monument comprising a single ditch circuit measuring *c* 40 x 30m (Phase 1, Fig. 8.2), which was subsequently expanded and elaborated by the addition of further circuits (Phase 2), although it is not possible to be certain whether the latter development occurred as a single event or was a more piecemeal process. It is also unclear whether the earthworks of the earlier enclosure was preserved and incorporated into the later design, although it could be argued that the generally concentric nature of the ditch circuits, particularly on the southern side of the enclosure, suggests that this was the case. The Phase 3 ditches were particularly substantial and appeared to represent a reinstatement of the

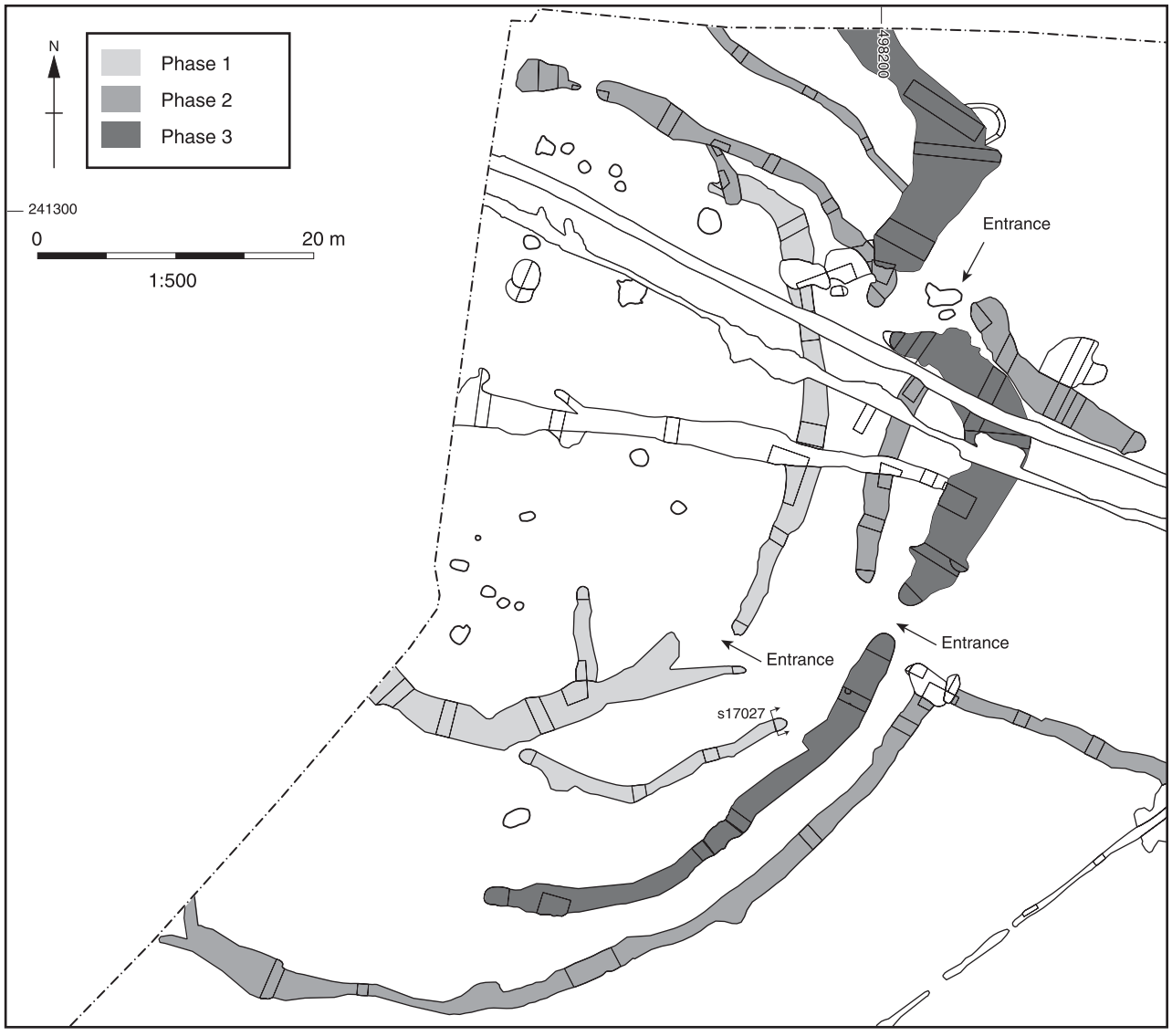


Fig. 8.2 The development of the middle Iron Age enclosure at Site 4 (Trench 54)

eastern facade of the enclosure on an almost monumental scale. Although their construction clearly entailed the slighting of some of the earlier earthworks, the absence of corresponding ditches encircling the southern part of the settlement suggests that the existing earthworks in this part of the site were retained. It is perhaps noteworthy that comb-decoration, which is considered to be a late feature, was recorded only on pottery from the Phase 2 and Phase 3 ditches. Bayesian modelling of the radiocarbon dates from the fills indicated that the Phase 1 and Phase 2 ditch circuits were constructed between the early 4th and early 2nd centuries BC. Due to the form of the calibration curve in this period and the consequently wide and substantially overlapping date ranges assigned to these features it was not possible to establish how much time elapsed between the initial construction of the inner enclosure and the subsequent addition of the outer ditch circuits. The Phase 3 ditches had been dug by 210-130 BC, the date obtained for a horse skull that was placed on the base of ditch 17496, and the pottery from their upper fills indicated that they did not completely silt up until the mid 1st century AD.

The motivation for enclosing settlements within earthwork boundaries has been discussed by numerous authors (Bowden and McOmish 1987; Hingley 1990; Rees 2008; Speed 2010). The existence of contemporary unenclosed settlements, such as those at Site 4 (Trench 61) and Site 5, suggests that such features were not needed for reasons of security, either against hostile forces or wild animals, and so a function rooted in social convention or symbolism is more likely, perhaps as an expression of the status or independence of the inhabitants. The substantial size of the Phase 3 enclosure ditches and the monumental design of the eastern entrance in this phase would certainly fit with such an interpretation. The ditch circuits at Site 4 (Trench 54) may also have served a more mundane purpose, at least during Phase 2, when the outer circuits may have enclosed an area sufficiently large to accommodate a substantial amount of the community's livestock, either as an area of enclosed pasture or during over-wintering. The entrances to the enclosure may have been designed with such a function in mind. The main entrance into the Phase 1 enclosure was situated on its south-eastern side and was associated with an outwork or small annex that may have been used as a pen for livestock. Corresponding breaks in the later ditch circuits, though slightly off-set from the original causeway, suggest that this entrance continued to be used, and the outermost circuit was associated at this point with an antenna ditch that gave the site something of the appearance of a banjo enclosure, and which may have had a role in funnelling livestock into the entrance. A similar observation has been made regarding the arrangement of the southern entrance to the enclosure at Flitwick (Luke 1999, 83). The Phase 2 ditch circuits also included a new, eastern entrance (created to the north of the original one) which was associated with an external segment of ditch that may have served a similar function to the antenna ditch at the south-eastern entrance. Interestingly, if the corresponding part of the original, inner ditch circuit was maintained as a functioning earthwork, this entrance would not have provided access to the interior of the enclosure. Although it is possible that all or part of the inner ditch had been filled in, this arrangement could alternatively be part of a livestock management system in which animals were driven into the eastern entrance and channelled to the south through a race formed by the inner and outer ditch circuits to a drafting gate at the south-eastern entrance from which they could be directed into the inner enclosure, the adjacent annex or the southern part of the outer enclosure as appropriate. The layers of sandstone cobbles recorded in hollows within the eastern entrance and tipping into a pit adjacent to the south-eastern entrance may indicate that the traffic passing through the entrances was sufficient to warrant the provision of metalled surfaces. The design of the enclosure may therefore have been intended to facilitate the management of livestock, perhaps indicating that the settlement had a primarily pastoral economy. The paucity of evidence for arable production (below) would certainly be consistent with this interpretation.

During the currency of the Phase 3 enclosure, the settlement experienced a substantial conflagration, evidence for which was preserved in the ditch that enclosed the south-eastern sector. A thin layer of black, charcoal-rich soil was identified which is likely to have derived from burning of vegetation that was growing within the ditch, but the main concentration of the fire was situated beyond the feature and was evidenced by a more substantial layer of pink, burnt soil that overlay the black layer. The deposit was found throughout almost the entire 40m length of the ditch, and although it clearly was not burnt *in situ* within the ditch, its 'clean' composition, with little evidence for mixing with other soil, indicates that it had not moved far from the location where it was burnt. The most plausible explanation is that this material had slumped into the ditch from an adjacent bank formed from the ditch up-cast, and that the main focus of the fire had been located on the bank. A clay bank would obviously not burn easily, and this suggests that the focus of the fire was a more combustible material situated on the bank, possibly a timber fence or palisade surmounting the earthwork. It should be stressed, however, that no positive evidence was found for the conjectured palisade, such as charcoal or postholes, and it is not possible to be certain whether the destruction was deliberate or accidental. Bayesian modelling of radiocarbon dates from this feature indicated that the conflagration took place between 350-170 cal BC.

Middle Iron Age open settlements at Site 4 (Trench 61), Site 5 and Site 6 (Trench 105)

The settlements at Site 4 (Trench 61) and Site 5 were represented by roundhouses and pits, and that at Site 6 (Trench 105) by a concentration of pits alone. Because of the absence of any enclosure ditches around them, or associated field systems, either within the excavation areas or the evaluation trenches or geophysical surveys of the surrounding area, they are characterised as open settlements, and they bear comparison with examples excavated in the immediate vicinity at Biddenham Loop (Luke 2008, 39), East Stagsden (Dawson 2000c, 21-40) and Area 1 of the Bedford Western Bypass (Albion Archaeology 2008). The limited ceramic evidence indicated that Site 4 (Trench 61) and Site 6 (Trench 105) were predominantly of middle Iron Age date, although occupation may have continued into the late Iron Age, while the settlement at Site 5 was entirely Iron Age in date.

All three sites had been substantially effected by medieval and modern ploughing, with the result that only a sparse group of truncated features survived at each. The surviving features at Site 4 (Trench 61) comprised part of a roundhouse gully, a possible four-post structure and three pits, two of which were substantial enough to have been used for grain storage, while the settlement at Site 5 was represented by two partial roundhouse gullies and a group of shallow pits. The function of the pits at the latter site was uncertain, although three were filled by dark, charcoal-flecked soil which may represent the disposal of refuse from domestic or agricultural activities. The distribution of features at Site 4 (Trench 61) may have derived from the division of the settlement into discrete zones dedicated to different activities, with the two storage pits being situated 35m south of the roundhouse and the possible four-post structure 20m north of it. The excavations at both sites were confined to the corridor of the Improvements and exposed only part of each settlement, the full extent of which were not established. The features at Site 4 (Trench 61) extended over a distance of 70m from north to south, but their proximity to the edges of the excavation area indicated that they continued beyond these limits, and at Site 5, roundhouse gully 6042 was only partially exposed and clearly extended beyond the south-eastern edge of the excavation.

At Site 6 (Trench 105) the only features identified were pits. The small number of features at this site and the relatively small volume of artefactual material from them do not demand a domestic interpretation, and they may represent an off-site activity area, similar to the area of late Iron Age pits to the north of the main domestic focus at the north-eastern complex at Site 2 or the peripheral activity areas associated with Farmstead 3 at Marsh Leys (Luke 2011, 39-42). Although such an activity area may have been used for non-domestic purposes, its presence may nevertheless indicate that an area of occupation was situated nearby.

The absence of substantial features such as boundary ditches renders open settlements difficult to detect, as the ephemeral roundhouse gullies often do not form substantial cropmarks. They were, however, a common element of the settlement pattern of the Great Ouse Valley during the Iron Age (Dawson 2000b, 115), the prevalence of which is becoming increasingly apparent as more examples are revealed by the stripping of large open areas associated with substantial developments such as the A421 Improvements, Biddenham Loop and Bedford Western Bypass.

Possible late Iron Age open settlement at Site 2

The earliest features at Site 2 appeared to belong to an open settlement dating from the late Iron Age which preceded the early Roman enclosure complex (Fig. 8.3). Occupation here began during the late 1st century BC or the first half of the 1st century AD. The features formed a rather disparate group that consisted of three activity areas scattered over a distance of more than 200m, comprising a roundhouse, only part of the ring gully of which survived, with a complex of intercutting quarry pits located *c* 60m to the south and a loose scatter of relatively shallow pits to the north. A ditch with an L-shaped plan that was located between the roundhouse and the quarry pits may have defined two sides of a small enclosure or pen that was completed with hurdles or other archaeologically undetectable barriers. The quarry pits appeared to represent an area dedicated to small-scale and *ad hoc* clay extraction, but the function of the pits in the northern part of the excavation was uncertain. No evidence was found within the excavation area for contemporary boundary ditches, and the ditches recorded by the geophysical survey all appeared to form part of the early Roman enclosure system. It is, therefore, likely that the late Iron Age phase of the settlement was neither enclosed nor associated with ditched enclosures or fields. The small artefactual assemblage recovered from the surviving features provided little opportunity to analyse the economy of the settlement.

Although ditched enclosures became increasingly numerous during the late Iron Age, open settlements remained a significant component of the landscape (Dawson 2007, 68). Contemporary settlement at East Stagsden, *c* 10km north of Site 2, comprised a similar range of features (Dawson 2000c, 127). The clear zoning of activities at Site 2 was also apparent at Stagsden, with the main area of pit digging situated a short distance away from the roundhouses and enclosures. This settlement also included an L-shaped ditch similar to that at Site 2 (Dawson 2000c, fig.17). The two contemporary farmsteads excavated at Marsh Leys comprised similar open settlements accompanied by individual enclosures (Luke 2011, 139), and the handful of late Iron Age features excavated at Beancroft Road, Marston Moretaine

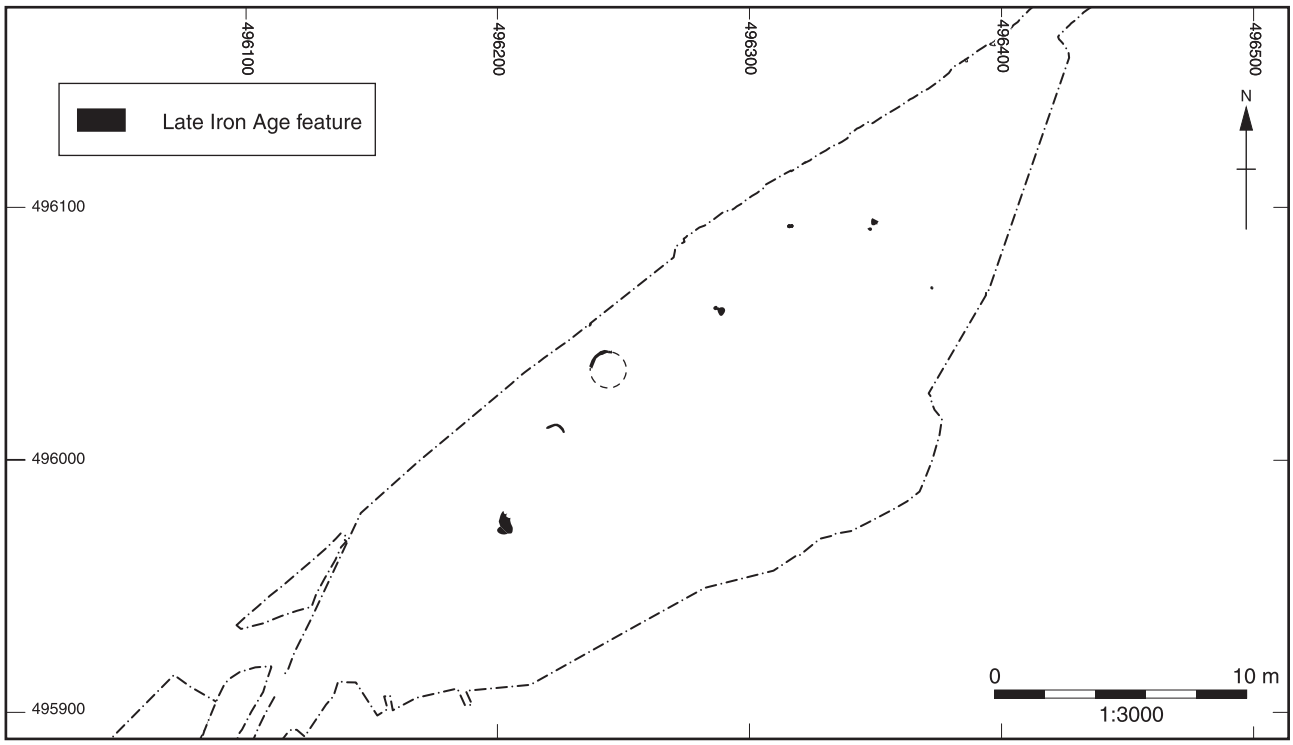


Fig. 8.3 Plan of the late Iron Age settlement at Site 2

may have been all that survived of another open settlement (Shotliff and Crick 1999).

The late Iron Age settlement at Site 2 was relatively short-lived, being soon swept away after the conquest when it was replaced by a complex of conjoined enclosures (below). This contrasts with the situation at Marsh Leys, where the the late Iron Age arrangements at both settlements continued until the mid-2nd century (Luke 2011, 139). However, both the ceramic evidence and the apparent retention of some late Iron Age boundaries in the post-conquest reorganisation of the site indicate that these changes represent an unbroken development of the site rather than evidence for any period of abandonment, and this phenomenon of continued occupation in a re-organised form is common to all the examples of this settlement type.

Conjoined enclosure complexes at Site 2, Site 3 and Berry Farm

Settlement during the late Iron Age and early Roman period was characterised at the A421 Improvements by complexes of conjoined enclosures. Settlements of this type were located at Site 2, Site 3 and Berry Farm and were the only sites of this period that were found, the earlier settlements at Site 4 (Trench 54), Site 4 (Trench 61) and Site 5 having by this time been abandoned (Fig. 8.4). Part of a similar complex has been excavated within Marston Vale at Wilstead (Luke and Preece 2010), as well as examples elsewhere in the Great Ouse Valley at Norse Road, Bedford (Edgeworth 2001), Ursula Taylor Lower School, Clapham (Dawson 1988) and Wavendon Gate (Williams *et al*. 1996). None of the complexes at the A421 Improvements was fully explored: excavation at Site 2 and Site 3 was restricted to the footprint of the Improvements, although the results were supplemented by geophysical survey, and the site at Berry Farm was investigated only by means of geophysical survey and evaluation trenching.

The excavation at Site 2 exposed three conjoined enclosures that lay at the eastern limit of a complex that the geophysical survey indicated extended to the north and west beyond the footprint of the Improvements. The enclosures were of varying shapes and sizes and abutted a ditched boundary that defined the northern edge of the complex. The northern boundary continued to the east beyond the three enclosures before petering out. It is possible that the complex originally extended further in this direction, but no features survived in this area. The results of the geophysical survey indicated that the enclosures were adjoined on their western side by a larger rectilinear enclosure within which lay a smaller rectilinear enclosure. The results of evaluation trenching by Albion Archaeology had confirmed that these features were of early Roman date, contemporary with the enclosures in the open excavation area (Albion Archaeology 2006). The larger enclosure appeared to be subdivided by a ditch that cut across the inner enclosure on a NW-SE alignment. The two features therefore cannot have been contemporaneous and provide evidence that the complex was modified over time, although their

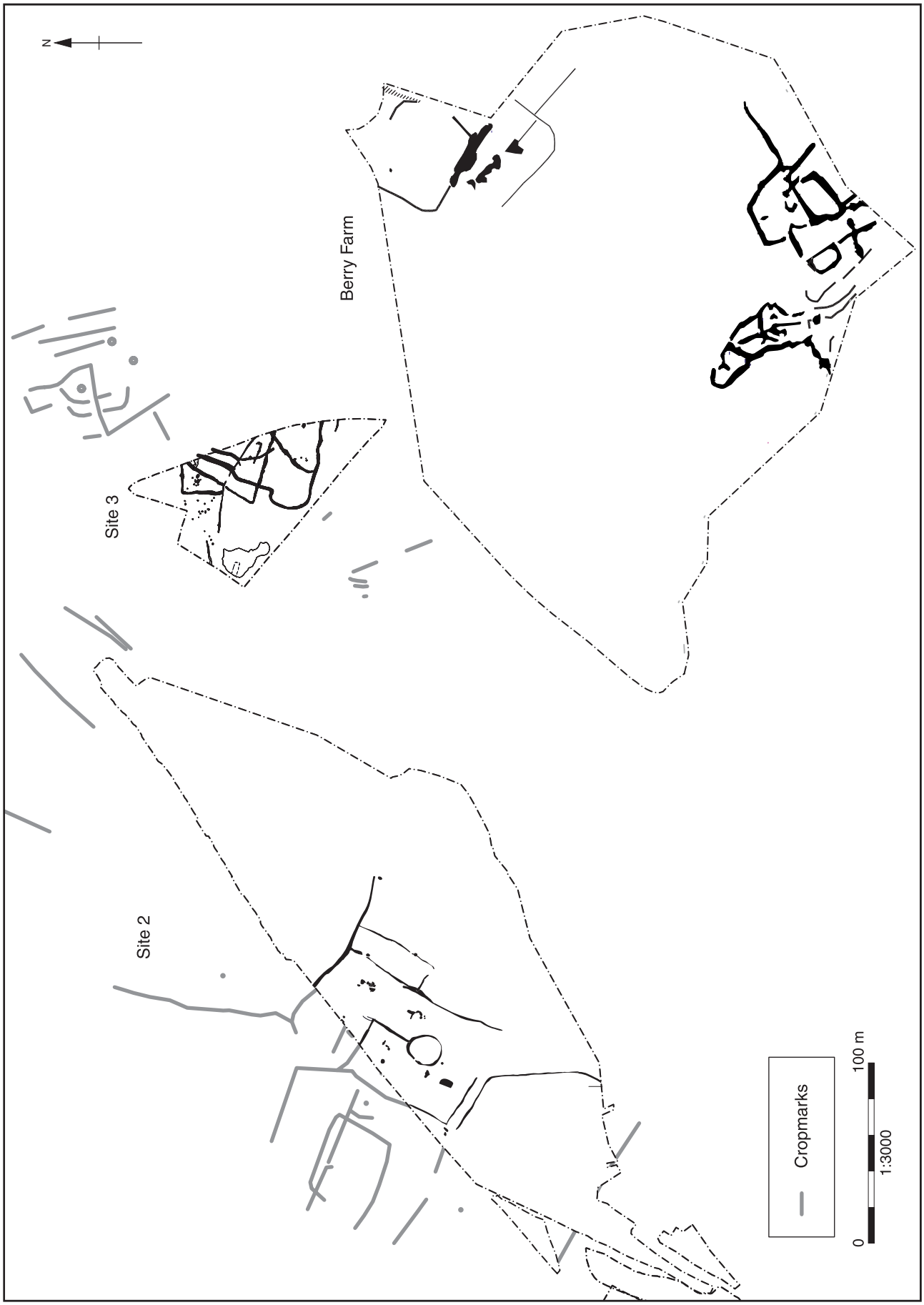


Fig. 8.4 Plans of the late Iron Age/early Roman enclosure complexes at Site 2, Site 3 and Berry Farm

sequence is not known and the pottery recovered from the ditch during the evaluation was of the same broad date as that from the enclosure. The excavation also produced possible evidence that the final arrangement of enclosures was the result of gradual development rather than a single deliberate design, although the sequence was not entirely clear and this evidence may alternatively have resulted from the piecemeal recutting of parts of the ditches, as had certainly happened at Site 3.

The largest of the three enclosures within the excavation area was the main domestic focus of the settlement. A particularly large roundhouse was situated at its centre, and the deposition of domestic waste in the form of pottery and animal bone was concentrated on this part of the site. The only element of the roundhouse that survived was the drip gully, which had been redug on one occasion. The domestic character of the building was indicated by the assemblage of more than 900 sherds of pottery that was recovered from its fills, which contained comparatively more types associated with dining and consumption, such as flagons, beakers, bowls and platters, and conversely fewer storage jars, than were found in other features. The roundhouse gully also contained a large assemblage of 5kg of animal bone, presumably representing the remains of food consumed within the building. The northern half of the enclosure was bisected by a ditch, which presumably divided it into areas of different usage, although the precise nature of these uses was not evident. Several groups of pits and postholes were scattered around the enclosure, as well as two shallow, soil-filled hollows, but again there was no evidence as to their precise functions. A droveway extended along the southern side of the enclosure. The western end of the droveway may have fed into the large enclosure recorded by the geophysical survey, while at its eastern end one of the flanking ditches turned southward to form a boundary that extended away from the complex for *c* 60m, before continuing beyond the southern edge of the excavation area. This arrangement may have been designed to funnel livestock into the southern corner of the large enclosure, bypassing the area of domestic habitation.

The only evidence for the use of the other two enclosures that lay within the excavation area was a group of shallow pits or hollows in the enclosure to the north of the domestic area that had been used for the disposal of a large quantity of burnt chaff, most likely crop-processing debris that had been used to fuel ovens or hearths. It is not known whether this material was generated by domestic fires in the roundhouse or derived from agricultural or industrial activities within the enclosure, although no evidence for such activities was identified.

Around the end of the 1st century, the domestic focus was abandoned and the ditches that defined the enclosures that lay within the excavation area were left to silt up. A small amount of 2nd-century pottery was recovered from the upper fills of the ditch that formed the northern boundary of the complex and from the surface of the droveway, and a scatter of pits were dug at this time to the north of the complex, suggesting that some level of activity may have continued in the unexcavated part of the settlement. It is not certain that this activity was domestic in character but it appears to have included some small-scale metalworking, as debris from a forge had been discarded in the northern boundary ditch.

The area excavated at Site 3 encompassed only the south-western corner of the enclosure complex. The layout of the part of the complex that was exposed was similar to the contemporary complex at Wavendon Gate (Williams *et al.* 1996) in that it was bounded by an outer boundary ditch, the area within which was subdivided by further ditches into subsidiary enclosures. The whole of one of these internal enclosures was exposed, as well as parts of two others. The absence of features within the enclosures suggests that they were agricultural in function, and a pastoral function seems to be indicated by the arrangement of the boundaries that divided them, the initial layout of which was subsequently re-organised to create a droveway that would have facilitated the movement of livestock to and from the south-western enclosure whilst bypassing its northern neighbour. Parts of the various boundary ditches that defined and subdivided the complex had been subject to piecemeal recutting, representing periodic maintenance of the boundaries, and one of the recut ditches contained part of a leg from a juvenile dog that yielded a radiocarbon determination of 350-40 BC (SUERC-30625; 2120±35BP) which, combined with the ceramic evidence, indicates that the site was occupied from the first half of the 1st century BC. Shortly after the introduction of Roman ceramics, the boundaries were replaced by a new arrangement of ditches, although the orientation of the complex was maintained and there was no evidence that the reorganisation was associated with a break in occupation. Perhaps the greatest change in the layout of the complex was the absence of internal divisions, at least within the area exposed by the excavation, from which we can perhaps infer an increase in herd size or a change in grazing strategies. The reorganisation also included the addition of a triangular enclosure that contained a small cremation cemetery of four burials, each of which was interred within a ceramic urn and accompanied by at least one accessory vessel. A further activity area was represented by a scatter of pits to the west of the enclosure complex, although no evidence was found for their date or function. No evidence was found in either the late Iron Age or Roman phases for domestic settlement, which was presumably therefore situated in a part of the complex that lay beyond the limits of the excavation.

The form of the parts of the complex that lay beyond the limits of the excavation area is elucidated to some extent by the geophysical evidence

from the area to to north-east, which indicates that the complex extended for at least a further 80m in this direction (Fig. 8.4). The survey results show a series of major boundary ditches oriented NNW-SSE and ENE-WSW that divide the area into rectilinear blocks, as well as a group of more curvilinear boundaries. The boundaries in the excavated area are integrated into this arrangement by a linear feature in the south-western part of the survey area that is likely to correspond with either the outer boundary ditch of the late Iron Age complex or its early Roman counterpart. It is tempting to speculate that the curvilinear features represent parts of the late Iron Age complex and that the linear features are of Roman date, as this distinction in the forms of the ditches certainly holds true in the excavated area. It is unfortunate that the area to the east of the excavation area lay beyond the footprint of the Improvements and thus beyond the limits of the investigation, as it is clear that features identified both in the excavation and the geophysical survey area continue into this area but neither the extent nor the character of this part of the complex is known.

The two complexes of ditched enclosures at Berry Farm were recorded through geophysical survey and evaluation trenching but were not subsequently excavated as the material from the proposed borrow area was not required. The full extent of neither complex was identified as both extended beyond the limits of the proposed borrow area. The southern complex comprised two elements: its eastern part consisted a group of conjoined rectilinear enclosures of varying sizes, which were bounded to the west by an open space beyond which lay further conjoined enclosures of smaller and more irregular shape. The features identified at the northern edge of the survey area comprised a large rectilinear enclosure with possible internal subdivisions, on the southern side of which was situated a second possible enclosure. Due to the nature of the investigations at this site the detailed information recovered was necessarily more limited than at the other complexes. Dating evidence was limited, but the pottery from both complexes dated broadly from the late Iron Age-early Roman period, and the intercutting of some features indicated that they were in use for some length of time. No evidence was found that directly elucidated the functions of the enclosures, but the pottery and animal bone recovered are likely to derive from domestic occupation, and it is reasonable to infer that some of the enclosures also had agricultural functions. The proximity and apparent contemporaneity of the two complexes suggests that they may have served complementary functions, although precisely how they were related to each other is not known.

Developed farm complexes at Site 7 and Site 2

The farmsteads at Site 7 and at the south-western complex at Site 2 both extended beyond the footprint of the A421 Improvements and consequently the areas that were excavated do not constitute the full extent of the settlements (Fig. 8.5). Boundary ditches were recorded at Site 7 that clearly extended beyond the limits of the excavation area to both north and south, although nothing is known of the remains in these areas. The features investigated at Site 2 formed the south-eastern part of a complex that extended to the north-west beyond the area of the excavation, where further features were identified by the geophysical survey, although it is not certain whether the features from the geophysical survey represent the full extent of the remains. At Site 7 the geophysical survey did not extend beyond the limits of the excavation area. Both settlements were established during the early-mid 2nd century on sites that had not previously been used.

Site 7

The settlement at Site 7 was the easier to characterise as a greater proportion lay within the excavation area. It belonged to a class of farmstead that includes both settlements at Marsh Leys as well as Biddenham Loop Farmsteads 13 and 20 and the farms at Peartree Farm and Odell. All these settlements were founded or substantially re-organised at about the same time and to similar designs comprising a complex of domestic and agricultural enclosures adjoining one side of at least one major linear boundary or trackway. They differed from the earlier conjoined enclosure complexes in having a more open layout in which the enclosures were not incorporated into a single bounded complex. At Site 7 the major boundary was oriented NE-SW, and the farmstead comprised a group of at least four enclosures abutting its south-eastern side and further enclosures flanking a subsidiary boundary that extended towards the south-east, as well as two successive oval structures that may have been either agricultural buildings or palisaded enclosures. The precise function of the enclosures could not be definitely ascertained, although the range of shapes and sizes presumably reflects a corresponding range of domestic and agricultural activities. A large quantity of burnt chaff had been dumped in the ditch surrounding Enclosure 7, and presumably had been burnt within the enclosure; it is not certain, however, whether it had been used as fuel to fire hearths or ovens or represented the burning of unwanted crop processing waste. Another interesting aspect of the arrangement of the complex was the group of enclosures that adjoined the main boundary, which comprised two long, narrow enclosures alternating with two larger ones. This appeared to represent two pairs of enclosures, each consisting of one large and one narrow enclosure, and the two pairs were separated by the most substantial boundary ditch in the complex. This would seem to indicate that each pair comprised two enclosures that were functionally linked in some way, although their exact purpose is unknown, as is the reason for the juxtaposition of

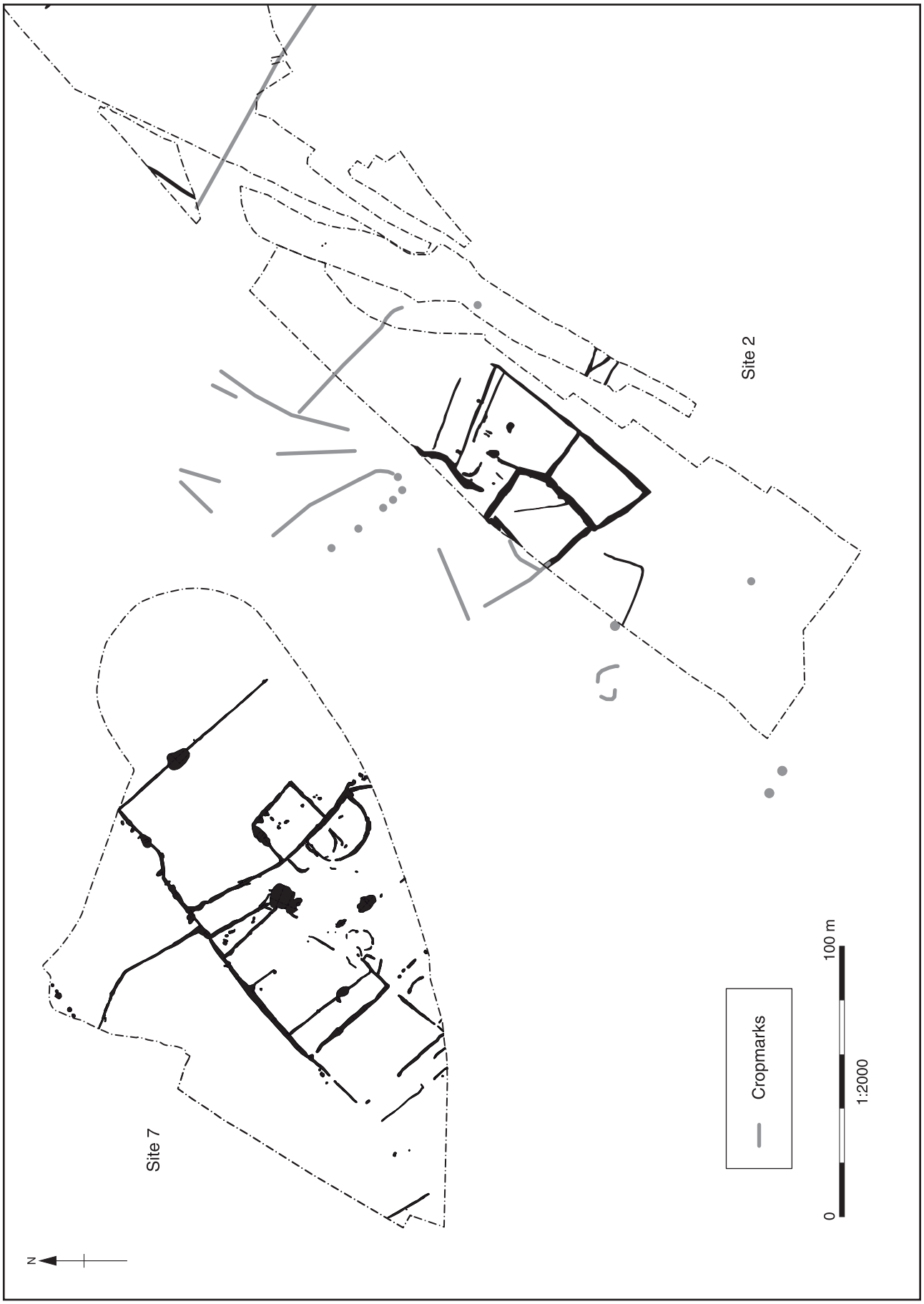


Fig. 8.5 Plans of the middle-late Roman developed farm complexes at Site 2 and Site 7

two such pairs. The complex was extended to the north-east at some point during the 2nd by the construction of a large, rectilinear enclosure. The enclosure measured 60m from north-east to south-west and at least the same distance from north-west to south-east and was not subdivided, forming a very large field comparable to the largest examples at Marsh Leys (Luke 2011, 148).

The refuse recovered from the fills of ditches and pits left little doubt that this was a domestic settlement, but no definite buildings were identified and the residential area was not identified. Pottery and bone were deposited in greater quantities in the ditches of the enclosures that flanked the subsidiary boundary, but not sufficiently so to confidently identify these enclosures as domestic, and the near absence of material from the possible oval structures indicated that they were not domestic in function. This contrasts with the situation at Marsh Leys, where two rectangular buildings were identified as well as three other possible examples (Luke 2011, 155), and at Odell, where a series of roundhouses were eventually replaced with a substantial rectangular farmhouse (Dix 1980, 16). The remains of any such buildings at Site 7 had presumably been destroyed by medieval and modern ploughing, which was evidenced by furrows that extended across the excavation area. The effects of ploughing had also severely reduced the enclosure and boundary ditches, which as a consequence were typically very slight and in places discontinuous. It was particularly noticeable that the features became shallower toward the south-western end of the excavation area, and it is not certain whether the end of the features in this part of the site represents the original arrangement or whether further remains had been completely destroyed. The similar sites were not sufficiently regular in plan to provide an indication of where the domestic buildings were likely to have been located; the domestic area at Odell was initially situated within a distinct, subrectangular enclosure but later moved to a more open part of the complex (Dix 1981, fig. 2), and at Marsh Leys the enclosures within which the buildings were set were not manifestly different from those with more agricultural functions (Luke 2011, fig.9.4). It is, of course, possible that the domestic focus lay beyond the limits of the excavation.

By the 3rd-century the ditches that defined the enclosures had fully silted up, and the only features dating from the later part of the Roman period were three large waterholes and a group of three burials. However, although the ditches were not maintained, the deliberate placement of the waterholes on the enclosure boundaries and the location of the burials alongside a boundary suggest that the interiors of the enclosures were being kept clear of obstructions. It is likely therefore that the enclosures continued in use, enclosed by hedgerows or fences that have left no archaeologically detectable trace. It is possible that each waterhole was in use for only a short period of time, as the pollen evidence from waterhole 15185 indicated that it was not kept clear of weeds, and was presumably no longer in use as a source of fresh water, by the time the initial layer of silt accumulated at its base. The disused features were then utilised as convenient receptacles in which to dispose of domestic refuse, which was presumably generated nearby, although no buildings or other incontrovertibly domestic features survived within the excavation area. Indirect evidence for buildings nearby was, however, provided by the insect assemblage in waterhole 15735, which included types that thrive in hay or other cut vegetation used as litter in buildings or stables.

Site 2

The south-western complex at Site 2 was rather more difficult to understand from the excavated evidence, as only a small part of it was exposed within the area of the excavation. The complex clearly extended to the north-west, where the geophysical survey recorded further boundary ditches. The boundaries appear to define a series of somewhat irregular rectilinear enclosures adjoining the eastern side of a substantial linear feature that may have been a hollow-way, but the features have a rather disjointed appearance, perhaps due to the nature of the clay geology, and it is difficult to escape the impression that they do not represent a complete or coherent plan of the remains in this area. In particular, it is difficult to be certain whether the site comprised a single complex of conjoined enclosures like the late Iron Age/early Roman settlement 200m to the north-east or a more open arrangement similar to Site 7. The excavated area encompassed four conjoined enclosures situated at the southern tip of the complex, and the geophysical evidence indicates that at least one similar enclosure adjoined their north-western side, possibly with larger enclosures to the north. It is clear from the small size of the artefactual assemblage that the excavated area was not used for domestic activities, and these enclosures presumably represented a peripheral area with agricultural functions, while the domestic area lay in the unexcavated part of the settlement.

The only excavated enclosure that contained positive evidence for its function had been used for crop processing. A pair of poorly preserved ovens were probably used for drying grain, although they may alternatively have been two flues from a single, larger oven. One was filled with burnt cereal chaff, representing the use of crop processing waste as fuel, and a large quantity of chaff had also been deposited in an adjacent ditch. Indeed, the quantities of wheat chaff in all the samples from this enclosure suggest that there was a large spread of waste material across the area. Close to the ovens was a partially paved hollow. It is uncertain whether this feature was originally an open hollow or the remains of a partly sunken building, and it may have been a threshing floor or a storage shed. Much

of its base comprised bare clay, but one end had been paved with a single large, flat slab of limestone measuring 1.4m by 1.1m and a mixture of smaller limestone slabs and sandstone cobbles. It is uncertain whether this mixture of surfaces was deliberate or simply the result of the opportunistic use of available materials. A similar large, flat slab of limestone was found among a dump of smithing debris within a ditch at Marsh Leys (Luke 2011, 165) and it is possible that the example at Site 2 was similarly associated with craft activity.

Buildings

Buildings were elusive on most of the sites, and the only type definitely identified was the roundhouse. One example was recorded at Site 4 (Trench 61) and two each at Site 5 and the north-eastern complex at Site 2. A small, presumably nondomestic circular structure was located at Site 4 (Trench 54) and hollow 20049 at the south-western complex at Site 2 and Structures 15742 and 15433 at Site 7 may also have been buildings, although this is far from certain.

Roundhouses are the archetypal building type of the Iron Age and Roman period and are assumed to have primarily served a domestic function (Pope 2008, 222-3). All the roundhouses at the A421 Improvements were of late Iron Age date except Roundhouse 2708/2709 at Site 2, which dated from the late 1st century AD. Each was represented primarily by a ring gully, which is likely to have been dug to catch rainwater falling from the eaves rather than representing the foundation for the wall of the building itself. Possible structural feature were associated with the buildings at Site 5, where five discrete features were situated in the vicinity of roundhouse 6021 and a single posthole lay within the footprint of roundhouse 6042. The structural character of the former group is not certain, however, as only the truncated bases of the features had survived, and they need not have been contemporary with the roundhouse as at least one other pit demonstrably belonged to a phase of occupation that preceded the building. Roundhouses in the region are in fact characterised by an absence of surviving structural features, and are usually represented only by the eaves gully (Webley 2007b, 59). The buildings within the eaves-drip gullies were presumably constructed without the use of substantial footings, and within Marston Vale the builders may have taken advantage of the availability of good quality Oxford clay to construct walls of cobb or wattle-and-daub. The sites had been substantially truncated by medieval and modern ploughing, and consequently only part of the circumference of the gully of each of the Iron Age examples survived. The only possible evidence for an entrance was at the western end of the surviving part of the eaves-drip gully at Site 4 (Trench 61), which ended in a square-ended terminal. This is somewhat at odds with the predominantly eastern or south-eastern orientation of roundhouse entrances, but such divergent orientations are not unknown. At Farmstead 2 at Marsh Leys, for example, roundhouse G57 had a south-facing entrance and roundhouse G73 faced north-west (Luke 2011, 152).

The early Roman roundhouse 2708/2709 at Site 2 was represented by a significantly more substantial eaves-drip gully than the earlier examples. It measured up to 2.25m wide and 0.56m deep. The gully was not a true circle and was particularly large, with dimensions of 17 x 15m. A survey of Iron Age roundhouse gullies in the Bedfordshire region indicated a typical diameter of 8-12m, with only a few larger examples (Webley 2007b, fig. 3.3), and the only larger roundhouse known in the region was the example at Luton Road, Wilstead, which measured 18m in diameter (Luke and Preece 2010, 153). Both larger examples date from the early Roman period, perhaps indicating a trend for larger roundhouses at this time, although there is not enough evidence to be certain of how typical these buildings were. The building at Site 2 was constructed during the second half of the 1st century AD, possibly the third quarter of the century, and the gully had been re-excavated on one occasion, but it is not known whether this was associated with an episode of repair or rebuilding of the roundhouse itself. A possible entrance was located on the north-western side, where a 1m break was present in the later circuit, but this is quite narrow for a roundhouse doorway and so may not have been the main entrance; possibly a primary entrance elsewhere on the circuit was accessed via a bridge of planks or logs with no break in the eaves-drip gully. The domestic debris deposited within the roundhouse gully makes clear its domestic function.

The structure at Site 4 (Trench 54) was situated a short distance outside the middle Iron Age enclosure and comprised a ring gully with a diameter of only *c* 2.5m, the western half of which had been destroyed by Phase 3 enclosure ditch 17719. Its small size precludes a domestic function and suggests that it was an ancillary structure, perhaps with an agricultural or storage function. A slightly larger, though still small, circular structure of similar date, with a diameter of *c* 5m, has been recorded at Bedford Western Bypass Area 1 (Albion Archaeology 2008), and a similarly sized example dating from the late Iron Age/early Roman period was excavated at Marsh Leys Farmstead 2 (Luke 2011, 155).

Evidence for buildings from the middle and late Roman period was decidedly elusive, as has been noted at other rural sites in the region (Luke 2008, 58). This could simply mean that buildings were no longer provided with eaves gullies, but alternatively the traditional roundhouse may have been superseded by other types of building that were constructed using a technique that left little trace, such as the ephemeral rectangular structures

identified at Marsh Leys (Luke 2011, 155). No buildings of this type were encountered at the settlements on the A421 Improvements, but it is possible that partially paved hollow 20049 at the south-western complex at Site 2 represented the remains of a sunken-floored building, or one whose floor had become concave through wear. A building at Yarnton, Oxfordshire, identified in similar circumstances, was represented by only a well-preserved floor surface within a shallow hollow with no surviving evidence of a superstructure (Robinson and Hey 2011, 40). A possible building surviving only as a clay surface has been recorded at Peartree Farm (Albion Archaeology 1995). Unlike the example at Yarnton, hollow 20049 did not produce a significant concentration of domestic debris, but a structural interpretation receives some support from a possible posthole at its northern end. If it is indeed the remains of a building, the paucity of material culture would indicate a non-domestic function.

The character of structures 15742 and 15433 is uncertain, but like hollow 20049 they were oval in plan. The gullies that defined them may have been foundation trenches, supporting either a wall of split timbers if they represent buildings or a fence of wooden pales if they were stock enclosures. As with hollow 20049 the absence of occupation material precluded a domestic interpretation.

Landscape

Settlement pattern

No evidence was found for permanent settlement before the middle Iron Age. Due to the wide date ranges ascribed to middle Iron Age pottery it is not possible to be certain how rapidly colonisation occurred, but the three sites of this period identified within the area of the A421 Improvements, at Site 4 (Trench 54), Site 4 (Trench 61) and Site 5, represent a quite dense distribution of settlements, and if they were typical of the area as a whole it would appear that Marston Vale was quite extensively settled during this period. This project has provided the most significant evidence for middle Iron Age settlement thus far recorded in the Vale, the only other known site being a small group of features at Marston Moretaine (Shotliff and Crick 1999, 35), but this apparent absence of remains may in part be due to the relative absence of fieldwork beyond the immediate environs of Bedford and the poor visibility of cropmarks on the heavy clay soils.

The number of occupied sites at the A421 Improvements increased from three to four in the late Iron Age, all of which represented new foundations as the sites that were occupied during the middle Iron Age were now abandoned. This coincided with the earliest occupation at several other sites in Marston Vale, at Marsh Leys (Luke 2011, 139), Wilstead (Luke and Preece 2010, 151) and Woburn Road, Marston Moretaine (Connor 2000), as well as continued occupation at Beancroft Road, Marston Moretaine (Shotliff and Crick 1999, 41), and formed part of a more general increase in settlement density that has been noted both in Bedfordshire (Dawson 2007, 66) and beyond (Cunliffe 2005, 265; Willis 2006, 107). The increase in the number of settlements would necessarily have required a greater uptake of land, presumably entailing clearance of more of the Vale's surviving woodland, although some woodland regeneration may also have taken place where settlements had been abandoned. The latter phenomenon would have provided a context for the ash identified at Site 3, as this tree requires fairly open conditions and is a coloniser of secondary woodland.

The settlements at the A421 Improvements that were occupied during the late Iron Age all continued into the early Roman period, but by the first half of the 2nd century all four had been abandoned, to be replaced by newly established settlements at Site 7 and the south-western complex at Site 2. A similar situation was recorded at both Wilstead and Woburn Road, Marston Moretaine, and although both farmsteads at Marsh Leys continued in occupation there appears to have been a major reorganisation of the landscape at this site, including the layouts of the farmsteads themselves. In fact the new layouts of the farmsteads at Marsh Leys were strikingly similar to that at Site 7, suggesting that a new model for the design of rural settlements had been adopted. These settlements each appeared to be associated with major landscape boundaries including one example that extended for at least 530m and linked Farmstead 4 at Marsh Leys with Bedford Western Bypass Area 11 (Luke 2011, 168 and fig. 9.17), and although the total number of settlements in use had been reduced compared to the early Roman period it seems probable that much of the landscape was now agricultural.

Communications

The communities that occupied the settlements within Marston Vale were, no doubt, integrated into larger social groups and exchange networks, but little is known of the routeways that connected them. The Vale was certainly off the beaten track as regards the main network of roads established during the Roman period. The principal routes that passed through Bedfordshire were Watling Street, which crossed the south-western part of the county en route from London to Chester, and a by-road of Ermine Street that crossed the eastern edge of the county, passing through Baldock, Sandy and Godmanchester, neither of which passed close to Marston Vale (Simco 1984, 63-5).

It is likely that during both the Iron Age and the Roman period rural settlements such as those within the Vale were linked by a network of less formal tracks that were of purely local significance and which have left little trace in the archaeolog-

ical record. The enclosure of parts of the landscape during the Roman period may have entailed the creation of boundaries that significantly effected movement through the Vale, preventing passage through certain areas or in certain directions and perhaps cutting off pre-existing routes. However, such boundaries can also function as routeways, channelling movement along their length and promoting the development of pathways beside the boundary earthwork (Tullett 2010, 113-4). It may be significant in this respect that the settlements established during the 2nd century at Site 7 and Marsh Leys Farm are associated with major boundaries along which such routeways may have extended. Indeed, at Farmstead 2/4 at Marsh Leys Farm these boundaries were defined by parallel ditches that presumably bounded either side of such a track (Luke 2011, 145-6), and the settlement at Peartree Farm was associated with a similar trackway (Albion Archaeology 1995). Such obvious physical evidence for a trackway was lacking from Site 7 but by analogy with these sites it is possible that a pathway extended alongside the boundary along the north-western edge of the enclosure complex, defined by ditch 15986. If this were the case, the subsequent construction of ditch 15985, which cut laterally across the earlier boundary, may have resulted in a significant reorganisation of the pathways by which the settlement was accessed.

Environment

The evidence from the geophysical survey and evaluation trenches indicated that the spaces between the settlements were more or less devoid of archaeological remains, and it is likely that they were occupied by a mixture of woodland, scrub and open pasture. The distribution of these differing environments is, however, unknown however. In addition, there may have been areas of arable cultivation that were not enclosed within archaeologically detectable boundaries. At Marsh Leys a low level scatter of pottery was recorded in the modern ploughsoil around the farmsteads that may have derived from manuring of otherwise undetectable arable fields.

The abundance of oak among the charcoal recovered from all of the sites suggests that mature oak woodland was present, a phenomenon that has been observed at other contemporary sites in Bedfordshire (Cartwright 2004, 288-90). Blackthorn and hawthorn were also common, as well as field maple, suggesting that some of the area surrounding the sites consisted of open woodland or scrub. Ash was also recorded at Site 3, and it is possible that together they formed areas of mixed deciduous woodland – oak, ash, maple and blackthorn being the staple woodland of most of the Midlands today (Rackham 2003). It is likely that much of the woodland was managed in order to provide the timber requirements of the local communities, and certainly trimmed oak log 15791, from late Roman waterhole 15735 at Site 7, appeared to be from a tree grown in managed woodland. However, the same feature also produced plank 15790, which probably came from a tree that grew in wildwood conditions, indicating that areas of natural woodland persisted at least until the early 2nd century, when this piece is likely to have been felled. The occasional fragments of willow/poplar suggest collection of wood from damp areas, and hence that some of the areas surrounding the sites may have been prone to waterlogging. Pollen evidence from waterhole 15185 at Site 7 indicated a decline in tree cover during the late Roman period, possibly representing clearance resulting in an almost treeless landscape.

The immediate environs of the settlements may have been enclosed by boundaries of several forms in addition to the ditches that formed their most obvious manifestation during the excavation. Indeed, the molluscan evidence that the ditches at Site 3 and at the south-western complex at Site 2 were themselves being grazed indicates that they did not form an effective barrier to livestock and so an additional barrier such as a hedgerow or fence would have been necessary for the enclosures to have had any practical use. The shade provided by such a boundary would explain the presence of shade-demanding molluscs in one of the samples from the outer boundary ditch of the late Iron Age enclosure complex at Site 3. The sloe/blackthorn, wild cherry, maple and ash identified in the charcoal assemblage may have derived from hedgerows, the latter two being the most common hedgerow trees in the east Midlands and the Chilterns (Rackham 2003). Evidence for two forms of boundary was preserved in waterhole 15735, comprising a group of oak fencing pales and material that may have derived from a 'dead hedge', a barrier formed by driving stakes into the ground, between which are clasped prunings of assorted light material. The molluscan evidence from Site 2, Site 3, Site 4 (Trench 54) and Site 7 indicated that the ditches held standing water, at least seasonally, as might be expected given the poor drainage of the clay substrate, but the greater distance of the A421 Improvements sites from the Elstow Brook appears to have insulated them against the rise in water levels that effected the settlements at Eastcotts and Marston Park, Marston Moretaine during the late Roman period (Shepherd 1995, 7; Chapman *et al*. 2011, 364).

Environmental evidence from the waterholes at Site 7 provided an indication of the immediate surroundings. The pollen assemblage from waterhole 15185 was characteristic of an open landscape with ruderal communities typical of habitation sites and footpaths, together with some grassland, probably used for pasture, while the insect remains indicated that waterhole 15735 was surrounded by bare, muddy ground populated by nettles. The

concentration of dung beetles in the latter feature was indicative of a dense concentration of grazing animals around it.

Agriculture and economy

All the sites investigated on the A421 Improvements were small rural farmsteads. Evidence for cultivation of cereals was identified in the form of crop processing debris that had been preserved by charring or by preservation in waterlogged conditions, and also cereal pollen recovered from late Roman waterhole 15185 at Site 7. Indirect evidence was also recorded in the form of a grain weevil in a sample collected from late Roman waterhole 15735. The remains of domestic animals were recovered from all of the sites apart from Site 9 and the evaluation at Berry Farm Borrow Area.

Evidence for agricultural activity was also provided by elements of the infrastructure of the farmsteads. Livestock may have been accommodated within the outer enclosure circuit at Site 4 (Trench 54), and the enclosure complexes at Site 2, Site 3, Site 7 and Berry Farm probably had agricultural functions, although the precise use of individual enclosures are not known. They may have been used for cultivation, as paddocks, for horticulture or any combination thereof, although the dung beetles from waterhole 15735 at Site 7 and the molluscs at Site 3 and the south-western complex at Site 2 clearly indicate that they were grazed by livestock. The middle Roman ovens and paved hollow within Enclosure 4 at Site 2 indicate that this was an area used for crop processing, and dumps of burnt crop processing debris deposited in a group of pits and hollows dating from the early Roman period at this site and in a 2nd-century enclosure ditch at Site 7 attest to similar activities at these settlements. The sickle blade from Site 4 (Trench 54) may have been used to harvest crops, and the querns from Site 2, Site 3 and Site 7 were clearly used in processing grain. In practice, it is perhaps likely that an annual cycle was implemented in which livestock were grazed on the stalks of the harvested fields, thus providing both fodder for the animals and manure for the field, and so any attempt to distinguish between fields used for cultivation and those used as pasture is artificial.

The evidence was not evenly spread among the sites, however. The majority of the animal bones came from Site 2, Site 3, Site 4 (Trench 54) and Site 7, with only insignificant quantities from the other sites, and the plant remains assemblages were restricted to Site 2, Site 4 (Trench 54) and Site 7. This is likely to reflect the character and preservation of the surviving features rather than a lack of agricultural activity at the other sites, on which only a small number of plough-truncated features survived. It is likely that all the settlements practised mixed farming regimes of cultivation and husbandry, although the relative importance of the two cannot be established with any certainty.

Cultivation

Apart from the dumps of burnt crop processing waste at Site 2 and Site 7, plant remains were generally sparse and only a fairly broad-brush impression of the arable crops grown can be established. Indeed, even soil samples from deposits that appeared to have good potential for preservation of charred plant remains frequently produced very disappointing results when processed. This is a common phenomenon at sites situated on clay geology, and is generally attributed to the mechanical properties of the resultant soils, with freeze-thaw and wet-dry cycles in particular being implicated in the physical attrition of the charred remains, until it is rendered too comminuted for collection.

Little evidence was found for the crops grown during the middle Iron Age at Site 4 (Trench 54). No deposits were uncovered that were directly associated with cultivation or crop processing and only a sparse background noise of charred plant remains incorporated incidentally into the fills of pits and ditches was identified. The preservation of this material was almost universally poor and provided little evidence for the crops from which it derived. The sickle blade recovered from enclosure ditch 17718 provided indirect evidence for the harvesting of crops, and the phytolith evidence indicated that straw, presumably derived from arable crops, was dumped into the enclosure ditches after use.

No late Iron Age features produced significant evidence for plant remains, but evidence from the Roman period indicated that the main crop grown was wheat, which, in the instances that could be identified to species, was predominantly spelt. This was the most common type of wheat grown in southern and central Britain during the Iron Age and Roman period (Jones 1991, 31-2) and similarly dominated the assemblages at Marsh Leys (Luke 2011, 162) and Biddenham Loop (Luke 2008, 63), as well as other contemporary sites in Bedfordshire such as Haynes Park (Luke and Shotliff 2004, 121), Stagsden (Scaife 2000a), and sites on the Great Barford Bypass (Poole 2007a, 153). Emmer formed a minor component of the wheat remains. This species had been the main wheat crop during the Neolithic and Bronze Age but by the Roman period probably survived only as a weed of the spelt crop. The discrete dumps of charred plant remains at Site 2 and Site 7 consisted predominantly of chaff, and so are likely to represent the disposal of crop processing waste that had been burnt to fuel ovens or hearths.

No deposits of crop-related material was recovered from the late Roman period, which is unsurprising given the limited number and range of features from this period. The evidence from nearby sites such as Marsh Leys and Biddenham Loop, however, suggests that cultivation practices are likely to have remained substantially unchanged.

Barley and oats were encountered both at Site 4 (Trench 54) and in Roman contexts at Site 2 and Site 7, albeit only in small quantities. It is difficult to evaluate the significance of these species as neither requires heat to process them beyond possibly drying a damp or 'green' crop and so they are less likely than wheat to be accidentally charred and thus preserved within the archaeological record. Barley was a common crop during the Iron Age and Roman period (Jones 1991, 23; 1996, 32) and has been recorded at Marsh Leys (Luke 2011, 162) and Biddenham Loop (Pelling 2008, 285), and so is likely to represent a crop. Most of the oats could not be identified to species and so could be the wild form, growing as a weed among other crops, but the cultivated variety was definitely recorded in a middle Roman context at Site 7.

Flax may also have been grown. Only a single seed was identified, from a middle Roman context at the south-western complex at Site 2, but the scarcity of remains of this plant may be due to the fact that, like barley and oats, fire plays no part in its processing and so preservation of charred material is less likely to occur. It was a commonly grown crop during the Roman period for the production of oil and for fibres for linen (Tomlinson and Hall 1996).

Legumes may have formed another part of the diet. Legume seeds were present at Site 4 (Trench 54) during the middle Iron Age but it was not possible to identify them to genus or species and they were present in such small numbers that it is difficult to interpret them as a potential cultivated crop. Garden pea was identified in early and middle Roman contexts at the north-eastern complex at Site 2 and a single fragment that may have been either garden pea or broad bean was recovered from a middle Roman context at the south-western complex. The quantities involved are extremely small and indicate no more than the practice of small-sale horticulture for consumption within the settlements.

Husbandry

None of the sites were occupied throughout the Iron Age and Roman period. Site 4 (Trench 54) was in use during the middle Iron Age, Site 3 and the north-eastern complex at Site 2 during the late Iron Age and early Roman period, and Site 7 and the south-western complex at Site 2 during the middle and late Roman period, although the latter site makes a relatively minor contribution to our understanding of the late Roman period. Considered together, however, they provide an indication of the changes in animal husbandry during these periods.

Cattle and sheep/goat were by far the most abundant species in all periods, but the relative importance of these two changed over time. Cattle were the most numerous species during the middle Iron Age at Site 4 (Trench 54), where they accounted for nearly two thirds of the identifiable bones. Across the A421 Improvements as a whole, sheep became increasingly abundant at the expense of cattle during the late Iron Age, and nearly reached parity during the early Roman period. This general pattern reflects trends in animal husbandry that Albarella (2007, 391) has recorded for this period in a survey of sites in the Midlands and East Anglia, but contrasts slightly with the situation at both Marsh Leys and Biddenham Loop, where the predominance of cattle was never challenged (Luke 2011, 163). From the 2nd century onward the evidence indicates a substantial resurgence in cattle, which remain predominant for the rest of the occupation of these sites and reach 81.9% of identified bones at the late Roman settlements at Site 2 and Site 7. The existing predominance of cattle at Biddenham Loop similarly increased during the late Roman period (Luke 2008, 63). This concentration on cattle made the best advantage of the local conditions, as the low-lying and relatively poorly drained clay landscape would have been well suited to pasturing cattle, whereas sheep fare less well in damp conditions. This phenomenon may form part of a regional or subregional trend, as the predominance of cattle at several sites in the Milton Keynes region has been noted previously in relation to possible specialisation in cattle breeding (Holmes and Rielly 1994, 531). Husbandry regimes a short distance downstream, to the north-east of Bedford, on the other hand, may have been rather different, as the sites on the Great Barford Bypass produced assemblages that were dominated by sheep/goat (Holmes 2007, 362).

The ageing data indicates a mixed strategy that combined slaughter of some animals for meat while other individuals were retained for their secondary products, the most important of which are likely to have been manure and traction, the latter evidenced by pathological conditions recorded from the middle Iron Age at Site 4 (Trench 54), the early Roman period at Site 2 and the late Roman period at Site 7. The paucity of evidence for dairying is consistent with results from the rest of the country that suggest that there was little taste for dairy products (Hesse 2011, 241-2). The mortality profile was fairly constant throughout all periods, suggesting that this represents traditional husbandry strategies originating in the Iron Age that continued to be practised at least until the late Roman period, when there was some evidence from the epiphyseal fusion data at Site 7 for a greater emphasis on the production of prime beef.

The bones of sheep and goat are difficult to distinguish but it is likely that most such remains came from sheep as the only evidence for goat was a single horn core from a middle Iron Age context at Site 4 (Trench 54). As with cattle the ageing data for sheep/goat was limited, but the evidence indicates no clear peak in the age of slaughter. Some were culled at the optimum age for meat (2-3 years) but a significant proportion were kept to a greater age, presumably for wool and milk and as breeding stock. First year mortalities may represent lambs that had not grown to full size but were neverthe-

less slaughtered for meat, perhaps as part of autumn/winter culls designed to manage the size of flock that required overwintering. Wool may have been a major product, but generally the strategy indicated by the mortality profile is non-intensive, providing all the commodities to be gained from sheep without specialising in one at the expense of the others. Such a system would have been easy to maintain, with little need for the provision of winter fodder, and in which most surplus animals were culled in their first year. The absence of neonates may indicate that the animals were not brought into the settlements for lambing but, as with the similar absence of neonatal calves, it is possible that this results from the poorer survival of the bones of young animals. There was no evidence in the ageing data to suggest that sheep husbandry practices varied between sites or changed over time.

Pigs were kept in small numbers for their meat, but were not a major element of the subsistence strategy, and the only evidence for domestic fowl came from the south-western complex at Site 2, where a single individual had been deposited within an oven dating from the middle Roman period. Both species were more common in towns and villas than on low status rural settlements (Hesse 2011, 233; Maltby 1997, 421), and it is possible that they were viewed as being more appropriate to urban environments than as farm animals.

The only other domestic animals for which evidence was found were horse and dog, although neither appears to have been used for human consumption. Both species were ubiquitous at all sites and in all phases, albeit only in small numbers. The horses were not normally slaughtered until they had reached an age where they are likely to have been past their prime or had debilitating injuries or illnesses, which suggests that they were kept for use as draught or pack animals. Further evidence for such a use was provided by pathologies identified at Site 7. With the exception of one distal radius in the late Roman assemblage at Site 7 all horse remains came from adult animals and this, along with the small quantity of remains, suggests that the settlements were not maintaining breeding herds but were obtaining individual adult animals when needed.

The evidence from butchery marks indicates that at Site 4 (Trench 54) the processing of carcasses was carried out entirely with knives, and that this practice continued at the late Iron Age sites. During the Roman period cleavers were introduced at Site 2 and Site 7, although only two instances were recorded at the former site. At Site 7 cleavers were used for disarticulation, although knives were also used for this task with equal frequency, and skinning, filleting and portioning were carried out exclusively with knives. The adoption of cleavers during the Roman period is a widespread phenomenon and has also been recorded at Marsh Leys (Maltby 2011, 125), Biddenham Loop (Maltby 2008, 283) and Great Barford (Holmes 2007, 336, 342, 349, 353), although at these sites marks from knives are less prevalent than at Site 7. The use of cleavers is closely associated with urban and military settings, where it probably represents professional butchers with a large turn-over of carcasses (Maltby 2007; Seetah 2006). Familiarity with these techniques presumably spread to rural sites such as Site 7 from the local towns at *Magiovinium*, Sandy and Dunstable, although contact with the military cannot be ruled out, perhaps through local men returning after military service.

Other resources

In addition to the crops and livestock maintained at the settlements, the communities of Marston Vale also exploited a wide range of resources from the landscape around them. Some of these resources are likely to have been partly or entirely managed, the most obvious examples being woodland and hay meadows.

The management of woodland during the late Roman period was attested at Site 7 by some of the worked wood that had been disposed of in waterhole 15735. The timber used for the oak fence pales is likely to have come from managed woodland, and the trimmed oak log was from the top of a small, fast-grown tree typical of managed woodland where small timber and firewood was regularly cut. The willow and poplar roundwood is likely to have originated from less formally managed willow pollard or scrub. The narrow tree-rings and straight grain of the plank from a box-like structure, in contrast, suggests that areas of wildwood were also exploited for more substantial trees. Roundwood, mostly of blackthorn-type plants, was the main source of fuel for hearths and bonfires, and probably represents a mixture of underwood collected from the woodland floor and material from hedge trimming. Oak was used for the early Iron Age cremation at Site 5, and also dominated the charcoal assemblages from middle Iron Age pit 17007 at Site 4 (Trench 54), a late Iron Age pit at Site 5 and a late Iron Age ditch fill at Site 3. These deposits are likely to represent material that was burnt in a specific activity for which oak was selected due to its longer burning properties.

Hay would have been required as fodder, particularly for overwintering livestock, and may also have been used as litter or for insulation in a domestic setting. By its nature it leaves little direct evidence, but the remains of *Craspedolepta nervosa* nymphs, which are usually found in dry grassland, were identified in samples from late Roman waterhole 15735 at Site 7, where they probably arrived on cut hay that was disposed of in this feature after being used in the settlement.

There was little evidence that the diet was supplemented through hunting. Although deer remains were found in Iron Age and Roman contexts at Site 4 (Trench 54), Site 2 and Site 7, they were mainly in the form of antler fragments on

which neither the burr or pedicle were represented, and so it it is not possible to be certain whether they derived from hunting or from the collection of shed antlers. Deer bones from two middle Roman contexts at the south-western complex at Site 2 may have come from hunted animals. It is possible that hunting was the preserve of the elite and that the inhabitants of these farmsteads were not of sufficient status to be entitled to hunt.

No evidence was found for the gathering of wild plant sources such as nuts or berries, and fish were also completely absent. Dobney and Ervynck (2007) have argued that fish was not regarded as a suitable food source by Iron Age people, and although fish become more common on sites of the Roman period, their absence from the Roman phases at the A421 Improvements, which has also been noted at Marsh Leys (Luke 2011, 163), may indicate that this attitude persisted.

Geological materials that were used in construction or in other domestic activities were obtained from a number of different sources. Both the shelly limestone that provided a flat piece of uncertain function at Site 4 (Trench 54) and the Oolitic limestone used as paving in middle Roman hollow 20049 at Site 2 and for a block of possible building stone during the late Roman period at Site 7 are likely to come from exposures in the sides of the Great Ouse Valley north-west of Bedford. A local source is likely for pebbles such as the quartzite pebble rubber from a late Roman waterhole at Site 7 or the sandstone pebbles used for the metalling of the entrance to the enclosure at Site 4 (Trench 54) and as cobbling in middle Roman hollow 20049 at Site 2. Such pebbles could have been obtained from the bed of Elstow Brook or one of its tributary streams, or from the boulder clay on the higher ground that surrounded the Vale. The geology on which the settlements were situated provided a ready source of good quality clay, which in modern times has given rise to a major brickmaking industry. In addition to its use in pottery manufacture, the main use for clay would have been as a construction material in daub and cobb structures. Extraction was recorded at the north-eastern complex at Site 2, where a group of intercutting pits were interpreted as clay quarries, and at Site 7, where clay exposed in the sides of the ditch defining Enclosure 7 was exploited, and a large, amorphous pit may also represent an area of quarrying. Waterhole 15735 at Site 2 produced some evidence that materials may have been obtained from greater distances during the late Roman period, in the form of a large slab of Totternhoe stone from the southern tip of Bedfordshire and two rotary quern fragments and a millstone fragment all in Millstone Grit, which are likely to originate from Derbyshire.

Exchange

It is difficult to assess the extent to which the production at each settlement was intended for trade rather than serving the immediate needs of the resident community. Certainly husbandry practices appear to have been designed to achieve a balance between each of the products offered by the livestock (primarily meat, traction and wool) without concentrating on a specific one, and this might suggest that the main concern was subsistence, each settlement aiming to be self-sufficient in as many products as possible. By the Roman period, if not earlier, however, the demands of taxation would have required that each settlement generate surplus produce beyond its immediate requirements.

The material culture at all the sites was rather poor, but nevertheless some of the commodities present probably arrived through trade, and presumably were exchanged for agricultural produce. Pottery is the most abundant artefact at all the settlements and may act as a proxy for the level of trade in which they were involved. During the Iron Age there is no evidence that any of the vessels were not locally produced, although the decorated copper alloy strip at Site 4 (Trench 54), the fragments of lava quern from a late Iron Age pit at Site 3 and the mid 1st-century AD brooches from Site 2 and Site 4 (Trench 54) indicate that the absence of traded goods during this period was not absolute. The lava quern is likely to have originated from the Continent, most likely Germany, although such material was widely exchanged and is quite common on sites of this period (Peacock 1980, 49). A small number of non-local vessels arrived from Verulamium and South Gaul during the early Roman period, particularly at Site 2, and the quantity increased during the 2nd and 3rd centuries to *c* 20% of the vessels in use at Site 2 and Site 7, by which time pottery was also arriving from the Nene Valley and the Alchester-Towcester area. During the late Roman period the sources of pottery became more diverse with the addition of wares from the Oxford region, Dorset, Hadham (east Hertfordshire), and Mancetter-Hartshill (Warwickshire). This increase in traded goods may be evidence for a greater integration of the settlements into wider trade networks and is an almost universal phenomenon at this time. It does not, of course, mean that the communities of Marston Vale had direct contact with the areas from which these goods originated, but suggests that they were exchanging their produce at markets where such products were available. Markets may have been located at the nearest towns at Sandy, *Magiovinium* and Dunstable, although how urban these settlements were and whether they acted as local market centres are unresolved issues.

The settlements are also likely to have been involved in more local exchange networks with the neighbouring communities around Marston Vale. It is interesting in this context that farmsteads at Marsh Leys and Kempston Church End have produced unusually substantial evidence for iron working, perhaps suggesting that they possessed

forges that provided services for the neighbouring communities (Luke 2011, 165). Evidence for pottery manufacture is also limited to a small number of sites, such as Site 3 and Farmstead 5 at Biddenham Loop (Luke 2008, 201-5), and it is possible that this too was a practice in which a few sites specialised for local trade.

Craft activities

Carpentry would have been one of the most important craft activities at all the settlements, essential in construction and also for fencing and making agricultural and other craft tools. Most of the evidence for these activities has not survived, but an assemblage of timber that had been disposed of in a disused waterhole at Site 7 provided an indication of some of the techniques in use during the late Roman period. The material was a mixed group that included a plank from a box-like structure that may have been part of a well-lining, a group of oak fence pales, pieces of roundwood and assorted off-cuts. The plank and fence pales had been cleft radially from the log and the very thin pales could only have been made with specialised tools: a 'froe' and a 'break'. The froe is a cleaver-like tool with a handle set at 90° to the blade, known from at least one Roman tool hoard (Goodburn 2011c) and the break is a simple holding device used to hold the poles or billets to be cleft. More detailed shaping had been carried out with both saws and axes.

Remarkably little evidence was uncovered for metalworking at any of the sites. While items such as the decorated copper alloy strip at Site 4 (Trench 54) and the brooches found there and at Site 2 and Site 3 were probably manufactured elsewhere and obtained through trade, it is inconceivable that rural farmsteads such as those recorded at the A421 Improvements did not have access to a smithy for more day-to-day needs, such as the manufacture, repair and ultimate recycling of agricultural tools. Four smithing hearth bottoms and a piece of what might be another were recovered from a small area of the north-eastern complex at Site 2. The material came from the upper fill of boundary ditch 2475 and from a pit that cut the ditch, and was deposited during the 2nd century, when the ditches of the enclosure complex had all but silted up. The absence of hammerscale indicates that metalworking was not carried out at this location, so the ditch was presumably being used as a convenient receptacle in which to dispose of debris generated elsewhere. It is unlikely that this material would have been transported far for disposal, however, so the metalworking may have been carried out nearby. This would have been consistent with the tendency for smithing to be restricted to peripheral areas of the settlement (Hingley 1997, 12). Smithing at the south-western complex at Site 2 during the late Roman period was attested by three hearth bottoms and a tiny amount of undiagnostic slag recovered from the fill of an enclosure ditch, again without hammerscale, but otherwise the only evidence for metalworking came from tiny quantities of slag at Site 3 and Site 7, and from the fill of a medieval furrow at Site 4 (Trench 54). Although it is possible that metalworking was carried out in areas of the farmsteads that lay beyond the limits of the excavations, such small quantities of smithing debris may indicate that it was not a major activity on these settlements. A much larger assemblage of metalworking debris was uncovered at one of the farmsteads at Marsh Leys and also at Kempston Church End, and it has been suggested that some settlements may have possessed a dedicated forge that provided iron working services for the surrounding area (Luke 2011, 165).

It is somewhat surprising that more substantial evidence was not found for the manufacture of pottery, since Marston Vale is situated on a source of good quality clay and much of the pottery assemblage came from local, though unidentified, sources. No kilns were located within any of the excavation areas but the two kiln bars that had been disposed of within an early Roman ditch at Site 3 had presumably been used in a kiln situated somewhere nearby. Three vessels at Site 7 that appeared to be wasters or seconds may indicate that potting was undertaken at this settlement also.

Animals would have been an important source of material in addition to their dietary significance. The remains of a leather shoe with a hobnail sole, of a type common in Roman Britain, was recovered from a late Roman waterhole at Site 7. It is not certain that the shoe was made at the site rather than being obtained through trade, but the piece of waste leather found with it is certainly suggestive of leather working taking place nearby, and the bone point/awl found at the same site may have been a leather-working tool. Antler working during the Iron Age was attested by sawn-off antlers at Site 4 (Trench 54) and Site 2, and similar evidence from the Roman period was recorded at Site 7, but the small number of pieces suggests that this was only an occasional activity. The only finished product was the head of a rake cut from an antler recovered from a late Roman waterhole at Site 7. Bone working was indicated by a bone point or awl from the same site, and a goat horn core at Site 4 (Trench 45) that had been chopped off mid-horn may be evidence for the working of horn.

Butchery practices have been alluded to above, but milling would also have been a regular element of food preparation. Fragments of quern were recovered from Site 2, Site 3 and Site 7 and a piece from a mechanically operated millstone was also found at the latter site (although the fragment appeared to have been brought to the settlement for use as a sharpening stone rather than indicating the presence of a mill). No hearths or ovens survived, but much of the charcoal within other features is likely to have derived from fuel used in such domestic contexts, and some of the structural fired clay may have come from clay ovens. Heat-

discoloured stones were a common find within feature fills – such as the group deposited in roundhouse gully 2709 at the north-eastern complex at Site 2 – and had probably been used as pot-boilers. A sandstone slab with a circular burnt and blackened mark on one face may have been used as a hotplate. A large proportion of the ceramic vessels were probably used for cooking, positive evidence for which was recorded on numerous vessels in the form of burning resulting from being placed on the hearth. In addition to this, a jar from Site 2 contained a burnt deposit which may be a food residue, and a vessel at Site 7 with a limescale-like deposit across its internal surface had been used to boiling water. Two white-ware mortaria at Site 7 had patterns of burning that suggested that they had been inverted over cooking vessels set on the hearth in the manner of a *testum*. In this form of cooking, reconstructed by experimental cooking from descriptions in *Apicius*, an oven is created by heaping hot embers on top of and around a vessel inverted and placed over an upright vessel (Grocock and Grainger 2006, 77-82).

Social practices

Although buildings interpreted as shrines have been excavated at Biddenham Loop and Marsh Leys Farm (Luke 2008, 227-31; 2011, 159-60), the most common form of evidence for ritual activity at Iron Age and Roman rural settlements comes from 'special deposits' – deposits of material that appear to have been placed deliberately rather than representing random dumps of rubbish. These deposits were presumably associated with religious or secular rituals that occurred at the level of the individual household or settlement, although it is clear from their relative scarcity that they were far from an everyday event, and they may represent special occasions in the life of the community that occupied the settlement. Identifying such deposits is not straightforward, but several possible examples were recorded at the A421 Improvements.

The most intriguing instance came from the ditch enclosing the north side of the early Roman cremation cemetery at Site 3, where a replica of a samian Drag. 37 bowl had been placed on the base of the ditch along with the articulated skull and vertebral column of a cow and a group of horse leg bones. The latter formed a discrete bundle and may have lain within an organic container that has not survived, while the cattle remains were deliberately placed with the vertebra aligned along the base of the ditch. Although the pot and the two groups of bones lay close together they were not in direct contact and it is not certain whether they were deposited together in a single event or represent an accumulation of material placed on separate occasions. The association of these remains with the boundary enclosing the cemetery strongly suggests that they derive from activities that formed part of the funerary ritual or from subsequent rituals commemorating the dead. Alternatively, they may represent evidence for a class of ritual activity that is increasingly being recognised at cemeteries during the Roman period that is not strictly funerary in character, although it remains uncertain whether such deposits represent commemorative rites or other forms of ritual in which the power of the dead was to be invoked (Barber and Bowsher 2000, 19-20; Booth *et al*. 2010, 504-5; Cool 2004, 457-60). It is particularly unfortunate that the 2m intervention in which the remains were exposed was the only part of this side of the enclosure ditch that was excavated, as it would be useful to know whether further such deposits existed in the rest of the feature.

The majority of the material identified as possible special deposits comprised deposits of animal bone. Inevitably there is some difficulty in distinguishing between deliberate, ritualised deposition and more mundane rubbish disposal, but a number of deposits stood out from the background noise of domestic refuse, either by virtue of the character of their contents or due to their context. An example of the latter was represented by the two skulls, one horse and one bovine, from one of the ditches that enclosed the middle Iron Age settlement at Site 4 (Trench 54). A cattle skull was similarly found in the main ditch circuit at Sywell Aerodrome, Northants (Rees 2008, 71). A second cattle skull recovered from the upper fill of the ditch may also have been a special deposit, as may cattle skulls from two other enclosure ditches at the settlement, although these instances are less certain. A further possible special deposit of a cattle skull was located on the base of a late Roman waterhole at Site 7, in association with a jar. It is possible, however, that these objects formed part of the overlying deposit, which comprises a more mixed assemblage of animal bone and pottery that represent more mundane refuse disposal.

Burials of complete articulated carcasses were very rare on the A421 Improvements, as in southern Britain more widely (Morris 2008, 39), presumably reflecting a desire to maximise exploitation of every aspect of the animal. The burial of a horse at Site 3 is therefore unusual and may represent a special deposit. It finds a parallel at Marsh Leys Farm (Luke 2011, 161). An articulated horse leg from a middle Roman ditch at Site 7 may also have been a special deposit. Dogs were a common subject for special deposits, particularly during the Roman period (Rees 2008, 153), and burials of complete skeletons were recorded at Site 2 and Site 7, as well as an articulating leg from a late Iron Age ditch at Site 3.

A possible special deposit that did not comprise animal remains was represented by two pots that had been stacked one inside the other in a small pit at Site 2 during the early Roman period. The base of a third vessel was also recovered, but its association with the first two was uncertain. A similar deposit, comprising six complete pots of late Roman date placed inside each other in two groups, was set in a beam slot or small pit at Site 8 on the Great Barford Bypass (Poole 2007a, 155).

The significance of such special deposits is difficult to determine with any certainty. Cunliffe (1992) has suggested that deposits in grain storage pits at Danebury were intended as propitiatory offerings, giving thanks for the successful preservation of the grain, while Hingley (1990, 100-1) has emphasised the association of special deposits with enclosure boundaries. It is likely that they represent a range of practices, the nuances of which have yet to be fully realised. The special deposits on the A421 Improvements came from a range of feature types. The majority were recovered from ditches, but this may simply reflect the relative scarceness of pits, particularly pits large enough to be grain storage pits (which may have been rendered impractical by the high water table and poor drainage qualities of the clay geology). The location of the two skulls on the base of the enclosure ditch at Site 4 (Trench 54), however, is certainly suggestive of a role as some form of foundation deposit associated with the establishment of the enclosure boundary. Most of the deposits represented the remains of livestock species, which would certainly be typical of the characteristically agricultural associations of such deposits (Rees 2008, 71) and could suggest an association with rites connected with the fertility of crops and livestock. The predominance of dog burials during the Roman period is somewhat at odds with this suggestion and may require a different interpretation, although it is possible that these burials represent no more than the disposal of the remains of dead animals that were of no further use, as dogs were not eaten.

Burial

Burial of the dead is one area of human behaviour that yields evidence for ritual and belief systems in an ostensibly explicit form, although in practice interpretation of this evidence is far from straightforward (Ucko 1969). The burials and other human remains from the A421 Improvements were relatively small in number but nevertheless extended from the early Iron Age to the late Roman period and broadly reflect the changes in funerary practices in the region during this period.

The cremation burial at Site 5 was the earliest feature recorded during the Improvements, having yielded a radiocarbon determination of 770-400 BC. No contemporaneous remains were identified and the burial thus appeared to be an isolated feature. It is of course possible that associated activity was located nearby, beyond the limits of the excavation, but this is entirely speculative. The apparently isolated location of this burial may be typical for such features, as the few known examples in the vicinity are generally situated either in areas that were peripheral to settlement, as at Biddenham Loop (Luke 2008, 34), or in proximity to earlier funerary monuments, as at Village Farm (Albion Archaeology 1995), the Bunyan Centre, Bedford (Steadman 1999, 29) and Broom (Cooper and Edmonds 2007). It is also possible that the ostensibly isolated location at Site 5 held some significance to the community that carried out the burial, and the placing here of these remains may itself have formed part of the process of imparting significance to this place. Funerary practice during the early part of the Iron Age is at present poorly understood and may have been quite varied (Dawson 2007, 62), but simple cremation burials like that at Site 5 and the others mentioned above appear to have formed a distinct, though perhaps not common, element of it. The quantity of bone recovered from the burial at Site 5 was very small, amounting to only 96.5g, and represents only a small proportion of the total produced by cremating a complete body, which McKinley (2000, 404) has calculated as 1000-3600g. The feature had certainly been truncated by the effects of medieval and modern ploughing but it is uncertain whether this had resulted in the loss of the majority of the cremated remains or whether only a token amount of material from the pyre had been collected for burial. In the latter case, the presence within the burial of bones from all parts of the body may indicate that some care was taken in the selection of the bone for burial.

Evidence for activity dating from the middle and late Iron Age was recorded at every site on the A421 Improvements apart from Site 7, but no formal burials from this period were identified. This absence of burials is characteristic of the period in the Bedfordshire region (Dawson 2007, 65) as across much of Britain (Cunliffe 2005, 543), and suggests that mortuary rites took a different form, which did not involve the creation of a grave in the conventional sense. Disarticulated human remains, on the other hand, often comprising no more than single bones or bone fragments, are a common discovery from settlements of this period, and these remains have been interpreted as evidence that the corpses of at least part of the population underwent a rite that involved deliberate defleshing in order to reduce the remains to dry bones (Carr and Knüsel 1997). On the A421 Improvements, disarticulated human bones were recovered from non-funerary features at Site 4 (Trench 54) and at Site 5. At Site 4 (Trench 54) the middle part of the shaft of an adult femur was recovered from the middle fill of enclosure ditch 17345 during the evaluation stage of the investigation, and during the excavation stage a group of five skull fragments were recovered from the upper fill of enclosure ditch 17719. The remains from Site 5 comprise part of the shaft of an adult human right femur from pit 109105 and the upper two thirds of a human left femur from ring gully 6021. In this instance the ring gully cuts the pit, indicating either that both bones were originally deposited in the pit and the left femur was subsequently disturbed when the ring gully was dug or that this location within the settlement was used for the deposition of human remains over an extended period. The bone from the ring gully was much

smaller and less robust than the piece from pit 109105 and so it is unlikely that they came from the same individual. Similar deposits have been recorded at Biddenham Loop, where skull fragments were found within the fills of an enclosure ditch at Farmstead 2 and in two pits at Farmstead 3 (Luke 2008, 44), and at Topler's Hill, where a pit contained two fragments from a humerus (Luke 2004, 48). A severed head was deposited in a well at the farmstead at Odell (Dix 1981, 22). The presence of these bones on sites that are otherwise domestic in character is unlikely to be coincidental, and indicates that either the process of excarnation occurred within the settlement or that the remains of individuals who had been excarnated elsewhere were brought into the settlement, perhaps for use in religious rites or to be curated as relics. What is less certain is whether their eventual deposition in pits and ditches was deliberate, forming a particular example of the ritual deposition within settlements discussed above, or whether their inclusion in the fills of these features was incidental. The fragmentary state of the bones found at Site 4 (Trench 54) and Site 5 might argue that they were incorporated accidentally, perhaps mixed in with the soil with which the features were filled, but several authors (Cunliffe 2005, 543; Fitzpatrick 1997b, 82; Hill 1995, 105-8) have discussed the similarities in the treatment and deposition of human and animal remains in special deposits, and have suggested that even individual human bones should be interpreted as deliberate deposits. The limited range of bones found in the deposits may be evidence for the selection of specific elements for burial. The deposition of fragments of skull at Site 4 (Trench 54) and Biddenham Loop may have been associated with the importance of the head in Iron Age belief (Aldhouse Green 2001, 93-110), or the skull and long bones may simply have been the most easily recognised elements, used as a token to symbolise the entire individual (Wilson 1981, 150).

Burial of a more formal and more easily recognised type reappears on the A421 Improvements during the late Iron Age, in the form of a possible cremation burial at Site 3. The remains comprised a very small quantity of cremated bone, amounting to only 0.2g, which was associated with an almost complete, though fragmented, pedestal jar and a large jar with a perforated base, all of which had been deposited within an enclosure ditch. The latter vessel would have been a suitable size for use as an urn, and pedestal jars were commonly placed as ancillary vessels, so this group may well represent a disturbed burial. The only identifiable bone was a fragment from a phalanx, the size of which suggested that it came from an adult. The deposit also included 6g of burnt animal bone that may be the remains of an offering that was placed on the pyre, but the fragments were too small to permit identification to species. It is not certain whether this group represents an *in situ* burial that had been placed within the ditch silts and has been disturbed by subsequent ploughing, or whether it was deposited in the ditch in the fragmentary condition in which it was found, perhaps having been disturbed from an original place of burial elsewhere. A contemporary burial has been recorded nearby at Beancroft Road, Marston Moretaine, where the cremated remains of an adult were interred in an urn of indeterminate form accompanied by two jars as accessory vessels (Shotcliff and Crick 1999, 35-5). A similar cemetery comprising four urned and two un-urned cremation burials has been excavated at Marston Park (Chapman *et al.* 2011, 364). These burials appear to owe nothing to the tradition of cremation burial that existed in the region during the early Iron Age, typified by the example at Site 5, but instead represent the introduction into the area of a new form of cremation rite during the 1st century BC and the 1st century AD. As such they form part of a wide range of novel practices and items that arrived at this time, including coinage, new ceramic forms and new forms of metalwork, which together provide evidence for widespread changes in late Iron Age society associated with much closer contact with the continent (Cunliffe 2005, 600-5; Dawson 2007, 65; Hill 2007).

Evidence for cremation burial dating from the early Roman period was provided by a small cremation cemetery of four burials located within a triangular enclosure at the edge of the enclosure complex at Site 3. Similar small cremation cemeteries dating from the late 1st-early 2nd century are known at Marsh Leys, where Farmstead 2 was associated with a group of seven burials (Luke 2011, 158) and Biddenham Loop, where a cemetery comprising 16 cremation burials was situated 60m from Farmstead 6/8 and groups of two and three burials were associated with Farmstead 5 (Luke 2008, 51). All these cemeteries were situated in peripheral locations, at the edge of, or a short distance from, the settlements with which they were associated, and this arrangement is part of a tradition that has been recognised elsewhere in southern Britain (Pearce 1999, 153-4). The cemetery at Site 3 differs from these other nearby examples in that it is set within a ditched enclosure. The central location of the burials within the enclosure, and the absence of other features, suggest that it was an area specifically set aside for burial. This would certainly be consistent with the absence of domestic or other mundane activity indicated by the particularly small assemblages of pottery and animal bone recovered from the enclosure ditches (Biddulph, Chapter 3). The general paucity of material from this area also emphasises the unusual nature of the deposition of the bowl and cattle and horse bones placed in ditch 3344 (above). The clearest parallels for such a cemetery enclosure have been found on the Great Barford Bypass, where the early Roman cemeteries at Site 4 and Site 8 were both bounded by ditches (Poole 2007b, 88 and 123). The absence of

ditched enclosures at the other cemeteries need not imply that they were not clearly defined, as their repeated use demonstrates that they formed areas that were reserved exclusively for burials.

The burials appear to have been interred over a period of little more than a generation, burials 3030, 3031 and 3050 containing vessels that dated from the second half of the 1st century and the group from grave 104802 dating from the later part of that period or the early 2nd century. They exhibited a marked consistency in burial rites, each containing the cremated remains of a single adult buried within a ceramic urn and accompanied by two accessory vessels, except for burial 3050, which included a single accessory vessel. The female in burial 3030 was the only one of the group whose sex could be established. The accessory vessels were predominantly dining forms, comprising a beaker and a platter in burial 3030, a similar combination in burial 3031 and a bowl and a flagon in burial 104802. Insufficient survived of the vessel in burial 3050 to enable its form to be identified. They exhibited a range of fabrics, including coarse reduced wares, white ware, oxidised ware, and samian ware. This range of forms and fabrics contrasted markedly with that of the rest of the pottery from the site, which was dominated by greyware jars, as is usual for a rural farmstead of this date. This suggests that vessels associated with dining were deliberately selected for deposition with the burials, either because they were used during the funeral, as part of a funerary meal, or for symbolic reasons associated with provisioning the deceased for the afterlife (Biddulph 2002). A similar contrast between the funerary and non-funerary pottery has been noted at the cremation cemetery associated with Farmstead 6/8 at Biddenham Loop (Luke 2008, 52), as well as at Sites 4 and 8 on the Great Barford Bypass (Stansbie 2007, tables 8.27-30), and at the 2nd and 3rd-century phases at Ruxox (Dawson 2004, 131-43; Parminter 2004a, table 9.19). The preference for dining vessels is not a universal trait, however. Although the assemblage from graves at Biddenham Loop differed from that at Site 3 it included a wider range of types, including those recorded at Site 3 but with jars also present and a higher proportion of bowls (Luke 2008, 52). Jars were also well represented at the similarly dated cemetery at Great Barford Site 8 (Stansbie 2007, 248-9).

In two of the burials beakers had been used for the cremation urn rather than the more usual jars, but both beakers were quite large and were adequate to the task. There is less evidence for deliberate selection of the vessels used as urns, which unlike the accessory vessels are more utilitarian types that were commonly found among the non-funerary pottery. This also appears to have been the case at Marsh Leys (Luke 2011, 158) and Biddenham Loop (Luke 2008, 52).

Further evidence for the provision of food as part of the funerary rites was provided by a carpal or tarsal from a large mammal and a fragment from a medium mammal long bone which were mixed in with the cremated remains in burial 104802. Both bones were burnt and may represent the remains of offerings that had been placed on the pyre and were collected accidentally along with the rest of the remains for burial.

During the same period, the remains of a perinatal infant – consisting of part of a humerus and a rib fragment from fill 2467 and a small fragment of cranial vault and part of a tibia from fill 2468 – were buried in pit 2465 at Site 2. The remains of infants have been recorded at several other sites in the area: the partial skeleton of a human foetus formed part of a special deposit within the fill of an early Roman enclosure ditch at Biddenham Loop Farmstead 5 (Luke 2008, 55), and four contemporaneous infant inhumations were recorded at Great Barford Site 8 (Poole 2007b, 127). These unburnt infant remains contrast with the contemporary cremation burials, which were all of adults, and suggest that the rite of cremation was considered to be inappropriate for such young children. This is a pattern that has been observed more widely in Britain at this time (Philpott 1991, 101), and is also mentioned by Pliny in reference to burial practices in Italy (*Nat. Hist*. VII, 15).

Evidence for funerary practice during the middle and late Roman periods was confined to Site 7. A group of eight fragments of burnt bone recovered from enclosure ditch 15753 provide evidence for the continued practice of cremation during the 2nd century, although no formal burials of this date were uncovered.

Three inhumations, all of adults, were recorded. Grave 15230 contained a Nene Valley colour-coated ware beaker that dated from the late 3rd-early 4th century, and the spatial proximity of the other burials suggested that they should be of a similar date. They were, therefore, contemporary with the three large waterholes that represent the final phase of activity on the site, and were dug some time after the final silting of ditch 15985, beside which they were located, although it is possible that the boundary with which the ditch had been associated was still defined by a surface feature such as a bank or hedge. They had been severely effected by medieval and modern ploughing, particularly grave 15341, in which only the torso and left arm survived. None was buried in a coffin. Two burials were of females aged over 30 years and the individual in burial 15230 was a probable male of undetermined age. All three were buried in extended positions, although the female in grave 15061 lay on her right side. The latter individual was interred in a large, subcircular pit rather than than the more conventionally shaped graves that were provided for the other burials. On her right arm she wore a copper alloy bracelet or armlet of a 1st-century form, which must have been at least 200 years old at the time of the burial. The armlet was of a type that Crummy (2005, 96-101) has suggested may have been *armillae*, military awards for soldiers

rather than jewellery for women, although this is not certain. Regardless of whether this was the case, or indeed whether the community living at Site 7 during the late 3rd-early 4th century would have recognised such an award, the object may have been a treasured heirloom. The location of these burials beside a boundary ditch is typical for late Roman burials on rural sites (Esmonde Cleary 2000, 137-8; Pearce 1999, 153-4), and the contemporary burials at Marsh Leys (Luke 2011, 159) and Biddenham Loop (Luke 2008, 62) lay in similarly peripheral locations, beside boundaries or in the corners of fields.

The small number of burials recorded on the A421 Improvements is clearly insufficient to account for more than a very small proportion of the population of the settlements with which they are associated. In many cases it is likely that further burials still lie undisturbed in areas that were beyond the footprint of the Improvements and so were not subject to excavation. However, the results from other sites in the vicinity where more substantial areas have been excavated, such as Marsh Leys, Biddenham Loop and Bedford Western Bypass, suggest that such additional burials are unlikely to increase the number to any substantial degree. The small number of burials appears to be a genuine phenomenon, and indicates that throughout most, if not all of the period represented by these sites the remains of most of the population were disposed of in a way that has left no archaeologically identifiable trace. The disarticulated bones at Site 4 (Trench 54) and Site 5, which appear to result from excarnation, may be evidence that this rite was widely practised, and that these few remains were deposited, whether deliberately or accidentally, within archaeological contexts while those of most of the population were not (although other explanations are possible, including burial in rivers or cremation followed by the scattering of the ashes). Even when formal cremation burial was practised, during the early Iron Age and again later during the late Iron Age and early Roman period, the small numbers of burials recorded suggests that only a minority of the population was afforded this rite, and that excarnation or some other undetectable form of disposal continued to be the norm for the majority. The continued practice of excarnation into the Roman period would also explain the source for the disarticulated human bones recovered from five non-funerary deposits at Marsh Leys (Luke 2011, 161).

The living and the dead

Throughout the Iron Age and Roman period the dead were very much part of the day-to-day lives of the inhabitants of these rural settlements within Marston Vale, as they were for similar communities throughout Britain. The presence of disarticulated bones at the middle Iron Age settlement at Site 4 (Trench 54) is likely to indicate either that excarnation was carried out within the settlement or that the excarnated remains, or part thereof, were brought into the settlement, perhaps to be curated as relics, a constant reminder of the deceased individual and of the link between the current generation and the ancestors. Furthermore, the deposition of some of these remains within the fills of the ditches that defined the enclosure may have been intended to make them an integral part of the fabric of the settlement.

A change in the relationship between the living and the dead may have been signalled by the adoption during the late Iron Age and early Roman period of cremation. This new rite appears to have been reserved for only part of the population and so, for the first time, burial practice created a division in the rites afforded to the dead that perhaps mirrored a distinction in status in life. If excarnation was indeed still practised, there is no evidence that the resultant remains were deposited within the settlement. Cremation burials, in contrast, were very visible in the landscape of contemporary settlements, forming cemetery areas – whether enclosed as at Site 3 or open as at Marsh Leys and Biddenham Loop – that were clearly distinct from areas of more mundane use which were located in sufficient proximity to areas of domestic occupation to have been encountered on a daily basis. No direct evidence for grave markers – such as postholes associated with the burials – was found, but the clustering of the burials and the absence of intercutting of graves indicate that they were marked in some way on the surface. This may have enabled the graves of named individuals to be recognised, enabling the dead to retain their individual identity and thus emphasising the links between the living and named ancestors (Esmonde Cleary 2000, 137). It is possible that the deposition of the dead in such clearly defined and visible locations formed part of a strategy in which the burials of the ancestors served to legitimise claims to ownership of the land, particularly as the area had only been intensively colonised relatively recently. In this case, the apparent absence of such cemeteries after the early 2nd century may indicate that this was no longer necessary in the more developed landscape of the middle Roman period, or alternatively that changes to tenurial arrangements had rendered such claims inappropriate, perhaps by reducing these rural communities to the status of tenants (below).

During the late Roman period, when cremation was superseded by inhumation as the main form of burial, 'managed cemeteries' became the norm at urban centres (Thomas 1981) and even at smaller nucleated settlements such as the nearby 'planned village' at Kempston (Dawson 2004), but on rural farmsteads burials seem to have been more dispersed (Pearce 1999, 153-5). This is demonstrated by the three graves at Site 7, as well as the burials at Marsh Leys and Biddenham Loop, which tend to be more dispersed and isolated, and certainly do not form the sort of definite cemeteries that characterised the earlier period. As a result, these burials

appear to be more fully integrated into the landscape of enclosures and ditches associated with each settlement, and although they may no longer have played a part in establishing tenurial rights, they would still have been encountered and acknowledged on a regular basis and no doubt served as important landmarks. The significance that the community still attached to their ancestors is demonstrated by the armlet buried with burial 15061, an heirloom that served as a physical reminder of the generations of owners who had worn it previously, and, if is indeed an *armilla*, perhaps of a specific individual who was awarded this honour two centuries previously.

Status, identity and 'Romanisation'

The settlements investigated at the A421 Improvements were all situated toward the lower end of the social scale and comprise rural farmsteads in contrast to the hillforts, oppida, villas and towns with which the elite of Iron Age and Roman society are typically associated. The scale of the sites suggest that each was occupied by a single family or kin group and their dependants, and the structural, artefactual and ecofactual evidence indicates that they were primarily involved in subsistence farming. The character of the settlements was typical of the region, and their material culture was unexceptional and predominantly utilitarian, with little evidence for exotic imports or luxury goods. Like most such communities, they were essentially conservative, with an adherence to traditional practices. It may, nevertheless, be possible to detect variations in status and cultural identity between settlements and over time.

The greatest variation in settlement form was found in the middle Iron Age, comprising open settlements at Site 4 (Trench 61) and Site 5 and the enclosed settlement at Site 4 (Trench 54). This is clearly a distinction that requires explanation. The absence of enclosures around the former sites suggests that such features were not necessary for reasons of security, either against hostile forces or wild animals, and the association of enclosure ditches with ritualised deposition, both at Site 4 (Trench 54) and elsewhere, indicates that they were acknowledged to be of more than mere practical significance. Bowden and McOmish (1987, 77) have argued that enclosure boundaries could be used to 'enhance the prestige of the settlement and its inhabitants', and such an interpretation could certainly be envisaged for the Phase 3 earthworks at Site 4 (Trench 54), which were constructed on a much more massive scale than the earlier circuits. Indeed, the features forming this phase of the enclosure seem to have been designed specifically to provide the eastern side of the settlement with a monumental façade, and to emphasise the eastern entrance, which was flanked by in-turned ditch terminals in an arrangement more akin to those found at hillforts than at rural farmsteads. Status need not, however, be equated in any direct or straightforward way with rank, and other authors have stressed that the symbolic significance of settlement enclosures may be more nuanced, representing the corporate identity and independence of the occupants (Hingley 1990; Rees 2008). The farmsteads of the late Iron Age and Roman period exhibited less evidence for variation in settlement form. It is possible, however, that the bounded form of the late Iron Age/early Roman complexes at Site 2, Site 3 and Berry Farm correspond to the relative isolation and perhaps independence of the occupants, whereas the later farmstead at Site 7, like the two neighbouring settlements at Marsh Leys and the farmstead at Area 11 of Bedford Western Bypass, appears to have been more fully integrated into a landscape connected by a network of major linear boundaries (which may mean that they were integrated into a wider community).

Little artefactual material was recovered that could provide evidence pertaining to issues of status and identity, and this paucity of material goods is likely to be indicative of the generally low status of the settlements and their relative lack of access to trade networks and luxury goods. It should, however, be cautioned that at none of the sites was the full extent of the settlement excavated and only at the north-eastern complex at Site 2 was the domestic focus identified. It is possible, therefore, that the full range of items deposited at the sites may not be represented in the excavated assemblage. The near absence of coins is particularly marked, with only six recovered in total compared to 44 at Marsh Leys Farmstead 3/5/7 (Guest 2011, 117). The paucity of 3rd and 4th-century coins, and their complete absence from Site 7 despite evidence that deposition continued there into the 4th century, is especially unusual as low value coinage was widely used at this time and is a common site find. It may suggest that coins were little used at these settlements. During the Iron Age, exchange is likely to have been embedded within social relations as a monetised economy had not yet been developed. Such traditional arrangements are likely to have continued into the early Roman period, but the lack of evidence for coin use during the later part of the period is unusual, even at rural farmsteads such as these. A similar situation was recorded at Marsh Leys Farmstead 4, where only three coins were recovered – in contrast to the numerous finds of coinage at the neighbouring farmstead. It is unclear whether the paucity of coinage indicates that exchange was still to some extent organised along traditional lines at these settlements or whether it is a reflection of their poverty, but if they were not using coinage to the same extent as most of their contemporaries, their access to markets and to traded goods would have been correspondingly restricted.

A comparison of the pattern of pottery use during the Roman period has been shown to correlate broadly with different site types and may provide a useful indication of their relative status

(Evans 2001; Willis 1998). The dominance of jars over more specialist dining forms recorded at the Improvements sites is typical of such rural farmsteads and contrasts with the values found at higher status settlements such as villas and military and urban sites. The absence of amphorae from the Improvements sites is also a typical trait of low-status rural settlements (Evans 2001, 33). From the 2nd century onward, Site 7 differed from this pattern, exhibiting a much lower use of jars than the contemporary occupation at Site 2 or at Great Barford Site 8. The overall percentage of continental imports at each site remained low at all the sites, amounting to 3% of the pottery assemblage at Site 7 and 2% at Site 2, the latter figure being identical to that recorded at Marsh Leys (Luke 2011, 166). The north-eastern complex at Site 2 produced an unusually high proportion of decorated samian ware, which at 17% compares well with the villa at Bancroft. This anomaly may, however, be a result of the small sample size at Site 2. The corresponding figure for Site 7 is 14% and is similar to those from other rural sites in Bedfordshire and the Milton Keynes area.

The conservative character of most of the pottery assemblages represents a continuation during the Roman period of native dining habits that had their origins in the Iron Age, with only a gradual adoption of more specialised dining wares. The evidence for the diet of the communities occupying these settlements similarly indicates a persistence of traditional practices with little evidence for the adoption of exotic foodstuffs. The animal bone assemblages at all of the sites were dominated by cattle and indicate that beef provided the bulk of the meat component of the diet, particularly when allowing for the greater meat weight yielded by cattle compared to other species. This pattern of consumption was established at Marston Vale during the middle Iron Age, as is demonstrated by the animal bone assemblage at Site 4 (Trench 54), and held sway throughout the Roman period. As has been discussed above, there was little evidence that the diet was supplemented through hunting. The deer remains consisted largely of fragments of antler which could have derived from hunting or from the collection of shed antlers, although deer bones from two middle Roman contexts at the south-western complex at Site 2 are more likely to have come from hunted animals. The remains of deer were completely absent from Marsh Leys (Luke 2011, 163), and only very small quantities were found at Biddenham Loop (Maltby 2008, 239, 284). It is clear from the finds at these sites that deer lived in Marston Vale during both the Iron Age and Roman period, and the paucity of evidence for the exploitation of so obvious a food source suggests that hunting may have been suppressed by taboo or legal restrictions. Villas often produce a relatively large number of bones from wild fauna (King 1991, 18) and evidence from writing tablets at Vindolanda depicts hunting as a popular leisure activity among the Roman elite (Mattingly 2006, 184). It is, therefore, possible that the communities who occupied the farmsteads at Marston Vale were not of sufficient status to be entitled to hunt. If this were the case, it is even possible that the bones at Site 2 provide evidence for poaching.

The burials at Site 3, Site 5 and Site 7 were of fairly common types and did not include more high status forms such as the Welwyn-style cremation burials that have been recorded at Old Warden, Stanfordbury and Felmersham (Simco 1973, 10). Although they contained the remains of individuals who had been given different burial rites to the rest of the community, this is likely to indicate no more than that they had been the head of a household or were members of the principal family in the settlement.

No evidence was found for disruption associated with the Roman conquest. The settlements that were occupied during the early part of the 1st century AD, at Site 2, Site 3, Site 5 and Berry Farm, all continued through the rest of the century apparently untouched by military and political upheavals elsewhere, although it is possible that social disruption occurred that was of a kind not easily detected archaeologically. When evidence for the Roman presence did appear, perhaps after a time lag (although the available dating evidence is not precise enough to be certain), it primarily took the form of the introduction of non-local pottery, particularly imports from South Gaul and romanized forms made in the Verulamium region. These types initially formed only a small proportion of the pottery at these sites and presumably represent the adoption by these communities of a small number of novel forms alongside the much larger quantity of traditional, locally made wares that continued to be used. Over the course of a generation or so the proportion of Roman wares – that is wheel-made, kiln-fired pottery – became dominant and by the early 2nd-century pottery of the late Iron Age tradition had been almost completely replaced. The adoption of romanised forms of pottery no doubt serves as a proxy for the introduction a much wider range of less robust goods for which direct evidence has not survived.

The most significant changes resulting from Roman rule that directly effected the communities of Marston Vale are likely to have been those pertaining to land ownership. This may have involved the re-allocation of land and the replacement of traditional systems of ownership with new arrangements based on Roman law, as a consequence of which some individuals would have found their status down-graded to that of tenants while the status of others correspondingly increased (Mattingly 2006, 354-5). The number of settlements in occupation in Bedfordshire appears to have decreased during the Roman period (Dawson 2007, 74), and this phenomenon presumably indicates that ownership of the land was being concentrated in the hands of a smaller proportion of the popula-

tion. It is difficult to definitely identify such tenurial changes archaeologically, but it is striking that the settlements that were occupied at the time of the conquest were all abandoned at the end of the century, or early in the 2nd century in the case of the north-eastern complex at Site 2, with new settlements established at Site 7 and the south-western complex at Site 2. At about the same time, the settlements at Marsh Leys and Wilstead also underwent substantial reorganisation (Luke 2011, 139; Luke and Preece 2010, 152). If these disruptions were indeed a consequence of changes in tenurial arrangements following the conquest the delay of a generation or two between the conquest, and the reorganisation of the settlement pattern may indicate that native traditions of ownership were not replaced immediately or that the ramifications of such changes took some time to take effect.

Historical trajectories

The aim of this section is to summarise the results of the investigations and to attempt to bring them together to construct a narrative history of the communities whose remains were uncovered, albeit an inevitably partial and imperfect one.

Before the Iron Age

The earliest evidence for human activity came from the worked flint that was recovered in small quantities from most of the sites. Much of this material was undiagnostic but a distinct late Mesolithic/early Neolithic element was identified that provided evidence for low-level but fairly widespread activity during this period. The precise nature of this activity is uncertain, as the flint derived entirely from residual contexts within later features or from the ploughsoil. No features of this date were identified, but the quantity of material recovered was clearly not sufficient to represent large-scale or long-term occupation. A similar situation prevailed at Marsh Leys (Luke 2011, 139). The absence of occupation is perhaps not surprising as the flat clay vale is very much unlike the topographic situations that were preferred for settlement at this time, which were most commonly either riverine sites immediately above the floodplain or good vantage points (Luke 2007, 26). Although Site 2 was situated in such an elevated location, overlooking the south-western tip of the Vale, the assemblage of flint was no greater than that recovered from Site 4 (Trench 54), within the Vale. The ephemeral nature of the evidence for activity of this period contrasts with the situation within the Great Ouse Valley, where flint concentrations recovered during field artefact collection have indicated the presence of several camps at Biddenham Loop (Luke 2008, 19-20), as well as individual examples at Bedford (Dawson 1988), Kempston and Clapham (Dawson 2000a, 47) and further down stream at Roxton (Taylor and Woodward 1985, 108 and 139). This contrast in the scale of occupation probably reflects the character of the environment. Although no studies of the palaeoenvironment within Marston Vale have been carried out, comparison with other parts of southern Britain suggests that its heavy clay soils are likely to have been dominated during prehistory by deciduous woodland, perhaps with alder carr in wetter areas (Scaife 2000b, 20). It is likely that the material at Marston Vale represents the residue of short-term, possibly seasonal, visits by hunting parties or other task-groups that ventured into the Vale from communities based at the camps along the river.

No evidence was identified for activity that could be securely attributed to the period between the late Mesolithic/early Neolithic period and the Iron Age, and this apparent lacuna reflects a pattern seen across much of the claylands of the south Midlands (L Webley pers. comm.). To some extent this could result from a failure of evaluation methodologies that typically rely on aerial photography, geophysics and low percentage evaluation trenching to detect the dispersed and ephemeral remains of sites of this period, which may lack the substantial dug features that characterise Iron Age and Roman settlements. However, the contrast with other clay landscapes in southern Britain, such as Essex, which have produced more substantial evidence for Bronze Age activity (eg Powell with Biddulph 2007), may indicate that these areas, including Marston Vale, were not used for permanent settlement at this time.

Middle Iron Age colonisation

Plentiful evidence has been found for occupation of the Great Ouse Valley during the early part of the prehistoric period but Marston Vale does not appear to have been colonised until the middle Iron Age. The early Iron Age cremation burial at Site 5 reminds us that the area was not *terra incognita* before this, although no evidence for earlier settlement has yet been found and it may have been only temporarily visited by transhumant or other mobile groups. The middle Iron Age colonisation is consistent with a wider pattern observed throughout the east Midlands of the river valleys filling up and settlement spilling over at this time into the clay areas beyond (Cunliffe 2005, 265). The precise origins of the settlers in Marston Vale are not known with any certainty. Although the simplest suggestion is that they came from the nearby part of the Great Ouse Valley, Hill (2007, 23-4) has suggested that infilling of vacant or sparsely populated areas may alternatively have occurred through people moving over longer distances. Consideration of such issues is hampered by the homogeneous character of contemporary material culture, particularly pottery, which is very similar over much of the east Midlands.

The colonisation of the Vale was characterised by individual farmsteads that were probably relatively self-sufficient economically, practising mixed farming regimes, although perhaps with a greater

emphasis on raising cattle in order to better exploit the natural characteristics of the Vale. The landscape may still have been substantially wooded, which would be consistent with Speed's (2010, 39) suggestion that irregular settlement enclosures such as that at Site 4 (Trench 54) are characteristic of new settlements established in largely wooded environments, in contrast to the more regular forms adopted by settlements that were fitted into landscapes that were already organised. Both open and enclosed settlements were recorded, and it is possible that the ditches that surrounded the settlement at Site 4 (Trench 54), and the items of decorative metalwork that were found at that site, were evidence that the inhabitants were of higher status than those occupying the open settlements at Site 4 (Trench 61) and Site 5.

Late Iron Age settlement expansion and the arrival of Roman rule

None of the three settlements that had been established at the A421 Improvements during the middle Iron Age continued to be occupied into the late Iron Age. This contrasts with the more typical trend for settlement continuity observed elsewhere in Bedfordshire and further afield (Dawson 2007, 67; Willis 2006, 107), perhaps suggesting some purely localised process of settlement dislocation occurred during the 1st century BC. It is interesting to note that, in contrast to the situation during the earlier period, there is little evidence for status distinctions between the settlements occupied during the late Iron Age and Roman period, although the significance of this is unclear. The late Iron Age settlements within Marston Vale were more numerous than their middle Iron Age predecessors, and were all new foundations at previously unoccupied locations, both at the A421 Improvements and elsewhere in the Vale at Marsh Leys (Luke and Preece 2011) and Wilstead (Luke and Preece 2010). The three late Iron Age settlements on the A421 Improvements and the site at Wilstead were of a new type that was added to the landscape in the form of farmsteads composed of complexes of conjoined enclosures. The multiple enclosures at each of these sites presumably represent the exercise of greater control over landuse, perhaps associated with more intensive agricultural strategies. None of the settlements appeared to have been materially affected by the imposition of Roman rule and all continued unaltered into the second half of the century.

Reorganisation during the 2nd century

When change came to Marston Vale, a generation or two after the Roman conquest, it entailed a wholesale reorganisation of the landscape. The existing farmsteads on the A421 Improvements were abandoned around the end of the 1st century or early in the 2nd century and in their stead two developed farm complexes were constructed. At about the same time the two farmsteads at Marsh Leys were reorganised along similar lines and that at Wilstead abandoned. Unlike the earlier farmsteads, the new settlements were not individual, isolated settlements, but were integrated into a complex of linear boundaries that subdivided the Vale into an organised landscape. This phenomenon could be viewed as the culmination of a process of agricultural intensification that started in the Iron Age and accelerated during the Roman period, with progressively larger areas of land being enclosed for agricultural use in response to a combination of a growing population and increased taxation. The 2nd-century arrangement remained in place until the late Roman period, when the settlements were abandoned. The precise date of this is uncertain, although it appears to have occurred during the early 4th century. It is equally uncertain what prompted this abandonment and how abruptly it occurred.

After the Roman period

Very little evidence was uncovered that dated from later than the Roman period, the only evidence for activity during the Anglo-Saxon period being a single spur dating from the 10th-11th century that was found at Site 2. The collapse of the Roman economy is likely to have been associated with a decline in population across southern Britain and it is possible, though by no means certain, that the Vale became substantially depopulated, with the main concentration of population in the local area reverting to the Great Ouse Valley and its immediate environs, as it had before the middle Iron Age. The dearth of Anglo-Saxon and medieval remains may also be attributed to the very different character of the settlement pattern during these periods, which is likely to have become consolidated at the sites of the historic villages that are scattered throughout the Vale. This pattern was a product of Anglo-Saxon and medieval social organisation and represented an entirely new arrangement that owed nothing to the prehistoric and Roman organisation of the landscape, thus emphasising the profundity of the break between these periods. Ultimately, medieval agriculture spread throughout the Vale, as was demonstrated by the ubiquitous evidence for ridge and furrow cultivation, recorded as earthworks at Lower Shelton, as subsurface features extending across each of the excavation areas, and by the geophysical survey between the excavations.

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Oxford Archaeology
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A programme of improvements to the A421 south-west of Bedford carried out by Balfour Beatty Civil Engineering Ltd on behalf of the Highways Agency afforded Oxford Archaeology an opportunity to investigate early settlement along a corridor of the clay landscape of Marston Vale, within the catchment of the River Great Ouse. The investigations comprised nine areas of excavation supplemented by watching briefs and earthwork surveys of three historic boundaries, as well as geophysical survey and field evaluation at a site that was not ultimately excavated.

The Vale appears to have been visited only occasionally during the early prehistoric period, the evidence being limited to a sparse distribution of worked flint and a single cremation burial dated by radiocarbon to the early Iron Age. The majority of the remains uncovered dated from between the middle Iron Age and the late Roman period, and were consistently rural in character, consisting of a series of small farming settlements. The report describes the evolution of settlement within the Vale as evidenced by the changes to settlement forms, landscape organisation, economic strategies and material culture, brought about by the effects of an increasing population and the imposition of Roman rule. The level of activity declined during the late Roman period, and the remaining settlements were abandoned during the early part of the 4th century.

THE IRON AGE AND ROMAN LANDSCAPE OF MARSTON VALE, BEDFORDSHIRE
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by Andrew Simmonds and Ken Welsh

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