A ROAD THROUGH THE PAST:

Archaeological discoveries on the A2 Pepperhill to Cobham road-scheme in Kent

By Tim Allen, Mike Donnelly,
Alan Hardy, Chris Hayden and Kelly Powell

A Road through the Past

Archaeological discoveries on the A2 Pepperhill to Cobham road-scheme in Kent

by Tim Allen, Mike Donnelly, Alan Hardy,
Chris Hayden and Kelly Powell

Contributions by

Andrew Bates, Edward Biddulph, Paul Booth, Ceridwen Boston, Lisa Brown, Dana Challinor, Sharon Clough, John Cotter, Peter Couldrey, P Ditchfield, Mark Gibson, Dana Goodburn-Brown, Carl Heron, David Holman, Lynne Keys, Hugo Anderson-Whymark, Nicholas Marquez-Grant, J M Mills, Elaine Morris, David Mullin, Jacqui Mulville, Rebecca Nicholson, Peter Northover, Adrian G Parker, A M Pollard, Adrienne Powell, Valery Rigby, Ian R Scott, Ruth Shaffrey, Wendy Smith, Cynthianne Spiteri, Elizabeth Stafford, Dan Stansbie, Roger Tomlin

Illustration and design by

Julia Collins, Leo Heatley, Sophie Lamb, Sarah Lucas, Lucy Offord, Magdalena Wachnik

Oxford Archaeology Monograph No 16

2012

The publication of this volume has been generously funded by The Highways Agency

Published by Oxford Archaeology as part of the Oxford Archaeology Monograph series

Designed by Oxford Archaeology Graphics Office

Reconstruction illustrations by Mark Gridley

Edited by Alex Smith

Front cover: Roman grave 6635 under excavation. Design by Julia Collins

ISBN 978-0-904220-68-1

Typeset by Production Line, Oxford
Printed in Great Britain

Contents

List of Figures

List of Plates

List of Tables

Summary

Oxford Archaeology carried out excavations for Skanska Construction (UK) Limited on behalf of the Highways Agency along a new road south of the then existing A2 between the Pepperhill and Marling Cross junctions. The road varied from 50m to 80m wide, and nearly 3km of the route (some 15ha) was stripped to archaeological levels prior to excavation. The route lay immediately north of the line of the previously excavated High Speed 1 (HS1). Additional areas (totalling 0.85ha) were excavated *c* 1km further east, where new ponds were being created north and south of the A2 alongside the Cobham services.

Features of every period from Neolithic to post-medieval were found, together with residual Mesolithic flintwork. Early Neolithic activity included one very large posthole associated with a flint scatter east of Tollgate. Later Neolithic/early Bronze Age activity was slight, except for a Beaker pit containing a large assemblage of finds just west of Tollgate, not far from a double Beaker burial on the adjacent HS1.

In the later middle Bronze Age two partial enclosures associated with probable metalled trackways were found, one containing a house, pits/hollows and fences, the other without internal features, but becoming a focus for later cremation burials. Scattered pits and cremations were also found further west.

Late Bronze Age and earliest Iron Age activity was very sparse, but early Iron Age groups of pits were found at intervals along the route, often with four-post structures and occasionally ditched boundaries. Some of the pits contained very rich assemblages of finds indicative of ritual deposition, and also included the largest collection of briquetage of this period from Kent. In the middle Iron Age activity became nucleated west of Tollgate, where another metalled trackway had enclosures, pits and four-post structures either side. This settlement continued in the late Iron Age, during which two high status burials took place, one in a bronze-bound bucket, the other accompanied by six brooches. Also in the middle Iron Age a major ditched boundary was dug overlooking the Downs Road dry valley, and burials were made within it and at its end. A ditched settlement was established at Cobham in the late Iron Age, but did not continue into the Roman period.

In the early Roman period the focus of occupation shifted to a new, larger rectilinear enclosure overlooking the Tollgate dry valley. Only the northern edge was examined, but this contained one very large rich burial pit and an attached cemetery with two more high status burials, all dated AD 50–70. Other burials continued until the later 3rd century AD, when settlement activity also ceased. Fields were laid out alongside the major Iron Age boundary, and middle and late Roman burials continued in and alongside it, one of whom isotope analysis has shown to be a foreigner.

Only a single isolated sunken-featured building could be dated to the Saxon period, but three low-status medieval settlements of the 11th/12th centuries were found, two west of Tollgate and the third east of Cobham services. All three were characterised by sunken-featured buildings. Only one settlement continued and grew, but was abandoned in the mid 14th century.

Acknowledgements

The A2 Pepperhill to Cobham archaeological project was funded by the Highways Agency, and we are very grateful to Phil Cheesmur, Project Sponsor, for his support. He was given archaeological advice by Rob Bourn of CgMS, and we are grateful to Rob for his even-handed approach. We would like to thank Tony Chadwick of Gravesend Borough Council, Lis Dyson of KCC Heritage Conservation and Stuart Foreman of OA for the strip, map and sample approach to the archaeology that allowed such a complete picture of the archaeology to be established. The project was monitored by Simon Mason of Kent County Council, and on occasion by Lis Dyson, and we would like to thank them for their common sense approach to the archaeology.

The construction project was carried out by Skanska UK, and we would like especially to thank the Project Manager Trevor Sharpe, and the Environmental Co-rdinator Gary Rogerson, for their pragmatic approach and interest in what we were trying to achieve. We would also like to thank David Ions and Tony Lawrence of John Jones, with whom we developed a good working relationship.

Fieldwalking and a metal-detecting survey were conducted by Brian Matthews and Rob Tannahill of OA respectively, and we would like to thank volunteers from the Kent Metal Detecting group for their help. Evaluation trenching was supervised by Annie Bingham, and a preliminary investigation in advance of removal of a badger's sett was carried out by Mike Kershaw and Jenny Thurstan. Geotechnical test pits were observed and monitored by Jim Collins.

The fieldwork was directed by Tim Allen, assisted for the first six months by Ros O'Maolduin. Running of the site day to day was carried out initially by Guy Cockin, and from December 2006 onwards by Mike Donnelly, assisted by supervisors Katrina Anker, Neil Lambert, Steve Leach and (latterly) Daniel Miller. The site survey was ably supervised by Leo Heatley, who was also responsible for all on-site IT matters. On-site finds and environmental processing and boxing were carried out by Jane Brant and Seren Griffiths respectively. Seren also later provided advice on radiocarbon dating. We are grateful to all those (too numerous to mention here) who worked on the site during the 11 months of fieldwork. We would also like to thank Denise Price, who arranged the accommodation, and Sharon Cook who assisted with the site administration. With a large team working away from home, these were both complicated tasks.

We are grateful to Medway Services for carrying out an X-ray survey of the contents of one corner of high status grave 6260 in situ, and to Birmingham University, who carried out a laser survey of the grave goods in situ. Conservation advice and supervision, particularly on the excavation and lifting of fragile finds, was provided by Dana Goodburn-Brown, who also carried out the conservation of the finds in post-excavation. Her enthusiasm was a source of inspiration for us all. We would also like to thank members of the Human Osteology department at OA, who excavated and recorded the human bones both on site and (where lifted en bloc) at the conservator's facility in Kent.

An innovative technological support to the recording of the lifted soil blocks in the laboratory was the 3-D arm brought to our attention by Dana Goodburn-Brown, and kindly lent to her and OA by Graeme Earl of the Faculty of Humanities (Archaeology), University of Southampton, for the detailed recording of the finds during excavation. Lucy Martin of OA photographed the finds during excavation, and made the 3D plans.

We would like to thank all the contributors to the report, and also Archaeology South-East, who kindly provided the assessment report of their adjacent excavations (Dawkes 2010) for the discussion.

Ian Scott would like to thank Dr Ralph Jackson, British Museum, for help with and discussion of the pharmaceutical box and palette in Grave 6635; Dr Ian Stead for information on the unpublished Iron Age graves from Alkham, Kent; Dr Stephan T A M Mols, Raboud University, Nijmejen for information on furniture and discussion of the probable table in Grave 6260, and for drawing attention to the wall-painting on the tomb of Victorius Priscus; and Prof Joseph Riederer, Berlin, for information and references on metalurgical analysis of Roman copper alloy vessels.

David Mullin would like to acknowledge the help of Ann Woodward in the interpretation of the pottery from the site.

Dana Goodburn-Brown would like to thank the scientists at the ISIS Research labs, STFC, who were very generous with their time in progressing this study, especially Dr Evelyne Godfrey, Dr Winfried Kockleman and Dr Anna Maria Paradowska. She would also like to thank Dr Mark Pollard for advice throughout, and to Dr Matt Ponting and Dr David Dungworth for commenting on a draft of her text. Dana is particularly grateful to Jacqui Watson, who took time following her recent retirement from English Heritage Conservation Dept to advise on the identification of wood by SEM, and to Dr Damian Goodburn for advice upon wood in general. The support of Lisa Gray, a freelance archaeobotonist who carried out wood identifications on

freshly excavated wood samples from the gaming board handles and bucket staves, is also much appreciated. Dr Ian Slipper at Greenwhich University, Chatham also deserves warm thanks for his contributions of expertise and time on the SEM.

The finds were drawn and photographed by Magdalena Wachnik, except for the flints, which were drawn by Sarah Lucas. Sarah also drew the reconstructions of the boxes in the early Roman graves. Illustration of site plans and sections was by Julia Collins, with assistance from Lucy Offord. Reconstruction drawings were by Mark Gridley.

Mike Donnelly did the initial site descriptions, matrices and the phasing of the GIS for the assessment report, and wrote the first draft of the Neolithic and Early Bronze Age site description. He later assisted with the assembly of the finds and environmental reports into the period chapters, and compiled much of the bibliography. Chris Hayden took over the early prehistoric site description and drawing briefs, and wrote the majority of the discussion for this period. Kelly Powell continued with the site descriptions for the later prehistoric, Roman and Post-Roman chapters, and supervised the drafting of many of the illustrations. Alan Hardy wrote the first draft of the discussion of the post-Roman archaeology in Chapter 5.

Tim Allen is grateful to all of these for their efforts. He edited and in some cases redrafted the site descriptions and figures, wrote the descriptions of the high status burials, the discussion of the Iron Age and Roman evidence, and also added to the discussions for the early prehistoric and post-Roman periods.

Copy-editing and separation of reports for web publication only was carried out by Alex Smith, and the final stages of production were supervised by Chris Hayden. The finds and paper archive were organised by Leigh Allen and Nicols Scott, to both of whom we are very grateful.

Chapter 1: Introduction

by Tim Allen

LOCATION AND SCOPE OF WORK

The A2 widening scheme was undertaken along the A2 south of Gravesend, and comprised the construction of a new offline route to the south of the existing A2 between the Pepperhill and Marling Cross Junctions, a distance of nearly 4km, and online widening of the existing A2 (mainly on the south side) between Marling Cross and Cobham (Fig. 1.1). The widening only involved substantive archaeological work either side of the A2 at Cobham Services.

The work was commissioned by the Highways Agency, and was carried out by Skanska Construction (UK) Ltd. Oxford Archaeology (OA) were appointed to provide the archaeological contribution to the Environmental Statement (Highways Agency 2004), to carry out the archaeological fieldwork and to prepare the publication report. The archaeological mitigation strategy was provided by the *A2 Pepperhill to Cobham Widening Scheme Archaeological Design*, written by Tim Allen of OA and approved by Lis Dyson and Simon Mason of Kent County Council Archaeological Services and by Rob Bourn of CgMS, acting for the Highways Agency.

After preliminary works in June 2006, the main stripping and archaeological excavation programme began in September 2006, continuing until early August 2007.

GEOLOGY AND TOPOGRAPHY

The A2 widening scheme is situated between the North Downs to the south, the Thames estuary to the north, the Medway estuary to the east, and the Darent estuary to the west. The route runs from the Pepperhill junction (c TQ 6215 7229) south-east to the Cobham junction (c TQ 6919 6927), a distance of nearly 4km (Fig. 1.1).

The A2 route ran across alternating dry valleys on a NNW alignment and areas of undulating plateau. Beginning within the Downs Road dry valley, the land then rises gently across a chalk plateau to a crest just west of Tollgate, then shelves down towards another steep-sided narrow dry valley at Tollgate Junction. Beyond this the route traverses another area of plateau, rising gently to another slight crest south of Singlewell and then dropping again before rejoining the old A2 at the Marling Cross junction. Beyond this the land levels out, but rises again from the Cobham Services to Thong Lane at the end of the scheme. The ground rises from *c* 15m OD within the dry valley on the west to *c* 75m OD at the east end.

The primary landuse prior to the road scheme was agriculture, although High Speed One (HS1, previously Channel Tunnel Rail Link, CTRL) landscaping visually dominated the local environment, and extended over part of the central section of the route. To the north of the existing A2, the local landscape is composed of housing and commercial development within Gravesend. The soils are predominately heavy and fairly clayey although there are occasional outcrops of chalkier land (eg east of the Tollgate dry valley), where significant quantities of flint were observed in the disturbed soil. These chalkier outcrops tend to lie on the higher ground.

The solid geology of the line of the route consists of Upper Chalk, overlain by a fine-grained silty sand of the Thanet Sand Formation (a member of the Eocene group); and the locally shelly sand and clay of the Lambeth Group (Woolwich and Reading Beds, also of the Eocene group) (Fig. 1.2). Other deposits present in the immediate vicinity include patches of sand with black flint pebbles, locally shelly, of the Harwich Formation, undivided clay and silty sands of the London Clay Formation; and drift deposits of Head consisting of silt, sand and clay with variable gravel. To the south of the site drift deposits of Clay-with-flints are present, while to the east are the Blackheath and Oldhaven Beds, Pebble Beds of the Palaeocene and London Clay of the Eocene (information from British Geological Survey 1:50,000 Series, England and Wales sheets 271 and 272).

ARCHAEOLOGICAL BACKGROUND

A Palaeolithic handaxe and a Levallois flake were found as residual stray finds on the HS1 route east of the Wrotham Road, Tollgate (Bull 2006a, 6). No Mesolithic sites have been found close to the line of the scheme, but work on the High Speed One (hereafter HS1) further west revealed knapping floors preserved beneath colluvial deposits (Andrews et al. 2011).

Just east of the Wrotham Road dry valley, and on the plateau just beyond it, a sub-rectangular enclosure of probable Neolithic date lay just north of the line of the HS1 and just south of the line of the A2 widening scheme. This site was visible as a cropmark, and was evaluated in advance of construction of the HS1 (URS 1995). It had a large

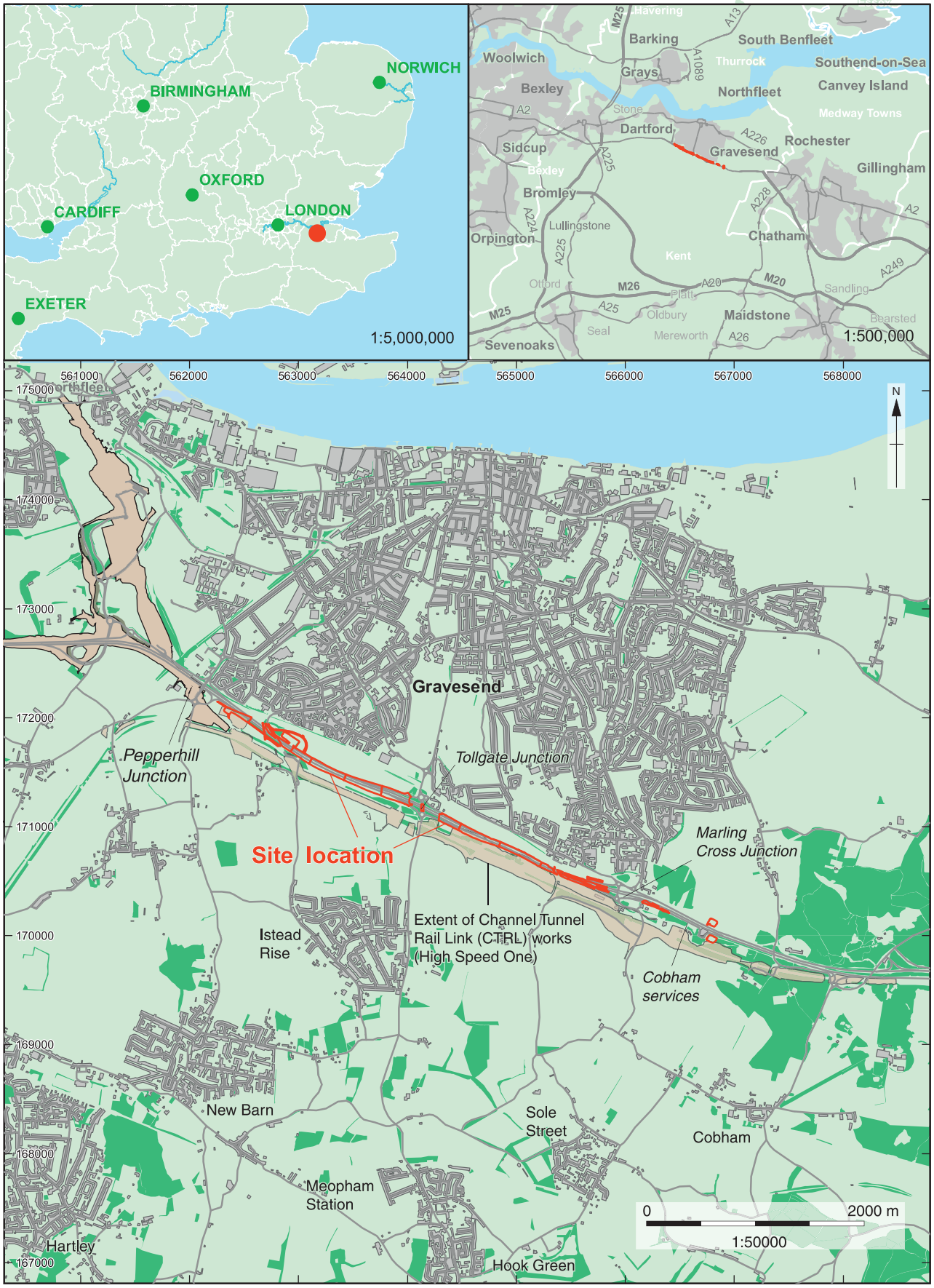


Fig. 1.1 Site location

Fig. 1.2 Geology of the site area (1996/11A-DMC. Derived from digital data at 1:50,000 scale, provided under licence by British Geological Survey. ©NERC. All rights reserved.)

ditch containing struck flint, though no pottery or burials were found, and was interpreted as a Neolithic mortuary enclosure (see Fig. 1.2 and Chapter 3 Site E below). No other Neolithic monuments are known in the vicinity of the scheme, although the eponymous site of Ebbsfleet Neolithic pottery lies only a few km to the north-west, in the valley of the river that rises at Springhead just north of the A2 about 1km west of the scheme.

There is a Bronze Age bowl barrow known as 'The Mount' at Ashenbank Wood (SMR KE 1358) south of the east end of the scheme, and a double-ditched Beaker barrow at Whitehill Road (Bull 2006b) some 3km to the south-west (Fig. 1.2). Fieldwalking on the line of the HS1 south of Singlewell found two scatters of surface flint of late Neolithic or early Bronze Age date, though only one isolated pit was revealed by topsoil stripping, adjacent to Church Road (Harding 2006; Bull 2006b, 9-10 and fig. 14). Just west of the Tollgate dry valley, on the crest of the plateau opposite the Neolithic mortuary enclosure, a double Beaker inhumation burial was found within the line of the HS1 (Askew 2006, 11–15 and figs 3-5). At the very west end of the scheme an early Bronze Age cremation burial was uncovered beneath colluvium in the Downs Road dry valley (ibid., 13 and figs 6 and 8). A few sherds of late Neolithic/early Bronze Age pottery were also recovered from Coldharbour Road just north of the A2, and just west of Tollgate Junction (Mudd 1994, 387–8 and fig. 9).

Coldharbour Road also contained a middle-late Bronze Age trackway, together with a group of cremations and possible pits or tree-throw holes (Mudd 1994). The trackway was running along the line of highest ground, and heading SSE towards the crest of the plateau, where a television aerial is now situated (see Chapter 2, Site C). Some 2km further east at Clay Lane Wood, also north of the A2, spears, human bones and armour were apparently found within an entrenchment in 1825 (SMR KE 1533). These have recently been interpreted as a Bronze Age cult site (Ashbee 2007). The HS1 excavations due south of the new offline route found a single late Bronze Age pit east of Henhurst Road (Bull 2006a, 11 and fig. 11) just south of Cobham Services, but only limited, and residual, middle Bronze Age finds were recovered. A middle Bronze Age settlement was excavated at Cobham Golf Course (Davis 2006) a few km further east. A late Bronze Age pit was also recovered in the valley just south of the Pepperhill Junction at the west end of the scheme (URS 2001b, 6 and fig. 5).

No major later Bronze Age foci have been securely identified in the surrounding area, although a large circular cropmark south of the HS1 just east of the Wrotham Road has provisionally been interpreted as a late Bronze Age enclosure (SMR KE 1748; 9461-4; see Fig. 1.3).

No major Iron Age centres (such as hillforts) are known in the vicinity of the scheme. Early Iron Age activity was, however, widespread along the line of the HS1, south of the route. Groups of pits were found at Hazell's Road, on the plateau east of Downs Road, and in three areas east of the Wrotham Road dry valley, Tollgate (Askew 2006, 17–22 and figs 8-10; Bull 2006a, 11–17 and figs 6–10). One of the groups lay some 400m east of the dry valley, and comprised pits of early Iron Age date together with a late Iron Age or Roman larger pit. A little further to the east a natural break of slope was observed. This later proved to be the edge of a dry valley filled with colluvial deposits (see Chapter 2, Site F below). Just east of this, a second group of early Iron Age pits was found where the line of the HS1 overlapped with that of the A2 widening scheme. Some of these contained considerable quantities of briquetage. One or two late Iron Age pits were also found. These pits were re-excavated during the A2 excavations (see Site G east, Chapter 3 below), as most had not been bottomed. A single early Iron Age pit was also found in evaluation at Coldharbour Road just north of the A2 (Mudd 1994). South of the line of the HS1, and just east of the Wrotham Road, a cropmark rectilinear enclosure has tentatively been ascribed to the Roman period, but might instead belong to the early Iron Age (SMR KE 1748; see Fig. 1.3).

On the plateau east of the Downs Road dry valley was an area of early/middle Iron Age activity, including a droveway, linear boundaries, a four-post structure and pits (Askew 2006, fig. 10). Continuing north of this were the cropmarks of ditches and pits, which were interpreted as those of a probable prehistoric settlement (see Chapter 3, Fig. 3.28 and Site B below). Midway between the dry valleys was a holloway of late Iron Age date, which developed into one or more enclosures in the early Roman period (ibid., 22–5 and figs 11–14). Further ditches possibly of Iron Age date were found close to the crest of the plateau just west of the Wrotham Road dry valley (Askew 2006, fig. 3; see also Chapter 3, Site D below).

A small area of middle and late Iron Age settlement, which expanded in the early Roman period, was excavated in advance of housing development just over 500m north-east of the Marling Cross Junction, and 750m north-west of Cobham services (Philp and Chenery 1998). Cropmarks taken before recent housing development to the west of this also indicated another probable later Iron Age site north of Singlewell (SMR KE 1590; see Fig. 1.3).

The widening scheme lay just east of the Roman town of *Vagniacae* (Springhead), and just south of the suspected line of Watling Street beneath the existing line of the A2 (Margary 1973; Hiscock 1968). Recent work in advance of the HS1 has shown that activity began to develop around the spring in the late Iron Age (Andrews *et al.* 2011). The remains at Springhead included a number of stone buildings, some of which were temples, and occupation ran from the 1st to the 4th century AD (Penn 1965; Andrews *et al.* 2011). Two Roman cemeteries have

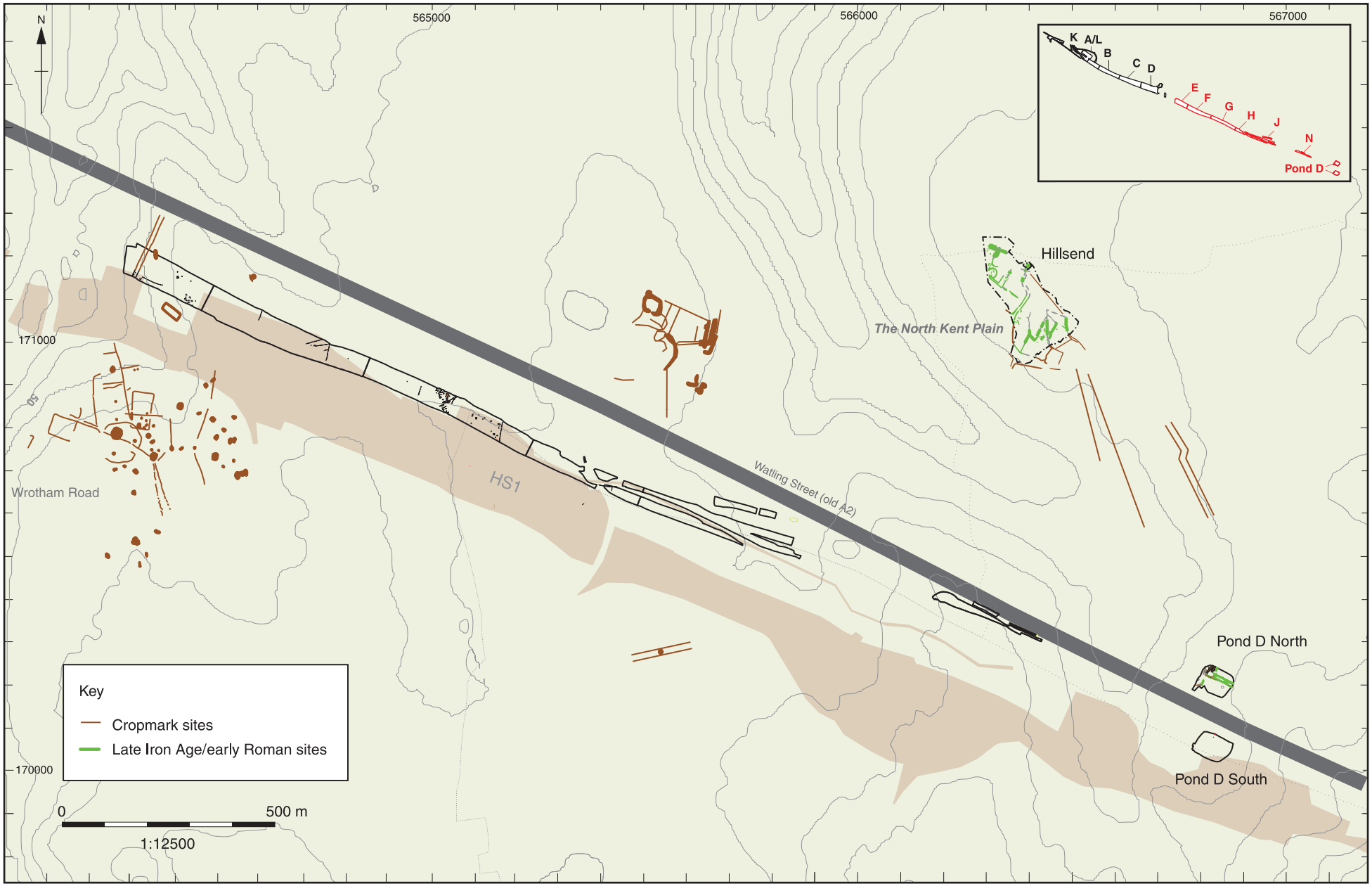


Fig. 1.3 Site in relation to local cropmarks

been found and excavated immediately east of the town at Pepperhill, a walled cemetery first found in 1801 (Davies 2001), and a large lower status cemetery in 1997–8 during the HS1 works (Biddulph 2006).

Excavations along the line of the HS1 between the Downs Road and Tollgate dry valleys uncovered two early Roman settlements (Askew 2006, 26–32). On the plateau midway between the dry valleys was a figure-of-eight enclosure, originating as a holloway in the late Iron Age, and developing into one or more enclosures in the early Roman period (ibid., figs 11–12). The enclosure included ovens, pits and one or more human cremation burials and a horse burial (ibid., figs 13–14; see also Chapter 4, Site B).

The ditches of a set of rectilinear enclosures or fields were visible as cropmarks on the plateau just west of the Wrotham Road, and the south end of this system was excavated on the line of the HS1, proving to be Roman and dating from the 1st–3rd centuries AD (Askew 2006, 30–3 and figs 15–20). The site consisted of at least two substantial enclosures approached by tracks or roads from the south and east. The settlement appeared to be of low status, including slots from possible timber buildings, a few graves, pits and ovens, and was occupied in the early and middle Roman period (see also Chapter 4, Site D). Study of the archive suggests that the south-west part of this site was not investigated in any detail. Just south of the line of Watling Street, and on the east side of the Wrotham Road, a tile cist was found during widening of the old A2.

Just west of Downs road in the dry valley, and approximately 220m to the south of the offline route, HS1 excavation uncovered a focus of Roman activity comprising a malting oven, a metalled road, ditches, various pits and a hearth (Askew 2006, 33–6 and figs 21–5). It was interpreted as an agricultural processing area in use between the 2nd and 4th centuries AD, and possibly part of a large farm or villa estate. The road was running north-west on a line very similar to that of Downs Road, and may have linked in to Watling Street further north. East of Singlewell at Henhurst Road, Tollgate a possible Roman road running east-west was found along the line of the HS1 route (Bull 2006a, 17–21 and figs 11–13).

In the wider landscape, a Roman villa at Cobham a few km to the east developed from a 1st century farmhouse and continued until the mid 4th century (Tester 1961), and another lay at Northfleet east of the river Ebbsfleet and north of Springhead (see Fig. 1.2). This has seen recent further excavation as part of the HS1 works (Andrews *et al.* 2011). A number of Roman villas, including the extensive villa at Darenth, are known in the Darent valley a few km further west (Philp 1984; Millett 2007, 153 and fig. 5.9).

No Saxon activity was known in the immediate vicinity of the scheme prior to excavation, although sunken-featured buildings were found during the HS1 excavations at Springhead and at Northfleet (Andrews *et al.* 2011). The Kent SMR records the discoveries made at Clay Lane Wood as the site of a Saxon cemetery, rather than a prehistoric site (SMR KE 1533).

A medieval settlement of the 11th/12th centuries AD was part-excavated at Wingfield Bank just north of the west end of the scheme, in advance of the construction of an electricity substation at Pepperhill Lane (Hardy and Bell 2001).

A late Saxon/medieval settlement was found just east of Downs Road on the HS1 route only 100m south of the scheme (Askew 2006, 37–40 and figs 26–7). It consisted of one or more posthole buildings on a terraced hillside, with associated pits and boundary ditch (see also Chapter 5, Site A). Some 70m to the south-west, on the other side of Downs Road, were discovered enclosures or field boundaries of 12th and 13th century date, associated with two ovens or malting kilns. These may have been parts of a single settlement.

A medieval enclosure with later annexes was found on the plateau 1km further east, and just west of Northumberland Bottom Army Camp (Askew 2006, 39–42 and figs 28–9). This was dated to the late 12th to mid 14th centuries, and included within it a sunken-floored building with an oven, and one other possible building. To the east was a holloway that only filled in during the post-medieval period. This site clearly continued northwards beyond the line of the HS1 towards the proposed offline route of the A2 (see Chapter 5, Site C).

East of the Tollgate dry valley, medieval activity was much more limited, though pits and ditches were found close to Church Road south of Singlewell (see also Chapter 5, Site H) and Henhurst Road towards the east end of the scheme (Bull 2006a, 21–2 and figs 2, 5, 11 and 14). A post-medieval brick kiln was found just south-east of the Cobham Service Area (ibid., fig. 2).

In the wider landscape, the scheme lies close to several parish boundaries, and runs north of the villages of Istead and Cobham, and south of Singlewell and Shorne. It forms part of the hinterland of Gravesend to the north.

A full list of the archaeological discoveries within a 500m corridor of the line of the proposed route can be found in the Environmental Statement (Highways Agency 2004, Section 8).

Archaeological investigations prior to excavation

To assist in characterising the archaeology, geophysical survey was carried out by Bartlett-Clark Consultancy along the line of the offline route from Pepperhill to Tollgate Junction. The results were not very distinct, and consisted largely of intermittent lengths of anomalies interpreted as ditches. Subsequently, in advance of topsoil stripping, a fieldwalking and metal detector survey was carried out over the arable fields west of Tollgate. This did

not reveal any concentrations of prehistoric flintwork or other artefacts, although several Roman coins were retrieved from the area of the cropmark enclosure just west of Tollgate.

Cropmarks were noted on aerial photographs in three areas along the line of the scheme between Pepperhill and Tollgate Junctions. The results of the aerial photographic survey were included in the Environmental Statement (Highways Agency 2004). To the west a broad linear feature ran NW-SE into Site L, and was interpreted as either a trackway, a very broad ditch or a palaeochannel (see Chapters 3 and 4, Site L). There was a narrow ditch parallel to this on the south-west side (see Chapter 5, Site L). At the north-western limit of this feature, outside the area of Site L, there appears to be a rectangular cropmark, possibly part of an enclosed settlement.

East of Wrotham Road there was less arable along the line of the scheme, although a large cropmark complex of several phases, but uncertain date, was plotted just to the south-east of the junction (SMR KE 1748 and 9461-4; see Fig. 1.3). A pair of parallel north-south ditches, provisionally interpreted as a trackway, was seen along the edge of the plateau just east of the Tollgate dry valley, and one or two large circular features east of that were interpreted as deneholes (see Chapter 5 Site E). Further north-south ditches were seen some way to the east (see Chapter 3 Site H), but the date of these boundaries, which did not match those on historic maps, was unclear.

Northumberland Bottom contained an army camp during the Second World War, and this lay along the line of the HS1 south of and over part of the Roman enclosure.

To the east of Wrotham Road (Tollgate Junction), evaluation and topsoil stripping for the HS1 overlapped with the line of the A2 widening scheme in places, before diverging south of the Marling Cross Junction (see inside back cover). Over much of this length of the HS1, however, only topsoil stripping took place, so did not always reveal any underlying archaeological features. Archaeological discoveries were more scattered here (Bull 2006a).

EXCAVATION METHODOLOGY

The general approach to archaeological investigation was set out in the Detailed Archaeological Design prepared and approved in advance of the archaeological works (Skanska document No. 30008).

The proximity of High Speed One to the south, along which archaeological excavations had been carried out, and north of which evaluations had taken place, was thought to be sufficient to anticipate the quantity and types of archaeology along the line of the new offline route. In the light of the frequent archaeological sites found along the line of the HS1 west of Tollgate, the entire length of the route was stripped by machine under archaeological supervision in advance of construction. For ease of management, the route was divided into chainage lengths from 300–400 m long, which were labelled A, B etc, and all potential archaeological features were planned and a proportion excavated to characterise the archaeology.

Following characterisation, an Archaeological Works report was prepared for each chainage length outlining the chronological range and character of the revealed archaeological features. Where archaeological features were numerous or particularly significant, proposals were made for further archaeological works in a Further Archaeological Works Design. The aims of the further work were related to the research aims and objectives set out in the Detailed Archaeological Design, and new aims were added where necessary to address archaeological questions raised by the characterisation. The approximate scale of these works was indicated on plans accompanying the design report.

Interventions were generally excavated by hand, and as a minimum at least 10% of all linear features, and half of every pit and posthole, was excavated. By agreement with Rob Bourn of CgMS acting for the Highways Agency and Simon Mason of Kent County Council, some additional lengths of large boundary ditches and many of the dene holes were investigated using machine-dug slots under archaeological supervision. All features and deposits were issued with unique context numbers, and context recording was in accordance with OA practice set out in the OA Fieldwork Manual.

A substantial proportion of the finds and environmental processing, context data entry and digitising of plans and sections was carried out on site. In addition, a pottery specialist visited periodically to carry out spot-dating, to ensure that the revealed features were being attributed to the right periods, and that significant discoveries were not being missed. The archaeological investigations, and the reports arising from them, were monitored regularly by Rob Bourn and Simon Mason.

More detailed excavations (Further Archaeological Works) were carried out in accordance with the proposals set out in the Further Archaeological Designs, but were modified as required to deal with complexities or unexpected discoveries revealed during the excavation of the planned features, and to address any further archaeological questions arising from them.

Area stripping under archaeological supervision was carried out wherever possible, and this included the areas of balancing ponds along both the offline and online lengths of the route. Archaeological Watching Brief was therefore limited to small areas of the online length of the scheme, and on works reducing the existing A2 to a single carriageway.

POST-EXCAVATION METHODOLOGY

Major fieldwork ended in August 2007, and Watching Brief in May 2008. Following the completion of fieldwork, and a review of the Research

Aims in the light of the fieldwork discoveries, a Post-Excavation Assessment and Updated Project Design was prepared and submitted in January 2009. Because of the rural nature of the site (ie very little vertical stratigraphy and limited quantities of finds) and the fact that much of the activity of different periods was spatially separate, it was decided that problems of residuality and intrusiveness would be fairly limited. As a result, rather than follow a strict MAP2 assessment approach, it was decided to record all of certain categories of finds such as the pottery, the fired clay and ceramic building material, the struck flint, worked stone, worked bone and the metalwork straight away. For the same reasons, all of the animal bone was recorded rather than a sample percentage, and full recording and reporting of the human bones was carried out at this stage. Other categories of environmental material, such as the charred plant remains, charcoal, the molluscs and the pollen, were assessed in the usual way, full recording being left to further analysis.

A first group of samples was also sent for radiocarbon dating during the assessment phase, in order to answer some key questions that either could not be addressed by artefactual dating, or where the artefactual dating needed to be confirmed or refined.

The investigation of the high status graves, which involved the gradual excavation of large blocks of soil in the conservator's laboratory, and considerable time before grave goods could be fully excavated, investigated and conserved, meant that a continuous programme of work had to be agreed at the outset, and the scope and aims of this investigation agreed in advance. To this end a separate Updated Project Design for the high status graves was produced and approved (Skanska document 30051).

STRUCTURE AND CONVENTIONS OF THE REPORT

The report is presented chronologically, and following the Introduction and Background to the excavations, is divided into four: Chapter 2—earlier prehistory (Mesolithic to late Bronze Age); Chapter 3—later prehistory (Iron Age); Chapter 4—Roman; and Chapter 5—post-Roman (Saxon, medieval and post-medieval). Within each chapter the finds and environmental evidence relevant to each of these periods is presented after the archaeological description, together with any absolute dating. The convention followed on the general site plans is to show the unexcavated parts of the features in the phase colour, and the excavated parts in white, except for fully excavated features which are coloured in. Detailed plans do not include phase colours. The archaeological narrative includes a detailed summary of sites and findspots along the scheme for the relevant period, and at the end of the chapter the evidence is discussed. In those periods that include high status burials (Chapter 3 the late Iron Age and Chapter 4 the early Roman period), the burials are dealt with as separate sub-sections following the same pattern. The archaeological description of the graves is followed by reports on the accompanying finds and scientific evidence, and the graves are then discussed. Aspects of the evidence dealing with the setting of the graves, and their relationship with surrounding or adjacent features, are dealt with in the discussion of the period in general at the end of the chapter.

Following the period chapters, there is a further postscript dealing with points that cross period boundaries, and themes that deal with temporal change. Key issues raised by the period chapters are also touched upon and developed in terms of their wider significance.

In addition to this present volume, a more detailed archive report is available digitally via the Oxford Archaeology website (www.thehumanjourney.net). This contains comprehensive stratigraphic descriptions of the whole site, in addition to full unedited finds and environmental reports.

The calibration of the radiocarbon results, relating the measurements directly to calendar dates, have been calculated for this report using the computer programme OxCal (v3.10) (Bronk Ramsey 1995; 1998; 2001) and are cited at 95.4% confidence unless otherwise stated.

LOCATION OF THE ARCHIVE

The finds and paper archive are currently held at the OA office in Oxford. These will be transferred to Kent County Council once they have identified a suitable repository for long-term storage in accordance with the guidelines of the Museums and Galleries Commission.

Chapter 2: From the Palaeolithic to the Late Bronze Age

by Mike Donnelly, Chris Hayden and Tim Allen

FROM THE PALAEOLITHIC TO THE EARLY BRONZE AGE

Little evidence for activity in these periods was found along the A2. All of the Palaeolithic and Mesolithic material, and much of that from the Neolithic and early Bronze Age, consisted of residual flint in later features (Figs 2.1–2). Just two sites (G and D) contained significant features and deposits, although in both cases the features were few.

Residual Late Upper Palaeolithic flint from Site A

The only tentative indications of Late Upper Palaeolithic activity found along the A2 were two residual blade-like flakes, one of which exhibited edge-damage comparable to the characterisitic 'brusing' found on blades in Long Blade assemblages. These were found on Site A in a pit (3030) which also contained middle Bronze Age finds (see below). These two pieces were more heavily corticated than the other flint associated with the pit.

The Mesolithic

No features or surfaces dated to the Mesolithic were found. The only evidence consisted of residual finds in later features or within scatters of artefacts of several periods in colluvial layers or the topsoil. Two main concentrations of Mesolithic material were, however, recognised, one occurring on Site B and the other at the boundary between Sites F and G.

Mesolithic flint from Site B

A range of residual Mesolithic flint was found in features in the central and western parts of Site B (Fig. 2.1). This flint included a rod microlith in pit 4612, a narrow blade and a single platform pyramidal core of Bullhead flint in ditch 7985 and a probable tranchet axe or adze fragment from gully 4518 (see Chapter 3 for details of these features). Several blades and blade-like flakes, as well as micro-burins, were recovered from a scatter of probably middle Neolithic material in layer 3424.

Mesolithic flint from the boundary between Sites F and G

A range of Mesolithic flint, as well as a considerable number of blades and blade-like flakes, which could date from either the Mesolithic or the early Neolithic, were found in a large natural hollow, probably the upper end of a dry valley, at the boundary between Sites F and G (Fig. 2.2). This material also included a bi-truncated point from middle Bronze Age posthole 9392 (part of posthole alignment 9612), and a backed bladelet from middle Bronze Age ditch 9179. Many blades, including one in quartzite, and three possible burins were also recovered.

Mesolithic material from other sites

Further residual Mesolithic flint was found in later features on Site C. This included three bladelets from pit 5066, one of which was broken and resembles a distal micro-burin, and a small partly denticulated thumbnail end scraper from pit 5110, which is more likely to be Mesolithic than early Bronze Age in date.

Other blade-like flakes, blades and bladelets, which could be either Mesolithic or early Neolithic in date, were identified on nearly every other site. This material includes two bladelets that were associated with a possible posthole/stakehole arc (10538) on Site K at the western end of the route.

The early and middle Neolithic

The early Neolithic ramped posthole and other features on Site G

The most intriguing Neolithic feature was a large ramped posthole (9539) found on Site G (Figs 2.2 and 2.3; Plate 2.1). No other comparable features were found on the site, although a layer on the edge of the natural hollow some 45m to the south-east, and a small number of pits and postholes that cut it, might also have dated from the early Neolithic. Although only early Neolithic flint was recovered from these features, an early Bronze Age radiocarbon date came from the only pit (9223) that was dated, showing that in this case the flint was residual.

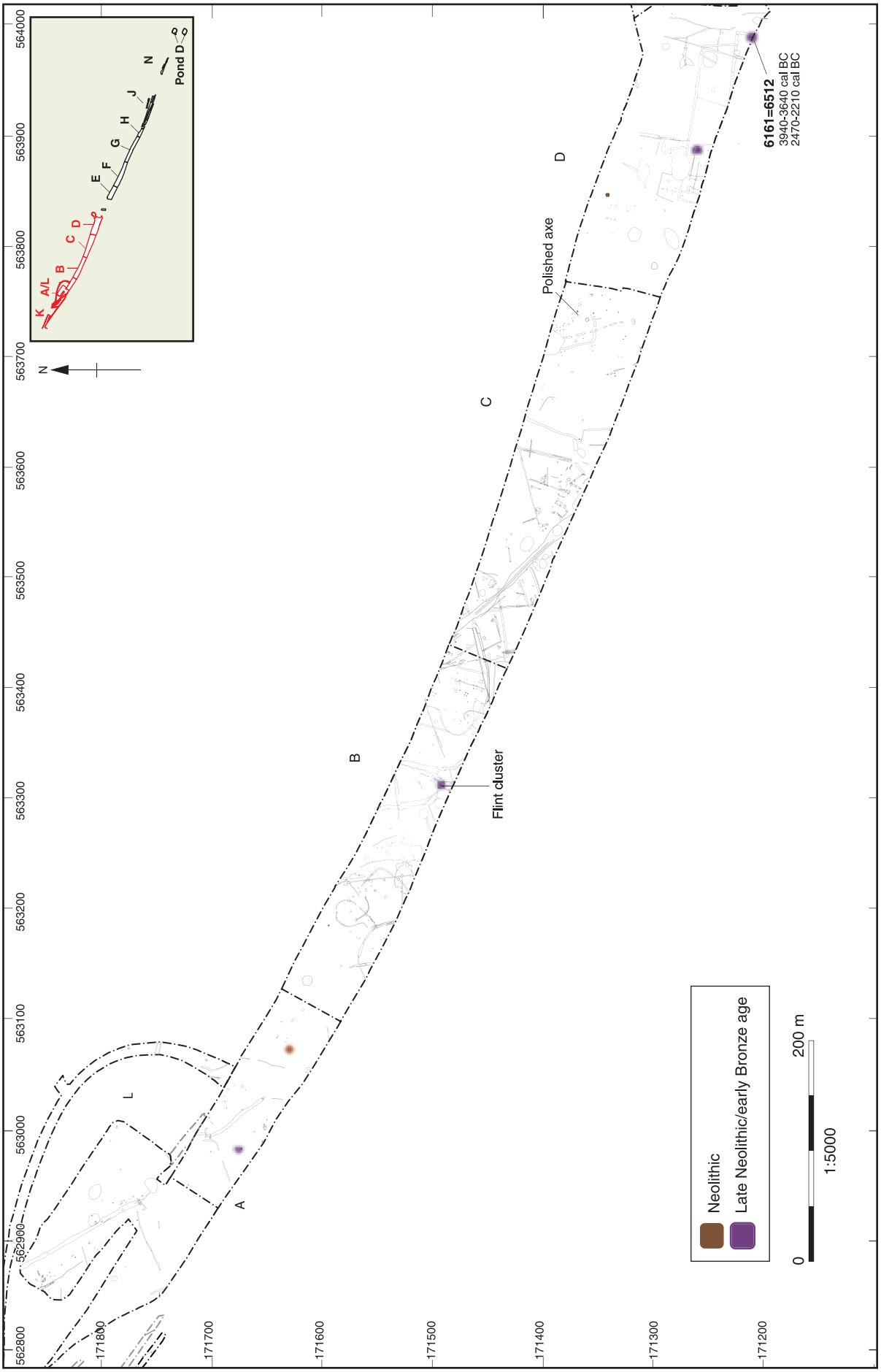


Fig. 2.1 Plan showing Neolithic and early Bronze Age features in areas L–D and giving radiocarbon dates

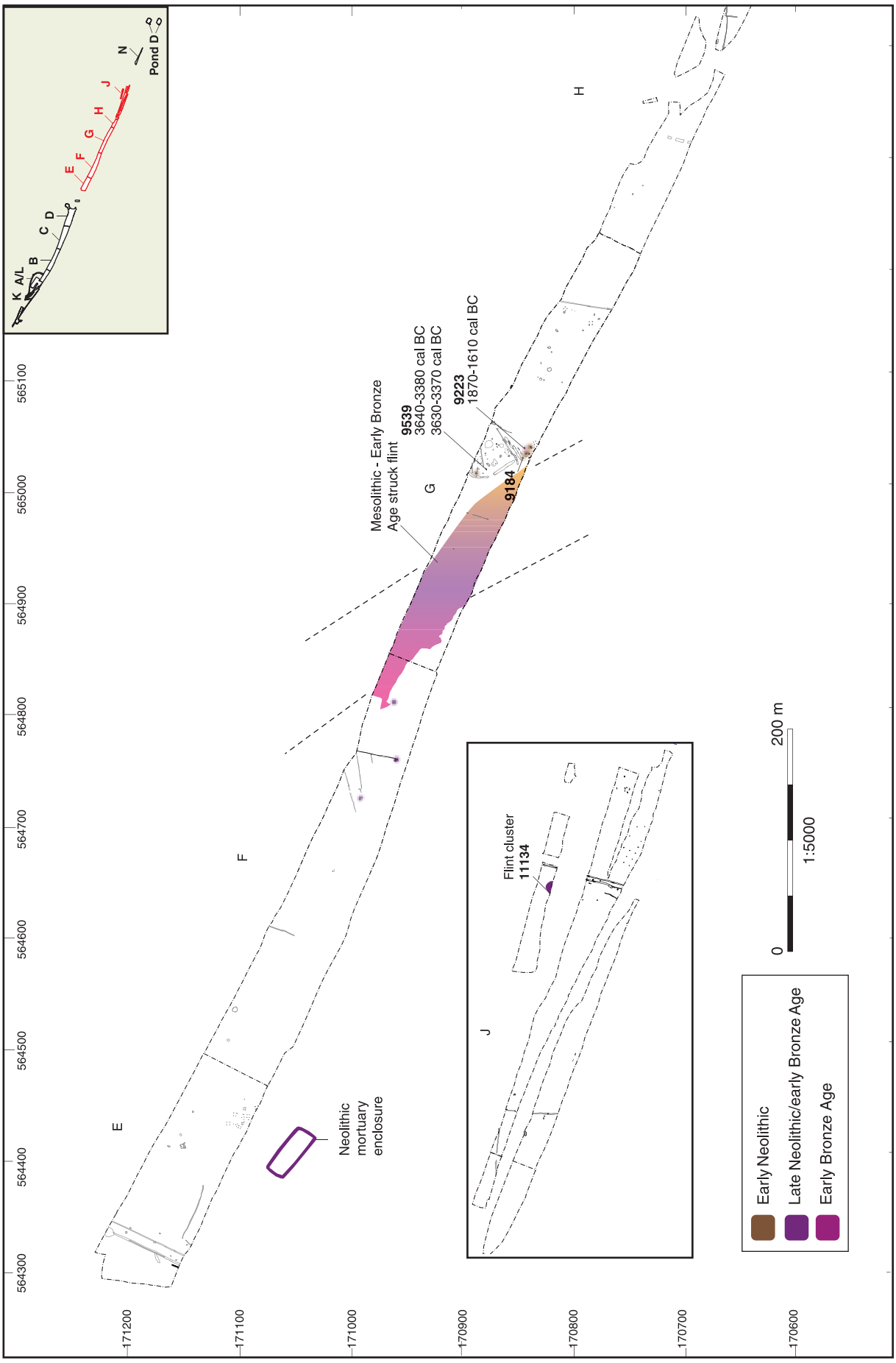


Fig. 2.2 Plan showing Neolithic and early Bronze Age features in areas E–J, with radiocarbon dates.

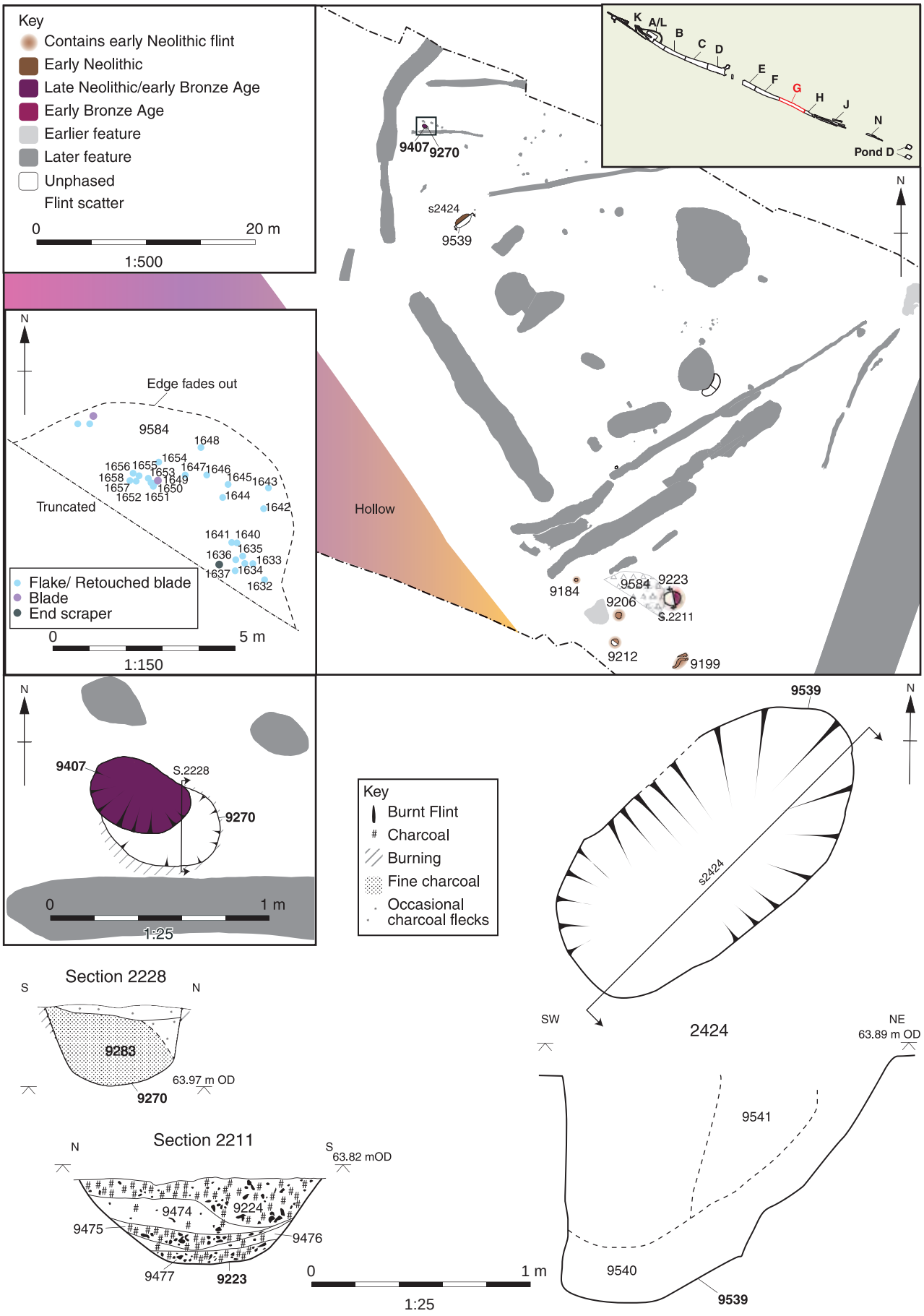


Fig. 2.3 Plan of Site G west showing distribution of features, plus detailed plans, sections and flint scatter

Plate 2.1 Site G early Neolithic posthole 9539

The large ramped posthole (9539) lay near the centre of Site G, in the area later occupied by a middle Bronze Age enclosure (see below). The presence of this middle Bronze Age activity may have obscured the presence of other early Neolithic features, or removed them entirely. The date of the ramped posthole is, however, established by two radiocarbon dates obtained from oak and hazel charcoal at the base. The oak charcoal may have derived from the post. The oak gave a date of 3640–3380 cal BC (NZA 30123) and the hazel a date of 3630–3370 cal BC (NZA 32317). These dates pass a χ^2 test (df=1 T=1.4 (5% 3.8), indicating that they could have been contemporary.

The ramped posthole was oval in plan, measuring 1.6m by 0.8m. In profile it was asymmetrical, sloping from the north-east, with a slight step, to a rounded socket, 1.2m deep (Fig. 2.3). The size of the socket suggests that the feature would have held a post with a diameter of up to 0.55m.

The lower fill (9540) contained charcoal fragments and a charcoal band which extended up the western side of the feature. This band of charcoal might indicate the use of a post that had been charred before being set into the posthole. The fill above this (9541) might derive from the use of the material excavated from the posthole to pack the post. The pottery recovered from this feature consisted of three sherds (6g) in flint-tempered fabrics but also an intrusive grog-tempered sherd. A flint blade, an end scraper and two flakes were also recovered.

Early Neolithic flint from layer 9584 and from pits cut into it

Some 40–45m south-east of the ramped posthole, a small area of soil containing a scatter of struck flint was found on the edge of the natural hollow, dipping slightly south-westwards (Fig. 2.3). The flint was plotted, but examination did not find any refits, and this small assemblage was heterogeneous in character, with few tools, none of them diagnostically early Neolithic. The layer was truncated by ploughing upslope to the north and east, but almost certainly continued south-westwards down into the hollow, though due to the impact depth of the road this was not investigated further (but see also below). One pit (9223), three postholes (9184, 9206 and 9212) and an irregular feature (9199) cut this layer, and all contained flints, some clearly of early Neolithic date. Charcoal from a layer in pit 9223, including much burnt flint, was radiocarbon-dated, but gave an early Bronze Age date of 1780–1610 cal BC (NZA 30115), and in this case it is clear that the flints were residual. The postholes measured from 0.3 to 0.6m in diameter, and from 0.20 to 0.3m deep. None had a clear post-pipe. There were other features of a similar size without struck flint in the same area that may also have belonged to the same phase of activity.

The irregular feature (9199) had very indistinct edges, but its fill was distinguished from the surrounding natural by its darker colour and by the presence of charcoal. The fill appeared to cover an area of around 1.5m by 2.0m and was around 0.15m deep. It may have been an area of disturbance rather than a cut feature.

Colluvium at the boundary between Sites F and G

A band of colluvium filling the top of a late Pleistocene hollow was identified running from north-west to south-east, spanning the boundary between Sites F and G (see Fig. 2.2). This was initially investigated by machine during the stripping of Site F, which revealed a sparse scatter of struck flint at various levels. However, work was halted when it was realised that most of the sequence would be preserved beneath the impact level of the new road. There were no obvious patterns or concentrations in the distribution of the flints, which ranged in date from Mesolithic to Bronze Age, and many may have been deposited in the hollow through in-washing or soil creep. Much of the flint displayed a rolled outer surface with significant edge damage. During a later watching brief, further struck flints were recovered from a trench which crossed the deeper central part of the hollow, but no buried surfaces or features were identified.

The date of the colluvium is uncertain. In some places probably Iron Age pottery was recovered from it, whilst at others it was cut by early Bronze Age features (see below). It is probable that differing colluvial layers were deposited intermittently from the Neolithic onwards.

Site B: flint scatter 3424

A small assemblage of flint was recovered from a deposit (3424) which lay near the south edge of the

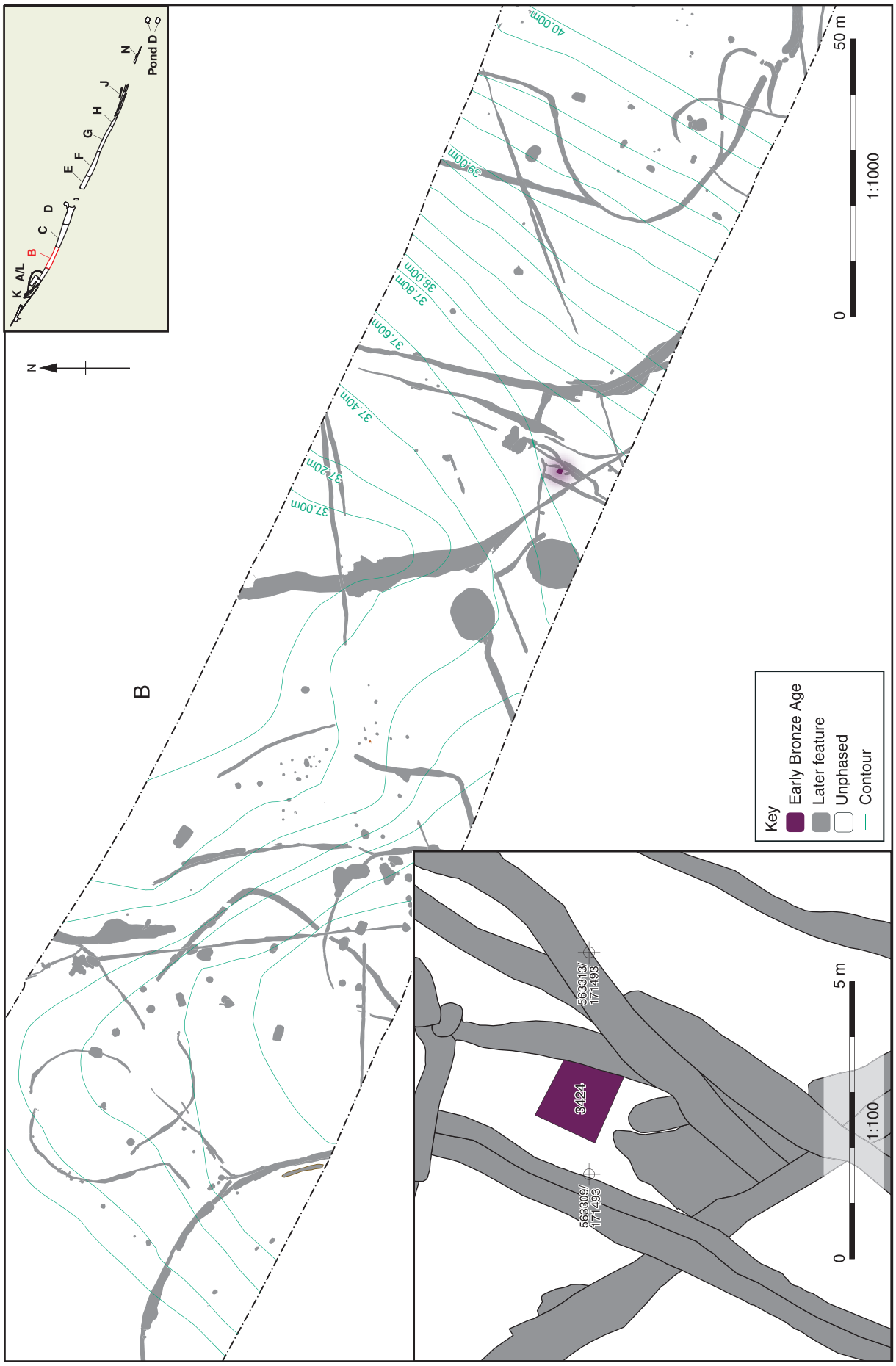
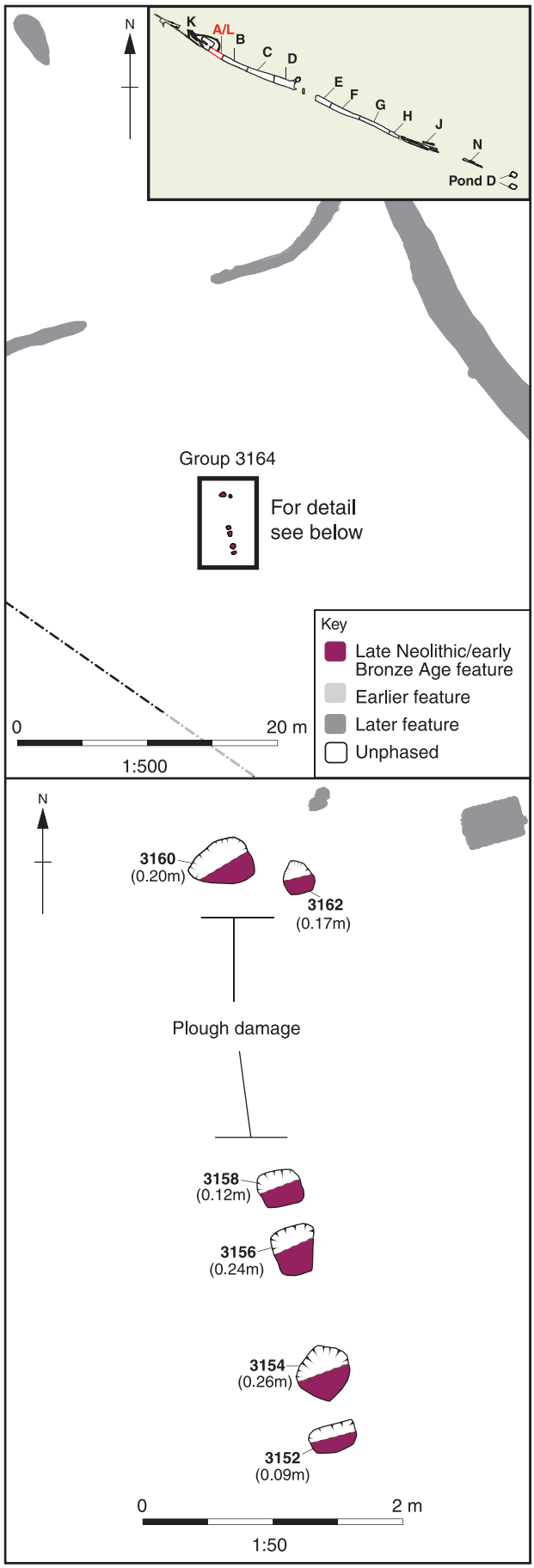


Fig. 2.4 Plan showing topographical location of flint scatter in Site B



centre of Site B (Fig. 2.4). It is possible that this deposit was associated with an Iron Age trackway (7980: see below), although there are several refits between the 35 pieces of flint recovered, 18 of them probably coming from the same core, so the flint may derive from an earlier, *in situ* deposit, truncated by the trackway. The deposit was originally sampled through the excavation of a 1.3m by 1.2m slot (Fig. 2.4; its full extent was not determined); subsequently a bulk sample of the deposit was also taken. The flint recovered from the deposit includes a chisel arrowhead, a notched piece and an irregular scraper, suggesting a middle Neolithic date. The presence of a micro-burin, in a much more rolled condition than the other flint, indicates that some earlier, residual material, had also become incorporated.

Site A

On Site A, a linear arrangement of postholes (Group 3164) was found (Fig. 2.5). The only artefacts associated with these postholes were a flint flake and a bladelet. The date of these features is, therefore, unclear, but since the only finds were flints, they are described in this chapter.

The group consisted of six paired postholes in a broadly north-south alignment, with large gaps of 0.5m and 2.2m between the pairs. The postholes measured from 0.24 to 0.48m across and from 0.09 to 0.26m deep. Even assuming that these postholes were all contemporary, the nature of the structure with which they were associated is unclear. Given their linear arrangement, it may have been nothing more complex than a fence. No other features were found in the surrounding area, and, given that the southernmost (3152) was only 0.09m deep, it is possible that other features have been entirely removed by truncation.

Residual early and middle Neolithic finds

Sites B and C produced several Neolithic tools, including a complete granite axe of Cornish origin from an Iron Age pit (5953) and a flake from a Neolithic polished implement from early Iron Age pit 5130. The axe was in excellent condition and was discovered alongside a socketed iron gouge.

On Site L a flint arrowhead was recovered from a Roman grave (12554), but was too broken to determine its original form or date. On Site K, a small assemblage of 23 flints was identified which included two residual, possibly Mesolithic/early Neolithic blades recovered from a stakehole (10536), which probably dates from the Iron Age. Blade-like flakes, blades and bladelets were identified on almost all of the others sites including Sites D, E, F and J, but some or all could easily belong to the Mesolithic period.

Fig. 2.5 Plans of possible post-alignment or building in Site A

The late Neolithic/early Bronze Age

Beaker pits on Site D

A late Neolithic/early Bronze Age Beaker pit (6161=6512) containing Beaker pottery and significant quantities of struck flint was found against the southern edge of the site (Fig. 2.6). Other finds of residual pottery, flint and a pit (6910) with similar struck flint also probably date to this period. The distribution of features and that implied by the residual finds indicates a scatter of activity without any specific focus. Struck flint of this date was found in this area during the HS1 field walking survey (OAU 3103) and the field walking carried out for the A2 scheme itself (OA 2003), while excavations during the HS1 work at Northumberland Bottom revealed a double beaker burial some 130m to the south. This location clearly acted as an important focus of activity during the late Neolithic/early Bronze Age.

The two halves of pit 6161 were excavated in a different fashion. The western half was excavated by context bulk sampling, which led to the recovery of the entire assemblage and allowed us to examine context variability but did not allow any detailed examination of the spatial distribution of finds within contexts. The second half was excavated by controlled spits, with detailed 3D recording of each find. Residual spoil from this was also retained for micro-debitage and environmental analysis. Most of the finds and nearly all the pottery, however, proved to have been in the western half.

The pit was 1.2m long by 0.95m wide and was 0.33m deep (Fig. 2.6). The feature had four fills, all sandy silts, which contained charcoal, burnt flint and pottery. A maximum of 17 pottery vessels were identified from the pit (see Figs 2.36 and 2.37), some being represented only by single fragments. Additionally, 485 pieces of struck flint were recovered, mostly from the middle fill (6163). Much of the assemblage is flake debitage, but tested nodules, cores, fine shatter and some tools are also present, indicating that knapping occurred here or nearby.

Fragments of animal bone were recovered but none could be identified, and although all of the fill was floated, only one indeterminate cereal grain and some vetch/vetchling seeds were recovered. Hazelnut shells were, however, more numerous, and oak and birch/hazel-family charcoal was identified. Two radiocarbon dates were obtained on material from this pit. One, on charred residue on one of the potsherds, gave a date range of 3940–3640 cal BC (NZA-31250), which is clearly too early (the Beaker period spanning 2400–1700 BC). The other, on a hazelnut, gave a date range of 2470–2210 cal BC (NZA-32282), and does fall within the earliest part of the Beaker period.

One other feature on Site D—pit 6910—may also be of this date. This was around 110m to the north-west of pit 6161, and measured 0.7m by 0.65m and 0.18m deep (Fig. 2.6). The single fill contained four thin regular flint flakes, which are likely to date from the late Neolithic/early Bronze Age, and part of an antler (sf 1936).

Much of the remaining struck flint from Site D is also likely to be of this date, and was recovered as residual material in a variety of features including Roman ditches (6384, 6940, 6941 and 6944). The only other Beaker activity was a residual Beaker sherd from gully 3005 on Site A.

Pits and residual finds on Sites E and F

An isolated, burnt pit (8038) containing five abraded sherds of probable Beaker pottery was found near the eastern end of Site F (Fig. 2.7), while a large sherd from the rim and collar of a Collared Urn was recovered from the surface of a burrow which cut this feature. It was also cut by gully 8037. Although it is possible that the Beaker pottery was residual, or already old when it became incorporated into the pit, an early Bronze Age date seems most likely. The pit was roughly oval in plan, measuring 1.6m by 1.2m across, and was 0.6m deep. It contained a number of burnt fills, indicating that several episodes of burning had taken place within the pit.

Two further pits on Site F might also have belonged to the same period, although they did not contain chronologically diagnostic artefacts. Pit 8062 lay around 50m to the south-east of pit 8038, and also contained burnt fills, although in this case there was no indication that the fire occurred *in situ*. The only finds recovered from this pit were a large number of fragments of fired clay (306 pieces, 105g) and a fragment of glass. The third feature, pit 8022, lay around 45m to the north-west of pit 8038. The only finds recovered from it were two flint flakes and a flake core.

A small assemblage of flint was recovered from Site E, mostly as stray finds in later features. Much of this flint appears to be late Neolithic/early Bronze Age in date, but some may also be of later Bronze Age date, associated with the enclosure found in Site G just to the east.

Pits and residual finds on Site G (9407 and 9270)

Around 9m to the north-west of the early Neolithic ramped posthole described above, two small pits were found which may have dated from the late Neolithic/early Bronze Age. These two features intercut (see Fig. 2.3).

The earlier pit (9270) was oval, measuring 0.35m across and 0.18m deep, and the upper edges of the pit were reddened by burning. The pit's fill contained a high proportion of highly comminuted charcoal, suggesting that this feature was used as a hearth or cooking-pit. The only finds recovered from the small area of fill not truncated by later oval pit 9470 were four flint flakes and a small fragment of unidentified animal bone.

Pit 9407 measured 0.5m by 0.4m across and was 0.35m deep. This pit contained an unusually

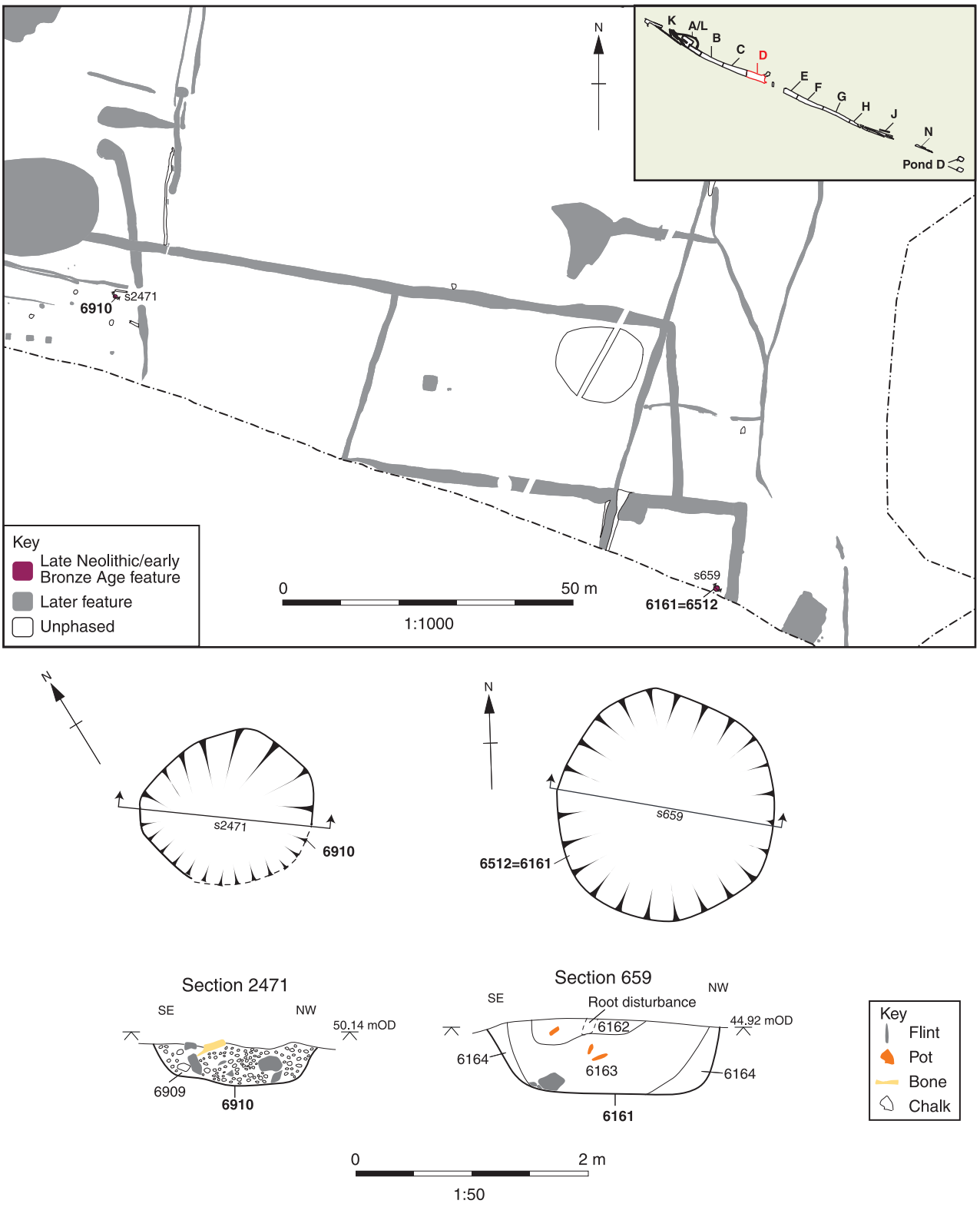


Fig. 2.6 Plan showing location of Beaker pit 6161 and pit 6910, together with detailed plans and sections

arranged assemblage of flints, some of which were found on edge within the cut. The flint was very fresh, suggesting that it was not residual, and the assemblage has been dated to the late Neolithic or early Bronze Age. It may be pure coincidence that this pit lay almost entirely within earlier feature 9270, but it is more likely that this feature was of a similar date, and so was still visible and remembered when 9407 was dug.

A single pit (9223) on Site G contained flints that suggested an early Neolithic date (see Fig. 2.3), but radiocarbon-dating of charcoal gave an early

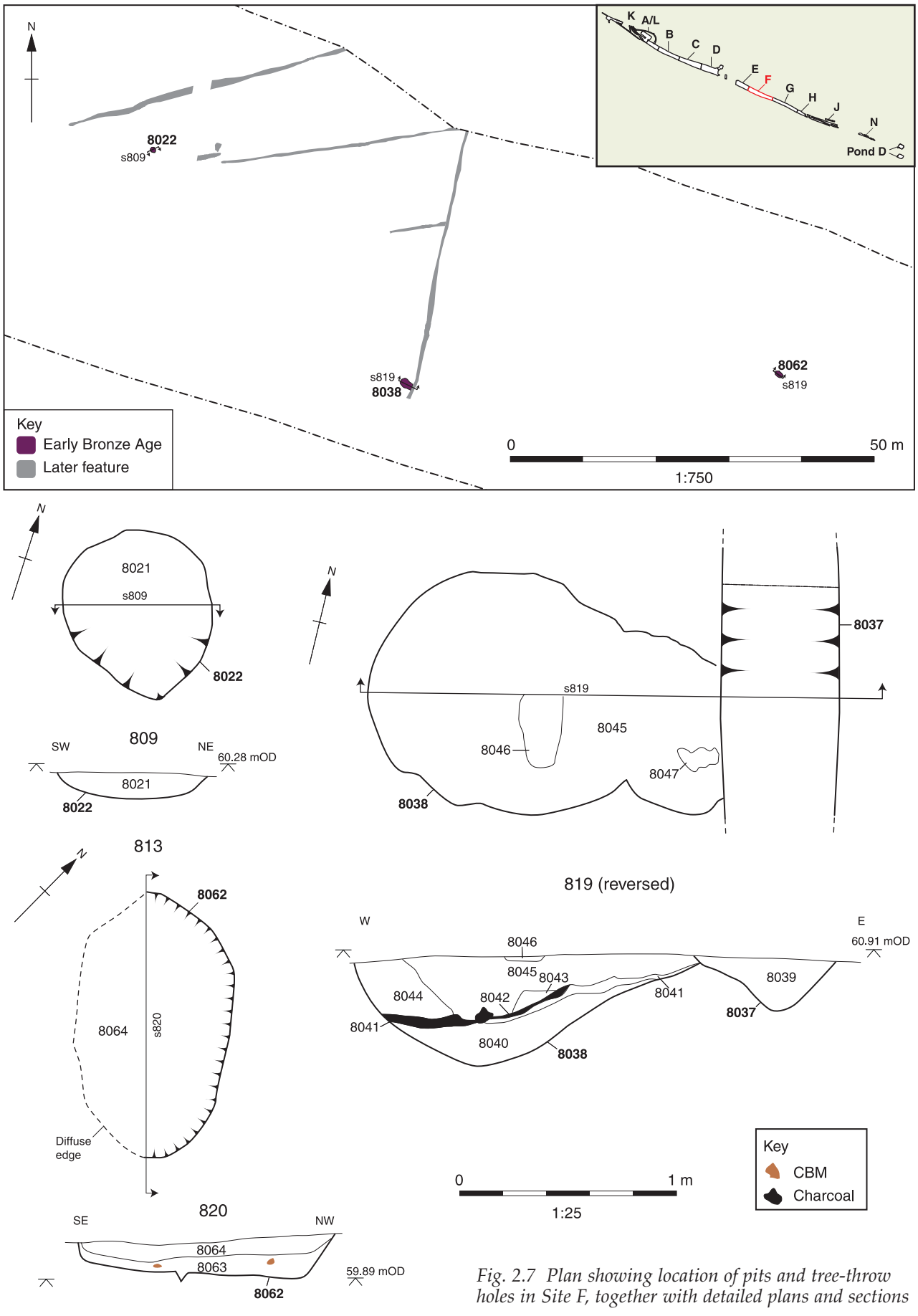


Fig. 2.7 Plan showing location of pits and tree-throw holes in Site F, together with detailed plans and sections

Bronze Age date of 1780–1610 cal BC (NZA 30115). The feature cut a spread of colluvium (9584) containing early Neolithic flints (see above), and it is most likely that the flints are residual, given that the sample came from a lower fill rich in charcoal and burnt flint, one of several within the pit. The pit measured 1.5m by 1.1m across and was 0.4m deep. It contained a series of charcoal-rich fills with burnt flint, some fired clay, and struck flint which included a small leaf-shaped arrowhead and a flint end scraper (SFs 1627 and 1625).

Other finds probably of late Neolithic/early Bronze Age date from the vicinity include a fine early Bronze Age plano-convex knife and a probably early Bronze Age thumbnail scraper, from linear hollows 9461 and 9537 respectively. Both of these features contained middle Bronze Age pottery, so the early Bronze Age flint is probably residual (for details of the hollows see below). Hollow 9461 also contained a middle Neolithic transverse arrowhead.

Flint from a colluvial deposit (11134) on Site J

A small collection of flint, mostly probably dating from the late Neolithic/early Bronze Age, was recovered from Site J. This flint included a small group, in a fresh condition, from the surface of a colluvial deposit (11134) within a natural roughly semicircular depression 12m by 5m across. A wide slot was excavated through this, but recovered only a very few further finds, probably indicating that the activity had taken place on the surface of the feature. Four scraps of Beaker or early Bronze Age pottery (weighing only 4g) were also recovered from this deposit.

Site J also yielded a stray later Neolithic Levallois-style discoidal core, which was found close to the boundary with Site H. This piece lay at the interface of the subsoil with HS1 backfill and may not have been in its original context.

Residual finds from other sites

Numerous smaller areas of late Neolithic/early Bronze Age activity were identified along the route. Several flints were recovered from Site K that are typical of this period, usually as residual finds in later features, including, for example, a backed knife from Iron Age pit 10515. Cremations of early Bronze Age date were found close by during the HS1 excavations, and there was probably other activity connected with these from which the finds derived. Alternatively it is possible that the finds were brought downslope in colluvium from Sites L or A, although apart from one possible Beaker sherd on A and a residual flint arrowhead of uncertain form and date from a Roman grave on Site L, there was very little early prehistoric material found on either site.

A single early Bronze Age rim was found on Site B in a late Iron Age pit (4458). On Site C, several residual flint tools were identified that may also be of this date, including a triangular arrowhead (ditch 7393), a thumbnail scraper (pit 5992) and a backed knife (ditch 5910).

Pond D North yielded a significant assemblage of flint, all residual in later features or layers. Analysis of these has indicated that many of the retouched forms are probably of middle to late Bronze Age date while much of the reduction sequence, including many of the cores, indicated a late Neolithic/early Bronze Age date. Two different phases of activity appear to be indicated, the earlier being knapping activity that probably took place on a slight knoll just north-west of the excavated area, and from which flint has been moved southwards downslope by later colluviation. Pond D South also produced a very small assemblage of struck flint (24 pieces). The assemblage has characteristics both of the late Neolithic/early Bronze Age and the later Bronze Age.

MIDDLE TO LATE BRONZE AGE SITES

The most significant of the middle and late Bronze Age discoveries along the A2 (Figs 2.8–9) was the remains of a middle Bronze Age L-shaped ditched enclosure associated with a roundhouse, a short posthole alignment, and a variety of pits and hollows on Site G. A further middle Bronze Age ditched L-shaped enclosure was found on Site C, and was associated with a pair of gullies or palisade slots to the west, one of which also contained Deverel-Rimbury pottery. Domestic activity may also have been represented by a small group of pits on Sites L and A, as well as by a very poorly dated group of post- and stakeholes and a pit on Site D.

Later Bronze Age funerary evidence is represented by small groups of cremated remains on Site C west of the L-shaped enclosure, and one more to the east on Site D. A further isolated cremation deposit was found on Site B. A more unusual deposit of cremated animal remains, associated with a group of Deverel-Rimbury vessels and a large deposit of fired clay, was found on Site L.

Due to the scarcity of material suitable for radiocarbon dating and the often very fragmentary condition of the pottery, it has not been possible to establish a more detailed chronology for many of these remains. This is the case for the enclosure on Site G, where only a small assemblage of pottery was recovered, and which, despite obtaining a series of OSL and radiocarbon dates, can be dated only broadly to the middle Bronze Age. The date of the enclosure on Site C is established by two radiocarbon dates from a middle fill, which are both of the 14th or 13th centuries cal BC, in the middle Bronze Age. There was no material suitable for radiocarbon dating from the pits on Site A, but both contained pottery with Deverel-Rimbury and Plain Ware attributes and may date from the transition between the middle and late Bronze Age (Morris 2006). Too little evidence was recovered from the features on Site D for any chronological certainty to be possible.

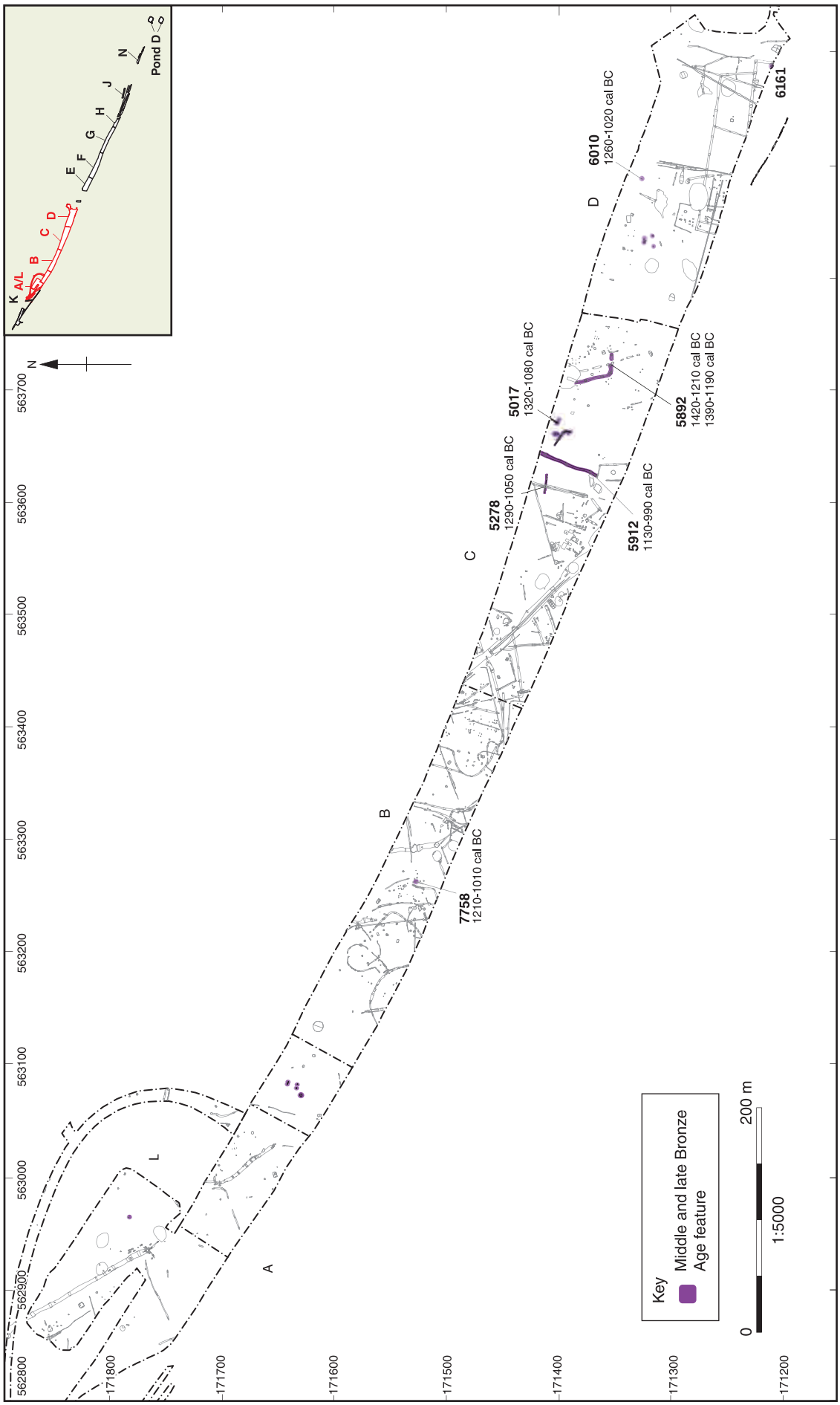


Fig. 2.8 Plan showing middle and later Bronze Age features in areas L–D with radiocarbon dates

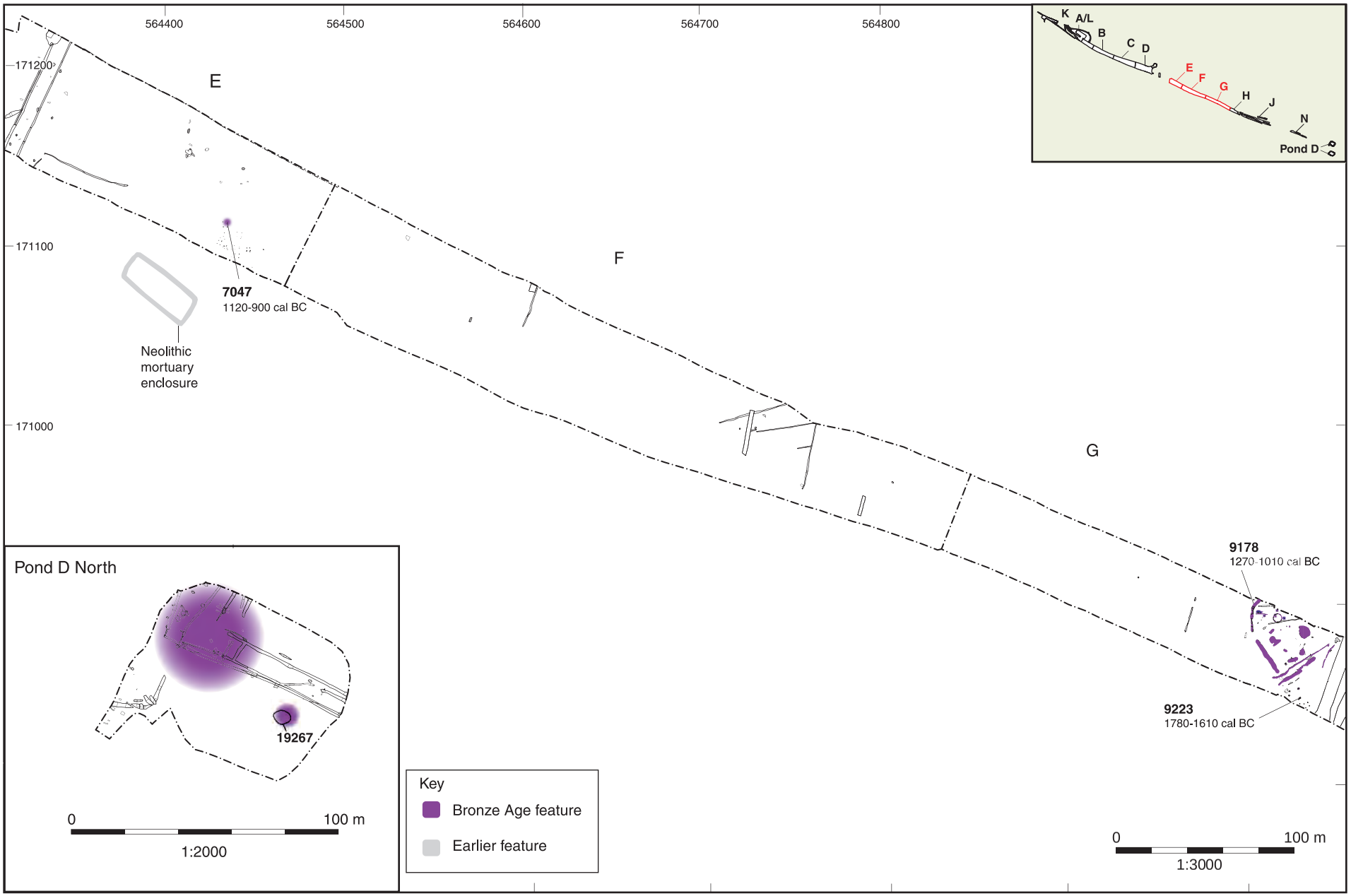


Fig. 2.9 Plan showing middle and later Bronze Age features in areas E–G and Pond D North, with radiocarbon dates

Radiocarbon dates have, however, been obtained from a number of the cremation deposits and their chronology is, therefore, more certain. The cremation deposits on Site C probably date from the 13th or 12th centuries cal BC, again suggesting a transitional middle–late Bronze Age date, and pottery in one of the undated cremation burials suggests that cremation continued in the succeeding Plain Ware phase of the late Bronze Age. The cremation deposit on Site B, whose radiocarbon date range centres upon the 11th century cal BC, also belongs to the late Bronze Age.

With the exception of pit 5280, however, there is no clear ceramic evidence for late Bronze Age activity associated purely with Plain Ware. There is also no middle Bronze Age evidence which can be clearly shown to date from before the 14th century cal BC, although it is possible that activity at the Site G enclosure began before this date.

Enclosure and trackway in Site G

Near the centre of Site G several stretches of curving ditch forming the west and south sides of a probable ditched enclosure were found, the ditch continuing on the north-west beyond the edge of the excavation (Fig. 2.10). A series of gullies much shallower than the main enclosure ditch appear to have defined the south-eastern side of this enclosure, and both cut and were overlain by an area of flints interpreted as a cobbled trackway. Within the excavated part of the interior, the northern part contained the remains of a roundhouse and a short alignment of postholes (Plate 2.2). The southern part, in contrast, was occupied by a variety of pits and hollows. The hollows fall into two groups: one of roughly rectangular linear features, and the other of large circular features.

Chronology

Two sources of evidence have been used to date these features. A sequence of three optically stimulated luminescence (OSL) dates and a radiocarbon date from the enclosure ditch provide absolute dates (Table 2.1). The pottery provides a more widely distributed means of dating.

The three OSL dates were obtained in a stratigraphic sequence from section 925 (cut 9105) across ditch 9178 (see below; Fig. 2.11). The lowest sample (OSL 4), which gave a date range of 1780–1290 cal BC at 68% confidence, came from the second major layer of fill (9117) within the ditch and thus probably slightly post-dates the cutting of the ditch. The uppermost sample (OSL 2), with a date range of 1580–500 cal BC at 68% confidence, came from the uppermost layer of fill within the ditch (9112). The OSL dates thus span almost the whole period over which the ditch filled.

Since they lie in a stratigraphic sequence, the three OSL dates can be refined using Bayesian modelling, as it is implemented in the programme OxCal (v. 4.0). The model that has been used is shown in Fig. 2.12. It should be stressed, however, that the three dates do not correspond very well to the stratigraphic sequence. The middle sample (OSL 3: 2170–1600 cal BC) could be earlier than the date indicated by the lowest sample (OSL 4: 1780–1290 cal BC), although the large errors associated with both, and especially with the lower date (OSL 4), means that they do not necessarily contradict each other. When they are placed in a sequence by the OxCal model, however, the estimated posterior distribution for the middle date (OSL 3) is significantly different from the prior distribution, as the

Plate 2.2 Site G middle Bronze Age enclosure interior showing roundhouse 9440 and pits

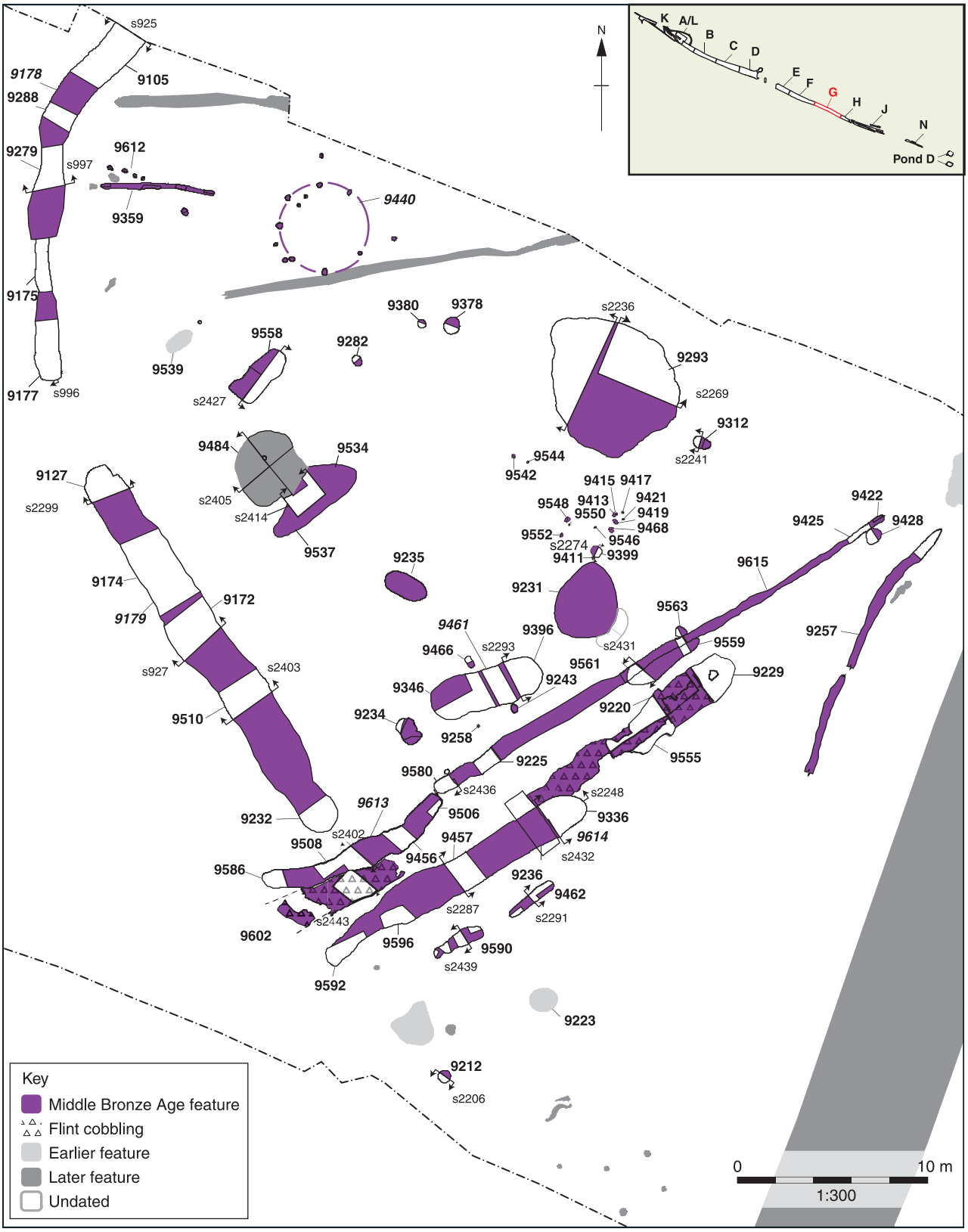


Fig. 2.10 Plan of Site G west

Table 2.1: summary of OSL and radiocarbon dates from ditch 9178 in Site G

Sample/ Lab. no.	*Context*	*Date*	*Date range (cal BC)*	*Estimated posterior distributions (cal BC)*	*Material*
Boundary (end of deposition)				1360- cal AD 170 (95.4%)	
OSL 2	Ditch 9178, cut 9105, context 9112	3050±540 before 2007	1580-500 (68.2%)	1640-600 (95.4%)	
OSL 3	Ditch 9178, cut 9105, context 9113	3980±290 before 2007	2170-1600 (68.2%)	1850-1100 (95.4%)	
NZA 30234	Ditch 9178, cut 9177, context 9159	2939±40 BP	1260-1050 (68.2%) 1270-1010 (95.4%)	1300-1020 (95.4%)	Large mammal bone, shaft fragment
OSL 4	Ditch 9178, cut 9105, context 9116	3540±240 before 2007	1780-1290 (68.2%)	1990-1160 (95.4%)	
Boundary (start of deposition)				2840-1120 (95.4%)	

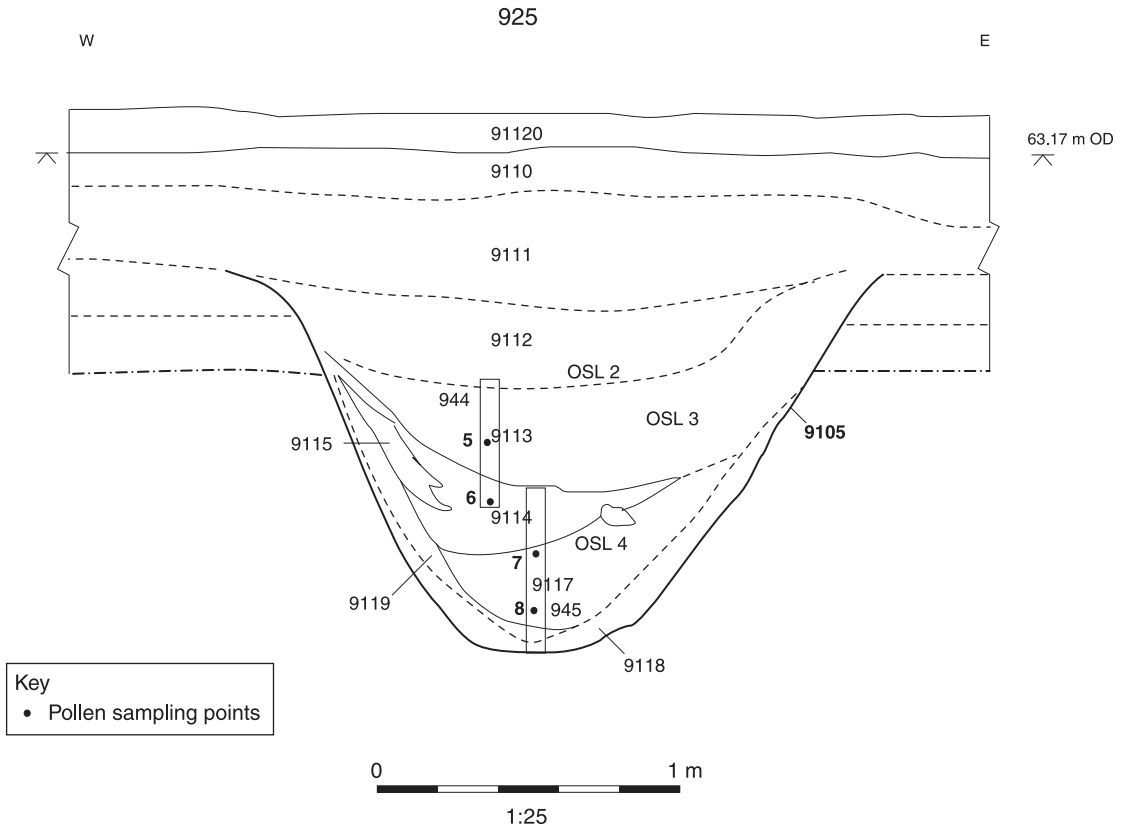
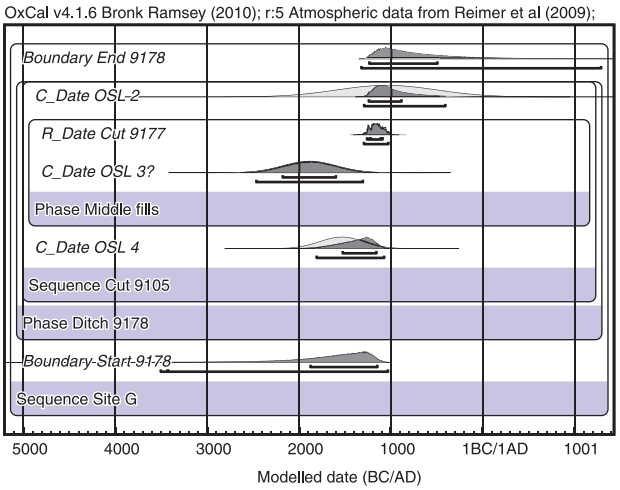


Fig. 2.11 Site G enclosure ditch 9178 section 925, showing location of OSL samples and pollen monoliths

index of agreement between these two distributions calculated by OxCal makes clear (A= 54.5%; generally accepted levels are > 60%).

Better control is provided by the single radiocarbon date of 1270–1010 cal BC (NZA-30234), which was obtained from a fragment of large mammal bone (9159) from one of the middle layers of fill (9157) in cut 9177 across the same ditch (Fig. 2.13). This bone formed part of a large group that at the time of excavation was believed to include some articulated remains. Most of these bones did not survive lifting, however, and very few could be identified, so this could not be established for certain. Nevertheless, the large group of bones suggests that the incorporation of residual material is highly unlikely, so this date can be regarded as secure.

Because they were obtained from different sections, at the southern and northern ends of the exposed section of the ditch, the radiocarbon and OSL dates cannot be correlated precisely, although it is clear that the radiocarbon date falls between the earliest and latest OSL date. The model therefore placed the radiocarbon date in sequence post-dating the lower OSL date and predating the upper OSL date. Due to the lack of congruence between the radiocarbon date and OSL3, OSL3 is believed to be suspect, probably incor-



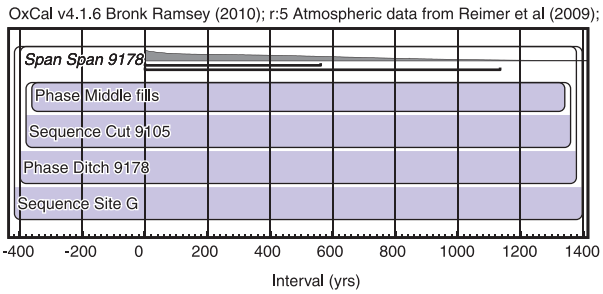


Fig. 2.12 (left and above) Modelled OSL and radiocarbon dates from Site G ditch 9178

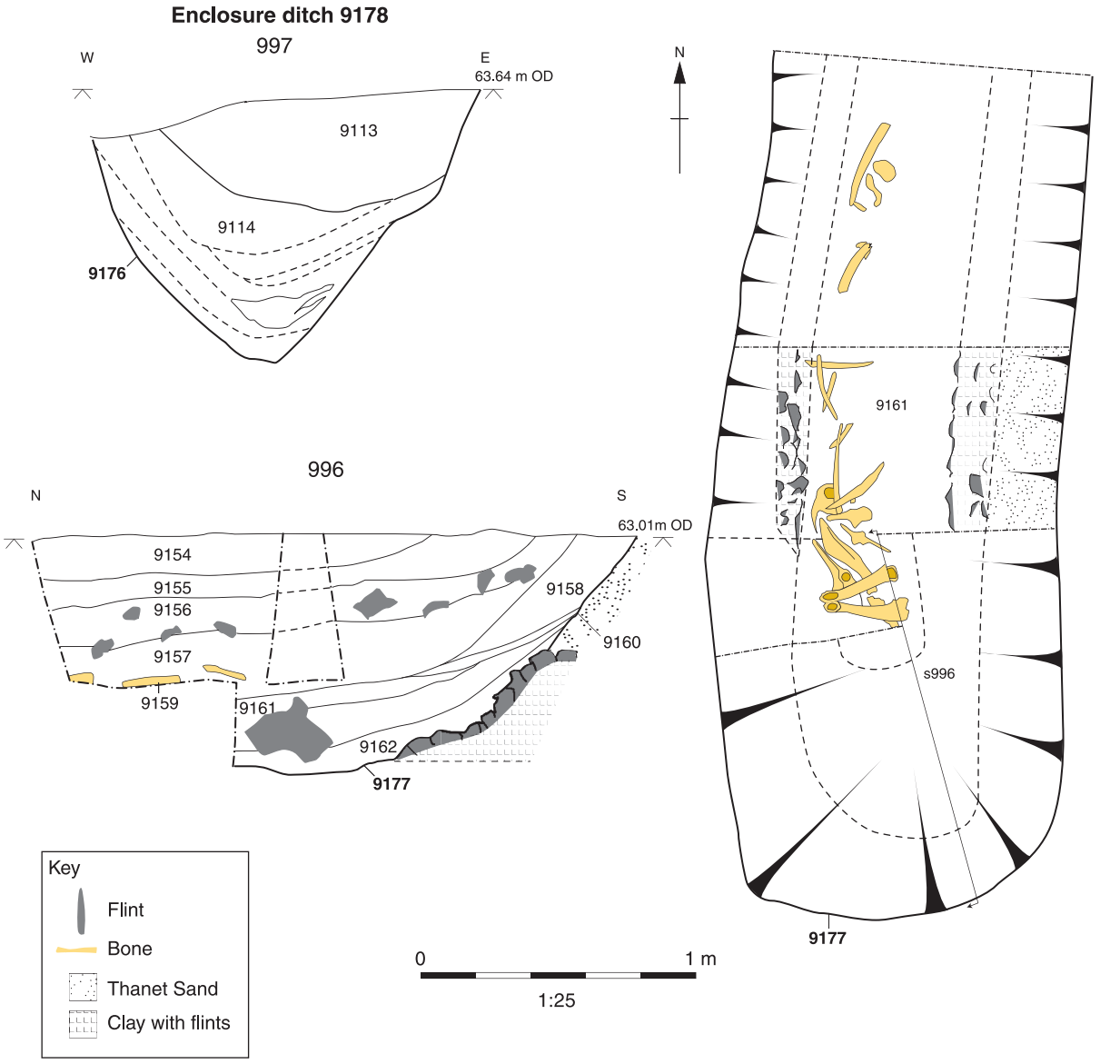


Fig. 2.13 Plan and sections of south terminus of enclosure ditch 9178 showing bone spread

Table 2.2: Summary of the proportions of pottery by fabric groups from features and structures in Site G, quantified by weight (g) (Total weight of pot per fabric group as a percentage of all pot in the same group; 0 = <0.5 %)

Group	*Total weight (g)*	*Grog*	*Grog & flint*	*Flint & grog*	*Flint*	*Flint in sandy*	*Shell*	*Unident. frags*	*Comments*
Enclosure ditch									
9178	71	34	6		61				
9179	136			32	65		2	1	
9614	39			3	79	18			
Shallow gullies									
9613	114				100				
9462	6				100				
Features within the enclosure									
Pit 9212	7				100				
Hollows									
9234	12				100				
9235	8				100				
9461	101		1		99				
9537	7				100				
9559	2				100				
9231	209				100				Globular urn?
9293	234	4			96		0		

porating residual earlier quartz grains, and was therefore excluded from the revised model.

Overall, even after modelling, the OSL determinations do not help to fix the date of the ditch very precisely. They suggest that the life of the ditch, from cutting to final fill, probably spanned a period of up to 600 years (68.2% probability) lying somewhere in the 2nd millennium cal BC (Fig. 2.12). The date at which the ditch was cut can be defined only to between 2000 and 1260 cal BC (68.2%), and its final infilling probably from 1250 to 770 cal BC (68.2%). The radiocarbon date alone provides a better basis for estimating the date, as from the size and profile of the ditch, and the geology through which it was cut, it is very unlikely that the ditch fills below the bone deposit took more than 200 years to accumulate. The ditch is therefore most likely to have been middle Bronze Age in origin.

The pottery in almost all of the features in Site G belongs to the flint-tempered fabric group (Table 2.2), and has been attributed to the middle Bronze Age. A sherd of probable globular urn in hollow 9231 also suggests a middle Bronze Age date. The uppermost fills of the enclosure ditch (9614 and 9179) did contain some later pottery, which was tentatively ascribed to the late Bronze Age and early Iron Age, and this is plausible for the tertiary silting of the ditch, also being consistent with the dating suggested by OSL2. Some grog-tempered sherds were found in ditch (9178) and in one of the hollows (9293), but always in association with larger quantities of flint-tempered pottery. The grog-tempered sherds have been attributed a late Neolithic/early Bronze Age date, and could, therefore, have been residual. Grog temper is, however, also characteristic of the transition from the middle Bronze Age to the late Bronze Age (Morris 2006), and these sherds could indicate that activity on the site continued into this transitional period. Many of the pits, hollows, gullies and postholes, including those associated with roundhouse 9440 and posthole alignment 9612, did not contain any pottery. It is only on the basis of their locations that these features are regarded as contemporary with the ditched enclosure.

Overall, then, it seems likely that the bulk of the occupation occurred in the middle Bronze Age (*c* 1600–1100 cal BC), but may have continued into the early part of the late Bronze Age.

The L-shaped enclosure ditches

The most conspicuous features on Site G were a series of ditches which defined what may have been an L-shaped (or more literally a J-shaped) enclosure, though because this enclosure lay only partially within the area of the excavation its full size is unknown (see Fig. 2.10; Plate 2.3). From the south-east to the north-west the ditches covered a distance of 44m, and given the curve to the east in the northern end of the ditch, this may be close to the full width of the enclosure. From the south-west to the north-east, features extended for a distance of 38m.

The western side of the enclosure was defined by two ditches, 9178 and 9179 (Fig. 2.10). The northern ditch, 9178, curved for nearly 20m from the northern baulk to its southern terminus. There was a gap of 5m between this ditch and ditch 9179,

which ran south-east in a straight line for 22.5m (Plate 2.4). A further gap of 4.5m separated ditch 9179 from the line of ditch 9614, which defined the south-eastern side of the enclosure, and ran north-east for 16m.

There was a gap of 31m between the end of ditch 9614 and the northern edge of the excavation (measured in a straight line following the alignment of the ditch). Two shallow gullies (9615 and 9257) ran most of the way across this gap, as did one of the hollows (9555), and it is clear that any boundary along this line was defined in a quite different way from that marked by the main enclosure ditches.

The profiles of the enclosure ditches varied. Ditch 9178, for example, was generally U-shaped in section (Fig. 2.13), while ditches 9179 and 9614, in contrast, were usually Y-shaped in section (Figs 2.14–15). In several of the sections across these ditches (2299, 927, 2432 and 2248) the profiles were distinctly stepped at the transition between the lower steep-sided part of the profile and the splayed upper part. This pattern is similar to that found in sections cut across the ditch of the experimental earthwork at Overton in its 32nd year (Bell *et al.* 1996, figs 7.5–6), where the upper part of the profile had collapsed due to erosion, the original profile only surviving at the bottom where it had been protected from erosion by the rapid accumulation of the ditch's primary fill. This suggests that at Site G, ditches 9179 and 9614 originally had much steeper, straighter sides and were much narrower, only around 1.0–1.4m wide at the surviving surface. The recorded maximum widths of these ditches varied from 1.0 to 2.4m, but was typically around 2.0m. The depths of the ditches varied, ranging from 0.8 to 1.7m. All of the ditches became shallower towards their ends.

Plate 2.3 Site G view looking south along the middle Bronze Age enclosure ditch

Plate 2.4 Site G middle Bronze Age enclosure ditch 9179 looking north-west

The ditch fills appear to have accumulated from both sides, and probably derived primarily from collapse of the sides of the ditch itself. There was no clear indication of greater fill on one side to suggest the location of a bank. Although there was a strip, nearly 5m wide, to the north-east of ditch 9179 (within the enclosure) which was devoid of any features and could have been occupied by a bank, features extended up to only 1.5m from ditch 9178 and almost up to edge of ditch 9164. If all these features were contemporaneous with the ditch, any associated internal bank could only have been quite narrow.

Small quantities of finds were recovered from most of the sections that were cut across these ditches. The pottery belonged almost entirely to the flint-tempered group (Table 2.2; see above), and mostly came from the uppermost fills of the ditches. Only small quantities of sherds in other fabric groups were recovered. The flint consisted mostly of flakes, although there were a few examples of other types including blades, bladelets, blade-like flakes, a denticulate, scrapers, notches, a serrated flake and a core. A fragment from a quern made of purple ferruginous sandstone was found in one of the middle fills of ditch 9178 (cut 9105; Fig. 2.11).

Due to the acidic nature of the soils overlying the chalk, very little animal bone was recovered intact from the ditches. That a significant deposit had occurred in the terminus of ditch 9178 is clear (Fig. 2.13), but aside from presumably chance occurrences of bones from a toad and an unidentified amphibian, a single fragment of cattle bone was the only piece that could be identified. The site records, however, make clear that there was a pattern in the deposition of animal bone, as the second largest deposit (after that at the south end of ditch 9178) was from the southern end of ditch 9179. A small amount of animal bone was also recovered from a cut (9457) in the centre of ditch 9614, and from a small number of other features in the southern part of the site.

Although it was evidently uneven, no clear pattern was observed in the distribution of other finds along the ditches. An intrusive cast iron blade, probably part of an agricultural implement, was recovered from the uppermost fill (9124) of cut 9127 across ditch 9179.

Gullies running along the south-eastern side of the enclosure

A series of gullies, much shallower than the main enclosure ditches, ran along the south-eastern side of the enclosure (Fig. 2.10). Gullies 9613 and 9615 ran roughly parallel to the inner side of enclosure ditch 9614, ending 7m from the northern edge of the excavation. Outside the enclosure, two further small gullies (9590, 9462) also ran parallel to enclosure ditch 9614. A final gully (9257) extended for 15m outside the enclosure, curving slightly, from the south-west to the north-east, ending near to the northern edge of the excavation, close to the end of gully 9615.

Given that these features were so shallow (with depths of between 0.1m and 0.4m) it is possible that the gaps between some of them have been produced only as a result of truncation of their shallowest parts. It is thus possible that gullies 9613 and 9615, and gullies 9590 and 9462, were parts of what were originally continuous features. The widths of these gullies varied from 0.6m to 1.6m, but given that they

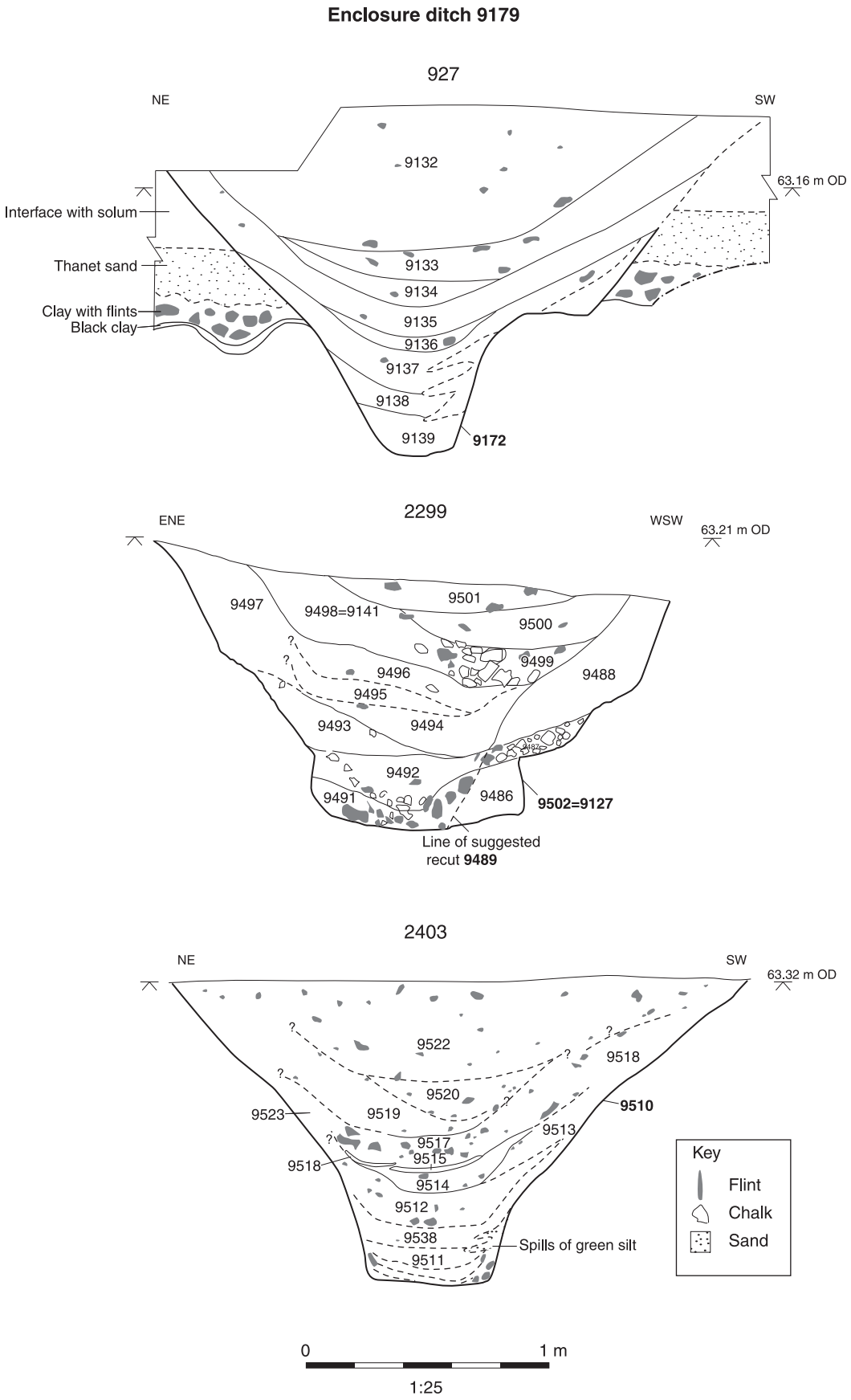


Fig. 2.14 Sections of enclosure ditch 9179

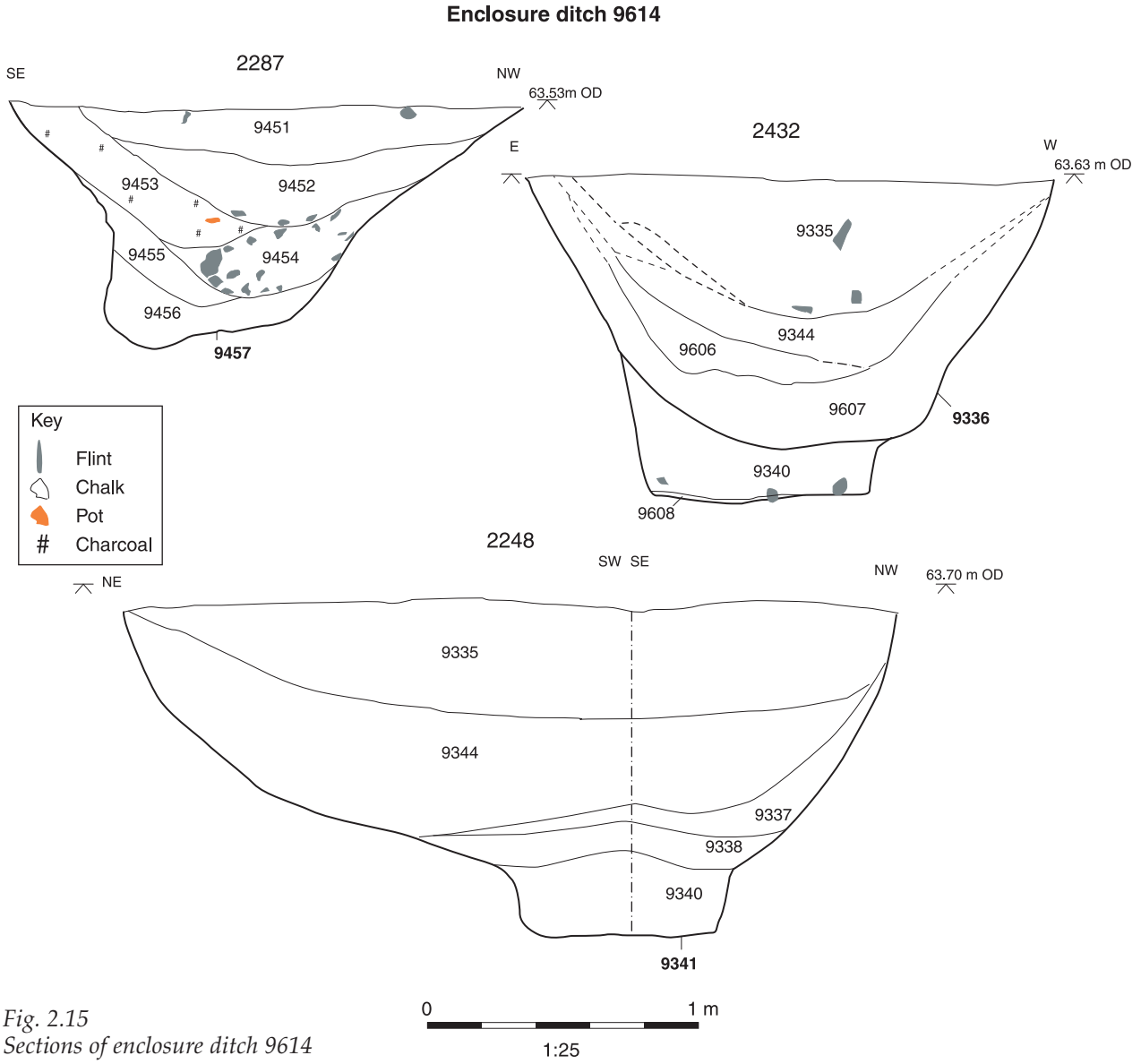


Fig. 2.15
Sections of enclosure ditch 9614

were bowl-shaped in profile, such variation may reflect the degree to which they have been truncated rather than variation in their original size.

Not surprisingly, given that they were such shallow features, the quantity of finds recovered from these gullies was small. Limited quantities of pottery, all belonging to the flint-tempered group, were recovered from two of them (9613 and 9462). Flint, consisting of blades, blade-like flakes, flakes and chips, was recovered only from gully 9613. Of the small quantities of animal bone recovered from gullies 9613 and 9462, only one fragment of cattle bone could be identified.

Flint cobbling along the south-east side of the enclosure

Running between ditches 9613 and 9614 in a north-easterly direction was a band of flint (9594, 9531) that formed a closely-packed surface in places, but was sparser in others (Figs 2.10, 2.16 and 2.17; Plates 2.5–6). This horizon was just over 2m wide at the south, narrowing to little more than 1m wide as it ran northwards. It was not traced beyond the end of feature 9229 to the north, nor beyond the end of ditch 9614 to the south. Towards the north this flint horizon was rarely more than one layer thick, but further south, where the flints were densest, there were patches where two superimposed layers were evident (Fig. 2.16 section 2443). The horizon was made up of irregular flint cobbles up to 0.18m long, but mostly in the range 30-100mm long. There was little clear sign of wear on the areas that were exposed, and no cart-ruts were seen. The flint horizon was cut by the east edge of ditch 9613, and by the north-west end of ditch 9614, but overlay broad shallow hollow 9229. It did not produce any finds, and it is possible that it was a natural hollow in which flints had accumulated. Only the faintest hollowing (9602) was evident further south in

section 2443, where the flint was densest, and this might just as easily have been formed by the passage of people and animals along a metalled surface.

Bands of what was interpreted as natural flint were found in Site C, but in the light of further excavations immediately north of Site C, one of these has been reinterpreted as a probable metalled holloway of late Bronze Age or early Iron Age date (see Site C below). In the case of the Site G layer, the juxtaposition of the flint band with the south corner of the enclosure ditch, and the common alignment of the flint and the ditches and gullies along the enclosure's south-east side, seems more than coincidental. The flint band did not appear within the

Plate 2.5 Site G middle Bronze Age cobbled surface 9594 looking north-east

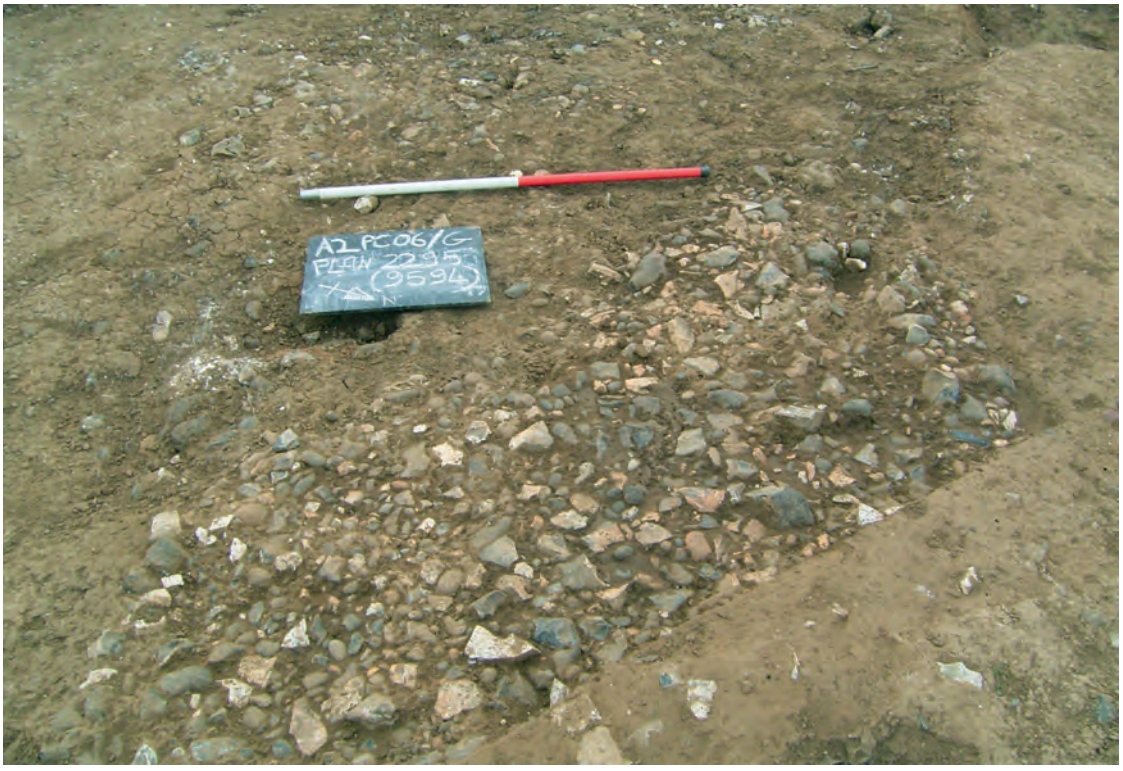


Plate 2.6 Site G detailed view of cobbled surface 9594

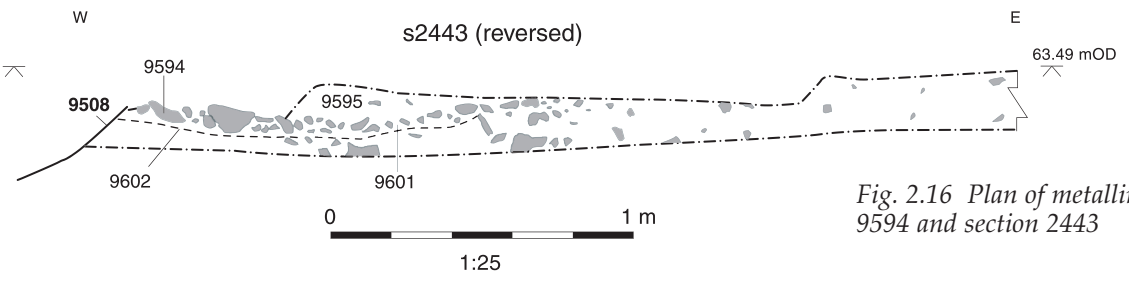


Fig. 2.16 Plan of metalling 9594 and section 2443

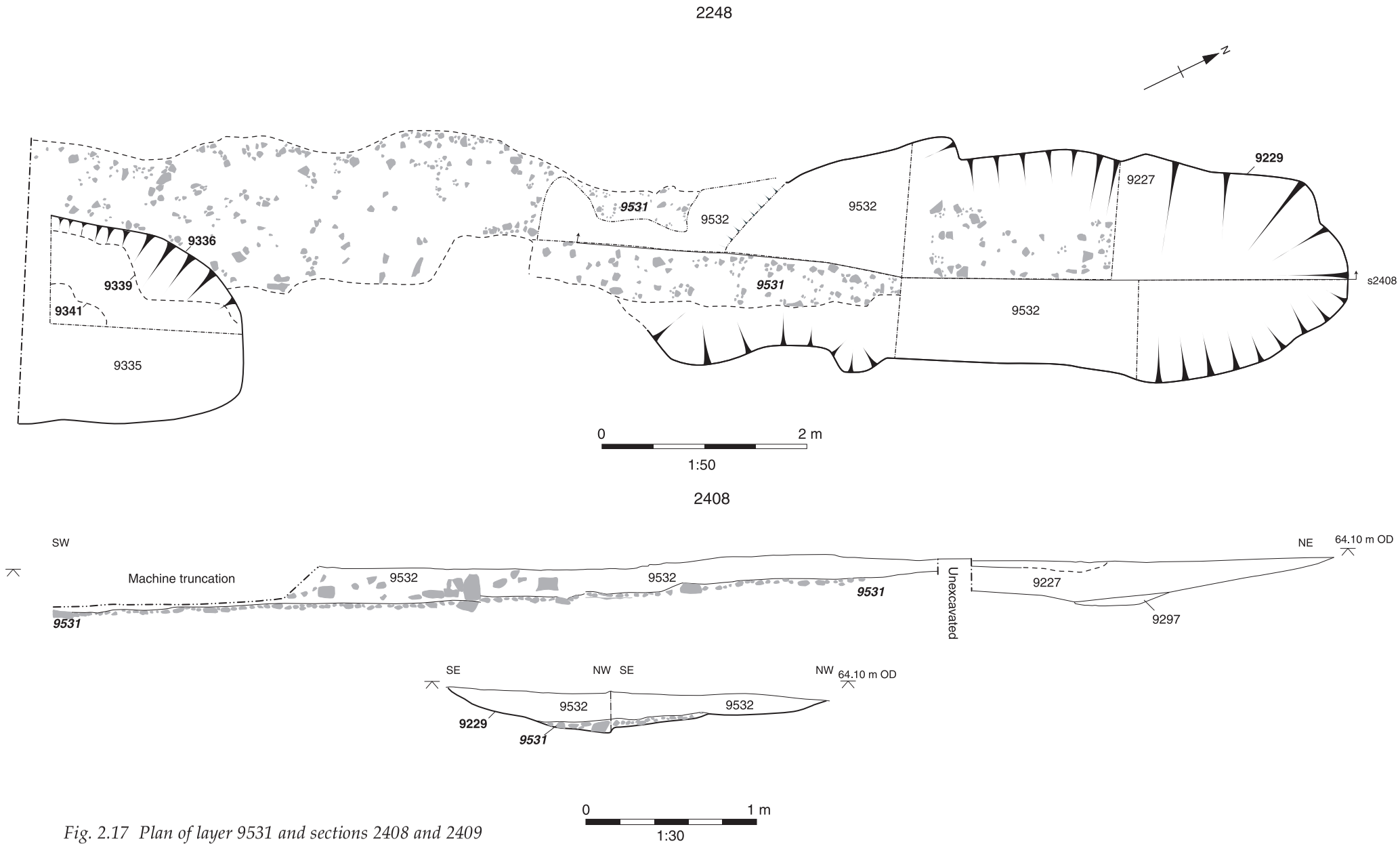


Fig. 2.17 Plan of layer 9531 and sections 2408 and 2409

interior of the enclosure, and only its edge was cut by ditch 9613. Given the erosion of the ditch sides discussed above, it is possible that the flint was originally respected in its entirety by the ditch, only apparently being cut by it as the ditch side eroded.

As this flint layer lay below the general Bronze Age ground surface, it seems unlikely that it would have been visible to the enclosure builders, had it not already become exposed by some means. If it was first encountered in digging the ditches, it was not a sufficiently thick deposit to have deterred them from digging through it. As the ditch did not follow it for any great distance, it clearly did not determine the alignment of this side of the enclosure. On balance, it is probable that the line of the flint was originally an unmade pathway, one that probably preceded the enclosure and was worn down by a combination of use and erosion due to the natural slope of the ground, forming deeper puddles in places such as feature 9229. Eventually it was decided to reinforce the pathway over a short distance, where the ground dropped south-south-westwards into the larger dry valley. This may have coincided with, or have slightly preceded, the digging of the enclosure ditches. The enclosure was then constructed to one side of this pathway, a pattern possibly also followed on Site C (see below).

Stratigraphic relationships along the south-eastern boundary of the enclosure

The south-eastern boundary was the focus for a range of other features, and the stratigraphic relationships between them show that they belong to more than one phase of activity. The stratigraphic relationships were not, however, sufficient to allow a simple sequence of all of the features in this area to be constructed. The longest sequence centred on gully 9615, which cut one of the large linear hollows discussed below (9559) and was in turn cut by two small pits (9563 and 9428). The south-eastern enclosure ditch (9614) and a second gully (9613) also cut large linear hollows (9229 and 9602 respectively). These latter two hollows, however, were distinguished by their flinty fills (see above) and may have been natural features.

Features within the enclosure

With the exception of one small pit (9212), all of the remaining middle to late Bronze Age features lay within the enclosure (see Fig. 2.10). The space within the enclosure can be divided into two parts according to the kinds of features which predominate. In the north-western part postholes predominate, some of which defined a small roundhouse (9440) and others a short posthole alignment (9612) (Fig. 2.18). Whilst a number of postholes were found in the south-eastern part of the enclosure, they did not define any clear structures, and in this area a range of pits and shallow hollows, both linear and circular, were the predominant features.

Roundhouse 9440

The clearest structure within the enclosure was a roundhouse defined by a circle of seven postholes (Fig. 2.18). An eighth posthole (9370) may have defined part of a porch which would have faced the east or south-east.

The post ring had a diameter of 4.0–4.5m. The postholes were quite evenly spaced, ranging from 1.2m to 1.9m, but most being 1.4m to 1.6m apart. The spacing suggests that a posthole was missing between postholes 9372 and 9368. Given that most of the postholes were from 0.1m to 0.3m deep, it is possible that this missing one had been removed by truncation. The widths of the postholes were very consistent, almost all measuring roughly 0.3m (Fig. 2.19).

The single posthole (9370) which may have been related to a porch was very similar in width to the postholes in the post ring (0.25m) but even more shallow (0.05m), underlining the possibility that the second posthole which would have been required to form a porch may not have been preserved. This posthole lay around 1.3m to the east of the post ring.

The only finds recovered from the postholes were two flint flakes. Charcoal was noted in two of them.

Posthole alignment 9612 and gully 9359

West of the roundhouse four postholes formed a row 2m long, aligned just off east-west. These postholes were slightly smaller than those related to the roundhouse (Fig. 2.19), measuring 0.2–0.3m across and 0.05–0.1m deep. Just to the south of this alignment, a short gully, 9359, ran for 6m east to west. The gully was narrow (0.2–0.3m wide) and shallow (0.1m), and was filled with orangey brown clayey silt. No finds came from either the posthole alignment or gully. Given the similar alignments of the postholes and gully, it is possible that one was a replacement for the other.

Other postholes, pits and hollows

A number of other postholes were found scattered throughout the enclosed area. The largest cluster, within which no order was apparent, lay in the south-eastern part of the enclosure, to the north of circular hollow 9231, but there were also two postholes within roundhouse 9440, three just outside it, and a few others scattered across the enclosure (see Fig. 2.10). Most of these postholes were smaller than those associated with the roundhouse and the posthole alignment, and were very shallow (Fig. 2.19). Apart from charcoal, none produced any finds.

A scatter of pits and hollows (linear and circular) was found with the southern part of the enclosure. All were shallow, but their size and shape was otherwise very varied (see digital report for detailed analysis of form).

Finds from the pits were fairly minimal for the most part, although the uppermost fill of pit 9399 was distinguished by the presence of a large quantity of flint, along with a fragment of copper-

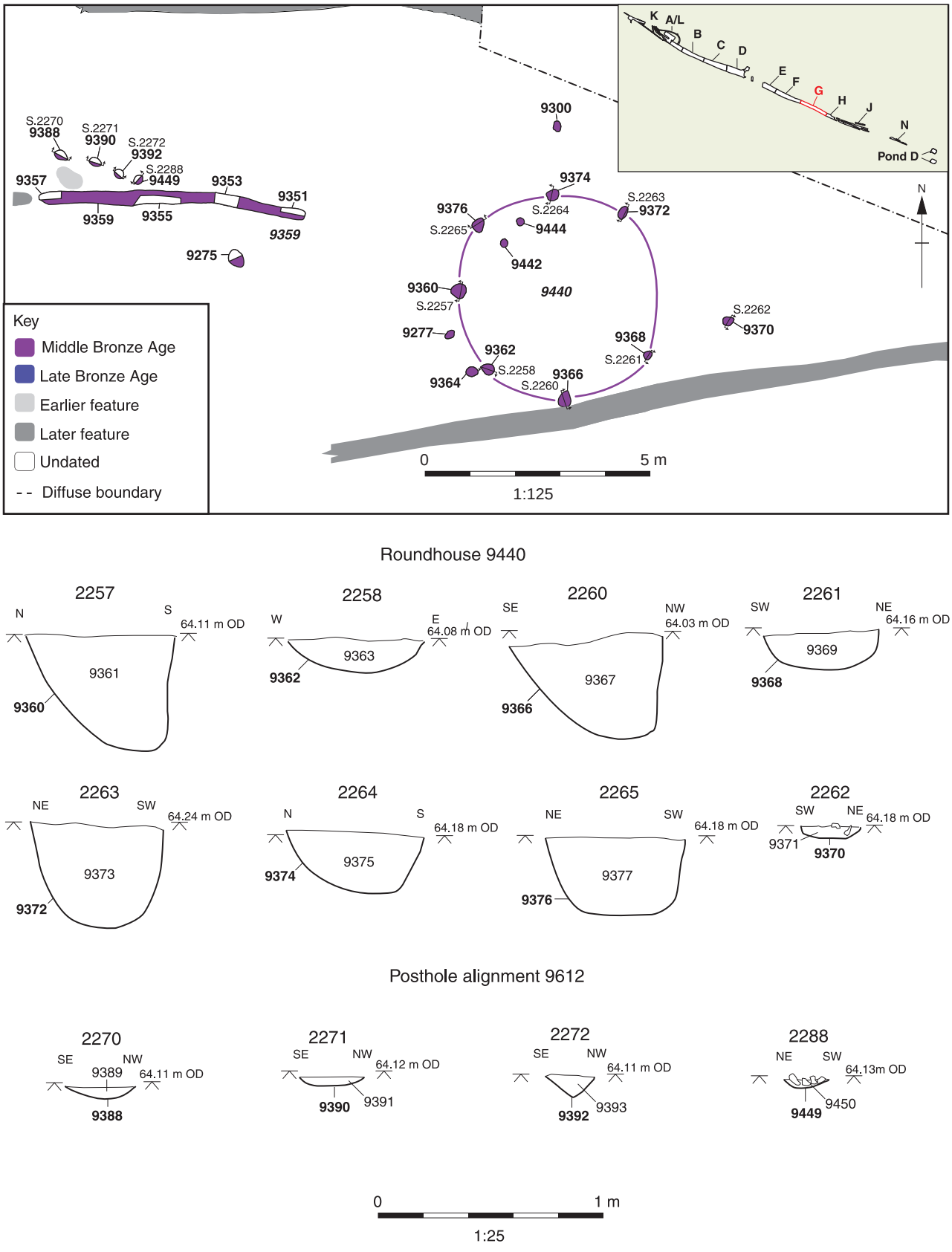


Fig. 2.18 Roundhouse 9440 plan and sections

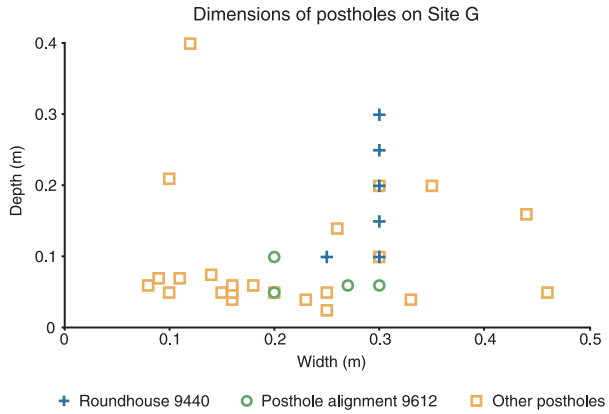


Fig. 2.19 Graph showing size of Bronze Age postholes on Site G

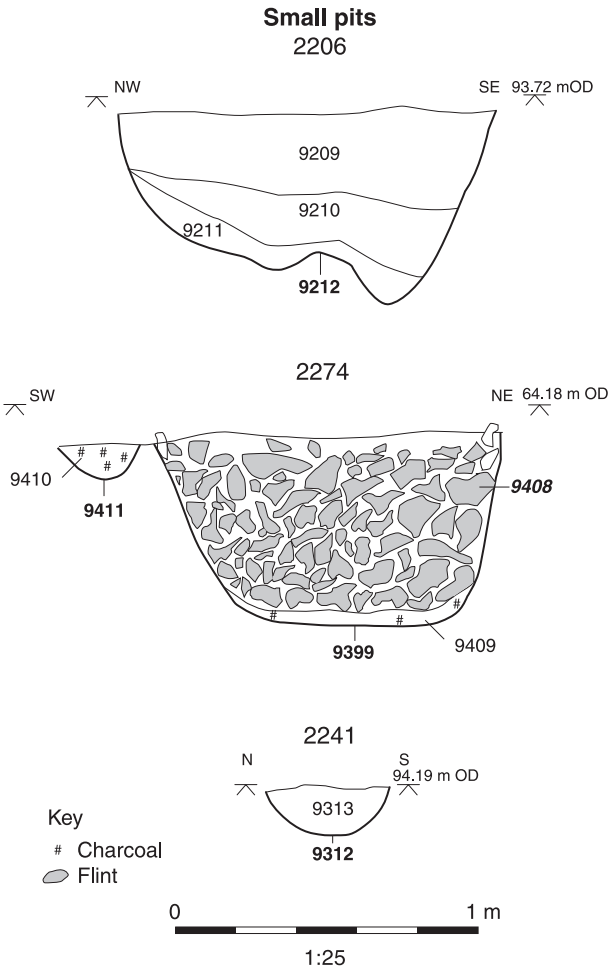


Fig. 2.20 Sections of pits on Site G west

alloy, and pit 9212, which lay outside the enclosure, contained two pottery sherds (both belonging to the flint-tempered group), a small quantity of animal bone and some unidentified charred grain (Fig. 2.20). Most of the hollows contained small quantities of pottery, but the larger circular hollows contained more. Almost all of this pottery belonged to the flint-tempered group, although single sherds in grog- and grog and flint-tempered fabrics were also recovered. A further circular hollow (9484) near to the centre of the enclosure, contained a large assemblage of early Iron Age pottery (see Chapter 3). Fragments of worked ferruginous sandstone, possibly fragments of querns, were found in three of the hollows (9231, 9293 and 9235).

Sites B and C

The later Bronze Age features in Site C have been dated on the basis of five radiocarbon dates (see Fig. 2.8 and Table 2.3) and pottery, and can be divided into three groups. At the eastern end of the site were two ditches (5892, 7424) forming an L-shaped partial enclosure (Fig. 2.21). Two radiocarbon dates of the middle Bronze Age were obtained from a middle fill of the main ditch (5892). The dates indicate that it predated a scatter of cremation burials and other small pits to the west. Radiocarbon dates from several of the cremations place them in the latter part of the middle Bronze Age (13th and 12th centuries BC), and overlap the transition to the post-Deverel-Rimbury phase of the later Bronze Age. Also in this central part of the site were two short lengths of gully or palisade slot (5740, 5289), which contained middle Bronze Age pottery, and so may have been contemporary with the L-shaped enclosure. The third element consisted of a north-south aligned ditch (5912) that lay to the west of the cremation burials. Although the chronological evidence for this feature is less clear than that for the cremation deposits, it appears to have been later, and probably dates from the late Bronze Age or later.

An isolated cremation burial (7758) was also found on Site B, from which a single radiocarbon date was obtained (Table 2.3), dating to the 11th century cal BC (see below, Fig. 2.25).

L-shaped enclosure: ditches 5892 and 7424

At the eastern end of Site C, an L-shaped enclosure was defined, primarily by ditch 5892 (Fig. 2.22; Plate 2.7). This ditch ran in an almost straight line, just off north-south, for 31m, and then turned at the south, just under 90°, to run for 10m east-west. A second, smaller ditch, 7424, may have been an extension of the east-west aligned section of ditch 5892, starting 4m to the west and continuing for 5.5m on the same alignment. The ditches thus defined the eastern and southern edges of a space which measured over 31m north-south and 19m east-west. To the north, ditch 5892 was destroyed by a much later denehole. No trace of an eastern side to this possible enclosure was seen within the excavated area, Further excavation work in the A2 Activity Park (Dawkes 2010), some 20m to the north, did not encounter a continuation of this ditch, suggesting that it must have ended or returned east just beyond the edge of the site.

No finds were recovered from the primary silts of ditch 5892, but layers of dark soil containing much pottery, charcoal and other finds came from middle-

upper fills 5484–6 and 5451 (Fig. 2.22). Two radiocarbon dates were obtained, one from a bone point, the other from some grains of barley, both of which were recovered from layer (5451) in section 858 (Fig. 2.22). The results from these samples were very similar, and pass a χ^2 test (df=1 T=0.3 (5%=3.8) indicating that the samples could have been of the same age. They suggest that the samples date from the 14th or 13th centuries cal BC (Table 2.3). Although this range overlaps with that suggested for the

Table 2.3: Summary of radiocarbon dates from Sites C and B

Site	*Context*	*Material*	*Lab no.*	*Date*	*Cal date BC (95.4% probability)*	*Cal date BC (68.2%)*
Cremation deposits near the centre of Site C						
C	Cremation pit 5017	Cremated human bone	NZA-30222	2979±35 BP	1380-1080	1270-1120
C	Cremation pit 5278	Cremated human bone	NZA-30145	2955±30 BP	1290-1050	1260-1120
Ditch 5892						
C	Ditch 5892, upper fill 5451	*Hordeum* sp.	NZA-30124	3044±35 BP	1420-1210	1380-1260
C	Ditch 5892, upper fill 5451	Bone point	NZA-30148	3018±30 BP	1390-1190	1370-1210
Ditch 5912						
C	Ditch 5912, upper fill 5298	Animal bone	NZA-32400	2884±20 BP	1130-990	1110-1010
Cremation deposit on Site B						
B	Cremation pit 7758	Cremated human bone	NZA 30151	2915±25BP	1210-1010	1190-1040

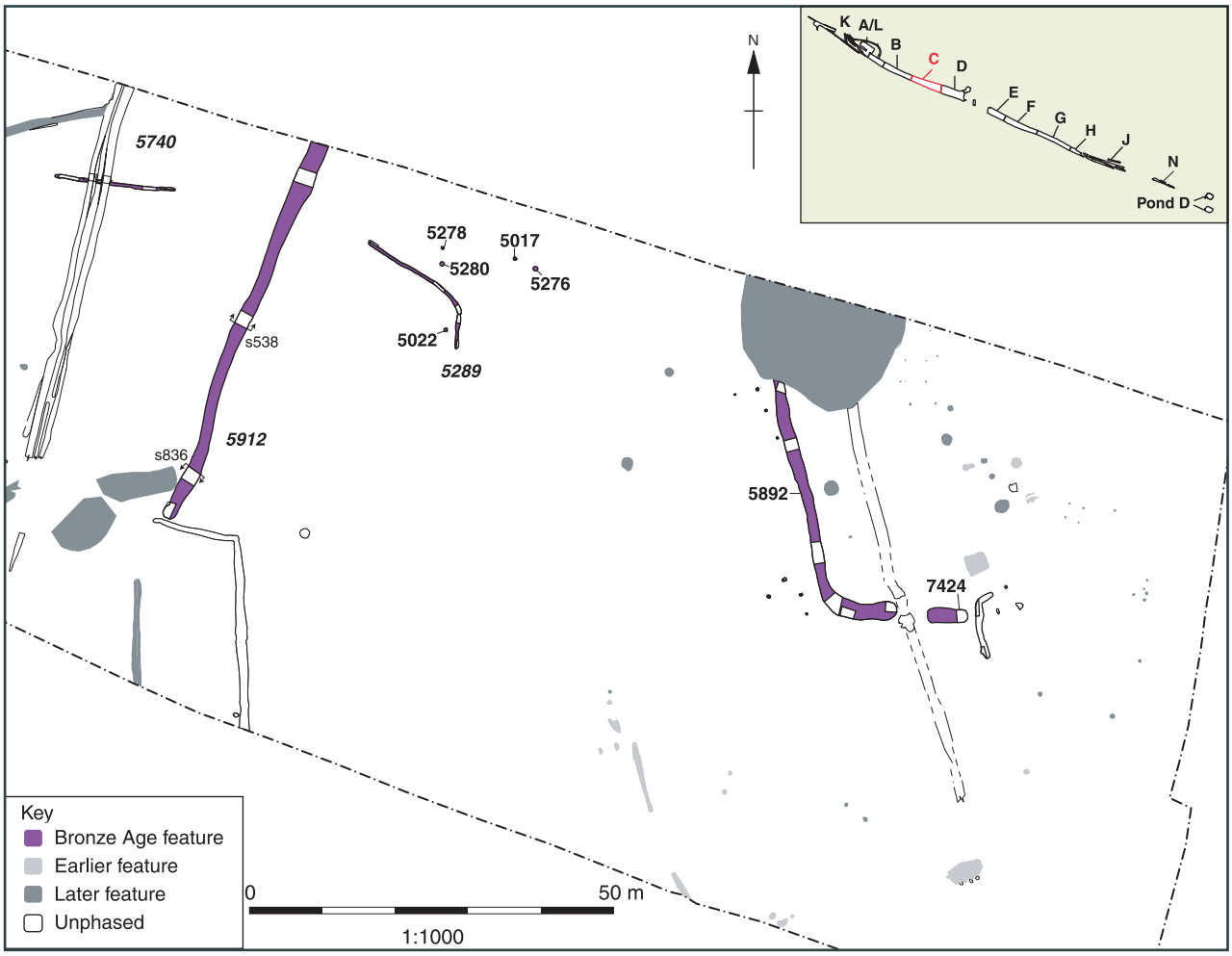


Fig. 2.21 Plan of later Bronze Age features on Site C

cremation deposits to the west, the overall probability distributions indicate that the samples from the ditch probably predate the cremation deposits. Given that these samples came from the upper layers of fill (and assuming that they were not residual), this suggests that the cutting of the ditches probably even more clearly predated the cremation deposits.

A considerable quantity of pottery was recovered from two of the cuts (5450 and 5483) of ditch 5892, and smaller quantities from two other cuts (5165 and 5501). Almost all of this was, however, recovered from upper layers of fill and thus, like the radiocarbon samples, its chronological relationship with the cutting of the ditch is uncertain. The diagnostic pottery from the ditch had Deverel-Rimbury characteristics, but only a small proportion of the pottery was in purely flint-tempered fabrics. The remainder was in a range of fabrics that are more common in the late Bronze Age. No pottery was recovered from ditch 7424. It is possible that the material that was radiocarbon-dated was residual, and that the pottery fabrics correctly indicate a later date, but given that two matching dates were obtained, and that the bone point was in very good condition, it is felt more likely that the variation in pottery fabrics is due to local differences between sites within the middle Bronze Age.

In profile, ditch 5892 had more or less steep, undulating sides, and a quite narrow, but irregular base (Fig. 2.22). As in the case of the enclosure ditches in Site G (9178, 9179 and 9614), the width of the ditch at its excavated surface has probably been exaggerated as a result of the collapse of its sides (and especially of the upper edges). The undulations in the side of the ditch, especially evident in section 587 but also elsewhere, may have been produced by such collapse. On the basis of its profile at the base of section 587, where the original profile is most likely to have been preserved, the original width may only have been around 0.8m. The depth of the ditch was quite consistent, generally falling between 1.0 and 1.2m. Ditch 7224 was of similar size, but was V-shaped in profile. It was 2.6m wide and 1.3m deep.

The distribution of flint in ditch 5892 roughly mirrored that of the pottery, most having been recovered from cuts 5450 and 5483, but with smaller quantities from other cuts. The flint consisted predominantly of flakes and chips, although there were also a small number of other types including a bladelet, end scrapers, piercers and a hammerstone.

The distribution of animal bone also roughly follows that of the pottery, the largest groups having been recovered from cuts 5450 and 5483, although there were also appreciable quantities in cuts 5165 and 5501. Much of this bone could not be identified, but amongst the identified bone, sheep/goat predominated followed by cattle. Smaller quantities of red deer and a single fragment of horse bone were also recovered. There was also a range of small species including bank vole, common shrew and lizard which, presumably, were incidentally included in the ditch fills. Two bone points made from roe deer and sheep/goat metatarsals were found in layer 5451. A cylindrical loomweight was recovered from cut 5483, and other fragments of fired clay from cut 5450.

A sample taken from cut 5450 contained charred grain and weed seeds as well as charcoal, whilst

Plate 2.7 Site C middle Bronze Age enclosure ditch 5892

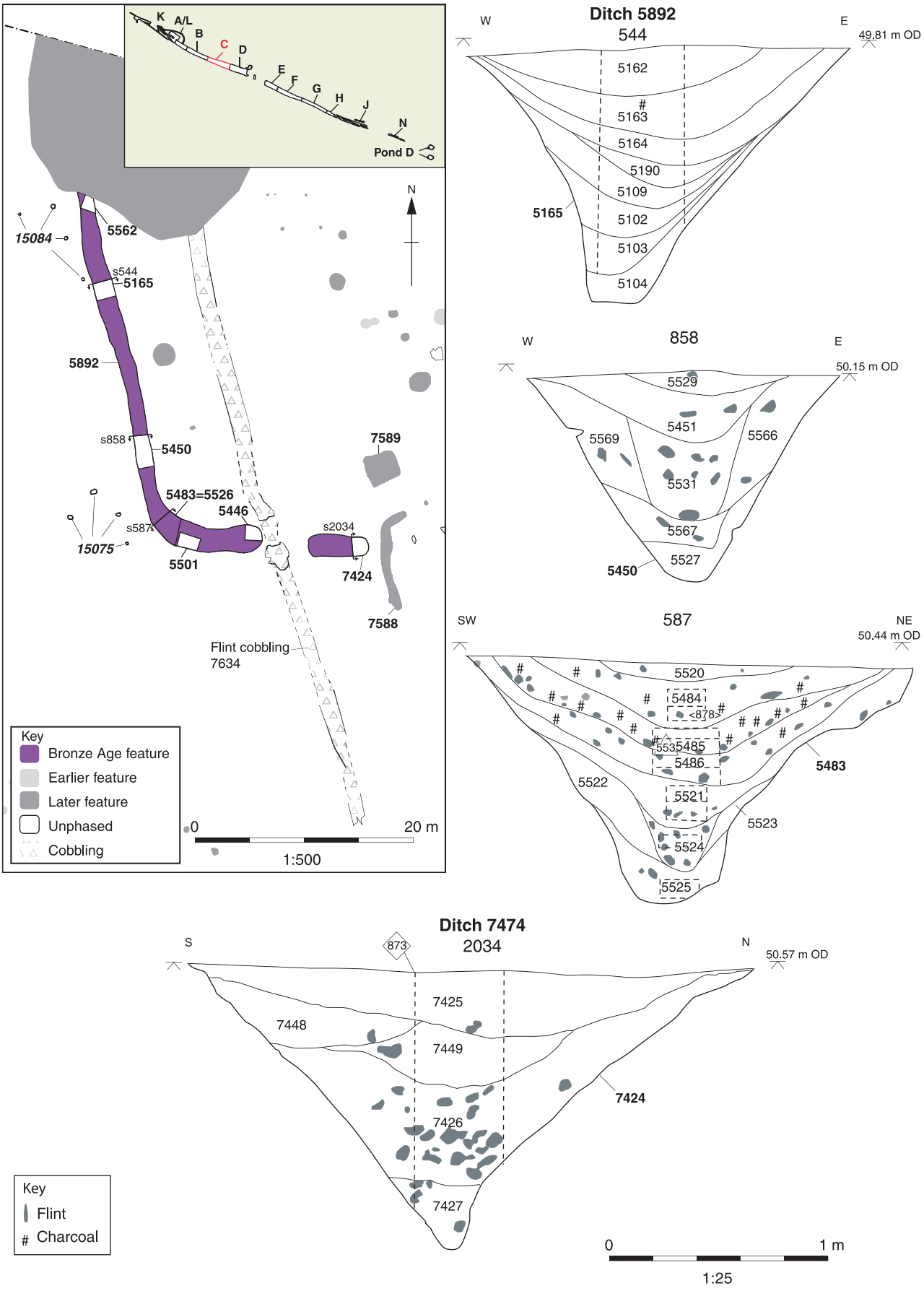


Fig. 2.22 Detail and sections of middle Bronze Age enclosure 5892, possible metalled track and associated features

molluscs from a sequence of samples taken from cut 5483 were also analysed (Fig. 2.22, section 587). The samples from the primary fill contained few shells, but in the layers above this, a larger assemblage was recovered in which open-country species predominated, although some shade-demanding species were also present. Further up the profile, shells became even more abundant, and shade demanding species predominated. In the uppermost fills of the ditch, however, there was a large increase in the proportion of open country species.

There was no feature marking the east side of the enclosure. A short length of gully (7588) ran roughly at right angles to 7424 just to the east, and a large sub-rectangular pit (7589) lay 4m north of that, but the gully contained undiagnostic potsherds, and the pit only fired clay, so neither is conclusively Bronze Age. No contemporary features were found within the area of the enclosure.

Just west of the enclosure ditch two groups of four small, shallow features (15075 and 15084), each with a single similar fill, were found. These were probably postholes, and had similar spatial arrangements, but formed no clear structures. There were no finds, but these may also have been Bronze Age. Some of the features to the east may also have been associated, but none contained pottery diagnostic of the Bronze Age, so all these features are described as part of the Iron Age occupation (see Chapter 3).

After stripping of the site, a band of flint nodules about 1m wide (7634) was observed running north-south across the interior of the enclosure, passing through the gap between 5892 and 5474, and continuing for another 20m before petering out (Fig. 2.22). The edges of the band were fairly straight, and the flint directly overlay both the natural chalk and the patches of silty clay Head deposit. A second shorter band, almost parallel to this, was seen on the north edge of the site some 20m further west, and a cross-section across this showed that the east edge of the flint band dived vertically for around 0.2m before levelling off and ending. This suggested that the flints were part of the natural geology, and so band 7634 further east was also interpreted as natural, and was not further investigated. Subsequent excavation by Archaeology South East (Dawkes 2010), however, revealed a holloway running from the north into the southern edge of their excavation, only 20m north of Site C. This Bronze Age feature was surfaced with a layer of flint in the late Bronze Age or early Iron Age, and it therefore appears likely that band 7634 was a continuation of this, and marks the bottom of a middle Bronze Age holloway that ran through the enclosure.

Cremation deposits, pits and gullies near the centre of Site C

The small cluster of features near the centre of Site C consisted of a group of five pits, three of which contained cremated human remains (5017, 5276 and 5278) and two short stretches of gully (5740 and 5289) (Fig. 2.23). Of the pits, one (5022) lay south of gully 5289, whilst the others were in pairs to the north of the gully.

Chronology

Single radiocarbon dates were obtained from the two of the cremation deposits (pits 5017 and 5278). The dates are very similar and pass a χ^2 test (df=1 T=0.3 (5%=3.8)) indicating that they could have been contemporaneous. The dates indicate deposition in the latter part of the middle Bronze Age, probably in the 13th or 12th centuries cal BC (Table 2.3).

Of the pits containing cremated remains, only one (pit 5278) contained any pottery. This consisted of just six sherds (65g) in a sandy fabric which is not typical of the middle Bronze Age, supporting the suggestion that there was local variation in the fabrics used for pottery at this time, though it may indicate that the date of the cremation deposit falls in the later part of the date range.

The pair of small pits that did not contain cremated human remains (5280 and 5022) both contained much larger groups of pottery, all in flint-tempered fabrics. In the case of pit 5022 the pottery included sherds with Deverel-Rimbury attributes (see Mullin and Brown below) which suggest that the pit may have been contemporary with the nearby cremation deposits. In the case of pit 5280, however, some of the pottery had features more typical of the post-Deverel-Rimbury Plain Ware tradition, which—like the pot from pit 5278—again suggests a slightly later date.

All of these features lay near two stretches of gully or slot (5289), which also contained pottery almost entirely in flint-tempered fabrics and with typical Deverel-Rimbury attributes. Overall, then, the pottery and radiocarbon dates from this group of features suggest activity predominantly in the middle Bronze Age, perhaps in the 13th or 12th centuries cal BC, which may have continued into the late Bronze Age.

Cremation burials and other pits

All of the pits were roughly circular, but they varied in profile, most having steep sides, but flat, sloping or rounded bases (Fig. 2.23). They varied from 0.36m to 0.70m across and from 0.07m to 0.25m in depth.

The pits that contained cremated remains were filled with dark grey or black silty clays containing a high proportion of charcoal. Those without cremated remains (5280 and 5022), in contrast, were filled with light, brownish yellow or yellowish grey silt clay deposits. The quantities of cremated remains associated with three of these pits were small (100–234g) and were distributed throughout the fills. The small quantities of cremated remains may be due to truncation of these features, but it is also possible that only a small portion of the pyre debris had been deposited in these pits. Very little flint was recovered from these features: just two chips from cremation burial 5276 and six chips from pit 5022. The only animal bone consisted of a few

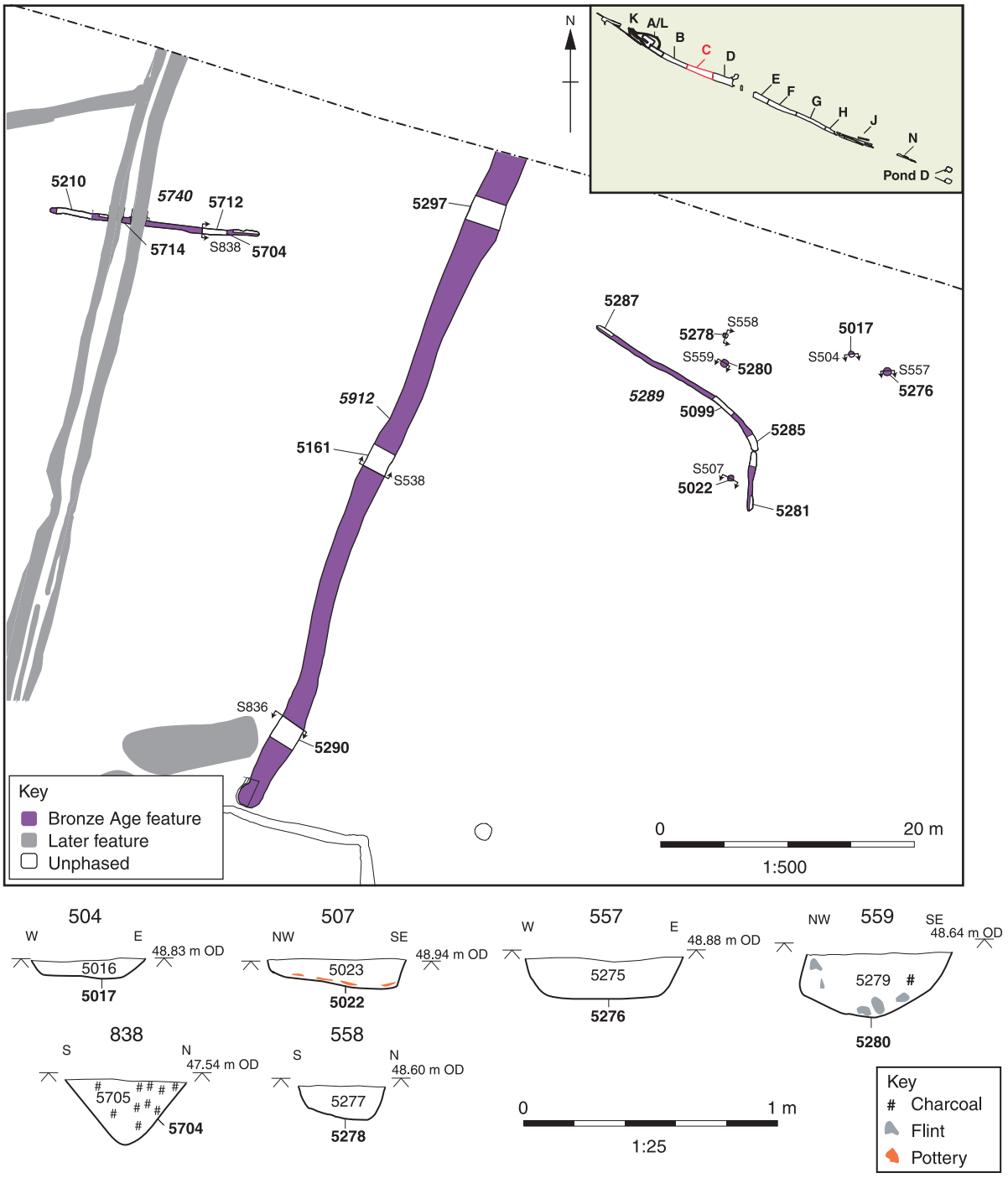


Fig. 2.23 Plan of slots 5740 and 5289, surrounding cremations and pits and ditch 5912, plus sections

unidentified fragments in the pits which did not contain cremated remains (5280 and 5022).

Gullies 5740 and 5289

A J-shaped gully (5289) made up of two lengths lay close to the cremation deposits. Together these gullies had a total length of 20.5m (Fig. 2.23). Their width was quite consistent, generally measuring around 0.5m. These gullies had very shallow, bowl-shaped profiles, at most only 0.08m deep, and the small gap between them was probably due to truncation. A further 27m to the west was another stretch of gully (5740), 16.5m long and aligned east-west (Fig. 2.23). Despite the distance between them, their similar width and alignment suggests that they were related. Gully 5740 was slightly deeper (0.12m to 0.32m). Its profile varied along its length, being V-shaped at some points, but having steep sides and a flat base at others (Fig. 2.23, section 838). The gully fills contained clusters of stones and

abundant charcoal. These stones might have been packing for posts, suggesting that the gully could have been for a palisade or fence. The limited depth of the gully, however, suggests that any such structure would have been quite slight.

Not surprisingly, given that gully 5289 was so shallow, finds were recovered only from gully 5740. Other than pottery, the finds comprised flint, a fragment of saddle quern in purple ferruginous sandstone (from cut 5714, context 5735), and two unidentified fragments of animal bone. The flint was mostly flakes and chips, although an awl, a blade and a core were recovered.

Boundary ditch 5912

A ditch (5912) ran north-south for a distance 55m from the northern edge of the excavation across the middle of the site midway between the two gullies just described (Figs 2.23–4; Plate 2.8).

The evidence for the date of this ditch is ambiguous. A radiocarbon date on animal bone from the uppermost fill (5298) of the ditch gave a result indicating that the bone probably dated from the 11th century cal BC, at the very beginning of the late Bronze Age (Table 2.3). This suggests that the final filling of the ditch probably post-dated the cremation deposits, pits and gullies to the east, but it is possible that the ditch was cut at around the same time as the cremated remains were deposited. The pottery from this feature was, however, mixed, and although much of it was in flint-tempered fabrics and could have belonged to the middle Bronze Age, there were also large quantities in other fabrics, including some attributed to the earliest Iron Age. Almost all of this pottery was recovered from the upper layers of fill, and no very clear change was apparent in the character of the pottery in the sequence of fills. Overall, however, the pottery and radiocarbon dates are consistent in suggesting a late Bronze Age or later date, at least for the later stages of filling of the ditch.

The profile of the ditch varied (Fig. 2.24). Section 836 had a Y-shaped profile with a flat base and very steep sides at the base. The maximum recorded width of the ditch was 2.9m, while the depth of the ditch varied from 1.3m to 1.8m. As in the case of the ditches in Site G, this form suggests that the profile of the ditch had been substantially modified by the collapse of its edges, and particularly the upper edge, and, as a result, that the width of the ditch had been exaggerated. An estimate of the original width of the ditch based upon the steep sides at the base of the ditch suggests that it was originally only around 0.8m wide. The other sections, such as section 538, have more continuously sloping edges and a more rounded base, but are still likely to have been affected by the collapse of the edges of the ditch.

Two fragments of an adult human femoral shaft, probably from the same bone, were recovered from the upper fill (5298) of cut 5297 where they were associated with an appreciable group of animal bone (NISP = 118), including fragments of cattle, dog, horse, pig and sheep/goat, although most of the fragments could not be identified.

The quantity of animal bone recovered in the other sections varied, but even where large groups were recovered, only a small proportion could be identified. The identified fragments consisted predominantly of cattle bone, although there were

Plate 2.8 Site C Bronze Age ditch 5912 (cut 5290) looking north

also small numbers of pieces from sheep/goat, pig, dog, horse and red deer.

The pottery, discussed above, was recovered from all of the sections across this ditch, while the only other finds comprised a flint flake, a small amount of fired clay and charcoal from cut 5290. The molluscs from the northern-most cut across this ditch (5297) were analysed. The samples from the lower and middle fills were dominated by shade-demanding species suggesting that the ditch was cut in a wooded, or only very recently cleared environment, and that even if the area had been cleared, woodland had quickly regenerated. The poorer samples from the upper fills, in contrast, suggest a much more open environment.

Isolated cremation deposit 7758 on Site B

The only feature dated to the middle to late Bronze Age on Site B was a small, circular pit (7758) containing a small quantity (195g) of cremated human remains (7759; Fig. 2.25). A radiocarbon date obtained from the cremated bone suggests a date of 1210–1010 cal BC (NZA-30151). This date range is a little later than those obtained for the cremation burials on Site C, but together the dates pass a χ^2 test (df=2 T=3.0 (5%=6.0)) indicating that they could have been contemporaneous. The pit was bowl-shaped in profile and measured 0.4m across and 0.14m deep. It was not associated with any finds.

The pit lay near the centre of the site, in an area of Iron Age and Roman features, with no other features of middle–late Bronze Age date identified in the vicinity. It is, however, possible that the cremation pit was related to four other features (7858, 4952, 7794 and 4987), which formed a rough alignment at intervals of 4–7m extending for nearly 15m NW-SE across the centre of the site. The only finds recovered from these other features were

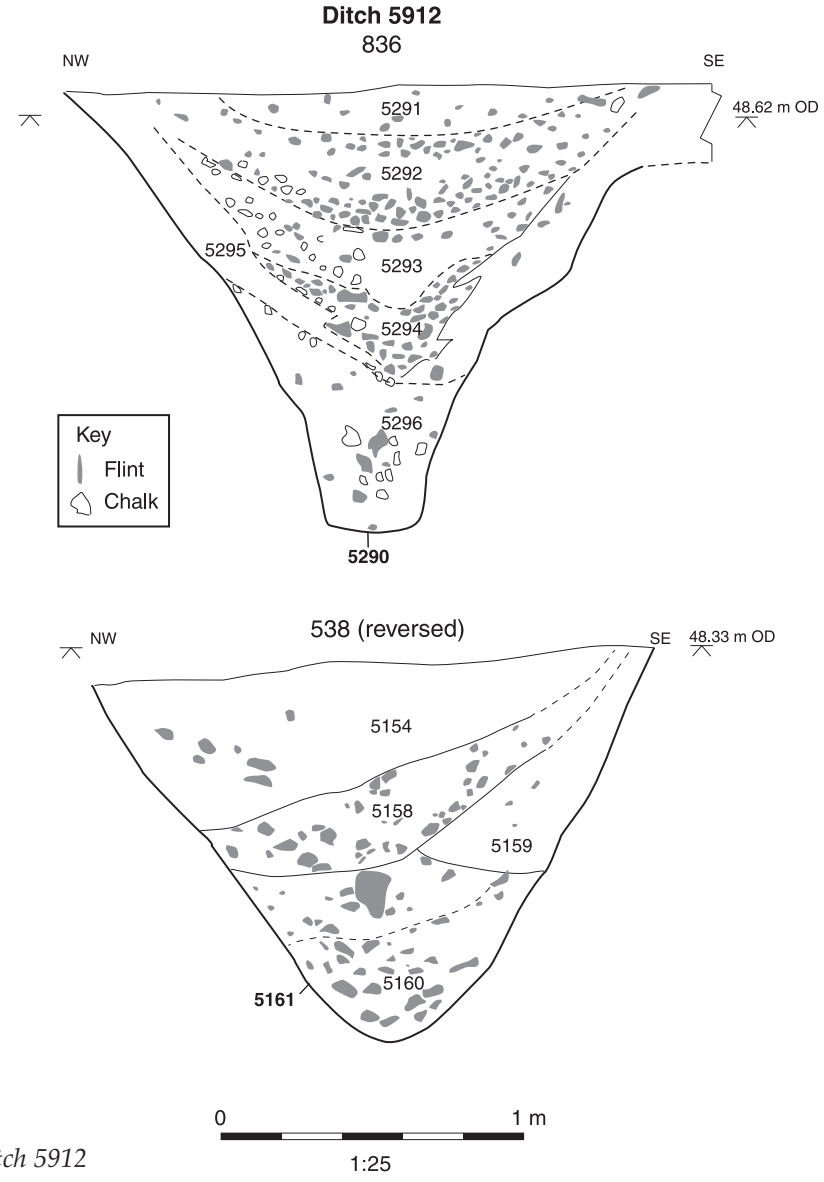
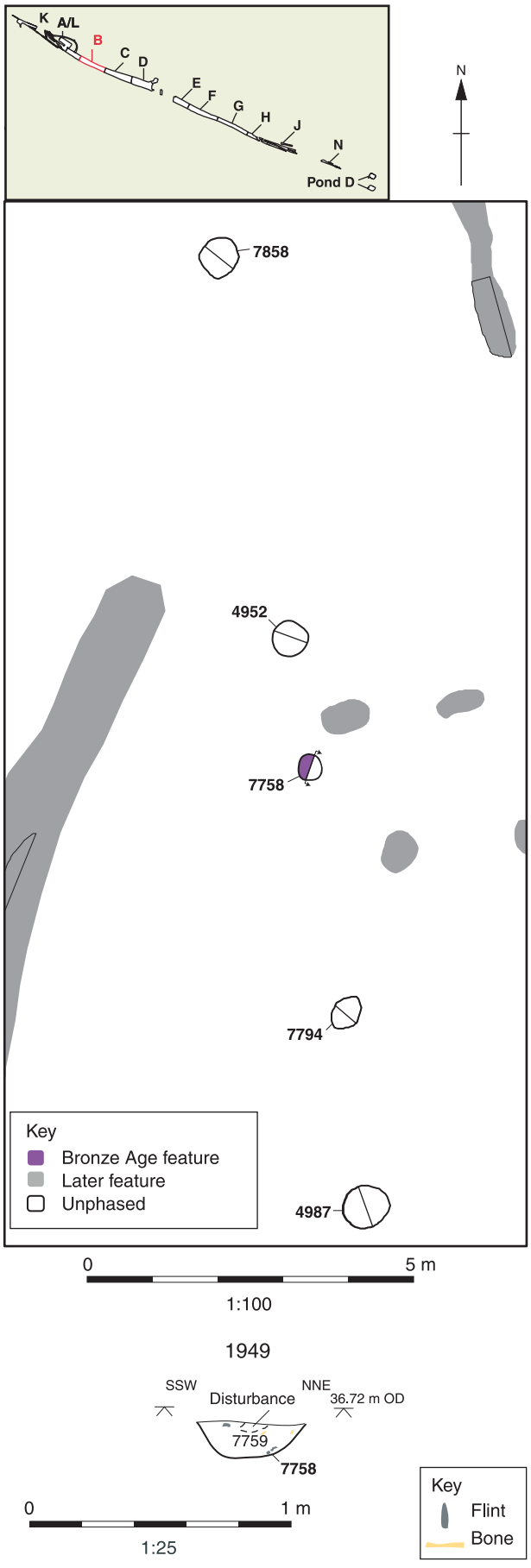


Fig. 2.24 Sections of ditch 5912



charcoal and burnt flint from pit 4952 and flecks of charcoal from pit 4987.

Pits in Sites A and L

An unusual deposit of cremated animal bone, Deverel-Rimbury pottery and fired clay was found in a pit (12510) on Site L, while a small cluster of pits which probably also date to the middle Bronze Age were found on Site A (Fig. 2.26).

Site L: pit 12510

Isolated pit 12510 lay near the eastern end of Site L (Fig. 2.26, B). The pit itself was roughly circular in plan, and measured 0.63m in diameter and 0.46m deep. It had almost vertical sides and a deep, concave base.

The pottery recovered from the pit consists of fragments of a Deverel-Rimbury urn, sherds from a cup, the base of another cup and rims from a further four vessels, including plain and inturned upright rims, which may belong to the late Bronze Age Plain Ware tradition. Fragments of the urn (12511) were visible on the surface of the pit after the site had been stripped, although the largest pieces, as well as fragments of a few of the other vessels, were exposed only after the first 20mm spit had been removed. Most of the cremated animal remains, which may originally have been contained within the urn, lay within this and the next spit, while most of the other pottery was found below the fragments of the urn.

The fragmented state and position of the pottery shows clearly that the deposit had been badly disturbed, while their position also suggests that the vessels were not originally placed on the bottom of the pit. Given the likely differences in the height of the vessels, it is quite possible that all of the vessels were, however, all originally placed at roughly the same level, and that it was only as a result of disturbance that sherds from the taller urn have come to lie above the other pottery. A small fragment of iron was recovered from the uppermost fill of the pit, and was clearly intrusive. Below the pottery and cremated remains, a large deposit of fired clay (470 fragments, 2533g), some bearing impressions of wattles, was found on the southern side of the base of the pit.

The pottery (including the urn) was predominantly in shell and flint-tempered fabrics (2512g including the urn), but there were also sherds in a range of other fabrics belonging to the flint- (222g), sandy and organic- (31g), flint and grog- (9g) and flint and shell-tempered (32g) groups, suggesting that the deposit may date from the transition to the late Bronze Age (Morris 2006), as do the possible Plain Ware sherds.

Fig. 2.25 (left) Plan and section of cremation burial 7758 on Site B

Site A: pit cluster

A loose cluster of five pits was found near the eastern end of Site A (Fig. 2.26, A). Four of these pits were small, shallow features with diameters of between 0.65m and 0.91m and depths between 0.09m and 0.30m. They lay in two pairs: 3166 and 3168 lay less than 1m apart, around 8m to the north of pits 3024 and 3040, which lay 3m apart. The fifth pit, 3030, was a much larger feature, measuring 2.2m across and 1.4m deep (Plate 2.9). It had more or less vertical sides which were rather irregular, probably as a result of their partial collapse, and a flat base (Fig. 2.26).

Only two of these pits contained any pottery: the large pit (3030) and pit 3024. The pottery in pit 3030 included Deverel-Rimbury forms and decoration as well as features which belong in the late Bronze Age Plain Ware tradition, an example of which was found in the lowest fill of the pit. Since many of the distinctively Deverel-Rimbury sherds were abraded, the pit probably dates either from the late Bronze Age, or from the transition between the middle and late Bronze Age.

In pit 3030 flint and shell-tempered pottery predominated, followed by flint-tempered sherds. There were also small quantities of flint and grog-, shell-, sandy- and flint and shell-tempered sherds, as well as a residual flint and grog-tempered Beaker sherd. In pit 3024 flint- and shell and flint-tempered pottery were present in roughly equal proportions. Four shell-tempered sherds were also recovered.

The only flint was recovered from the same two pits. It consisted almost entirely of flakes and chips, but a core and a blade-like flake were also recovered from pit 3030, and a blade, an end scraper, a core and a hammerstone from pit 3024. Both of these pits, as well as pit 3166, also contained fired clay.

Pits 3030 and 3024 also contained large groups of animal bone. In both cases most of the bone could not be identified, but cattle, pig and sheep/goat bones were noted in both, and red deer and wild cat in pit 3030. Samples from both pits 3030 and 3024 contained a little charred grain and chaff as well as charcoal.

Two further large pits, 3039 and 3097, which lay some 55m north-west of pit 3030, are also tentatively ascribed to the late Bronze Age (Figs 2.26–7). Both contained small numbers of sherds that could only be characterised as later prehistoric (ie middle Bronze Age to middle Iron Age), but pit 3097 contained 140 struck flints of later Bronze Age character, and both features are of broadly similar size to pit 3030.

Pit 3039 was a very large feature, measuring 2.5 x 2.3m across and 0.7m deep with one steep and one more sloping side and a flattish base (Fig. 2.27). It contained three fills but produced only 21 small and undiagnostic sherds of pottery weighing 76g. A complete saddle quern was found in the centre of the base of the pit (SF 302) in fill 3078, a fragment of another quern in the second fill 3077 and a rubber (SF300), all made from the same purple sandstone, in top fill 3038 (see Stone report and Fig. 2.42). Pit 3097 was of a similar size (1.9m in diameter and 1.15m deep) and contained a large assemblage of

Plate 2.9 Site A middle–late Bronze Age pit 3030

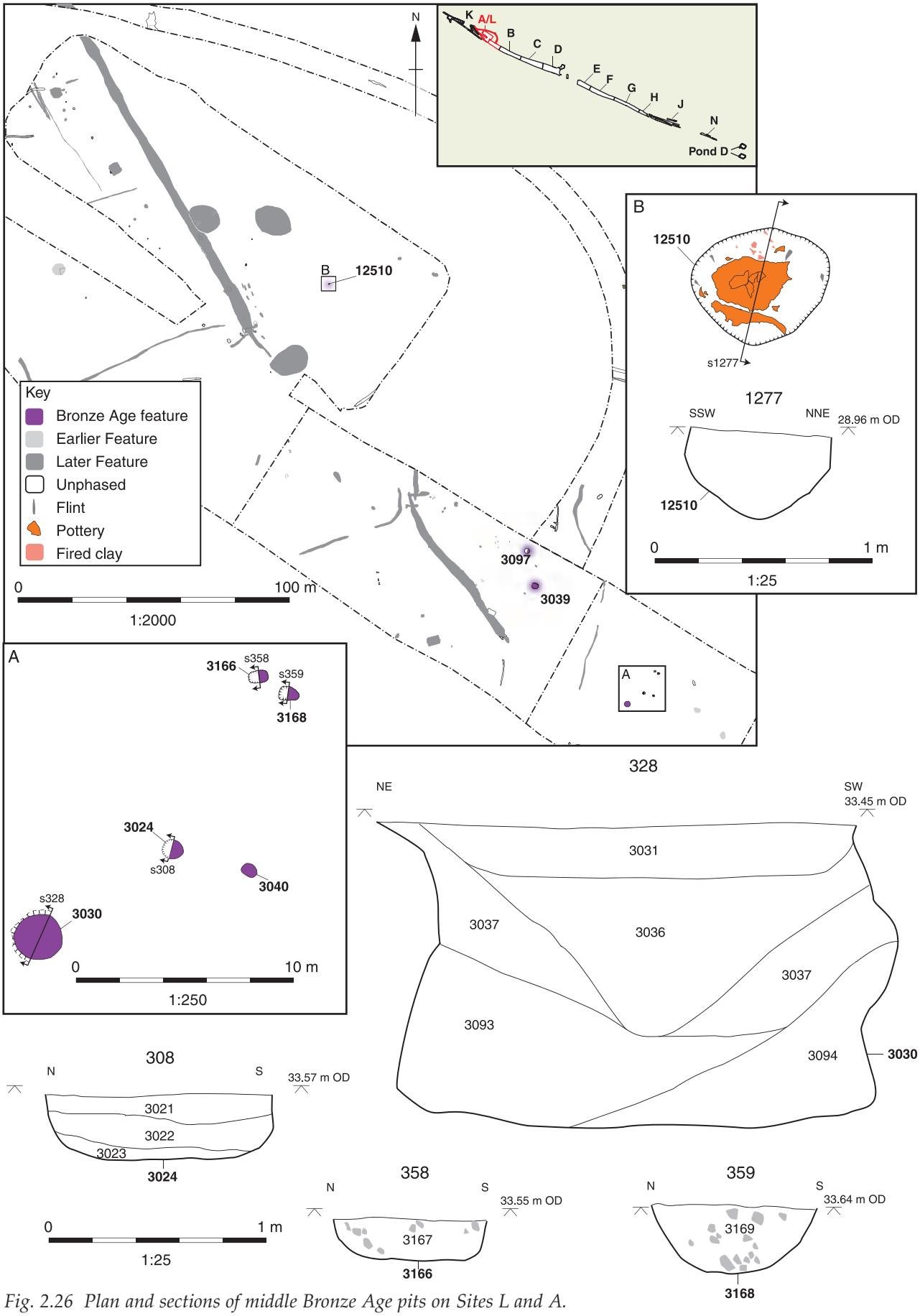


Fig. 2.26 Plan and sections of middle Bronze Age pits on Sites L and A.

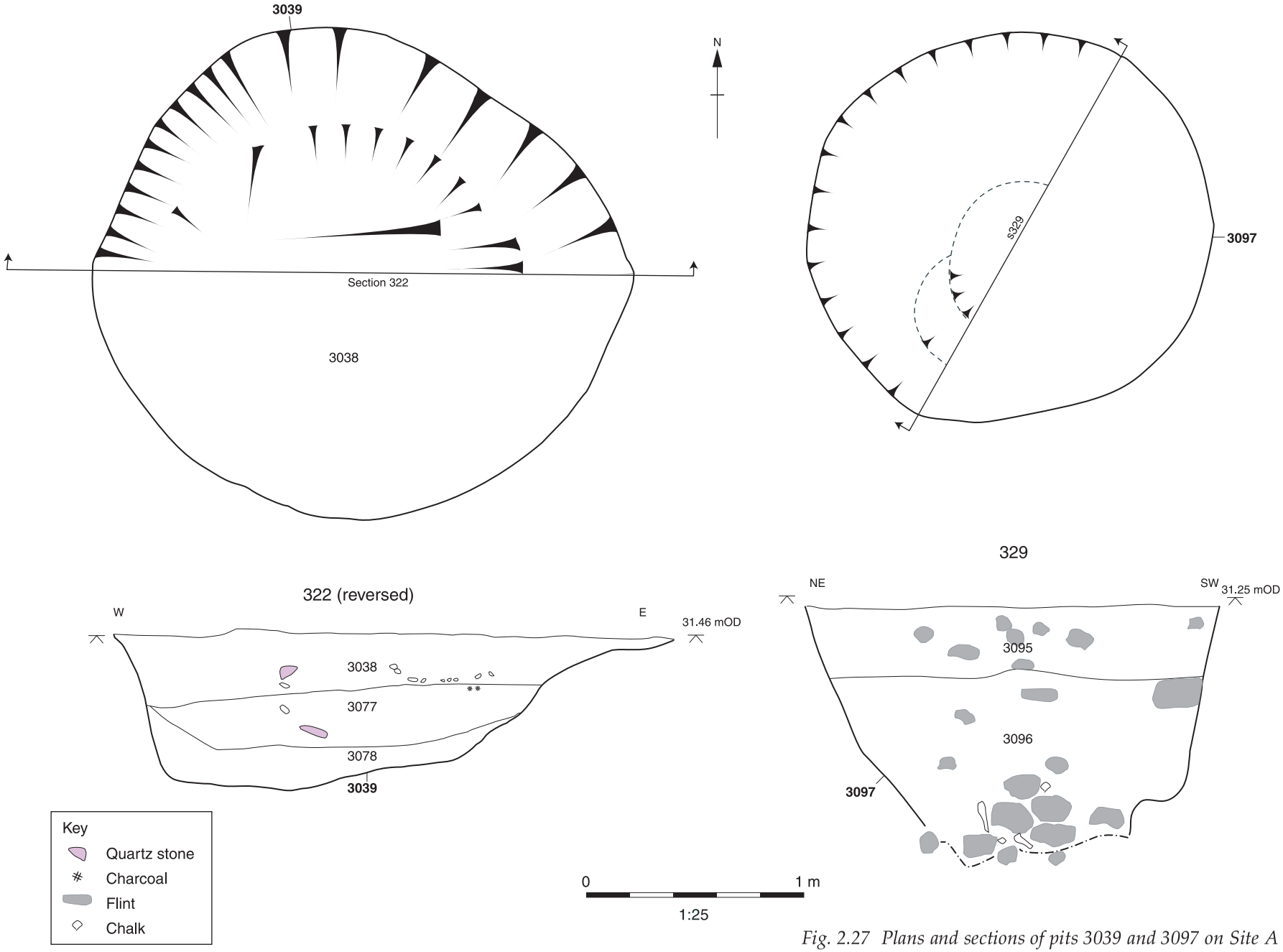


Fig. 2.27 Plans and sections of pits 3039 and 3097 on Site A

animal bone including the standard domestic species and also bones of rodents and birds, presumably incorporated by chance. An environmental sample from the pit yielded a few charred cereal grains. There were however only six sherds of undiagnostic pottery, all from the top fill.

Site D

One further cremation burial (6010) was found on the north side of Site D, some 110m east of the enclosure in Site C (Fig. 2.28). The cremation comprised 402g of bone from an adult, together with charcoal in a small circular pit. The pit was, however, very shallow, indicating that the cremation had been truncated. A radiocarbon date of 1260–1020 cal BC (NZA-31264) was obtained from cremated bone. The bones indicated that the burial was that of an adult.

A small cluster of postholes and stakeholes (6505, 6422, 6426, 6428 and 6430), as well as a pit (6202), were found near the eastern edge of Site D. The only dating evidence was three flint-tempered sherds, one in posthole 6505, and two in pit 6202, which may be middle Bronze Age in date. The sherd from posthole 6505 was decorated with linear grooves. Two flint flakes also came from posthole 6505. The remaining features on the site date from the Iron Age and Roman periods, so these sherds may have been residual, though they do demonstrate some Bronze Age activity in this area.

The pit (6202) was roughly oval in plan, measuring 1.9m by 1.4m across and 0.28m deep. It had a slightly undulating base and steep sides. The postholes were roughly circular and were from 0.14–0.38m wide and 0.06–0.17m deep. They did not form any clear shape.

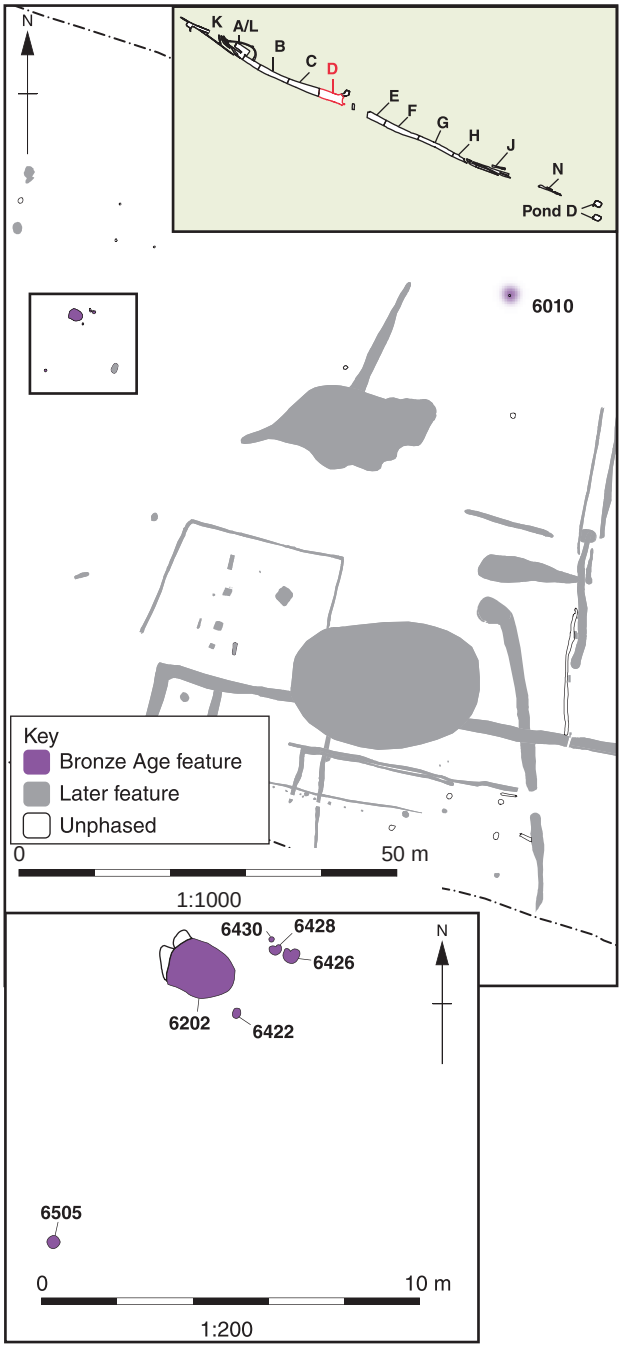


Fig. 2.28 Plan of Bronze Age pits and postholes on Site D

EARLY PREHISTORIC FINDS ASSEMBLAGE

Struck flint *by Hugo Anderson-Whymark and Mike Donnelly*

Excavations along the route of the A2 Pepperhill to Cobham widening scheme yielded 5156 struck flints (Table 2.4). Flints were recovered from all of the excavated sites in varying quantities, and ranged in date from the Late Upper Palaeolithic through to the early Iron Age, though the majority of the assemblage dates from the middle to late Bronze Age (see phase summaries below).

Methodology

The artefacts were catalogued according to broad artefact/debitage type, with retouched pieces classified according to standard morphological descriptions (Bamford 1985, 72–7; Healy 1988, 48–9; Bradley 1999, 211–27; Butler 2005). Additional information was recorded on condition (rolled, abraded, fresh, burnt and broken) and degree of cortication. Following on from this, selected assemblages were studied in greater detail. Metric analysis was conducted (Saville 1980) as was hammer mode (Onhuma and Bergman 1982), termination type, butt type (after Inizan et al. 1992), cortex cover and flake type (after Harding 1990). Where numbered, all four figure numbers refer to the detailed catalogue. Small finds numbers given out during excavation will be prefixed with "sf".

Refits were sought to clarify reduction strategies and investigate activities represented in specific contexts and locations. Refitting exercises were carried out on all contexts identified as of high

potential, but the number of refits identified was low, and were only significant in the small Neolithic assemblage from Site B and the Beaker pit on Site D.

Raw material and condition

Flint was the only raw material employed, with the sole exception of a single blade-like removal in orange-red quartzite from pit 9293 on Site G. Similar flint raw materials, probably sourced from local flint gravel deposits, were exploited along the entire length of the route. The flint was available in the form of irregular nodules of variable size, with heavily abraded cortical surfaces, and is generally mid to dark brown in colour, frequently containing mottled grey cherty inclusions. The raw material is generally of reasonable flaking quality, but thermal fractures were common and frequently hindered knapping. Bullhead Bed flint, which exhibits an olive green cortex with an underlying orange band, was recovered from most sites (Dewey and Bromehead 1921). This flint may have been collected directly from the base of the Reading Beds, but the abraded condition of the cortex on some pieces may indicate a secondary gravel source. The materials employed demonstrate that little care was taken over raw material selection, except perhaps for some of the finer Neolithic tools.

The condition of the flint was variable and is discussed further in relation to individual sites and contexts below.

The assemblages

The flint assemblages from the various sites across the landscape are summarised in Table 2.4. All of the flint was assessed, and are briefly described on a site by site basis in the digital report. Assemblages (from Sites G, B, D, D North, and C) that underwent more detailed analysis are presented in Table 2.5 and are described here.

Site G Neolithic Activity

The Site G flint assemblages from Neolithic contexts are limited in size, with surface scatter 9584 containing 36 flints, and much smaller amounts from the pits. Posthole/pit 9407 contained 38 flints from three fills. Pit 9223 contained 21 flints, ramped posthole 9539 four, whilst postholes 9184 and 9206 each produced seven and features 9212 and 9199 contained two and ten flints, respectively.

Only the assemblages from the buried soil 9584, pit 9223, posthole/pit 9270 and ramped posthole 9539 were examined in detail, amounting to 99 flints. The assemblage comprised 57 flakes, with 8 blades and 6 blade-like flakes and 7 tools. While knapping waste was present (chips (16) and irregular waste (4)), the numbers were far from significant and cores were absent (one tested nodule was present). No refits were identified from or between any of these assemblages.

Of the tools, a very finely worked leaf-shaped arrowhead (Fig. 2.29, no. 2), a fine end scraper on a distal trimming flake blank (Fig 2.29, no. 3), a serrated flake (4006), a double notched flake (3997) and a retouched/utilised blade (4005), all came from pit 9223. Two further end scrapers were recovered, one from ramped posthole 9539 (sf 1631/4016) and another from buried soil 9584 (sf 1638/3965) along with a retouched blade-like flake (sf1640/3966). All three end scrapers were formed on sizeable flakes as were the majority of the retouched pieces. Despite three items being incomplete the tools average 55mm by 33mm by 9mm. In total retouch was identified on eight of 83 pieces or 9.9% of the assemblage (excluding chips), a very high number. Moreover, pit 9223 contained five retouched pieces in an assemblage of only 21 flints or 23.8% and must be seen as a highly selective assemblage. The arrowhead was broken, but the fine end scraper was intact and still readily usable.

The early Neolithic assemblage from Site G while small does appear to indicate an area of domestic activity in which formal flint tools and flake and blade blanks were utilised. The lack of fine debitage may indicate limited upkeep, repair or re-sharpening of tools but clearly does not represent the intense levels of debitage one would expect from tool production and *in situ* knapping floors.

Site B in situ *middle Neolithic Activity 3424*

A small assemblage of 35 flints was recovered from a clay layer, believed at the time to represent part of the cobbling for an Iron Age road. The flints all display moderate patination and some are clearly broken (8). There were several refits within the assemblage. These included a laterally split flake, perhaps a double removal (4956 and 4957), another laterally split piece (Fig. 2.30, nos 1–2; 4948 and 4949), and a flake struck at 90 degrees to the right handed edge of the previous removal (4953 and 4954). This last indicates either a platform shift or the use of a multi-platform core (Fig. 2.30, nos 5–6). There was also a pair of refits that indicates the core being worked for flakes from left to right (Fig. 2.30, nos 3–4, 4951 and 4952). No detailed sequence was identified and it is likely that much of the assemblage had been lost to later truncation by Iron Age features. It is, however, also likely that some flints were missed in the field.

In total, 18 of the 35 pieces originated from the same core and this was probably also the case with some of the other inner removals, although they lacked the distinctive banding immediately below the cortex. A solitary rolled micro-burin (4936), however, shows that not all of the flint was contemporary. Other tools consisted of a chisel arrowhead (Fig. 2.30, no. 7, 4958), a notched piece (4950), an irregular scraper (4959) and a miscellaneous retouched flake (4943).

Site D Beaker Assemblage

Beaker pit 6512/6161 yielded 496 flints, including 216 chips. The pit contained four fills, but the

majority of the flint was recovered from the middle fill 6163/6514. The assemblages from the other fills are of similar character, and the assemblage has been considered as a whole. The flint assemblage (Table 2.6) is dominated by flakes (228, 46%), with a minimal blade (3, 0.6%) or blade-like component (6, 1.2%). The flakes generally exhibit plain platforms (146, 57.3%) with only very rare preparation of the platform-edge. The cores are, however, more complex, with three single platform examples (4460, 4463 (Fig. 2.31, no. 3) and 4467), three with two platforms (two at ninety degrees (4430 and 4462) and a single opposed platform example (4914)) and a single core with three or more platforms (4461). A further five tested nodules exhibit only a couple of flake removals before they were abandoned. The presence of several cores, numerous chips and a flint hammerstone made from a re-used core indicated that the pit contains knapping debris. This is further supported by the presence of similar cortical surfaces throughout the flake assemblage.

Eight retouched flints were present in the pit, representing 2.9% of the assemblage excluding chips. These comprise two side scrapers (4432 and 4530), an end scraper (Fig. 2.31, no. 5; 4529), a spurred piece (4531), a notch (4532), two simple edge retouched flakes (sf 1446/4837 and sf 1461/4852) and a miscellaneous retouched flake (4538). A small number of flints were burnt (7.9%), indicating that the assemblage does not simply represent knapping waste.

Refitting identified four sequences, involving a total of 10 flints. The first refitting sequence consisted of three flakes and involved the removal of a large step fracture from a flawed core. Flake 4874 (1495) failed to remove the step wholly and the core was then worked perpendicular to the initial platform before another two attempts were made to correct the initial step, the second of which was successful. This reveals some attempts at curation of the core.

The second refit involves a blade-like flake (4858) from a large conical/pyramidal single platform core refitting onto a regular flake which had been made into a notch (4532) (Fig. 2.31, nos 1–2). A third piece came earlier in the sequence (one or two removals missing) and was a side trimming flake (4864). All were struck from the same platform.

The third refit involves the direct refitting of two inner flakes (4484 and 4488). These may have originated from earlier on in the reduction of core 4463, which contains the fourth refit sequence where a small inner flake refits directly to the dihedral platform (Fig. 2.31, nos 3–4). Numerous other flakes were clearly from this core but no further refits were identified.

The assemblage from pit 6161 can be compared with similar Beaker assemblages recovered from HS1 sites Beechbrook Wood and South East of Eyehorne Street (Devaney 2006). The similarity in terms of technological characteristics between Site D and Beechbrook Wood pit 1374 is striking (Cramp

Table 2.4: The flint assemblage by excavation area

	Site														
CATEGORY TYPE	*N*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*	*PDN*	*PDS*	*Grand Total*
Flake	7	233	396	357	475	22	270	850	17	76	17	263	259	19	3261
Blade		4	6	8	10	2	14	32				7	10	1	94
Bladelet		1	5	5	5	1	3	14		2	1	3	3		43
Blade-like		6	11	8	12		10	54	1	6	1	5	23	1	138
Irregular waste		9	16	12	34	2	6	56	2	2		11	21		171
Chip			19	98	118	17	4	52		1		1	24	1	459
Sieved chips 10-4 mm		363	64	41	128	8		68				145			693
Rejuvenation flake core face/edge				2			1	6					1		10
Rejuvenation flake other				1								1			2
Flake from ground implement				1	1										2
Single platform blade core			1												1
Double platform blade core													1		1
Tested nodule/bashed lump		1	2	3	6		1	14	1	1		1	6		36
Single platform flake core		1	2		2	1	4	9		1		1	5		26

Multiplatform flake core		3	1	4	4		5	22			1		15	1	56
Keeled non-discoidal flake core			1										3		4
Levallois/other discoidal flake core										1					1
Core on a flake				2	5			3					1		11
Unclassifiable/fragmentary core							2						1		3
Microlith			1					2							3
Microburin			1												1
Leaf arrowhead								1							1
Chisel arrowhead			1					1							2
Barbed and tanged arrowhead													1		1
Triangular arrowhead				1											1
Fragmentary arrowhead												1			1
End scraper		2	7	3	6		1	11			1	3	6		40
Side scraper			2		2			2		1				1	8
End and side scraper										1					1
Disc scraper								1							1
Thumbnail scraper				1				1							2
Scraper on a non-flake blank					1			1							2
Other scraper			1	4	1		3		1	1			1		12
Awl		1	3	1									1		6
Piercer		3	2	4				3					3		15
Spurred piece			2	1	1		2	1					1		8
Serrated flake								3							3
Denticulate			1					4					1		6
Notch			2	2	5		1	7			1	1	12		31
Backed knife			1	1			2				1		1		6
Plano-convex knife								1							1
Other knife					1			3							4
Retouched flake			1	3	5		1	16				1	19		46
Burin							2						1		3
Axe			1												1
Other heavy implement													1		1
Misc. retouch		1		1	1			2					3		8
Other				1				2					2		5
Hammerstone		*1*		*1*	*1*		*1*	*2*					*4*		*10*
Grand Total	7	629	550	564	824	53	333	1244	22	93	23	444	430	24	5240
No. of burnt flints (%)*		18 (6.77)	1 (0.21)	19 (4.47)	25 (4.25)	7 (2.1)	47 (4.4)	82 (7.22)	1 (4.5)			17 (5.7)	17 (4.19)	2 (8.7)	236 (5.77)
No. of broken flints (%)*		33 (12.40)	54 (11.56)	64 (15.05)	62 (11.81)	3 (10.7)	74 (22.5)	144 (12.68)	4 (18.2)	10 (10.9)	9 (39.1)	58 (19.5)	53(13.05)	2 (8.7)	570 (13.94)
No. of retouched flints (%)*		7 (2.63)	25 (5.35)	23 (5.41)	23 (4.38)		12 (3.6)	63 (5.55)	1 (4.5)	3 (3.3)	3 (13)	6 (2)	57 (14.04)	1 (4.3)	220 (5.39)

• Percentage excludes chips

2006) and conforms well with what would be expected for an early Bronze Age assemblage (Butler 2005). These pits feature squat or broad flakes with direct hard hammer percussion and a virtual absence of platform abrasion. Elsewhere, the beaker material from Barrow Hills Radley was also focused on small hard-hammer struck flakes with numerous hinged terminals. (Bradley 1999, 219).

Plain platforms are dominant here and at the HS1 sites (57.3% here and 60% from HS1). There are some differences which can best be explained by the choice of nodule, with very small nodules at Beechbrook Wood (average 47g) compared to much larger nodules at Site D (139g). The smaller nodules yielded significantly higher numbers of trimming flakes (51.8% compared to 35.1%) and significantly lower incidences of non-cortical flakes because there is far less inner material to work with.

Pit 1374 and adjacent pit 562, however, displayed very high incidences of burning and breakage (Table 2.7) amongst the flint, and contained significant amounts of animal bone, so much so that is has been argued that they represent the residues of feasting (Cramp 2006). In contrast only around 8% of the flint from pit 6161 was burnt, and very little animal bone was found. A more appropriate model for pit 6161 is that Beaker pit assemblages represent formalised deposits rather than straightforward accumulations of domestic waste (Allen 2005, 222).

Despite very careful study, only four separate small refitting sequences were identified from pit 6161. The lack of further refits may be due to truncation having removed many of the flakes, to middening before burial, as has been argued for many Neolithic and later Bronze Age assemblages (Garrow *et al.* 2005), or conscious selectivity about what was buried. It is possible that all three were contributory factors. While some truncation of the pit had certainly occurred, the abraded state of some of the Beaker vessels strongly implied middening before deposition, and the different representation of rim and base sherds may indicate deliberate selection. In the case of pit 6161, however, the general uniformity of surface condition of the flint makes middening of this material less likely. Deliberate selection, whether of specific pieces or of a 'token' proportion of knapping debitage, seems more probable. The burnt flint may perhaps have been subject to the same process.

Site Pond D North mixed Neolithic–Bronze Age assemblage

A total of 437 flints was analysed in detail. The assemblage is clearly dominated by flakes (261, 59.7%), but does include blades (13, 3%) and blade-like flakes (23, 5.3%) giving a total of 8.2% for blade forms. Platforms are generally plain (4, 9%) though complex, linear and punctiform platforms (25.1%) hint at a more careful reduction strategy, while cortical examples (19%) indicate that the full range of reduction of nodules into blanks, tools and waste occurred here. The assemblage contains significant

Table 2.5: The flint assemblage by detailed analysis areas

	Site analysed in detail									
CATEGORY TYPE	*Early Neolithic G*	*Middle Neolithic B*	*Neolithic-Bronze Age PDN*	*Early Bronze Age D*	*Middle Bronze Age A*	*Mid-Late Bronze Age C*	*Mid-Late Bronze Age G*	*Early Iron Age C*	*Early Iron Age G*	*Grand Total*
Flake	57	23	260	228	134	105	445	102	54	1407
Blade	8	1	10	1	3	2	8	3	1	37
Bladelet		2	3	2		1	4	2	4	18
Blade-like	6	3	23	6	4	3	25	2	1	73
Irregular waste	4	1	21	23	9	3	25	6	3	95
Chip	16		24	92		21	4	2	16	175
Sieved chips 10-4 mm				124	131			41	50	346
Rejuvenation flake core face/edge			1			1	4	1	2	9
Rejuvenation flake other								1		1
Flake from ground implement								1		1
Double platform blade core			1							1
Tested nodule/bashed lump	1		6	5		1	8		2	23
Single platform flake core			5	1	1		8			15

Multiplatform flake core			15	3	2	1	16	2	1	40
Keeled non-discoidal flake core			3							3
Core on a flake			1	2			3	2		8
Unclassifiable/fragmentary core			1							1
Microlith							1			1
Microburin		1								1
Leaf arrowhead	1									1
Chisel arrowhead		1					1			2
Barbed and tanged arrowhead			1							1
End scraper	3		8	1	1	1	6	1		19
Side scraper				2			1			3
End and side scraper							1			1
Thumbnail scraper							1			1
Other scraper		1	3			1		3		6
Awl			1		1	1				3
Piercer			4		3	3	3			12
Spurred piece			1	1				1	1	4
Serrated flake	1									1
Denticulate			1				2			3
Notch	1	1	12	1			2	2		19
Backed knife			1							1
Plano-convex knife							1			1
Retouched flake	1		18	2			12		1	35
Burin			1							1
Other heavy implement			1							1
Misc. retouch		1	3	1	1		2			8
Other			3				1			3
Hammerstone			5	1	1	1	2			9
Grand Total	99	35	437	496	291	145	586	172	136	2390
No. of burnt flints (%)*	6 * (7.23)	0	17* (4.08)	22* (7.86)	16 * (10)	5* (4.03)	20* (3.44)	5* (3.60)	19* (27.14)	110* (5.89)
No. of broken flints (%)*	18 * (21.69)	6* (17.14)	54* (12.98)	14* (5)	17* (10.63)	11* (8.87)	42* (7.22)	19* (13.67)	7* (10)	187* (10)
No. of retouched flints (%)*	8 * (9.64)	4* (11.43)	58* (13.94)	8* (2.86)	7* (4.38)	7* (5.65)	34* (5.82)	7* (5..04)	2* (2.86)	134* (7.17)

* Percentage excludes chips

Table 2.6: The flint assemblage from Beaker pit 6512 by context

CATEGORY TYPE	Middle fill 6513	Pit 6512 Middle fill 6163/ 6514	Upper fill 6162/ 6515	Grand total
Flake	23	182	23	228
Blade		1		1
Bladelet		2		2
Blade-like		5	1	6
Irregular waste	1	20	2	23
Chip		202	14	216
Tested nodule/bashed lump	2	3		5
Single platform flake core		1		1
Multi platform flake core	1	1	1	3
Core on a flake		2		2
Core reused as Hammerstone		1		1
End scraper		1		1
Side scraper		1	1	2
Spurred piece		1		1
Notch		1		1
Retouched flake		1	1	2
Misc retouch		1		1
Grand Total	27	426	43	496
No. of burnt flints (%)*	2 (7.41)	19 (8.48)	1 (3.45)	22 (7.86)
No. of broken flints (%)*	3 (11.11)	8 (3.57)	3 (10.34)	14 (5)
No. of retouched flints (%)*	0	6 (2.68)	2 (6.9)	8 (2.86)

*Percentage excludes chips

Table 2.7: Comparison of Beaker pit assemblages

CATEGORY TYPE	Pit 6161 Site D	Pit 1374 Beechbrook Wood	Pit 562 Beechbrook Wood
Flake	228	230	85
Blade	1	1	1
Bladelet	2	1	4
Blade-like	6	5	2
Irregular waste	23	115	16
Chip	216	272	37
Tested nodule/bashed lump	5		
Single platform flake core	1	1	
Multi platform flake core	3	3	
Core on a flake	2	2	1
Core reused as Hammerstone	1	1	
Unclassified core		6	
End scraper	1	3	
Side scraper	2	6	
Thumbnail scraper		3	
Other scraper		2	
Backed knife			1
Spurred piece	1		
Notch	1		
Leaf shaped arrowhead			
Barbed & Tanged arrowhead		1	
Retouched flake	2	19	
Misc retouch	1	5	
Grand Total	496	676	147
No. of burnt flints (%)	22* (7.86)	417 (61.7)	147 (100)
No. of broken flints (%)*	14* (5)	400 (59.17)	87 (59.18)
No. of retouched flints (%)*	8* (2.86)	39* (9.65)	1* (0.91)

*Percentage excludes chips

amounts of both broad and narrow removals and also displays by far the highest incidence of platform abrasion/preparation from all A2 sites (101/385, 26.2%), far in excess of the late Neolithic–early Bronze Age assemblage from Site D (2/257, 0.8%).

Cores include many single platform and multi-platform examples displaying flake removal scars but there are two cores that display both blade(let) and flake scars. These consist of an opposed platform core and a multi-platform core, and there are other multi-platform examples that are typical of early Neolithic cubic examples. Many of the cores have been heavily worked with over 15 removals seen on nine of them, while others are more typical of an expedient later prehistoric strategy with only a very few removals from a single unprepared platform. Just more than half the cores (15/29, 51.7%) have some evidence for platform preparation, usually along the edges of an earlier abandoned platform, and in many cases only along parts of a platform, due to subsequent removals from the prepared platform. One of the heavily-worked multi-platform cores was reused as a hammer stone (Fig. 2.32, no. 6). Despite its complexity, this piece is probably of middle–late Bronze Age date.

Formal tools are common here as are less formal retouched flakes (18). These are often very elegant flakes, displaying platform edge abrasion in five instances and are most likely of Neolithic date. Some of the more irregular examples, made on flakes with unmodified platform edges, are more typical of Bronze Age assemblages. Notches are also common (12): nine are simple single notches, two are double and there is also a multiple notched flake. The more formal tools comprise 8 end scrapers, 1 horned scraper, 2 other scrapers, 1 possible barbed and tanged arrowhead, 1 backed knife, 4 piercers, 1 awl, 1 spurred piece, 1 micro-denticulate, 1 burin, 1 heavy implement, 2 combination tools, 3 with miscellaneous retouch and one piece which is unclassified but clearly a tool.

Some of these tools are clearly Bronze Age, such as many of the notches, retouched flake, horned scraper and piercers (4989, 4992 and 5263). The horned scraper (Fig. 2.32, no. 5; 5152) exhibits abrupt slightly concave retouch on both sides of a flake, with a simply struck concave distal notch. This is typically seen as later Bronze Age in date, and the type has a limited spatial distribution, most examples coming from the Seaford/Alfriston area of

the Sussex Downs (Butler 2001). A crude possible early Bronze Age barbed and tanged arrowhead (Fig. 2.32, no. 4; 5054) was also recorded, but despite the two notches forming a tang and slight barbs, the flake exhibits abrupt retouch along the left hand side and only erratic flake removals along the right-hand side. Another unusual artefact is a large, thick, hard hammer flake (5229) that exhibits a series of flake removals along both sides of the ventral surface. The function of this retouch is unclear as it leaves an irregular edge, but the distal left hand side exhibits heavy use-damage on the ventral and dorsal surfaces, possibly indicating the tool was used as a knife. All of these flints with concave working edges were recovered from pit 19267 at some distance from the main body of the assemblage. The lithic assemblage from this feature is late Bronze Age in date, but this feature has yielded late Iron Age pottery and an early Saxon radiocarbon date.

Several of the tools recovered here appear to be of early Neolithic date. This would include several of the retouched flakes, but more importantly, the burin (Fig. 2.32, no. 1; 5189), the micro-denticulate (Fig. 2.32, no. 2; 5174) and two very elegant end scrapers on long flakes/blade-like flakes (Fig. 2.32, no. 3; 5000 and 5025). The scrapers are near mirror images of each other and very closely resemble an end scraper (3996) recovered from a pit on Site G. The micro-denticulate is a particularly fine example, made on naturally backed blade, it has a series of finely executed tiny notches along its right hand side. The burin is a single burin on a truncation, probably formed on a blade.

The assemblage from Pond D North can be interpreted in two ways. It may contain artefacts from a range of periods, including a possible Mesolithic burin and bladelets, early and late Neolithic, middle and late Bronze Age material. Alternatively, it may comprise two specific assemblages, one dating to the early Neolithic and the other of mid–late Bronze Age date. The tools described above, the blade and blade-like flake component, the degree of platform abrasion and some of the cores recovered all point to a relatively small but significant early Neolithic component to the assemblage. The dimensions of the blanks from the assemblage and the length-width ratio most closely resemble the early Neolithic assemblage from Site G (see Table 2.8 below). Moreover, the degree of retouch within the assemblage is only matched by the Site G early Neolithic assemblage and the middle Neolithic scatter from Site B. The remaining assemblage, possibly around two-thirds or three-quarters of the total, is likely to be middle–late Bronze Age in date and mirrors much of the material recovered from Sites A, B, C, F and G.

Site C middle Bronze Age features

Ninety-one flints were recovered from ditch 5892, which yielded significant quantities of Deverel-Rimbury ceramics. Five retouched pieces were recovered consisting of three piercers (Fig. 2.33, nos 2–3; 4369, sf 584, 4415 and 4416) and two scrapers, one end (Fig. 2.33, no. 1; 4414, sf 556) and one double concave-nosed example (4403). This amounts to 6.4% of the assemblage excluding chips, and may indicate that the ditch enclosed an area of settlement activity, including perhaps hide-preparation and leather-working. Two bone points recovered from this ditch further emphasise the likely domestic nature of the enclosure. Cores were absent although one tested nodule was recovered.

A putative palisade slot (5740) yielded 54 flints, including an awl (4305), a multi-platform flake core (4284) and a large broad blade (4311) with ventral distal retouch. The majority of the remaining pieces are fairly large broad flakes struck with a hard hammer off unprepared platforms. One refit was observed between a side trimming and a distal trimming flake (4297 and 4298 respectively) indicating a single platform core worked clockwise, another piece (4296) also appears to come from this core, but has no direct relationship to the refitted flakes. Retouch here was rarer here than for the nearby ditch (5892) amounting to only two examples (4.4%).

Site A middle–late Bronze Age pits

The flints from three pits from Site A dated by pottery to the end of the middle Bronze Age were analysed in detail. Although the assemblages were small they appeared to represent material contemporary with the pits. All three pits were extensively sampled, so the there is a high degree of confidence that the material that was analysed was truly representative of the assemblages.

A small but relatively fresh assemblage (65 flints) from pit 3024 contained many large hard hammer flakes with plain, unprepared platforms (Fig. 2.34, nos 3–5). There were no blades and only three blade-like flakes. Two cores were present, a single platform flake core and a multi-platform flake core reused as a hammerstone (Fig. 2.34, no. 7; 3039). There were three retouched tools (5.3%) consisting of an end scraper on a secondary flake blank (Fig. 2.34, no. 1; 3010, sf 301), an awl on a blade-like flake blank (3023) and a probable piercer on a secondary flake blank (3036). Refitting identified only one sequence, consisting of three small side and distal trimming flakes of bullhead flint (3055–7).

Pit 3030 contained 86 pieces which included more fine knapping debris, many flakes, a single blade, another multi-platform flake core (Fig. 2.34, no. 6; 3070), two piercers and a miscellaneous retouched flake. Two residual flints possibly dating from the Late Upper Palaeolithic recovered from this feature have already been considered above. The assemblage contained 4.2% retouch. Much of the assemblage appears less fresh than that from pit 3024. Two pieces (3103 and 3147) had been struck from the same core but with another removal or two (unrecovered) separating them (3124 is also probably from this core). Two piercers also look like they were struck

from the same core (Fig. 2.34, no. 2; 3073 and 3086), albeit a different one from the earlier group.

Pit 3097 contained a quite different assemblage to the other two, in that the assemblage of 140 pieces contained a mass of fine shatter from several cores, including some of Bullhead Bed flint, along with thirty flakes and a large flake core. Formal tools or indeed, retouch itself, was entirely absent.

Site G middle–late Bronze Age pits

The middle to late Bronze Age features on Site G produced some comparatively sizable assemblages. Pits 9293, 9231, 9396 and 9554 yielded 286, 116, 91 and 93 flints respectively, with several other smaller groups of 20–70 flints from various pits and ditches. Despite the significant flint assemblages, only four of the 586 pieces recovered were chips. However, with the exception of pit 9554, these features were not sampled and much of this fine shatter may have been missed. The assemblages were generally spread across a large number of contexts within any feature and whilst many of the flints were in fresh condition, no refits were identified, although two cores (3881 and 3882) may be from the same split nodule. Many of the flints may be residual, with numerous examples of blades and blade like forms were identified. Other earlier finds included an early Bronze Age thumbnail scraper, a middle Neolithic transverse arrowhead (Fig. 2.29, no. 3) and an exceptionally fine early Bronze Age plano-convex knife (Fig. 2.29, no. 5; see above); these may represent curated artefacts that were intentionally deposited rather than being accidentally redeposited. However, this seems unlikely for the Mesolithic material from pit 9293.

These pits also displayed great variety in the tools and blank assemblages they contained. Non-cortical pieces varied from 30.4% of the blank assemblage in pit 9293 to as much as 55.4% in pit 9396. Trimming flakes amounted to over half the blanks in pit 9293 (51.9%) but only made up 29.2% of the blanks from pit 9396. Initial stages of core working were also in evidence, ranging from a high of 28.2% of the blanks from pit 9231 to 13.9% in pit 9396. Core rejuvenation flakes were present in three of the four pits in small numbers but were absent from pit 923; these are likely to represent residual Mesolithic-Neolithic material.

Cores/tested nodules were frequently recovered here, 15 from pit 9293, seven in 9231, nine in 9396 and six in 9554. Despite the presence of significant quantities of residual early material, none of the cores belonged to blade-based industries though six displayed platform edge abrasion.

Tools from pit 9293 included a microlith, five end scrapers, one side scraper, one other scraper, three piercers, two notches, a denticulate, nine retouched flakes and two other examples of miscellaneous retouch. This amounted to 8.4% of the assemblage, with only one example being definitely residual. Elsewhere, the figures were far lower.

The nature of the deposits in these pits indicates that they may have been left open for some time. The colluvial fills accumulating in the top of the dry valley immediately to the west, and extending onto parts of the site, contained a variety of struck flint of different periods, and it seems likely that occupation activity mixed this material with contemporary midden deposits associated with these pits-scoops, resulting in a very mixed flint assemblage. These midden deposits would have contained the waste from a variety of domestic activities which would have given rise to these very mixed assemblages.

Site C early Iron Age pits

Three pits at the eastern end of Site C produced large quantities of early Iron Age pottery associated with small but significant flint assemblages. These were chosen for further analysis on the grounds that they may have represented very rare, contemporary early Iron Age flint knapping.

Pit 5130 produced 36 flints including a nosed end scraper (4222), a flake of a polished flint implement, two notched flakes (4196 and 4215) and two blades and a blade-like flake. The assemblage does not appear to represent early Iron Age knapping, indeed, several of the pieces appear to be more suited to a Neolithic date, such as the flake from a polished implement (4197), a core (4205) which has blade-like scars, and a blade (4199) and regular flake (4198) which display parallel blade scars more typical of much earlier periods. Flakes 4206, 4208 and 4220 from contexts 5405, 5406 and 5428 respectively, look as if they may have been struck from the same core. As such, they may be genuine examples of early Iron Age knapping, although there is also later Bronze Age activity in the immediate vicinity from which the flints may have derived. Context 5428 is a considerable distance below 5405 and 5406, which overlie each other.

Pit 5110 produced 58 flints, mostly flakes or chips (from samples) but also included a multi-platform flake core (4270) and an end scraper (4264). The scraper in particular is unlikely to be early Iron Age in date, resembling a partially denticulated Mesolithic example. Again, this does not appear to be an *in situ* contemporary assemblage—the upper fill contains the most patinated examples, no refits were identified and very few pieces look like they came from the same core. This assemblage is a very mixed bag in terms of form, surface condition and degree of rolling and may originate form a diverse range of periods. Moreover, many of these flakes appear as if they have originated from accidental hard hammers striking the nodules present in the chalk, possibly during the cutting of the pit.

Eighty pieces were recovered from pit 5066. There are several pieces which look to be far earlier in date than the late Bronze Age–early Iron Age. These include one blade (4172), three bladelets and a probable snapped blade (4115). One bladelet (4179) strongly resembles a distal micro-burin, less typical (and more difficult to identify with certainty) than the usual proximal variety. The remaining assem-

blage contains numerous flakes and chips along with two flake cores (4117 and 4164), a spurred piece (4121) and two atypical scrapers (4171 and 4175). One of the scrapers (4175) is a convex scraper with the scraping edge on the ventral rather than distal side, and may represent a form of expedient early Iron Age tool production. A later Bronze Age or early Iron Age date is plausible for the majority of the flint, but which is impossible to say.

Site G early Iron Age pits

Iron Age features from Site G included 99 flints from pit 9010 and 37 from pit 9004. As with Site C these assemblages were largely residual. The pits were 70m or more east of the main area of Neolithic and Bronze Age activity and were cut into chalk rather than Thanet sands, but much of the material must have originated from colluvial horizons known from that locality and removed during the HS1 stripping operations.

Pit 9004 contained large numbers of fairly genuine looking fine knapping waste along with some narrow bladelets (3298–3301) and narrow chips. Many of the removals were struck from Bullhead Bed flint. The assemblage contained many thin pieces rather than the larger, thicker and probably squatter flakes one would expect from a residual middle–late Bronze Age or even early Iron Age assemblage and is almost certainly derived from residual Mesolithic or early Neolithic material.

Pit 9010 also contained several pieces which could be seen as being broadly early in date. These included a blade (3421), a blade-like flake (3423) and two possible crested removals/core rejuvenation flakes (3330 and 3335) which indicate a careful blade reduction strategy typical of the Mesolithic–early Neolithic. Other pieces from the assemblage indicate a much cruder and later reduction strategy focused on larger squat, thick hard

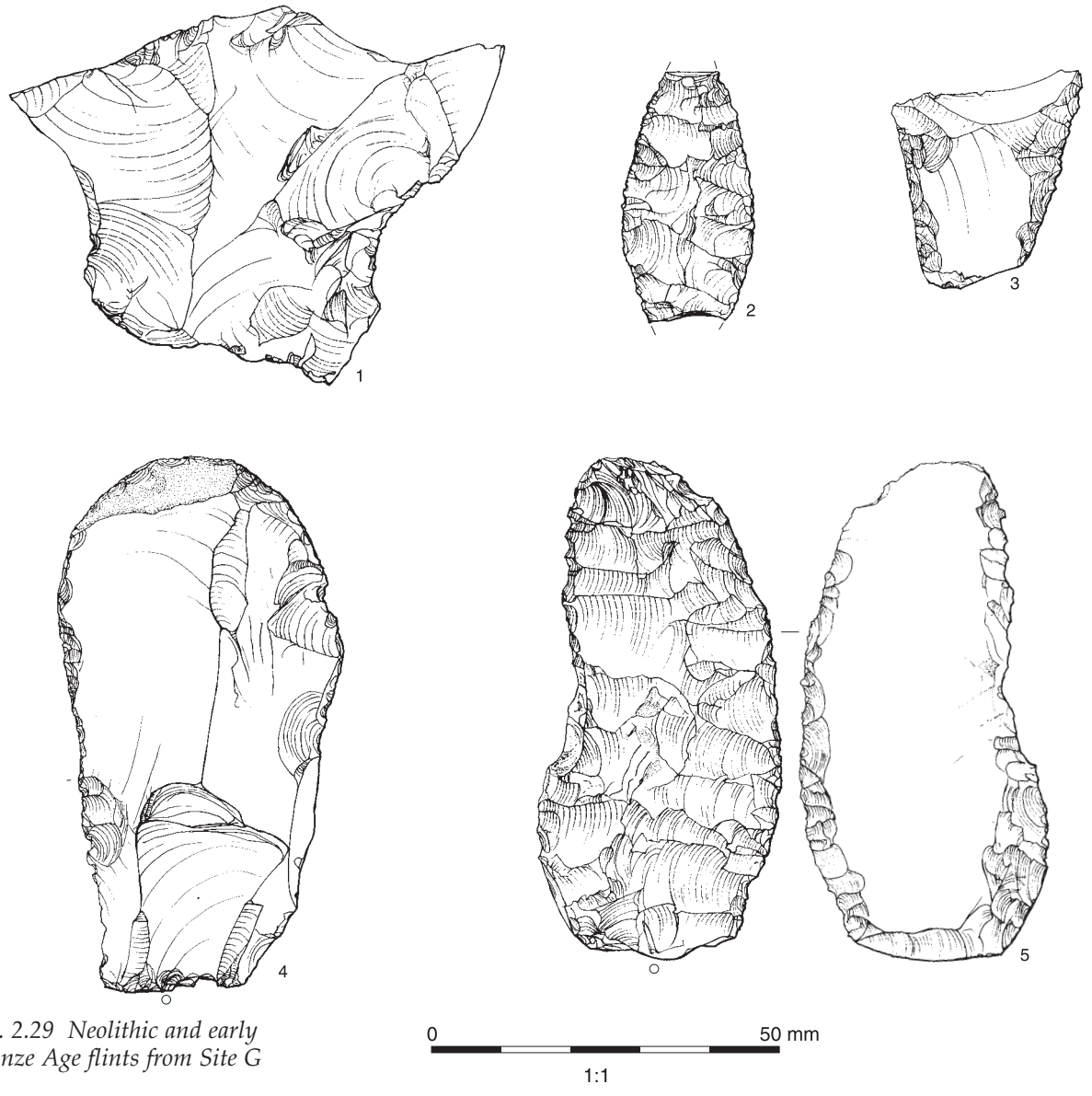


Fig. 2.29 Neolithic and early Bronze Age flints from Site G

hammer flakes and some utilised frost shattered fragments, one of which had been converted into a spurred piece (3379). A broken side scraper (3379) probably had a hollow/concave profile when complete and represented the only other retouched example present here. A core on a large flake (3368) and a tested nodule were also present (3373). There was also a high degree of burning within the assemblage which taken with the thicker cruder removals may indicate a limited early Iron Age component to the assemblage here. Three of these heavily burnt flakes formed one refit and another near refit in which the intervening flake was missing (3398–3400).

Catalogue of illustrated flints

Fig. 2.29: Neolithic and early Bronze Age flints from Site G

1 Multi platform flake core. Mid-late Bronze Age. Pit 9231 fill 9302. (cat 3525).
2 Leaf shaped arrowhead. Early Neolithic. Pit 9223, fill 9224 (sf 1625/cat 3995).
3 Transverse arrowhead. Middle Neolithic. Pit 9446, fill 9396 (sf 1623/cat 3914).
4 End scraper on distal trimming blade-like flake. Early Neolithic. Pit 9223, fill 9224 (sf 1627/cat 3996).
5 Plano convex knife. Late Neolithic-early Bronze Age. Pit 9347, fill 9396 (sf 1604/cat 3879)

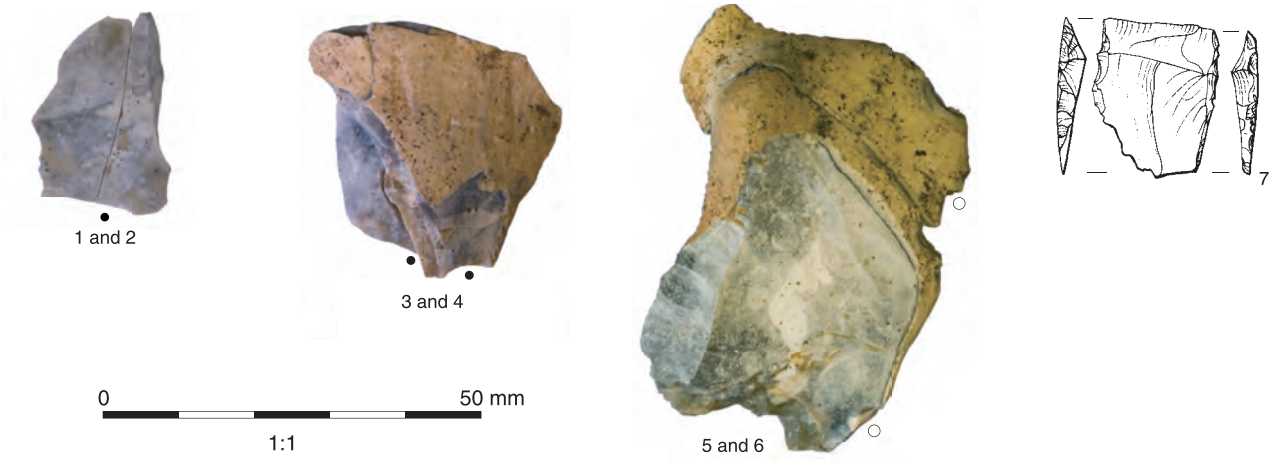


Fig. 2.30 Middle Neolithic flint refits and arrowheads from Site B

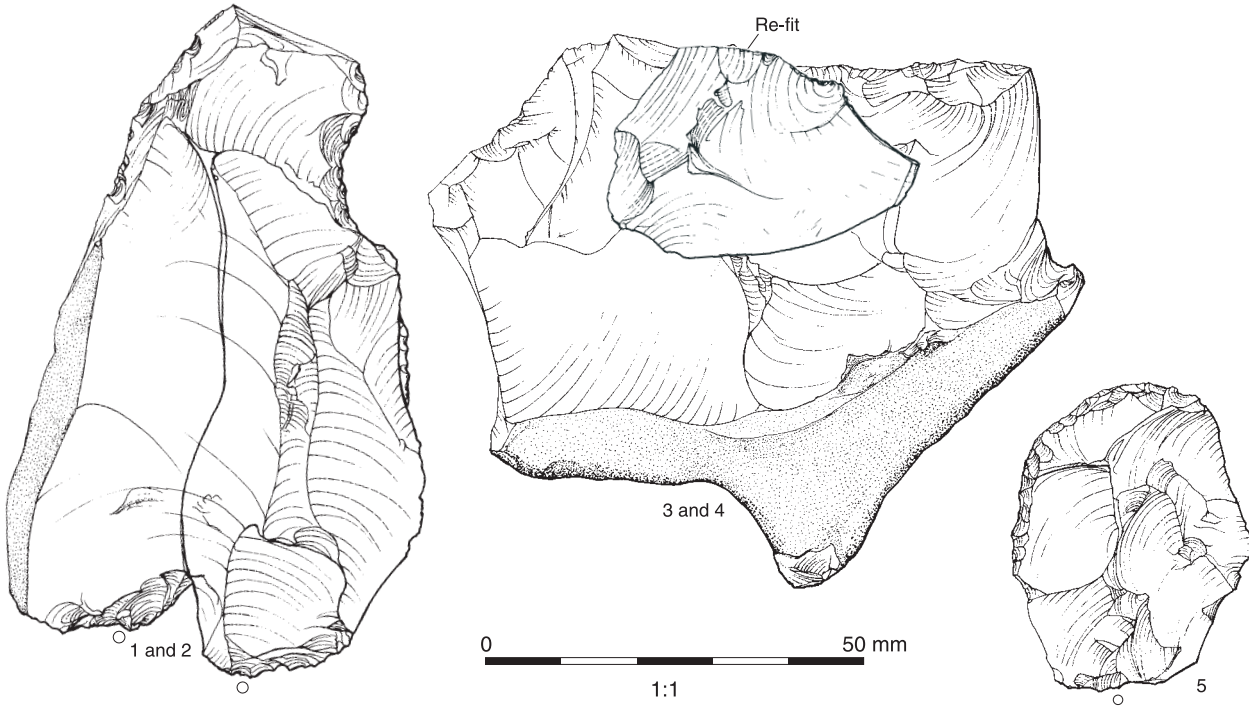


Fig. 2.31 Beaker pit flint assemblage refits and tools from Site D

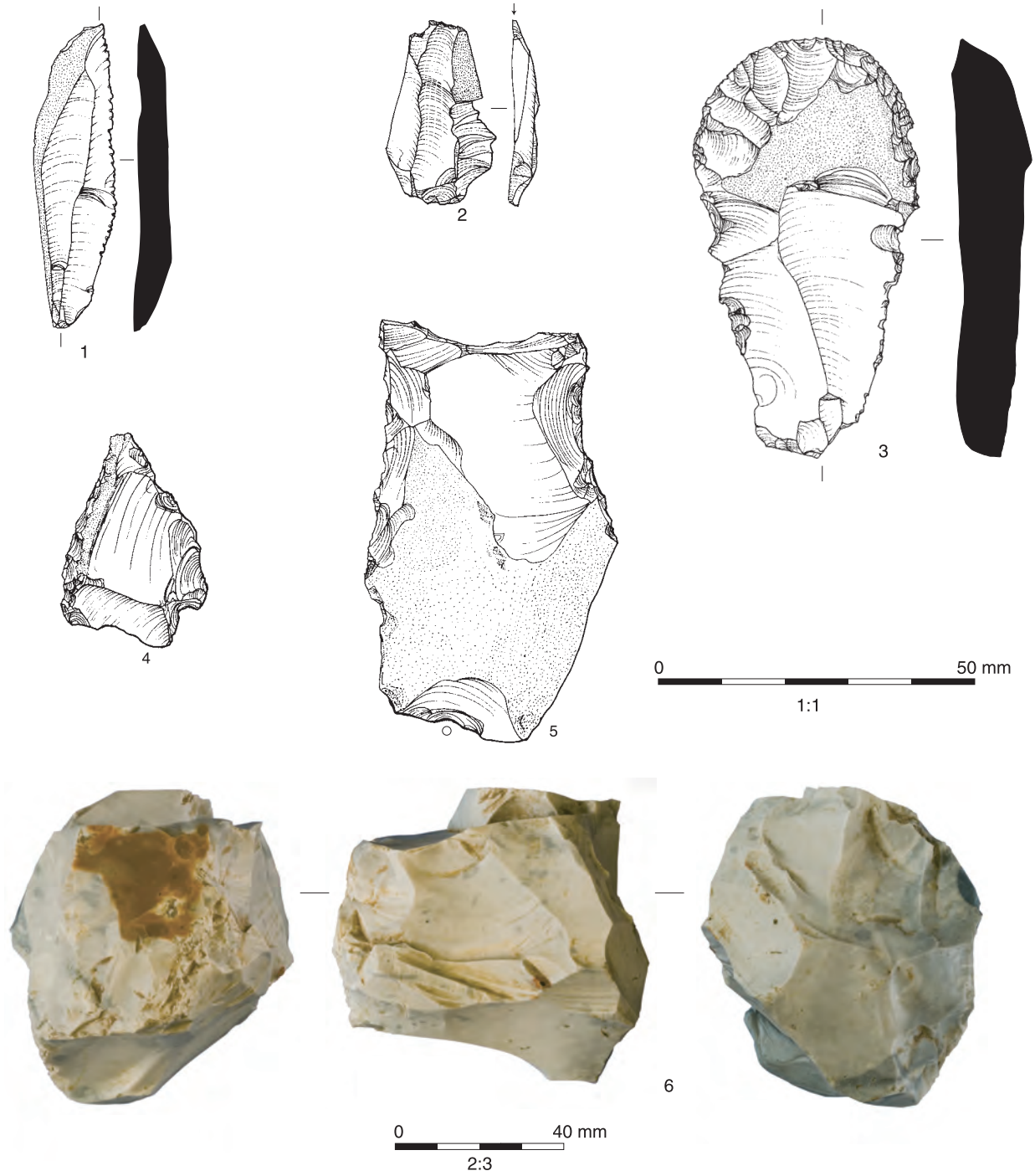


Fig. 2.32 Early Neolithic and Bronze Age flints from Site Pond D North

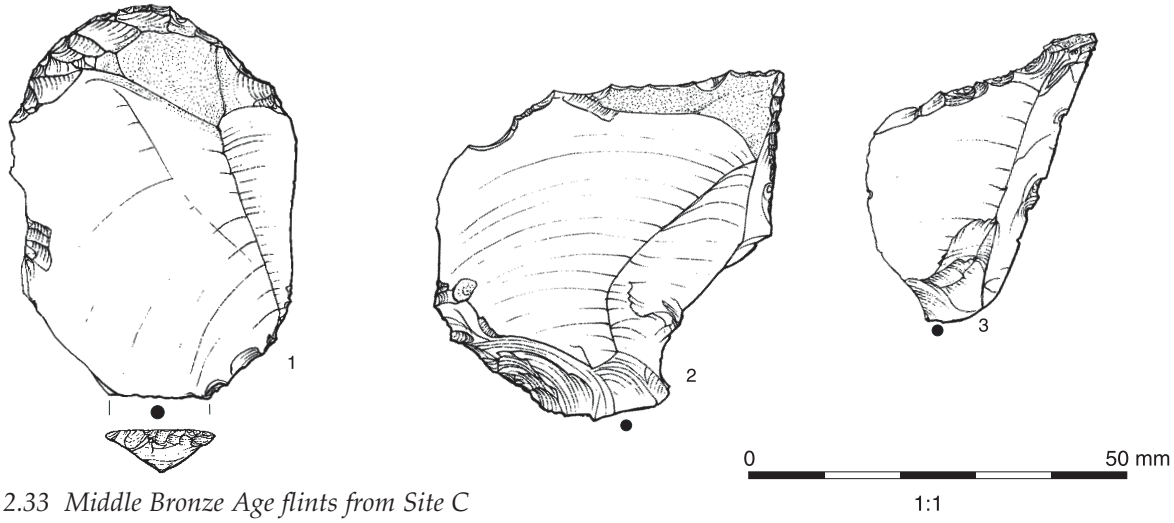
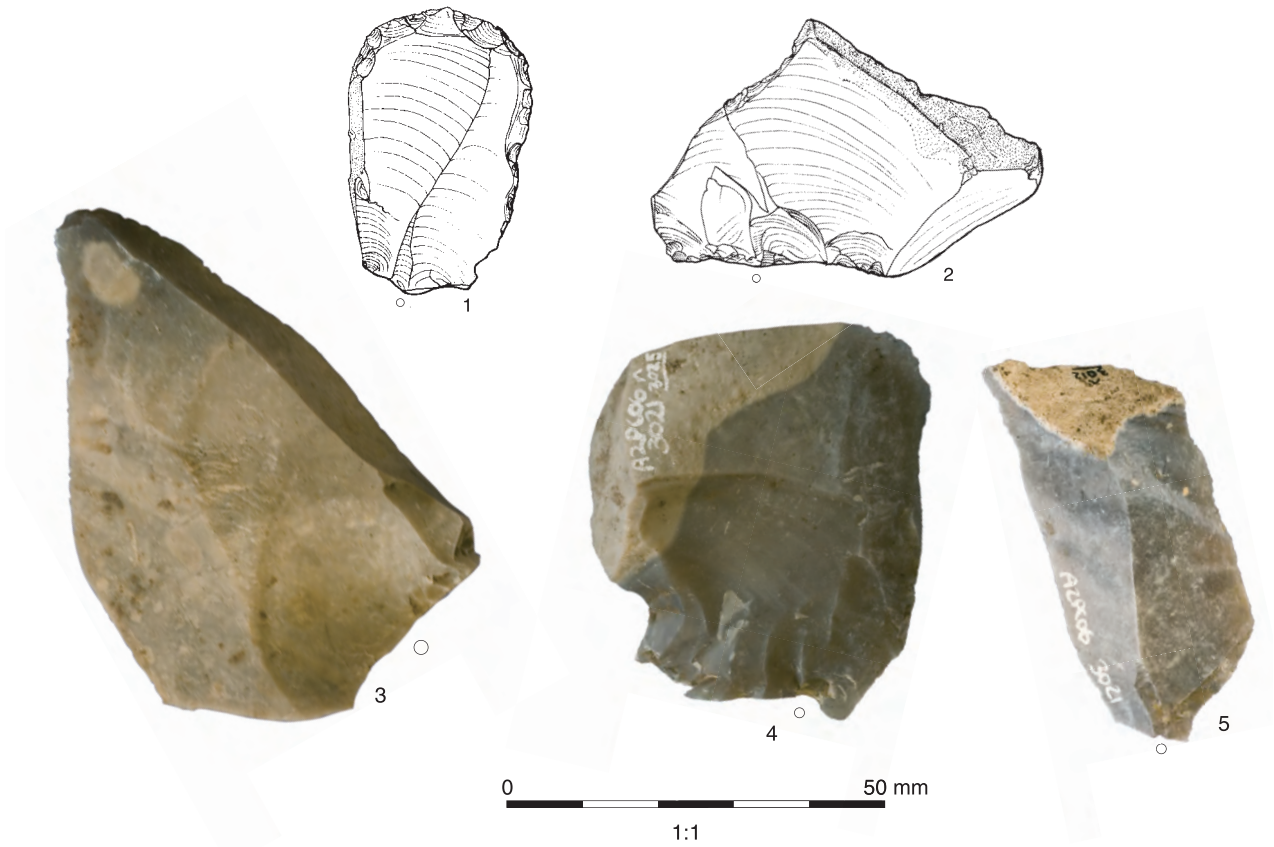


Fig. 2.33 Middle Bronze Age flints from Site C



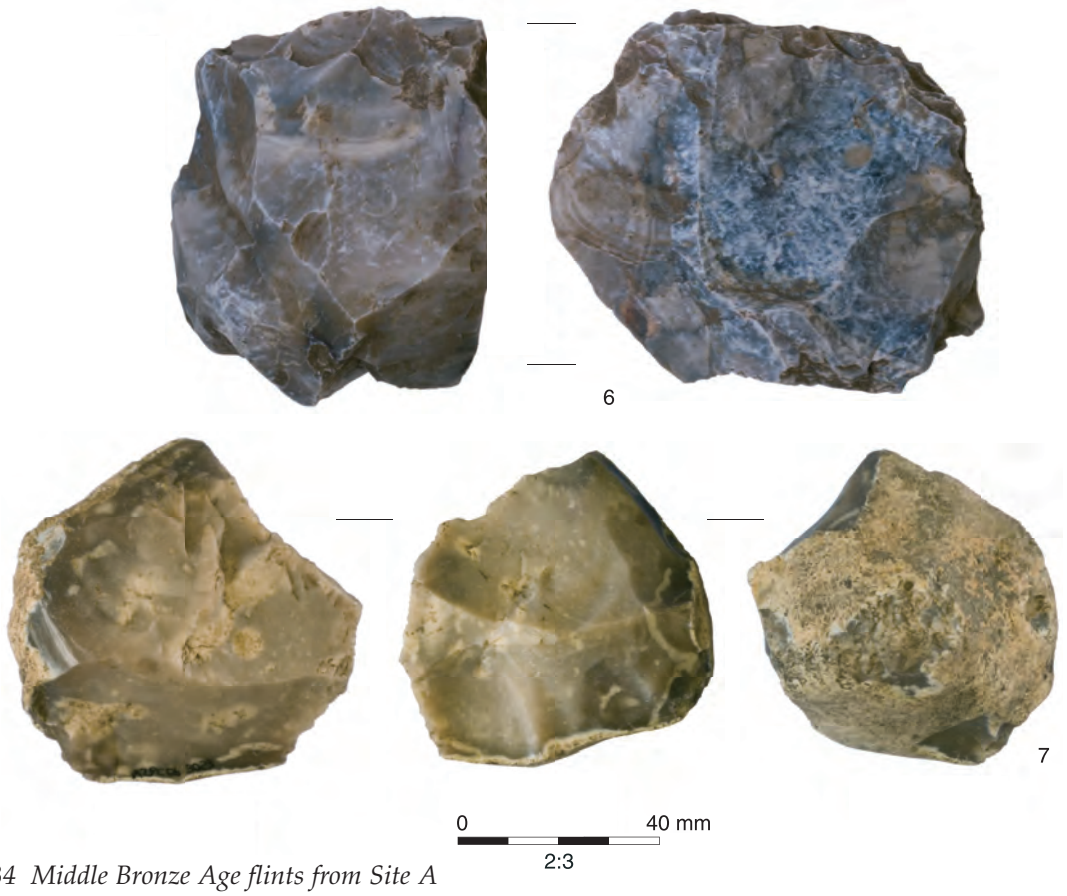


Fig. 2.34 Middle Bronze Age flints from Site A

Fig. 2.35 Palaeolithic and Mesolithic flints from the A2

Fig. 2.30: Middle Neolithic flint refits and arrowheads from Site B

1–2 Inner flake snapped laterally from inner flake. Middle Neolithic. Spread 3424 (cat 4948 & 4949).
3–4 Core preparation flake to distal trimming flake. Middle Neolithic. Spread 3424 (cat 4951 & 4952)
5–6 Core preparation flake to distal trimming flake. Middle Neolithic. Spread 3424 (cat 4953 & 4954).
7 Chisel arrowhead. Middle Neolithic. Spread 3424 (cat 4959).

Fig. 2.31: Beaker pit flint assemblage refits and tools from Site D

1–2 Blade-like flake onto notch. Early Bronze Age. Pit 6161, fill 6163=6514 (cat 4532 & sf 1472/4858)
3–4 Inner flake onto core. Early Bronze Age. Pit 6161, fill 6163 (cat 4463 & 4473).
5 End scraper on flake blank. Early Bronze Age. Pit 6161, fill 6163 (cat 4529).

Fig. 2.32: Early Neolithic and Bronze Age flints from Site Pond D North

1 Single burin on a truncation. Early Neolithic. Ditch 19168, fill 19167 (cat 5189).
2 Microdenticulate on a blade. Early Neolithic. Subsoil layer 19147 (cat 5174).
3 End scraper on a blade-like flake. Early Neolithic. Ditch 19039, fill 19040 (sf 1952/cat 5000).
4 Possible barbed and tanged arrowhead. Early Bronze Age. Spread 19110 (cat 5396).
5 Horned scraper on a prep flake. Late Bronze Age. Well? 19267, fill 19293 (cat 5393).
6 Multi-platform flake core reused as a hammerstone. Mid-late Bronze Age. Ditch 19212, fill 19213 (cat 5390).

Fig. 2.33: Middle Bronze Age flints from Site C

1 End scraper on a miscellaneous trimming flake. Middle Bronze Age. Ditch 5501, fill 5504 (sf 556/cat 4414).
2 Piercer on a distal trimming flake. Middle Bronze Age. Ditch 5501, fill 5504 (4415).
3 Piercer on a flake blank. Middle Bronze Age. Ditch 5483, fill 5485 (sf 584/cat 4369).

Fig. 2.34: Middle Bronze Age flints from Site A

1 End scraper on side trimming flake. Mid-late Bronze Age. Pit 3024, fill 3021 (sf 301/cat 3010)
2 Piercer naturally backed on distal trimming flake. Mid-late Bronze Age. Pit 3030, fill 3031 (cat 3073).
3 Hard hammer inner flake. Mid-late Bronze Age. Pit 3024, fill 3021 (cat 3026)
4 Hard hammer inner flake. Mid-late Bronze Age. Pit 3024, fill 3021 (cat 3025)
5 Hard hammer distal trimming flake. Mid-late Bronze Age. Pit 3024, fill 3021 (cat 3012).
6 Multi-platform flake core. Mid-late Bronze Age. Pit 3030, fill 3031 (cat 3070).
7 Multi-platform flake core reused as a hammerstone. Mid-late Bronze Age. Pit 3024, fill 3023 (cat 3039).

Fig. 2.35: Palaeolithic and Mesolithic flints from the A2

1 Possible bruised blade. Late Upper Palaeolithic. Site A, Pit 3030, fill 3031 (cat 3097).
2 Single platform blade core. Mesolithic. Site B, Ditch 4845, fill 4844.
3 Backed bladelet microlith. Late Mesolithic. Site G, Ditch 9510, fill 9522 (sf 1626).
4 Rod microlith. Late Mesolithic. Site B, Pit 4612, fill 4613 (sf 443).
5 Bi-truncated rhombic microlith. Early Mesolithic. Site G, Pit 9293, fill 9345 (cat 3621).
6 Side trimming blade. Mesolithic-early Neolithic. Site F, Tree-throw hole 8031, fill 8032.
7 Blade. Mesolithic-early Neolithic. Site G, Pit 9231, fill 9302. (cat 3471).
8 Blade-end flaked axe. Early Mesolithic. Site B, Ditch 4364, fill 4365. (sf 425).

Late Neolithic/early Bronze Age pottery *by Lisa Brown and David Mullin*

A total of 357 sherds (1360g) of late Neolithic/Bronze Age pottery was recovered from the excavations. No material of Neolithic date was identified. The assemblage includes sherds representing at least 19 decorated Beakers, three undecorated vessels and a Collared Urn.

Most of the pottery (334 sherds/1304g; 94 % by number and 96 % by weight) was recovered from a single pit (6162/6512) in Area D. The remaining 23 sherds (56g) came from a variety of deposits in Areas A, B, C and F. Carbonised residue, which does not appear to be post-depositional, was found adhering to the inner surface of a sherd from a Beaker (Fig. 2.36, no. 1), but this returned an anomalously early date of 4952±50 BP (NZA 31250).

Fabrics

As relatively little late Neolithic and early Bronze Age pottery has been recovered from west Kent, fabric remains a poor indicator of chronology. Typically for earlier prehistoric pottery no obviously standardised 'recipe/s' were used to create the potting clays from which the A2 vessels were manufactured, and technically speaking each vessel is made from a distinctive fabric. Nonetheless, a broad fabric classification scheme based on dominant inclusion type/s has been devised to accommodate the assemblage.

The following fabrics were identified (Table 2.8):

F1 Rare to sparse white and grey flint inclusions <4mm in a fine micaceous sandy ware with rare to sparse orange grog. [Vessel 4, vessel 16 and body sherds from 6413, 6163, 6514 in pit 6161/6512)]

F2 Common ill-assorted non-calcined white flint inclusions 0.5-4 mm in a fine, slightly micaceous sandy ware with rare orange grog. Oxidised.

G1 Fine slightly micaceous sand with sparse red or grey grog and rare white flint. More sandy/micaceous than G2, less soapy. [Vessels 9, 10, 11, 15]

G2 Moderate to common grog (mostly red, some grey) in a slightly micaceous sandy clay, with

Table 2.8: Fabrics and forms of early prehistoric pottery

Fabric	*No. sherds*	*Wt (g)*	*No. and type of vessel*
F1	37	152	1 Beaker
F2	138 (1 vessel ?)	464	1 Beaker
G1	24	118	3 Beakers; 1 undecorated Beaker
G2	76	480	5 Beakers; 1 undecorated Beaker
G3	1	4	1 Beaker
Q1	53	84	1 Beaker; 1 uncertain form
Q2	9	19	1 ?undecorated Beaker
V1	19	39	3 Beakers

rare small white flint <2 mm which is probably naturally occurring in the clay. Occasionally the odd larger calcined flint inclusion. More soapy than G1.[Vessel 2/3, 6, 7, 8, 11, 12]

G3 Medium grade sand, slightly micaceous, with red and black grog and sparse white non-calcined flint <2mm. Distinguished from G1 and G2 by its coarser sandier texture and slightly more common flint. One sherd only [Vessel 14] Pond D South

Q1 Fine slightly micaceous sandy ware with rare white flint < 2mm and even rarer lumps of burnt flint or rounded flint >2mm. Occasional voids. [Vessel 5] and body sherds.

Q2 Moderate grade quartz sand with abundant glauconite pellets and rare white and grey non-calcined flint <3mm. Occasional plant voids. [Vessel 16] Site B, pit 4477.

V1 Resembles G1. Fine micaceous sandy ware with fine red grog and rare flint mainly <2mm and with distinctive common plant voids.

Shell-tempered wares are completely lacking but 19 sherds representing three Beakers clearly combined plant matter with a fine sandy clay (fabric V1). The most common fabrics include grog only or combine grog with rare to sparse inclusions of flint. The apparent preponderance of F2, with common flint represents the fact that the 138 sherds of this fabric belong to a single Beaker. Grog tempering with some sparse flint was used in the early and middle Bronze Age at Shrubsoles on Sheppey (Raymond 2003). This fabric was used in the late Neolithic/early Bronze Age pottery recovered from Northumberland Bottom (Edwards 2006a). The use of sandy wares (Q1) without other apparent inclusions is generally rare for the late Neolithic/early Bronze Age in the region, but it is important to bear in mind that in the case of small abraded sherds (common in the A2PC assemblage) it is often the fragments between inclusions that survive, giving an impression of an inclusion-free fabric.

There is no evidence within this assemblage of imported Beakers or of long-distance procurement of potting clays. Most of the raw materials could have been acquired either strictly locally or, in the case of the sand with flint wares, from relatively short distances away, at most 5–10km to the south where there is a major outcrop of Clay-with-Flints outcrops, although smaller deposits occur more locally. Glauconitic sandy ware Q2, represented by a single vessel (Fig. 2.37, no. 16) may have been an import or created from materials procured from approximately 15km to the south of the site on the Upper Greensand and Gault clays.

All but 11 sherds are oxidised, reinforcing the evidence that the preferred colour of Beakers was in the red-orange range (Gibson 2002, 89). The exceptions are small Beaker fragments from fill 6514 of Pit 6161/6512, which may have belonged to an irregularly fired vessel.

Forms and decoration

Beakers

Sherds representing a minimum of 19 Beakers were identified, all but two of which (Vessels 14 and 15) were from pit 6161/6512. Twelve have been illustrated, the remaining seven represented by small rim tips or body sherds with indistinct decorative features. All of the pottery was fragmentary and generally abraded but one complete profile (lacking only the mid portion of the base) was reconstructed (Fig. 2.37, no. 8).

A single vessel (Fig. 2.36, no. 7) was represented by 127 sherds weighing 444g and seems likely to fall into Needham's (2005) mid-carinated class. It is fairly crudely executed, in grog-tempered ware G2. The heavy rolled rim and mid-line carination are features paralleled by two vessels from Beechbrook Wood on the line of the HS1 (Edwards 2006b, fig. 2.8, nos. 7 and 9). The hint of a cordon below the rim has an affinity with a rusticated Beaker from Saltwood Tunnel (Edwards 2006c, fig. 2.8, no. 14). The decoration is probably Barbed-Wire type (although the thread line is indistinct), imprecisely applied in meandering horizontal lines, and with crude, irregular triangle-shaped impressions between the lines on the upper part of the vessel. The carination on the vessel suggests that this is an early Beaker, although present in a highly fragmented and worn state.

The only complete profile (Fig. 2.37, no. 8) comes from a somewhat globular vessel with a pinched out base which fits within Needham's (2005) s-profile class. This vessel is the only example from the site with 'crow's foot' decoration, a paired fingernail impression motif which can be paralleled on similar, globular vessels from Hitcham, Buckinghamshire; Lion Point, Essex and Undley, Suffolk (Clarke 1970, figs 115, 909, 796). This motif is rare within Kent and fingernail impressions have only been noted before from Saltwood Tunnel on the route of the HS1.

A total of five further vessels appear to be of the s-profile class. A globular, short-rimmed Beaker (Fig. 2.36, no. 4) is finely made in fabric F1 and has

the most complex decorative pattern: incised cross-hatching within four zones across the width of the vessel, a scheme not unknown in southern and eastern England, notably at Hockwold-cum-Wilton, Norfolk (Bamford 1982, figs 13 and 14, P63.010 and P63.022), but also relatively common in southern Britain (Case 1993, fig. 16, nos. 4 and 7).

Of probably similar globular, s-profile form is Vessel 5 (Fig. 2.36, no. 5) in sandy ware Q1. This very incomplete vessel is also highly abraded and the surface encrusted with post-depositional clay and/or limescale. Nonetheless, close scrutiny suggests that the decorative motif consisted of simple slightly meandering horizontal incised lines extending the width of the vessel. This decorative technique is relatively rare but can be paralleled with a similar s-profile Beaker from Eynsham, Oxfordshire (Clarke 1970, fig. 326), whilst meandering incised horizontal decoration occurs on Beakers from Rudstone, Yorkshire, Boyton, Suffolk and Brantham Hall, Suffolk (ibid., figs 386, 420, 107).

Although no complete profiles could be reconstructed, it is likely that Vessels 6, 9 and 10 (Fig 2.36, no. 6 and Fig 2.37, nos 9 and 10) also belong to Needham's (2005) s-profile group. Vessel 6, in fabric G2, is relatively crudely made, with an undulating rim circuit and faintly rusticated design of impressed fingernail marks executed in irregular lines. This decoration is difficult to parallel, but similar irregular lines are present on a vessel from Sutton, Suffolk (Clarke 1970, fig. 364). Vessel 10 was also in a grog tempered fabric and, although the sherd is very abraded and the decoration faint, this appears to be decorated with meandering 'false cord', applied by fingernail to mimic cord-impressed decoration. Although very little survives of Vessel 9, the general impression is of a globular, or s-shaped profile vessel.

Too little survived of the remaining Beakers to allow classification of form, but Vessel 1 (Fig. 2.36, no. 1) was represented by 138 small fragments, most non-joining, but sufficient to identify as a rusticated Beaker with a short rim and a fingernail-impressed decoration, which was roughly smoothed after application. The fabric is a coarse flint-tempered ware, the only example within the assemblage and somewhat unusual for the immediate region.

Vessels 12 and 13 were both represented by small, comb-impressed sherds, although too little survived of the vessels to identify an overall scheme. Vessel 11 had short diagonal lines of what may have been false cord decoration, applied by fingernail to mimic cord-impressed ware, but the sherd was very abraded and the decoration faint.

Vessels 14 and 15 were represented by single sherds and very abraded. Vessel 14 appears to be decorated by a very worn cord impression, Vessel 15 by horizontal comb and diagonal impressed lines. Both are in grog and flint fabrics.

Undecorated Beakers/Food Vessel

A corrugated low profile open vessel (Fig. 2.36, no. 2+3) was recovered from pit 6161/6512. It is grog-tempered (G2) and the surfaces roughly smoothed. A small number of sherds (9 sherds weighing 19g) with similar surface treatment, but in a different fabric (Vessel 16; Fig 2.37, no. 16), was recovered from context 4196. Both of these vessels are difficult to classify and may fall into the Food Vessel tradition, rather than Beaker. Although coarse, thick walled vessels with plastic decoration are known from 'domestic' sites in East Anglia and elsewhere (Case 1993), the vessels from the A2 are more open in form, and have more in common with the Food Vessel tradition, which overlaps with 'post-Fission Horizon' Beakers (Needham 2005; Ann Woodward pers. comm.).

Collared Urn

The fill (8065) of an animal burrow (8055) in Site F produced a single Collared Urn rim sherd (Fig. 2.37, no. 17). The provenance precludes funerary or domestic designation of the vessel, although Woodward (2000) suggests that, prior to the middle Iron Age, most pots were made and used for the consumption of food, drink and hallucinogenic substances in the context of communal gatherings and feasting. The collar is 65mm long with vertical cord impressions 12–13mm apart. The pinched out collar base and smooth internal profile suggest that it is a late type (Burgess 1986, 345), although insufficient of the vessel survived to tell whether there was decoration below the collar.

Discussion

In 1982, Tim Champion (1982, 32) noted that most of the 36 or so substantial or near complete Beakers found in Kent were from funerary contexts. Additional funerary sites and occupation sites have since been identified (Gibson 1990, 19; 1992a, 283; 1992b, 399–400; Macpherson-Grant 1994, 262–3; Smith 1984), including an important occupation site underlying colluvium at Holywell Coombe, near Folkstone (Gibson 1998). Nonetheless, pottery from domestic sites dating to the period of the currency of Beakers were uncommon in Kent prior to the HS1 excavations. Recently, however, a large pit group of national significance was excavated at Beechbrook Wood along the line of the HS1 (Edwards 2006b, fig. 2.8, nos 1–9). This produced 173 sherds/2343g of Beaker pottery, a slightly larger assemblage than A2PC, with a minimum of 14 vessels represented. Most came from a single pit and the assemblage is dominated by Clarke's East Anglian, Barbed Wire and Southern styles, the majority of which fall within Needham's (2005) globular s-profile class.

The majority of the Beakers recovered from pit 6162/6512 on the A2PC project belong to the globular, s-profile class, which Needham (2005, fig. 13) assigns to the 'post-Fission Horizon' period in the middle period of Beaker use. A single exception to this is Vessel 7, which appears to be an earlier,

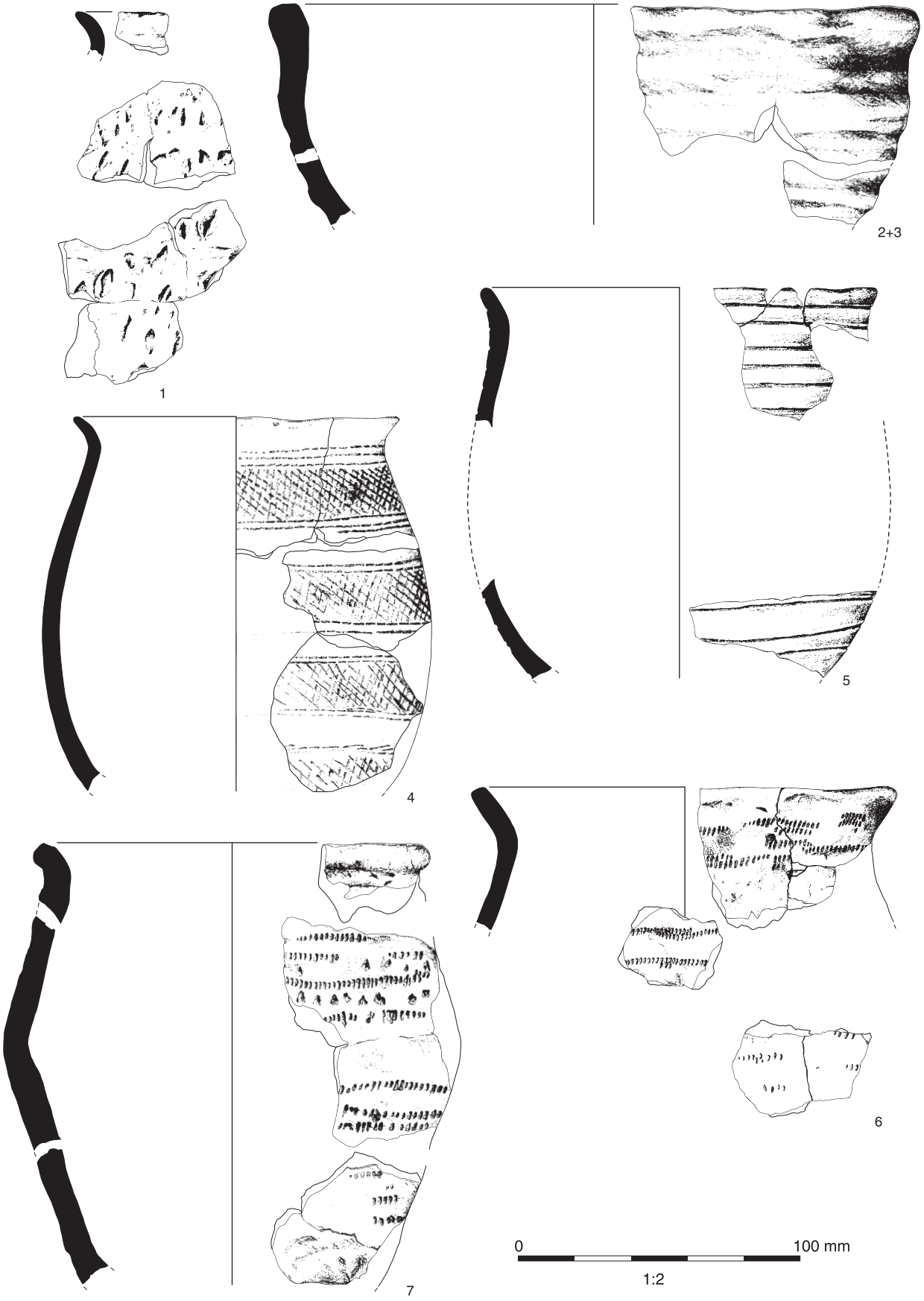


Fig. 2.36 Beaker pottery Nos 1–7

Fig. 2.37 Beaker and other early Bronze Age pottery Nos 8–16

carinated vessel. The plain vessels (Fig. 2.36, no. 2+3 and Fig 2.37, no. 16) are difficult to classify and may belong to the 'domestic' Beaker tradition, but their form suggests parallels with plain Food Vessels. A decorated Food Vessel was recovered from Saltwood Tunnel on the route of HS1 (Barclay *et al.* 2006), although this vessel had more in common with the decorative schemes used on late Beakers. The co-occurrence of Food Vessel and Beaker, as seen on the A2 scheme, is exceptionally rare, especially in south-east England where Food Vessels are uncommon.

Pit Group 6161/6512 from the A2 contained a sizeable assemblage of lithic material along with charred plant remains and fragments from 17 decorated Beakers and two undecorated vessels. Only a single base was present, whereas sherds from the rims of at least nine vessels were included, possibly indicating that the sherds were not randomly incorporated. In addition, apart from the undecorated vessels, all of the five Beakers for which profiles and rim diameters could be ascertained were of a similar, relatively small size and volume, whereas the two undecorated vessels were larger, possibly providing some indication of the way in which this group of vessels might have been used. Although the contents of pits containing Beaker ceramics have been poorly synthesised, especially in relation to non-grave assemblages (Case 1993), the material from the A2 fits within a pattern of deposition of relatively large numbers of fragmentary Beakers of mixed size, form and decoration within pits across southern Britain.

Whilst Beakers are relatively well known, early Bronze Age settlement in West Kent is poorly understood, and barrows tend to be located in west Kent and on the chalk downland between Canterbury and Dover. Settlement sites are extremely rare. It is difficult, therefore, to find parallels for the Collared Urn fragment from the A2 scheme. Longworth (1984, 216–7) lists ten Collared Urns from Kent and a further example has been recorded from Northumberland Bottom. Collared Urn/Food Vessel fragments are also known from Cobham (Barclay *et al.* 2006). Small, largely featureless grog-and-flint tempered sherds, which may be of this date, were also recovered from Shrubsoles Hill, Sheppey (Coles *et al.* 2003).

Catalogue of illustrated sherds (Figs 2.36–7)

Pit 6161/6512

1. Beaker. Fabric F2. Oxidised. Fingernail impressed rusticated decoration. Sooted inner and outer surfaces. Context 6163 <618>/6515
2. Undecorated Beaker/Food Vessel, shallow bowl form. Fabric G2. Oxidised. Corrugated wall. Context 6163 <618> (part of 3?)
3. Context 6163 <618> (part of 2?)
4. Beaker. Fabric F1. Incised cross-hatched decoration contained within four incised horizontal zones. Oxidised. Context 6163 <618>
5. Beaker. Fabric Q1. Oxidised. Incised horizontal lines on surviving upper and lower body and rim. Context 6163 <618>; context 6514: SF1468, SF1478, SF1479; 6515: SF1439
6. Beaker. Fabric G2. Oxidised. Irregular horizontal rows of comb-impressed decoration. Context 6514: SF1466, SF1471, SF1495 and additional sherds from 6163 <618>
7. Beaker with slight midline carination and heavy, slightly rolled rim. Fabric G2. Oxidised. Irregular rows of comb-impressed decoration. Context 6163 <618>
8. Beaker. Fabric G2. Oxidised. Double thumbnail impressed ('crow's foot') decoration overall. Context 6513 SF1501; 6514 SF1475 SF1480 and SF1484.
9. Beaker. Fabric G1. Oxidised. Possibly decorated but surface obscured by ?root damage. Context 6163 <618>.
10. Body sherd from a relatively large vessel. Fabric G1. Oxidised. Burnished with a pebble or implement producing streaked surface. Context 6514 SF 1474
11. Beaker sherd. Fabric G1. Oxidised. Diagonal decoration faint, may be false cord type. Context 6513 SF1524
12. Beaker sherd. Fabric G2. Oxidised. Horizontal lines of comb-impressed decoration. Context 6163 <618>.
13. Beaker sherd. Fabric G2. Oxidised. Horizontal lines of comb-impressed decoration. Context 6163 <618>. May be part of Vessel 12.

Miscellaneous Deposits

14. Beaker sherd. Fabric G3. Oxidised. Comb-impressed decoration. Pond D South context 2085.
15. Beaker sherd. Fabric G1. Oxidised. Comb-impressed and incised lattice decoration. Site F context 8045.
16. Undecorated Beaker/Food Vessel rim. Fabric Q1. Oxidised. Site B context 4196
17. Collared Urn rim. Fabric uncertain. Oxidised. Vertical cord impressed collar. Site F, context 8065.

Later Bronze Age pottery *by Peter Couldrey and David Mullin*

An assemblage of later Bronze Age pottery comprising 1912 sherds weighing 10,837g was recovered from features from Sites A, C, G and L (Table 2.9). Features from which this material was recovered included enclosure ditches, a possible palisade slot and pits. The pottery from all of the sites was assessed by Peter Couldrey and this report utilises this assessment data.

Fabrics

Fabrics were identified macroscopically, with the use of a x10 hand lens and allocated codes according to the PCRG (1997) recommendations. In many instances the fabric and surface treatment provided the only indication of chronology: little prehistoric pottery has been recovered from west Kent and until more diagnostic sherds are found, supplemented by independent dates, the fabrics will remain poor indicators of chronology. In the absence of more precise evidence, dates were

allocated to sherds using the following broad criteria:

Flint, sometimes with addition of sand, was used as a tempering agent during the early to middle Neolithic in east and west Kent (Barclay and Edwards 2006; Smith 1973). Its use declined in the late Neolithic and early Bronze Age, but became common in the middle Bronze Age (Deverel-Rimbury), as at nearby Gravesend (Barclay 1994) when the use of coarse temper often receives comment. In practice, coarse tempers tend to be used for large urns or jars and smaller vessels are often found in finer fabrics, as at Dartford (Couldrey 2003). Pure Grog tempering was used in the late Neolithic/early Bronze Age, and has been recorded from middle–late Bronze Age assemblages in East Kent, such as Beechbrook Wood, but was not common (Morris 2006).

Grog tempering with added flint is used in west Kent from the middle Neolithic (Smith 1973; 1984). In the late Neolithic/early Bronze Age it is found locally at Northumberland Bottom (Barclay and Edwards 2006). This fabric also occurs in the early and middle Bronze Age at Shrubsoles, in Sheppey (Raymond 2003) and in the middle Bronze Age at Gravesend (Barclay 1995). Its use continues during the transition from middle to late Bronze Age (Couldrey 1988) into the early Iron Age (Morris 2006), though always in a minority of fabrics.

Fossil shell is a common inclusion in prehistoric pottery in West Kent. Whilst apparently absent from early Neolithic contexts, this fabric occurs in Fengate style vessels at Darenth (Smith 1984) and became popular in the late Neolithic when associated with Clacton substyle Grooved Ware (Barclay and Edwards 2006, table 2.3). The fabric is present among the late Neolithic/early Bronze Age pottery found at Darenth (Smith 1984) and Northumberland Bottom (Edwards 2006a). However, it is notably absent from local middle Bronze Age assemblages at Gravesend (Barclay 1994) and Cobham Golf Course (McNee and Morris 2006), reappearing in the late Bronze Age/early Iron Age at Darenth (Couldrey 1984).

Fossil shell and added flint is first recorded from the late Bronze Age at Gravesend (Barclay 1994), although at Cobham this fabric is still absent early in the late Bronze Age (McNee and Morris, 2006), but appears in small quantities during the late Bronze Age/early Iron Age (Macpherson Grant 1996). The practice the adding of flint to shelly clays continued throughout the early Iron Age, apparently falling out of use in the middle Iron Age, as at Darenth (Couldrey 1998).

Sandy fabrics without flint, shell or grog inclusions are relatively unknown in the early Neolithic, but were found associated with late

Table 2.9: Fabrics of later Bronze Age pottery

Site	*Sherds (weight in g)*	*Grog*	*Flint/grog*	*Sand*	*Flint/sand*	*Flint*	*Flint/shell/sand*	*Flint/shell*	*Shell*	*Flint/sand*	*Quartzite/flint*
Site L	165 (2774)	--	3 (9)	4 (31)	--	23 (222)	--	135 (2512)**	--	--	--
%		--	1.8 (0.3)	2.4 (1.1)	--	13.9 (8.0)	--	81.8 (90.5)	--	--	--
Site A	304 (858)	--	1 (3)	1 (6)	--	139 (311)	--	155 (521)	8 (17)	--	--
%		--	0.3 (0.3)	0.3 (0.7)	--	45.7 (36.2)	--	50.9 (60.7)	2.6 (2.0)	--	--
Site C	891 (6203)	--	--	24(16)	28 (407)	542 (2995)	20 (122)	257 (2584)	9 (28)	11 (50)	--
%		--	--	2.7 (0.2)	3.1 (6.6)	60.8 (48.3)	2.2 (2.0)	28.8 (41.7)	1.0 (0.4)	1.2 (0.8)	--
Site G	552 (1002)	4 (36)	7 (39)	--	19 (29)	511 (883)	--	2 (1)	9 (4)	--	--
%		0.7 (0.4)	1.3 (4.9)	--	3.4 (0.3)	93.0 (88.1)	--	0.4 (0.1)	1.6 (0.4)	--	--
TOTAL	1912 (10837)	4 (36)	11(61)	25 (22)	47 (436)	1215 (4411)	20 (122)	549 (5618)	26 (49)	11 (50)	--
%		0.2 (0.3)	0.6 (0.6)	1.3 (0.2)	2.5 (4.0)	63.5 (40.7)	1.0 (1.1)	28.7 (51.8)	1.4 (0.5)	0.6 (0.5)	--
Coldhabour Lane	380 (2680)	----	--	--	--	166 (1325)	--	185 (1286)*	--	--	25 (58)
%		--	--	--	--	43.7 (49.4)	--	48.7 (48.0)	--	--	6.5 (2.2)

* This figure includes both Barclay's Flint and shell, and Flint, grog and shell fabrics. * *The figures for Site L are biased by one very large vessel in a flint and shell fabric.

Neolithic/early Bronze Age pottery at Northumberland Bottom (Edwards 2006a). This fabric occurs more frequently during the middle to late Bronze Age and into the early Iron Age, becoming more popular in the middle and late Iron Age (Couldrey 1991; 1998; 1999).

Detailed fabric records for each pot can be found in the site archive.

Site assemblages

Site C

A total of 891 sherds weighing 6203g was recovered from a total of five features at Site C. The largest amount of material (408 sherds weighing 3727g) was recovered from enclosure ditch 5892, where it was associated with bone points, charred plant remains, worked flint, animal bone, a loom weight and middle Bronze Age radiocarbon dates. Possible palisade slot 5740 also contained substantial amounts of pottery (162 sherds weighing 1239g), while two pits (5022 and 5280) also contained much pottery.

Many of the sherds from L-shaped ditch 5892 (Fig. 2.38, nos 3–14) display clear Deverel-Rimbury characteristics: small pre-firing perforations in the body (Fig. 2.38, no. 11); a decorated knob (Fig. 2.38, no. 4); decorated and plain cordons (Fig. 2.38, nos 6–8, 10 and 12); plain upright and inturned rims (Fig. 2.38, nos 3 and 13) and rims decorated with finger-tip impressions and diagonal grooves (Fig. 2.38, no. 11). The decoration comprising rows and columns of round-pointed tooth-comb impressions on the body and base of one sherd from 5485 (Fig. 2.38, no. 5) are unusual but can be paralleled with examples from south Essex and from Coldharbour Road, Gravesend (Mudd 1994), where they are thought to belong late within the middle Bronze Age (Brown 1995). Two radiocarbon dates were obtained from middle fill 5451 in this ditch, both giving almost identical date ranges: 1420–1210 cal. BC (NZA 30124) and 1390–1190 cal. BC (NZA-30148). These dates fall in the latter part of the middle Bronze Age, and perhaps support this interpretation.

The material from slot 5740 was predominantly flint tempered and comprised a vessel with plain upright rim and pre-firing perforation through the wall (Fig. 2.38, no. 1), another with finger-tip impressed decoration on the body (Fig. 2.38, no. 2), a possible boss and a flat base with abundant flint protruding beneath. These are all characteristic Deverel-Rimbury traits and found widely on other vessels from southern England. Further sherds with raised cordons decorated with diagonal slashes (500752–4), typical of Deverel-Rimbury pottery, were residual within Iron Age pit 5066 just to the west of ditch 5892.

Two pits (5022, 5280) from a group (15079) in this same area contained pottery (see Fig. 2.23). Neither of these was radiocarbon-dated, but two dates were obtained from aceramic cremation burials immediately adjacent, 5017 (NZA-30222) and 5278 (NZA 30145). Both gave date ranges spanning the middle–late Bronze Age transition. Pit 5022 contained a substantial amount of a finely flint tempered vessel with flint temper protruding from the base, whereas pit 5280 contained smaller amounts of purely flint-tempered pottery including a coarseware vessel with inturned rim and high shoulder; fragments of a finer vessel with smooth, lightly burnished surfaces, and a short everted rim with slight internal bevel (Fig. 2.39, no. 15), all of which probably belong within the late Bronze Age. The pottery from pit 5025 comprised 35 flint-tempered body sherds and a fragment of an everted rim from a thin-walled bowl, which are also likely to be middle to late Bronze Age.

Site G

A total of 552 sherds weighing 1002g was recovered from Site G. Most of the sherds from the site are small and severely worn and average sherd weight is low. Ditches 9178, 9179, 9613 and 9614, all associated with enclosure 9178/9179, produced 190 sherds weighing just 360g (average weight 1.9g). Most of these are featureless body sherds, recovered from the upper ditch fills. A series of pits (9461, 9199, 9212, 9231, 9234, 9235, 9293, 9472 and 9559) also contained small amounts of worn flint tempered pottery which is probably of middle to late Bronze Age date.

The pottery from enclosure ditches 9178, 9179, 9613 and 9614 was predominantly flint tempered (91.6 % sherd count) and comprised body sherds recovered from the upper ditch fills. Nevertheless, a radiocarbon date of 1270–1010 cal. BC (NZA 30234) suggests a middle to late Bronze Age date for this assemblage.

Pit 9231 contained 92 flint-tempered sherds with an average weight of 2.27g. The lower fill (context 9233) contained a decorated sherd probably from a middle Bronze Age globular urn (Fig. 2.39, no. 20). A sherd with similar decoration was recovered from Coldharbour Road immediately to the north of the site (Mudd 1994). Pit 9461 contained 38 sherds of flint tempered pottery and one in a grog tempered fabric, a similar range to that found in the enclosure ditches, but all were small and worn. Pit 9293 also contained 144 flint tempered sherds weighing 224g of middle to late Bronze Age date.

Site A

A total of 304 sherds weighing 858g of middle–late Bronze Age pottery was recovered from pits 3030 and 3024. The range of fabrics from both these pits was similar: flint, shell and shell-and-flint, like that employed for late Bronze Age pottery in the region. The appearance of shell-and-flint fabric for middle Bronze Age (Deverel-Rimbury) forms in Pit 3030 may represent the earliest use of this fabric in the area.

Pit 3030 contained sherds with middle Bronze Age forms and decoration. The lowest fill (context

3094) produced a rounded shoulder with finger-tip impressions, indicative of a late rather than a middle Bronze Age date. Above that, context 3093 contained a finger-tip impression on a straight shoulder in a shell and flint tempered fabric. Higher up, in context 3036, a severely worn sherd had a fragment of an applied cordon probably from a 'horseshoe' design (Fig. 2.39, no. 17), clearly of the middle Bronze Age Deverel-Rimbury tradition, also in shell and flint tempered fabric. The upper fill (context 3031) contained a rim with a finger-tip impression on top of the rim in a flint tempered fabric (Fig. 2.39, no. 16). Many of the sherds were moderately or severely worn and it is likely that the middle Bronze Age sherds were old when buried. This, together with the presence of the rounded shoulder, which could be attributed to the late Bronze Age plainware tradition, suggests that the contents of the pit fall within the middle to late Bronze transition or the late Bronze Age itself.

The pottery from Pit 3024 also probably belongs to the middle to late Bronze transition or to the late Bronze Age plainware tradition. The lowest fill (context 3023) contained 37 sherds weighing 110g, which included a plain upright rim in a heavily flint-tempered fabric, with traces of soot on its external surface. A second plain rim from a finer vessel, with walls just 5mm thick, was of uncertain angle but could be from a plain Deverel-Rimbury bucket jar or globular jar. The upper fill (context 3021) produced 166 sherds weighing 317g. These included plain upright rims in shell temper and flint temper; a fragment of a vertical perforated lug (Fig. 2.39, no. 19) and a base with abundant flint, probably also of middle Bronze Age date.

Site L

A total of 165 sherds of middle Bronze Age pottery weighing 2774g was recovered from cremation burial 12510 (Plate 2.10). The pottery comprised fragments of an urn and cup of Deverel-Rimbury tradition, as well as rim sherds from at least four vessels and the base of a small cup (Fig. 2.40, nos 21–7). Sherds from plain inturned and upright rims were found in the same pit and may represent late Bronze Age plainwares, although such plain rims do occur on other middle Bronze Age assemblages within Kent (Ann Woodward, pers. comm.) and this group may fall late within the middle Bronze Age. The group provides a rare sample of the forms and a range of fabrics (including flint, shell with flints, and organic inclusions in a sandy matrix) associated with the middle Bronze Age in west Kent.

Discussion

The assemblages from the four sites along the scheme are too small and fragmentary for detailed comparative analysis to be possible. A breakdown of the fabrics from the four sites along the scheme is however presented above in Table 2.9. This orders the sites geographically from W to E, all but Site G

Plate 2.10 Site L middle Bronze Age cremation burial 12510 showing bucket urn

lying west of the dry valley at Tollgate. The dominant fabrics at the A2 are flint and flint and shell, with only small proportions of other fabrics present. As can be seen, this is true of all of the sites, but there does appear to be a difference between the sites west of Tollgate and Site G to the east, in that flint and shell constitutes nearly half of the material to the west, but is hardly represented at all to the east. The highly fragmented state of the pottery on Site G appears if anything to strengthen this difference.

The principal fabrics from Coldharbour Road (Barclay 1994) are also included in the table, as this site lies only 200m to the north of Site C, and subsequent excavation in the A2 Activity Park has shown that they were linked by a trackway (Dawkes 2010). Although the fabric divisions used were slightly different, it is clear that the principal fabrics are the same as those used on the A2, and that the proportion of flint and flint and shell fabrics are closest to those from Site C, as might be expected. A quartzite and flint fabric was also identified at Coldharbour Road (Barclay 1994), which is not present at any of the A2 sites. Given the very low percentages of other fabrics from these sites, and the small quantities of material represented, differences between them cannot be regarded as likely to be significant.

There is still relatively little published material of middle and late Bronze Age date from West Kent. Other than Coldharbour Road, Deverel-Rimbury pottery has been found at Hayes Common (Philp 1973b), Princes Road, Dartford (Hutchings 2003) and the Cobham Golf Course (Barclay *et al.* 2006). Other assemblages from east Kent were summarised by Macpherson-Grant in 1992 and now include the largest published groups from Kent at Shrubsoles Hill, Sheppey (Raymond 2003), Iwade (Hamilton

and Seager Thomas 2005) and Kemsley (McNee 2006). Sites which span the transition between middle and late Bronze Age are uncommon.

Not surprisingly, the most similar material was recovered from Coldharbour Road, where later Bronze Age pottery including Deverel-Rimbury bucket urns, globular urns and a cup were recovered immediately to the north of the old A2 (Mudd 1994). These vessels were decorated with finger-tip impressions on or below the rim, horizontal applied cordons and, in one case, comb impressions. The range of decoration is very similar to that from the A2 excavations, as are the range and proportions of fabrics (see Table 2.9). Burnt residues on a hook rim jar from Coldharbour Road were radiocarbon dated to 1225 to 989 cal BC (OxA-4719; Mudd 1994, 389), which overlaps with dates obtained from Sites C and G on the A2. Hook rim jars occurred in the same contexts as barrel urns at Coldharbour Road, suggesting a transitional phase between Deverel-Rimbury and post-Deverel-Rimbury Plain Ware traditions. Further examples of the co-occurrence of apparently Plain Wares in the same context as Deverel-Rimbury ceramics occur on the A2 in cremation burial 12510 at Site L (see below) and pits 3030 and 3024 at Site A.

A similar tooth-comb decorated sherd to that from Site C was found at Coldharbour Road and other parallels such as Ardleigh, White Colne and North Shoebury (Brown 1995a), as well as the radiocarbon date from Site C, all suggest a transitional late middle Bronze Age date for this form of decoration. Decoration amongst the assemblage is otherwise typical of Deverel-Rimbury ceramics from southern England, although the perforated rim from 5485 is noteworthy as perforations are rare in southern England and occur more widely in the west and north of Britain (Quinnell and Blockley 1984; Longworth *et al.* 1988, figs 18 and 19). Perforated vessels are also recorded from the Thames Valley and this form of decoration is quite common among the assemblage from the Ardleigh cemetery in Essex (Brown 1999). The distinctive use of fingertip impressions at the base angle and widespread fingertip rustication found amongst the 'Ardleigh Group' (Brown 1995a) is absent from the material from the A2, however. A perforated vessel was also recovered from a round barrow at Bridge, Thanet (Macpherson-Grant 1992).

The flint fabrics from the A2 are also typical of the flint-rich areas of southern England, and elsewhere in Britain locally occurring tempering agents appear to have been exploited. At Ardleigh, Essex (Brown 1995a), the fabrics contained a high proportion of grog-tempered fabrics which contrasts to the fabrics from sites further south such as Mucking, where they are dominated by flint. Closer to the A2 excavations, the small assemblages from Princes Road, Dartford (Hutchings 2003) and Coldharbour Road, Gravesend (Barclay 1994) comprised flint tempered fabrics with small amounts of quartz sand and quartz.

The pottery recovered from cremation pit 12510 comprised fragments of an urn, a cup and sherds from plain inturned and upright rims of the Deverel-Rimbury tradition, and is worth considering in detail. Similar incurving rims occur in middle Bronze Age contexts at Reculver, where a closed form plain jar was associated with a classic middle Bronze Age bucket urn (Macpherson-Grant 1992, fig. 4). At Bridge, Thanet, the cremation urns from a round barrow have slightly closed forms (ibid.) and similar vessels were found at Frindsbury, Milton Regis and Littlebourne (Ann Woodward pers. comm.; Ellison 1975). The small vessel, or cup, can be paralleled by examples from Frith and Ightham (Jessup 1930, fig. 14), while at Netherhale Farm, Thanet a small ovoid cup was found in the same context as a tall jar (Ann Woodward pers. comm.). These small vessels are common in middle Bronze Age assemblages and contrast to cups from later post-Deverel-Rimbury assemblages from elsewhere in Southern Britain due to their thickness, coarser fabrics and simpler forms. The whole assemblage from the pit is probably, therefore late within the middle Bronze Age.

The association of the cup from pit 12510 with a bucket urn and sherds of other vessels is reminiscent of the ceramic sets previously recognised on late Bronze Age sites such as Broom, Warwickshire (Palmer 1999), where a clay lined pit contained burnt flint and large portions of five vessels and fragments of seven to eight others. These included a very large, thin-walled jar, a medium sized jar and a small cup and has been interpreted as a feasting set (Woodward 2000). Other such sets have been recorded from Wasperton, Warwickshire, Cadbury Castle, Somerset and Combe Hay near Bath (ibid., 6). Woodward (2000) also suggests the large vessel and associated cups from Maidenhead (illustrated in Barrett 1980, fig. 5) and Knights Farm, Burghfield (Bradley *et al.* 1980, fig 31: 1–19) form similar sets. The identification of the pottery from pit 12510 as associated with feasting is further supported by the other finds from this context, which include burnt animal bone from at least three species and possible fragments of oven.

Catalogue of illustrated sherds (Figs 2.38–40)

1 Site C Pit 5740. Perforated rim, MBA Bucket Urn. Fabric F49.
2 Site C Pit 5740. Fingertip impressed rim, MBA. Fabric F50.
3 Site C Ditch 5892. Plain upright rim, MBA. Fabric SF18.
4 Site C Ditch 5892. Cordon with incised line, MBA. Fabric SF23.
5 Site C Ditch 5892. Base with round-tooth comb impressions on wall and bottom of base, MBA. Fabric FS55.
6 Site C Ditch 5892. Cordon with incised chevron decoration, MBA. Fabric SF23.
7 Site C Ditch 5892. Cordon with incised chevron decoration, MBA. Fabric SF42.

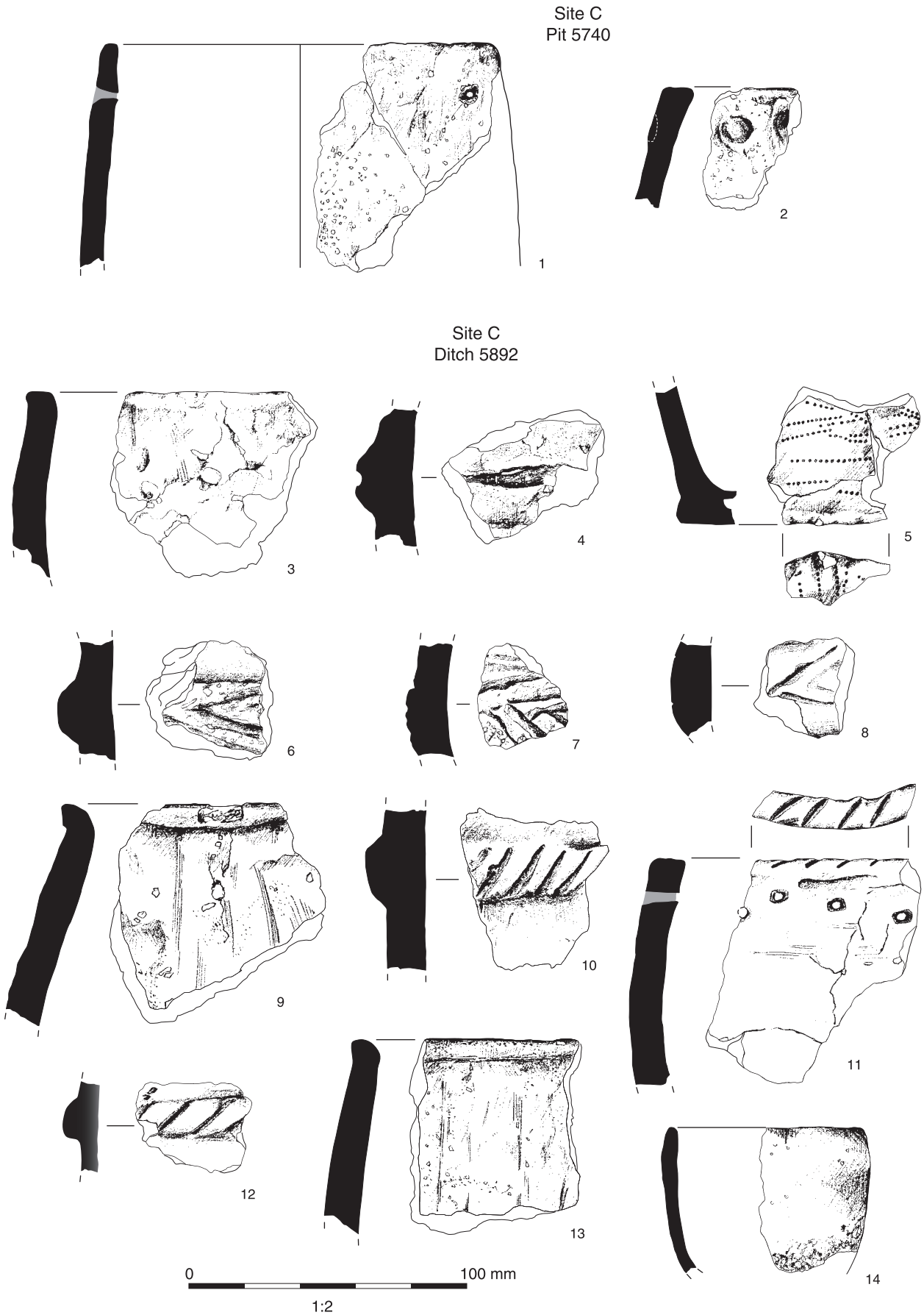


Fig. 2.38 Middle Bronze Age pottery from ditch 5892 and gully 5740 on Site C Nos 1–14

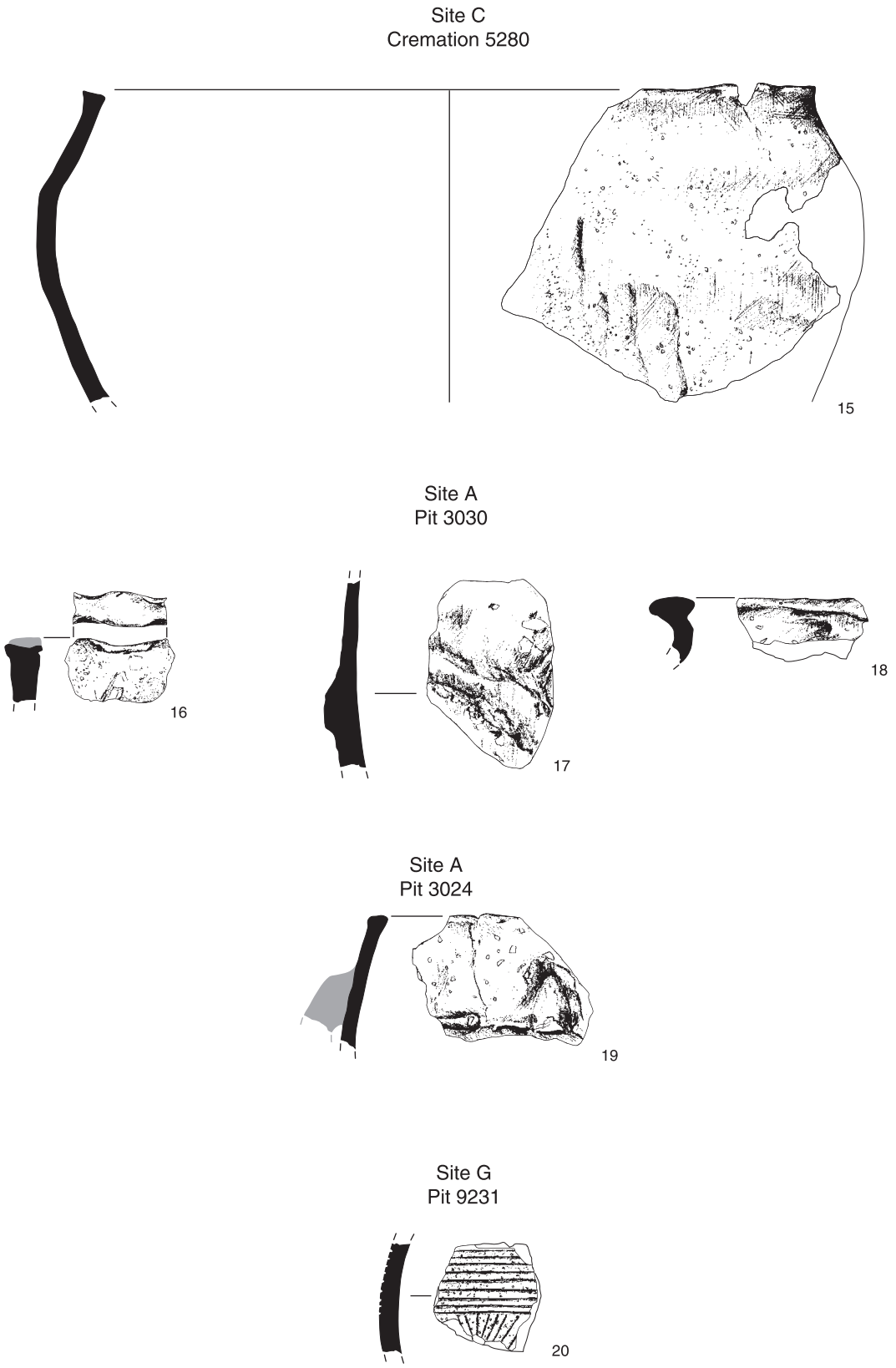


Fig. 2.39 Middle and late Bronze Age pottery from sites C, A and G Nos 15–20

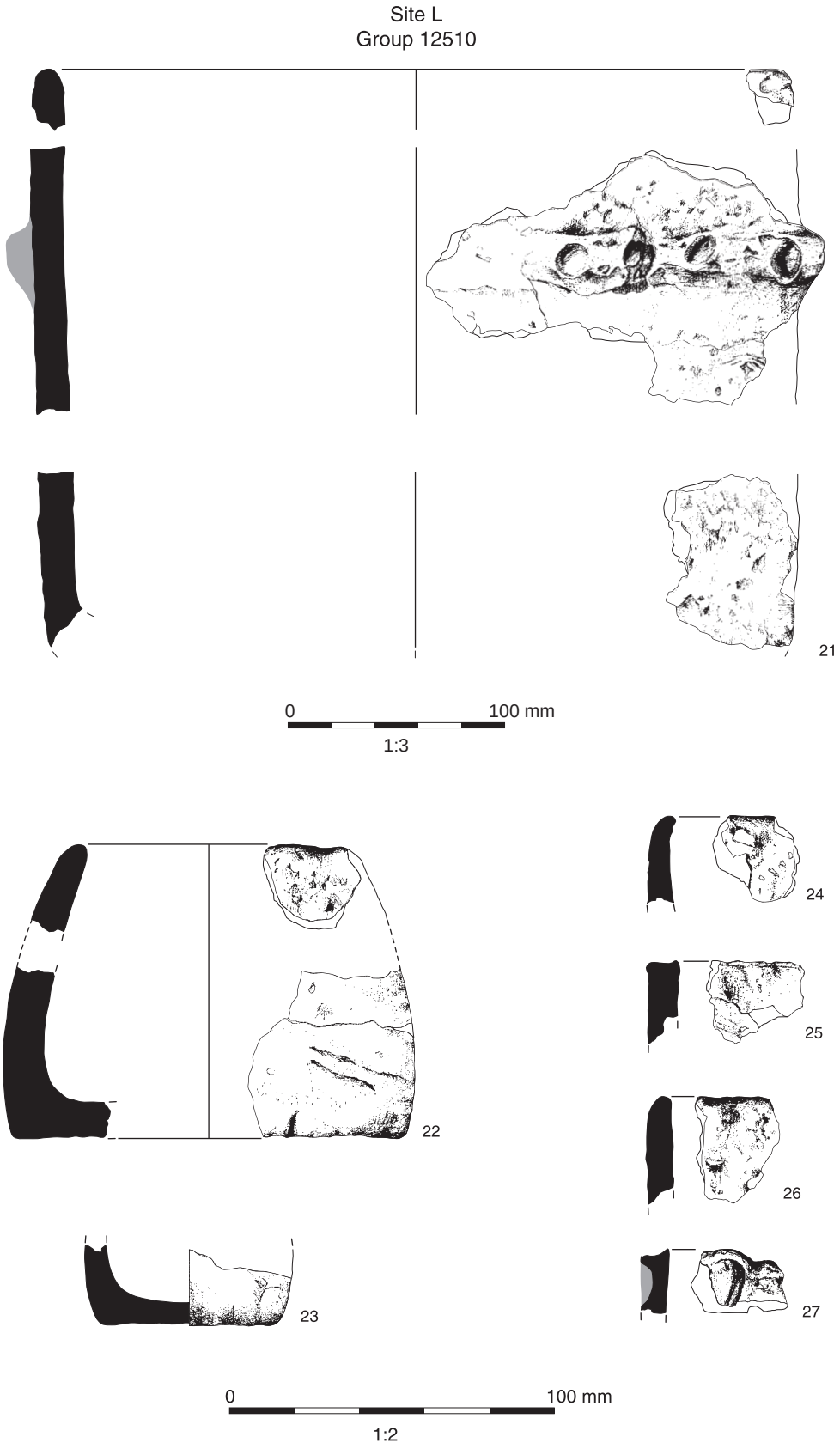


Fig. 2.40 Middle Bronze Age pottery from pit 12510 on Site L Nos 21–7

8 Site C Ditch 5892. Cordon with incised chevron decoration, MBA. Fabric SF42, possibly from same vessel as 7.
9 Site C Ditch 5892. Out-turned rim, MBA. Fabric SF20.
10 Site C Ditch 5892. Cordon with incised diagonal lines, MBA. Fabric FS62.
11 Site C Ditch 5892. Upright, flat-topped rim with perforations below the rim and incised diagonal lines on top of rim, MBA. Fabric F53.
12 Site C Ditch 5892. Cordon with incised diagonal lines, MBA. Fabric FS39.
13 Site C Ditch 5892. Slightly inturned rim with internal groove, MBA. Fabric SF37.
14 Site C Ditch 5892. Upright rim from small cup, MBA. Fabric SF38.
15 Site C Pit 5280. Globular vessel with out-turned rim with internal bevel, LBA. Fabric F36.
16 Site A Pit 3030. Upright rim with finger impression, MBA. Fabric FS7.
17 Site A Pit 3030. Applied horizontal cordon, MBA. Fabric S2.
18 Site A Pit 3030. Flat-topped, externally expanded rim, MBA. Fabric FS12.
19 Site A Pit 3024. Plain rim with applied vertical lug with horizontal perforation, MBA. Fabric F2.
20 Site G Pit 9231. Body sherd decorated with incised horizontal lines above radiating/triangular incised decoration, MBA. Fabric F20.
21 Site L Pit 12510. Rim, wall and body sherds of large Deverel-Rimbury bucket urn. Horizontal applied cordon with fingernail impressions, MBA. Fabric SF18.
22 Site L Pit 12510. Undecorated cup with inturned rim, MBA. Fabric SA13.
23 Site L Pit 12510. Base of ?small cup, MBA. Fabric F6.
24 Site L Pit 12510. Inturnned rim, MBA. Fabric FG1.
25 Site L Pit 12510. Plain, upright rim, MBA. Fabric F18.
26 Site L Pit 12510. Inturnned rim, MBA. Fabric F10.
27 Site L Pit 12510. Body sherd with finger-tip impression, MBA. Fabric F21.

Fired clay *by Dan Stansbie*

A total of 8011 fragments of fired clay weighing 4777g was recovered from Bronze Age contexts (Fig. 2.41). The fired clay was rapidly scanned and assigned to one of seven fabric types previously defined by Cynthia Poole and based on North Kentish samples (Poole 2011). Objects were assigned to a type where identifiable and object thickness (mm) was recorded. All other material was assigned to one of two categories: structural, deriving from oven superstructures or wall daub and unidentified. Preservation was relatively good, with several objects being completely preserved.

The condition of the fired clay assemblage is highly variable, as might be expected for an assemblage recovered from what is effectively a large transect across a wide swathe of the landscape.

Fabrics

The fabrics are divided into seven categories described below:

Fabric A has a fine silty clay matrix. It contains medium-coarse quartz sand in variable densities, moderate silver mica, rare red clay pellets and a low density of chert or other very fine grained rock pebbles up to 15mm in size and flint up to 20mm.

Fabric A2 is identical to fabric A but has a high density of chaff or straw temper.

Fabric B: Contains a high density of coarse quartz sand and grits, with 0.5–5mm of burnt flint.

Fabric C: has a clayey slightly silty matrix with no inclusions.

Fabric D: has a matrix of fine sandy-silty, smooth, laminated, micaceous clay. It contains common to abundant fine and medium coarse sand and grit, between 0.5–2mm, rare to occasional chert/flint grits, between 2–3mm and occasional burnt flint grits between 3–15mm.

Fabric E: has a matrix of fine silty calcareous clay and contains coarse rounded to sub-angular chalk grit, up to 22mm.

Fabric F is as fabric A, but contains frequent inclusions of platy fossiliferous shell between 2–3mm in size.

The fired clay fabrics were similar in character and likely to be derived from the locally available clay sources. Fabrics A and A2 appear to be similar to the silty or fine sand briquetage fabric group (see Morris below), which is described as deriving from 'Holocene era deposits of Head containing silt, sand and clay with variable gravel.' Fabric E is likely to have derived from subsoils overlying local deposits of chalk, or marls lying within periglacial features in the chalk. Fabric B contains flint added as temper and is likely to derive from the same source as the flint-tempered pottery fabrics, possibly in the London area (Cynthia Poole pers. comm.). Fabrics C and D are likely to derive from the same source as fabric A or a similar source. Fabric F is from an unknown source.

Site assemblages

The breakdown of fired clay site by site is presented below.

Site D

A total of three fragments of structural fired clay in fabric A weighing 7g was recovered from early Bronze Age pit 6161.

Site F

An assemblage of 50 fragments of structural fired clay in fabric A weighing 168g came from two contexts phased to the early Bronze Age. In addition another 109g of fired clay of the same type and fabric came from two unphased contexts.

Site L

A total of 513 fragments of fired clay weighing

Fig. 2.41 Middle Bronze Age fired clay from Sites C and G

3236g came from a single middle Bronze Age pit 12510. This consisted almost entirely of structural material in fabric A, with some in fabrics A2 and E. There is also one fragment of possible oven plate in fabric A from pit 12510.

Site A

A very small quantity of structural fired clay (37 fragments weighing 37g) in fabrics A, D and E came from pits 3024 and 3030.

Site B

Although found as residual material in Iron Age contexts, two fragments of perforated slabs or oven plates of late Bronze Age character were found, one (SF 441) in context 4602 in pit 4606, the other in context 4584 in ditch 4583.

Site C

Late Neolithic to early Bronze Age fired clay comprises three fragments of structural material weighing seven grams. A small quantity of fired clay from the middle Bronze Age phase (128 fragments weighing 426g) largely comprises structural material in fabrics A and E, although there is a small amount of unidentified material and a possible fragment of cylindrical oven brick/loomweight (SF 553) from cut 5483 in ditch 5981. There is also part of a cylindrical oven brick/loomweight (SF 576) in fabric A (weighing 388g) from a small pit or posthole 5552.

Site G

The late Neolithic to early Bronze Age material (10 fragments, weighing 11g) came from the single fill of pit 9466, and was very fragmentary. The later Bronze Age material (44 fragments weighing 404g) is largely structural, and was mostly made in fabric A, with small quantities of fabrics B and E. It also included part of a cylindrical oven brick/loomweight in fabric A (SF 1613) from pit 9293.

Discussion

The fired clay is limited in quantity, and none of the structural material was *in situ*. Nevertheless the quantity of material in Site L suggests that there was a built oven, and therefore a focus of domestic activity, close by. Two types of clay object were found—perforated oven plates and cylindrical oven brick/loomweights.

Perforated oven plates

Only two fragments of perforated oven plate of the type generally recognised as late Bronze Age in date were recovered from the road scheme, both in Site B. The perforated slabs suggest ovens in the vicinity, perhaps to the east, where a late Bronze Age cremation and undated burnt features were found.

Two examples of fragments of perforated oven plates came from Kingsmead Park, on the Hoo peninsula (Macpherson-Grant 2005, 77). Both of these objects are described as scrappy sherds (ibid.), with one being made in a flint-tempered fabric possibly paralleling the perforated plates from the A2 and the other being made in an organic-tempered fabric. However, 16 fragments of perforated plate were found at Highstead (Macpherson-Grant 2007, 267–8) and at least three of these were made in a flint-tempered fabric. With regard to perforated oven plates of late Bronze Age date, Cynthia Poole (pers. comm.) has suggested that the similarity of the fabrics across sites and to pottery fabrics of the period may indicate that the plates were made at centralised pottery production sites and distributed with the pottery, rather than each community producing its own clay plates.

Cylindrical loomweights/oven bricks

Typologies of loomweights from Essex suggest a chronological division between three different forms, with cylindrical objects dating to the middle Bronze Age, pyramidal objects dating to late Bronze Age and triangular varieties dating to the early Iron Age (Barford and Major 1992, 118–9).

Cylindrical loomweights/oven bricks are relatively rare in Kent. Cylindrical loomweights of middle Bronze Age date were found at Hayes (Philp 1973b, 51–2), and at White Horse Stone, on the route of the HS1 (Hayden 2006). Champion (2007b, 102) reports examples from a growing number of other unspecified sites in Kent. The several cylindrical loomweight fragments may indicate that the settlements on sites C and G were engaged in textile production.

Catalogue of illustrated material (Fig. 2.41)

1 SF 441 perforated oven plate; fabric B; context 4602
2 Fragment of oven plate; fabric B; context 4584
3 SF 553 fragment of cylindrical loomweight; fabric A; context 5485
4 SF 1613 fragment of cylindrical loomweight; fabric A; context 9387
5 SF 576 fragment of cylindrical loomweight; fabric E; context 5553

Worked stone *by Ruth Shaffrey*

All the worked stone recovered from the earlier prehistoric contexts is concerned with food processing in the form of querns and rubbers. Site C produced a single saddle quern, carefully shaped but making use of a boulder, from layer 5735 in cut 5714 in middle Bronze Age gully 5740 (SF 565 Fig 2.42, no. 2). Site A produced a complete saddle quern along with single fragments of another quern and a probable rubber, all from separate fills (3078, 3077, 3038) within the same late Bronze Age or early Iron Age pit 3039. The complete saddle quern has a shaped base and neatly finished grinding surface that slopes up steeply on one side (SF 302, Fig 2.42, no. 1). Site G produced another two quern fragments and a likely quern fragment but these were all more fragmentary. All seven

items are of distinctive mainly purple ferruginous sandstone.

This ferruginous sandstone is commonly known as carstone (Gallois 1965, 34) and is found within the Folkestone Beds of the Lower Greensand. The ferruginous beds show very little geographic variation (Dines *et al.* 1969, 54) so that samples collected at Folkestone or more locally cannot through visual comparison help in identifying the source of the examples identified on the A2. The same stone occurs on other Bronze Age sites in the local vicinity including Coldharbour Road (Roe 1994, 399), Beechbrook wood (Diez *et al.* 2006) and Hayes Common. The latter produced over 100 fragments

Fig. 2.42 Possibly late Bronze Age saddle querns

from the Bronze Age site, of which 24 retained evidence of their grinding surface; the examples from the A2 are more carefully shaped than those from Hayes Common, which are of 'unformed' type (Philp 1973, 44–5).

The nearest outcrop of Folkestone Beds was approximately 10km from the site just south of Snodland, where the Folkestone Beds reaches its most northerly point before extending in westerly and south-easterly directions. Despite the relatively frequent occurrence of carstone saddle querns in north-west Kent, however, one must be careful to avoid assumptions that only local stone was used for quern manufacture during the later Prehistoric period. Querns of various types of Lower Greensand from Kent, including ferruginous sandstone, have been found at Shoebury and other sites in Essex, and these testify to movement across the Thames (Buckley and Major 1995, 72). They indicate that the production of saddle querns of Lower Greensand in north-west Kent was more than a sporadic use of a local resource and that the A2 examples are part of a much wider picture of exploitation and distribution.

Worked bone *by Ian R Scott*

Just two objects of worked bone were recovered from earlier prehistoric contexts, both of which are points or pins made from small bones, found in ditch 5489 in Area C (Fig. 2.43, nos 1 and 2). The bones both came from fill 5451 in cut 5450, a middle fill of the ditch, and were accompanied by middle Bronze Age pottery. A fragment of sf 501 was submitted for radiocarbon dating, and gave a date range of 1390–1190 cal. BC (NZA-30148).

Points similar to these are known from other middle Bronze Age sites such as Brean Down in Somerset (Foster in Bell 1990, 161–2). The complete examples found there were made on metapodiae or tibiae, usually of sheep, and the bones were not split longitudinally, but share the tapered and smoothed ends of the A2 examples. The Brean Down examples came to a distinct point, and were described as awls. They may have been used in leather-working, but it was also suggested that they may have been tools to decorate pottery.

The longitudinal splitting of the A2 examples was probably carried out to create two usable tools from a single bone. These may also have been awls, but as they were halved longitudinally would not have been as strong as those from Brean Down, and may instead have had other uses. If they did not have such distinct points, they may alternatively have been used as dress pins, or (as suggested at Brean Down) as tools for decorating pottery

Catalogue *(all dimensions are in mm;* Fig. 2.43***)***

1 Pin, or point, complete, fashioned from a Roe deer or sheep metatarsal. Made by splitting the bone longitudinally and cutting and polishing the proximal end to a flat point. The distal end is unworked. Complete. Similar to Sf 551. L: 102, W: 13, Area C, Context 5451, Ditch 5450, Sf 550

2 Pin, or point, made in a similar manner to Sf 550, but with the point snapped-off. Fashioned from a

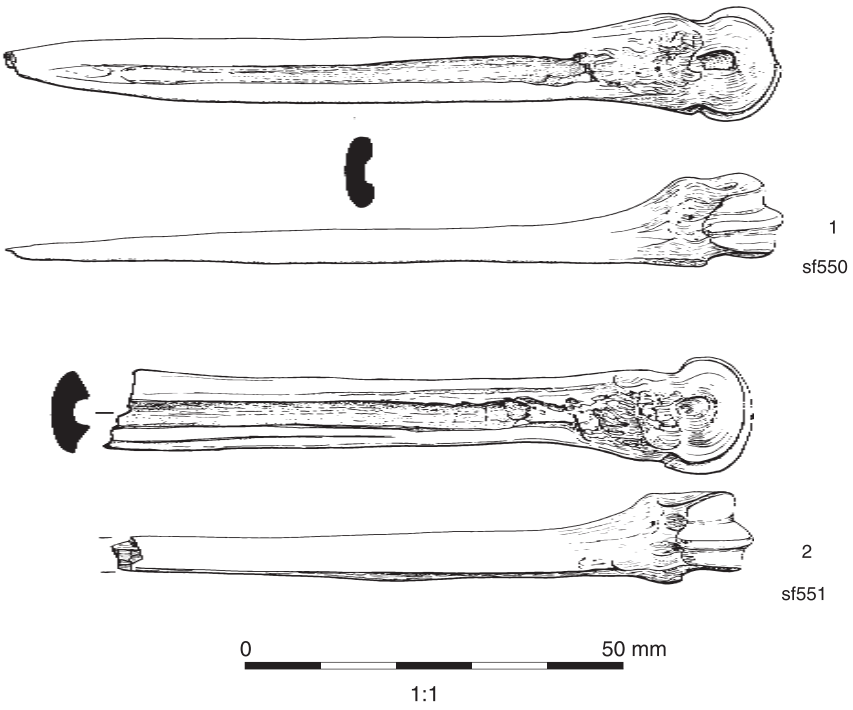


Fig. 2.43 Middle Bronze Age worked bone points from enclosure 5892 on Site C

Roe deer metatarsal. Originally probably longer than sf 550, since at the point at which it is broken the stem is still widening. L: 87, W: 14, Area C, Context 5451, Ditch 5450, Sf 551

EARLY PREHISTORIC OSTEOLOGICAL AND ENVIRONMENTAL EVIDENCE

Cremation and inhumation deposits *by Mark Gibson, Ceridwen Boston, Sharon Clough and Nicholas Marquez-Grant*

A total of five cremation deposits and one group of disarticulated bone were recovered from Bronze Age contexts. For methodology see Chapter 3, Iron Age human remains report.

Bronze Age cremation burial in Site B

An unaccompanied cremation burial (7759) was recovered within a small pit (7758) on Site B (see Fig. 2.25). Radiocarbon dating confirmed a middle–late Bronze Age date for this burial, 1210–1010 cal BC (NZA 30151). The deposit weighed 194.9g and appeared to comprise the partial remains of one individual, which was probably adult on the basis of skull fragment dimensions. Sex could not be estimated and no pathological lesions were identified. The cranial vault was most readily identified, comprising 30.8g (60.1%) of the deposit. and included tooth roots and fragments of parietal bone identified from meningeal vessel indentations on the endocranial surface. The remainder were fragments of the axial skeleton (3.9g; 2%), including vertebral pedicles, and upper limb bones (0.4g; 0.2%), including a partial humeral head. No lower limb bone fragments were identified. The cremated bone was predominantly white or predominantly white with very occasional flecks of light grey or blue indicating near complete cremation.

The low bone weight of deposit 7759 suggested that only a small proportion of the total cremated skeleton had been selected for deposition within the feature. The bone was sooty and mixed evenly throughout the pit fill from which it was recovered. There was no indication of *in situ* burning within the pit, and the deposit contained only a few burnt flints, indicating placement of the already burnt material within the feature. The deposit may have constituted an unurned burial that had not undergone thorough sorting from pyre debris by processes such a winnowing or washing (McKinley 1993), but equally may have been a small spread of redeposited pyre debris or a cremation-related deposit.

Bronze Age cremation deposits in Site C

Three deposits of cremated human bone (5017, 5276 and 5278) were recovered from a cluster of three small pits (5016, 5275 and 5277) on Site C (see Fig. 2.21). The pits were roughly circular, varying from 0.34m to 0.67m across. They appeared to have been heavily truncated, given that the deepest (5275) was only 0.16m. The cremated bone was distributed throughout the charcoal-rich pit fills. No animal bone or pottery was recovered with the deposits, but burnt fragments of animal bone were found within deposit 5276.

Radiocarbon dating undertaken on deposits 5016 and 5277 indicated a middle–late Bronze Age date of this cluster, 1320–1080 cal BC (NZA-30222), and 1290–1050 cal BC (NZA 30145) respectively.

Weight and skeletal part representation

The deposits ranged in weight from 100.3g to 233.8g (Table 2.10). Experimental work in modern crematoria has revealed that the total weight of bone of an adult cremation ranges from about 1000g to 3600g (McKinley 2000b, 404). Therefore none of these three contexts can be considered as fully recovered or presenting most of the individual.

The most represented identifiable body parts by weight were lower limb bones followed by skull fragments. The majority of the sample, however, was unidentifiable (77%), due largely to considerable bone fragmentation.

Skull fragments were mainly of the cranial vault with very few landmarks, although parts of the mandible and petrous bone, the crown of a canine and a partial molar fragment were found in context 5016. Vertebrae and ribs were very fragmented and poorly represented, only 1.1g recovered from the three cremations in total. Most were pedicles, transverse processes and bodies of vertebrae. One rib fragment was identified. The upper limb was also poorly represented. The only identified fragments were humeral head, found in all three deposits. Given the large quantity of unidentified long bone fragments, it is likely that upper limb bones were present but were not identified. Lower limb long bones were well repre-

Table 2.10: Summary of human bone weight by body part in Site C cremated bone deposits (g)

	Context number		
	5016	*5275*	*5277*
Skull	4.9	9.5	12.4
	2.1%	9.5%	11.0%
Axial	1.0	0	0.1
	0.4%		0.01%
Upper limbs	0.4	0.9	3.1
	0.2%	0.9%	2.8%
Lower limbs	20.8	0.8	7.5
	8.9%	0.8%	6.7%
TOTAL (g)	233.8	100.3	112.5

sented in deposit 5277, including tibial and femoral shaft fragments, with all femoral fragments displaying a portion of the linea aspera. The other two deposits contained far fewer lower limb bone fragments, but 5275 did contain part of a femoral head.

Palaeodemography

None of the deposits included the remains of more than one individual. All were adult, judging from dimensions of the skull and long bones fragments. Unfortunately, no epiphyses or third molars were preserved to confirm this age estimation. Sex could not be attributed to the adult skeletons due to the absence of diagnostic traits.

Fragmentation

Fragment sizes between 5mm and 10mm were most common in cremation deposits 5275 and 5277, whilst those measuring less than 5mm comprised more than half of deposit 5016. It should be noted that there was very little difference in the weight of the two fragment sizes in the first two contexts. Thus, all three were highly fragmented. In all three deposits, bone fragments were small with 39.4% — 51.1% comprising fragments measuring less than 5mm. Such marked fragmentation is usually the result of drying and cracking of the bone during burning, collection and burial, deliberate fragmentation by the mourners or grave diggers, taphonomic factors (such as soil type and ploughing), and the much later process of archaeological excavation and post-excavation processing (McKinley 1994).

Fissuring of some of the larger bone fragments and transverse and longitudinal cracking and splitting of many elements indicated that the bone had been 'green' or covered with flesh when cremated (Reverte 1986; Ubelaker 1989).

Colour

The cremated bone from all three deposits was white or predominantly white with hues of blue and grey comprising approximately 30% of the samples. There were no fragments of a darker colour. Colouration suggested that oxidation of the bone was not complete but nevertheless, prolonged, and high temperatures in the pyre had been attained.

Discussion

Low bone weights of all three deposits indicated that none represented the entire cremated skeleton. Due to severe truncation, it was not possible to establish whether these low weights were the result of deliberate selection or due to taphonomy.

The high degree of truncation and the small sample size limited the osteological potential and interpretation of funerary rites. The bone was distributed throughout the charcoal rich deposits with no concentrations of bone. There was no *in situ* burning or truncation by other archaeological features and all three deposits appeared to only represent one individual. The sooty appearance of the bones, the presence of charcoal in all three deposits, and the wide distribution of bone throughout the pit fills suggested that they were not formal unurned burials, but represented small quantities of redeposited pyre debris or cremation-related deposits. The latter deposits are not uncommon in the Bronze Age of Southern Britain (McKinley pers. comm.).

Late Bronze Age cremation burial in Site D

An isolated cremation burial (6010) lay within a small pit on the north side of Site D, some 110m east of the L-shaped ditch in Site C (see Fig. 2.28). There were no finds within the pit, but cremated bone was radiocarbon dated to 1260–1020 cal BC (NZA-31264).

The weight of cremated bone recovered was just over 400g, representing less than half of the cremated bone produced by modern cremations. This burial was, however, truncated, so it is not clear whether the bone represents partial collection of the bone, or loss after deposition. Nearly 90% of the bone was unidentifiable, the majority of the identifiable bone being unspecified long bone fragments, together with small fragment of skull (1.2g), portions of proximal and intermediate hand phalanges (shaft and head portions) and a distal phalange from the foot. The individual was probably an adult, based on the dimensions of the long bone fragments. The cremated bone was predominantly white, with hues of blue- grey amounting to 5%.

Disarticulated human remains from late Bronze Age ditch in Site C

In addition to the cremation burials, two fragments of femoral shaft, one the distal third of a left femur and the other of the mid-shaft, probably also of the left, were recovered from the uppermost fill (5298) of ditch 5912 on Site C (see Fig. 2.23). A radiocarbon determination of 1130–990 cal BC (NZA-32400) was obtained from animal bone in the same deposit. Dimensions would suggest that they were fragments of the same bone. Bone preservation was fair, with little leaching of the bone mineral apparent. However, the cortical bone had been damaged by root action. Breaks on the mid-femoral fragment and on distal end of the distal femoral shaft fragment were recent, and inflicted on dry bone (possibly during archaeological excavation). The proximal end had been broken previously, however, and the cross-section of the bone showing smoothing of the surface. This smoothing was irregular, and was probably the result of taphonomic processes rather than deliberate human modification. Breakage patterns would suggest that this had occurred on dry bone.

Bone dimensions suggested an adult femur, although no epiphyses were present to confirm this.

The linea aspera was not marked, suggesting relatively little strenuous muscle use of the Biceps femoris (one of the hamstring muscles).

Animal bone *by Andrew Bates, Jacqui Mulville and Adrienne Powell*

In total, 31,689 animal bone fragments, or number of individual specimens (NISP), were recovered from 10 sites, and of these, 5206 (16%) were identified to a species level and have been included within the analysis. A total of 321 fragments of identified bone came from contexts dated to the early prehistoric period. A full methodology and analysis can be found in the site digital report.

Neolithic and early Bronze Age

In total, four features from Site G and D contained bone fragments of these periods (9206, 9212, 9223, 6910). Most of this material was not identifiable, being very small fragments recovered from soil samples, with the exception of seven red deer antler fragments from pit 6910. All of the material from Site G was burnt. It should be noted that posthole 9206 was attributed to the early Neolithic due to its association with the other two features, as opposed to any direct dating evidence.

Bronze Age

Relatively small quantities of material were identified from four sites (Table 2.11). Sites A and L share some of the same ditches and gullies and were within 800m of Site C. Site G was a further 1km from its nearest counterpart, Site C.

Table 2.11: Animal bone from Bronze Age contexts by species and site, bone of the same individual counted as 1 NISP. Number in brackets = bone collected from soil samples

Species	*Site*			*Total*
	A & L	*C*	*G*	
	MBA-LBA	*MBA-LBA*	*MBA-LBA*	
Cattle	10	76	2	88
Sheep/goat	19 (6)	82 (10)		101 (16)
Sheep	1	3		4
Pig	11 (3)	6 (1)		17 (4)
Equid sp		1		1
Red deer	3	22 (1)		25 (1)
Cat	5 (1)			5 (1)
Common shrew		(2)		(2)
Bank vole		(1)		(1)
Toad	11 (4)		(2)	11 (6)
Frog	1 (2)			1 (2)
Lizard		(2)		(2)
Mole	1			1
Total	62 (16)	190 (17)	2 (2)	254 (35)

The vast majority of animal bones were collected by hand, with predominantly small mammal bones recovered from 44 sieved soil samples. The number of principal stock animals from soil samples was low, although notably those that were recovered were of sheep/goat as opposed to larger cattle, suggesting some bias in the hand-collected material towards larger mammals.

The distribution of species per context is low, typically less than five NISP of one species per context. Some differences in the distribution of cattle and sheep/goat by feature type are apparent, with few cattle bones excavated from pits. The low numbers on bone prevent much analysis of the correlation of the deposition of species within feature types, although it is clear that larger numbers of both cattle and sheep/goat occur from two deposits of ditch group 5892. Pig bones were relatively rare in excavated Bronze Age deposits, although a number of pig bones forming associated bone from four individual animals were recovered from pit 3030.

Of the biometric data from cattle, two astralagi gave a range of 59.9–61.6 for the GLI (greatest lateral length), within the expected range for cattle of this period.

Associated or Articulated Bone Groups (ABGs)

Middle Bronze Age Ditch Group 5892, Site C

Ditch group 5892 comprised the L-shaped ditch in Site C. Ditch interventions 5450 and 5483 and to a lesser extent 5501, produced significant numbers of both cattle, sheep/goat and deer bone and antler, specifically from the upper deposits. Species from these upper deposits are more abundant in bones identified as sheep/goat or sheep. Although some bones were evidently from the same individual, including two instances of articulating cattle radii and ulnas, and one pair of red deer mandibles, the majority would appear to represent a collection from different individuals. The Minimum Number of Elements (MNE) of cattle and sheep/goat demonstrate that a range of limb and the mandible are present. The MNE method does not represent the skull particularly well, but a number of skull fragments are present. From the unidentified categories, a further seven medium-sized mammal rib fragments were recovered, although no vertebra fragments. A minimum number of four cattle, seven sheep/goat and two pigs were calculated.

Middle to Late Bronze Age Pit 3030, Site A

Four Bronze Age pits from Sites A and L, features 3030, 3097 and 3024 in Site A and feature 12502 in Site L, produced animal bone. The deposits in these pits typically contained less than five NISP of a single species, the exception to this being deposit 3094 at the base of pit 3030, a beehive-shaped storage pit measuring 1.4m in depth and 2.24m in diameter. This middle to late Bronze Age pit contained the remains of piglets thought to be from

four individual animals, one juvenile, one neonate/juvenile and two foetal/neonate. None of these skeletons were complete. In addition, a complete mandible and a humerus fragment of a cat were recovered from the same deposit. The size overlap of domestic and wild cat precludes differentiating between the two, but these bones are presumably of wild cat, as the domestic variety was not introduced until the 1st century AD (Davis 1995, 177). Further cat remains were recovered from this pit, including fragments of a humerus from its second fill, deposit 3037, and fragments of a femur, mandible and a maxillary premolar from its third fill, deposit 3036.

Pathology

A middle Bronze Age sheep/goat metatarsal had evidently been broken, the healed fracture resulting in a very slight misalignment of the bone, and additional new bone growth (exostosis) along the length of the shaft of the bone. There was also an instance of osteochrondrosis dissecans on the proximal articular facet of a Bronze Age cow metatarsal. Osteochrondrosis dissecans is defined as the focal ischemic necrosis of the growth cartilage initiated by necrosis of the cartilage canal blood vessel during growth of the bone (Ytrehus et al. 2007, 445).

Wild species

A small number of deer bones and red deer antler or antler fragments were recovered from Bronze Age deposits. One of the red deer antler fragments had been sawn, showing working. Bones of wild cat were also recovered from two pits on Site A, one definitely of middle to late Bronze Age date, the other not securely dated but probably of late Bronze Age or early Iron Age date. These presumably represent wildcats, as domesticated cats are believed to have been a Roman introduction (Davis 1995, 177). Two bones from a pippit-sized bird were also recovered.

A single mole scapula was recovered from the basal deposit of the middle to late Bronze Age pit, 3030, which measured 1.4m deep. Moles may burrow to over 1m in depth, and it is quite feasible that the bone is intrusive or an incidental inclusion as opposed to associated with human activity. Alternatively, historically moles are trapped as a pest to agriculture and horticulture (Carnegie 1910, 212–6). Similarly, they maybe caught for their silky fur.

Amphibians and reptiles

A small collection of frog and toad bones was present. Frogs may have been consumed, but most came from pits that could have acted as pit fall traps. There was a single example of a burnt toad bone, from deposit 3031 of the middle to late Bronze Age pit 3030. Bones of slow worm or probable slow worm were also recovered from Bronze Age contexts. It would be tempting to associate slow worms with midden deposits, modern-day compost heaps being an attractive habitat for the species.

Charred plant remains *by Wendy Smith*

Although a number of samples of Neolithic–Bronze Age date were collected during the A2 excavations none of these produced rich assemblages of charred plant remains (see Smith 2009). Typically the most promising early prehistoric sample only produced a few charred plant remains; certainly none produced more than 50 identifiable remains and most produced <10 (ibid., table 1). Such small assemblages are generally considered uninterpretable, and in those cases where charred plant remains were observed in assessment, their secure identification will not alter present knowledge of Neolithic or Bronze Age collected foodstuffs and/or cultivars.

While a few tree fruits and nuts were present in some of the cremation deposits, they are as likely to have arrived with the wood fuel rather than representing any deliberate offering. This could apply to the hazel nutshell fragments and a possible hawthorn (cf. *Crataegus* sp.) haw from sample 1250 in middle Bronze Age cremation pit 12520. Hazel nutshells were also present in the enclosure ditches on Sites C and G, and again could represent foodstuffs or fuel. In terms of cultivated cereals, several spelt wheat (*Triticum spelta*) grains were recovered from pit 5023 on Site C, and a single spelt grain was recovered from enclosure ditch 9236 on Site G. A number of barley grains were found in ditch 5451 on Site C, and a single barley grain in mid to late Bronze Age pit 3024 on Site A. The recovery of small quantities of grain from such contexts is, however, unexceptional both because we know these cereals were cultivated in the period (Tomlinson and Hall 1996; Zohary and Hopf 2000) and because such small quantities are likely to be 'background noise'.

The limited recovery of early prehistoric CPR at A2 is mirrored by the results from excavations at Northumberland Bottom and Tollgate West along the adjacent route of the High Speed 1 (Davis 2006a; 2006b). A similar paucity of early prehistoric evidence is apparent in recent work in the Ebbsfleet Valley, Kent (Andrews *et al.* 2011).

Wood charcoal *by Dana Challinor*

The assessment of the processed samples was undertaken by Wendy Smith, who identified a range of samples with high potential for further charcoal analysis. A selection of these was made which reflected the range of feature types and phases represented in the dataset. The majority of the identifications at full analysis were undertaken by Denise Druce of Oxford Archaeology North, and her assistance in the production of the dataset is gratefully acknowledged. The aims of the charcoal analysis were to characterise the wood utilised for

Table 2.12: Results of the charcoal analysis from Bronze Age contexts

	Phase	*early Bronze Age*		*middle Bronze Age*	*late Bronze Age*	
	Site	*F*	*G*	*C*	*C*	
	Feature type	*pit*	*pit*	*ditch*	*cremation*	
	Feature	*8038*	*9223*	*5450*	*5017*	*5278*
	Context	*8040*	*9224*	*5451*	*5016*	*5277*
	Sample	*803*	*1812*	*1518*	*500*	*1533*
	% identified			*12.5*	*12.5*	*12.5*
Quercus sp.	oak	+++	++	51r	247	
Corylus avellana L.	hazel			6r		
Alnus/Corylus/Carpinus	alder/hazel/hornbeam	+	++			1
Prunus spinosa L.	blackthorn			9		
Prunus sp.	cherry type		+	5r		
Maloideae	hawthorn group		++	43r		112r
Acer campestre L.	field maple			4		
Fraxinus excelsior L.	ash		+			
Indeterminate				4	6	4
Total		+++	++++	122	253	117

r= roundwood; h=heartwood; + = <5; ++ = 5-25; +++ = 25-100; ++++ = >100

fuel and to examine any changes in the exploitation of woodland resources.

A total of five samples were examined from Bronze Age contexts. A full methodology is presented in the site archive. The results by fragment count are given in Table 2.12. The main focus of the Bronze Age samples were two cremation deposits from pits 5017 and 5278 in Site C (see Fig. 2.21). According to the human bone analysis (see above), the remains in these pits were not formal unurned burials, but small quantities of redeposited pyre debris or cremation-related deposits. The remains of a single adult appeared to be represented in both pits. In common with other cremation related deposits of comparable date, both assemblages were dominated by a single taxon. Pit 5017 was clearly dominated by oak, which is typical of late Bronze Age cremations, both regionally (Aldritt 2006c; Druce 2011) and nationally (Challinor 2009a; Campbell 2007) and pit 5278 was dominated by a member of the hawthorn group which, although rarer, is also attested at other sites, including a cremation-related deposit near Margate (Challinor 2009b; Challinor forthcoming; Gale 1992). A possible link between the dominance of a single species in pyre wood assemblages and the maturity of the deceased (adult) proposed at Raunds (Campbell 2007) seems to be supported by the evidence from the A2.

Although no other late Bronze Age contexts provided directly comparable data to the cremation deposits, mid–late Bronze Age ditch (5450), which was adjacent to the cremations, produced likely domestic debris (pot sherds, bone artefacts and oyster shells). The charcoal assemblage was notably more diverse with oak, hawthorn group, hazel, blackthorn and field maple. The gathering of mixed types of wood, particularly with increased hedgerow-type species, is consistent with the general picture of Bronze Age domestic fuel practices (Challinor 2010a). Two early Bronze Age pits (8038 and 9223) from Sites F and G further east also contained similar assemblages.

Pollen and phytoliths *by Adrian G Parker*

Four samples were prepared for pollen and phytolith evaluation from the main Bronze Age enclosure ditch on Site G (9105), section 925, columns 944 and 945 (see Fig. 2.11). A full methodology can be found in the digital report. It is also assumed that column 944 was stratigraphically above 945. Samples 5 and 6 were taken from column 944 at 20cm (?context 9111) and 40cm (context 9113) respectively and samples 7 and 8 from column 945 at 20cm (context 9114) and 40cm (context 9117).

Four samples were also taken from a large Bronze Age pit or hollow (9293) section 2269 columns 990 and 991 in Site G (see Fig. 2.10). This was thought possibly to have been a pond. Two samples from column 990 were taken at 20cm and 40cm (both contexts 9345) and in column 991 one sample was taken from context 9386 (20cm) and one from context 9387at 40cm.

Results and discussion

The pollen and phytolith results show large variations in preservation ranging from poor/nil preservation to relatively good preservation. The results of the pollen counts are shown in Tables 2.13–14 and phytoliths in Table 2.15.

Within the all of samples analysed for pollen the grains showed signs of deterioration and selective preservation was evident amongst the observed assemblages. Resistant taxa such as Compositae

Table 2.13: A2 pollen results from Bronze Age Ditch 9105

Pollen from Site G Ditch 9105, section 925, columns 944 and 945

	944		*944*		*945*		*945*	
	9111		*9113*		*9116*		9117	
	20cm	*%*	*40cm*	*%*	*20cm*	*%*	*40cm*	*%*
Trees								
Betula	0	0.00	0	0.00	6	1.61	2	0.72
Pinus	8	9.30	2	1.75	8	2.15	11	3.97
Quercus	1	1.16	4	3.51	16	4.30	19	6.86
Tilia	0	0.00	0	0.00	19	5.11	21	7.58
Ulmus	0	0.00	0	0.00	1	0.27	2	0.72
Ilex	0	0.00	0	0.00	1	0.27	0	0.00
Shrubs								
Corylus	2	2.33	3	2.63	24	6.45	11	3.97
Hedera	0	0.00	0	0.00	2	0.54	0	0.00
Crataegus t.	0	0.00	0	0.00	2	0.54	1	0.36
Rubus t.	0	0.00	0	0.00	2	0.54	0	0.00
Calluna	0	0.00	1	0.88	2	0.54	2	0.72
Herbs								
Cereal t.	1	1.16	1	0.88	9	2.42	6	2.17
Gramineae	5	5.81	35	30.70	97	26.08	45	16.25
Cyperaceae	0	0.00	0	0.00	4	1.08	8	2.89
Ranunculaceae	0	0.00	0	0.00	14	3.76	5	1.81
Chenopodiaceae	4	4.65	8	7.02	5	1.34	7	2.53
Caryophyllaceae	0	0.00	0	0.00	5	1.34	11	3.97
Fabaceae	0	0.00	0	0.00	2	0.54	2	0.72
Filipendula	0	0.00	0	0.00	0	0.00	1	0.36
Plantago lanceolata	0	0.00	2	1.75	34	9.14	21	7.58
Plantago major/media	0	0.00	0	0.00	9	2.42	3	1.08
Rumex spp.	0	0.00	2	1.75	14	3.76	5	1.81
Urtica	0	0.00	0	0.00	0	0.00	1	0.36
Galium t.	0	0.00	0	0.00	1	0.27	2	0.72
Polygonum spp.	0	0.00	0	0.00	1	0.27	4	1.44
Compositae Liguliflorae	45	52.33	28	24.56	45	12.10	33	11.91
Compositae Tubuliflorae	5	5.81	9	7.89	14	3.76	12	4.33
Cirsium/Carduus t.	0	0.00	0	0.00	5	1.34	1	0.36
Umbelliferae	0	0.00	1	0.88	2	0.54	2	0.72
Mentha aquatica	0	0.00	0	0.00	0	0.00	0	0.00
Spores								
Polypodiaceae	1	1.16	0	0.00	0	0.00	0	0.00
Filicales	14	16.28	17	14.91	24	6.45	33	11.91
Pteridium	0	0.00	1	0.88	4	1.08	6	2.17
n	86	100.00	114	100.00	372	100.00	277	100.00
Trees	9	10.47	6	5.26	33	8.87	35	12.64
Shrubs	2	2.33	3	2.63	30	8.06	12	4.33
Herbs	60	69.77	86	75.44	259	69.62	167	60.29
Spores	15	17.44	18	15.79	28	7.53	39	14.08

Liguliflorae and Chenopodiaceae were strongly represented within a number of samples. However, other less resistant taxa including Gramineae and *Urtica* were also identified. These samples do provide some important information but the pollen data should be viewed with some caution owing to selective preservation.

Likewise phytolith preservation varied across the site. The samples from the basal contexts of Site L had undergone dissolution will almost nil preservation. Given the proximity of these samples to the chalk bedrock this was not surprising. Pitting and etching of phytoliths was noted from most contexts but a number of samples contained relatively high

Table 2.14: A2 pollen results from Bronze Age pit/hollow 9293

Pollen from Site G Pond Feature 9293, section 2269, columns 990 and 991								
	990		*990*		*991*		*991*	
	9345		*9345*		*9386*		*9387*	
	20cm	*%*	*40cm*	*%*	*20cm*	*%*	*0cm*	*%*
Trees								
Betula	0	0.00	1	0.00	2	0.65	1	0.55
Pinus	2	0.00	3	0.00	4	1.31	2	1.09
Quercus	0	0.00	1	0.00	5	1.63	6	3.28
Tilia	0	0.00	0	0.00	10	3.27	9	4.92
Ulmus	0	0.00	0	0.00	1	0.33	1	0.55
Ilex	0	0.00	0	0.00	0	0.00	1	0.55
Shrubs								
Corylus	1	0.00	0	0.00	24	7.84	14	7.65
Hedera	0	0.00	0	0.00	0	0.00	0	0.00
Crataegus t.	0	0.00	0	0.00	2	0.65	0	0.00
Rubus t.	0	0.00	0	0.00	1	0.33	1	0.55
Calluna	0	0.00	0	0.00	6	1.96	5	2.73
Herbs								
Cereal t.	0	0.00	1	0.00	22	7.19	2	1.09
Gramineae	2	0.00	4	0.00	116	37.91	55	30.05
Cyperaceae	0	0.00	0	0.00	2	0.65	2	1.09
Ranunculaceae	0	0.00	0	0.00	4	1.31	2	1.09
Chenopodiaceae	10	0.00	2	0.00	3	0.98	2	1.09
Caryophyllaceae	0	0.00	0	0.00	3	0.98	1	0.55
Fabaceae	0	0.00	0	0.00	3	0.98	2	1.09
Filipendula	0	0.00	0	0.00	0	0.00	0	0.00
Plantago lanceolata	0	0.00	1	0.00	22	7.19	7	3.83
Plantago major/media	0	0.00	2	0.00	4	1.31	1	0.55
Rumex spp.	0	0.00		0.00	8	2.61	1	0.55
Galium t.	0	0.00	0	0.00	2	0.65	0	0.00
Polygonum spp.	0	0.00	0	0.00	2	0.65	0	0.00
Compositae Liguliflorae	15	0.00	9	0.00	31	10.13	17	9.29
Compositae Tubuliflorae	5	0.00	2	0.00	11	3.59	5	2.73
Cirsium/Carduus t.	0	0.00	1	0.00	2	0.65	0	0.00
Umbelliferae	0	0.00	0	0.00	5	1.63	0	0.00
Spores								
Polypodiaceae	0	0.00	0	0.00	1	0.33	0	0.00
Filicales	3	0.00	2	0.00	9	2.94	25	13.66
Pteridium	0	0.00	1	0.00	1	0.33	21	11.48
n	38	0	30	0	306	100.00	183	100.00
Trees	2	0.00	5	0.00	21	6.86	18	9.84
Shrubs	1	0.00	0	0.00	27	8.82	15	8.20
Herbs	32	0.00	22	0.00	240	78.43	97	53.01
Spores	3	0.00	3	0.00	11	3.59	46	25.14

number of identifiable morphotypes. The successful application of phytolith analysis has been undertaken by the author at hilltop enclosures and hillforts at Taplow, Buckinghamshire, and Castle Hill, Little Wittenham, Oxfordshire (Parker in Allen *et al.* 2009, 155–9; Parker in Allen *et al.* 2010, 96–7).

The pollen data suggests a relatively open landscape in the vicinity of the site. Tree and shrub pollen does, however, suggest a backdrop of regional woodland with *Quercus, Tilia* and *Corylus* being the dominant. The geology exposed during the excavation showed Chalk overlain by Lower Greensand and Clay. Regional pollen work from site on similar geology across Sussex, Surrey, Hampshire and Berkshire has shown that the pre-clearance woodland was dominated by *Tilia, Quercus, Ulmus, Fraxinus* and *Corylus*. None of the samples examined came from pre-clearance contexts.

Table 2.15: A2 phytolith counts from Bronze Age features 9105 and 9293

Sample	Context		Panicoid	Other grasses		Cyperaceae	Grass long cells		Other long cells			Number
Column		Pooid		Chloridoid	Lig dicots		Corklike	Dendriform		Hairs		
Site G 9105												
5	944	9111	22	9	2	45	2	1	4	67	12	23	7	194
6	944	9113	45	11	2	55	3	1	7	88	21	16	11	260
7	945	9116	33	3	4	24	4	1	5	45	11	14	5	149
8	945	9117	24	6	1	23	1	5	2	34	9	21	6	132
Site G 9293														
9	990	9345	4	4	1	0	1	0	1	0	0	3	0	11
10	990	9345	3	2	0	11	1	0	1	7	1	4	0	30
11	991	9386	44	14	1	22	15	2	4	101	84	88	12	387
12	991	9387	2	5	0	14	2	0	1	21	2	6	2	55

However, in Area G the oldest samples span the Bronze Age and give insight into change in the landscape.

Pollen data from the main ditch in Site G and pit 9293 show that during the early to mid Bronze Age trees and shrubs comprised 18% of the pollen sum with *Quercus, Tilia* and *Corylus* the major components. The lowermost samples in both sites show a relatively strong presence of *Tilia* (up to 7.5%). *Tilia* is often under-represented in pollen diagrams due to its poor pollen dispersal, rather than low pollen productivity. Although dates for the decline across England range from the late Neolithic to the late Bronze Age there appears to be a marked decline during the late Bronze Age from across southern England (Scaife 1987; Parker 1999). The cause of the decline may include climate change inhibiting the growth of thermophilous taxa such as *Tilia*, paludification due to deteriorating soil conditions and human clearance of regional woodland. The decline in *Tilia* and associated increases in Poaceae, disturbed ground taxa including *Plantago lanceolata* and or cereals has been noted from many sites across southern England (eg Scaife 1987; Waton 1982; Thorley 1981; Parker 1999). Scaife (1987) suggested that woodland clearance in the later Bronze Age largely took place in areas between already cleared fertile soils on downland and the less tractable soils on heavy clay soils.

Despite the backdrop of woodland non-arboreal pollen dominates the samples, accounting for 53–78% of the total pollen sum. The presence of both grass short and long cell morphotypes supports the predominance of grasses in the local area. Poaceae is the largest component (16–38%) of the pollen spectra with a strong presence of Ranunculaceae, *Plantago lanceolata*, Compositae Liguliflorae and Compositae Tubuliflorae. These taxa indicate disturbed ground perhaps due to grazing. The presence of some cattle bone from the site supports this notion. Cereal type pollen is found in all the Bronze Age samples suggesting the growing of some arable crops (although some wild grasses can produce large Poaceae grains). The large pit 9293 in Site G (context 9386) contained a significant number (88) of dendriform long cell Poaceae phytolith morphotypes. These are derived from the inflorescence bract of cereals, implying that this context contains the residue of threshed cereals or the incorporation of ashed cereals from hearth materials.

The small presence of *Calluna* pollen suggests the presence of heather in the landscape, perhaps derived from the development of regional heathland. During the late Holocene heathland tended to develop on cleared ground, especially in areas with sandy substrates (Scaife 1987).

Although tentatively interpreted as a possible pond, pit 9293 showed little/no evidence for being a pond based on the pollen evidence. No aquatic or semi-aquatic pollen types were found. This interpretation is therefore unlikely, unless perhaps it was used a seasonal dew pond.

Overall, the pollen and phytolith analysis has provided some insight into the local and regional vegetation in the Bronze Age. The results suggest an open landscape with a regional background with *Quercus, Tilia* and *Corylus*. Pollen and phytolith evidence both suggest some cereal cultivation in the local area. In addition, disturbed ground—perhaps related to grazing—is suggested by the presence of *Plantago lanceolata, Rumex*, Ranunculaceae and Compositae Liguliflorae.

Land snails *by Elizabeth Stafford*

A total of 271 samples were collected from 45 feature profiles from sites A, B, C, D, G and L for the recovery of land snail assemblages. An initial rapid assessment of 203 mollusc samples as well as a 17 spot bulk samples concluded that preservation of shell was highly variable, both within and between the sites. The assessment identified six well-dated representative profiles where shell preservation was

Table 2.16: Molluscan data from middle Bronze Age ditch 5892

Sample		*878A*	*878B*	*878C*	*878D*	*878E*	*878F*	*878G*	*878H*	*878I*	*878J*
Context		*5484*	*5484*	*5485*	*5485*	*5486*	*5486*	*5521*	*5521*	*5524*	*5525*
Depth (m)		*0.12-0.20*	*0.20-0.28*	*0.30-0.34*	*0.34-0.40*	*0.40-0.46*	*0.46-0.53*	*0.57-0.54*	*0.64-0.71*	*0.78-0.84*	*1.00-1.08*
Sediment processed (kg)		*2.7*	*2.7*	*2.7*	*1.8*	*1.9*	*2.8*	*3.3*	*2.7*	*2.7*	*4.1*
Taxa	Habitat										
Pomatias elegans (Müller)	S-D	14	28	11	21	289	10		1		
Carychium tridentatum (Risso)	S-D	4	69	35	277	893	61	5	7		1
Cochlicopa sp.	C		18	17	8	102	3	4			
Truncatellina cylindrica (Ferussac)	O-C		1	1	5	7	1	1	2		
Vertigo pygmaea (Draparnaud)	O-C		2		4	2	4		1		
Pupilla muscorum (Linné)	O-C		1	2	5	15	14	18	6		3
Lauria cylindrica (da Costa)	S-D			1	2	46	13		1	1	
Vallonia costata (Müller)	O-C	59	323	87	55	371	347	43	9	3	4
Vallonia excentrica (Sterki)	O-C	19	86	22	14	30	43	26	10	1	3
Acanthinula aculeata (Müller)	S-D	1	12	1	19	188	7	1	1	2	
Ena obscura (Müller)	S-D					14	4		1		
Punctum pygmaea (Draparnaud)	C		11	4	21	129	82	7	6	1	
Discus rotundatus (Müller)	S-D	7	22	122	124	150	20	2	1	1	
Vitrina pellucida (Müller)	C			2	3		3	1	1		
Vitrea sp.	S-D	3	9	16	30	171	53	7	9	1	
Nesovitrea hammonis (Ström)	C			1		8	2	1	2	1	
Aegopinella pura (Alder)	S-D		7	10	27	333	34	7	6	2	
Aegopinella nitidula (Draparnaud)	S-D	16	75	64	55	343	20	2	3		1
Oxychilus cellarius (Müller)	S-D		3	13	7	17	11	1		2	
Cochlodina laminata (Montagu)	S-D	3		5	11	10	1		1		
Clausilia bidentata (Ström)	S-D	10	10	14	28	132	30	1	1		
Candidula sp.	O-C				2			2			
Helicella itala (Linné)	O-C	5	6	2	3	18	4		3		2
Trichia hispida (Linné)	C	3	55	72	24	52	10	1			
Helicigona lapicida (Linné)	S-D			1	2	21			1		
Cepaea/Arianta sp.	C	8	2	10	8		3	1			
Cepaea sp.	C		1			18					
Cepaea nemoralis (Linné)	C				2						
% Shade-demanding		38.16	31.71	57.12	79.66	77.61	33.85	19.85	45.21		
% Catholic		7.24	11.74	20.66	8.72	9.20	13.21	11.45	12.33		
% Open-country		54.61	56.55	22.22	11.62	13.19	52.95	68.70	42.47		
No. individuals/sample		152	741	513	757	3359	780	131	73	15	14
No. individuals/kg		56	274	190	421	1768	279	40	27	6	3
Shannon Wiener Index (H')		2.033	1.98	2.35	2.28	2.46	2.12	2.15	2.68		
Brillouin Index (HB)		1.893	1.93	2.27	2.22	2.44	2.06	1.96	2.32		
H'-HB Index		0.14	0.05	0.08	0.06	0.02	0.06	0.19	0.36		

considered adequate for detailed analysis to further characterise the assemblages. Two of these profiles were from middle Bronze Age ditch 5892 and late Bronze Age ditch 5912 on Site C (see Fig. 2.21), and the results of the detailed analysis are presented here (Tables 2.16–17). A methodology can be found in the digital report.

Middle Bronze Age ditch 5892

Group 5892 comprised a large L-shaped enclosure ditch cut through natural weathered chalk bedrock. The ditch, although constructed in the middle Bronze Age was probably visible and perhaps still partially open during the late Bronze Age and into the Iron Age.

A total of 49 samples from five profiles were rapidly assessed for the preservation of land snails. All five profiles provided broadly similar environmental signals. Of the five sequences, intervention 5483 was selected for full analysis based on shell abundance, composition, and the level of sampling. This profile also contained the artefact rich occupation horizon 5485 which provides some chronological control. The mollusc count from this sequence is presented in Table 2.16 and the histograms in Figure 2.44. Four molluscan assemblage zones (A–D) have been identified in this sequence.

Table 2.17: Molluscan data from late Bronze Age ditch 5912

Sample		*826*	*827*	*829*	*831*	*833*
Context		*5298*	*5299*	*5300*	*5702*	*5703*
Spit		*2*	*3*	*5*	*7*	*9*
Depth (m)		*0.10-0.22*	*0.22-0.30*	*0.30-0.40*	*0.40-0.55*	*0.78-1.14*
Sediment processed (kg)		*2*	*2*	*2*	*2*	*2*
Taxa	Habitat					
Pomatias elegans (Müller)	S-D	1	14	44	98	24
Carychium tridentatum (Risso)	S-D	16	15	702	413	119
Cochlicopa sp.	C			36	9	12
Truncatellina cylindrica (Ferussac)	O-C					3
Vertigo pygmaea (Draparnaud)	O-C		1			2
Pupilla muscorum (Linné)	O-C				1	10
Lauria cylindrica (da Costa)	S-D				1	
Vallonia costata (Müller)	O-C	1	27	9	2	4
Vallonia excentrica (Sterki)	O-C		15	2		1
Vallonia sp.	O-C	1	21			
Acanthinula aculeata (Müller)	S-D			16	8	
Ena obscura (Müller)	S-D			1	5	
Punctum pygmaea (Draparnaud)	C	2	2	9	5	24
Discus rotundatus (Müller)	S-D	5	5	59	124	43
Vitrina pellucida (Müller)	C			2	1	1
Vitrea sp.	S-D	1	2	70	58	6
Nesovitrea hammonis (Ström)	C		1	6	9	1
Aegopinella pura (Alder)	S-D	2	2	64	61	13
Aegopinella nitidula (Draparnaud)	S-D	4	2	89	95	24
Oxychilus cellarius (Müller)	S-D	2	2	43	20	5
Clausilia bidentata (Ström)	S-D		1	6	7	8
Helicella itala (Linné)	O-C		1	1	1	1
Trichia hispida (Linné)	C		3	28	12	3
Cepaea/Arianta sp.	C		2		2	
Cepaea sp.	C	1		6		1
Limicidae			2			
% Shade-demanding		86.1	38.1	91.7	95.5	79.3
% Catholic		8.3	6.8	7.3	4.1	13.8
% Open-country		5.6	55.1	1.0	0.4	6.9
No. individuals/sample		36	118	1193	932	305
No. individuals/kg		18	59	597	466	153
Shannon Wiener Index (H')		1.86	2.25	1.66	1.87	2.13
Brillouin Index (HB)		1.53	2.04	1.63	1.83	2.03
H'-HB Index		0.33	0.2	0.03	0.04	0.11

In Zone A (0.53–1.10m) the basal two samples from primary fills 5525 and 5524, contained very low numbers of shells of mixed ecological preferences. The low shell abundance indicates unconducive conditions and rapid sedimentation, probably as a result of the initial physical weathering of the feature edges and bank immediately after the feature was cut.

Up-profile, in fill 5521, shell was more abundant suggesting a reduced rate of sedimentation as the feature edges began to stabilise. Open-country species are numerous; reaching *c* 70% at the top of this zone. Shade-demanding molluscs are, however, by no means absent with quite a diverse range of species throughout, comprising between 45% and 20% of the assemblages. Catholic species account for *c* 12% of the totals, predominantly the Punctum group.

It is likely at this level in the ditch the mollusc shell derives from several sources such as shells from the contemporary topsoil eroding into the ditch as well as molluscs colonising the base of the feature from adjacent environments. This mixing of assemblages appears to be reflected in the high values of the H-HB index. The environment in the base of the ditch itself is initially likely to have comprised bare earth and chalk rubble, and as the rate of sedimentation reduced, a light cover of grasses and herbs. Experimental work on sites such as Overton Down (Bell *et al.* 1996) have demonstrated that this process can occur quite rapidly in chalk cut ditches, that is within the initial 10–15 years of infilling. Often such primary fills are colonised by species capable of living on bare scree-like surfaces such as *Discus rotundatus*, *Vitrea*

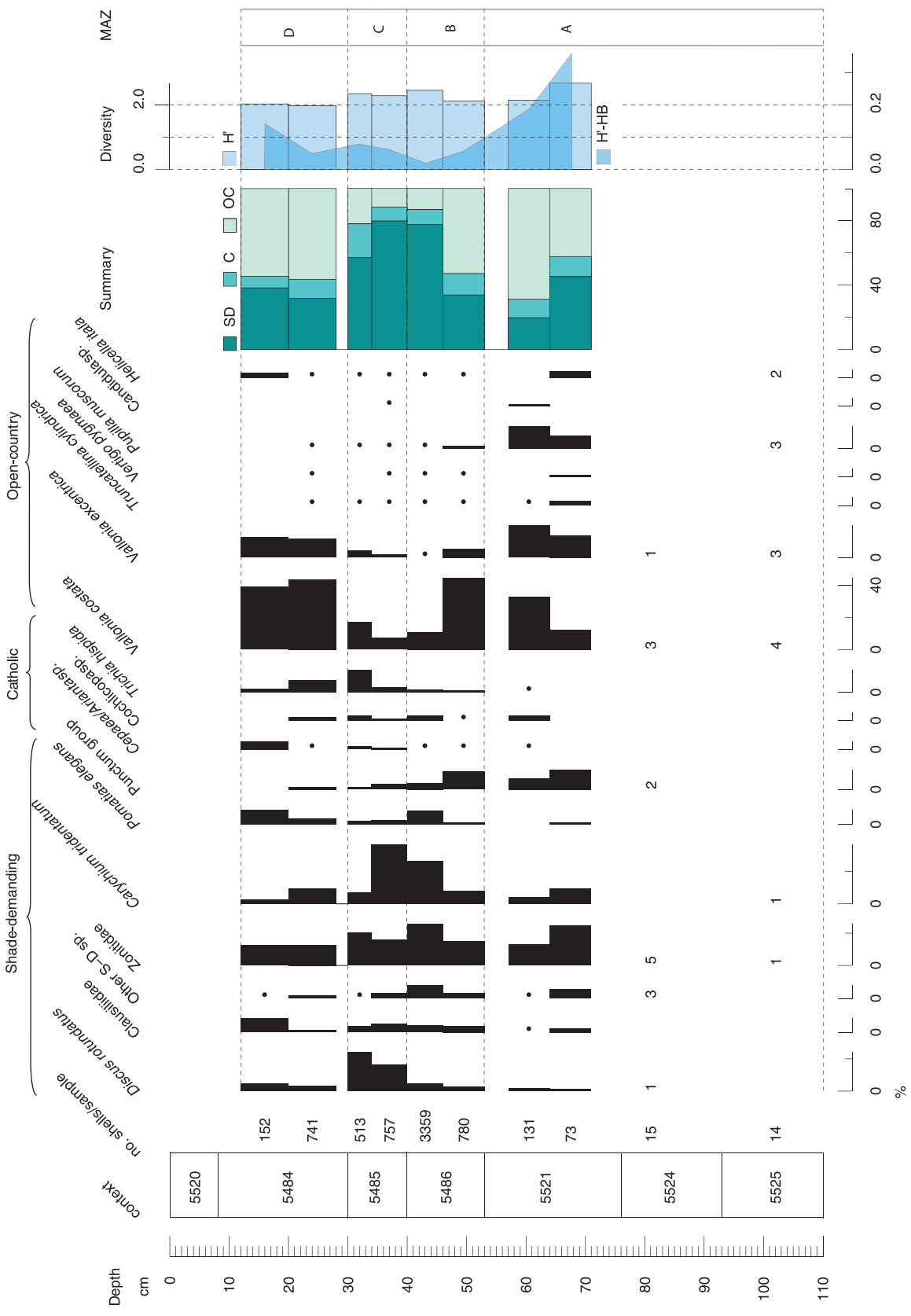


Fig. 2.44 Percentage molluscan diagram for middle Bronze Age ditch 5892, cut 5483, Site C

contracta and *Oxychilus cellarius* (the troglophiles of Evans and Jones 1973), often classed as shade-lovers, as well as the open-county species *Vallonia costata* and the catholic Punctum group.

The diversity of the shade-demanding fauna, however, which includes *Cochlodina laminata*, *Acanthinula aculeata*, *Helicigona lapicida* and *Ena obscura*, also suggests an environment of shady deciduous woodland with much leaf litter. It may be some of the shade-demanding component represents a residual component from a previous environment. However, overall these shells did not appear very worn and many were of the more fragile shelled species that do not reside in active soils for long periods of time. In contrast the open-country component, particularly dominating at the top of this zone, are consistent with a relatively open environment Numerical significant species include the grass snails *Vallonia excentrica* and *V. costata*, the latter dominating slightly, and *Pupilla muscorum*. *Truncatellina cylindrica, Vertigo pygmaea* and *Hellicella itala* are also present. The species composition which includes many obligate xerophiles suggests an area of established grassland rather than ground very recently cleared of woodland. It is quite possible these mixed assemblages reflect the existence of a boundary zone between two different quite established environments. One would expect some clearance of vegetation would be required prior to the cutting of the ditch and the open environment around and within the feature this may be reflected in the predominance of the open country species at the top of this zone.

Zone B falls at 0.40–0.53m. Between 0.76m and 0.53m shell abundance increases dramatically suggesting a significant reduction in the rate of sedimentation and soil formation at the top of this zone. Stability is reflected in the much lower values of the H'-HB index.

Initially changes in molluscan composition comprise increases in the proportions colonizing species *V. costata* and the Punctum group The proportions of some of the obligate xerophiles such as *P. muscorum*, and *V. excentrica* are reduced although in terms of absolute values they maintain a consistent low level. Shade-demanding species increase significantly between 0.57m and 0.64m to 78%, and open country species are reduced to 14%. Overall this suggests the rapid growth of vegetation; long grass and then scrub within or encroaching into the feature. The assemblages are characterised by the predominance of *Carychium tridentatum*. This species, along with *Acanthinula aculeata* and some of the zonitids, *Vitrea* sp. and *Aegopinella pura*, although classed as a shade-lovers due to their small size, often occur in areas of long grassland. However, the presence of other species such as *Aegopinella nitidula, Discus rotundatus*, Clausiliidae and *Ena obscura* indicate some arboreal cover with abundant leaf litter.

Although the snail faunas may to some extent be reflecting microenvironments prevailing within the ditch, the predominance of a diverse range of shade-demanding species suggests substantial refugia persisted in the vicinity from which these snails could colonise. Of note is a small peak (7%) in the burrowing snail *P. elegans* at the top of the zone which may indicate some loose soil and disturbance in the vicinity.

Zone C (0.30–0.40m) is marked by a notable reduction in shell abundance and slight increases in values of the H-HB index. Initially shade-demanding species maintain high proportions at 80% with open country at 12%. Towards the top of this zone, however, shade-demanding species are reduced to 57%, catholic species increase to 21% (predominantly *Trichia hispida*), and open-country species to 20% (mainly *V.costata* and to a lesser extent *V. excentrica*). The changes in this zone appear to reflect continued disturbance within the feature and equates with the artefact rich context 5485. The increase in the proportion of open country fauna at the top of the zone suggests some clearance or trampling of vegetation within the ditch may have occurred.

Zone D (0.00–0.30m) is characterised by a large increase in the proportion of open-country species to *c* 55%, predominantly the grass snail *V. costata* but also *V. excentrica,* with a slight increase in *Helicella itala* at the top of the zone. Shade-demanding elements are significantly reduced to *c* 30%. This suggests substantial clearance of vegetation in the area. The significant reduction in shell abundance towards the top of this zone suggests a big increase in the rate of sedimentation possibly as a result of ploughing. Although shade-demanding species appear to persist in the upper levels of the ditch it is clear a proportion of these, such as the Clausillidae, are residual elements comprising very worn shells. It may be that some areas of woodland or scrub persisted in the vicinity.

Late Bronze Age ditch 5912

Group 5912 comprised a large ditch dated to the later Bronze Age. A single profile of snail samples was retrieved from the northernmost section where the ditch cuts through weathered chalk bedrock. Rapid assessment concluded shell preservation was moderate to good and five samples were selected for detailed analysis. The mollusc count is presented in Table 2.17 and the histogram in Figure 2.45. Three molluscan assemblage zones have been identified in this sequence.

Zone A (0.60–1.26m) encompasses the primary fill 5703. Shell was surprisingly abundant in this context (305 individuals). Shade-demanding taxa were present at 80%. *C. tridentatum* predominates, although the zonitids and *D. rotundatus* are also significant. *P. elegans* at 8% may reflect the loose nature of the substrate. The proportion of open-country taxa was very low at 7%. Overall this suggests the ditch was either constructed in very close proximity to woodland or in an area only very

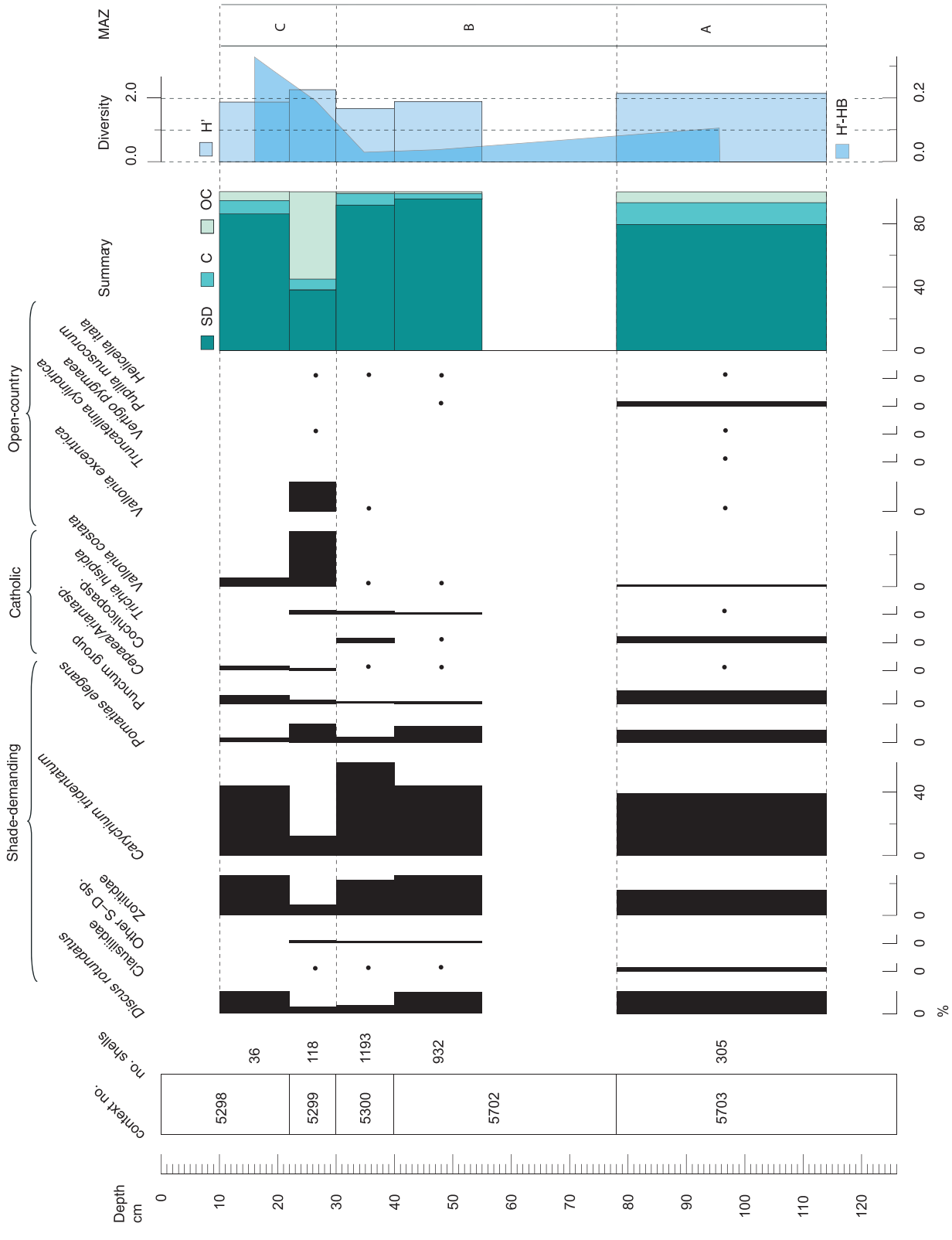


Fig. 2.45 Percentage molluscan diagram for late Bronze Age ditch 5912, Site C

recently cleared where open-country species had not had the opportunity to colonise.

Zone B (0.80–0.30m) is characterised by a significant increase in shell numbers and a drop in the H'-HB index suggesting the feature edges were stabilising and soil formation ensued. The assemblages are overwhelmingly dominated by shade-demanding taxa at *c* 95%. Additional species include *A. aculeata* and *Ena obscura.* Catholic and open-country species are negligible. The environment in the vicinity of the feature at this point appears to have been rather enclosed, with arboreal cover and abundant leaf litter. Although the snail faunas may to some extent be reflecting microenvironments prevailing within the ditch the continued predominance and rapid colonisation of shade-demanding species suggests substantial refugia persisted in the vicinity from which these snails could colonise. Any clearance associated with the cutting of the ditch may have been quite short-lived

Zone C spans 0.00–0.30m. A very significant change occurs in the profile at 0.30m. Shell abundance drops dramatically to only 118 individuals and a marked increase in the H'-HB index is noted suggesting instability and disturbance. Open-country species increase to 55%, mainly *V. costata* and *V. excentrica.* A corresponding drop in the shade-demanding component to occurs to 38%. This is similar to Zone D in ditch 5483 and suggests substantial clearance of vegetation in the area. The uppermost sample from fill 5298 contained too few shells for interpretation suggesting a rapid increase in the rate of sedimentation possibly as a result of ploughing levelling.

Discussion

The samples provide local environmental data for many of the periods represented by the archaeological remains. However, since features from different phases are not distributed uniformly along the route it is impossible to provide a comprehensive characterisation of the development of the whole area. In addition, molluscan evidence from archaeological features to some extent reflects very local conditions associated with these features, unlike the evidence from sequences of extensive soils and sediments that more often contain snails from a wider catchment. There are obvious taphonomic problems related to the function of features, processes of infilling, sedimentation, erosion, reworking of older sediments, and post depositional disturbance. It is important to determine wherever possible if a feature has been deliberately backfilled, leading to the mixing of assemblages, and/or if the feature has been left open for any period, allowing sufficient time for *in situ* soil formation to occur. These issues, however, are inherent in molluscan analysis and will be considered in the interpretation of the assemblages.

Although human activity is recorded during the Neolithic and early Bronze Age along the route of the A2, the earliest snail-bearing deposits date to the middle Bronze Age. This is better than the situation at Northumberland Bottom, where the earliest snail bearing deposits from the HS1 section 1 dated to the middle Iron Age. There is however a corpus of regional environmental data available from previous investigations that can provide a general landscape context. Although pollen data for the early to mid Holocene in Kent is rather limited, evidence from Holywell Coombe (Preece and Bridgland 1998; Kerney *et al.* 1980) and Wateringbury (ibid.) suggests locally forested conditions during the pre-boreal and boreal (*c* 9000–5500 BC), initially birch (*Betula* sp.) and pine, followed by hazel and then hazel and elm (*Ulmus* sp.) woodland. Probably more pertinent to the A2 scheme is recent work undertaken as part of the HS1 Section 2 at Springhead and the Ebbsfleet Valley. Here, pollen data suggests in the late Mesolithic and early Neolithic a predominantly wooded habitat prevailed dominated by lime, oak and hazel on drier areas with alder carr and reed swamp on and along the fringes of the floodplain. Clearance was slight at this time, with only small open areas in the woodland indicated in the local area (Barnett *et al.* 2011). Further to the west, early Neolithic mollusc data from A2-A282 Dartford Road Improvement Scheme (Stafford 2011) indicated an environment of open woodland.

Overall the extent and duration of woodland clearance in Kent is not clear. Current research suggests that clearance on the chalklands of the south and south-east was predominantly a late Bronze Age phenomenon (Wilkinson 2003, 730). Locally, however, there may have been much variation with some areas subject to extensive and permanent clearance, and other areas where cycles of clearance and woodland/scrub regeneration occurred (Thomas 1982; Preece and Bridgland 1998; Kerney *et al.* 1964; Wilkinson 2003). Molluscan and pollen work at Springhead has demonstrated clearance of substantial areas for grassland and arable had begun by the middle Bronze Age, and at Dartford areas of grazed grassland had been established by the late Bronze Age.

Data for the middle and late Bronze Age on the A2 scheme is restricted to two ditches from Site C in the central part of the route and here there is strong evidence for wooded conditions. The lower fills of the middle Bronze Age enclosure ditch hint at relatively open conditions, possibly grazed grassland, in the vicinity of the feature immediately prior to and following construction. However, the character of the predominant shade-demanding component in this ditch suggests this may have been at the boundary of an area of woodland which appears to have encroached into this feature during its infilling. Some disturbance of the vegetation is indicated coinciding with the artefact-rich horizon 5485. Samples from the late

Bronze ditch 5912 (cut 5297), a little to the west, are also dominated by shade-demanding taxa almost from the very base of the feature suggesting it was constructed very close to woodland or in an area very recently cleared of woodland. The rapidity with which the shade-demanding taxa colonised this ditch, to the exclusion of open-country taxa, suggests that any clearance in the locality was temporary.

Radiocarbon dating *by Rebecca Nicholson and Tim Allen*

A series of 14 radiocarbon determinations were obtained from Neolithic and Bronze Age material, as part of a programme to establish an overall chronological framework for the excavated archaeological remains (Table 2.18 and Fig. 2.46). The calibration of the results, relating the radiocarbon measurements directly to calendar dates, have been calculated for this report using the computer programme OxCal (v3.10) (Bronk Ramsey 1995, 1998, 2001) and are cited at 95.4% confidence unless otherwise stated. A full account of the laboratory procedures and methodology is presented in the digital report.

The main objectives for the early prehistoric dates were to clarify potential Neolithic activity and to date and sequence the Bronze Age enclosures. The resulting dates ranged from the early Neolithic to the middle–late Bronze Age.

There were no certainly Neolithic features on the scheme prior to the radiocarbon dating programme. There was, however, a concentration of Neolithic flintwork including both earlier and later Neolithic material on Site G, making it likely that this slight elevation was occupied more than once prior to the presumed middle Bronze Age enclosure. Two features in particular stood out: a pit outside the enclosure that contained several dumps of hearth debris, and a single very large ramped posthole (9539) containing the base of a charred post. Large ramped postholes of this type are characteristic of wooden monuments of the late Neolithic and early Bronze Age and as only scraps of indeterminate pottery were recovered from this feature a sample was submitted for AMS radiocarbon dating.

Table 2.18: Neolithic and Bronze Age radiocarbon dates

Laboratory number	*Result BP*	*Error*	*Site*	*Sample/small find no.*	*Context No.*	*Feature*	*Material*	*$\delta^{13}C$ (‰)*	*Calendrical date cal. BC/AD (95.4% unless stated) Calibrated using Oxcal 3.10*
NZA 32313	2828	35	E	Sample 720	7048	7047 (Group 7099)	Charred grain (indeterminate species)	-23.9	1120-900 cal. BC
NZA 32400	2884	20	C		5298	5912	Mammal bone – cattle left metatarsal	-21.8	1130-990 cal. BC
NZA 30151	2915	25	B	Sample 1455	7759	7758	Cremated human bone	-19.2	1210-1010 cal. BC
NZA 31264	2934	30	D	Sample 600	6010	6010	Cremated human bone	-19.5	1260-1020 cal. BC
NZA 30234	2939	40	G		9159	9178	Mammal bone - large mammal shaft fragment	-23.5	1270-1010 cal. BC
NZA 30145	2955	30	C	Sample 1533	5278	5278 (Group 15079)	Cremated human bone	-21.3	1290-1050 cal. BC
NZA 30222	2979	35	C	Sample 500	5017	5017 (Group 15079)	Cremated human bone	-23	1380-1340 BC (3.4%); 1320-1080 cal. BC (92%)
NZA 30148	3018	30	C	SF 551	5451	5892	Mammal bone - worked	-21.7	1390 - 1190 cal. BC 91.8%); 1180-1160 BC (1.6%); 1150-1130 (2%)
NZA 30124	3044	35	C	Sample 1518	5451	5892	Charred barley grain (*Hordeum* sp.)	-22.8	1420 - 1210 cal. BC
NZA 30115	3405	35	G	Sample 1814	9477	9223	Charcoal (Maloideae)	-25.3	1870-1840 BC (3.7%); 1780 - 1610 cal. BC (91.7%)
NZA 32282	3877	35	D	Sample 618	6163	6161/ 6512	Charred hazel (*Corylus avellana*) nutshell	-22.8	2470-2270 cal. BC (90.0%); 2250-2210 cal. BC (5.4%)
NZA 32317	4699	35	G	Sample 1825	9540	9539	Charcoal - oak (*Quercus* sp.)	-25.1	3630-3570 cal. BC (18.1%); 3540-3370 cal. BC (77.3%)
NZA 30123	4758	35	G	Sample 1826	9540	9539	Charcoal - hazel (*Corylus avellana*)	-24.4	3640-3500 cal. BC (83.1%); 3430-3380 cal. BC (12.3%)
NZA 31250	4952	50	D	SF 1485	6514	6161/ 6512	Charred residue on pot	-29.6	3940-3870 cal. BC (8.3%); 3810-3640 cal. BC (87.1%)

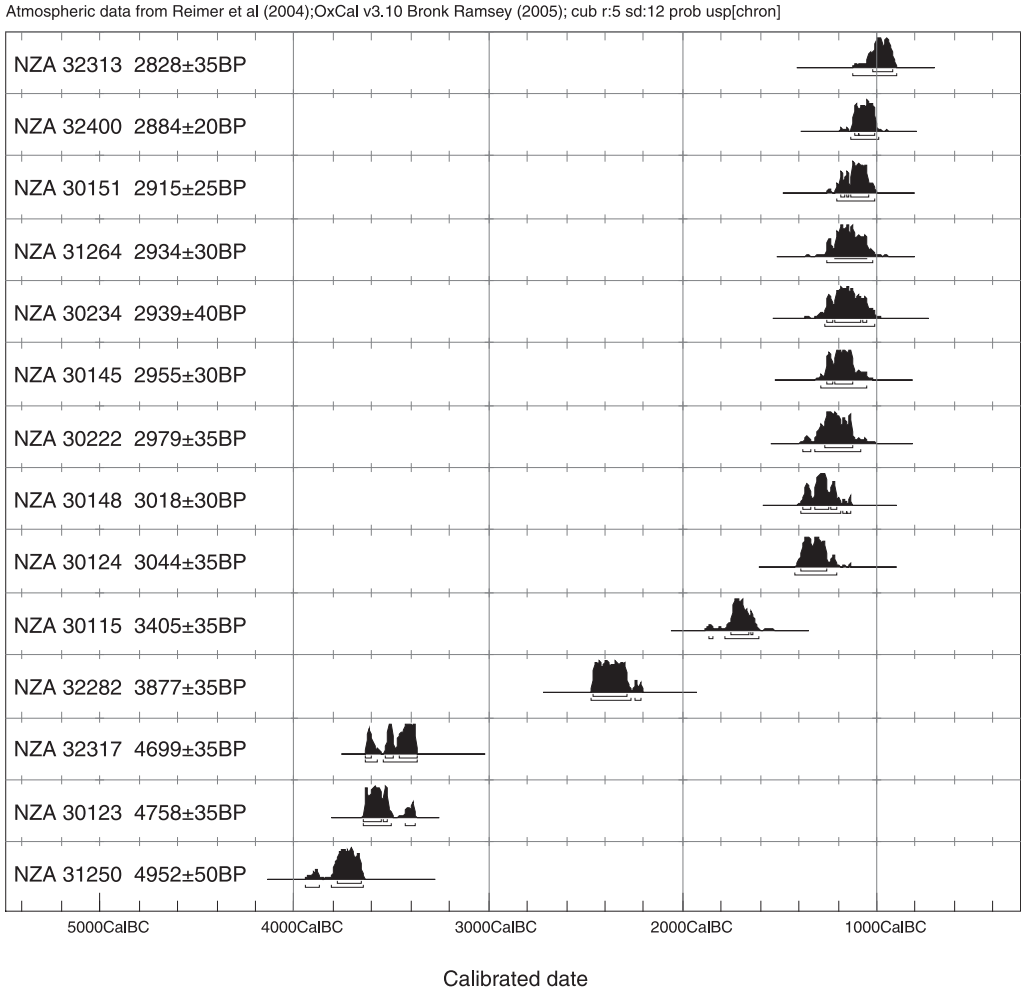


Fig. 2.46 Radiocarbon distributions for the Neolithic and Bronze Age features

Results

Charcoal (sample 1826) from charred post within posthole 9539 in Site G

The majority of charcoal, representing the remains of a burnt post within posthole 9539, was identified by Dana Challinor as oak heartwood. Because of the long-lived nature of oak, this material was not originally selected for dating; instead a sample of hazel (Corylus avellana) charcoal from within the posthole fill was submitted, since hazel is a much shorter-lived tree. It was hoped that the radiocarbon date would assist in establishing whether the enclosure was dug around an already existing monument, or was a contemporary part of the middle Bronze Age site. The resulting date of 3640–3380 cal BC (NZA 30123) is early Neolithic, which would imply either a much earlier monument, or that the selected charcoal was residual. A second date from the same posthole in Site G, this time from the probable remains of the charred post itself, was later submitted and also gave an early Neolithic date (NZA 32317: 3630–3370 cal BC). It therefore appears that the post is genuinely of this date, and the flintwork found within 20m presumably relates to it. The feature is therefore of similar date to pits 136 and 175 identified at Saltwood tunnel (Allen 2006).

Charcoal (sample 1814) from pit 9223 in Site G

Pit 9223, just south-east of the middle Bronze Age enclosure in Site G, contained an early Neolithic leaf-shaped arrowhead and a flint knife. A fragment of Maloideae (apple/pear/hawthorn family) charcoal was submitted for dating, from a significant concentration of charcoal and burnt flint within this feature. The resulting date of 1780–1610 cal BC (NZA 30115) is later than anticipated, suggesting that the flintwork was residual, and is likely to indicate early Bronze Age activity beyond the confines of the enclosure.

Dating the regionally important Beaker pit 6161 on Site D

Pit 6161 was the only Beaker pit found on the scheme; it lay at the edge of the chalk plateau above the dry valley at Tollgate Junction. It was, however,

only 150m from a double Beaker burial found during the HS1 excavations, located close to the highest point on the plateau. The pit is only the second from Kent to contain a diverse assemblage of pottery and struck flint, and given the continuing uncertainties about chronology within the Beaker period, clearly merited scientific dating.

Two samples were dated: charred residue from the interior of one of the Beaker sherds (sf. 1485 from context 6514) and a charred hazelnut shell from fill context 6163. The first of these gave a date which was far too early (NZA 31250: 3940–3640 cal BC), while the date from the hazelnut shell (NZA 32282: 2470–2210 cal BC) is very early in the Beaker period, but within the right general time frame. Regarding the first date, erroneous radiocarbon dates are known from about 10% of dated samples and probably result from contamination unrelated to individual laboratories or pre-treatment procedures (A Bayliss pers. comm.). In this case it seems likely that some older carbon may have become incorporated in the sample, possibly from the pot itself.

Since the decoration on the finest of the Beakers within the pit is likely to indicate a middle Beaker period date (S Needham, pers. comm.), the early Beaker date indicated by NZA 32282 may indicate repeated activity at this spot or episodic dumping within the feature over several centuries.

Dating and sequencing the Bronze Age enclosures

Two probable later Bronze Age enclosures were found, one on Site G and another on Site C. Such enclosures are still very rare in Kent, so one of the aims of the dating programme was to confirm their date and thereby to clarify the chronological relationship between them. Additionally it was hoped to establish the chronological relationship between the enclosures and the neighbouring cremations on Site C, and between Site C and the Bronze Age site at Coldharbour Road to the north.

The enclosure in Site G contained very few finds: three OSL dates indicated that the feature was infilled in the middle Bronze Age. A large mammal (cattle-sized) long bone fragment from a concentration of such bone was dated by AMS to the mid–late Bronze Age (1270–1010 cal BC: NZA 30234). This date fits into the 'gap' in radiocarbon determinations from Kent identified by Allen (2006). Late Bronze Age pits, for example at Saltwood Tunnel, Tollgate and White Horse Stone date to the period *c* 1100–800 cal BC, while others date to the middle Bronze Age *c* 1525–1250 cal. BC (ibid.). Since the bone came from a middle fill of the enclosure, the enclosure itself is likely to be a little earlier, possibly being dug towards the end of the middle Bronze Age.

There was a dark occupation soil within the fill of enclosure ditch 5892 in Site C, which also contained a substantial assemblage of Bronze Age pottery. The later Bronze Age, however, covers a long period and there are very few radiocarbon dates to calibrate the pottery dating more closely. Hence a grain of barley (*Hordeum vulgare*) was submitted for AMS dating (sample 1518) to help tie down the pottery chronology as well as to provide a *terminus post quem* for the infilling of the enclosure ditch. The resulting date was 1420–1210 cal. BC (NZA 30124).

Worked bone point SF 551 was one of two well-preserved and very similar objects found within a middle fill (5451) of enclosure ditch 5892 in Site C, and was sent for radiocarbon dating to provide a second date for this context. It was dated to 1390–1190 cal BC (NZA 30148).

Viewed together, the two dates from this enclosure ditch suggest that the activity dates to the latter half of the middle Bronze Age, or very early in the mid–late Bronze Age. This is consistent with the Deverel-Rimbury traits evident on some of the pottery. Since the dates were obtained from a middle-upper fill of the enclosure ditch, the cutting of the enclosure is somewhat earlier, and likely to have occurred in the latter half of the middle Bronze Age.

Cremations 5278 and 5017, adjacent to the Bronze Age enclosure in Site C

Cremations 5278 and 5017 are two unaccompanied cremations lying north of a later Bronze Age palisade trench, some 35m west of enclosure ditch 5892 (see Fig. 2.21), and it was hypothesised that they might be of similar date. Cremated bone was submitted for AMS dating and the results indicate a middle–late Bronze Age date of 1290–1050 cal BC (NZA 30145) for cremation 5278 and 1320–1080 cal BC (NZA 30222) for cremation 5017, dates which overlap with those from the adjacent enclosure.

Cremation 6010 in Site D

An unaccompanied cremation (6010) in pit 6008 in Site D, approximately 150m east of enclosure 5892 (see Fig. 2.28), gave a late 2nd millennium BC date (1260–1020 cal BC: NZA 31264), which is consistent with the other cremations at the eastern end of Site C. This cremation is therefore an outlier from the occupation of this phase.

Cremation deposit 7759 in Site B

This cremation deposit with pit 7758 (see Fig. 2.25) lies not far from two high status late Iron Age burials, and establishing whether it was of similar date was important for understanding the extent and character of the late Iron Age burial group. Cremated human bone provided a later Bronze Age date of 1210–1010 cal. BC (NZA 30151) suggesting this burial was also of similar date to those from Site C.

Animal bone from boundary ditch 5912 in Site C

A disarticulated cattle metatarsal from layer 5298, the final fill of cut 5297 (ditch 5912) west of the middle Bronze Age enclosure in Site C (see Fig. 2.23), yielded a date of 1130–990 cal BC (NZA 32400) suggesting that a middle–late Bronze Age date is appropriate for this boundary.

Four-post structures on Site E east of Tollgate Junction

The postholes from this group of four-post structures contained only a few sherds of undiagnostic pottery, but a number of them contained a few charred cereal grains. Seeds from two postholes were dated, but one produced a modern date and was clearly intrusive (NZA 32283: -1697 ± 25 BP), while an indeterminate cereal grain from posthole 7047 (group 7099) gave a late Bronze Age date (NZA 32313: 1120–900 cal BC), which gives a *terminus post-quem* for the use of the four-post structures.

DISCUSSION *by Tim Allen and Chris Hayden*

The Palaeolithic and Mesolithic

The only Palaeolithic finds—a pair of blade-like removals from Site A—were residual in a middle Bronze Age pit. Whilst the occurrence of such material is unusual, it is obviously of limited significance.

The quantities of flint which can be confidently assigned to the Mesolithic were also small. The only positively identified early Mesolithic piece was a bi-truncated rhombic point from the boundary of Sites F and G. The late Mesolithic was represented by a rod microlith from Site B and probably late Mesolithic backed bladelets from Sites F and G. The other material which can be confidently assigned to the Mesolithic comprises just two burins from Sites F and G and an axe, a micro-burin and a single-platform blade core from Site B. There was, however, a larger quantity of less diagnostic material, distributed much more widely, which can be assigned only to the Mesolithic or early Neolithic.

All of the Mesolithic and possibly Mesolithic material found along the A2 was residual. Given the lack of integrity of these assemblages and the chronological uncertainties associated with most of it, this material can only provide limited information about the distribution of activity across the landscape. It is, however, perhaps worth noting that the scarcity of material along the A2 is consistent with the results obtained along the HS1. There too it was noted that Mesolithic flint was scarce on the North Downs Chalk (Harding 2006, 16). Although the overall distribution of Mesolithic flint across Kent is clearly the product of many factors, and probably does not accurately reflect the distribution of Mesolithic activity (ibid., 15–16), the fact that work along both the HS1 and the A2 have failed to reveal more evidence of Mesolithic activity could be taken to support the view that this area was little exploited in that period. It is nevertheless also worth noting that whilst the A2 runs predominantly over the Chalk, it does lie close to the Thanet Sand, and the few finds along the A2 could be seen as forming the northern end of a group of sites situated along the northern edge of the Downs, close to the boundary between these two geological units (ibid., 22, fig. 6).

The earlier Neolithic

Evidence for early Neolithic activity was also sparse, but does include the earliest features identified along the route. The most intriguing is certainly the large ramped posthole found on Site G.

The ramped posthole on Site G

This feature (9539) was 1.6m long, 0.8m wide and 1.2m deep, and, to judge from the band of charcoal within it, contained a charred post with a diameter of up to 0.55m (see Fig. 2.3). A pair of radiocarbon dates were obtained from this feature, one on oak which may derive from the charring of the post; the other on hazel charcoal (see above). The dates pass a χ^2 test, indicating that they could have been from material of the same age. The two dates suggest that the post was erected in the period *c* 3640–3360 cal BC. Very little artefactual material was associated with this feature, just four small sherds, one of which, with a grog-tempered fabric, was probably intrusive, and a few pieces of flint.

No similar features were found on the site, nor were there any obviously structurally related features. The feature lies within a middle–late Bronze Age L-shaped enclosure, and whilst the evidence for the date of the remaining features in the area is sometimes slight, it seems likely that most of them were related to this much later enclosure. The posthole was found only when excavating a shallow hollow, the removal of which revealed its full extent. The whole area was lowered by machine at the conclusion of the excavation to ensure that no further features existed, and it is clear that the posthole did not form part of a larger structure.

Some 40m to the south-east of the ramped posthole, early Neolithic flint was also recovered from a number of features (pit 9223, postholes 9184, 9206 and 9212 and irregular feature 9199). A radiocarbon date from the pit (9223), however, gave a 2nd millennium cal BC date (1870–1610 cal BC; NZA 30115), and it is possible that all three features date from the early Bronze Age and that the flint was residual. The residual struck flint in these features was probably part of a larger surface scatter of flint, much of which appears to date from the early Neolithic, which was recovered from a natural hollow that ran north-west across the site and formed the upper end of a largely silted dry valley. Only a few m² of this surface could be excavated at the level of impact of the road at this point, but further Mesolithic and early Neolithic flint was recovered by limited machine excavation from its uppermost fills. The early Neolithic posthole lay at the very edge of this natural feature, where the ground began to level out. The ramped posthole therefore appears to represent the only dug feature, although there is evidence for further early Neolithic activity in the immediately surrounding area.

It is not easy to find convincing parallels for such an isolated feature. One possible parallel is offered by single standing stones—the ramped posthole

representing the remains of a wooden analogue. Although sites and monuments records contain numerous examples of such isolated monoliths (eg EH pastscapes), most are undated, and in the absence of other excavated remains they do not provide a very enlightening comparison. A tradition of single large monoliths derives ultimately from Brittany, where such features were important in the 5th millennium BC, and there are a few examples in Britain that are likely to date to the early Neolithic, such as the Rudston monolith. The fact that it is surrounded by four Neolithic cursus monuments suggests that in this case the monolith is also likely to be early Neolithic.

Large postholes associated with various kinds of monuments are a common enough feature in the Neolithic, though during the early Neolithic this is more apparent in Scotland (eg Balbridie) than further south, where close parallels in both form and size generally belong in late Neolithic monuments such as the Arminghall timber circle and henge or the Sanctuary (Cleal *et al.* 1995).

Similar features that are closer in date have been found associated with a number of early Neolithic mortuary structures and long barrows. In many cases, these large postholes form arrangements at the front of the barrow (eg a single large post at Badshot (Keiller and Piggott 1939) or more elaborate arrangements at Thickthorn (Drew and Piggott 1936) and Nutbane (Morgan 1959)) but they also occur in other locations (eg Giant's Hills; Phillips 1936). At Wayland's Smithy I (Whittle 1991), the wooden mortuary structure was constructed using two large D-shaped postholes. Large postholes were also found at the unusual early Neolithic enclosure at Godmanchester (McAvoy 2000). Evidence for the charring of posts was found at a number of these sites (eg Giant's Hills and Godmanchester).

These parallels, however, show only that similarly large posts were widely used in early Neolithic structures, and given the differences in their contexts, they do not shed much light on the significance of the Site G example. In the case of the large Mesolithic postholes in the Stonehenge Car Park, an analogy with totem poles was suggested (Cleal *et al.* 1995). In this context, however, the term 'totem pole' signifies little more than a post with ritual or religious associations, since the more particular significance of totem poles are not likely to have been paralleled in either Mesolithic or early Neolithic southern England. The totem poles of the Pacific North-west coast were produced by semi-sedentary hunter-fishers societies and had very specific social and cosmological associations. They were, in any case, usually associated with settlements, rather than having been isolated structures (Hawthorn 1979). Other historical parallels, such as the use of poles by the Maori (Sahlins 1985), reveal equally specific cosmological and social associations, and the limitations of any specific ethnographic analogy.

The importance of this ramped posthole lies partly in the recognition that single timber posts were erected in the British early Neolithic, since by their very isolation they are often likely to pass unnoticed. It is possible that the post was intended as a marker to those emerging from the dry valley onto the level plateau, perhaps signifying a change from wooded to more open landscape, or a territorial marker, but more of these postholes will need to be recognised before any pattern in their locations or associations can be recognised.

The early Neolithic activity on the A2 is merely one facet of a varied picture of exploitation of the local landscape at this time. Apart from the house at White Horse Stone (Hayden 2006), there are no large early Neolithic 'houses' known in Kent, and current evidence suggests a lifestyle that was still semi-mobile, so that a single Neolithic community might occupy a considerable territory. The early Neolithic activity shown by struck flint at Pond D North, some 1.7km to the east of Site G, probably represents another short-lived occupation site within such a territory. Only 800m to the west of Site G was the Tollgate rectangular enclosure, probably a mortuary enclosure. Limited investigation (Bull 2006a) did not establish its date with certainty, but such monuments are known very early in the Neolithic, for instance at Dorchester-on-Thames (Whittle *et al.* 1992) and Radley (Bradley 1992) in Oxfordshire. Earliest and early Neolithic pits were found to the west at the A2/A282 junction in the Darent Valley, and others at the Darenth Gravel Pit site (Simmonds *et al.* 2011, 64–5 and 185–8), while the eponymous site of Neolithic Ebbsfleet Ware lies less than 3km to the north-west down the Ebbsfleet Valley. Recent radiocarbon dates (eg Cotton and Field 2004) have shown that early Ebbsfleet Ware overlaps with Plain Bowl pottery, and can be dated between 3500 and 3300 cal BC, and so may also be contemporary with the activity on the A2.

While it was found as a curated item in an Iron Age pit, the Cornish granite axe from Site C is likely to have been rediscovered locally, and so is important evidence of the wide-ranging contacts of the Neolithic community in this area.

The late Neolithic/early Bronze Age

The late Neolithic/early Bronze was again not extensively represented along the route of the A2, but, alongside residual flint, a number of deposits in small pits were found on Sites D, F and G (see Figs 2.1–2). The chronology of these pits probably varied. The only well-dated pits of this period on Site D (6161=6512 and 6910) were associated with a rich assemblage of Beaker pottery, and may have been earlier in date than a single well-dated pit of this period on Site F (8038), which contained the rim and collar of a Collared Urn as well as abraded Beaker sherds. The pits on Site G have been dated on the basis of associated flint and can only be generally assigned to the late Neolithic/early Bronze Age.

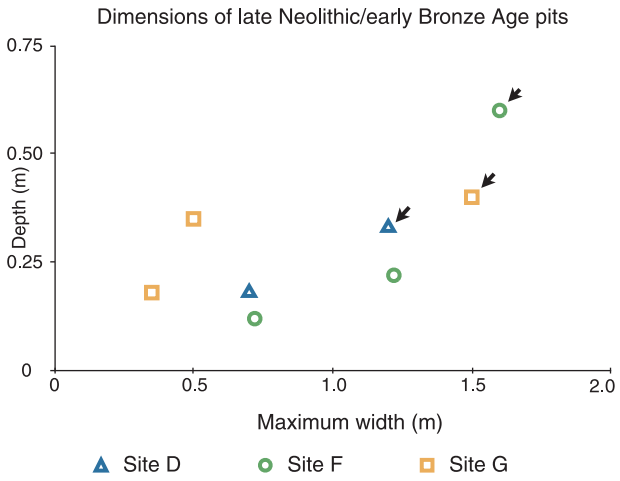


Fig. 2.47 Dimensions of late Neolithic/early Bronze Age pits

Although they were all quite shallow, the width of the pits varied considerably. The most securely dated of the pits (6161, 8038 and 9223) were the largest (Fig. 2.47), all consisting of quite wide (1.2–1.6m) but not very deep (0.3–0.6m) features, sizes which Garwood (2011) suggests are typical of rich late Neolithic/early Bronze Age pits elsewhere. The remaining smaller features shown in Fig. 2.47 are not securely dated, although pit 9407 did contain probably late Neolithic/early Bronze Age flint.

There were very marked differences in the assemblages associated with these pits. Most of them contained quite small groups of finds without any pottery (the primary reason why these pits are poorly dated), and with just a few pieces of flint and minimal animal bone. Pit 6910 stands out as the only pit with a large quantity of animal bone, but unfortunately it is not securely dated. The assemblage recovered from pit 6161 is also unusual in that it included 221 sherds (960g) of pottery, from at least 17 decorated Beaker vessels and two undecorated vessels, as well as 496 flints, consisting mostly of flakes but including a few blades, cores, side and end scrapers, a spurred piece, a notch and a large number of chips. In addition, a few fragments of animal bone (none of which could be identified) a grain of cereal (unidentified), some vetch or vetchling, hazelnut shells, and some charcoal were recovered.

A contrast similar to that between pit 6161 and the other late Neolithic/early Bronze Age pits on the A2 was also noticed amongst the pits of similar date along the HS1 (Garwood 2011), and in particular the rich assemblage recovered from a pit (1374) at Beechbrook Wood (Brady 2006a). This pit was a large shallow feature similar in size to pit 6161, and contained 111 sherds (1616g) from at least 14 Beaker vessels, 1370 pieces of worked flint (including nearly 1000 chips), a few fragments of cremated human bone, fired clay, a pestle, and a rich assemblage of charred plant remains. A number of wider parallels for such rich late Neolithic/early Bronze Age deposits are noted by Garwood (2011).

The interpretation of such deposits is problematical. On the one hand they are undeniably rich compared to other, contemporaneous pit deposits, and yet they still contain only the partial remains of broken vessels—albeit sometimes finely decorated—as well as a range of other material which suggests a mixture of domestic debris rather than specially selected material. Garwood (2011) suggests that such material derives from middens. He goes on to argue that such rich deposits were used to mark key boundaries in the landscape, material from middens having been selected because of their symbolic associations with various aspects of domestic life.

The radiocarbon date from pit 6161, which is a couple of centuries earlier than the date range attributed to the majority of the decorated vessels, could be seen as strengthening the suggestion that it came from a long-lived midden. There are, however, also indications that it did not contain a random selection of material. All of the decorated Beakers of which the form and size could be determined were quite small, whereas the two undecorated vessels were larger. The pottery could therefore have been the remains of a set of vessels used to serve and consume some kind of drink. Even if the vessels were not all contemporary, they might still represent particular acts of consumption repeated on successive visits. From the excavations to date there is no evidence of a significant boundary to which pit 6161 was related, although if the radiocarbon date on a charred hazelnut is residual, then the date indicated by the pottery vessels is broadly contemporary with the double Beaker burial on the HS1 just to the south. The burial was placed close to the highest point on the plateau, and may well have become the focus for repeated visits. Alternatively it is possible that the 'boundary' was not marked in an archaeologically visible way, relating instead to a natural feature such as the Tollgate dry valley itself, which the pit's location overlooks. One final possibility, relating both to the double burial and pit 6161, is that the position of these features was intended to reference the Tollgate mortuary enclosure immediately opposite on the east side of the dry valley. This monument would almost certainly still have been visible at this time. Only limited investigation of this monument has been carried out (Bull 2006a), and so, while there were clearly no late Neolithic and early Bronze Age deposits to the north and south (on the lines of the A2 and HS1 respectively), it remains possible that such deposits were made close to the monument itself. On current evidence, however, the positioning of these Beaker deposits might indicate a deliberate opposition to this relic of the past.

There are, then, very marked differences in the way in which such deposits could be interpreted,

and the different possible interpretations have very different consequences for our understanding of late Neolithic/early Bronze Age society. A proper treatment of this issue would require a more detailed and wide ranging analysis of the contents of late Neolithic/early Bronze Age pit deposits than is possible here (but see Thomas 1999).

One way of accounting for such deposits, and for the contrasts with other contemporaneous pit deposits, would be to suggest that rubbish deriving from different kinds of activities was classified and treated differently. Ethnography provides numerous examples, from very different contexts, of such classifications and of the widespread idea that the mixing of different categories may cause pollution (eg Moore 1986; Dumont 1970; Valeri 1985; Hanson and Hanson 1983; including examples which relate specifically to pottery: Miller 1985, 24, 155). Such classifications are invariably culturally specific and often of great complexity, and it is unlikely that archaeological evidence will ever provide much insight into the details of such systems in prehistory. The suggestion here is that a classification of this general sort may provide an explanation of why apparently exceptional assemblages were deposited in pits. The purpose of the burial in this case would be to prevent further contact with the material (rather than to mark a particular location), and it would have been the special status of the material which made such burial necessary.

The middle and late Bronze Age

A wide range of evidence for middle and late Bronze Age activity, both domestic and funerary, was found along the A2. Perhaps the most significant consists of a pair of probably middle Bronze Age L-shaped enclosures on Sites G and C, both of which were associated with metalled lengths of probable trackway (see Figs 2.10 and 2.21). The enclosure on Site G was associated with evidence of domestic activity, including a roundhouse and a variety of pits and hollows (see artist's reconstruction in Fig. 2.50), while the interior of that on Site C was not. On Site C, however, there were other gullies or palisade slots adjacent, and the area became a focus for cremation burials. Smaller groups of features—pits and postholes—found on Sites A and D, are more difficult to interpret but may also have been related to domestic activity. The pits on Site A probably date from the transition from the middle to the late Bronze Age. The postholes and pits on Site D are very poorly dated, but may date from the middle Bronze Age.

The funerary evidence consists of three small deposits of cremated human remains in small pits. Two such deposits (5017 and 5278), found amongst a small group of pits on Site C, date from the 13th or 12th centuries cal BC, and another on Site D (6010) probably to the 12th century cal BC. A similar but isolated deposit found on Site B (7758) probably dates from the 11th century cal BC.

Plate 2.11 Site L middle Bronze Age cremation burial 12510 showing fired clay at base

A more unusual middle Bronze Age deposit (12510) was found in an isolated pit on Site L (see Fig. 2.26). The deposit consisted of a Deverel-Rimbury urn, and the remains of two cups and other vessels, lying upon a large deposit of fired clay (Plate 2.11). The urn may have contained a deposit of cremated animal remains.

Chronology and ceramics

As the brief summary of the middle and late Bronze Age remains found along the A2 given above indicates, the chronology of some of the features assigned to this period is uncertain. The most securely date features are the pits containing cremated human remains for which radiocarbon dates have been obtained. These dates indicate that they date from the end of the middle Bronze Age and the beginning of the late Bronze Age (the 13th to the 11th centuries cal BC).

Radiocarbon dates were obtained from the ditches associated with the enclosures on Sites G and C and with a boundary ditch (5912) on Site C. Unfortunately the only material available for dating was found in the upper or middle fills of these ditches, and the results therefore only provide *termini ante quem* for the dates at which the ditches were cut. A sequence of OSL dates was also obtained from the enclosure ditch on Site G, but the errors associated with them are too broad to give a very useful indication of the chronology of the ditch. Pottery has, therefore, also been used to define the chronology of these sites. Much of the pottery recovered from the ditches was, however, also recovered from upper levels of fill, and in addition, was highly

fragmented so that few diagnostic pieces were found. It is, nonetheless, possible to make some useful observations on the basis of the pottery.

Pottery with typical Deverel-Rimbury characteristics was recovered from the enclosure and associated features on Site G, the enclosure ditch (5891), a pit (5280) and a gully (5740) near the cremation deposits on Site C, the pits on Site A, and the pit associated with the cremated animal remains in Site L. The range of fabrics from which this pottery was made varied. In the case of Site G almost all of the pottery was in flint-tempered fabrics, which Morris has suggested (on the basis of the ceramics recovered along the HS1) is typical of middle Bronze Age assemblages in Kent (Morris 2006). This material was very fragmented, however, and virtually no diagnostic forms were recognised. At some of the other sites a wider range of fabrics was recovered, and the pottery report suggested that some of these were more appropriate to the late Bronze Age (or even later). In the case of the ditches (most of the pottery from which was in the upper fills) this might be argued to be due to mixing of ceramics of different dates, but the pottery forms, and the associated radiocarbon dates, indicate otherwise. The diagnostic forms recovered from the Site C enclosure ditch were without exception Deverel-Rimbury forms (Couldrey and Mullin this vol.).

Both the Site L pit and the two pits on Site A also contained pottery that could belong to the late Bronze Age Plain Ware tradition: a rounded shoulder in the case of the Site A pits and plain inturned and upright rims in the case of the Site L pit. It therefore seems likely that these two assemblages date from the transitional period between the middle and late Bronze Age to which Morris, in particular, has drawn attention (Morris in Brossler *et al.* 2004, 58–90; Morris 2006). Cremation pit 5278 on Site C also yielded a transitional middle/late Bronze Age radiocarbon date, supporting the view that much of the activity could belong late in the middle Bronze Age. Also on Site C, the pottery from pit 5280 was entirely in flint-tempered fabrics, but, alongside the Deverel-Rimbury pottery, the assemblage included a fine burnished vessel with a short everted rim and a slight internal bevel that could belong to the Plain Ware tradition. This suggests a transitional date, and that the adoption of new forms was not necessarily paralleled by the adoption of new fabrics.

Rather than being chronological, it is also possible that the variation in fabrics was related to differences in geography. Mullin and Brown (this vol.) note that it is the assemblage from Site G that stands out from the more mixed groups found further west along the A2. All of the other sites lie on the chalk plateau west of the dry valley at Tollgate; Site G is the only site to the east.

In conclusion, the evidence suggests that much of the later Bronze Age activity found along the A2 may have taken place within a limited period of time. There is no clear evidence for activity prior to the 14th century cal BC. Similarly, although there are a number of ceramic assemblages that contain both Deverel-Rimbury and Plain Ware pottery, and which may date from the transition between the middle Bronze Age and the late Bronze Age, no purely Plain Ware assemblages were recovered. Apart from the isolated cremation deposit on Site B, no clear evidence was recovered for activity in the 11th and 10th centuries cal BC, although the mixed assemblages from the boundary ditch (5912) on Site C or from the pits on Site A (if the Deverel-Rimbury pottery was residual) might also belong to this period.

In the vicinity of the A2, the site at Coldharbour Road provides well-dated remains (Mudd 1994). The droveway and ditches there were associated with pottery that may date from the middle to late Bronze Age transition, while a number of radiocarbon dates obtained from the site provide dates that span the period from about 1500 to 900 cal BC, extending the range from adjacent Site C. Although middle and late Bronze Age remains were not extensive along the HS1, they have revealed material from a wider date range than those found in the A2 excavations. At Cobham Golf Course, for example, a ditch marking the line of a hedgerow and a small scatter of pits and postholes were associated with Deverel-Rimbury pottery (Davis 2006). A radiocarbon date on charred residue from one of the Deverel-Rimbury sherds gave a date 1530–1390 cal BC (NZA-23006), earlier than the A2 evidence. Two scatters of pits and postholes associated with Plain Ware pottery, as well as a linear spread of flint, charcoal and gravel pebbles, were also found. A second radiocarbon date on charred residue from this pottery gave a date of 980–820 cal BC (NZA-21143). The remaining sites in the area provide much more fragmentary and uncertain indications of late Bronze Age activity. At Springhead, for example, late Bronze Age finds were recovered from a probably secondary context in a colluvial layer. At the West of Church Road site, two pits associated with late Bronze Age pottery were found, and it was suggested that a ditch might also belong to the same phase of activity (Bull 2006). It is worth noting, also, that a deposit of burnt flint found in the evaluation at Springhead might have been the remains of a burnt mound. Although not dated, such features are typical of the middle and late Bronze Age.

The L-shaped enclosure and settlement on Site G

The Site G enclosure consisted of a substantial ditch on the west and south sides, with much slighter gullies along the south-east, flanking, and partly overlain by, a metalled trackway (see Fig. 2.10). The ditch had steep sides and a narrow V-profiled bottom, and at its deepest (1.5m on the west) was almost of defensive proportions. The barrier created by the ditch may also have been enhanced by an internal or external bank. The ditch fills show no clear or consistent indications of bank slip from one

side or the other. There were no features immediately outside the ditch on the west side, and there was a band devoid of archaeological features inside the enclosure, interrupted only by gully 9539 and fence line 9612. There was however a gap 7–8m wide on the west, presumably for an entrance, but there were no traces of gate postholes suggesting that the ditch and bank were not intended for defence. Running along the south-east side of the enclosure was a metalled trackway, flanked by a much smaller gully; several large pits or hollows lay close to this ditch, making a substantial bank unlikely along this side. The area enclosed by the ditches is uncertain, but is likely to have been at least 55m by 65m, ie upwards of 0.35ha. The enclosure contained a small post-built roundhouse, a fence line and a collection of large and small pits or hollows.

Largely as a result of the work of Ellison (1978; 1981; 1987) on sites in Sussex and the south-west, an image of the typical form of middle Bronze Age settlement in southern England has developed. The standard domestic unit in these settlements 'comprised one large circular living hut, one or two subsidiary huts, and storage structures, either in the form of small pits or four- and six-post structures' (Ellison 1978). She suggested that it was 'probable that each such unit was occupied by a small kin group practising mixed agriculture in the area around the settlement site, and owing to the lack of evidence for the replacement of posts in most cases, that each unit was occupied for a fairly short length of time' (ibid.). This image has proved durable, being cited recently by, for example, Bradley (2007), Brück (1999a, 145), Woodward (2008), and Fitzpatrick *et al.* (2007).

Reviewing the middle Bronze Age settlement evidence from Kent, in the context of his discussion of finds along the HS1, Champion has, however, recently noted that the HS1 provided little evidence of this type of settlement in Kent (Champion 2011). Along the HS1, he notes that 'occupation typically covered an unenclosed area about 20–40m across, with a low density of postholes and shallow pits, though individual structures were difficult to discern' (ibid.).

Although the evidence from the enclosure on Site G is less complete, there are sufficient similarities with sites from the same period in Sussex and other areas of southern England (and perhaps Northern France; Desfossés *et al.* 1992) to suggest that it was a small domestic site.

Features within the enclosure

Before examining the character of the features within the enclosure, it is worth noting that it is impossible to demonstrate that the internal features were contemporary with the enclosure ditch. Although the distribution of the features, almost all of which lie within the Site G enclosure, might be taken to imply that they were related to it, it has been suggested (eg for Down Farm: Barrett et al. 1991; Mile Oak: Rudling 2002) that the settlement features (such as roundhouses) at a number of similar sites elsewhere predated or postdated the enclosure. At Site G, almost no finds were recovered from the postholes, and, even in the case of the larger features that did contain pottery similar to that recovered from the enclosure ditch, strict contemporaneity is impossible to establish. It nonetheless seems likely that these features were contemporary with some stage of the life of the enclosure.

The features found within the Site G enclosure consist of a roundhouse, a short posthole alignment, other postholes amongst which no structures could be discerned, and a range of pits and hollows. This range of structures and features is sufficient to suggest the existence of a small farmstead. Due to the recovery of only part of the enclosure, however, it is not possible to undertake any meaningful detailed analysis of the arrangement of these structures to compare with those carried out of sites in Sussex by Ellison (1978; 1981; 1987) and others (eg Drewett 1982). A few observations can, however, be made.

The roundhouse, represented by a single ring of posts with a diameter of 4.0–4.5m, is comparable to the smaller examples analysed by Ellison (1981, fig. 15.1), even if, as indicated by the plan of the roundhouse from East Valley Farm near Dover (Parfitt and Corke 2003), these posts formed an inner ring with the wall a metre or so further out. It was smaller than any of her 'major residential structures' (all of which have a maximum width of at least 6m; Ellison 1981, fig. 15.1, 419). She interpreted most of the buildings similar in size to the Site G roundhouse as ancillary structures—structures with a high proportion of features associated with food storage and preparation (Ellison 1981, 419). Brück's analysis of the finds from 48 middle Bronze Age roundhouses has, however, already called into question the distinction, in terms of artefacts, between Ellison's major residential and ancillary structures (Brück 1999a, 151, fig. 3). Ellison's third category of building was animal shelters, which were characterised by the absence of domestic finds (but also by extensive wear to the floor). The roundhouse on Site G lacked a surviving floor; it was not associated with any pits and two flint flakes were the only artefacts recovered from the postholes. The absence of evidence associated with the Site G roundhouse may simply be an artefact of truncation, but makes it impossible to characterise further. It is, however, worth noting that although quite large assemblages of artefacts were recovered from the roundhouses in Sussex analysed by Ellison, it is not unusual for roundhouses elsewhere to have few associated artefacts.

The other features found within the enclosures can also be paralleled elsewhere. On Site G a short alignment of postholes (9612) might have been the partial remains of a fence. The alignment on Site G lies close to the edge of the excavation and it is, therefore, impossible to see what role it might have played in organising space within the enclosure. One possibility, for example, is that it defined a small pen behind the roundhouse. The presence of a

short stretch of gully that roughly follows the line of the postholes suggests that a boundary in this location may have been renewed.

Further postholes were also found amongst which no structures have been recognised. Their presence nonetheless implies the existence of other structures, even if they were no more than isolated tethering posts.

A variety of pits and hollows were also found within the enclosure. None of the pits (all bar one of which were less than 0.4m deep) were deep enough, or had a sufficient depth to surface area ratio, to have been used as grain storage pits. None of them contained large quantities of artefacts and it does not, therefore, appear that they were used a rubbish pits (at least for materials that have survived). The large circular features are similar to those elsewhere interpreted as ponds, but analysis of the soils from the largest (9293) has shown no evidence of water-lain deposits, and phytoliths suggest instead the processing of cereals. This example may therefore have been something akin to a threshing floor, and may justify the use of the term 'working hollow', denoting a large open feature used for any of a variety of agricultural functions. The function of the linear hollows is also unclear, although it is possible that they were quarry pits cut to provide material for a bank along the SE side of the enclosure (see also below). Such hollows may have been used as pig wallows at certain times of the year.

No comparable sites were found during the HS1 investigations, or in previous work in Kent. A middle Bronze Age roundhouse was found at East Valley Farm near Dover (Parfitt and Corke 2003), but it does not appear to have been associated with any form of enclosure. The remains of an enclosure were found at South Dumpton Down (Perkins 1995, 468–70), but in this case the enclosure does not appear to have been associated with domestic features. More recently a horseshoe-shaped enclosure some 45m across, consisting of several lengths of ditch of probable middle Bronze Age date, was found at the A2/A282 junction (Simmonds *et al.* 2011, 68–9), and was radiocarbon-dated to 1610–1410 cal BC. Like South Dumpton Down, however, this was not associated with any surviving internal features.

Spatial structure within the enclosure

Despite the only partial excavation of the enclosure, there are some indications of ordering within it. The pits and hollows are clustered in the south-eastern part of the enclosure, whilst the roundhouse and fence lie in the north-western part. The distribution of artefacts, however, provides few clues. The quantities of pottery and flint—the most frequently occurring finds—seem to be related to the size of the features rather than the distribution of activities. Fired clay was recovered only in small quantities, but this again seems to follow a similar pattern, most having been recovered from the large circular hollows. The range of finds, which included pottery, fired clay including a loomweight/oven brick, flint, querns, as well as a small fragment of copper-alloy from an unidentified object, is consistent with the interpretation of the site as a small agricultural homestead.

The distribution of charred plant remains provides a tentative indication of the location of some activities. Charcoal occurred across the whole site in a wide range of features, but charred plant remains were recovered only from the south-eastern part of the site (although in miniscule quantities). The small quantities suggest that they consist of stray fragments (rather than deliberate dumps), and their distribution may, therefore, relate directly to the distribution of activity within the enclosure. This suggests that grain storage, processing or cooking may have taken place in this part of the site. The charred plant remains include chaff as well as grain, perhaps suggesting that grain was threshed within the enclosure. This very tentative interpretation is strengthened by the phytolith evidence from hollow 9293, which suggested that the threshing of cereals was taking place there. Most of the fragments of quern were also found in this part of the site (in large circular hollows 9293 and 9231 and medium-sized linear hollow 9235), although a further fragment was also recovered from the northern-most enclosure ditch (9178).

Although the quantities recovered were again small, the animal bone also had a striking distribution. Almost all of what was recovered was found in the enclosure ditch, and in particular in their termini (from cut 9177 at the southern end of ditch 9178; and cut 9489 at the southern end of ditch 9179). There were also small amounts in a small pit outside the enclosure (9212) and in two shallow gullies, one (9462) again outside the enclosure, the other (9613) in the gap between the enclosure ditches in the southern corner of the enclosure.

The distribution of the animal bone can be interpreted in different ways. Brück (1999a, 152), for example, has noted that 'odd' deposits in middle Bronze Age settlements (which include deposits of animal bone) are often found in the ends of ditches and suggests that they were 'ritual' deposits which reflect Bronze Age rationalities (Brück 1999b). The concentration of animal bone at the end of the enclosure ditches at Site G could be one of these. More prosaic explanations are, of course, also possible. The overall pattern of deposition of animal bone on Site G is concentrated at the periphery of the site, a pattern similar to that noted by Wilson (1996) at a number of Iron Age and Saxon sites. He suggests that this reflects the way in which animal remains were disposed of, rather than the location of any associated activity. It is, however, noticeable that (with the exception of the deposit in the northern-most enclosure ditch (9178)) most of the animal bone was recovered from the area around the southern corner of the enclosure. This may reflect the fact that butchery occurred in this corner of the site or that this part of the site was associated with waste. The animal bones

in the enclosure ditches mostly came from middle and upper fills, and need not, therefore, have been related to the primary use of the enclosure.

The small quantities of animal bone and charred plant remains do not allow any detailed inferences concerning the site's subsistence economy, beyond the fact that the evidence suggests a mixed agro-pastoral economy including some hunting of wild animals.

Outside the enclosure, struck flints of later Bronze Age character have been found both west of the dry valley in Site F and in Iron Age storage pit 9010 some 70m to the east. While it is possible that the latter in fact represents early Iron Age flint-working, it is at least as likely that the flints are residual in these pits, and that the material to east and west represents Bronze Age activity in the hinterland of the later Bronze Age enclosure.

The duration of the settlement

The limited quantities of artefacts and numbers of structures associated with the Site G enclosure could be taken to indicate that the site was only occupied for a short period. This would be consistent with Ellison's (1978) characterisation of middle Bronze Age settlement as lasting for 'only a fairly short length of time', citing the lack of evidence for the replacement of structures in support. This conclusion is also borne out by Brück's analysis of middle Bronze Age settlements, in which she found that 75% of buildings in her sample had been neither renovated or rebuilt (1999a, 146), and that only one phase of occupation was represented on most sites. She relates the relatively short occupation of middle Bronze Age settlements (compared to late Bronze Age settlements such as Reading Business Park: Moore and Jennings 1992; Brossler *et al.* 2004) to the life cycle of their residents and to a neo-local pattern of residence (a pattern of residence in which, after marriage, residence is established in a new location separate from that of the parents of both the husband and wife; Keesing 1975). Another significant factor governing the replacement of structures is the nature of occupation, whether permanent, seasonal or repeated on a longer time cycle. Brück (1999a, 149) also notes certain complexities in establishing a more precise estimate of what 'short-lived' implies, notably the fact that there is no reliable way of estimating how long wooden structures such as roundhouses could have survived. The publication of the results of excavations along the Brighton Bypass (Rudling 2002), has however highlighted the variation in the longevity of middle Bronze Age settlements. Radiocarbon dates from the site at Downsview, where the remains of 13 roundhouses were found, suggest that the site was occupied for between 580 and 860 years in the middle and late Bronze Age.

The small quantities of artefacts recovered from Site G do not necessarily provide a good indication of the longevity of occupation. It is clear from the overall distribution of middle Bronze Age finds along the A2 that much material was dispersed and deposited in features elsewhere. There are a number of cases where assemblages of artefacts were recovered from features that do not seem to have been directly associated with settlement, and which suggest either that material was removed from settlements for deposition elsewhere, or that activities themselves occurred away from settlements. For example, the large boundary ditch (5912) found on Site C, which does not appear to have been closely associated with any domestic features, nonetheless contained quantities of pottery and animal bone, as well as some fired clay. This phenomenon is not confined to the A2; for example, a similar deposit was found in a middle Bronze Age ditch at some distance from other features at White Horse Stone (Hayden 2006, 107–8, 113–14).

Most of the finds from the Site G enclosure consist of small fragments, which perhaps escaped any attempts to manage rubbish on the site. In the ditches the only large groups of finds occur in the middle and upper fills, and it is possible that this material became incorporated in the ditches only when, or after, the occupation of the site came to an end. The absence of material from the lower fills of the ditch could then be interpreted as evidence that waste was more carefully managed while the enclosure was in use. In her review of ethnographic evidence for the way in which material was discarded in a wide range of contexts, Murray (1980) found that on sites that were occupied for longer than a season, waste was not left *in situ*. Because of variation in the way in which material is discarded, the quantities of finds on a site do not, therefore, necessarily tell us anything about the duration of occupation.

The density of features associated with a settlement are the product of a range of factors, including the longevity of occupation, the frequency with which structures were replaced, the number of occupants, and cultural norms concerning living space. All of these attributes may have varied social and cultural correlates; for example, old structures may be abandoned following a death, and new ones put up for each generation, or old structures may be inherited. A settlement may expand as the size of a family increases, or children may leave to establish new settlements. It is, as a result, impossible to make simple inferences from the number and density of features to the size and length of occupation. There were, nonetheless, a few indications of renewal or renovation on Site G: the possible renewal of the boundary marked by posthole alignment 9162 and gully 9359, and the stratigraphic sequences of hollows, gullies, pits and the enclosure ditch along the south-eastern side of the enclosure. There is no indication that the roundhouse was rebuilt or that the porch posts were replaced (Reynolds 1995; although note that Brück (1999a, 158) suggests that rather then reflecting maintenance of porches, the larger size of porch postholes may reflect architectural elaboration of the entrances).

Overall, it appears likely that Site G was occupied for a relatively short period of time, perhaps as little as a single generation of occupation. On the A2 scheme the middle–late Bronze Age transition was the period of greatest activity within the later Bronze Age, and there is a relative paucity of late Bronze Age activity following this. The picture is similar at Coldharbour Road and along the adjacent part of the HS1, although on other sites in the area, such as at Darenth and at the A2/A282, late Bronze Age cremations and settlement features have been found (Simmonds *et al.* 2011, 69–71). Some degree of settlement shift or dislocation may therefore have occurred, although given the large areas still unexplored, it would be ill-advised to suggest a reduction in population in this area in the late Bronze Age.

The enclosure on Site C

The L-shaped enclosure ditch on Site C provides interesting similarities and contrasts to the partial enclosure on Site G (see Fig. 2.22). The ditch was of similar proportions and profile to that on Site G, particularly in view of the location of the Site C enclosure on the highest part of the plateau, where erosion is likely to have been most severe. The enclosure was obliterated by a post-medieval dene hole at the north end of the site, but did not reappear in the A2 Activity Park some 20m further north, so either terminated or turned in between the two. No return was seen on the east, indicating that this was open. Just as on Site G, the large ditch enclosed the west and a little of the south side, but the latter arm of the ditch was much shorter than the western arm, and east of this there was no boundary ditch. Two groups of postholes on the outer (west) side of the ditch may also have been Bronze Age, and their proximity perhaps makes it unlikely that the ditch had an outer bank. On the inside, however, there was a band devoid of features, so an internal bank may have existed. Unlike the Site G enclosure there was only one gap or entrance in the ditch, some 4m wide, but in common with Site G there was no trace of any postholes for a gate.

The area enclosed by the ditch on Site C was considerably smaller than that on Site G, only some 17m east-west and perhaps 40–55m north-south, or a total of around 0.1ha. A band of cobbles ran parallel to the ditch and passed through the gap in the southern side, and this now appears to have been man-made, a continuation of the metalled holloway identified in the A2 Activity Park excavations (Dawkes 2010). Their investigations suggest that the metalling is unlikely to be as early as the enclosure ditch (ie middle Bronze Age), but indicate the probable line of an earlier route contemporary with the ditch.

Although no internal features have been positively identified as relating to the ditch on Site C, the ditch itself contained a larger assemblage of finds, and of as great a variety, as the enclosure and settlement in Site G. As on the enclosure in Site G, almost all of the finds in the Site C enclosure came from middle or upper fills, perhaps indicating the maintenance of these enclosure ditches, and the avoidance of deposition within them, until a late stage in the occupation. The material found in the Site C enclosure ditch comprised pottery, fired clay including a loomweight/oven brick fragment, animal bone including bone tools, charred plant remains and struck flint. This material suggests that a similar range of activities was carried out in the vicinity, even though no traces of structures have survived.

It is possible that the absence of relatively shallowly-founded structures such as the roundhouse at Site G is simply due to destruction by ploughing. The fact that two four-post structures were found adjacent shows that truncation had not removed all postholes, but these were more substantial than those of the house. Some of the large hollows on Site G (eg 9537) were also very shallow, and might have been removed by truncation, although others such as 9239 and 9558 should have survived in part. Alternatively, the activities that generated these finds and environmental deposits may have been carried out without the need for below-ground features, perhaps indicating varied practices within the local Bronze Age communities of this area.

The nature and function of the enclosures

At both Sites G and C, although only part of the enclosure lay within the area of the excavation, it appears that the enclosures were only partial, or at least that the character of the boundary of the enclosure was marked in different ways in different places. This is not unusual. While some middle Bronze Age settlements such as Corporation Farm, Abingdon, appear to have been substantially enclosed (Shand *et al.* in Barclay *et al.* 2003, 37–40), others, as at Site G, were only partly enclosed, or unenclosed, eg Cotswold Community, on the Gloucestershire–Wiltshire boundary (Powell *et al.* 2010). Even Corporation Farm had large gaps in the ditches on the south-east side. In some cases it is apparent that whilst the ditches and banks of such apparently partial enclosures extended only part of the way around the settlement, other forms of boundaries marked the other sides. At Site G, while there was no indication of a deep ditch along much of the south-east side of the enclosure, shallow gullies and linear hollows did demarcate a boundary, which may have existed above ground as a hedge. At Plumpton Plain Site A, in Sussex, the banks were apparently created by scraping sediment from the interior of the enclosure rather than by digging ditches (Holleyman and Curwen 1935, 16, figs 8 and 9). It is possible that some of the linear hollows at Site G, especially those which lie parallel to the south-eastern side of the enclosure, could be

explained as quarries which were used to provide material for a small bank. There may perhaps have been a fence erected along such a bank, or a hedge established upon it, all trace of which has now been removed by ploughing.

Even accepting that the sides of the enclosure without substantial ditches could have been marked in some other way does not remove the very marked differences in the boundaries on different sides of the enclosure at Site G. The ditches that defined the boundary of the enclosure to the south- and north-west were quite substantial, measuring between 1 and 1.5m deep. Furthermore, it appears that their original profile was quite narrow, perhaps just over 1m, and that they had quite steep sides. The reasons for this asymmetry are unclear. It could, perhaps, be explained in quite prosaic terms. It is possible, for example, that animals were grazed to the north and west of the enclosure, and that a more substantial boundary was required to keep the animals away from the houses on this side. The presence of a wide gap on the west, however, without evidence of a gate, perhaps indicates otherwise. The boundaries may perhaps have been intended to structure space to create a relatively open front to the settlement and a more closed, protected back, as appears to be the case at Itford Hill in Sussex, where the house entrances lie on the south-east (Ellison 1978). Brück, however (1999a, 160, note 3), suggests that 'monumental' boundaries were placed only on the sides of the settlement which would have been seen as an outsider approached. In her view, then, the ditched boundary would form the 'front' of the settlement, rather than the back. For example, on Cranborne Chase at Down Farm, the ditched boundary lies to the east (and the houses are also oriented to the south-east; Barrett *et al.* 1991). Whatever the case, it is possible that the differences in the character of the boundary played some role in orienting the settlement, and creating either a monumental front space to impress outsiders or a protected, closed back space. In the case of Site G, the space most directly enclosed by the ditch appears to have been associated with the roundhouse and perhaps a pen, whilst most of the evidence for processing grain and for butchery—or perhaps more significantly, for discarded waste—comes from the more open eastern side of the enclosure.

The site could thus be seen as having been structured along an axis which progressed from the outside through a boundary associated with certain kinds of waste, to an activity area associated with processing food, to perhaps the most private part of the settlement associated with roundhouses. The ditch could, then, be seen as marking a clear boundary between the deepest and most private part of the site and the outside.

The partial enclosures do not appear to form effective enclosures for livestock. The junction between the chalk and the Thanet Sands lies just to the east of the ditches on Site C, and might have coincided with a change in landuse, perhaps from open grassland to woodland. This is, however, speculative, and there is no such change on Site G. Lambrick has recently identified a category of middle Bronze Age two-armed ditches forming angles in the Thames Valley, and has suggested that they were used for stock control (Lambrick with Robinson 2009, 70–72 and fig. 3.11). The ditches at Sites C and G, however, both have one arm of substantial ditch much shorter than the other, and there are entrances at, or very close to, the junction of the ditches. The 'interior' of the Site G example was also occupied by a variety of features that would have rendered use for livestock capture impractical. These are therefore unlikely to have had the same function as these L-shaped ditches.

One factor that appears to have been common to both was the presence of a trackway passing through or alongside. In both cases, the substantial lengths of ditch were on the west, with only short lengths of ditch to the east. The side with the substantial ditches is, however, the direction from which the prevailing wind comes, and the main purpose of the ditches may have been to provide substantial banks that would provide protection from the weather. The same interpretation has been proposed for a similar arrangement of middle Bronze Age ditches just south-west of Stonehenge (McOmish pers. comm.). These partial enclosures may therefore have owed their existence to the trackways, and have provided a protected area on one side for temporary occupation. In the case of Site G this appears to have been more formally organised than on Site C.

The context of the enclosures

In order to put the later Bronze Age discoveries from the A2 widening scheme into context, the results of the adjacent excavations along the line of the HS1, at Coldharbour Road and in the A2 Activity Park are all shown together, and have been phased to match the phasing used for the A2 widening scheme (see plans on inside front and back covers). The later prehistoric features along the line of the HS1 were phased according to a slightly different ceramic framework than that derived from absolute dates on the current scheme, so have been adjusted to correspond. The results from the A2 Activity Park are those described in the assessment report, and so are provisional; there is some discrepancy between the dating offered in the main text and in the pottery report, and in general the dating suggested by the pottery report has been followed in revising the phasing here.

The scale of activity of the middle Bronze Age along the western part of the scheme and its vicinity, and of the following transitional middle–late Bronze Age down to 1000 cal BC, is now considerable. Partial enclosures occur within 1km of one another at Sites C and G, and that on Site C is

accompanied by a palisade and (somewhat later) by cremations to the west, with another cremation on Site D (6010) to the east. Others are also known at Coldharbour Road (Mudd 1994), and more recent excavation in the A2 Activity Park has shown that the middle Bronze Age trackway ditches found at Coldharbour Road extend south almost as far as Site C. This routeway was evidently long-lived, as it was succeeded by a holloway and eventually by a metalled trackway. Five cremations, one in an urn dated to the post-Deverel-Rimbury Plain Ware phase of the Bronze Age, were found alongside the trackway. One further cremation came from the HS1 to the south (urned cremation 2013). A small ring-ditch of probable middle Bronze Age date has also been found in the Activity Park, some 200m north-west of Site C.

Pits of middle Bronze Age or transitional middle–late Bronze Age date were found on Sites L and A, and a cremation on Site B. Although no middle Bronze Age features were found on the HS1 south of sites K–D, around 30 residual sherds were found in middle Iron Age features. These extend the spread of middle Bronze Age activity further south. A middle Bronze Age barrow was found during evaluation below alluvium further along the HS1 to the west (see Askew 2006). Added together, this shows widespread if low-level activity across a significant area. Despite the presence of later Bronze Age boundary ditch 5912 on Site C, and of a probable continuation turning north-east within the Activity Park, there is no evidence for large-scale enclosure of the landscape (*pace* Dawkes 2010). The assessment report from the Activity Park suggested that the ditches they revealed constituted a field system of sorts, but these are on very varied alignments, unlike the rectilinear systems that are characteristic of middle Bronze Age systems in the Thames Valley (eg Lambrick with Robinson 2009), and are besides poorly dated. Several are on the same line as Iron Age, Roman and medieval ditches found in the A2 widening scheme, and most likely represent continuations of these. There is no clear evidence that the enclosure on Site G was associated with, or formed part of, a field system, as the enclosures at some of the middle Bronze Age sites in Sussex appear to have been.

Yates (2007) cites four other sites in the area of the A2 excavations as providing evidence for Bronze Age field systems, but further work at these sites has since revealed that the evidence is also slight (Champion 2011). Bradley (2007) has noted that elsewhere there seems to be a lack of correspondence between middle Bronze Age settlements and field systems in two respects: firstly between the large scale of the field systems compared to the small scale of the settlements, and secondly in the positioning of the settlements in relation to field systems.

These discrepancies could be explained by a system, such as that cited by Gingell (1992), in which rights to the use of land are distributed by a central authority to lower status social groups. It is worth noting that a system of this kind operated in Hawaii, in which land was redistributed when a new chief was in invested (Handy and Pukui 1958). The Hawaiian system, although set in a very different ecological setting, is interesting in two respects: firstly, it was not associated with villages—settlement remained scattered, as they do in the middle Bronze Age—and secondly, its outcomes were variable, reflecting varying relationships with the social hierarchy, with certain households retaining the same plots over a number of generations and others moving more often. This suggests a pattern of settlement of varied duration which is similar to that found elsewhere in southern England.

The character of activity at other sites

Alongside the enclosures on Sites C and G, and the ditches discussed above, two small clusters of features that may date from the Bronze Age were found. These consist of a small cluster of post- and stakeholes on Site D, whose date is rather uncertain, and a group of pits on Site A, which can be dated more confidently to the middle or late Bronze Age, and perhaps to the transition between these two periods.

These small groups of features are similar to the low density scatters of postholes and shallow pits covering areas 20–40m across described by Champion (2011) as typical of occupation evidence along the HS1. The shallow pits and post- and stakeholes are also similar to those found in the enclosure in Site G. Site A, however, also includes one large pit (3030: 2.2m wide by 1.4m deep) that is certainly dated to this period, and others (3039 and 3097) potentially of this date. These features thus provide evidence suggesting different elements of occupation in the Bronze Age landscape, possibly including below-ground storage, in a more dispersed pattern through the landscape. The possible association between deep pits and storage may be enhanced by the discovery of a complete saddle quern at the base of pit 3039, and parts of several others in the fills.

The suggestion that these small groups of features represent a set of activities carried out away from the main centres of domestic occupation is supported by some contrasts in the quantities and kinds of artefacts associated with them.

The quantities of the most frequently occurring categories of finds—pottery, flint and animal bone—are shown in Fig. 2.48. The quantities of finds clearly in part reflect the proportion of the features that were excavated. The features associated with the enclosure on Site G were the most thoroughly sampled, and the quantities of artefacts from this site are probably over-represented in relation to those from the other sites. This further accentuates the relatively small quantities of

material recovered from Site G. It should also be noted that the differing materials have been quantified in different ways, and it is not possible to make direct comparisons between the different categories of material. There is no quick and straightforward way of quantifying broken objects (cf. Orton and Tyers 1992) that is entirely satisfactory. Here, the pottery has been quantified by weight, the flint by number of pieces, and the animal bone by total number of identified specimens (NISP).

The first striking feature is the contrast in the quantities of finds associated with the differing sites. It might have been expected that most waste would have been generated by activities associated with the domestic activity associated with the roundhouse in the Site G enclosure. In fact, however, the quantities of artefacts associated with the Site A pits (almost all of which came from just two pits) are, overall, much larger than those associated with the Site G features. Furthermore, the quantities of finds found on Site C also contain quantities of finds greater than those found in Site G.

There are also striking contrasts in the kinds of finds recovered, but these have to be interpreted with care. For the animal bone, the contrast is largely due to the geology of the different sites, as Sites A and C have chalk at shallow depth, while most features on Site G were within the acidic Thanet Sands. The largest groups of flint were recovered from the hollows and pits in Site G, and from the enclosure ditch. Very little flint was recovered from the Site C ditch and, although some was recovered from the Site A pits, it formed a much smaller proportion of the finds than was the case for the Site G hollows and pits. It is possible that the numbers of flints on Site G includes some earlier material, as early Neolithic, late Neolithic and early Bronze Age features are all present on this site. Nevertheless the scale of variation is likely to indicate a genuine difference.

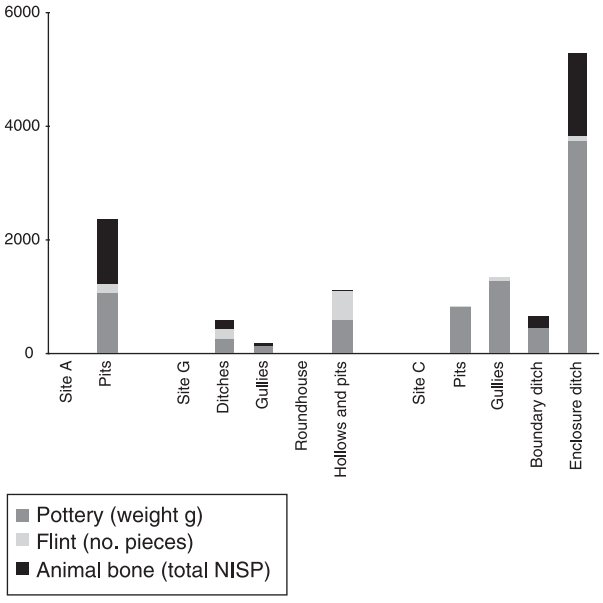


Fig. 2.48 Quantities of pottery, flint and animal bone on Sites A, G and C

The significance of these patterns is unclear. It might be thought that one of the uses of the worked flint was in butchering animals, and the concentration of animal bone at the edge of the Site G enclosure, especially in features not associated with domestic occupation, merely reflects the deposition of unpleasant waste away from the main foci of domestic activity. Analyses by Wilson (1996) in a range of different contexts suggests that this kind of distribution of animal bone, in particular being concentrated towards the edges of sites, is widespread. It is also possible, however, that the groups of animal bones in the Site A pits and in the Site C boundary ditch might reflect the consumption of meat away from the main domestic foci. In both cases the animal bone is associated with relatively large assemblages of pottery. Unfortunately, the material from along the A2 is too fragmentary for this analysis to be pursued in more detail. Whatever the case, the small groups of features do provide evidence for the distribution of activities—or at least of deposition—at a range of locations away from obvious centres of settlement.

Cremation burials

The five deposits of cremated human remains which were found along the A2—three on Site C, one on Site D and one on Site B—were all contained within small, shallow pits, and, given that the full weight of the cremated remains of an adult is estimated to range from 1000g to 3600g (McKinley 2000b), they all represent partial deposits, with weights ranging from 100g to 402g. The cremation deposits on Sites B and D appeared to be isolated features; no other middle or late Bronze Age features were identified in the immediately surrounding area. The deposits on Site C lay close to each other, not far away from the field boundaries discussed above. The deposits on Site C date from the 13th or 12th centuries cal BC; the Site D example probably from the 12th century, and the Site B example from the 11th century.

A number of cremation burials probably dating from the middle or late Bronze Age have recently been found in the A2 Activity Park immediately to the north of Site C (see Fig. 2.49 for radiocarbon dates). These burials all appear to lie close to, and in one case within, trackway ditches and a subsequent holloway running south from Coldharbour Road to Site C. A possibly middle Bronze Age ring-ditch, this time associated with inhumation burials, was also found some 200m north-west of Site C. These excavations, combined with those along the A2, now provide a significant sample of Bronze Age cremation deposits and other burials which, because of the extent of the excavations, can be related to the wider Bronze Age landscape. It

must be stressed, however, that whilst it is impossible to ignore the evidence from the adjacent site, until the analysis of the burials in that area is undertaken, and in particular, their chronology more precisely defined, the discussion of them can only be provisional.

Middle and late Bronze Age burials are also increasingly well evidenced in Kent more widely. This evidence has recently been reviewed by Champion (2011) in the context of the HS1. Middle Bronze Age cremation burials associated with ring-ditches are known at Monkton (Bennett *et al.* 2008, 99) and at Bridge (MacPherson-Grant 1980) and along the HS1 at Tutt Hill (Brady 2006b). There are, however, also a number of examples of middle Bronze Age cremation burials, like those along the A2, which do not seem to have been closely associated with ring-ditches or with settlements. These include burials at West of Northumberland Bottom (Askew 2006, 16) and East of Newlands Road. A further example at Saltwood Tunnel (Riddler and Trevarthen 2006) lay 75m south of a ring ditch at a distance which, like the deposits on the site to the north of Site G, makes it difficult to argue that the burial was associated with the ring-ditch.

Excavations along the HS1 also revealed a number of late Bronze Age cremation burials, which, at Beechbrook Wood (Brady 2006a, 24), for example, lay close to a field boundary. There were other examples, such as at Pilgrim's Way, which appear to have been isolated features, with very little other evidence for late Bronze Age activity having been found on the site. A further small group of probably late Bronze Age cremation burials, not associated with any other late Bronze Age features, has recently been found at Pinden Quarry (Brady *et al.* 2011). Webley has recently reviewed the evidence elsewhere in south-eastern England, and cites examples of late Bronze Age cremation burials in Essex, Hertfordshire, Surrey, Berkshire, Buckinghamshire and Bedfordshire (Webley and Timby 2007).

Although cremation burial remains common, overall these sites indicate a movement away from burials associated with ring-ditches in the middle Bronze Age towards burial associated with trackways and field boundaries, or in apparently isolated locations, in the late Bronze Age. The burials found along the A2 and on the adjacent site to the north are consistent with this pattern.

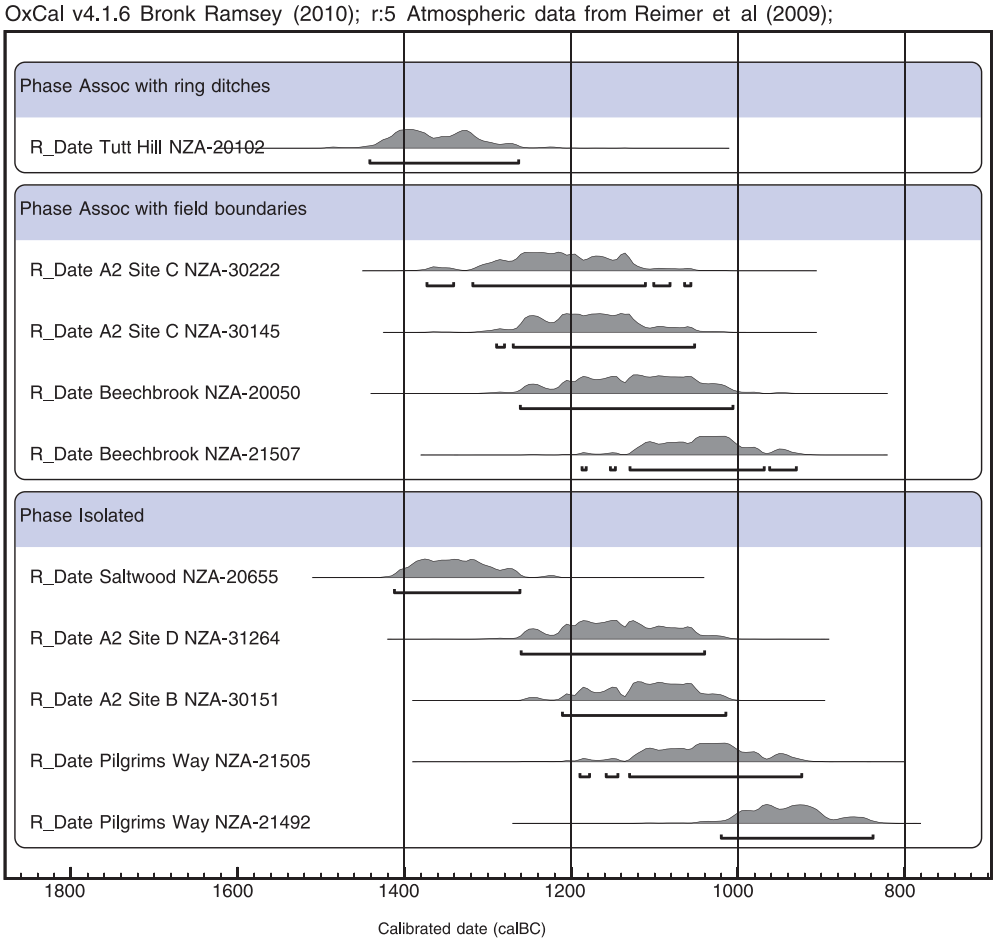


Fig. 2.49 Calibrated radiocarbon dates from middle and late Bronze Age cremation burials from the A2 and HS1 excavations

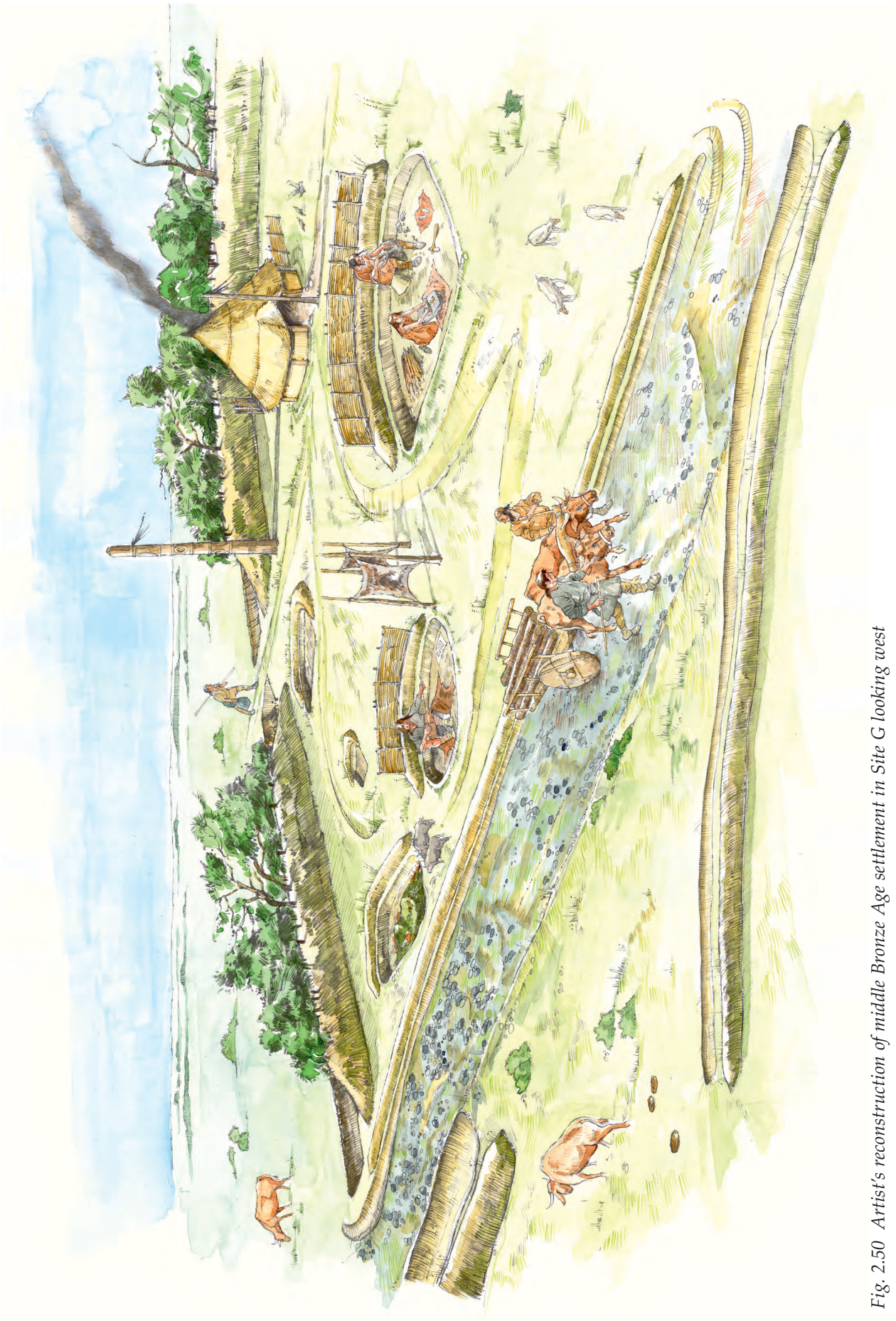


Fig. 2.50 Artist's reconstruction of middle Bronze Age settlement in Site G looking west

Although there are too few dates from Kent alone to confirm the chronological pattern, the shift in the location of cremation burials appears to have begun in the later part of the middle Bronze Age, after *c* 1300 cal BC. It is possible that isolated burials, not associated with field boundaries, are characteristic of a slightly later phase, beginning *c* 1200 cal BC, although clearly in the case of the cremation burial at Saltwood Tunnel, which lay 75m from the ring-ditch, there may be exceptions.

The shift away from burial associated with ring-ditches is not the only change. Although the A2 burials were clustered on and around Site C, they were quite widely dispersed, rather than occurring in a clearly defined location (ie a cemetery). This pattern again seems to be typical more widely. The burials associated with field boundaries and in isolated locations at other sites almost all occur as single deposits or in small numbers; the group of 20 cremation deposits at Pinden Quarry appears to be exceptional (Brady *et al.* 2011). At Pilgrim's Way (Hayden 2006), for example, a dispersed scatter of five late Bronze Age cremation deposits was found (although there were also a number of undated cremation deposits that could belong to this period) and at Beechbrook Wood (Brady 2006a) there were just two such deposits.

None of these burials is obviously related to centres of settlement, but there is a sense in which the distribution of burials parallels that of settlement. Just as the centres of settlements seem to have been relocated, following Brück's (1999a) neo-local pattern of residence, so too it seems that places of rest for the dead were neo-local.

It is important to note at this stage that our knowledge of the distribution of burials is incomplete. The burials along the A2, like many others of the middle and late Bronze Age contain only small quantities of cremated human remains, and how the remainder of the cremated remains were treated, and the location of pyre sites, are unknown. Furthermore, it is also clear that other forms of burial were practised at the same time. Along the A2 this is evidenced by the fragment of human femur found in ditch 5912 on Site C, as well as by more extensive remains on other sites (eg Cliffs End Farm, Ramsgate (Wessex Archaeology nd)).

The dispersed pattern of burial could, however, be seen as one further aspect of a dispersed middle and late Bronze Age taskscape—a pattern in which, despite the clear foci of settlement such as the Site G enclosure, tasks were also carried out at locations scattered across the landscape.

There are well known case studies from very different contexts which illustrate the fact that marked changes in burial do not necessarily correspond, at least in any obvious way, with social change (eg Morris 1990; Morris 1992). In the middle and late Bronze Age of southern England, however, the movement away from burial associated with ring-ditches, and the parallels between the dispersed neo-local patterns of burial and settlement, over the period in which field systems were established, suggests that the change in burial practices may have been related to changes in social structure, perhaps involving a decline in the importance of ties of descent, expressed in burials associated with ring-ditches, and the rise of new forms of power, related to the division of the landscape.

The deposit of cremated animal bone, fired clay and pottery on Site L

A further, more exceptional example of the distribution of activities around the landscape is provided by the unusual contents of a pit (12510) on Site L (see Fig. 2.26). This disturbed pit contained a Deverel-Rimbury urn, the remains of several other vessels, including at least two cups, and many fragments fired clay, some bearing impressions of wattles, which clearly derive from a structure of some kind. The fill of the pit was rich in charcoal, and contained a deposit of cremated bone that may have been contained within the urn. Although originally taken to be a further human cremation deposit, examination of the cremated remains did not identify any human bone, and suggests instead, that it was animal bone. A possible parallel for this deposit was found at North Shoebury, Essex (Wymer and Brown 1995) where, 120m to the north of the middle Bronze Age enclosures a small pit containing pottery, fired clay and charcoal was found.

The significance of the practices related to the deposits in this pit are obscure, but several elements may provide some indications. The presence of the burnt animal remains suggests immolation and thus sacrifice, a type of ritual with a very wide distribution. The presence of the urn and the similarity of the deposit with middle Bronze Age cremation burials could also be taken to indicate a symbolic relationship with human burials. The association of these elements with the fired clay—which clearly derives from a structure which has been destroyed—could be taken to indicate that the deposit was related to the 'death' of the structure. It is, of course, impossible to exclude the possibility that the structural remains were included for quite different reasons. Whatever the case, it is striking that the deposit was not associated with any other below-ground indications of activity, and thus appears to provide another example of the widespread distribution of activities, away from the foci of settlement, in the middle and late Bronze Age.

A further reminder of this is the later Bronze Age struck flint found on Sites B, F and Site G east, none clearly associated with below-ground features. Despite the increasing archaeological visibility of this period in terms of ditched field systems, waterholes and settlement and burial enclosures, it is clear from sites where ground surfaces are preserved, such as the Eton Rowing Course (Allen *et al.* forthcoming(a)), that much offsite activity leaves only surface deposits such as flint clusters and spreads or hearths. The residual material found

along the line of the A2 is too heavily reworked to provide much insight into the particular activities carried out in these locations, but serves to remind us that the spaces between these settlements or burials may also have been significant to those inhabiting this landscape in the past.

Chapter 3: The Iron Age

by Tim Allen and Kelly Powell

Iron Age activity was found in most areas of the scheme, although there was a particular concentration in Sites B to E (Figs 3.1 and 3.2). There is a broad division between the generally scattered activity of the early Iron Age, consisting largely of pits and four-post structures, and the ditched enclosures of the middle and late Iron Age, although pits and four-post structures continue. Settlement of the middle and late Iron Age is concentrated on Sites B and C. For this reason, the Iron Age activity will be described chronologically, that is, divided between early and middle and late Iron Age, although on this scheme there is transitional activity both at the early–middle Iron Age boundary, and (to an even greater degree) at the middle–late Iron Age boundary. Due to the latter overlap, the description of the middle and late Iron Age activity in this area will not be separated, instead the evolution of each part of the nucleated settlement will be described from the middle into the late Iron Age/very early Roman period.

THE EARLY IRON AGE

The early Iron Age activity on the scheme was dispersed throughout much of the length of the road corridor. Due to the radiocarbon plateau between 800 and 400 BC, phasing within the early Iron Age is dependent upon either stratigraphic relationships or ceramic evidence. Despite this, a number of Iron Age pits across the site that contain large assemblages of typologically early Iron Age pottery have been radiocarbon dated, and almost all of these have produced dates centring upon the late 5th and earlier 4th centuries cal BC. The early Iron Age can therefore be considered to extend from c 800 to 350 BC.

Most features of the earlier Iron Age are either pits or postholes, and very few intercut, so pottery is virtually the only tool available for closer dating. While there are forms diagnostic of the earliest Iron Age (800–600 BC), these occur in only a limited number of contexts, and some of these are only small sherds. Nevertheless, where forms diagnostic of the earliest Iron Age are present, and there are no later forms, features have been attributed to this phase.

A number of features that lack diagnostic forms contain pottery originally described as late Bronze Age/early Iron Age on the basis of the fabrics represented. These largely occur in areas where middle and transitional middle/late Bronze Age activity has also been found (Sites C and G), and it is possible that some of this material is residual. The radiocarbon dates for later Bronze Age activity on these sites do not, however, extend beyond 1000 BC, and no conclusively late Bronze Age pottery assemblages have been identified. These sherds are therefore more likely to be Iron Age. Within the Iron Age these fabrics are not, however, exclusive to the earliest Iron Age, so features containing these assemblages have therefore been described simply as early Iron Age.

Where radiocarbon dates or forms indicate a date late in the early Iron Age, these are shown as later early Iron Age. Other than the pits that have been radiocarbon dated, however, very few features can be confidently ascribed to this sub-phase. Except where very large and fresh assemblages of pottery are present, absence of later diagnostic forms does not reliably indicate an earlier date, so unless forms diagnostic of the earliest Iron Age are present, features can only be characterised as early Iron Age.

As very few features can be dated to the earliest Iron Age, and only a small number of features to the later early Iron Age, the description is presented site by site, rather than by chronological phase within the early Iron Age.

Site K

The westernmost early Iron Age activity occurred on Site K (Fig. 3.3). This was somewhat confused by the colluvial sequence in this area, which comprised a putative buried ploughsoil (10561), overlain by deposit 10560 which in turn was sealed by colluvium 10543. Only occasionally did all three layers survive intact. The little pottery recovered from the features was either dated as late prehistoric (anywhere between middle Bronze Age and early Iron Age) or more specifically identified as early Iron Age. Therefore all the features from Site K are discussed here.

The early Iron Age features in Site K comprised a scatter of pits and postholes, along with a ditch (10563), which crossed the excavation on a NNE-SSW alignment but did not appear in the excavated area to the north (Fig. 3.3). Overall the ditch was 0.8–1m wide and 0.4m deep and other than two sherds of late prehistoric pottery produced only flint (including a core and a notched flake). Four postholes lay to the west of the ditch, and could perhaps have formed a slightly curving row, although the gaps between them (6m or more) make

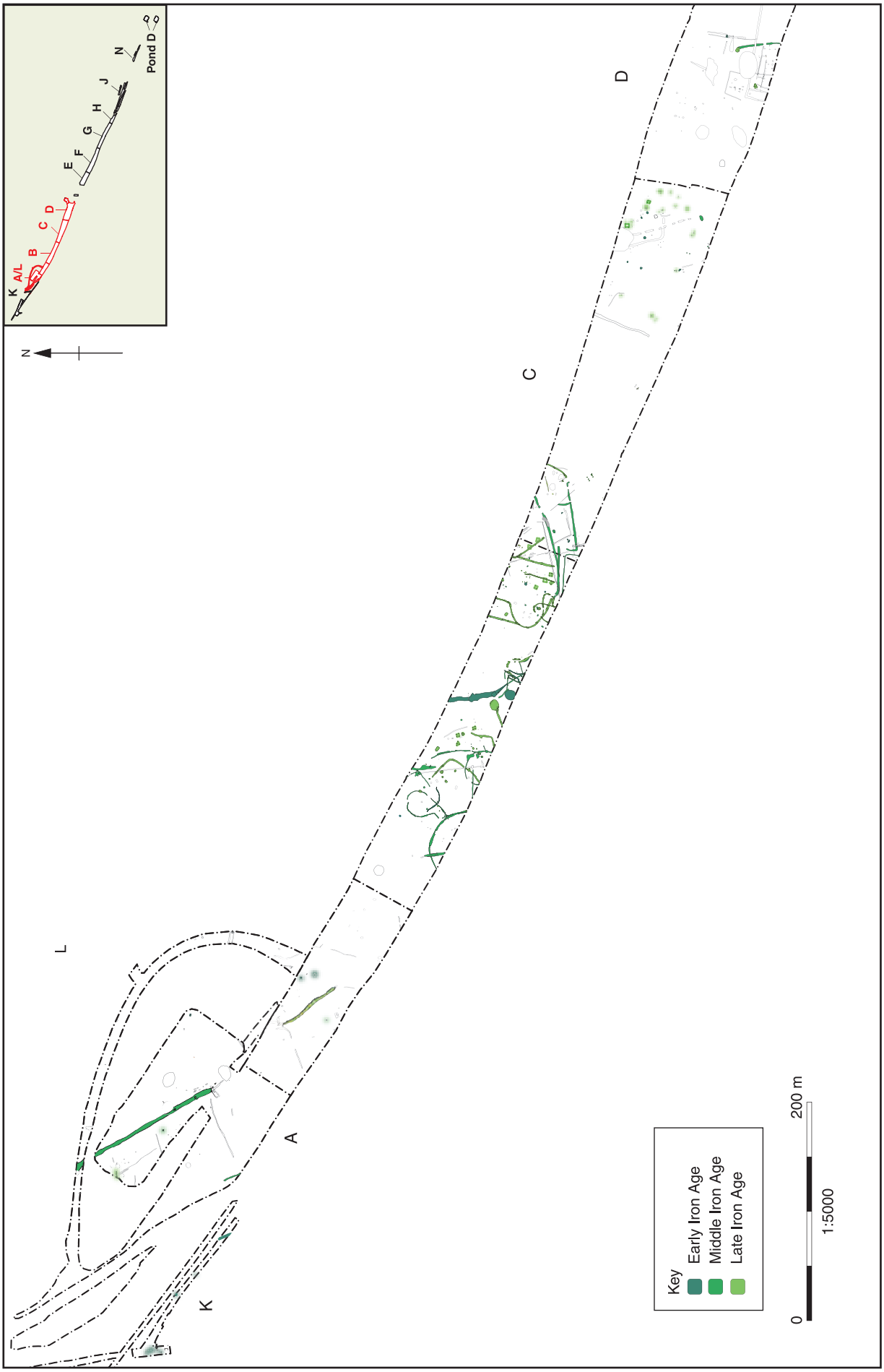


Fig. 3.1 Overall phase plan showing Iron Age features in areas K–D

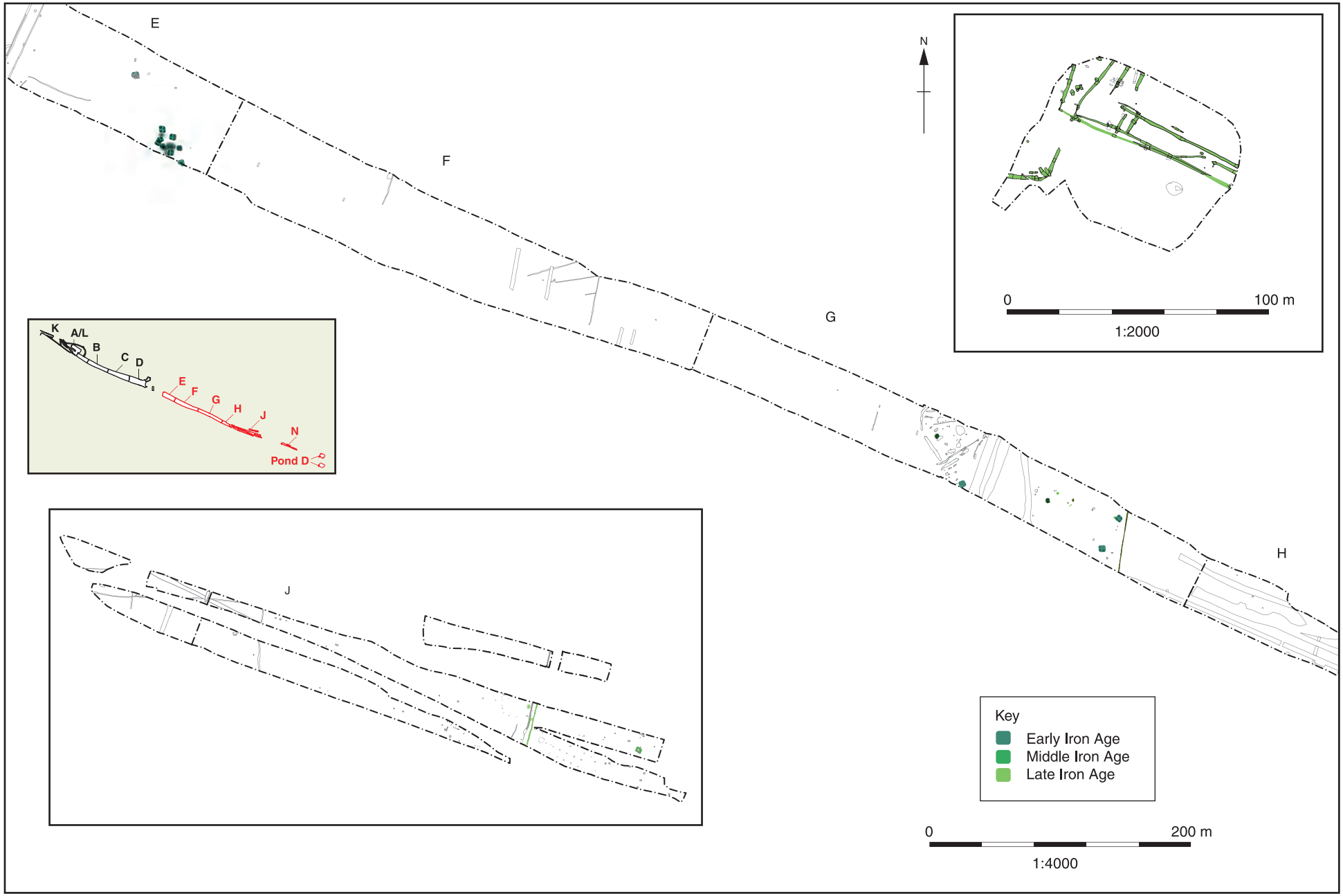


Fig. 3.2 Overall phase plan showing Iron Age features in areas E–J (and Pond D North)

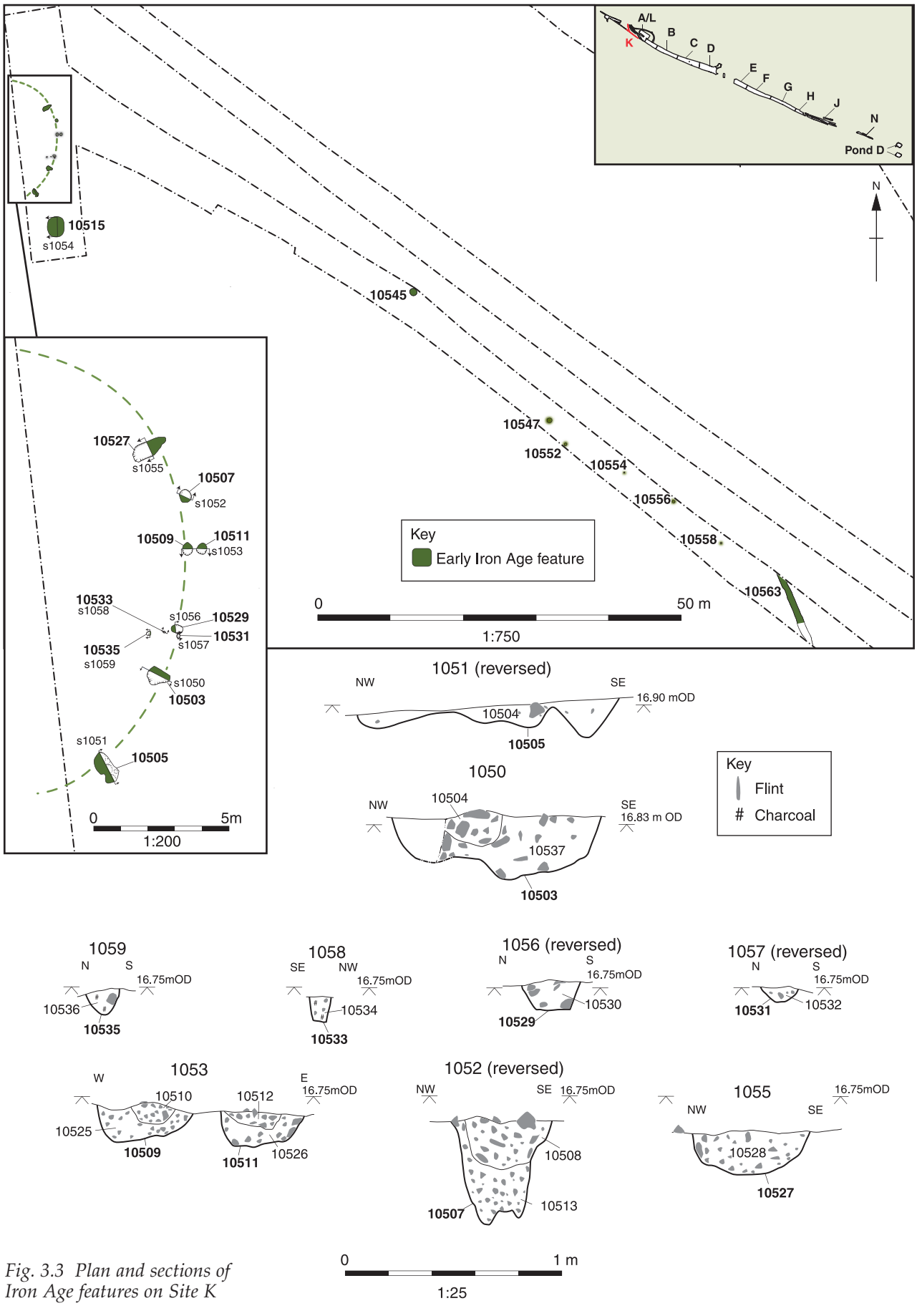


Fig. 3.3 Plan and sections of Iron Age features on Site K

it unlikely that this was a fenceline. Posthole 10556 produced flint but there were no other finds.

Two smaller pits (10545 and 10547) lay north-west of the postholes; both were circular in plan and measured *c* 1m in diameter and 0.3m in depth. These features both produced late prehistoric pottery, and 10547 was sampled due to the presence of significant quantities of charcoal. Analysis of this sample yielded a few indeterminate cereal grains and one wheat grain as well as many small charcoal fragments.

In the west of the site, a group of postholes (10538), possibly forming an arc, was found cutting the natural chalk at the base of colluvial layer 10543 (Fig. 3.3). This group consisted of nine features, which varied in character from well-defined post-holes (10507, 10509, 10511 and 10529) to stakeholes (10535, 10533 and 10531), elongated pits (10527 and 10503) and an irregular feature (10505). The nine features were clustered into six positions, spaced between 1.6m and 3.6m apart, and (with the exception of posthole 10507, which was much deeper than the others) all had their long axis roughly perpendicular to the arc, ie aligned towards its point of origin. The multiple post- or stake-holes may indicate repairs or double posts; the elongated pits may in fact have held two post-positions, as the figure-of-eight shape of feature 10505 perhaps also suggests.

If the arc was genuine, its radius was of approximately 7m, and might have belonged to a circle some 12–14m in diameter. On the north there was a wider gap between 10527 and the edge of the excavation, which may indicate either the limits of the arc, or perhaps a break in the ring. A roundhouse of this diameter would be quite considerable, towards the size range of large earliest Iron Age houses such as Bancroft (18m; Williams and Zeepvat 1994, fig. 20), Pimperne (14–15m; Harding et al. 1993), Longbridge Deverill (16m; Hawkes 1994) or Little Woodbury (15m; Bersu 1947). A smaller double post-ring roundhouse of similar date (11m in diameter) was found in the Middle Thames Valley at Dunston Park (Fitzpatrick *et al.* in Barnes *et al.* 1995, fig. 35), and in this the posts of the two rings were also quite close together.

The evidence from Site K is not sufficient to be confident of this interpretation, and it is not well-dated, as the group contained only two sherds of late prehistoric pottery and a few struck flints. The post-ring was overlain by 0.75m of colluvium before early Iron Age pit 10515 was dug (see below). It is uncertain over what period this accumulated, and it is likely that colluviation was preceded by a period of erosion, as no buried soil was found below it here. Alternatively therefore the arc could belong to the later Bronze Age, and could possibly have belonged to a freestanding timber circle rather than

Plate 3.1 Half-section of pit 10515 showing red and black fills

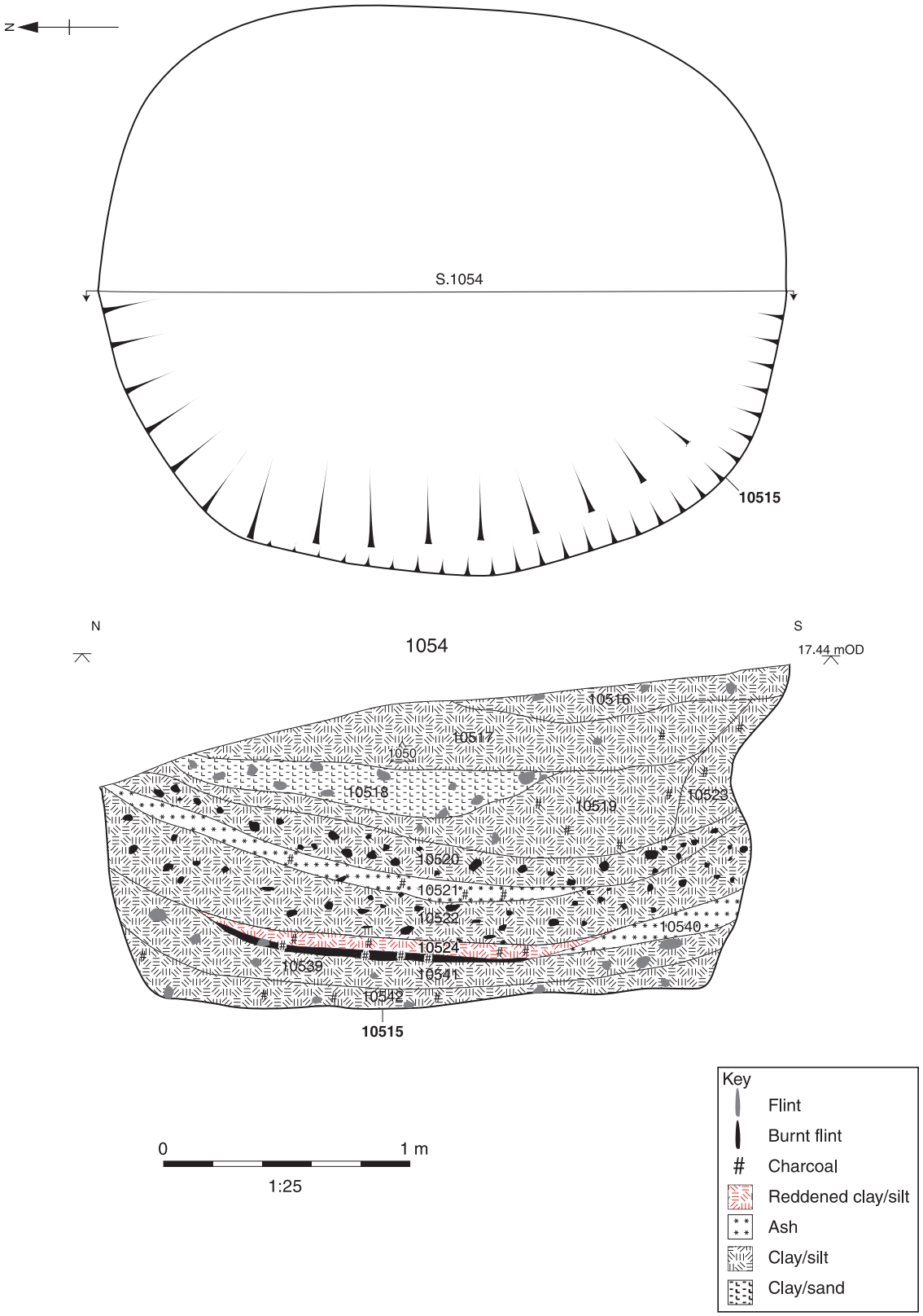


Fig. 3.4 Plan and section of pit 15015

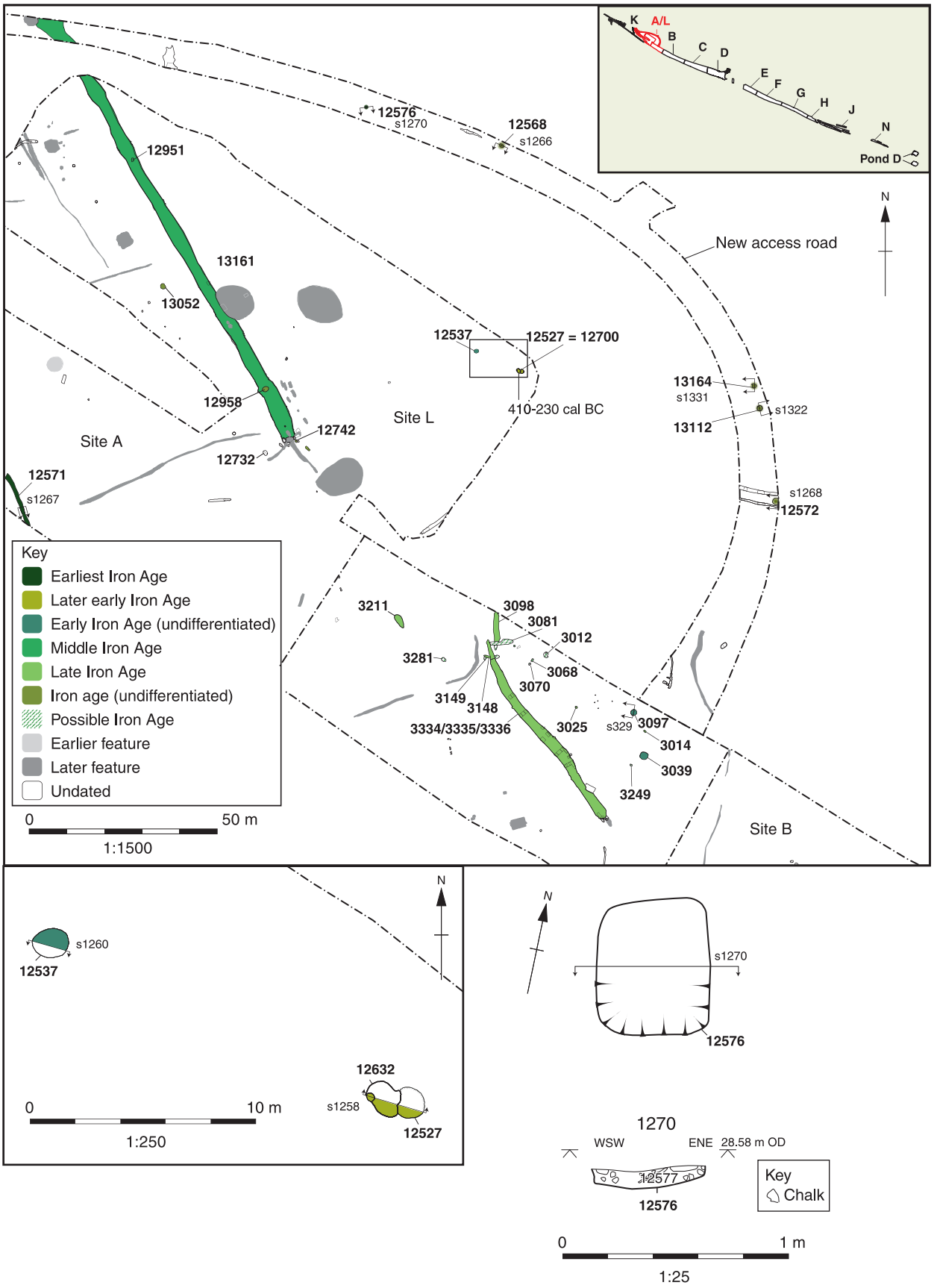


Fig. 3.5 Plan of Iron Age features in Sites L and A

a roundhouse. Examples of the middle and late Bronze Age are known in the Upper Thames Valley, that at Spring Road, Abingdon having its postholes oriented towards the centre in a similar manner (Allen and Kamash 2008). The flints, however, included two blades, and so rather than support a Bronze Age date may all have been residual. A further possibility is that the structure was even earlier, perhaps belonging with the early Bronze Age cremation found to the north-west in the HS1 excavations (Askew 2006, 13).

A large sub-circular pit (10515) immediately south of the posthole group clearly cut colluvial deposit 10543. The pit measured 2.8 x 2.3 x 1.3m deep, and had a complex sequence of 13 fills (Fig. 3.4). These were overlain by layers representing two episodes of dumping of material from an industrial process involving burnt flint. The reddening of layer 10524 suggested to the excavators that the burnt flints were still hot when deposited (Plate 3.1). One half of the pit was excavated, and produced a total of 91 sherds (969g) of pottery of early Iron Age date, along with burnt flints, three fragments of copper-alloy strip, two fragments of triangular loomweight/oven brick and other fragments of fired clay. Animal bone included pig, sheep/goat and goat, cattle and red deer. Samples from fills 10520 and 10522 produced abundant charcoal including oak, possible hazel or birch and Pomoideae, as well as hazelnut shells. Residual flint was found throughout the pit including a knife (SF 1050) from upper fill 10517.

The fills of the pit were not radiocarbon dated, and so cannot be dated more closely than early Iron Age. The structure represented by the arc appears to have been earlier than this, but could belong to an earlier phase within the early Iron Age, rather than to the earliest Iron Age or earlier.

Site L

A scatter of Iron Age pits was excavated on Site L (Fig. 3.5), one of which (12576) contained a large part (307g) of a small fineware bowl dated to the earliest Iron Age (800–600 BC), and another 13 sherds of early Iron Age character. The pit was sub-rectangular, measuring 0.5m x 0.54m but was only 0.08m deep and was therefore probably significantly truncated. The only other artefactual evidence was 168g of structural fired clay. This is the only pit on this site that can clearly be dated to the earliest Iron Age.

Pits 12572, 12568, 13164 and 13112 are dated as early Iron Age (for details see Table 3.1). These were very varied in shape and profile, although all were shallow. Pit 12572 was the most substantial, with three main fills containing burnt flints, pottery, animal bone and fired clay. Most came from the upper fill, which also contained a very small copper-alloy fragment (SF 1270) and an intrusive horseshoe nail (SF 1283). Fewer find were recovered from the other pits, though an environmental sample from Pit 12568 yielded barley, possible emmer and other indeterminate cereal grains.

About 100m west of 13112 and 13164 was another shallow pit 12537, which had clearly been truncated

Table 3.1: Early Iron Age pits on Site L

Cut No	*No Fills*	*Length (m)*	*width (m)*	*depth (m)*
12572	4	1.87 +	2.10	0.6
12568	2	1.2	0.9	0.3
13164	1	1.2	1.2	0.2
13112	4	1.55	1.5	0.35
12537	2	1.30	1.1	0.18

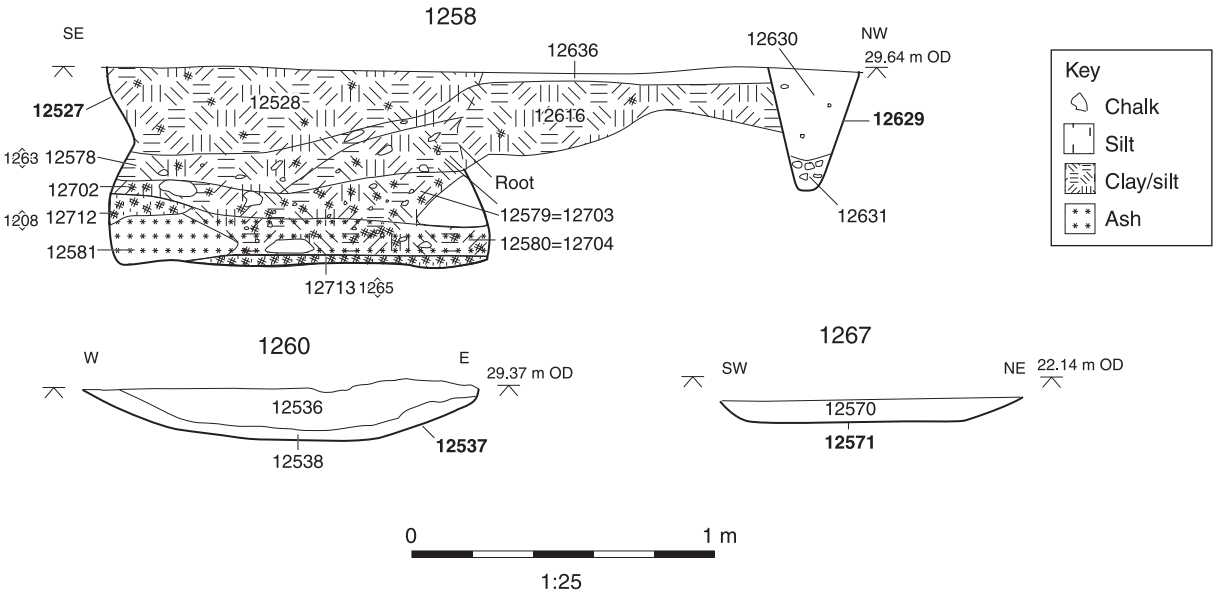


Fig. 3.6 Sections of pit 12537, ditch 12571 and pit 12527

by ploughing (Fig. 3.6). Its two fills produced 880g of structural fired clay and fragments of slag, possibly indicating some form of industrial activity nearby. It is possible that this feature was related to and contemporary with pit 12527, which lay only 13m to the east (see below).

An isolated length of ditch (12571) on the southern edge of Site L was traced for 17m (Fig. 3.6). This was 1m wide and only 0.08m deep, but produced 619g of Iron Age pottery, some of which was diagnostically early Iron Age. The ditch also contained a fragment of briquetage and over 700g of fired clay as well as a fragment of slag and medieval or post-medieval tile. Its alignment was parallel to ditch 10563 on Site K some 52m to the south-west, and the two features may have been contemporary.

One pit dated by radiocarbon to the late early Iron Age (12527) was excavated in the north-east corner of the main body of Site L, cut on its west side by well-defined posthole 12629 (Figs 3.5–6). Feature 12632 appeared to be a natural clay solution hole in the chalk, whose top remained as a hollow, into which the upper fills of pit 12527 spilled. The main pit had near vertical sides at the top becoming undercut lower down, and bottoming on a flat base, and was 1.16 x 1.05m in plan and 0.62m deep. Its sequence of seven fills contained significant amounts of pottery (including a large proportion of a fingertip-decorated jar in a localised deposit of ash), structural fired clay, a triangular loomweight/oven brick, and a quantity of animal bone including numerous sheep and sheep/goat remains representing a part-skeleton. Analysis of flots from processed soil samples identified abundant emmer wheat and barley within different fills.

Two of the lowest fills in pit 12527 (12713 and 12712) consisted almost entirely of charred grain (Plate 3.2). This type of pit is often described as a 'grain storage' pit, and deposits of charred grain at the bottom of such pits are sometimes interpreted as the result of firing the grain that had sprouted around the edges before anaerobic conditions prevented further germination (Reynolds 1974). There was, however, no sign of *in situ* burning on the base or sides of the pit, nor any evidence of sprouted grains, and this is therefore unlikely. A sample of the grain from 12713 was submitted for radiocarbon dating and returned a date of 410–230 cal BC (NZA-32308), with a 69% probability of falling between 410 and 350 cal BC, or the earlier 4th century BC.

The depositional sequence within the pit contains a wide variety of materials, mostly of domestic character, such as the pottery, animal bone and charred foodstuffs. The presence of most of a highly decorated vessel at the base (Plate 3.3) and the layers of virtually unmixed charred plant remains, however, make simply rubbish dumping unlikely. Viewed as a whole, the infilling comprised a sequence of layers of different character: first charcoal and ash layers, then a layer rich in pottery with a part-sheep skeleton and no bones of other species, then a comparatively sterile deposit with only oven brick fragments, and finally a layer composed largely of pottery and of triangular bricks or weights. This suggests a series of intentionally selected deposits reflecting early Iron Age culture.

Posthole 12629 may have acted as a marker for these features, suggesting continued significance once abandoned or closed.

Site B and the western part of Site C

Site B and the western end of Site C contained a substantial settlement of middle and late Iron Age date (for details see below), comprising ditched enclosures, four-post structures and pits either side of a cobbled road. Among these features were a number that could not be dated, but certain evidence of earliest or early Iron Age activity was relatively slight. For the earliest Iron Age this consisted solely of sherds from a single isolated hollow (7949) beneath the cobbled road (7980) in Area B and a small group of pits and postholes at the western end of Area C (Fig. 3.7).

The isolated hollow (7949) measured 4.6m in diameter with a depth of only 0.35m. A cobbled trackway (7980) had slumped into the hollow. The lowest fill contained six very small sherds (9g) of pottery in a fine flint-tempered fabric often found in earliest Iron Age vessels, as well as fired clay and a small assemblage of worked flint. Further small flint-tempered sherds of early or middle Iron Age pottery (7 sherds weighing 28g) came from the silt (7948) above the cobbled surface. The cobbled trackway divided the two halves of the middle Iron Age settlement, and was cut by a succession of gullies, some containing middle and some late Iron Age pottery, so most likely was either in existence before the settlement was established, or was created at its outset. It is tentatively considered to date to the end of the early Iron Age or the start of the middle Iron Age (for description see middle Iron Age below).

The majority of the four-post structures contained too few finds to date, and so could belong to any phase within the Iron Age, or even potentially to the late Bronze Age. One of those at the junction of Sites B and C, structure 3772, was however radiocarbon-dated to the early Iron Age (see Fig. 3.7). This was just under 3m square, with sizeable postholes *c* 0.7–0.8m in diameter, and two smaller postholes *c* 0.4m in diameter just north of the southern pair. The structure produced fragments of pig bone and charred grain including wheat. Charred grain from posthole 3733 was radiocarbon dated to 2404+/-50 BP, giving a calibrated date of 760–390 cal BC (NZA-32280), with a 72.5% chance of being between 630–390 cal BC.

Nearby features pit 3895 and ditch 7987 also produced pottery in fabrics current both in the early and middle Iron Age. The pottery from pit 3895

Plate 3.2 Half-section of pit 12527 showing charred layers

Plate 3.3 Detail of pot at base of pit 12527 and loomweight in section

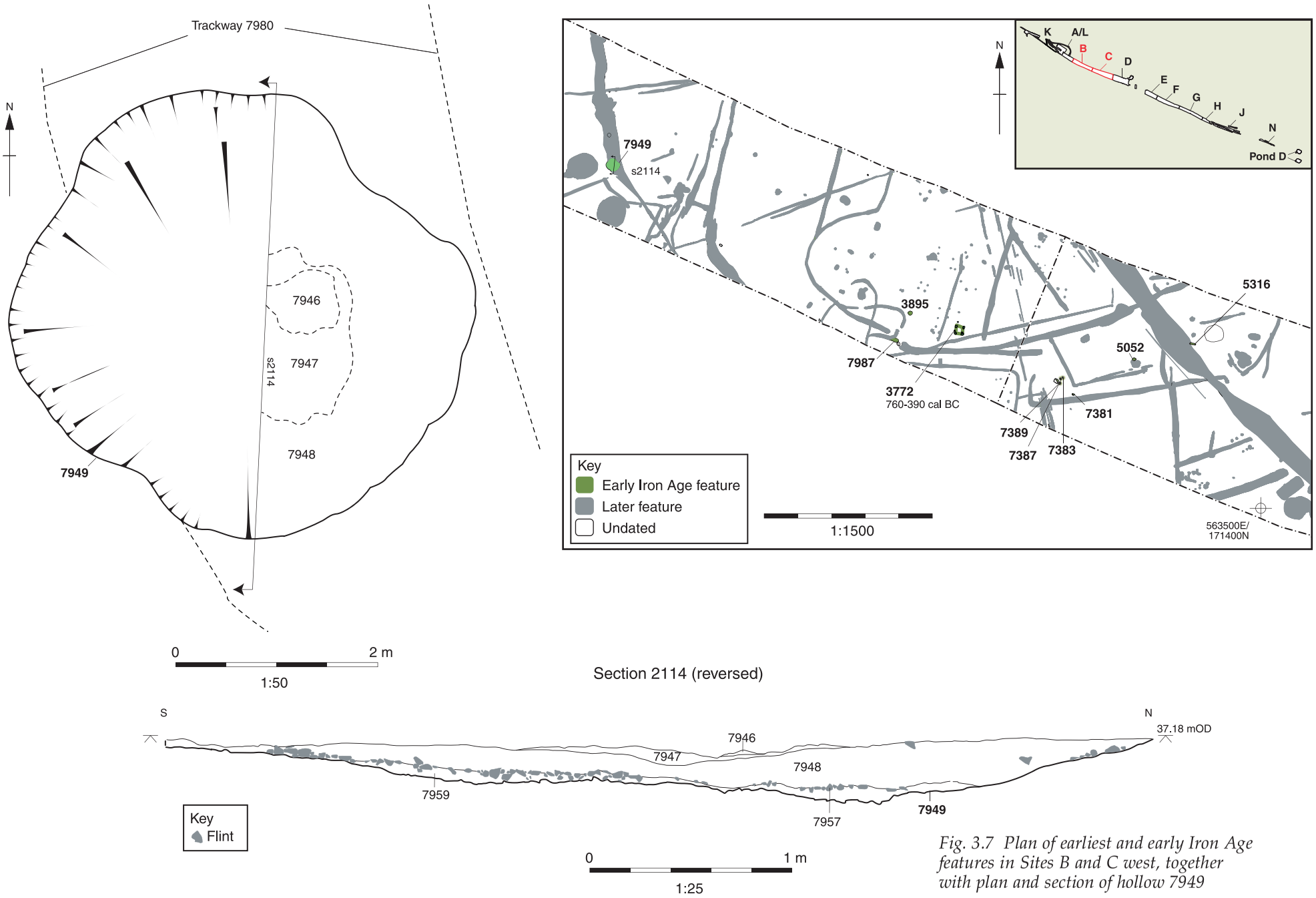


Fig. 3.7 Plan of earliest and early Iron Age features in Sites B and C west, together with plan and section of hollow 7949

included burnished sherds that suggest either a transitional early–middle or a middle Iron Age date, and the sherds from the ditch were few and worn. It is therefore possible that both belong with the middle Iron Age settlement, or if early Iron Age, date to the very end of the period. Some of the undated features may also have been early Iron Age, but in the absence of clear evidence undated features are described in the middle/late Iron Age phase.

A group of small pits and postholes were found *c* 30m further east (Fig. 3.7). Except for pit 7389 these were all *c* 0.3–0.7m in diameter and up to 0.3m deep. Pit 7389 was much larger (1.35 x 1.15 x 0.25m). Pits 7381 and 7389 both produced small amounts of pottery in fabrics current in the late Bronze Age and early Iron Age. Given the lack of clearly late Bronze Age activity found in this area, these pits probably also dated to the early Iron Age. Both these pits and nearby feature 7383 also yielded structural fired clay. A partial sheep skeleton, probably that of a yearling lamb, came from 7381, and sheep/goat bones from 7387.

A short length of ditch (5316) beneath post-medieval holloway 5306 produced similar pottery and may also belong to this phase, though it may have been a later feature containing residual sherds.

Site C east and Site D

A mixture of features of earliest Iron Age, early Iron Age and later early Iron Age date was found at the east end of Site C (Fig. 3.8), close to the later Bronze Age activity centred upon enclosure 5892 (see Chapter 2). Five pits and a posthole produced

Table 3.2: Details of Iron Age pits on Site C

Cut No	*No of Fills*	*Length (m)*	*Width (m)*	*Depth (m)*	*Proposed date*
5955	1	0.9	0.7	0.15	Earliest IA
5923	6	1.6	1.6	1	Earliest IA
7228	9	?	1.8	1	Earliest IA
7295		0.85	0.80	0.27	Earliest IA
5959	1	0.85	0.75	0.12	Early IA
5990	1	1.45	1.45	0.2	Early IA
7209	3	1.70	0.90	0.50 (max)	Early IA
5110	17	1.3	1.1	1.05	Early IA
5130	16	2.1	2.05	1.35	Early IA
5992	7	2.2	1.8	1.15	Early IA
5066	19	1.76	1.62	1.25	Early/Middle IA
5953	1	0.8	0.7	0.2	Early/Middle IA

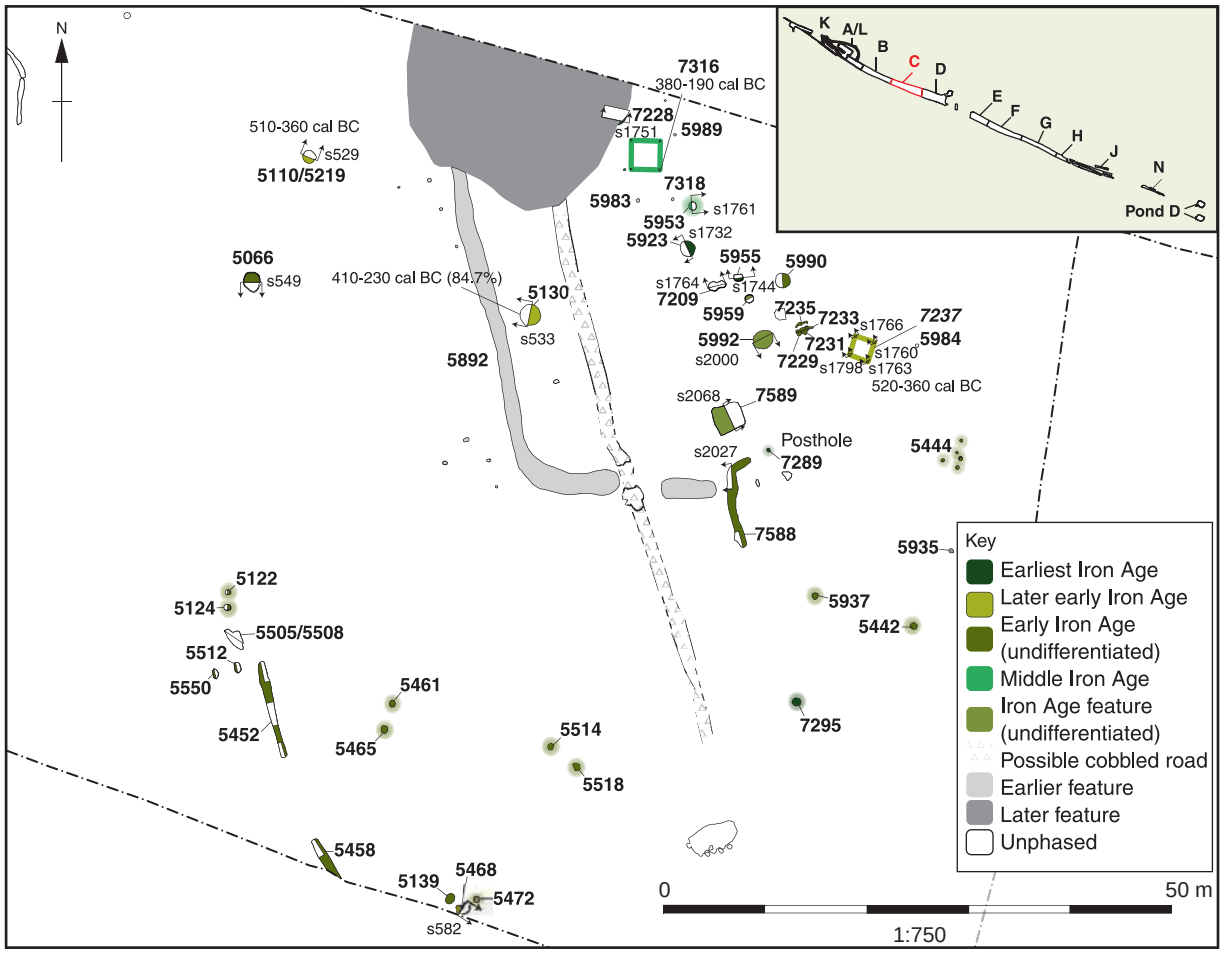


Fig. 3.8 Plan of Iron Age features at the east end of Site C

pottery specifically dated earliest Iron Age, and all but one of these pits may belong to this phase. A larger number of other features in the surrounding area contained pottery in fabrics that were used both in the late Bronze Age and the early Iron Age. In the absence of any clearly late Bronze Age assemblages this pottery is probably early Iron Age.

Earliest and early Iron Age pits are listed in Table 3.2. It seems likely that many of the pits were originally dug for storage and were later used for refuse, though there were some with definite evidence for structured deposition.

Pits with structured deposits

Four large pits (5110, 5130, 5992 and 5066; grouped as pit group 5750) spread across the northern part of Site C (Figs 3.8) varied in size but were all sub-circular in plan and had similar profiles (see Figs 3.9 and 3.10). Samples from two of the pits were submitted for radiocarbon dating, giving dates of 510–360 cal BC (NZA-32315) for charred grain from pit 5110 and 410–230 cal BC (NZA-32314) for pit 5130. There is a 84.5% probability that the date for pit 5130 lies between 410 and 350 cal BC. The other

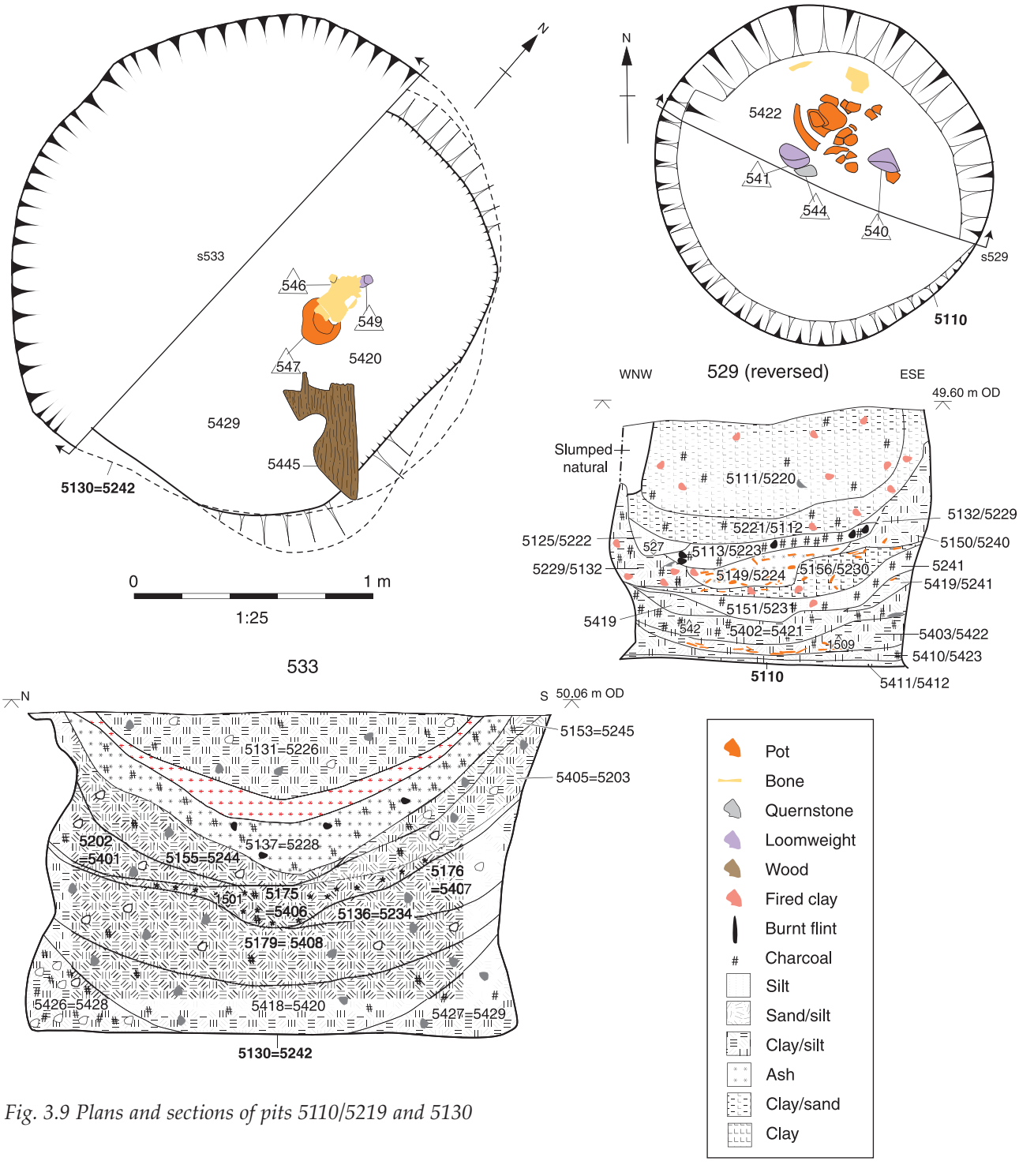


Fig. 3.9 Plans and sections of pits 5110/5219 and 5130

two pits were dated purely from the ceramic evidence, which indicated similar dates, although pit 5066 is likely to be the latest of the group, remaining partly open into the middle Iron Age.

Pit 5110 was the northernmost of the four pits, *c* 12m north east of 5066, and the smallest of the group (Fig. 3.9). It measured 1.3m x 1.1m at the surface, was 1.05m deep, with a barrel-shaped profile expanding out to a maximum of 1.45m x 1.4m approximately half way down. Its base was very flat with a further very slight undercut just above the bottom. The pit contained 17 fills, the first two of which (5411=5412 and 5410 =5423) were natural clays, but also included fuel ash slag

Plate 3.4 Briquetage/fired clay layer 5156 in pit 5110

Plate 3.5 Pit 5110: half-section showing red/black layers

and (in 5410) a few fragments of briquetage. This suggests that salt processing was taking place nearby early on in the use of the pit. These lower fills also produced a small amount of pottery and charred wheat, hazel nut shell and weed seeds. These were overlain by two very dark and rich silty fills (5403=5422 and 5402=5421). The earlier fill (5403) produced a remarkable 1520g of pottery, in addition to six loomweights/triangular oven bricks and a possible saddle quern. In contrast 5402 contained 236 fragments of briquetage weighing 632g as well as 714g of pottery. The faunal evidence included cattle, sheep and pig bones, while plant remains included charred cereal including barley, hazelnut shell and both oak and non-oak charcoal. Further fuel ash slag was found in 5402 but not 5403.

The following four layers all contained large quantities of briquetage and fired clay mixed with charcoal (Plate 3.4), but otherwise only a single sherd of pottery, a flint flake and fragments of sheep/goat bone. The uppermost of these (5235) was limited to the northern half of the pit and did not appear in section. The fired clay assemblages included a further possible loomweight/triangular oven brick from 5156. These deposits were overlain by a thin layer of charcoal (5150=5240).

The upper pit fills continued this sequence of layers of ash and charcoal interspersed with dumps of artefacts (Plate 3.5), although evidence of crop processing and animal bone was also more abundant. Silty clay layer (5132=5229) contained nearly 4kg of briquetage and over 2kg of structural fired clay as well as 33 sherds of pottery, animal bone and flint. Charred cereal was present, mostly identified as wheat, in addition to hazelnut shell and charcoal. This was overlain by large central deposits of ash (5149=5224), charcoal and burnt flint (5113=5223).

Following layer 5113 was a localised silt deposit (5125=5222) that contained 303g of briquetage, a fragment of slag and 40 sherds of mostly comminuted pottery. Clay layer 5112 above this produced 148g of briquetage and 210g of fired clay as well as 12 sherds of pottery, and substantial upper fill 5111 contained 447g of briquetage and 51 sherds of pottery. All contained animal bone in small quantities, charred plant remains including emmer and unidentified wheat, possible barley, hazelnut shell and charcoal.

Overall the pit yielded 510 sherds of pottery weighing 3.48kg and 4035 fragments of briquetage weighing 20.8kg. The industrial waste was therefore clearly preponderant, and there was less obvious domestic waste in pit 5110 than in the others in this group, with only half the amount of pottery and very little animal bone (see below). Where identified the faunal remains included a variety of domesticates but predominantly sheep/goat, but unlike the other pits it did not contain large numbers of rodent and no recognised amphibian remains, suggesting that it was not left open for long periods of time. This is reinforced by the fact that most of the fills appeared to be deliberate deposits, lacking the natural slumps of chalk found in some of the other pits.

Pit 5130, 38m south-east of 5110, was near-circular, measuring 2.1 x 2.05m in plan and survived to a depth of 1.35m (Fig. 3.9). The profile of the pit was approximately cylindrical, but narrowed slightly partway down before expanding and becoming undercut at the bottom. The 16 fills of pit 5130 appear to have formed two separate and successive sequences. Clayey slump fills (5426 and 5427) around the edges of the base of the feature had either collapsed from the sides or had been dumped into the bottom of the pit. Layer 5427 contained 508g of early Iron Age pottery and layer 5426 another two sherds (54g) of pottery and 645g of structural fired clay. Both layers also contained animal bone.

The primary deposits around the pit sides were overlain by a silty clay (5418). Close to the pit bottom layer 5418 contained a deliberate deposit (numbered 5420) consisting of the upper third of a red deer skull whose antlers had been cut off (SF 546) resting on a set of two triangular loomweights/oven bricks (SFs 545 and 549) and a pot base (SF 547) (see Plate 3.6). The fill of the pot was part of 5418, but was numbered separately 5432. Below this was a large sub-triangular piece of carbonised wood measuring 0.6 x 0.3m and only 0.01m in thickness (Plate 3.7). Unfortunately this object disintegrated during the process of lifting it and the resulting

Plate 3.6 Deer skull on top of loomweights (sf 5240) in pit 5130

Plate 3.7 Charred wooden object in base of pit 5130=5242

charcoal could not be identified to species. The red deer skull was the only bone of this species in pit 5130. Layer 5418 also included another triangular loomweight and part of a cylindrical loomweight, together with 72 sherds (1.65kg) of pottery. The pottery was predominantly large sherds from the single vessel whose base was intact. Although the pottery could only be dated broadly as late Bronze Age or early Iron Age, and the cylindrical loomweight is a later Bronze Age type, the triangular weights indicate that the deposits were certainly early Iron Age. Fill 5179 contained 0.5kg of pottery, but the sherds were much smaller. It also produced charred wheat, barley and oat/brome grass. On the south side of the pit a third, slightly siltier layer (5176) overlay 5179, and contained a similar range of artefacts and ecofacts.

Layers 5176 and 5179 were overlain by a layer of redeposited natural and ash (5175). This produced no pottery but contained a single small fragment of briquetage and two fragments of fired clay. In addition to the ubiquitous animal bone the fill also yielded charred wheat, possibly spelt. A radiocarbon date of 410–350 cal. BC at 84.5% probability (NZA-32314) was obtained on charred cereal grain from fill 5406=5175. At this point it appears that the pit may have been left open for some time, as layers of clay-silt clearly built up around the edges of the pit (5203 and 5202) containing nothing but residual flint and a few fragments of fired clay. Subsequently two dumps of material appear to have been deposited from different sides of the pit (5155 and 5153). Much of the content of these fills appeared to be domestic in nature including over 1kg of early Iron Age pottery, cattle bone and charred wheat grain. However, two large fragments of briquetage were also recovered from 5153.

The deliberate dumping continued with a layer of ash, charcoal and burnt flint in a silt matrix (5136) and a thick layer of red/pink ash (5137) both of which extended across the whole pit (Plate 3.8). Both produced very similar finds including sizeable assemblages of pottery (895g/640g), some of which was diagnostically early Iron Age. Both also contained briquetage and structural fired clay, although in very small quantities. Animal bones were more numerous in layer 5136 than in the earlier fills, and included a wider variety of taxa, though pig and sheep bones were predominant. The charred grain was again composed mainly of wheat. The last surviving fill (5131), which occupied the centre of the pit, was a layer of clayey silt that also contained pottery, burnt and unburnt flint and some charcoal, although there was no briquetage and very little animal bone. It was probably another deliberate dump.

Overall 690 sherds of pottery weighing 8.13kg were deposited in this pit. Pit 5130 also produced a small assemblage of fresh, thick flint flakes struck from fairly crude cores. It is possible that this was Iron Age knapping debris, but it is more likely that it was residual from the later Bronze Age occupation in the same area. The layers of ash and burnt material seem to indicate further dumps of industrial material, as seen in the other pits. However, it is possible that different elements of the industrial process were represented in pit 5130. This pit, like 5110 and 5066 (see below), produced briquetage, but in much smaller quantities. The layer of reddened ashy material was not paralleled on Site C, but was similar to layers in the storage pit on Site K, just as the deer skull at the base of pit 5130 was unique on Site C, but was matched by similar deposits in pits on Site G.

Located *c* 30m further east, Pit 5992 measured 2.2 x 1.8m in plan, narrowing briefly at a depth of 0.4–0.5m and having a total depth of 1.15m, with seven distinct fills (Fig. 3.10). The first significant fill of the pit (7314) comprised a mottled layer rich in cultural material. This included 118 sherds of pottery weighing 918g, some of which was diagnostically early Iron Age, as well as 570g of fired clay, a few fragments of briquetage and a number of sheep and sheep/goat bones. There were also a large

Plate 3.8 Pit 5130 half-sectioned showing carbonised deposits

number of bones of rodents, snake and amphibians that probably fell into the pit, indicating that it remained open for some time at this level.

This was overlain by a cleaner clay layer (7287) that also produced a sizeable finds assemblage. This comprised 41 sherds (403g) of pottery, including several earliest Iron Age sherds, 21g of fired clay and sheep/goat bones thought to represent the hind quarters of a single animal. There were also further amphibian/small mammal bones. Abundant charcoal was recovered from an environmental sample from this layer; both oak and non-oak species were identified. Above this clay-silt layer (7286) contained 65 sherds (328g) of pottery, 11g of fired clay and fragments of briquetage, but only a few fragments of mammal bone. Both 7286 and 7287 also produced fragments of iron resembling nail stems. It is likely that these three fills corresponded to fill 5994 on the western side of the pit, which produced a further 76 sherds of pottery weighing 440g, 209g of fired clay and more sheep/goat remains.

Layer 7286 contained a lens of green sand (7285) which also produced 80 sherds (504g) of pottery and 112g of fired clay but the faunal assemblage comprised only a small amount of cattle bone. This was overlain by a larger clay silt deposit (7284) containing a significant assemblage of 165 sherds of pottery weighing 1605g, a few dated earliest Iron Age. Fired clay from the fill weighed 521g and briquetage 29g. Animal bone comprised sheep/goat as well as pig. An environmental sample from the layer produced charred barley and charcoal. Layers 7285 and 7284 seem to correspond to 5995 on the western side of the pit, which produced a further 50 sherds of pottery weighing 456g, 84g of fired clay and sheep/goat remains.

The final clay silt deposit in the pit (7283) contained 243 sherds (1103g) of pottery, 445g of fired clay and a fragment of briquetage. Unlike the lower fills the faunal assemblage in 7283 contained all the standard domesticates (sheep/goat, pig and cattle). An environmental sample also produced abundant charcoal, hazelnut shell and plum/damson/greengage remains. This corresponded to fill 5996 which contained 75 sherds (583g) of pottery, 583g of fired clay and cattle bone.

Overall pottery from 5992 totalled 6.3kg, with 2.1kg of fired clay. The majority of the pottery could only be dated by the fabric to either the late Bronze Age or early Iron Age, although some was diagnostically early Iron Age, and a few sherds were dated to the earliest Iron Age. Although the pit had a less complex sequence than its neighbours it contained similar deposits including briquetage and was clearly significant for waste deposition.

The final pit in this group (5066) lay furthest west and measured 1.76 x 1.62m in plan, expanding to 2.1 x 1.7m at two-thirds of its depth (maximum 1.25m), with a marked undercut and slightly uneven base (Fig. 3.10). The pit contained 19 fills in total and the fills in the lower half of the pit differed from those in the upper half in a number of ways. The lower sequence comprised a number of culturally rich clay silt deposits (5433, 5431, 5430, 5416, 5425, 5415) interspersed with redeposited chalk from minor collapses (5491, 5492, 5490, 5488). Overall this suggests that dumping episodes were followed by periods of inactivity in which natural subsoil was

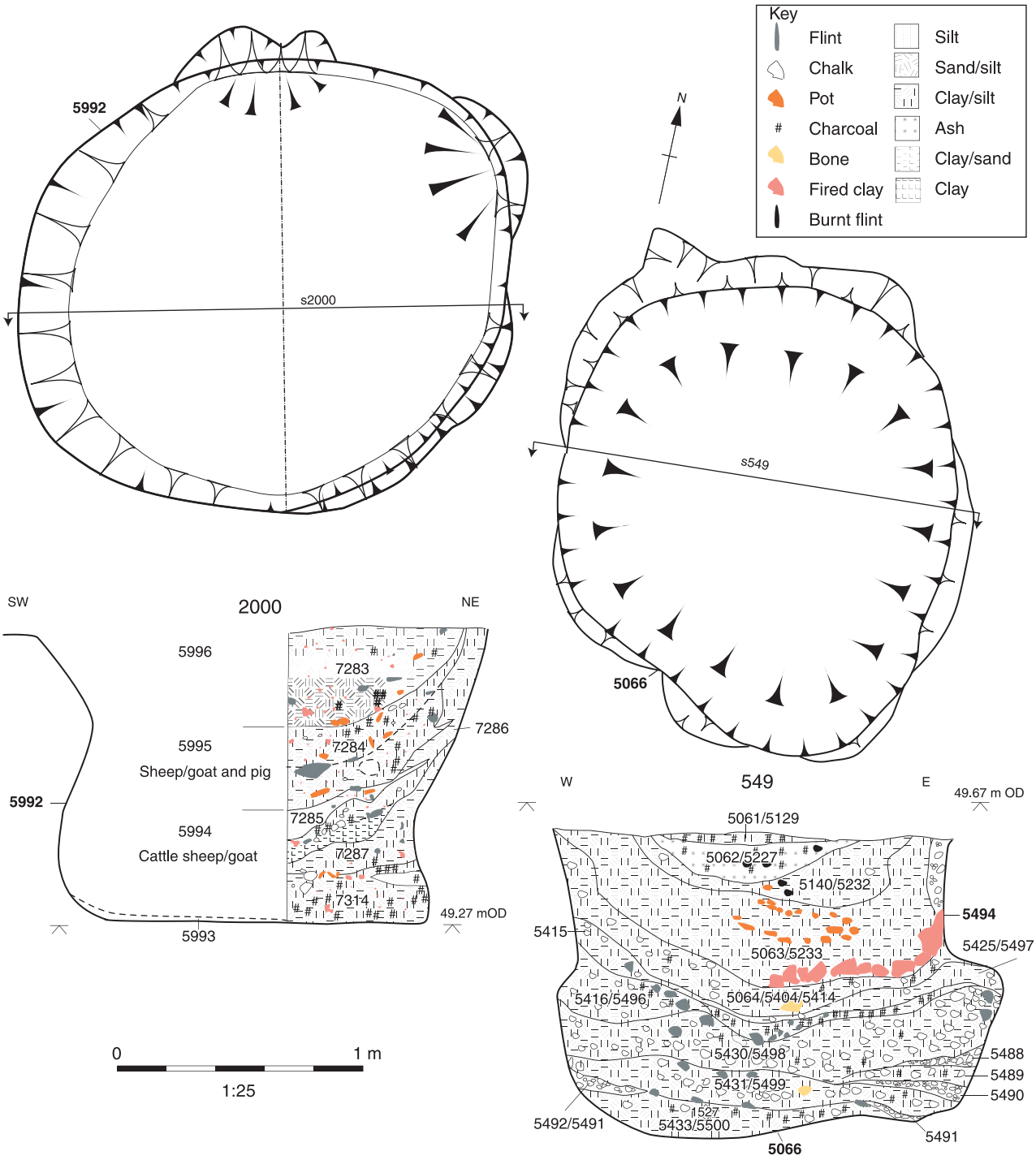


Fig. 3.10 Plans and sections of pits 5992 and 5066

able to accumulate within the open pit. This is supported by the occurrence of amphibian and rodent remains in many of the fills, probably the result of accidental pit-falls.

The dumping deposits each contained over 500g of pottery, much of which was identified as early Iron Age or early–mid Iron Age, including a near-complete cup (SF 539) from fill 5415. In all cases this was accompanied by animal bone including the standard domesticates (cattle, sheep/goat, pig) as well as red deer in fills 5433, 5431, 5430 and 5416. Other finds included a small amount of fired clay from basal fill 5433, fragments of briquetage from 5431 and 5430, slag from 5425 and crumbs of iron from 5415. Environmental samples from the lower fills produced only charred weeds and charcoal, with layer 5425 particularly rich in charcoal. In some cases processing of the samples yielded globules of fuel ash slag derived from processes involving high temperatures. These deposits reflect

a mixture of domestic and industrial activity, including the hunting of wild animals, the use of salt and iron smithing.

The nature of the fills changed above layer 5415, becoming more clayey and containing larger amounts of briquetage and charred cereals but excluding red deer bone. The upper sequence was preceded by a localised deposit of burnt material (5413) that contained no artefacts. Layer 5414 lay directly above 5413 and contained further fragments of briquetage, animal bone and a single triangular loomweight/oven brick (the only example from pit 5066). Above deposit 5414 there was further evidence of collapse of the side of the pits, possibly indicating a period of inactivity. This was overlain by a substantial, charcoal-rich fill (5063) containing a remarkable assemblage of briquetage. In total 2129 fragments weighing 22,074g were recovered, much of which appeared to have been deliberately placed along the base of the fill. A further 8kg of fired clay was also found within 5063, alongside a sizeable pottery deposit (39 sherds weighing 744g) and mammal bone. In contrast to the briquetage much of the pottery was found

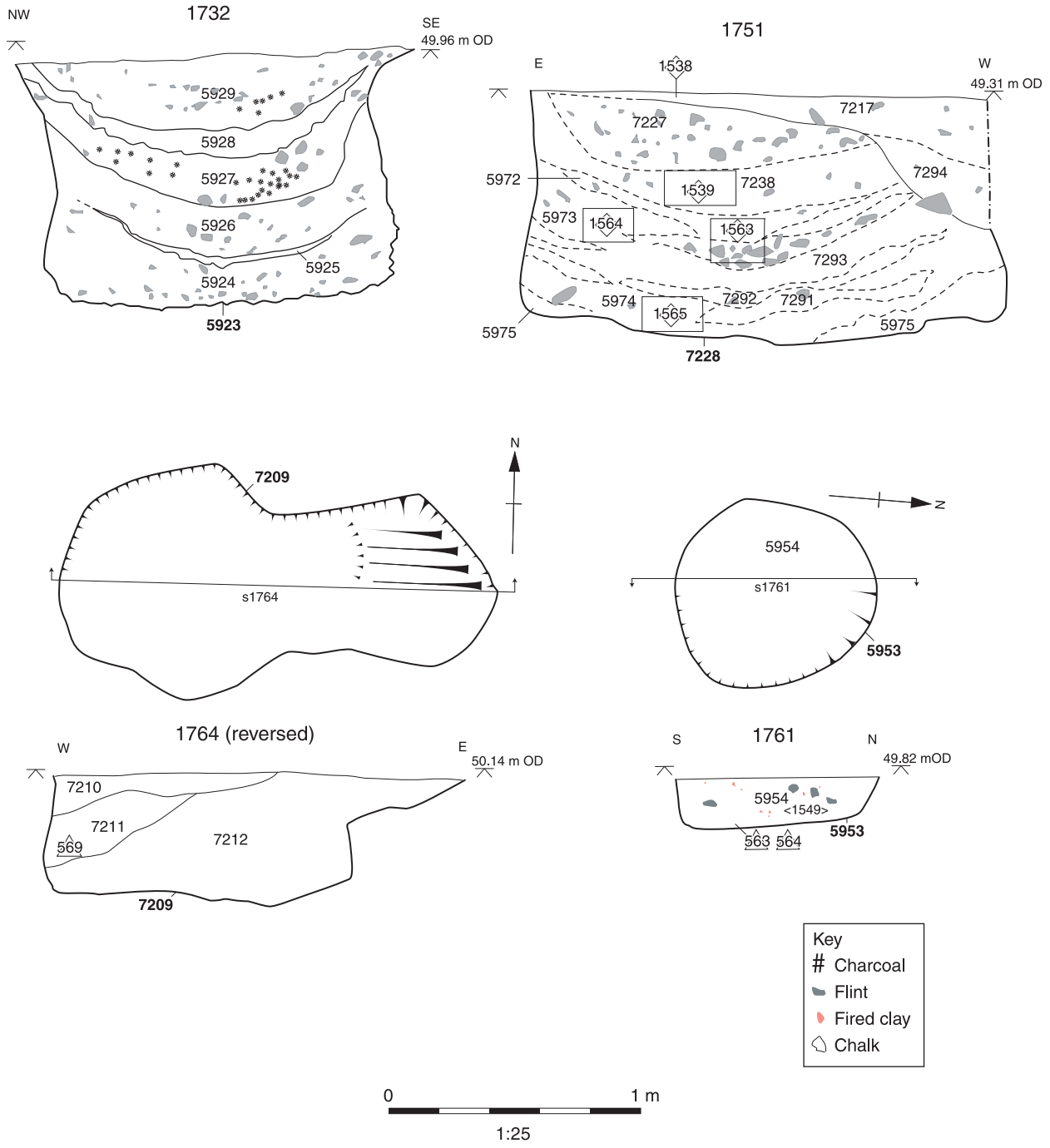


Fig. 3.11 Sections of pits 5923, 7228, 7209 and 5953

towards the top of the fill. Amongst this were sherds of several S-profiled and burnished vessels in sandy fabrics, suggesting that this layer was deposited in the middle Iron Age. Fill 5063 was the lowest fill to produce possible charred cereal and both 5063 and 5414 yielded further globules of fuel ash slag.

The uppermost three layers filled the centre of the pit top. Fill 5140 contained another 626g of pottery, 846g of briquetage and 269g of fired clay as well as animal bone and charred wheat. This was overlain by burnt layer 5062 which produced more fragmented pottery (36 sherds, 106 g), briquetage and fired clay in smaller amounts. Ecofacts included sheep/goat bone, oak and non-oak charcoal, charred hazelnut shells and barley. The last fill (5061) contained a similar amount of pottery and bone, a single charred cereal grain, charcoal and hazelnut shell as well as a fragment of slag. A few Roman pottery sherds and a fragment of Roman brick were found in these fills, indicating there was some disturbance at a later date, possibly from ploughing. Struck flint in quite fresh condition was also found throughout the pit, and may represent a very important and rare example of Iron Age flint knapping.

Pit 5066 contained over 1000 sherds of pottery weighing nearly 6kg and 2347 fragments of briquetage weighing 23.37kg. Fill 5063 contained a particularly large dump of briquetage, possibly intentionally selected. The presence of fuel ash slag and of small amounts of briquetage and charred material in most of the fills indicates that salt processing was taking place in the vicinity throughout the life of this pit. It is possible that the dump in 5063 marks the end of this activity and consequently the abandonment of related debris in this layer and in 5140 above. It is interesting that the lower and upper fills have a noticeable change in character, potentially marking changes in settlement behaviour including diet and scale of industrial production.

Both of the pits in this group that were radiocarbon-dated gave dates likely to fall in the late 5th or earlier 4th century cal BC. The pottery from pit 5066 suggests that it was slightly later, the upper fills being deposited at the start of the middle Iron Age, perhaps in the later 4th century BC. This fits with the interpretation suggested in the briquetage report (see Morris this vol.), which suggested that the briquetage deposited in 5110 was earlier than that deposited in pit 5066.

Overall pit group 5750 represents an important source of archaeological evidence. The features were all fully excavated by hand and were extensively sampled, so we can be confident that all available evidence was recovered. As a whole, it is possible that the depositional sequence in the four pits represents 'special' deposits chosen to reflect the various aspects of Iron Age life. Several of the pits had clear indicators of pauses in the depositional record such as thin layers of washed in or collapsed natural, suggesting that the deposits were separated by intervals of time, and perhaps reflected rituals performed at different times of year, or according to some other cycles of activity. The changing character of the deposits also indicates the variety of activities that were being undertaken at different times at this location.

Aside from the four substantial pits described above, there was probable earlier evidence for struc-

Plate 3.9 Half-section of earliest Iron Age pit 5923

tured deposits. Large pits 5923 and 7228 both produced sizeable assemblages of pottery (5923 – 664g; 7228 – 617g), each including a single diagnostic sherd identified as earliest Iron Age (Fig. 3.11). Structural fired clay was recovered throughout the fills, and both pits contained abundant charcoal and charred cereal grains, including barley and wheat (Plate 3.9). While, however, the pottery within 5923 was dispersed throughout the fills, that in 7228 was mainly recovered from the upper fills. Both pits contained animal bone including cattle and sheep/goat and rodent, but 7228 also produced red deer and bones of at least two neonatal pigs from fill 5974 close to the base. Another atypical find in pit 7228 was 66g of oyster shell from fill 5974. This is relatively uncommon in the Iron Age, though found with increasing frequency on sites near the Kent coast. The burial of multiple piglets at the base, red deer bones, oysters and a concentration of pottery towards the top of pit 7228, although only a fraction of the fill survived, may indicate structured deposition. The oysters and pig bone may perhaps have been the result of feasting.

Another pit containing a rather more unusual finds assemblage was 5953, the objects recovered including a Neolithic stone axe, an iron carpenter's gouge, a flint flake and hazel nut shell (Fig. 3.11). 'Curated' stone axes are quite often found in Iron Age contexts (see also Roe this vol.), and is a clear instance of structured deposition. In north-west France these objects are often reused as 'affutoirs' (sharpening or grinding stones) or 'polissoirs' (burnishing or polishing stones) in the Iron Age (Yves Menez pers. comm.). The gouge is of a type found in both Iron Age and Roman contexts, but the earliest dated parallels would appear to be of very end of the early Iron Age and of the middle Iron Age (see metalwork report below). This pit is therefore either later early Iron Age or later.

Other features in Site C

A range of other pits, postholes and gullies of early Iron Age date were revealed in the east of Site C (see Fig. 3.8 and Table 3.2). Of the other pits in the northern group, one (7209) was keyhole-shaped, and contained early Iron Age pottery, along with fragments of animal bone, oyster and briquetage, a flint flake, charcoal and large quantities of fired clay from the superstructure of an oven (see Fired Clay report below). This feature has some similarity to a keyhole oven, but there was no trace of *in situ* burning on the base or sides of the half that was excavated. Although oven superstructure was dumped in the feature (layer 7211), there was no evidence of flooring or floor supports to suggest that the fire might have been set on a raised floor. This was probably a pit with a step on one side to allow access, later backfilled with oven material. Although less substantial, it is not dissimilar in form to pit 12527 in Site L.

A single four-post structure in the vicinity of the northern pits, structure 7237, was also dated to the later early Iron Age. This comprised a square of postholes measuring 2.3 x 2.2m (Fig. 3.12). The postholes contained numerous scraps of pottery in fabrics current in the late Bronze Age and early Iron Age periods, rodent and amphibian bone, fired clay and oak charcoal, hazelnut shell and a possible haw stone. Hazelnut shell from fill 7208 (posthole 7207)

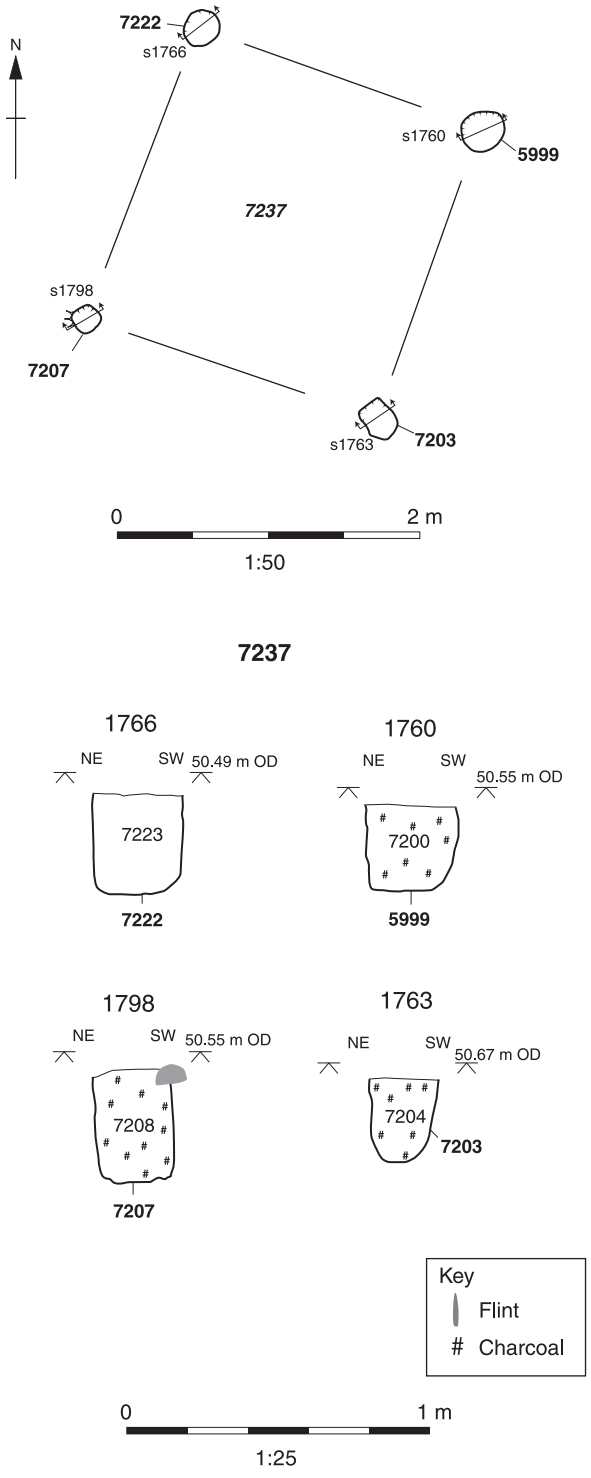


Fig. 3.12 Plan and sections of four-post structure 7237

was radiocarbon dated to 520–360 cal. BC (NZA 32307), a date very similar to that from pit 5110.

Scattered features to the south of the main northern pit group included gully 7588 and post-hole 7289. The L-shaped gully (9.5 x 1 x 0.5m deep; see Fig. 3.8) was situated at the south eastern terminus of Bronze Age enclosure ditch 5892, with posthole 7289 directly north-east of its terminus. Both features contained pottery of fabrics used in the late Bronze Age and the early Iron Age, with an earliest Iron Age finger-tipped jar identified from 7289.

Another smaller area of activity was located to the south-west (Fig. 3.8). This comprised a pair of short lengths of gully (5458 and 5452), a pit (5505) cut by a gully (5508) and in the wider vicinity four pairs of pits. A number of these features contained pottery in fabrics used both in the late Bronze Age and the early Iron Age. Other finds were scarce but included a triangular loomweight or oven brick in 5465 (see Fired Clay report), fired clay from pit 5512 and a flint flake and charcoal from 5514.

Site D pit and posthole

A single large pit (6336) and one small pit or posthole (6505) on Site D yielded pottery of early Iron Age date (for plan see Fig. 3.35 below). The pit was 2 x 1.65m in plan and a minimum of 1.2m deep but was not excavated beyond this depth due to health and safety concerns (Fig. 3.13). It had largely removed smaller pit 6339 on the east side. Pit 6336 contained eight fills to the level of excavation, including two dumps of burnt material, along with some animal bone (including dog and roe deer). The character of the pit suggests it may have originally been used for storage and at a later date was partially filled in and ultimately used to dispose of refuse, including hearth material.

Site E

Activity on Site E fell into two very distinct time periods. The ditches to the west were clearly post-Roman in date and are discussed in Chapter 5, whilst the remaining scattered activity was more characteristic of the Iron Age. Dating evidence was meagre, comprising a few sherds of pottery from three features, although this appeared to be entirely early Iron Age in date, and therefore the features are discussed here.

The Iron Age activity was located in two separate groups (Fig. 3.14). The first comprised an intercutting group of pits (7012, 7013 and 7025), a posthole (7015) and a short gully (7023). Gully 7023 appeared to be the earliest feature, and produced a sherd of early Iron Age pottery. This was probably cut by pit 7013, while the latest feature, pit 7012, contained just a few fragments of fired clay.

The second group was located 40m to the south-west, and comprised 46 postholes, all of which contained similar, single fills that were fully excavated and sampled. Eight possible post-built structures were identified within this group (Figs 3.14 and 3.15; Plate 3.10). These comprised five simple four-post structures (7095, 7097, 7098, 7099 and 7100) two similar structures with extra postholes (7179 and 7181) and a group of three postholes (7180), with a possible fourth lying beyond the site edge (Table 3.3). The structures were mostly placed on a north-south alignment, although some were more accurately described as NW-SE. This type of structure is found on many British Iron Age sites, and

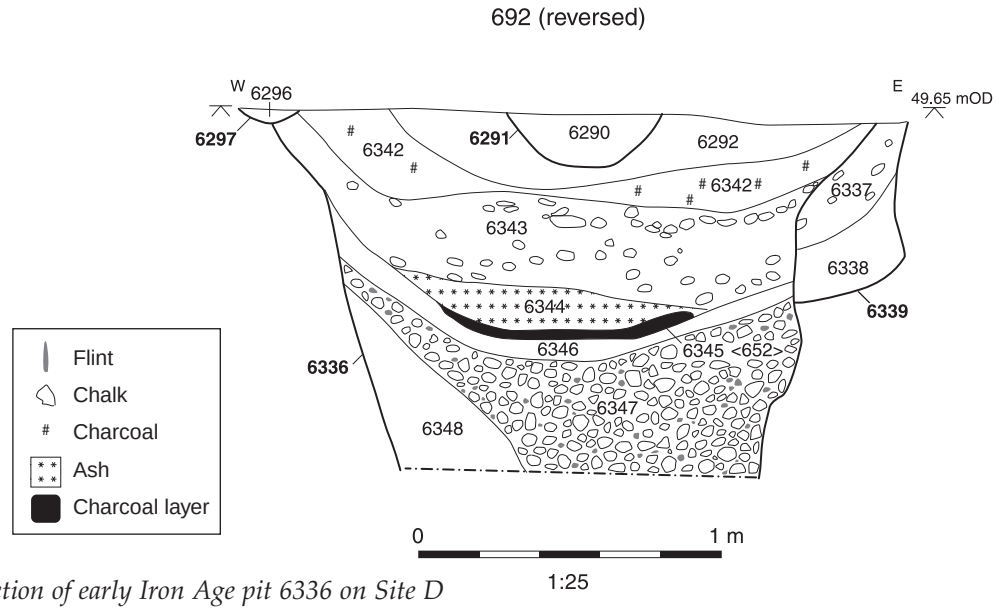


Fig. 3.13 Section of early Iron Age pit 6336 on Site D

Fig. 3.14 (facing page) Plan of Iron Age features in Site E, including Tollgate Neolithic enclosure

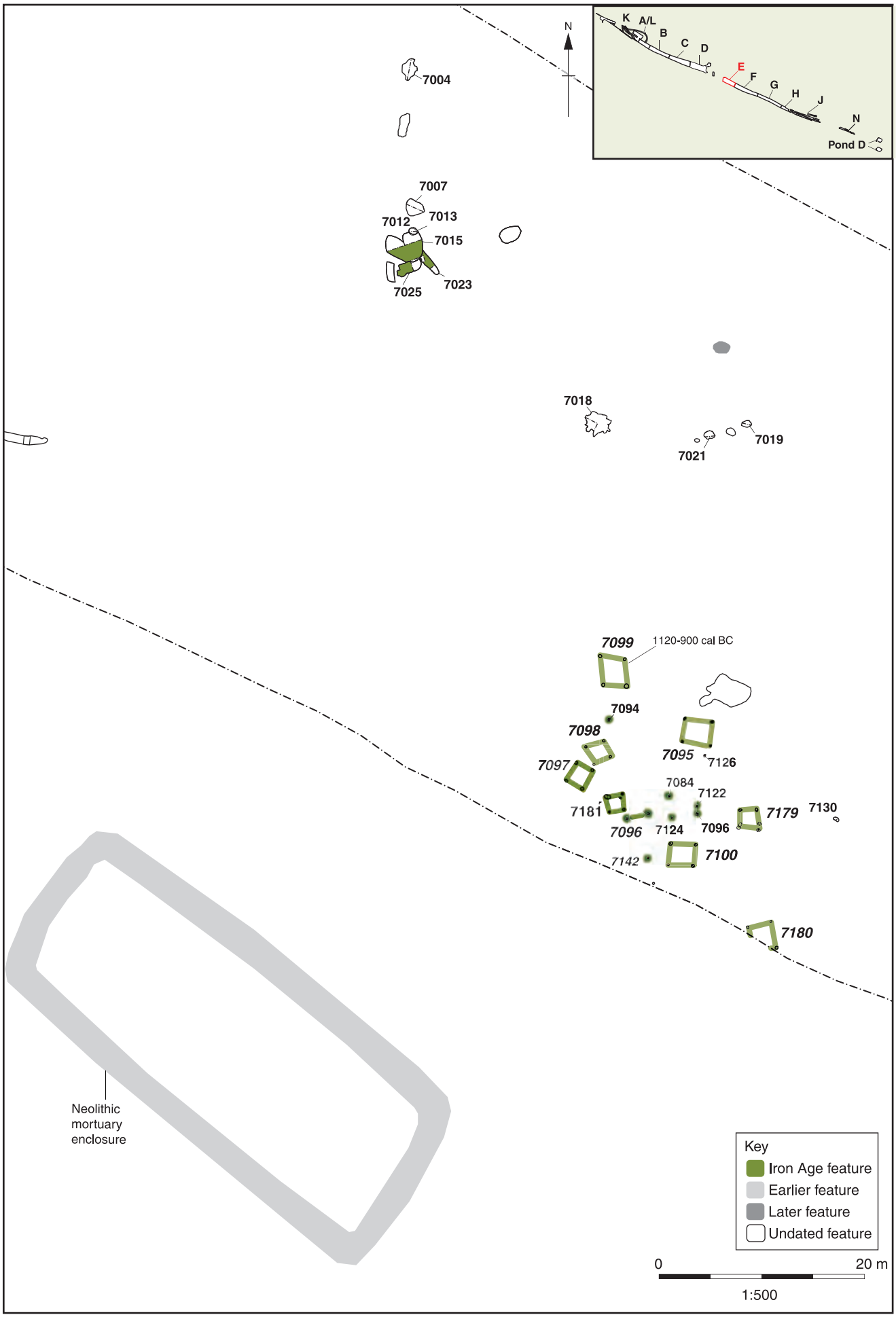

N
K
A/L
B
C
D
E
F
G
H
J
N
Pond D
7004
7007
7012
7013
7015
7023
7025
7018
7019
7021
7099
1120-900 cal BC
7094
7098
7095
7126
7097
7084
7122
7181
7179
7130
7096
7124
7096
7100
7142
7180
Neolithic
mortuary
enclosure
Key
Iron Age feature
Earlier feature
Later feature
Undated feature
0
20 m
1:500

Plate 3.10 Four-post structure 7179 viewed from the north-east

they are generally interpreted as storage structures with raised floors, and particularly as granaries. A number of the postholes did not appear to belong to any obvious structures, although the surviving postholes were shallow (maximum depth 0.19m), and it is possible that others had been entirely removed by ploughing. For example, a pair of posts (7096) to the south-east of 7181 may have formed part of a heavily truncated four-post structure.

Finds from the postholes were few. Only posthole 7076 (part of 7096) produced any pottery, and this consisted of a scrap in a fabric characteristic of the late Bronze Age or early Iron Age. Other finds comprised fragments of fired clay and very small fragments of iron slag. A possible small cylindrical bone bead (SF 700; see Scott this volume) came from discrete posthole 7142.

Table 3.3: Detail of Iron Age four-post structures on Site E

Structure No.	*Overall size (m)*	*No. of postholes*	*Posthole diameter (m)*	*Posthole depth (m)*
7095	2.8 x 2.5	4/5	0.18-0.32	0.06-0.12
7097	2.2 x 2	4	0.28-0.3	0.11-0.2
7098	2.1 x 2	4	0.2-0.26	0.1-0.15
7099	3 x 2.7	4	0.27-0.4	0.1-0.16
7100	2.7 x 2.3	4	0.25-0.3	0.07-0.18
7179	2.3 x 2.2	6	0.22-0.42	0.07-0.15
7180	1.6 x 1.6	5	0.2-0.28	0.03-0.15
7181	2.8 x 2.5	3	0.14-0.39	0.03-0.11

Fragmentary, unidentifiable animal bone was recovered from all the structures except 7095, 7100 and 7180. Environmental sampling of the postholes produced charcoal in varying quantities, although none was identified to species. There were a few cereal grains including possible wheat from structures 7098 and 7099. Isolated postholes 7086 and 7124 contained larger numbers of grains, including hulled barley, indeterminate wheat, indeterminate cereal and vetch/vetchling. One of the grains from structure 7099 was radiocarbon dated and gave a calibrated date range of 1120–900 cal BC (NZA 32313), ie in the late Bronze Age (see Chapter 2).

The date of this group of four-posters is difficult to pin down, as such structures are common both to the late Bronze Age, for instance at Reading Business Park and at South Hornchurch (Brossler *et al.* 2004; Guttmann and Last 2000), and to the Iron Age. Only one charred cereal grain was dated, and none of the postholes belonging to structures contained a sizeable assemblage of grains, so these may have been residual. If the evidence of the slag were taken at face value, it would suggest an Iron Age date in preference, but none of the fragments weighed more than 1g, and all of this could equally well have been intrusive. There is no obvious

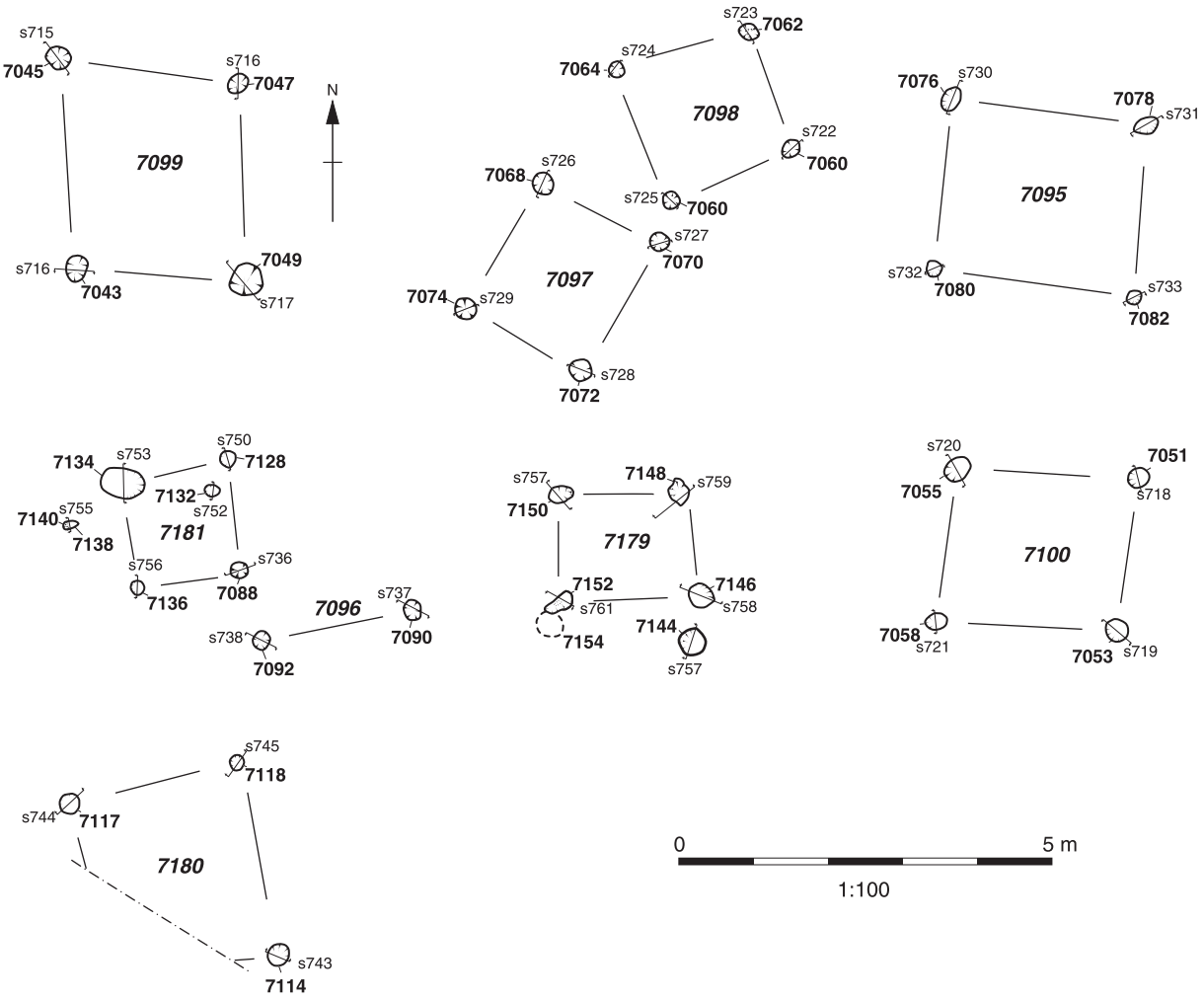


Fig. 3.15 Detailed plans of four-post structures on Site E

parallel for the tiny bone object, whose perforation was so small as to make use as a bead very doubtful. Three very small amber beads of similar size were recovered from a middle Bronze Age waterhole at Appleford Sidings, Oxfordshire (Boyle in Booth and Simmonds 2009, 51), indicating that very small beads were current in the later Bronze Age. Nevertheless, a bead as small as this could also have been residual or intrusive.

Activity in the vicinity is sparse. The nearest late Bronze Age feature found along the line of the A2 was at Site G some 600m to the east, or on Site D a similar distance to the west, where cremation 6010 was radiocarbon-dated to 1260–1020 cal BC (NZA 31264; see Chapter 2). On the adjacent HS1 excavations the nearest feature found was 2km further east (Bull 2006a, 11). In the evaluation of the Tollgate mortuary enclosure, however, flint-tempered pottery ascribed to the late Bronze Age was reported from the lower colluvial fills only 60m to the south-west of the four-post structures, with a mixture of similar pottery and middle Iron Age pottery from the upper colluvium above this (Barclay in OA 1995, Appendix 2). Flint-tempered fabrics are, however, also characteristic of the early Iron Age in this area, and such sherds were found in other features on Site E itself. It was argued that ploughing on or around the mortuary enclosure may have begun in the late Bronze Age, and have continued into the middle Iron Age (ibid, 16). This evidence can of course be interpreted either as providing a context for storage structures in the late Bronze Age, or alternatively as explaining why charred cereal grains might be available for incorporation into later postholes.

Examination of the morphology of the four-post structures on the scheme, few of which were able to be dated, does not provide any clear differentiation by date. Comparison with other sites is also not helpful; while all of the four-posters at South Hornchurch were less than 2m a side, those at Reading Business Park were varied. It is therefore possible that the four-post structures on Site E began in the late Bronze Age. Although such structures need not have been associated with large quantities of domestic debris, it is tentatively suggested that the group may represent the continuing use of such structures over a considerable

period, into the early and possibly the middle Iron Age, rather than a large group of late Bronze Age date.

Site G

A group of early Iron Age features was found in Site G, mostly in the eastern half (Fig. 3.16). The features were bounded on the east by a ditch (9609), and consisted of two four-post structures, a scatter of large and smaller pits, and a few other postholes. In the west part of Site G one large irregular hollow (9484) within the middle Bronze Age enclosure was early Iron Age, and pottery of this date was also recovered from the uppermost fills of the Bronze Age enclosure ditches. Outside the enclosure to the south-east was one further four-post structure (9221) and several small pits, mostly undated, some of which may also have been Iron Age.

Excavation in advance of the construction of the HS1 had included the stripping of much of the eastern half of Site G. This had revealed some of the pits, and these had been partly excavated, though rarely bottomed, by MoLAS. Some of the part-excavated features were not, however, included on the site plan or recorded, although pottery from the excavation was found at the bottom of the slots that had been dug.

The pottery that was recorded from the MoLAS excavation of this site was dated as early or early–middle Iron Age (G P Jones 2006), although a radiocarbon date of the earliest Iron Age 850–760 cal BC (NZA-22880) was recovered from a residue on a bodysherd from pit 374 (= pit 9054). This indicates that some activity of the late Bronze Age or earliest Iron Age was present (see also below). A further radiocarbon date of 760–380 cal BC (NZA 22866) came from pit 387 (= 9012). A few late Iron Age or early Roman features were also found during the HS1 excavations immediately to the south of the line of the new A2, so only a tentative Iron Age date can be offered for features found on Site G that did not contain diagnostic finds. As on Site C, a few features contained pottery diagnostic of the earliest Iron Age, and some radiocarbon dates and finds identified features belonging to the latest part of the early Iron Age, in the 4th century cal BC. Most of the features, however, could only be dated as belonging somewhere within the early Iron Age.

Pits with structured deposits

The most significant features on Site G were a group of large, complex pits (9010, 9053, 9052 and 9088), similar to those from Sites L and C. Around these were scattered smaller pits such as 9004, 9054 and

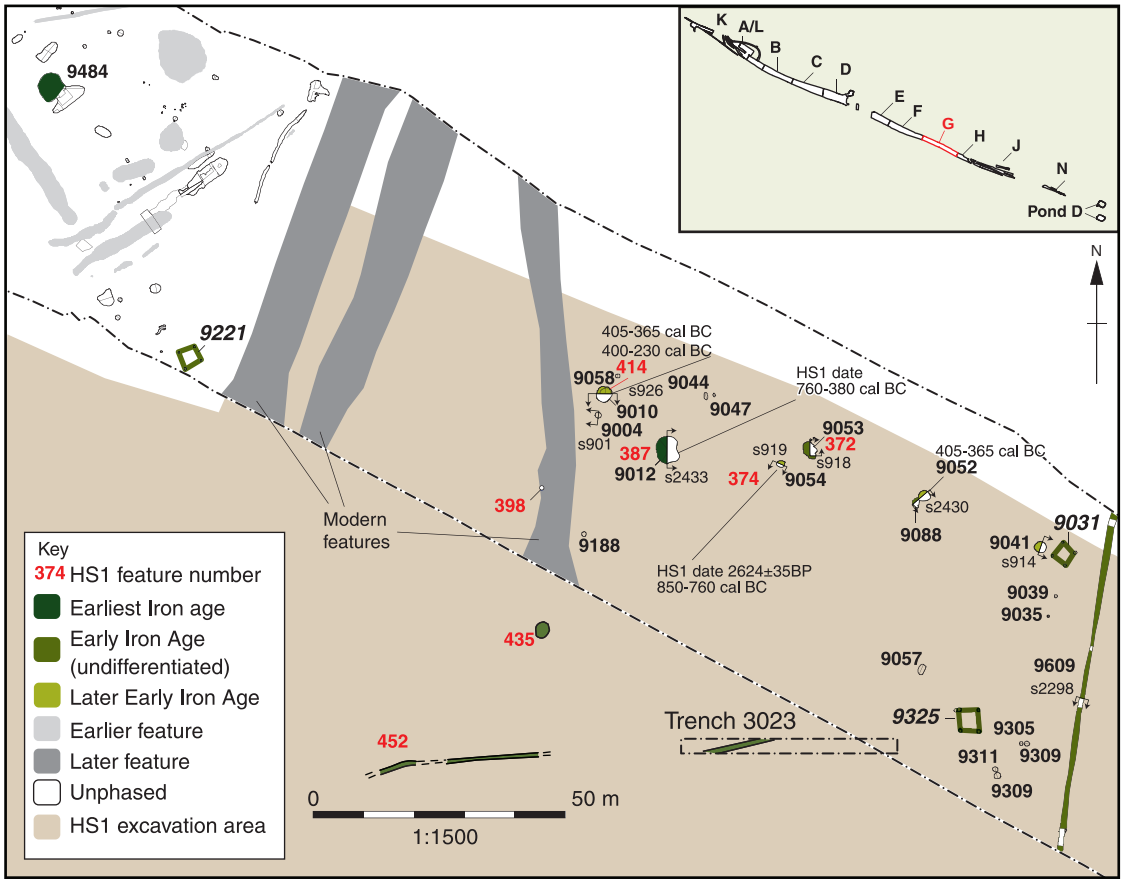


Fig. 3.16 Plan of Iron Age features in Site G

9041. On Site G, as on Site C, the pits were roughly arranged in a row, aligned WNW-ESE.

The westernmost pit was 9010, one of the largest and certainly the deepest of all the complex pits on the site. The pit measured 2 x 1.4m in plan and was 1.85m deep, containing 16 fills (Fig. 3.17). Like many of the pits discussed above, 9010 was vertical-sided at the top and undercut lower down (at around 0.45–0.65m), below which the sides narrowed again slightly to a flat base. This pit had previously been exposed during the HS1 works as pit 414, and the top fills of this pit had been partially excavated (see section 926), producing 18 sherds of early–mid Iron Age pottery and animal bones.

The primary fill of the pit (9170) contained a small assemblage of rodent and amphibian bone indicating the pit had been left open. The main part of the fill, however, consisted of a dump of over 1kg of pottery, fragments of fired clay and charred plant remains including spelt and possible emmer wheat, weed seeds and a possible tuber. This was overlain by two deposits of mixed ash and silt (9109 and 9082). Almost 15kg of pottery was recovered from 9109, with a further 3.8kg of pottery from 9082 (Plates 3.11 and 3.12). This largely belonged to three smashed vessels; a very large storage vessel (base SF 947), a highly burnished tripartite black jar (SF 958) and a small roughly-made small pot or bowl. A single fragment of human sternum was also recovered from 9109. Standing upright on top of the layer of smashed pottery on the north-west side of the pit, and within layer 9082, was a further jar with finger-tip decoration on the shoulder (pot 9151; Plate 3.13). This contained fish (a small scad (*Trachurus trachurus*) vertebra; identified by R Nicholson) and pig bone and marine shell. Layer 9082 also produced both oak and non-oak charcoal and much fuel ash slag. A total of four triangular loom-weights/oven bricks and a further unidentified

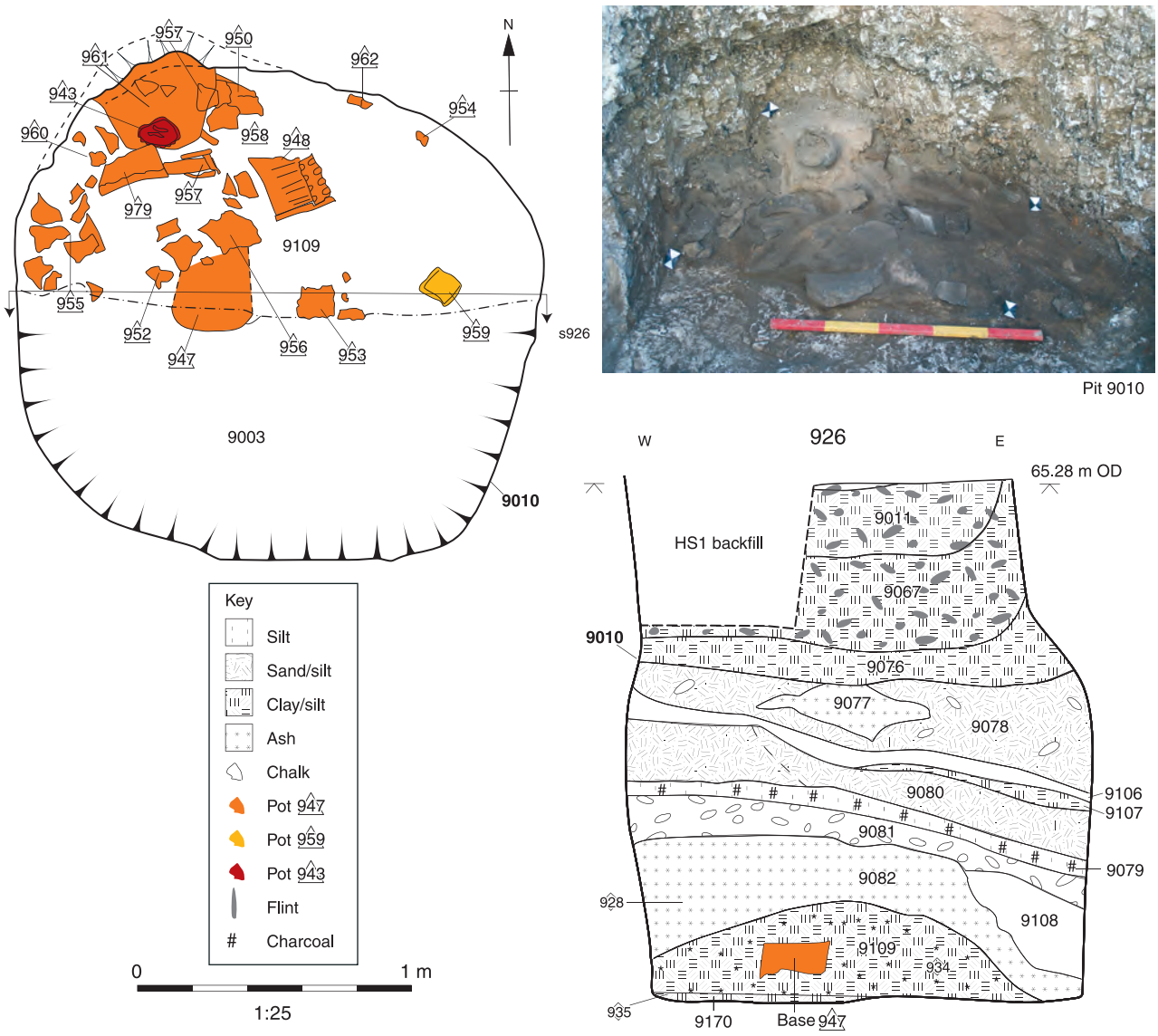


Fig. 3.17 Plan and section of pit 9010, showing approximate limits of pottery dump in layers 9109 and 9082

Plate 3.11 Pit 9010 showing layer of smashed pottery under excavation

Plate 3.12 Pit 9010 showing whole pot on layer of smashed pottery

clay object were recovered from 9082, in contrast to only a single fragment of fired clay from 9109. In addition a possible bone toggle was found in 9082 (see Scott this volume), one of very few worked bones from the Iron Age across the site.

Both layers also contained a few cattle and sheep bones, and layer 9082 included much of two pig skeletons, both sows. One of these was burnt. Bones of two other pigs were also recovered from 9082, one a burnt neonatal fragment, along with bones of

Plate 3.13 Pit 9010 showing detail of largely complete pot on burnt layer 9082

rodents, amphibians and bird, and fragments of marine shell. Charred plant remains were abundant and included wheat, possibly emmer, and barley. This phase of dumping was apparently followed by a period of disuse during which a deposit of clay silt containing rodent and amphibian bones (9108) formed around the eastern edge of the pit. This was succeeded by a thin sterile layer of chalky silt (9081) that covered the whole of the pit base, perhaps suggesting that the primary deposits in the pit bottom were deliberately sealed. Alternatively the pit sides may have been cleaned preparatory to further use.

The silt and chalk was followed by a thin layer of black soil with abundant charcoal (9079), predominantly oak with some hazel/birch and some hazelnut shell. It contained little in the way of cultural material other than a few sherds of prehistoric pottery and fragments of structural fired clay. The layer, however, contained animal bones including domesticates, roe deer and small mammals. The charcoal was followed by a thicker layer of clayey silt 9080, which contained seven sherds of pottery, animal bone and fragments of fired clay. The most unusual find from this layer was a whole limpet shell and fragments of another. Layer 9080 was once more covered by a layer of sterile silt to the east (9107), which in turn was overlain by a layer of chalk (9106) extending across the whole pit. This seems to have been another sealing layer like 9081 below.

A thick layer of silt (9078) overlay 9106. Partway through its accumulation an ash and burnt flint deposit (9077) had been dumped in the centre of the pit, and was subsequently partly sealed by further silting. Both layers produced small assemblages of pottery, structural fired clay and animal bone. Amongst the animal bone from 9078 was a complete red deer antler at one edge of the pit, and this layer also included an unfinished chalk spindle whorl (see Shaffrey this vol.). Ash layer 9077 included dog bone and a large fragment of human skull. A fragment of mussel shell and possible charred fruit was also recovered. Both layers also yielded large amounts of charcoal, oak in 9078, hazel/birch in 9077. The upper three layers of the pit (9076, 9067, 9011) were all deliberate dumps of material containing domestic waste including pottery, fired clay and animal bone.

Two radiocarbon dates were obtained from the human skeletal remains within pit 9010. The sternum fragment from context 9109, close to the base of the pit, returned a date of 400–230 cal BC (95.4%) with a 71.6 % probability of falling within the range 400–350 cal BC (NZA 32401). The skull fragment from later deposit 9077 was dated to 405–365 cal BC (NZA 32405). These dates can be interpreted in two ways. The bones could come from different individuals, suggesting that the pit was not dug much before 400 cal BC, and was at least three quarters filled within thirty years or less. Alternatively, both bones could derive from the same individual, hence the very similar date ranges. This would provide a TPQ for the filling of the pit, but the bones were deposited in successive phases of infilling divided by clean chalk including small bones that probably result from animals falling in accidentally. This suggests a gap between the phases of deposition, and thus that the human

bones had been curated. While the gap between the death of this individual and the deposition of the bones is unknown, however, the tripartite jar in layer 9109 was clearly an early Iron Age form, indicating that the filling of the pit took place in the 4th century BC, and most likely in the first half.

Pit 9010 demonstrated a pattern of probable structured deposits followed by periods of inactivity. Like the pits in Site C, the presence of ashy, burnt fills and fuel ash slag suggests industrial debris, though there was no briquetage. Other similarities include the large faunal assemblage in pit 9010, which included both domesticates and wild deer, marine shells and the presence of triangular loomweights/oven bricks. The incidence of hazelnut shell in many cases is also notable but may be a secondary product of the use of hazel wood for fuel, as hazel charcoal was frequently noted. This may reflect the local environment but may also represent human choice in selection of fuels. In contrast this is the only pit within the early Iron Age to produce human bone, although the occurrence of fragmentary human remains in Iron Age pits is not unusual. It may be significant that dog bone was also found alongside the human remains, although not typically found in these pits.

Another large pit (9053) was excavated *c* 45m east of 9010, measuring 2.6 x 1.8 x 1.3m deep (Figs 3.16 and 3.18). The pit had an irregular profile, undercut and slightly deeper to one side, and it is possible that 9053 represented two separate features. Overall the pit or pits contained a sequence of nine fills. The earliest deposits (9100, 9098, 9099, 9101) were all devoid of finds, and were likely to be natural slippage or silting.

There followed a sequence of four further silting fills, possibly entering the pit from the east. Of these, fills 9097 and 9096 produced a small amount of pottery, fired clay and animal bone. The latest dark clay/silt fill (9094) appeared to be *c* 70m thick, but had almost all been excavated as pit 372 during the HS1 excavations (Plate 3.14). The OA excavation yielded 13 sherds of pottery and a triangular loomweight/oven brick fragment, while the HS1 excavation of this deposit included 6kg of early–middle Iron Age pottery and animal bone. The faunal remains as a whole represented only the standard domesticates. Unlike the other pits in this group, pit 9053 appears to have lacked any structured deposition in the lower fills, although the quantity of pottery recovered from the upper part (nearly 7 kg), and the relatively large average sherd weight (22.8g), suggests that it did occur higher up the profile.

While pit 9053 was not dated other than by its pottery assemblage, just to the south-west was pit 9054, largely excavated during the HS1 excavations as pit 374 (Fig. 3.16). Pit 9054 measured 1.1 x 0.95m in plan, but was only 0.35m deep with a single fill. Most of the finds from pit 9054 were recovered in the HS1 excavation, and included 6kg of early–middle Iron Age pottery (G P Jones 2006); a radiocarbon date of 850–760 cal BC (NZA 22880) was obtained from sooting on a pot sherd. The pit,

Plate 3.14 Pit 9053 half-excavated showing HS1 backfill over in situ deposits

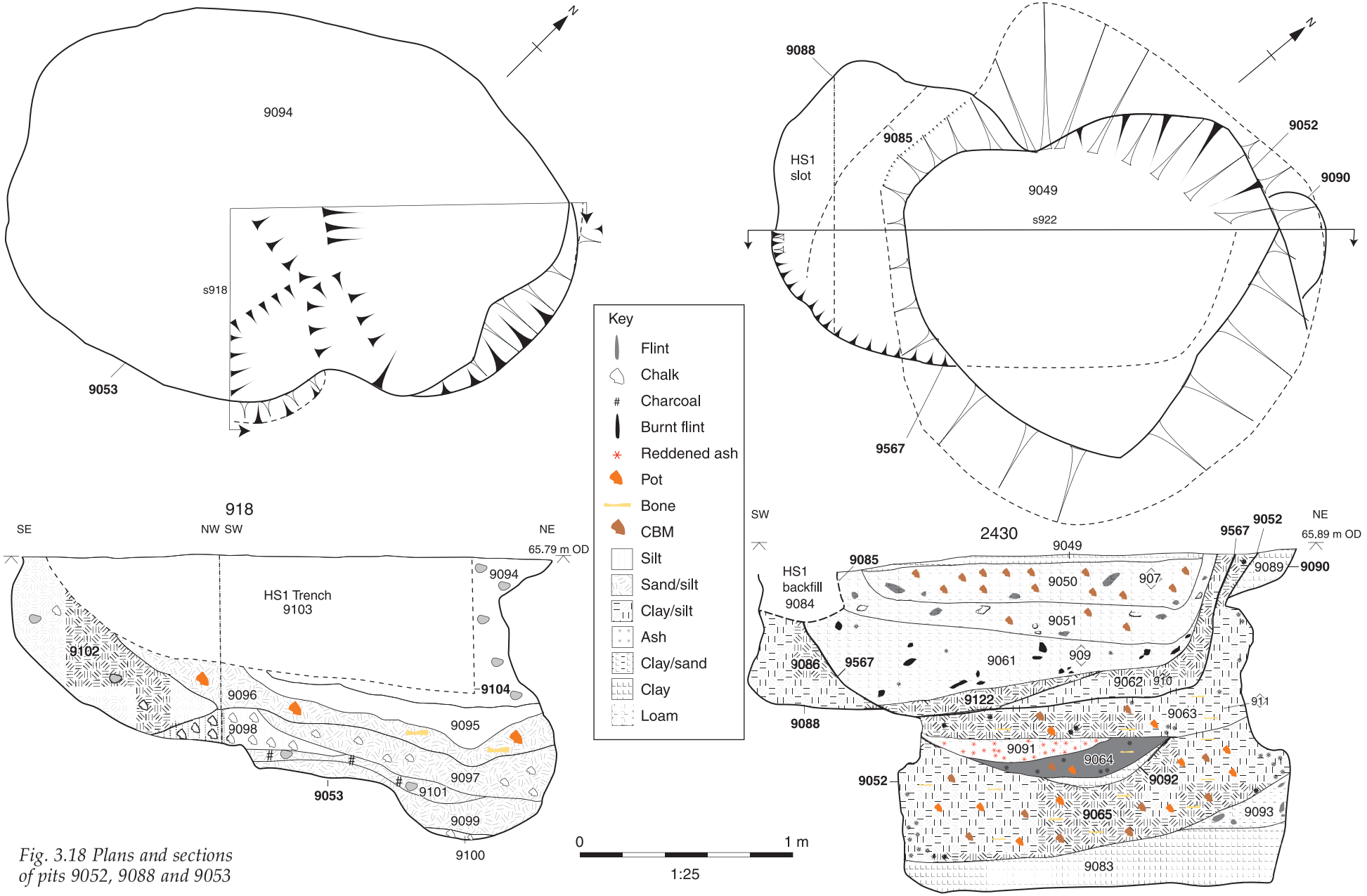


Fig. 3.18 Plans and sections of pits 9052, 9088 and 9053

however, also contained a 4th–3rd century BC La Tène 1 brooch, three iron blade or tool fragments and two fragments of worked stone probably from a quern, so the late Bronze Age or earliest Iron Age pottery is probably residual. The combination of pottery of early Iron Age type and the La Tène 1 brooch shows that this is another pit of the later early Iron Age with a high concentration of varied artefacts, probably deposited deliberately.

Intercutting pits 9052 and 9088 were located *c* 15m south-east of 9053 (Fig. 3.16). Feature 9052 was virtually square at the base, which was flat, and was undercut significantly almost all the way round (Fig. 3.18 and Plate 3.15). It measured 2.18 x 1.83 x 1.62m, and the upper part was heavily truncated by what was interpreted as a later pit 9088, recut as 9567. Unusually the base of pit 9052 was covered by a layer of clay (9083) up to 0.25m thick, within which much of the skeleton of a young red deer, and part of that of a raven, were found. Further bones of the raven were attributed to overlying layer 9065. A bone from the red deer skeleton was submitted for radiocarbon dating, giving a date range of 405–365 cal BC (NZA-32406). Three sherds of pottery were also found, with an average sherd weight of 18g. A deposit of yellow-brown clayey silt (9093) overlay 9083 on the east side, where 9083 was thickest. As this lay beneath the natural overhang of the chalk side, it is unlikely to have accumulated naturally, and could have derived from the surface of layer 9083 on the south-west, where the layer was dished and may have been truncated (see also below).

Both deposits 9083 and 9093 were overlain by layer 9065, a brown silty loam 0.3–0.5m deep. Layer 9065 included the skeleton of a pig, one bone of which was found in the underlying layer 9083, and some raven bones. The pig bone probably sank into the surface of the clay, but the raven bones are more likely to have been disturbed from the skeleton in the layer below. There were also 41 sherds of pottery with an average sherd weight of 16g, again suggesting immediate burial. Charcoal was rare within 9065 except around the edges of the pit, where it was much more common (see Fig. 3.18). This could perhaps have derived from the burning of the pit after use for grain storage, as experiment has shown that a layer of germinated grain forms around the pit edge during underground storage (Reynolds 1974). Charcoal such as this may perhaps have represented the residue of such a burning, left *in situ* when layer 9065 was deposited, but if the pit had been burnt prior to storage, then any burning on the surface of 9083 must have been removed, as this was not evident during excavation. Layer 9065 settled, and the hollow in the centre was filled first by a thin layer of clean clay (9092), and then by dumped layers of black soil with abundant charcoal (9064) and of ash (9091) (Plate 3.16). Nearly 90 small sherds of pottery (average weight 6.7g) were found in 9064, and a few larger and fresher sherds in 9091.

Plate 3.15 Pit 9052 fully excavated showing undercut sides

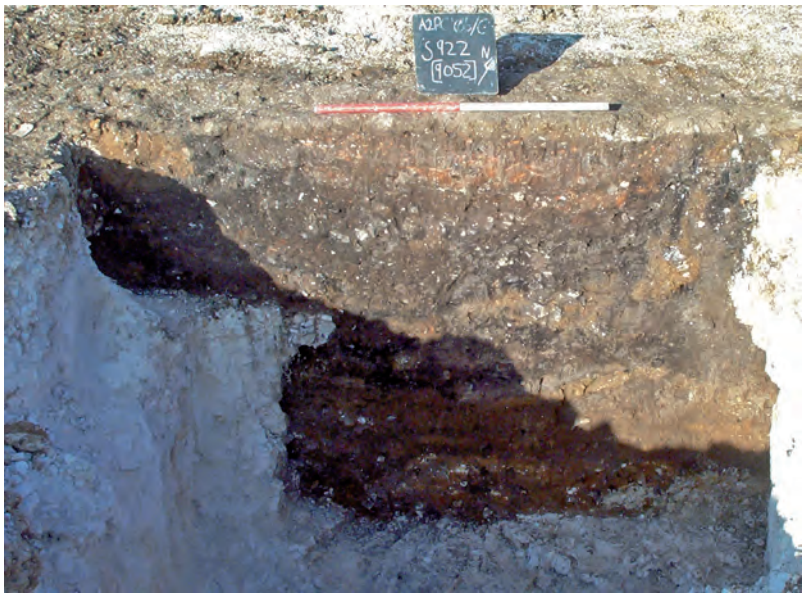


Plate 3.16 Pit 9052 half-excavated showing black and red fills

These were followed by layer 9063, which extended to the top of the pit on the north-east side. The near-vertical edge of this layer suggested that it had been cut away by pit 9567, and was perhaps originally up to 0.8m deep across the whole of pit 9052. A considerable number of very small sherds of pottery (average weight <2g) were recovered from this soil. The truncation of this deposit by pit 9088/9567 may have affected sherd size, but it remains likely that the pottery was not thrown straight into the pit, but had been exposed on a midden. Toad bones found in 9064 and 9063 may also support the idea of redeposition from a midden.

With the exception of archaeologically sterile layers 9092 and 9093 the pit fills were generally characterised by large assemblages of animal bone, with further unidentified bird bone from 9064. Pottery was present but not abundant, with a total of 2kg recovered throughout the pit, the largest deposit being 60 sherds weighing 657g from upper fill 9063. Structural fired clay came from four of the seven fills but only in small amounts, and only fill 9064 produced tiny fragments of briquetage. Processed soil samples produced small amounts of wheat, including emmer, as well as barley and abundant charcoal (oak and hazel/birch).

Pit 9088 was interpreted on site as occupying all of the broader cut above the deep pit 9052, and thus measuring 2.2 x 1.2m and 0.7m deep with a flat base. The plan, however, shows that there was a slight bulge on both edges of the pit in line with the edge of supposed recut 9567, and also a slight step down in the base, suggesting that this was a genuine cut. Pit 9088 had therefore been completely removed except at the south-west end of the pit group, and there was no surviving relationship between 9052 and 9088. It is possible that rather than being a later pit cutting both 9088 and 9052, cut 9567 may actually have been the edge of pit 9052, the vertical edge of layer 9063 being due to settling of the pit fills beneath. Some of the other complex pits, such as 12527 in Site L, also had a wide shallow cut with the deeper undercut pit proper at one end. Nevertheless, the fact that the layers in pit 9052 proper were generally horizontal suggests that slumping is unlikely to explain the angle of layer 9063, and a separate later pit is more likely.

Pit 9088 only contained one surviving fill, but pit 9567 contained six fills, most of which were deliberate dumps richer and more varied than the fills of pit 9052 below. This included 4.3kg of pottery, much of which was identified as early or early–middle Iron Age, and larger amounts of fired clay including a fragment of triangular loomweight/oven brick from 9051. The most substantial fill (9061) also produced a fragment of an iron needle and a curved fragment of copper-alloy, a piece of worked antler and 15g of briquetage. Other small deposits of briquetage (up to 76g) were recovered from fills 9086 and 9050. Fragments of iron smithing slag came from fills 9061 and 9062.

Environmental evidence from 9088/9567 was similar to that from the pit below comprising wheat, barley, oat/brome grass and abundant charcoal, some of which was identified as hazel/birch. The animal bone assemblage was smaller and included domesticates with larger quantities of horse, but lacked any small mammal or amphibian bones. The upper fills of the pit were disturbed on the southern edge by a small HS1 test slot and it is possible that the uppermost fill of the pit (9049) was also a remnant of the earlier excavation.

Other features in Site G

A range of other, generally smaller and shallower pits (9058, 9004, 9044, 9047, 9041), were found in the eastern part of Site G, generally in the vicinity of the

pits described above. Most could be dated fairly confidently to the early Iron Age. Amongst these remaining pits, pit 9012 was different in character, being large in area (3.7 x 2.8m) but only *c* 0.56m deep. Due to partial excavation during the HS1 works the pit contained modern backfill in the top and was heavily disturbed, but it is likely that five of the observed fills were genuinely Iron Age deposits. Just over 2.2kg of early Iron Age pottery was recovered, along with 829g of fired clay, animal bone (including pig, cattle and sheep/goat) and flint. Environmental evidence comprised abundant charcoal, but only a single oat/brome grass and one wheat glume base. One vessel fragment is tentatively ascribed to the earliest Iron Age, making this earlier than the other dated pits on the site, but in keeping with the date range of 760–380 cal. BC (NZA 22866) obtained from soot on a potsherd from the HS1 excavations.

Aside from pits, there were two four-post structures in the eastern part of Site G (9031, 9325) and another further west (9221) (Fig. 3.19). Just south of structure 9031 was a pair of postholes (9035/9039), possibly representing another structure. All of these were fully excavated and sampled. Structures 9031 and 9325 measured 2.5 x 2.3m and 2.6 x 2.5m respectively and postholes 9035 and 9039 were also 2.6m apart. The postholes within the eastern structures ranged from 0.34 to 0.64m in diameter, (although most were under 0.5m), and no certain post-pipes were found.

Posthole 9321 in structure 9325 had much of an early Iron Age pot crammed into the backfill (55 sherds weighing 571g), and there was also fired clay in the postholes. It was suggested that this might have filled the post-pipe, but this is not certain. This may indicate the accidental or deliberate destruction of this structure by burning. Only a little pottery came from four-poster 9031 and from posthole 9035, but this was also early Iron Age in character. All three structures also produced fired clay, flint and occasional animal bones. The few identified bones were of rodent, finch and raven but no mammals. Environmental samples from the postholes produced charcoal, which was abundant in structure 9325, and was identified as oak, possibly from the posts themselves. No charred plant remains came from either four-post structure, but single grains of charred spelt and barley came from postholes 9035 and 9039.

The western four-post structure (9221) was 2.3m square with small postholes 0.24–0.35m in diameter and 0.16-0.23m deep (Fig. 3.19). There were no post-pipes. Posthole 9219 contained tiny fragments of pottery that were more like the Iron Age material in the pits to the east than the Bronze Age vessels to the west, suggesting that the four-poster was Iron Age.

The eastern limit of Iron Age activity on Site G was marked by a single ditch (9609) that ran north-south across the excavation and continued in both directions (Fig. 3.16), although it was not recorded

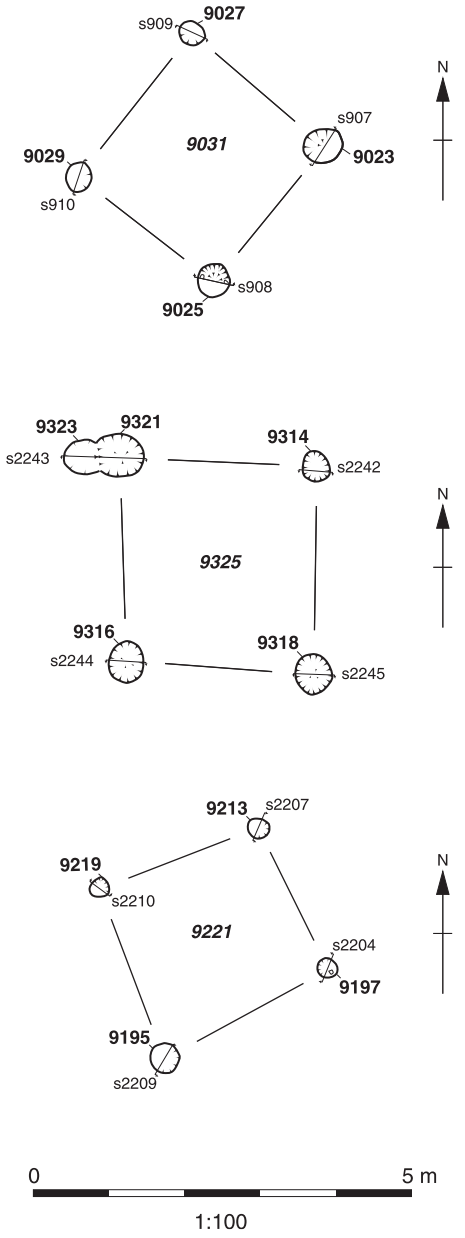


Fig. 3.19 Plans of four-post structures

within the area of the HS1 works to the south. The ditch was 0.9m wide and 0.45m deep, displaying a V' shaped profile with a slightly rounded base. The excavated sample of the ditch contained nine sherds of late prehistoric pottery, along with fragments of fired clay, flint and bone, but also produced a possible post-medieval tile fragment. As this feature marked the limit of Iron Age activity, it seems likely that the ditch is indeed early Iron Age, and that the post-medieval tile fragment is intrusive. The fragmentary remains of another possibly Iron Age ditch (10011), this time on a south-south-west alignment, were identified 170m to the east on Site H. It is possible that this feature may have formed part of a single system with ditch 9609.

THE MIDDLE IRON AGE

There was a significant change in the character of activity in the middle Iron Age, with a concentration of settlement activity in in Sites B and C, and the creation of a major land boundary on Site L (see Fig. 3.1). The settlement was characterised by large ditched enclosures and boundaries, although pits and four-post structures also continued. This settlement activity evolved into the late Iron Age and beyond, such that a number of ditches were recut, making the sequence difficult to disentangle in places. The limited number of characteristic middle Iron Age ceramic forms from the site did not help. Wares tempered with coarse shell are common, but are so likely to fragment that very few forms could be identified to corroborate the dating. Glauconitic sandy wares, particularly when used in black burnished wares, were treated as characteristic of the middle Iron Age, but were also found in association with late Iron Age wares, defined by the use of the potter's wheel and by grog-tempering. In some cases vessels in glauconitic ware were associated with potin coins (see below). Stratigraphic relationships were used wherever possible to establish the relative chronology and the evolution of the enclosure system, and in the main this was consistent with the assumptions used for ceramic dating.

Sites L and A

Boundary ditch 13161 and associated burials

On Site L a large boundary ditch 13161 was traced for 156m SE-NW, continuing across the adjacent access corridor (see Fig. 3.5 above). Cropmarks confirm that it was continuous between them, and that it continued north-west until masked by the old A2, and so was at least 220m long. The exposed lengths of ditch confirm the line of the ditch on the cropmarks, which kinked slightly eastwards and then turned back westwards beyond the current site.

A total of nine interventions averaging *c* 2m long were cut along the length of the ditch (Fig. 3.20). A Roman cemetery was identified on the north-east side of the ditch, and the uppermost ditch fills were identified as late Roman.

The ditch was cut through mixed natural geology consisting of greensands, clayey sands and chalk. Where the natural was predominantly chalk the ditch had a U-shaped profile, whereas those cuts dug mainly through clay displayed a slightly 'V'-shaped profile, presumably due to greater natural erosion of the sides. As a result of its continued use throughout the Roman period the original dimensions of the ditch are uncertain. As surviving, the ditch was up to 5m wide and 1.5m deep. At its

Plate 3.17 Section of ditch 13161 with shaft 12958 below

narrowest point (Fig. 3.21 cut 12781) it was clear that the clay edges of the ditch had slumped, but its original size was certainly at least 3m wide.

The ditch increased in surviving depth towards the south-east terminus, from 1.2m (Fig. 3.21, cut 12779) to 1.8m (Fig. 3.22, cut 12680). Approximately 15m from the south-eastern terminus of the ditch a deep shaft (Fig. 3.21, 12958) was dug into the base of the ditch, taking the overall depth at this point to 3.15m (Plate 3.17).

The depositional sequence within ditch 13161 was also complicated by the changing natural geology, but in general the basal fills probably represent periods of relatively slow natural accumulation through silting, and small episodes of collapse or slumping, likely to have derived from an upcast bank or banks. Slumping appears to occur mostly on the south-west side, although some collapse also occurred on the north-east, and it is possible that earthworks existed on both sides of the ditch.

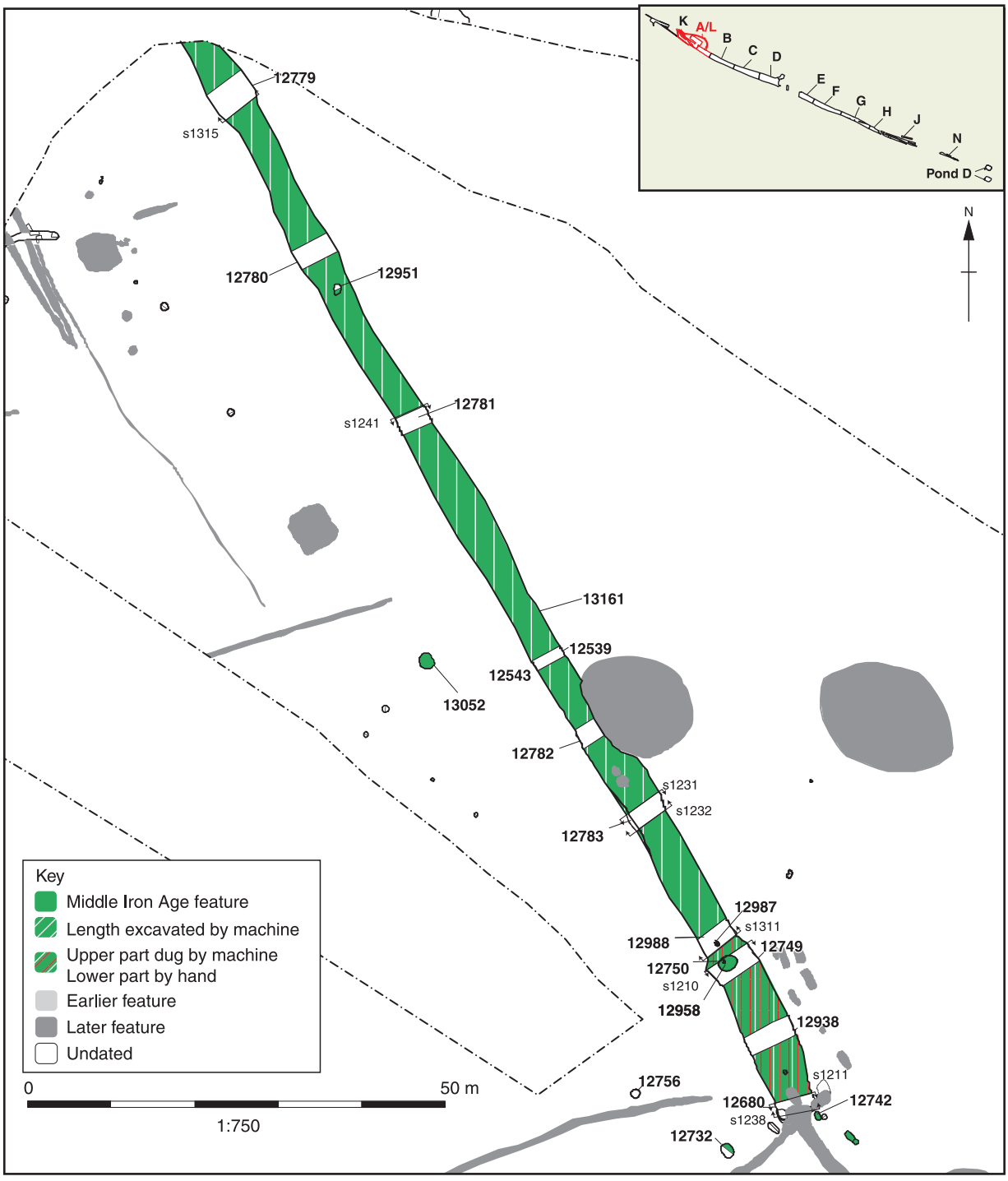


Fig. 3.20 Plan of middle Iron Age ditch 13161 on Site L showing extend of hand and machine excavation

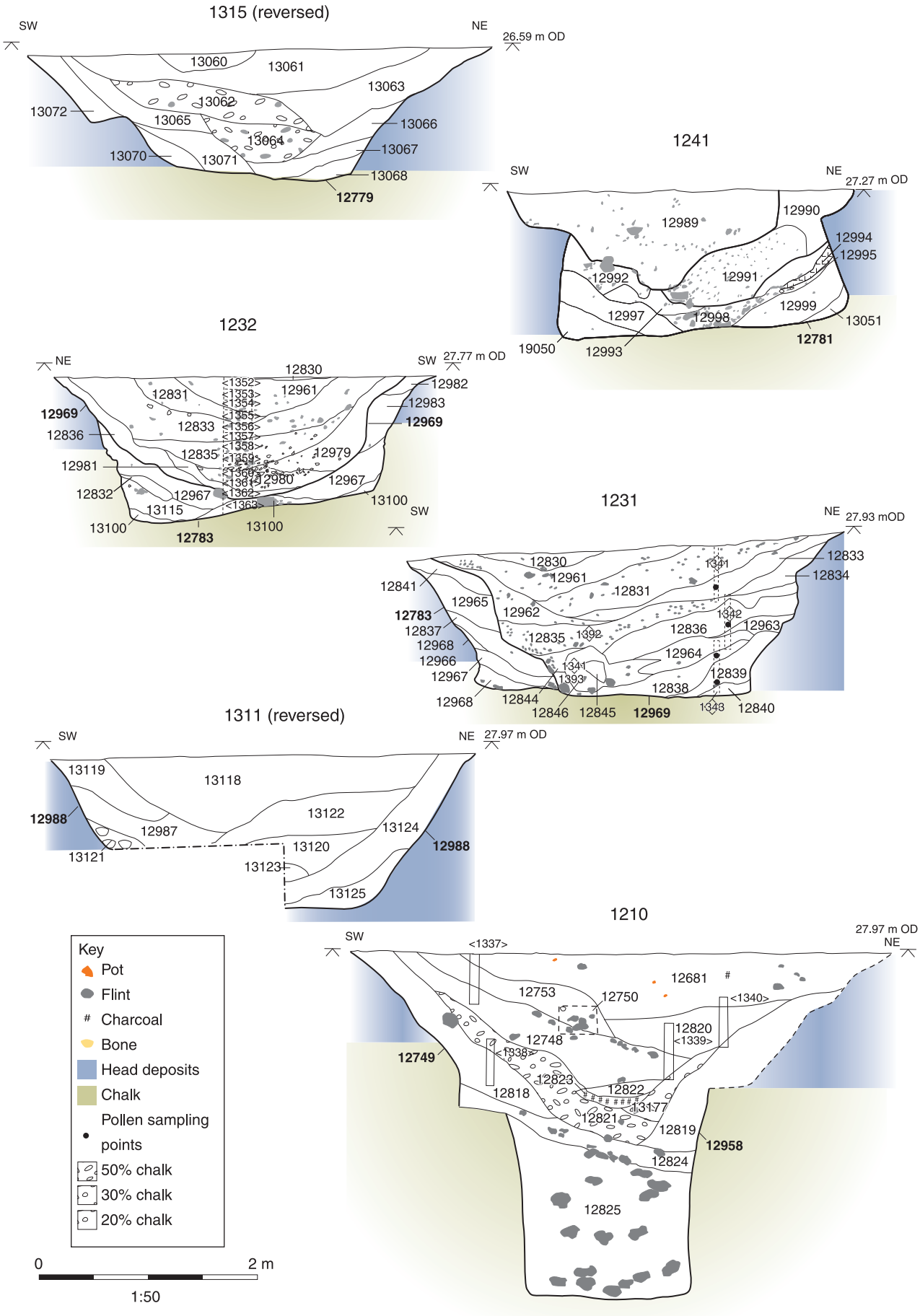


Fig. 3.21 Sections from cuts 12779, 12781, 12988 and 12749/12958 across ditch 13161

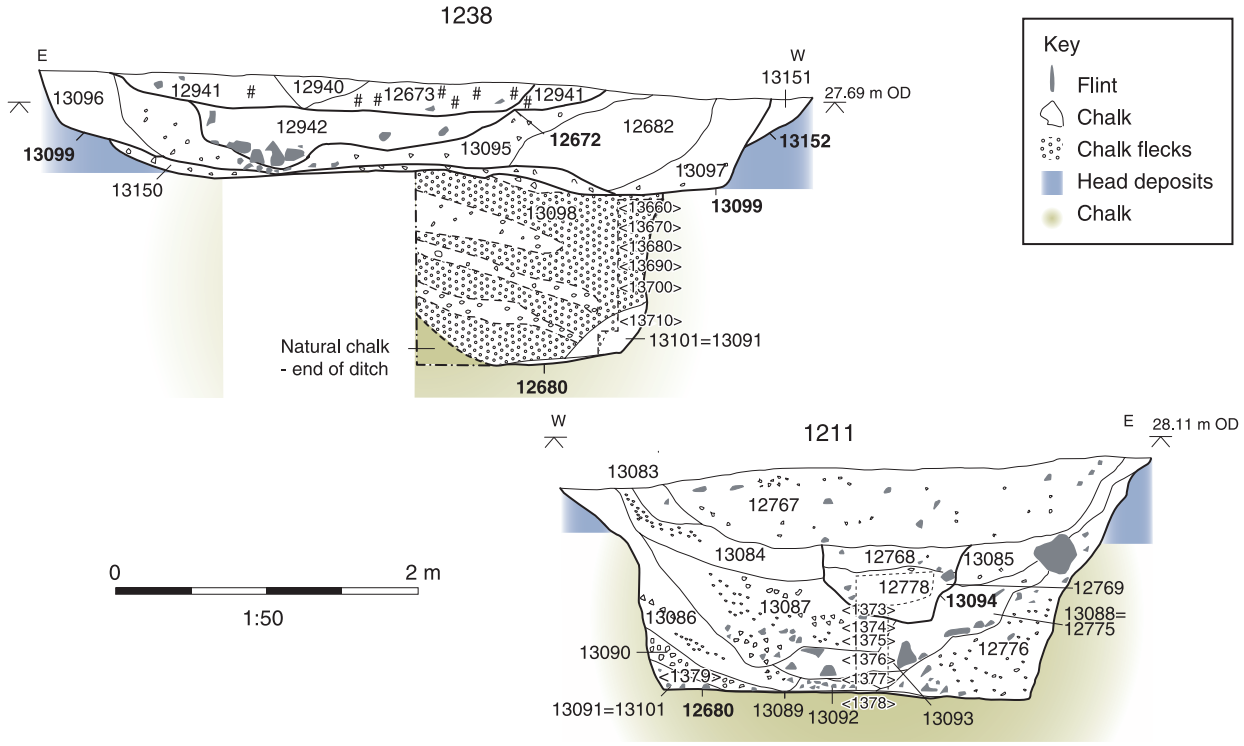


Fig. 3.22 Sections from cuts 12783, 12969 and 12680 across ditch 13161

This initial silting phase yielded few finds. These consisted of a small assemblage of undiagnostic sherds of later prehistoric pottery and three sherds of late Iron Age or early Roman date. Most of the earlier sherds were severely worn, and probably originated from features truncated by the ditch and subsequently incorporated into the bank. Other finds from this silting phase were scant, consisting of only a few bone fragments including pig, dog and horse and worked flint.

Plate 3.18 Ditch 13161 showing chalk infill in section 12782

Plate 3.19 Skeleton 12986 over shaft in ditch 13161

Following this there was a phase of rapid infilling, largely represented by chalk rubble and flint nodules that had collected in the centre of the ditch (Plate 3.18). For the most part, these deposits are too large to have derived from erosion of the ditch sides, and they probably represent collapses of bank material, or deliberate dumps of the same. As with the initial slump fills, at different locations within the ditch these collapses appeared to originate from either the south-west or north-east side of the ditch, or both. On the south-west there was a band without features some 10m wide alongside the ditch, perhaps suggesting the existence of a bank on that side. Towards the south-east terminus Roman graves came much closer to the ditch edge on the northeast side, but this does not disprove the existence of an earlier bank on this side as well.

On the whole the artefactual and ecofactual record from this phase of activity was similar to the initial silting phase. Pottery was more prolific, although still in small quantities with little over 100 sherds weighing 369g. The pottery included both residual sherds of fabrics current in the late Bronze Age and early Iron Age, and some sherds of middle–late Iron Age date. Overall the sherds were small-sized and severely abraded. Other finds included residual flint, animal bone and a small amount of fired clay.

Immediately above the chalk several small deposits of charcoal were found along the ditch (eg Fig. 3.21 section 1210 layer 12823). Soon after this an inhumation burial (12987) was inserted into the ditch. This individual was found *c* 15–20m from the south-eastern terminus, and close to the pit found in the base of the ditch (Fig. 3.20 and Plate 3.19). Skeleton 12986 was placed on the surface of fill 13123 in a crouched, prone position (Fig. 3.23), and did not lie in a formal grave cut. Both arms were flexed at the elbow, with the left hand lying below the pelvis. Parts of the skull and the lower left leg were missing, the former possibly as a result of truncation, but the latter more likely due to the differing preservation of bones surrounded by chalk, and those covered by clayey silt. The skeleton represented a juvenile of approximately 12–13 years of age. A sample of bone from this individual was radiocarbon dated to 400–350 cal BC (65.5%) or 300–230 cal BC (29.9%) (NZA 30150). This dating suggests that the ditch had been dug during the late early or middle Iron Age.

Following this burial, layer 12748 accumulated, and this clayey silt with little chalk probably represents a period of silting of unknown duration. On the surface of this layer a neonate burial (12750) was placed in a supine position with the head to the south-east (Fig. 3.23). This lay just to the south-east of skeleton 12986. All major body parts were represented although certain smaller bones were absent due to poor preservation. As the rate of accumulation of the middle silts in the ditch is uncertain, the burial may be of Iron Age or Roman date.

A further Iron Age burial (12742) was located in a purpose-dug grave less than 1m beyond the terminus of ditch 13161 (Fig. 3.20 and Plate 3.20). Like burial 12986 this was a crouched inhumation of a 12–13 year old juvenile (12744), and was placed in an oval grave pit measuring 0.9 x 0.55m (Fig. 3.23). The individual was tightly crouched and placed on its right side with the head to the north-west. A radiocarbon date range of 380–200 cal BC was

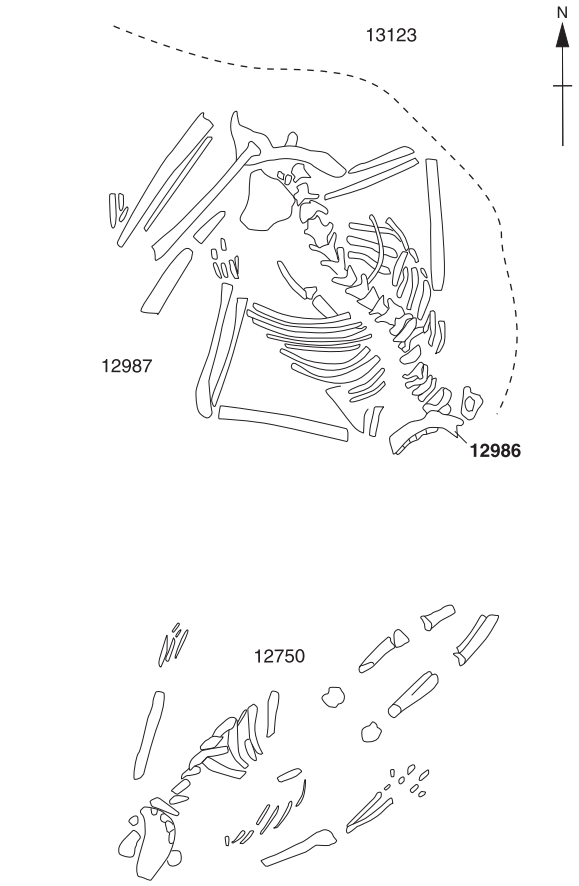


Fig. 3.23 Plans of Iron Age inhumation burials 12987, 12750 and 12744 in pit 12742

Plate 3.20 Crouched skeleton 12744 in grave at end of ditch 13161

obtained from this individual (NZA 30161). This is similar to that obtained from skeleton 12986.

The dating evidence for ditch 13161 is somewhat contradictory. It is possible that the date for skeleton 12986 is incorrect, and that this and the neonate burial 12750 in fact belong to the Roman period. This would allow the boundary as a whole to date to the late Iron Age or very early Roman period. The burial rite is, however, unusual for the Roman period, and the crouched burial just beyond the ditch terminus is also middle Iron Age. Although this might be coincidental this seems unlikely, given that it is otherwise the sole burial of this date in Sites L or A. It is also possible that the late Iron Age/early Roman pottery in both contexts 12832 and 13088, which totalled only a few sherds, was intrusive, although these deposits were in different parts of the ditch, and the sherds were larger and less worn than the earlier Iron Age sherds from the lower ditch fills.

A third possibility that should be considered is that burial 12986 had been curated for some time before burial. Recently Parker-Pearson has argued for the curation of prehistoric bodies in mummified form (Parker-Pearson *et al.* 2005, 129–46), and while his evidence came from Scotland, such a practice might explain the early date for this burial in the middle fills of the ditch, and also provide a reason

why only part of the body was present, although the rest was articulated, and there were no signs of animal gnawing or other disturbance. If true, it would indicate that this skeleton had been curated for at least 200 years before burial.

Some 80m beyond the terminus of ditch 13161 another long boundary ditch was found crossing Site A on a NNW-ESE alignment. This boundary consisted of a much smaller ditch, recut on a number of occasions into the early Roman period (see Fig. 3.5 above). Only the latest phases of the ditch (3336 followed by 3075) were dated, and these belonged in the early to middle Roman period, but it is likely that the sequence began in the Iron Age, perhaps even in the middle Iron Age. Given the very different character of this boundary to 13161, however, it appears more likely that it was not dug contemporarily with 13161, and was perhaps added later. As such this sequence is described and discussed in the late Iron Age section below.

Discrete features

A number of pits on Sites A and L were probably Iron Age, but cannot be dated more precisely. A single pit on Site L (13052) did, however, produce diagnostically middle Iron Age pottery. This was located 8.6 south west of the central part of ditch 13161 (Fig. 2.20), and measured *c* 1.6m in diameter and 0.7m deep. The pit contained seven fills and produced 63 sherds (471g) of pottery, fragments of fired clay and animal bone, including a large fragment of cow skull. Two further features (12756 and 12732), which lay 5–10m west of the south terminus of ditch 13161, may also date to the middle Iron Age, although they may be later. Feature 12756 contained a mixture of burnt clay, patches of burnt soil and charcoal, along with a burnt animal skull placed upside down in the middle. The sides of this feature were also burnt, and it seems likely that this was an oven, some of whose superstructure had collapsed or been thrown in when it went out of use.

Sites B and C

Much of the archaeology identified on Site B and the western third of Site C was middle or late Iron Age, including a series of enclosures, a large trackway and numerous discrete features (Fig. 3.24). Generally the middle Iron Age features contained less pottery than those belonging to the late Iron Age, and it is therefore perhaps more likely that the features in this area without finds also belong to the middle Iron Age. Within this area, the middle and late Iron Age activity could be separated into two halves lying east and west of the trackway. As these two middle Iron Age foci largely respected the trackway, it is assumed that the settlement grew up around it, and so the trackway will be described first.

Central Site B

The central portion of Site B contained little in the way of middle Iron Age remains with the exception of trackway 7980 and pit 3400 (Fig. 3.25). The trackway lay within a slight natural hollow running NNW-SSE in which a layer of colluvium had protected the archaeological features.

Plate 3.21 Metalled road 7980: excavation in progress looking south-east

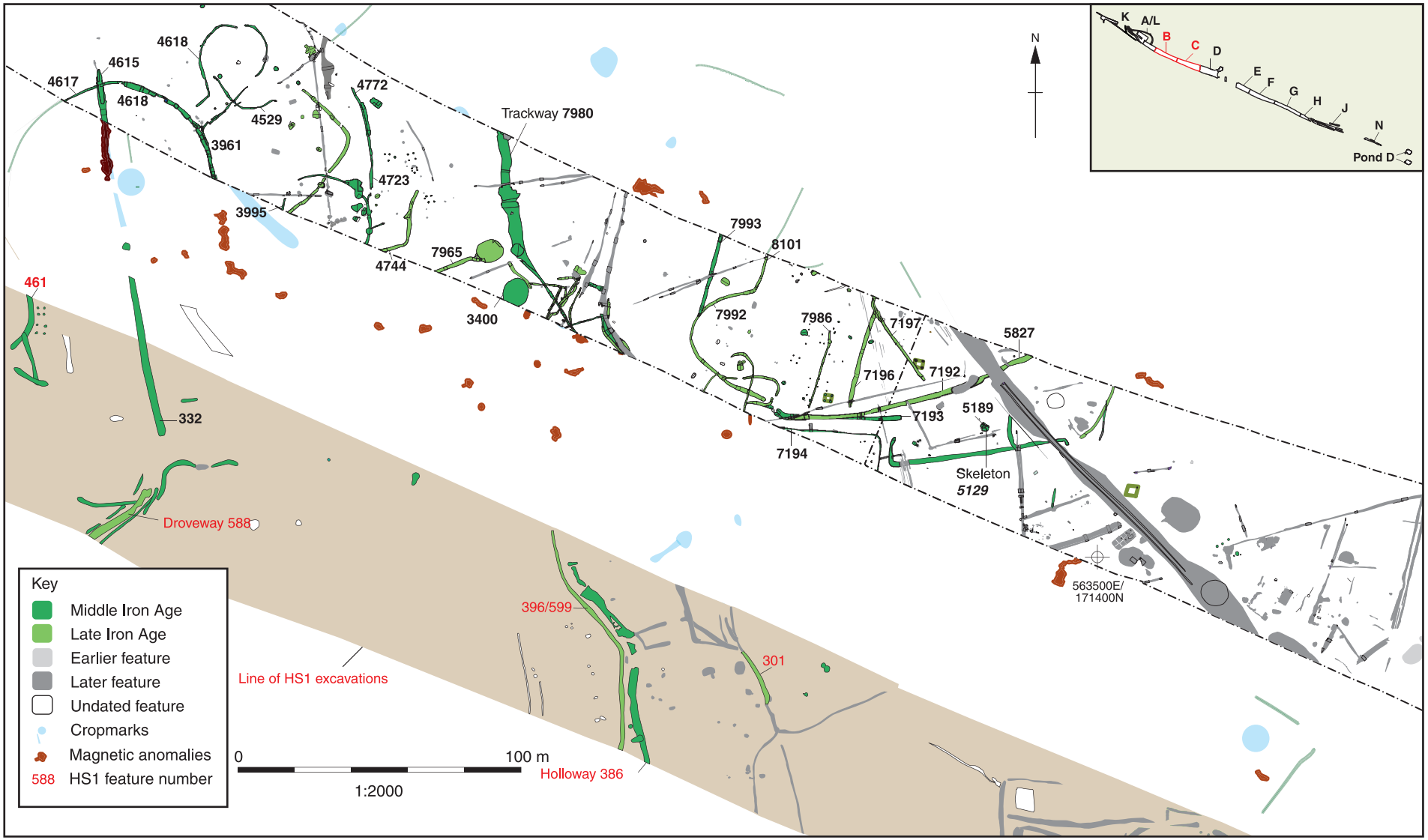


Fig. 3.24 Plan of middle and late Iron Age settlement in Site B and Site C west

Trackway 7980

The deepest part of the hollow was on the east side, and this was followed by a well-preserved cobbled/metalled surface of early–middle Iron Age date (Plate 3.21). The trackway was well-preserved in the northern half of the route, where the hollow was deepest, but further south it had been largely obliterated, partly by a complex of intercutting later ditches and partly by ploughing (Fig. 3.25). Patches of cobbles did, however, survive almost as far as the southern baulk of the site, and showed that the trackway turned south-eastwards just north of ditch 7971, which cut its south-western edge. One patch of flints extended south of 7971, clearly demonstrating that the ditch was not an original drainage ditch associated with the trackway, but was later.

The trackway consisted of a broad band of flint cobbles and pebbles forming a band *c* 5m wide, set into a clay layer contained within a shallow cut. The flints within the surface construction were closely packed, surviving up to four deep on occasion, however most of the remaining trackway survived only one or two layers deep (Fig. 3.26). In places it appeared as though an initial phase had been constructed using smaller flints, on top of which another, less well-preserved layer of large, less regular cobbles had been placed.

Possible wheel ruts were noted in the surface of the trackway, up to 0.7m long and 0.17m deep. These were overlain by a layer of accumulated silt that produced most of the cultural material. A section of the trackway was removed by machine and revealed early Iron Age hollow 7949 (see above). No other earlier features were found below it.

Cultural material from the trackway was scarce and comprised 24 sherds of worn late prehistoric pottery that could not be closely dated, unidentified animal bone, two tiny fragments of fired clay,

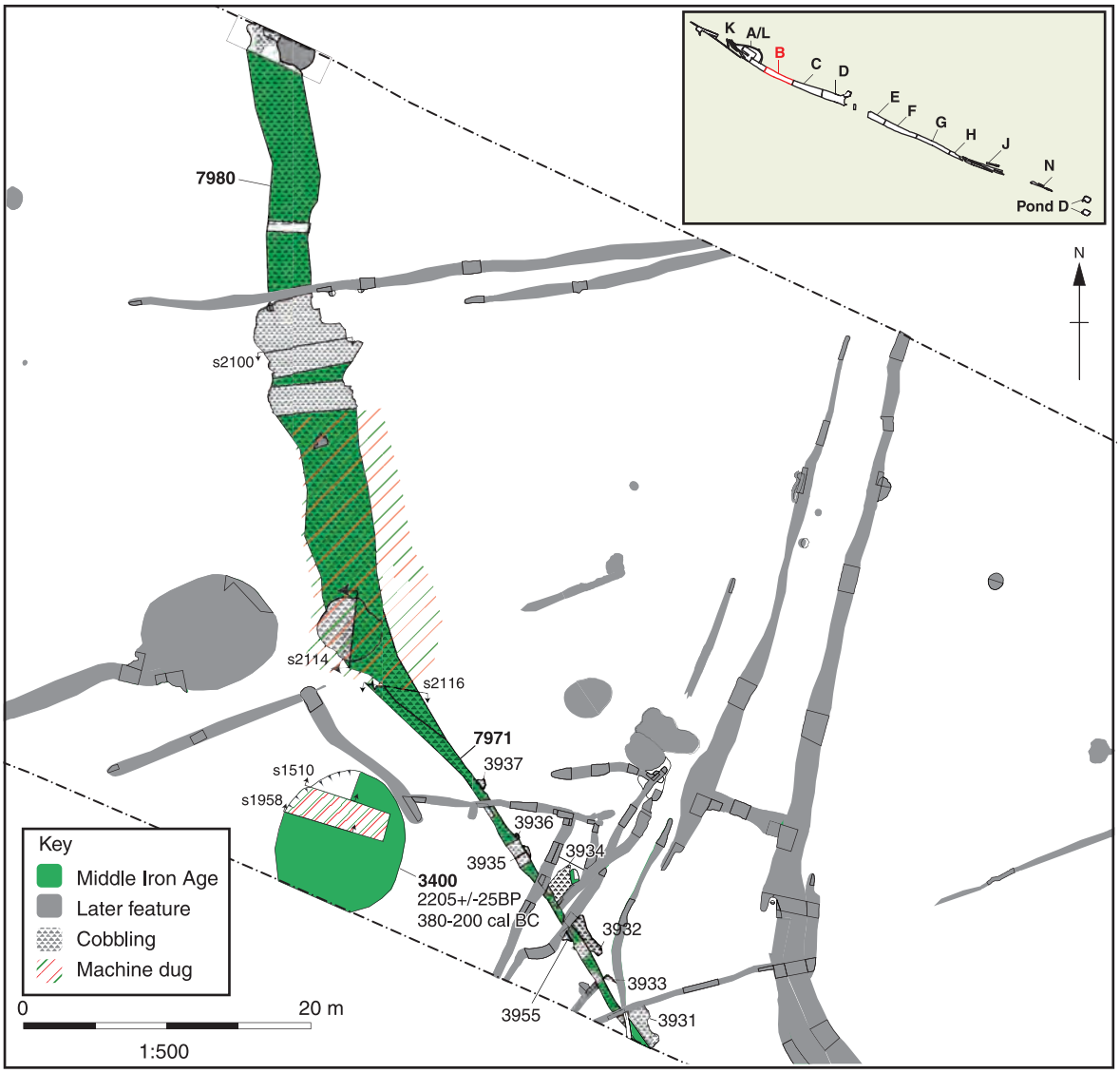


Fig. 3.25 Plan of the trackway 7980 and pit 3400

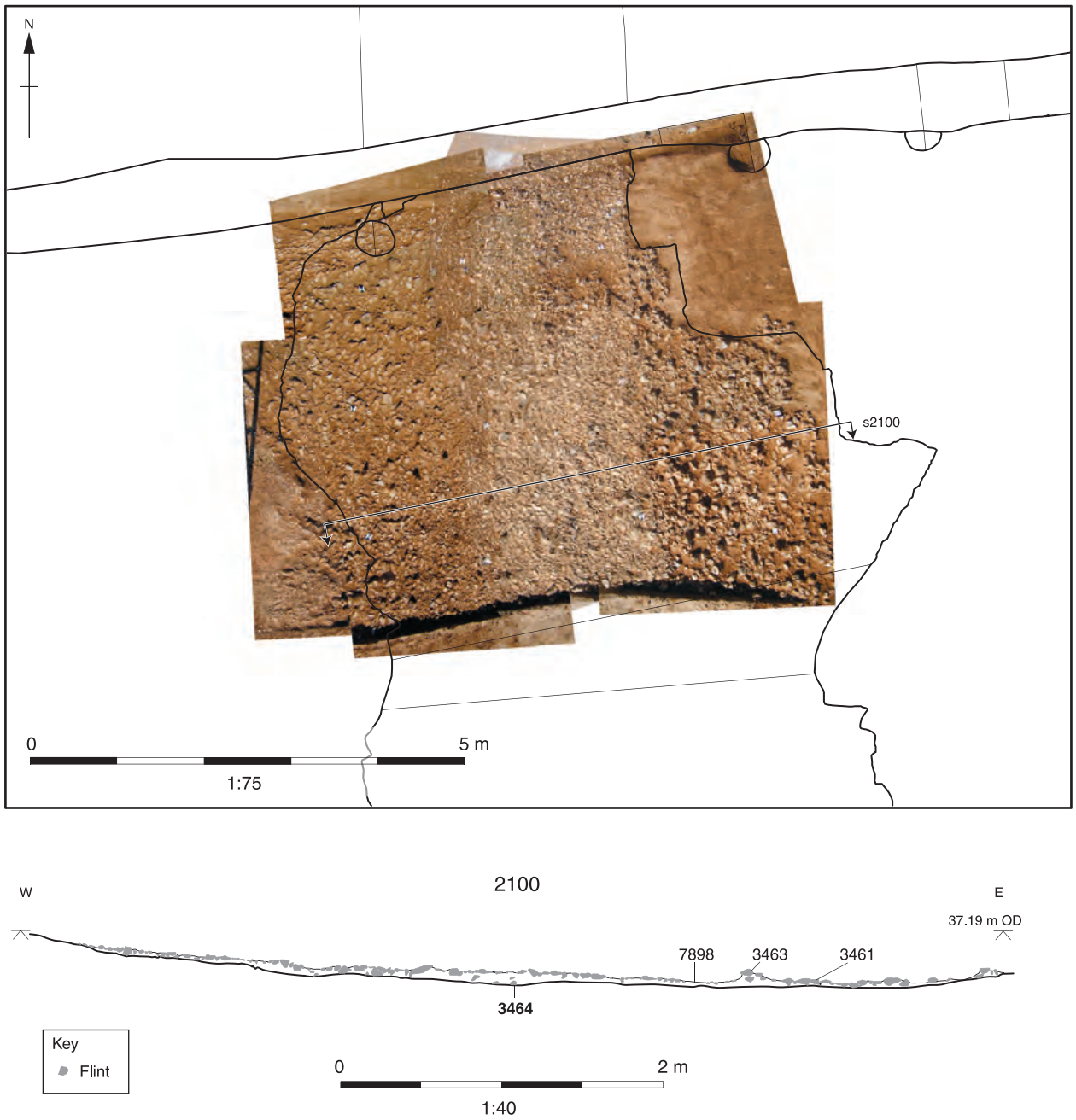


Fig. 3.26 Detailed geo-rectified plan of the cobbled trackway 7980 showing wheel-ruts, and section

fragments of an unidentifiable copper-alloy object (SF 450) and worked flint. A very small multi-coloured glass bead (SF 453) was also recovered from the surface of the trackway, but this is not a known Iron Age or Roman type, and is probably intrusive. With the exception of the fired clay and some residual worked flint the assemblage came from the accumulated soil fill (3462) overlying the trackway. The directly associated finds do not date the trackway closely, but the metalling clearly overlay early Iron Age hollow 7949 and was cut at its southern end by a number of middle–late Iron Age ditches, the earliest of which was ditch 7971. It is also on a very similar alignment to major ditch 4615 to the west, and so was probably constructed early in the life of the middle Iron Age settlement, if it did not precede it. The continuation of this trackway to the south is probably holloway 386 found within the HS1 excavation (Fig. 3.24).

Pit 3400

Approximately 4m south-west of trackway 7980 and ditch 7971, on the southern limit of the site, a very large pit (3400) was excavated. This feature measured 9 x 8.75m, but was only 1.8m deep with an irregular base. It contained a minimum of 12 fills—all appeared to be redeposited natural silty

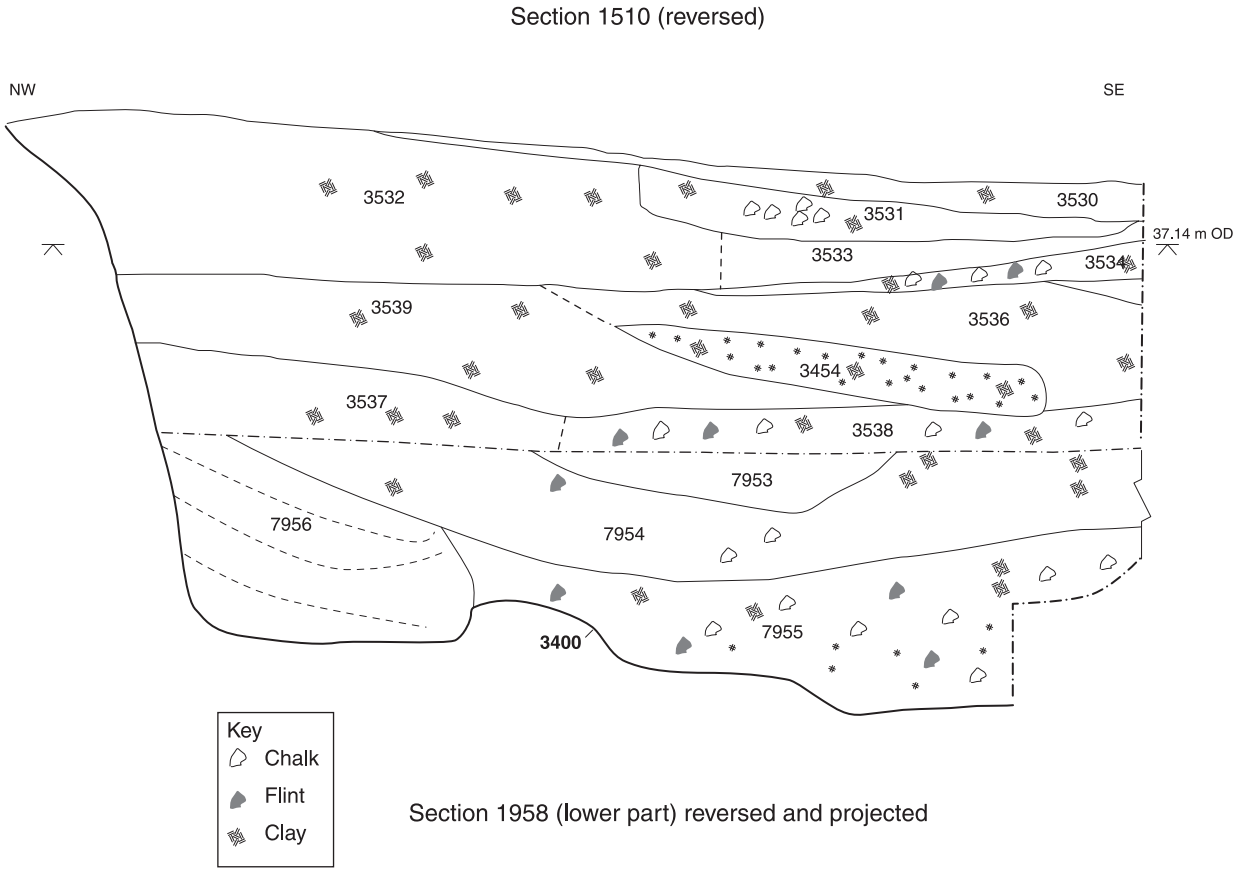


Fig. 3.27 Section of pit 3400

clays, probably representing a series of backfill deposits, with the exception of a small, central fill 3454 (Fig. 3.27). This contained the partial cremation of a probable adult human in association with early–middle Iron Age pottery, a chalk spindle-whorl, fired clay, animal bone, charcoal and flint. The pottery proved to represent most (623g) of a single bowl (Fig. 3.57), heavily fired in parts, probably on the cremation pyre. Due to the rarity of early or middle Iron Age cremations, cremated bone was sent for radiocarbon assay and returned a date of 380–200 cal BC (NZA 31265), placing it firmly in the middle Iron Age. The charcoal that accompanied the cremation was identified entirely as oak and it is likely that the scraps of fired clay also originated from the cremation process. Other finds included a complete chalk disc-type spindle whorl (SF 451; see Shaffrey this vol.), unburnt animal bone including dog and pig, and two flint flakes, some or all of which may have been associated with the cremation.

The size of pit 3400 and its mainly sterile fill might suggest that this was originally a quarry pit, possibly relating to the construction or maintenance of the trackway. It is unclear why the cremation and related objects were placed in the centre of the pit but it is possible that the feature held some ritual importance, perhaps related to its position next to the trackway, which divided the west and east halves of the Iron Age settlement.

Western Site B

Enclosures 4617 and 4518

A series of enclosures were located on a slight rise in the chalk plateau west of the trackway, at the western end of Site B (Fig. 3.28 and Plate 3.22). Stratigraphically, one of the earliest features was curvilinear gully 4529, which was cut by enclosure 4518, but no finds or environmental remains were recovered.

The ditch of a large curvilinear enclosure (4617) lay south-west of gully 4529. The earliest phase of this enclosure consisted of a relatively shallow ditch (0.75m wide and 0.45m deep) that only survived intermittently, due to recutting along its line by a series of deeper ditch lengths (Fig. 3.29). It is, however, likely that all of the surviving lengths formed part of one contemporary ditch measuring at least 60m across. No entrances were visible, but these may have existed in the areas of the later recuts. This was probably the northern part of a large enclosure, most of which lay south of the A2

excavation area. The western continuation may have been related to ditch 461 (Fig. 3.24) excavated on the line of the HS1. Little cultural material was found within the enclosure ditch, but included a few fragments of structural fired clay and animal bone.

Ditch 4617 was cut by the northern terminus of a large NNW-SSE ditch 4615. The ditch was up to 2.6m wide and 1.5m deep with a distinctive 'V' shaped profile and evidence for a possible bank on the eastern side (Fig. 3.29). The majority of the ditch fills contained small deposits of late prehistoric pottery, fired clay and animal bone. It seems likely that all this material derived from surface dumping eroding into the ditch, rather than deliberate deposits. The ditch was later cut by shallow ditch 4616 at its northern end, possibly a slight recut of the ditch terminus. A significant quantity of animal bone including cattle, pig and horse, came from this potential recut. Animal burials and significant groups of bone are often found in the terminals of enclosure ditches and this may be an example of such practice.

Ditch 4615 was picked up by the geophysical survey prior to excavation, and was traced for a further 15m to the south. It is likely that it continued as ditch 332 in the HS1 excavations to the

Plate 3.22 Aerial photographs of west part of Site B showing enclosures (a, above) on chalk and in the hollow (2970) and (b, left) on the chalk (2972)

south (Fig. 3.24), making the boundary 125m long. Both in terms of its length and size it invites comparison with the other large boundaries to the north-west, particularly ditch 13161. Although on a different alignment, it may also have been part of the same system of middle Iron Age large-scale land division.

East of ditch 4615 enclosure ditch 4617 was recut by a series of much larger ditch lengths (Plate 3.23; Fig. 3.28: 4618, 4619 and 3961) that ran for stretches of 12m, 11m and 18m respectively. These were far broader (1.4–1.9m) and deeper (0.75–0.9m) than the gullies of the earlier phase (Fig. 3.29). The deeper recuts had few fills (1–3 layers of chalk-rich clay-silt) but yielded considerably more artefactual material, perhaps indicating a shift in the function of the enclosure. There was no relationship between these recuts and ditch 4615, but the fact that it formed the western limit of these recuts suggests that they were dug after, or contemporarily with it. There was a 7m wide gap between ditch 4615 and the closest recut, and gaps of 4m between the other ditch segments. These may indicate multiple entries into the enclosure, but as this area was truncated by ploughing, it is possible that the earlier ditch 4617/4623 still existed as a shallow barrier between the recuts. These deeper lengths of ditch may alternatively have been dug largely as quarries for a bank, which could have been continuous along much of the south (inner) side. Even the wider gap between 4615 and 4617 need not have been an entrance, if as suspected there was an upcast bank along the east side of 4615.

Pottery from groups 4618 and 4619 was sparse and generally middle Iron Age in date. Ditch 3961 produced a larger assemblage of 59 sherds weighing 459g including a late Iron Age sherd, although this was from an upper fill. Ditch 3961 also produced 251g of briquetage. All three recuts produced fired clay including a pedestal base from 4618. Animal bone was recovered in some numbers and revealed the usual species: cattle, sheep-goat, pig and horse.

From its layout, 'banjo' enclosure 4518 to the north-east was clearly associated with enclosure 4617 (Plate 3.24). The 'banjo' was an oval ditched enclosure with a narrow funnelled entrance on the south-west side. Overall the enclosure was 34m long from entrance to rear and 21.5m wide. It consisted of three lengths of ditch: a curving,

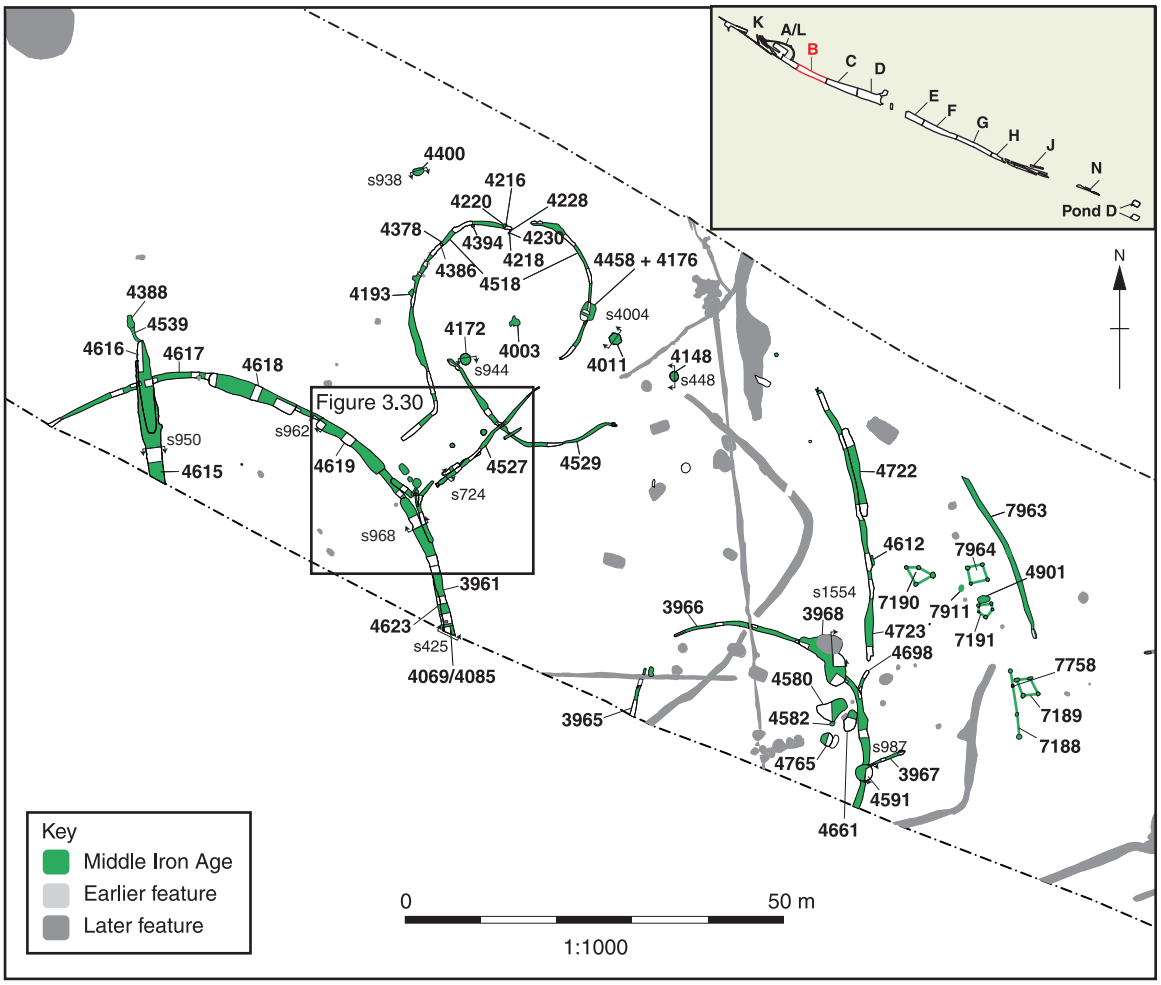


Fig. 3.28 Plan of middle Iron Age features in the western half of Site B

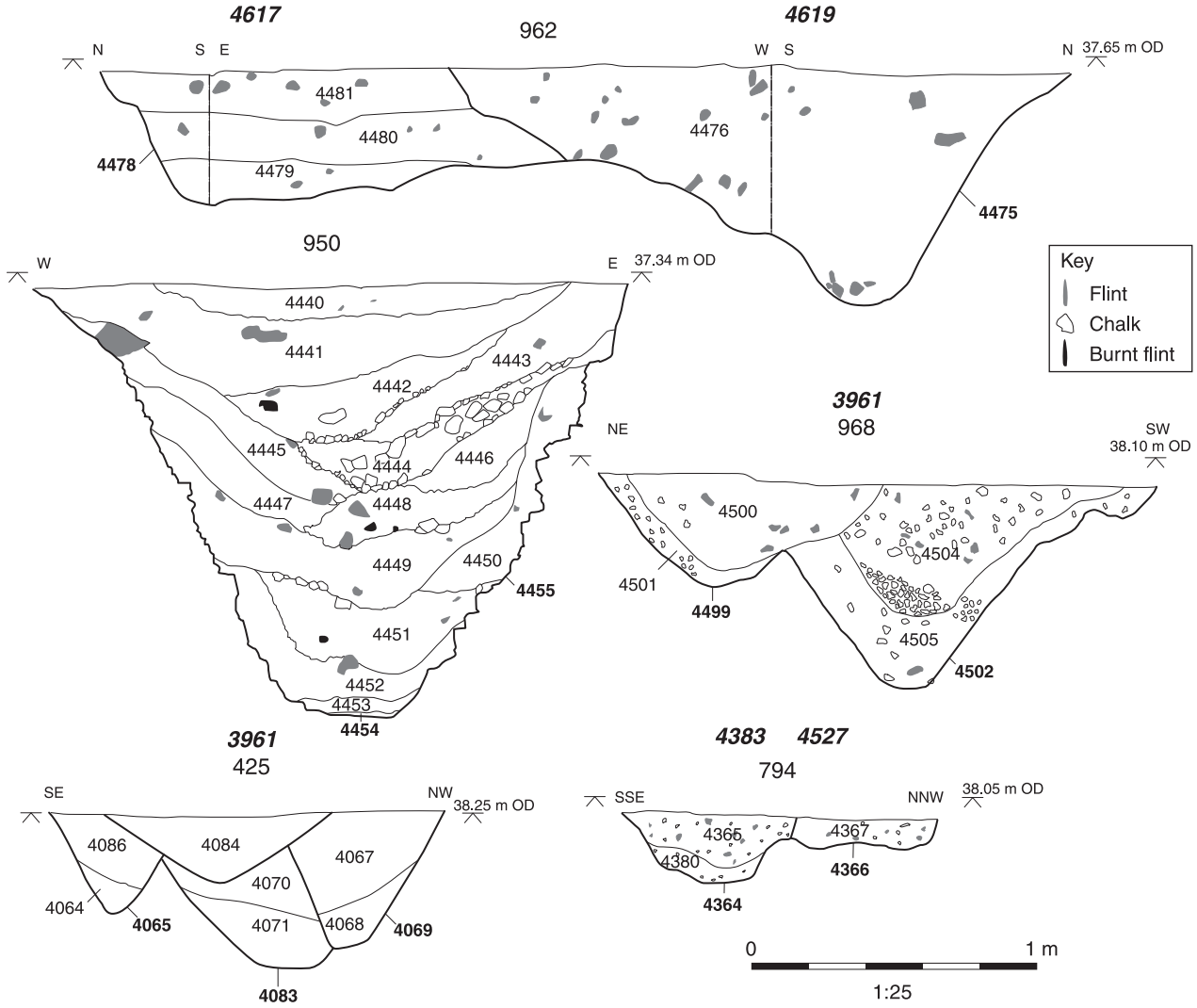


Fig. 3.29 Sections of enclosure ditches 4617 and 4619, ditch 4615, 3961 and ditches 4383 and 4527 in enclosure 4518

nearly hemispherical west side with a straight spur at the south end running south-west, a second ditch continuing the curve on the north-east and east, and a relatively straight length on a south-west alignment, parallel to the spur of the western ditch. The ditches of enclosure 4518 were heavily truncated, surviving to *c* 0.65m wide and only up to 0.3m deep and containing a single fill. Long stretches of the enclosure ditch were excavated, mostly producing only scraps of pottery, but a group of sherds of a globular jar (weighing 835g) came from context 4019, confirming a middle Iron Age date.

Despite the later truncation of the enclosure ditches, the gaps between them all probably represent genuine entrances. That on the north was 2.5m wide, and the ditches either side are not in line. The gap on the south-east is 4.5m wide, and the two ditch 'termini' are turning away from one another. In addition, large quantities of finds, in this case much of the globular jar, came from the fill of the ditch just north of the gap, and, as noted above, such deposits are common at ditch termini. The opening at the south-west entrance measured 7m across. The ditch also contained frequent animal bones, including both those of domesticated species and of roe and red deer. Other finds included a fragment of Mesolithic flint axe from the eastern side of the entranceway, small amounts of fired clay and iron crumbs.

A series of postholes ran along the north-west and north sides of the enclosure, and were mostly cut by the ditch (Fig. 3.28). This includes postholes 4218 and 4220 on the north and postholes 4386 and 4378 on the north-west, while 4228 and 4230 lay on either side of the northern entrance. The postholes were generally spaced between 1.5 and 3m apart. None contained any finds. Most of the postholes may have marked an earlier form of fenced enclosure, possibly associated with ditch 4529, or may have been marking-out posts for the construction of 4518.

The south-west end of the narrow funnel in enclosure 4518 stopped 4m from the original ditch of enclosure 4617, which had no gap in line with this funnel. There was, however, a gap 4m wide between the deeper recuts 4619 and 3961 in the second phase of 4617, which approximately aligned with the funnel (Fig. 3.30). There may therefore have been an entrance here, a possibility strengthened by a single posthole just inside (south of) the end of 3961, although this contained only burnt flints.

A series of further modifications was made between ditch lengths 4619 and 3961 (Fig. 3.30). Ditch 3961 was recut by gully 4622 at the north-west end. Gully 4622 diverged north-eastwards and turned to end 1m short of ditch 4527, and immediately west of the end of ditch 4383. During this period there might have been access between enclosures 4617 and 4518.

Subsequently, however, the gap between 4619 and 3961 was reduced by a shallow length of gully

Plate 3.23 Working shot looking west along ditch 4617

Plate 3.24 Aerial photograph of curving ditch 4618 and banjo enclosure, looking north-east

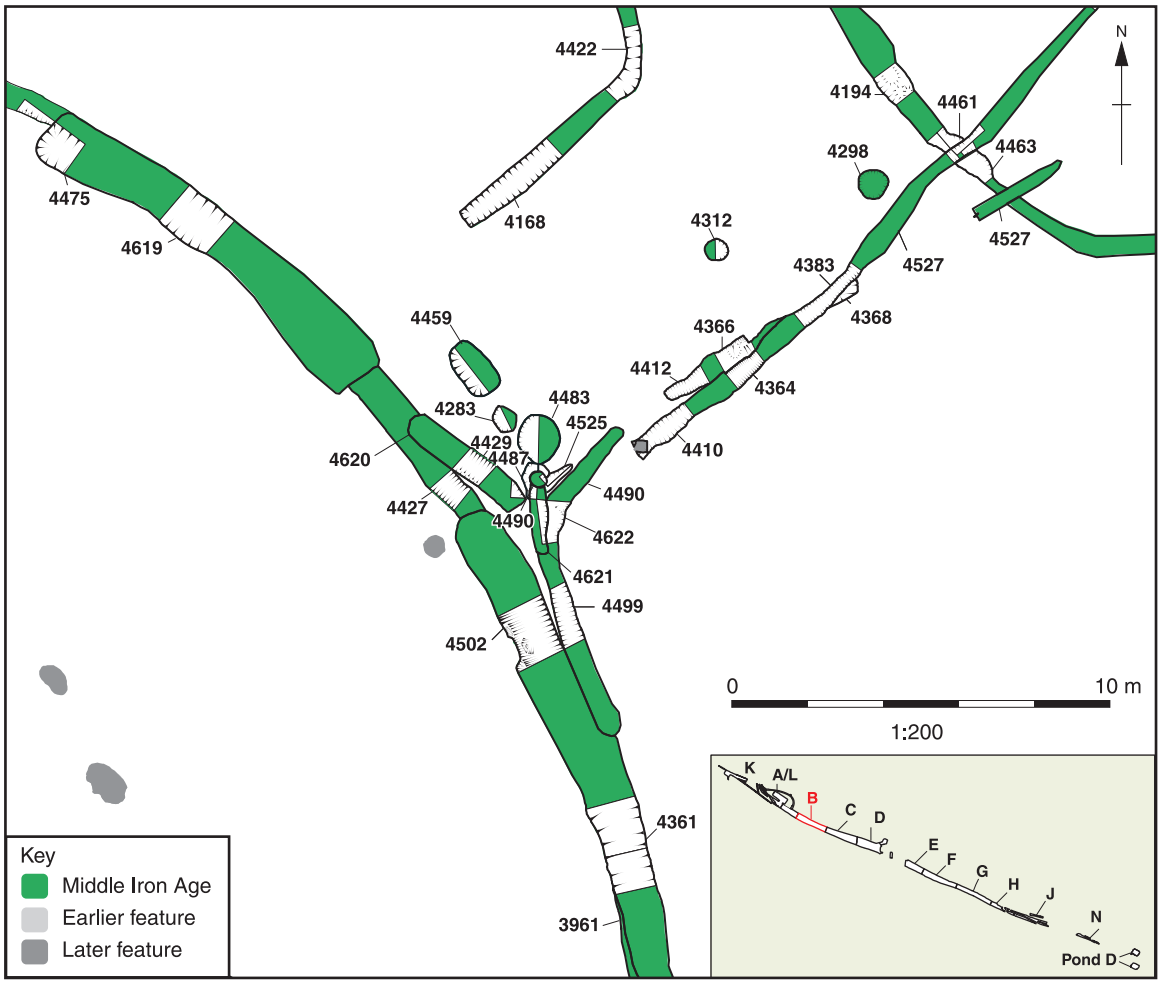


Fig. 3.30 Detail of south-west end of enclosure 4518 and the junction with curving enclosure 4617

(4620), which cut obliquely across the original enclosure ditch. This produced only animal bone and a fragment of fired clay. Gully 4622 was also recut at the corner on the south-west side by shallow gully 4621, which followed the south edge of 4622 northwestwards and continued beyond the corner for up to 1.5m, and was subsequently truncated by a series of shallow pits (Fig. 3.30). The gullies and pits overall appeared to block the eastern part of the entrance and this may have been a final modification before the enclosure went out of use.

From its position it is probable that enclosure 4518 was added to enclosure 4617, and the ditches of 4518 may have stopped short of an external bank, although the size of the original ditch of 4617 is unlikely to have generated upcast sufficient to account for the gaps. Alternatively the gaps at the end of the funnel may have been intended for access to the north-west and south-east, but not to enclosure 4617. As there was a gap between the deeper recuts (4619 and 3961) of enclosure 4617, it is more likely that enclosure 4518 was added when, or after, these were dug. At this point the upcast from the recut ditches of 4617 could have provided an external bank against which the ditches of enclosure 4518 ended, or there may have been access available in all directions. Ditch 4622 may then have been added to block off access to the south-east, leaving the north-west side open, or may simply have skirted the end of an existing bank.

Associated features

The main part of the interior of enclosure 4518 contained only a single pit (4172) and a possible tree-throw hole (4003) (see Fig. 3.28). The circular pit was located adjacent to gully 4529, and was 1.44m in diameter and 1.1m deep. Its six fills contained deliberate dumps of material including middle Iron Age pottery and fragments of fired clay in small quantities, as well as animal bones, particularly sheep. Overall pit 4172 appeared to have been used for the disposal of domestic rubbish, although little direct evidence of habitation was found in the vicinity of the enclosure.

A further sequence of two probable middle Iron Age pits (4458 and 4176) cut enclosure ditch 4518 at the easternmost point. The only other internal features in enclosure 4518 were two high status

Plate 3.25 Pit 4011 half-sectioned with dark fills at top

cremation burials (4298 and 4312) within the neck of the enclosure on the eastern side. These were late Iron Age and are therefore discussed below.

A number of circular pits containing middle Iron Age pottery, similar to 4176, were found in the vicinity of enclosure 4518. These included pits 4011 (Plate 3.25) and 4148 south-east of the enclosure and pit 4400 to the north-west (see Fig. 3.28). Three chalk weights, all with suspension loops, two of them oblong and the third triangular, came from pit 4011 (see also Shaffrey this vol. and Fig. 3.72), while a single flat linear 'potin' coin was found on the stripped surface of pit 4148, and was presumed to have derived from the upper fill. Such potin coins are dated to the end of the 2nd or first half of the 1st century BC (Hobbs 1996, 16–17), and Holman believes that these variants are late in the Class I series, perhaps dating as late as the mid 1st century BC (see Holman this vol. and 2000, 208). A second very similar potin came from the lowest fill of oval pit 4400, north-west of enclosure 4518.

The four pits just described all lay in a rough line, and shared finds that suggest placed deposits. Two (4176 and 4011) both contained base sherds with crosses, 4011 has the chalk weights, while 4148 and 4400 both contained a potin coin. Pits 4148 and 4400 also both contained a fish bone (indeterminate from 4148, and a plaice or flounder precaudal vertebra from 4400; identifications by R Nicholson), the middle fill of pit 4400 contained a large deposit of fired clay in charcoal, while the uppermost surviving fill of pit 4011 contained much charcoal and burnt flint. Larger pit 4172 within enclosure 4518 had a basal fill of charcoal and charred cereals. These deposits strongly suggest that the area of enclosure 4518 was the focus for placed deposits in the middle–late Iron Age, perhaps explaining why this was the location chosen for the high status burials of the late Iron Age (see below).

Enclosures 3966/3695 and ditch 4723/2

East of enclosures 4518 and 4617 was another curvilinear enclosure (3966), with a ditch (4723 recut as 4722) running north from it, and a group of four-post structures to the east (Fig. 3.28). There was also a scatter of large storage pits in this area. Ditch 3966 continued beyond the excavation area, but no obvious continuation was found in the HS1 works. The enclosure was smaller than 4617 to the west, forming a tighter arc 33m across. It is suggested that ditches 3966 and 3965 were both part of the same enclosure, and that this was approximately circular.

The northern side of the enclosure was formed by ditch 3966, which varied from 0.36 to 1.08m wide and from 0.13 to 0.3m deep, with a flat base. The ditch generally contained a single silting fill that produced 107 sherds of pottery weighing 607g. Much of this was diagnostically middle Iron Age in date. Animal bone was found in some quantity and included hare as well as the standard domesticates, one of only two hare bones on the site. A fragment of copper-alloy edge binding was also recovered (SF 402).

The second ditch (3965) was only visible for 6.5m, running SSW from a terminus opposite that of 3966 and continuing beyond the A2 scheme. The gap between the termini was 5.75m, which presumably

constituted an entrance to the enclosure. Ditch 3965 yielded only a single sherd of severely worn prehistoric pottery, plus charred weeds and wild seeds.

Two short lengths of narrow gully (4698 and 3967) radiated from the arc of 3966 to the north-east and east respectively, and are thought to be contemporary with the enclosure. There was a gap some 1.3m wide between the end of gully 4698 and that of ditch 4723, which continued to the north. This was probably for an entrance. Ditch 4723 ran approximately south-north, but curved slightly to the west. The ditch was *c* 37m long, 0.6–0.9m wide and 0.25m deep. Although six sections were dug across the ditch it produced only five sherds of pottery, one of which was middle Iron Age, animal bone and an iron nail.

Ditch 4723 was recut by ditch 4722 on the same alignment on the eastern side towards the northern end, over a distance of 12m. This feature was wider (1.1m) and deeper (0.4m), but had a similar profile. Only two sherds of pottery and pig bone were recovered from 4722, one sherd being late Iron Age. Ditch 4723 is interpreted as middle Iron Age in origin, as its line mirrors that of large boundary 4615 to the west. The recut 4722 is likely to have been dug in the middle–late Iron Age, and so spans both phases.

A number of pits were found within enclosure 3966, with some, such as pit 4580, being quite substantial (4.05 x 2.65 x 0.4m deep). None produced significant quantities of finds. The enclosure ditch (3966) was also cut by a complex of three intercutting pits (group 3968) to the north and by pit 4591 on the east. Group 3968 contained over 600g of pottery, much of which (including two bases decorated with burnished crosses) dated to the middle Iron Age, although a possibly Roman sherd was found in one of the upper fills. Animal bone was plentiful, but consisted only of bones of cattle, pig and sheep/goat. Fired clay was recovered in small amounts and a small deposit (4740) close to the base of 3607 yielded abundant hawthorn group charcoal and a few wild/weed seeds. The irregular profile and size of this feature perhaps suggest a quarry pit later used for occasional dumping. It is likely that most of the feature postdated the use of the middle Iron Age enclosure. The upper fills of the pit group were cut into by two smaller pits, 3630 and 3608, which clearly contained dumped material from an oven or hearth. Only four sherds of pottery came from 3630, which could have been either middle or late Iron Age. Pit 3608, however, produced over 1kg of late Iron Age pottery, and was probably associated with enclosure 4779 (see below).

Circular pit 4591 to the east measured 2.2m in diameter and 0.45m deep, and had removed the relationship between enclosure 3966 and narrow SW-NE aligned gully 3967. It contained two thick dumps of domestic rubbish (4593 and 4594) with significant quantities of middle Iron Age pottery, together totalling 174 sherds (1.2kg), and smaller collections of fired clay. Animal bone was prolific, especially in fill 4594, although only standard domesticates were present; some of the bone displayed clear evidence of butchery. A copper-alloy nail, an iron collar and a fragment of brick, possibly Roman, came from fill 4594.

An area of colluvium immediately east of enclosure 3966/ditch 4723 partially obscured and confused an area of archaeology that comprised a ditch, pits, a possible fenceline and several four-post structures. The confusion lay in the similarity between the underlying silty clay subsoil and the colluvium, so that some features belonging to probable structures appeared to cut the colluvium, while others appeared to be sealed by it. In addition, colluvial material was probably accumulating over a considerable period; Roman pit 7792, for example, was found beneath a thin layer of colluvium while several probable Iron Age features cut into it. As such, stratigraphic dating of features in this area was difficult. At least one four-post structure was, however, dated to the middle Iron Age by radiocarbon dating, and from their position and character it is likely that others also fell into this period (see Fig. 3.28).

A radiocarbon date range of 360–50 cal BC (NZA 32310) was obtained from charred grain recovered from four-post structure 7964. This structure was 2.5m square, and consisted of postholes 0.4–0.5m in diameter and of a similar depth (Fig. 3.31). This was the only posthole structure within this area to produce charcoal containing charred grain: a single charred wheat grain and an indeterminate cereal grain. Pig bones were also recovered. Four-post structure 7189 to the south-east was also *c* 2.5m square, but the postholes were less regular. This produced only animal bone and flint. Group 7190 west of 7964 was irregular in shape, and although a further posthole was sought west of 7834, none was found. Group 7191 south of 7964 consisted of five postholes arranged in a rectangle 2.1m x 1.1m, with the fifth posthole to the south.

A possible alignment (7188) of five small pits or postholes included one Bronze Age cremation burial (7758), and *in situ* burning in one of the other four undated features, so all of these are dealt with in the later Bronze Age section (see Chapter 2). Ditch 7963 was *c* 23m long, although the northern end was not properly defined and may have been truncated away. The ditch was 0.6m wide and 0.35m deep containing up to three fills. This produced only structural fired clay and sheep/goat bone but no dating evidence.

The pits east of enclosure 3966 and ditch 4723 were of varied dates, but large oval pit 4901, immediately north of group 7191, and pit 7911 to the north-west both produced scraps of prehistoric pottery and 4901 yielded abundant charcoal. These may have been contemporary with the four-post structures.

Eastern Site B/Western Site C

East of the trackway there was a further area of middle Iron Age activity straddling the Site B/Site

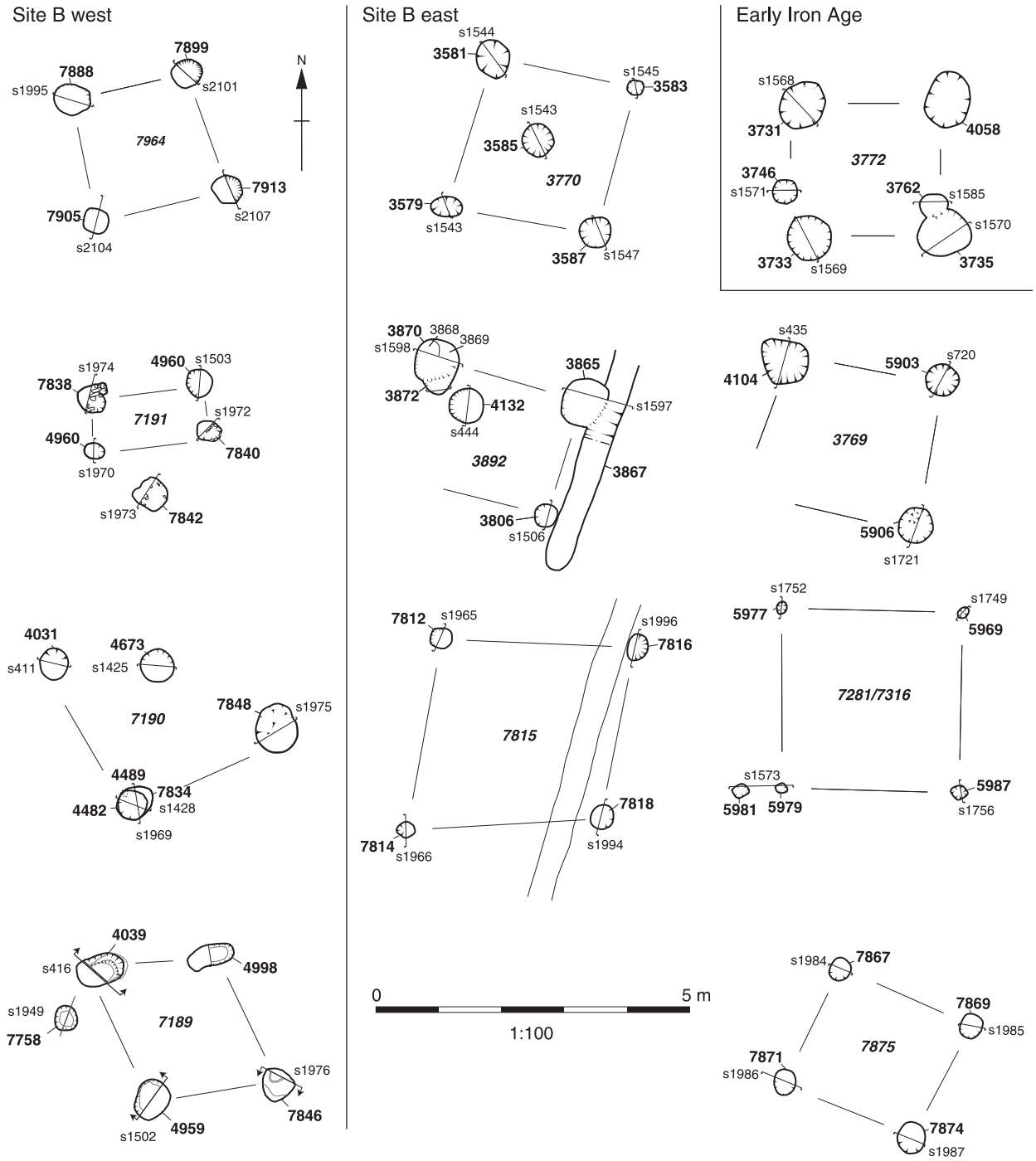


Fig. 3.31 Plans of four-post structures in Sites B and C.

C boundary, comprising enclosure and trackway ditches, numerous pits, four-post structures and a crouched inhumation burial (Fig. 3.32). Some of the ditches were modified in the late Iron Age, showing continuous occupation in this area.

Ditches

Ditches 7193, 7194 and 5910 ran west-east from the south edge of the site, and between them appeared to form the eastern boundary of the middle Iron Age activity in this area, with only a single possible contemporary pit (5265) beyond it (Fig. 3.32). Ditch 7193 lay entirely within the excavation, and ran for 45m, slightly curving northwards at its western end. It may have been added to a shorter ditch 7987 just to the west that contained early–middle Iron Age pottery.

Ditch 7193 was *c* 1.2m wide and 0.85m deep, containing 16 sherds of pottery, some of which appeared to be middle Iron Age. Other finds included animal bone, flint and fired clay. Enclosure ditch (7194) ran parallel to ditch 7193 some 4m to

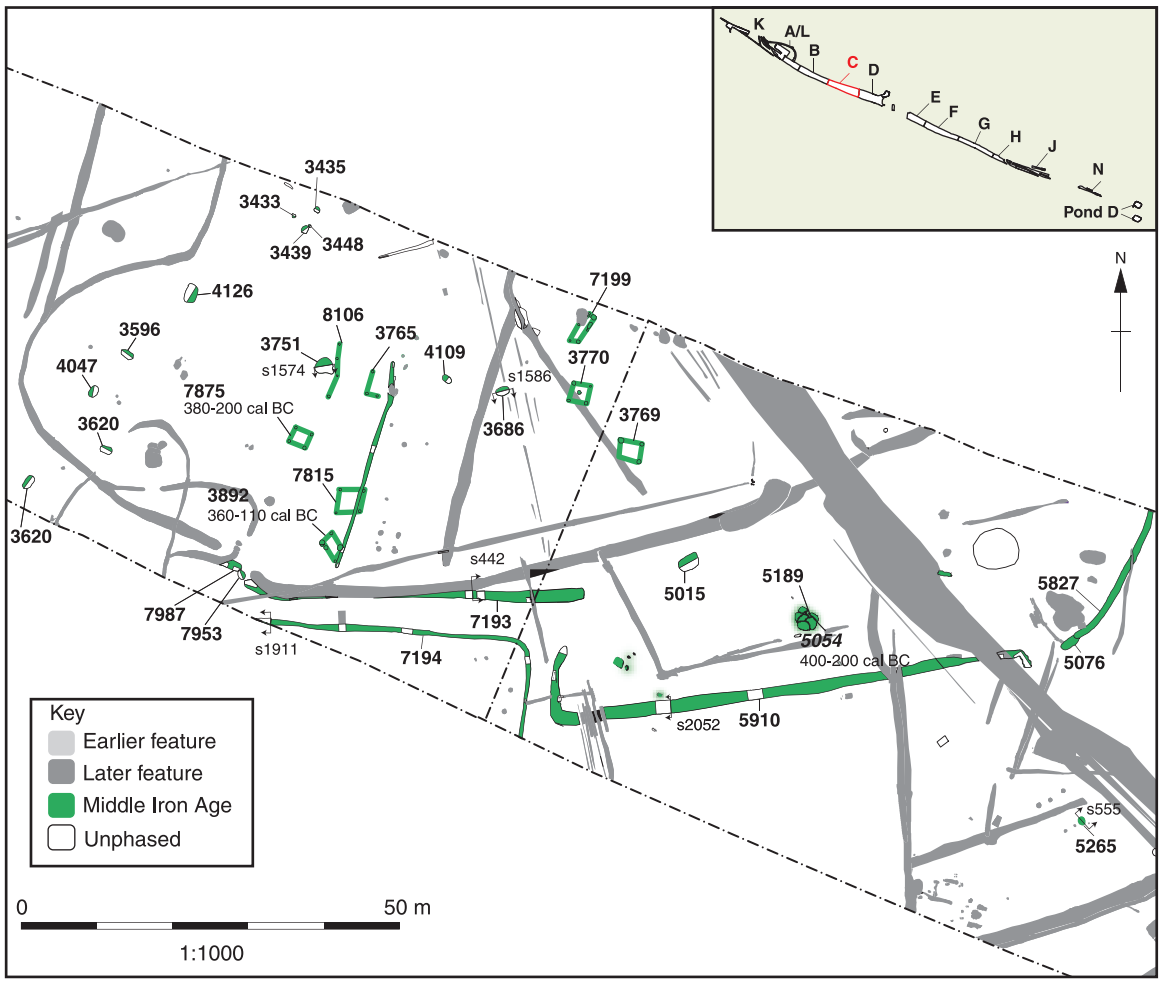


Fig. 3.32 Plan of the middle Iron Age settlement east of the trackway in Sites B and C

the south, before turning southwards at its eastern end and continuing beyond the southern limit of excavation. This feature was probably part of a rectilinear enclosure, although this was not visible as a cropmark, and was not picked up as far south as the HS1 works. The ditch was less substantial than 7193, measuring *c* 1m wide and 0.6m deep, and contained 31 sherds (138g) of middle Iron Age pottery and a few fragments of animal bone and fired clay. Two pairs of postholes were excavated inside the presumed enclosure, but none contained any finds.

Ditches 7193 and 7194 may have marked a corridor or trackway leading to a larger enclosure bounded on the south by large ditch 5910. This began in line with the end of ditch 7193 and the north side of enclosure 7194, and ran south parallel to 7194 for 10m, before turning ENE-WSW. It then ran for a distance of 63m, ending in a short southern projection 3m long. The ditch was up to 1.8m wide and 0.68m deep but was heavily truncated at its eastern end by medieval and post-medieval features. Finds from ditch 5910 comprised Iron Age pottery, animal bone, fired clay and flint. The pottery assemblage totalled 107 sherds (348g), most of which were small sherds in late Bronze Age/early Iron Age fabrics, but also included a few sherds in middle Iron Age fabrics. Environmental evidence from 5910 comprised a few grains of charred wheat and other cereals and of vetch/vetchling.

The western arm of ditch 5910 and enclosure 7194 were 3m apart, suggesting another funnel or trackway, and coincided with the eastern terminus of 7193. Overall this suggests that the ditches were broadly contemporary forming part of a large enclosure sequence. Some 5m beyond the east end of 5910 was pit 5076, cut by ditch 5827. The ditch, which was of similar size and depth to 5910, appears to represent a continuation of this boundary with an entrance between them.

Pits

Whilst the majority of discrete middle Iron Age features were located to the north-west of this ditch series one complex feature (5189) including an inhumation (skeleton 5129) lay only 6.7m north of ditch 5910 (Figs 3.32 and 3.33). Pit 5189 measured 3.15 x 2.7m at the surface, and had an irregular profile, with up to five different scoops (5052, 5068, 5071, 5184 and 5187) in the bottom measuring from

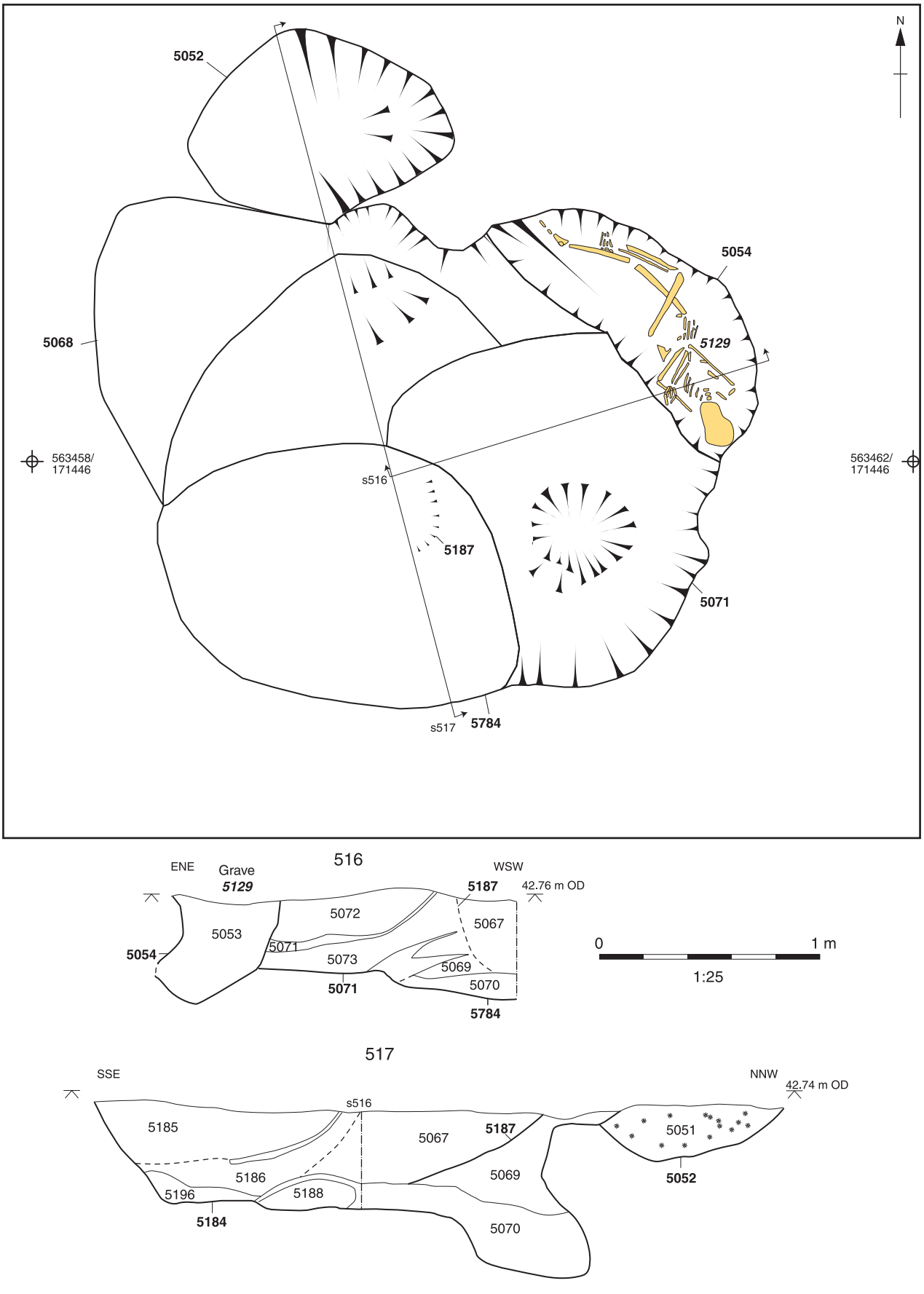


Fig. 3.33 Plan and section of grave 5054 with skeleton 5129 in pit 5189

Plate 3.26 Skeleton 5128

1.2 x 0.65m to 2.2 x 1.2m in plan and varying from 0.25–0.7m deep. These may represent a sequence of intercutting pits, but the fills suggest rather a rapid sequence of deliberately dumped backfills across the whole of the feature (Fig. 3.33). The dumping clearly slumped subsequently into the various scoops, creating localised hollows whose fills varied considerably. Only two of the scoops, 5052 and 5071, contained finds, producing small amounts of pottery in fabrics current from the late Bronze Age to the middle Iron Age. Scoop 5052 also contained animal bone, 129g of briquetage and 449g of fired clay, plus charred wheat grains and oak charcoal.

Grave 5054 lay along the eastern side, and was 1.4m long, 0.6m wide and 0.58m deep, containing the remains of a flexed individual lying on the left side, orientated north-south (Fig. 3.33). The skeleton (5129) was not identified until the bones appeared towards the bottom, but it was suggested in the section drawing that the grave had been cut through the earlier fills, and so was the latest event within this feature. Given the unusual curving shape of the grave cut, however, it is equally possible that the body was deposited into the open feature, which was then filled all at once. Some sub-rectangular pits with similar profiles were identified at Danebury as partly dug pits (Cunliffe and Poole 1991, 159). The bones were badly preserved, making ageing and sexing difficult, but were identified as a probable female aged 25–30. There were no accompanying grave goods, but bone from the skeleton gave a radiocarbon date with a range of 400–200 cal BC (NZA 30160), placing it in the early–middle or middle Iron Age.

A single pit (5265) was located 25m south-east of ditch 5910 (Plate 3.27). The pit measured 1.23 x 0.9 x 1.24m and contained deliberate deposits of charred material in the upper fills (5268, 5271, 5272) (Fig. 3.34). The pit produced 30 sherds of late prehistoric pottery (70g), including some specifically middle Iron Age material. Other finds

Plate 3.27 Pit 5265 half-excavated

included structural fired clay, bone fragments, and a little iron and slag. The location of the pit, removed from other activity and apparently beyond the settlement boundary, and the presence of charred material and slag may indicate that this feature had an industrial purpose.

Numerous pits were also located north or north-west of ditch 7193, some of which lacked any pottery. Most of the pits were, however, middle or late Iron Age, and it is likely that the undated examples were also contemporary with the ditched settlement.

As outlined above there are particular difficulties separating features belonging to the middle and late Iron Age, therefore the pits could fall into either phase. However, those features described below contained diagnostic middle Iron Age pottery. The details of these features are summarised in Table 3.4. The pits varied in size and contents, but most contained the typical contents of pottery, fired clay and animal bone.

Pit 3751 was among the largest of pits in this area, and contained a sequence of seven fills comprising natural silting or erosion deposits (3752, 3754, 3755) interspersed with lenses of charcoal-rich material (3753, 3756) containing burnt flint, and in the case of 3756 a larger amount of fired clay (Fig. 3.33). Finds from the pit were scarce, comprising 20 sherds of pottery, animal bone and fired clay.

Pit 4109 lay some 15m east of 3751, and was especially shallow, containing a burnt primary fill overlain by a thicker deliberate deposit, which comprised the remains of a pair of human feet, together with 11 sherds of middle Iron Age pottery, fragments of pig bone and fired clay. It is unclear whether the bones were part of a truncated skeleton, or were all that had been deposited. This was perhaps the most unusual find of human bone from the scheme, although it was not an uncommon practise to deposit disarticulated human remains in the Iron Age.

Pit 3686 further east was somewhat larger than 4109 with four fills (Fig. 3.33). Basal fill 3760 contained two triangular loomweights/oven bricks and a fired clay pedestal base, a fragment of greenstone saddle quern, briquetage and animal bone.

Table 3.4: Middle Iron Age pits in eastern Site B

Cut No	*No Fills*	*Length (m)*	*Width (m)*	*Depth (m)*
3433	1	0.5	0.5	0.15
3620	3	2.1	1.05	0.4
3686	4	1.8	1.2	0.65
3751	7	2.4	2.2	0.7
3833	4	1.6	1	0.6
4047	2	1.45	1.15	0.35
4109	2	0.9	0.65	0.2

Table 3.5: Iron Age posthole structures in eastern Site B

Group No	*No Posts*	*Length (m)*	*Width (m)*	*Orientation*
7875	4	2.35	2.2	East-west
7815	4	3	2.9	NE-SW
3892	4	2.6	2.4	NE-SW
3770	5	2.5	2.4	North-south
3769	3	2.5	2.4	North-south

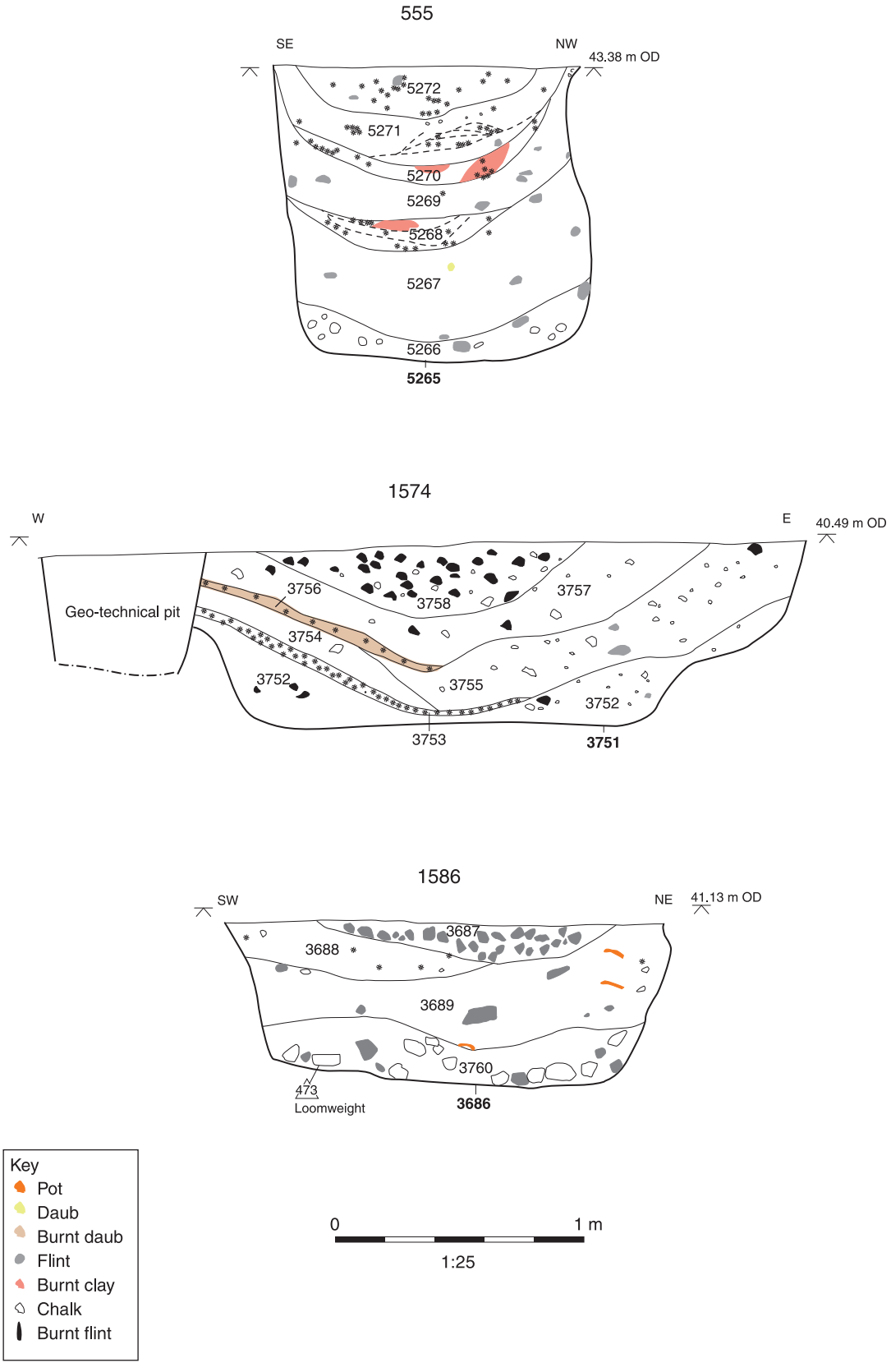


Fig. 3.34 Sections of pits 5265, 3751 and 3686

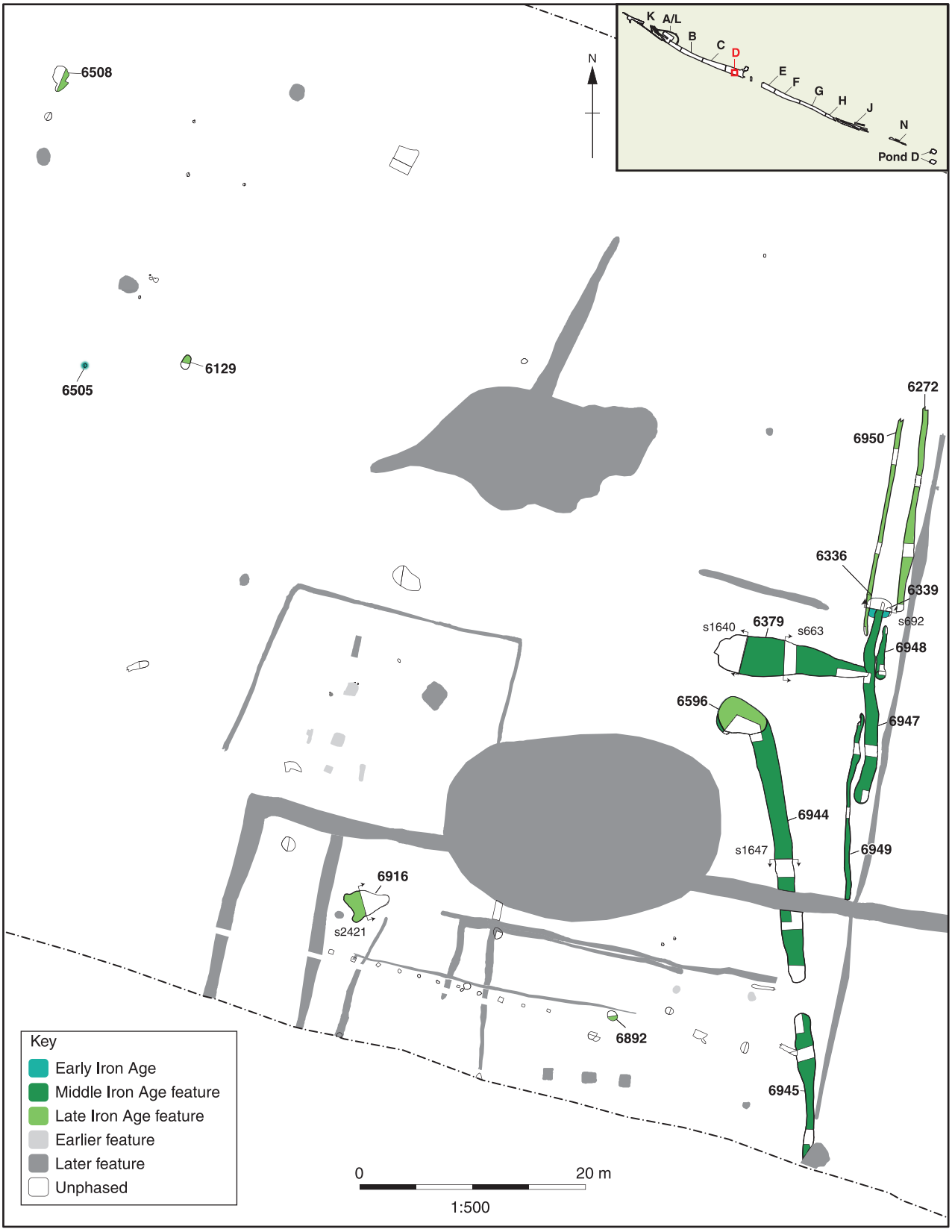


Fig. 3.35 Plan of Iron Age features on Site D

This was overlain by a second large dump (3689) that produced a triangular loomweight/oven brick and two fragments of possible sandstone saddle quern, as well as animal bone. The two upper fills had fewer finds, although three iron objects, two fragments of nail stem or spike and an unidentified object were recovered from the top fill 3687. The presence of large objects in some quantity within the pit seems to suggest the pit was deliberately and rapidly backfilled, reinforced by the large quantity of chalk rubble in upper fill 3687.

Four-post structures and other postholes

A number of probable postholes were also scattered around this area, most falling into recognisable groups or structures. This included five possible four post-structures (7875, 7815, 3892, 3770 and 3769; see Table 3.5 and Figs 3.31–2), a posthole row (8106), an L-shaped group (3765) and a rectangular group (7199).

Four-post structure 7875 was the most regular, being square with four similar-sized postholes. Structure 7815 was slightly skewed, and it is alternatively possible that its western pair of postholes were part of a row of four (7812, 7814, 7887 and 4132) continuing south, and including some thought to belong to structure 3892. This latter structure was the least convincing, forming a trapezoid rather than a square or rectangle, and with only two large postholes. This should perhaps be viewed instead as a two-post structure. Only three postholes belonging to structure 3769 were found, the fourth being believed to have been removed by ditch 7197, but the surviving three were all substantial, are at right angles and form sides of equal length, suggesting a convincing square. There were five postholes in Structure 3770, four of which form a square, with the fifth posthole in the centre. This has a similar orientation and size to structure 3769, and is therefore probably genuine.

A single sherd of late prehistoric pottery came from structure 7815, animal bone from 7875 and 3769 and fired clay from 7875. A charred seed from posthole 7871 in structure 7875 and a single charred grain from posthole 3806 in possible structure 3892 were submitted for radiocarbon dating, returning dates of 380–200 cal BC (NZA 32311) for 7875 and 360–110 cal BC (NZA 32306) for 3892 respectively. One posthole of 3769 was probably obliterated by late Iron Age ditch 7197, and structure 3770 was also crossed by this ditch, suggesting it too was earlier. A middle Iron Age date for these therefore seems likely.

The post-row (8106) consisted of four postholes just east of pit 3751, running north-south in a very slight arc for 7.5m. The postholes contained only fired clay, charcoal and fuel ash slag. Group 3765 was an L-shaped arrangement of three postholes, none of which produced any finds, east of the posthole row and measuring 3.4 x 1.7m. Two of these were in line with the western side of possible four-post structure 7815, and it is possible that they form part of a fenceline, some of whose postholes did not survive.

Group 7199 comprised six postholes and a small number of pits north of four-post structure 3770. These formed a roughly rectilinear shape, measuring 4.7 x 1.7m, around the east side of large pit 3690. Pit 3690 and posthole 3702 both produced late prehistoric pottery although this may have been residual. Other finds included part of a possible iron gouge and animal bone.

A further probable four-post structure (7316) was located at the eastern end of Site C in the area previously occupied by both earliest and early–middle Iron Age activity (see Figs 3.9 and 3.37). The postholes produced wheat and other cereal grains, possibly reinforcing the four-poster granary interpretation; environmental samples also yielded hazelnut shell, cleaver and charcoal. The group contained 29 worn sherds of pottery in fabrics characteristic of the late Bronze Age and early Iron Age, small amounts of fired clay, flint and animal bone. Unusually for this period this also included (unidentified) fish bone. A radiocarbon date of 380–190 cal. BC (NZA 32316) was obtained from charred grain from fill 5986 in posthole 5987.

Site D

A single isolated ditch on Site D, almost 200m from the nearest contemporary activity on Site C, was thought to date to the middle Iron Age (Fig. 3.35). The large segmented ditch (6944/6945) extended approximately northwards from the southern edge of excavation, and it is likely that ditch 6249, found during a watching brief south of Site D was a continuation. The ditch clearly became more truncated towards the south of the site, measuring 1.5–2m wide and 0.75m deep at its northern limit and only 0.7–1.3m wide and 0.35–0.65m deep further south.

Occasional localised dumping was found in the northern segment of the ditch, most notably in a fill rich in cattle bone (6563) and a later localised deposit (6554) of partially fired clay (490g) and burnt material. The upper fills of the ditch contained more finds than the lower ones. A total of 50 sherds (385g) of middle Iron Age pottery was recovered from the ditch. Other finds included animal bones, further fired clay and fragments of copper-alloy. The ditch was cut by Roman ditch 6941, which also contained middle Iron Age pottery at this point, and the northern terminus was cut by large pit 6596. This feature measured 4.5 x 3.2 x 0.9m deep and contained late Iron Age–early Roman pottery (see below).

THE LATE IRON AGE

Late Iron Age activity on the A2 scheme was widespread. The settlement established in the middle Iron Age on Site B continued, and the major land boundary in Site L gained a continuation in Site A.

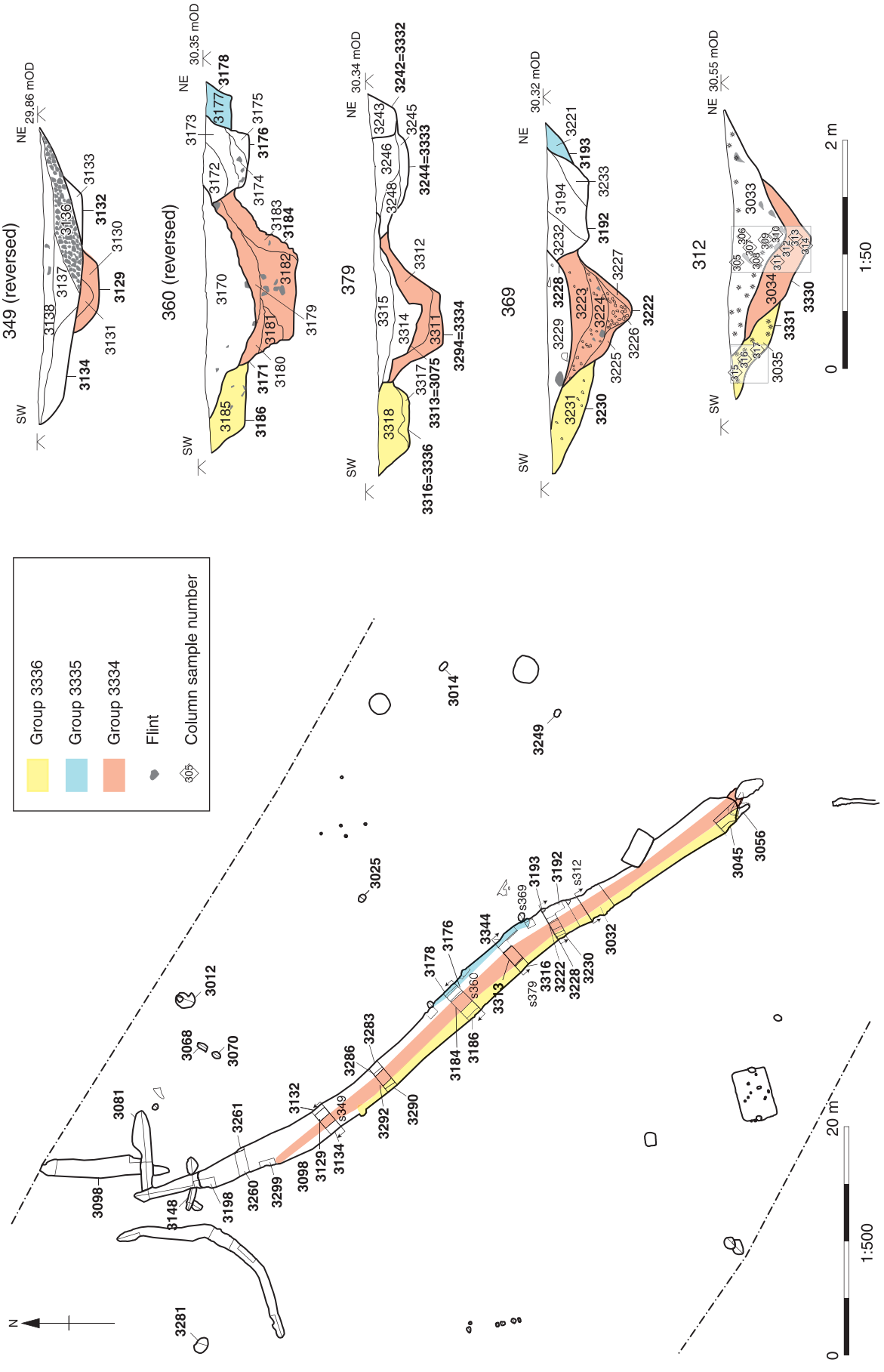


Fig. 3.36 Detailed plan of boundary ditch and sections showing late Iron Age phases on Site A

A new settlement was established at Pond D North. A combination of stratigraphic sequences, ceramic and other finds, and spatial association has enabled the broad sequence of activity to be worked out, despite the absence of diagnostic finds assemblages in many of the features.

Sites L and A

Ditch 13161 on Site L was probably cut in the middle Iron Age (see above) and continued through to the Roman period (see below) (see Fig. 3.5). The ditch was a significant boundary in the late Iron Age (*c* 3m wide and 1m deep), but no diagnostically late Iron Age pottery was recovered from it. In contrast, it is likely that the long ditch crossing Site A north-west to south-east, which may have acted as a continuation of the Site L boundary, was late Iron Age in its inception (see Fig. 3.5, and Fig. 3.36). The earliest elements of the sequence were ditches 3336 and 3335, which had no stratigraphic relationship to one another (Fig. 3.36). The ditches were traced over distances of 40 and 15m respectively, but 3335 in particular may have been longer. It is possible but unlikely that these were contemporary rather than successive boundaries. Only one virtually complete cross-section of 3336 was obtained (Fig. 3.36 Section 379), and none of 3335, but it is clear from the surviving profiles that the gap between the ditches could not have been much over 1m at ground level, and probably less. The ditches could not therefore have functioned effectively as defining a trackway, although it is possible that they ran either side of an upcast bank.

Ditch 3336 was cut by larger ditch 3334, which was a minimum of 45m long, up to 1.7m wide and 0.7m deep. The ditch contained between one and five chalk-rich fills, all of which appeared to be the result of natural erosion and silting. In particular, the lower fills more often seem to represent collapsed bank material and the upper fills natural silting. The position of the bank is problematic as the collapse seems to have entered from both sides. The only finds retrieved from the ditch were a heavily worn sherd of late prehistoric pottery and unidentified animal bone fragments.

A series of smaller features (3098, 3081, 3148) were located at the northern end of the intercutting ditch sequence. These were cut by Roman ditch 3356 and, although undated, are also likely to be late Iron Age. Gullies 3081 and 3148 may have been redefining this entrance between earlier ditches 3334 and 3098, before the boundary was extended across it in the Roman period (see Chapter 4).

A number of pits were located in the vicinity of the boundary ditch (Fig. 3.36). Shallow pits 3014 and 3025 to the north-east of the ditch both produced sherds of late Iron Age pottery; 3025 also contained cattle bone. The remaining pits in this area included three very small features (3068, 3070 and 3249) and a larger pit (3012) which produced only fragments of animal bone (3249) and a tiny sherd of medieval pottery (3068). Despite this the character of the pit is similar to other prehistoric pits in this area, and the scrap of pottery is probably intrusive. To the west of the ditch, pit 3281 and natural hollow 3211 also produced sherds of late prehistoric pottery and animal bone.

Sites B and C

The late Iron Age activity on Sites B and C represented a development of the middle Iron Age settlement and therefore fell generally into the same three zones, although there was a slight spatial shift.

Modifications to the trackway crossing central Site B

The cobbled trackway was cut across by a complex of ditches on the south side of the excavation (Fig. 3.37). These had very few finds. One of the stratigraphically earliest ditches (7971) followed the alignment of the trackway for nearly 32m, mostly cutting its western edge. The existence of a patch of the cobbled surface west of the ditch (layer 3955) however shows that this ditch was not contemporary with the trackway. The ditch survived 1m wide and 0.2m deep but produced only a single sherd of worn prehistoric pottery. This ditch was cut by all the ditches with which it intersected, and may be later middle Iron Age or late Iron Age.

Almost all of the ditches that cut 7971 were on a north-north-east alignment, or ran eastwards beyond it, such that the trackway could not have continued to function. Some of these ditches (groups 7972/3, 7974 and 7975) contained only middle Iron Age or indeterminate later prehistoric pottery. Although this material was worn, the first ditch to contain late Iron Age pottery was 7977, which cut 7975, perhaps suggesting that this part of the trackway ceased to function during the middle Iron Age.

The central zone of activity in Site B in the late Iron Age comprised a series of generally short lengths of sinuous, intercutting ditches or gullies that cut the cobbled remnants of the southern part of trackway 7980. A number of these ditches continued beyond the southern edge of excavation and may have been linked to the northern part of the late Iron Age/early Roman enclosure to the south within the HS1 works. Many of the gullies in this area were shallow (Fig. 3.37), and most were filled with soil derived from the adjacent hollow, very similar to the overlying colluvium, making them difficult to distinguish. The relationships between them were therefore not always clear, and few contained diagnostic pottery, but a plausible sequence is described in the digital report.

The area bounded by ditches 7975 and 8102 was extended in the early Roman period to form a ditched trackway running north-north-east (see Chapter 4).

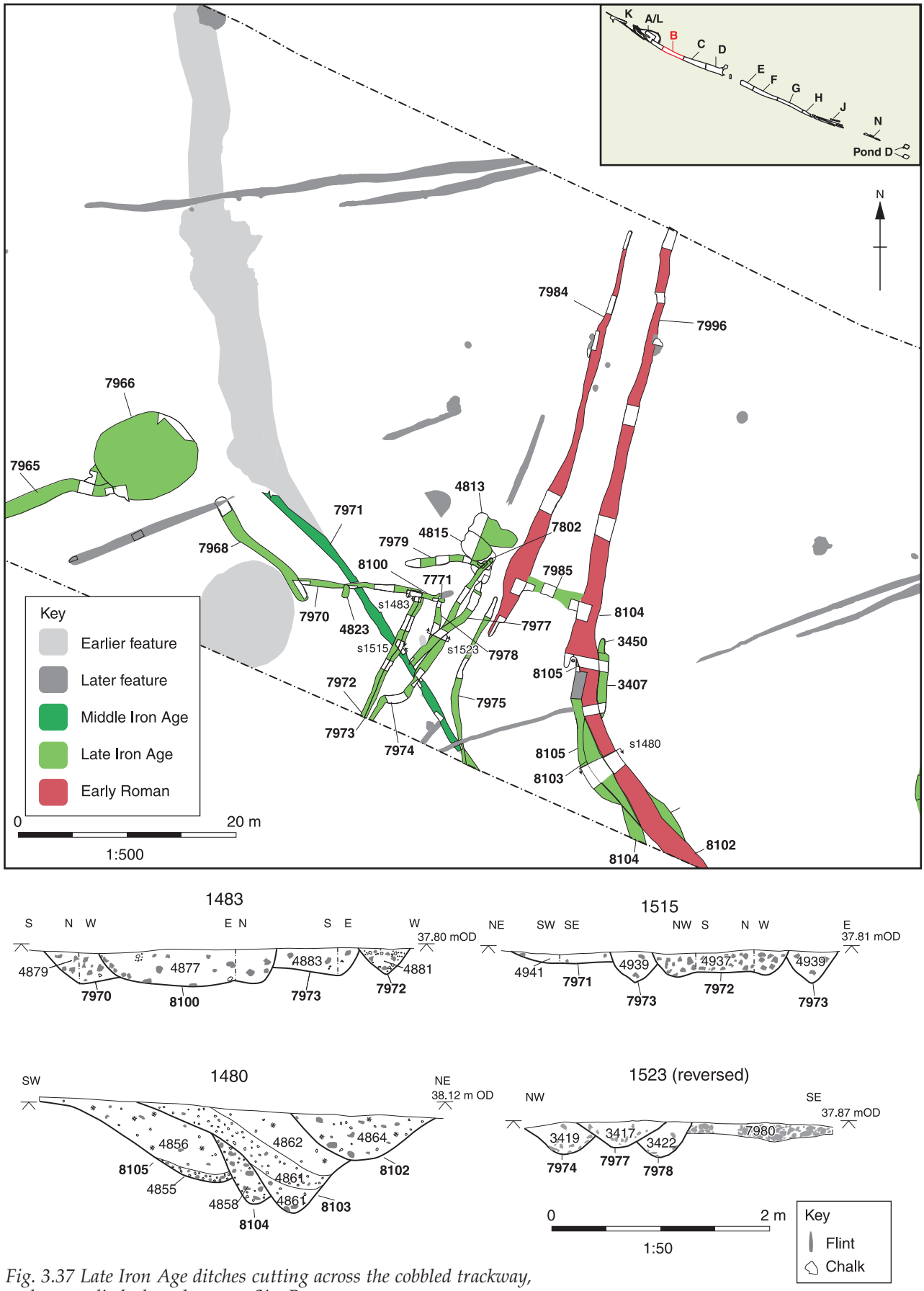


Fig. 3.37 Late Iron Age ditches cutting across the cobbled trackway, and a new ditched trackway on Site B

Western Site B

The most westerly late Iron Age features were two high status burials (4298, 4312) in circular pits found within the neck of middle Iron Age 'banjo' enclosure 4518 (Fig. 3.38). These are described separately at the end of the Iron Age description.

In the late Iron Age, enclosure 3966 was superseded by a sub-rectangular enclosure made up on the south-east and north-east sides of ditches 3963 and 4779, which blocked off the north-west entrance into the earlier enclosure (see Fig. 3.38).

Ditch 3963 ran north-east for 18m before ending just short of 3966, and after a 2.5m wide gap ditch 4779 continued for another 17m before turning at right angles to the north-west for nearly 25m. As both 3963 and 4779 ended short of enclosure ditch 3966, it is possible that this was a modification to the earlier enclosure, which continued to function to the south-east, though there were no recuts to substan-

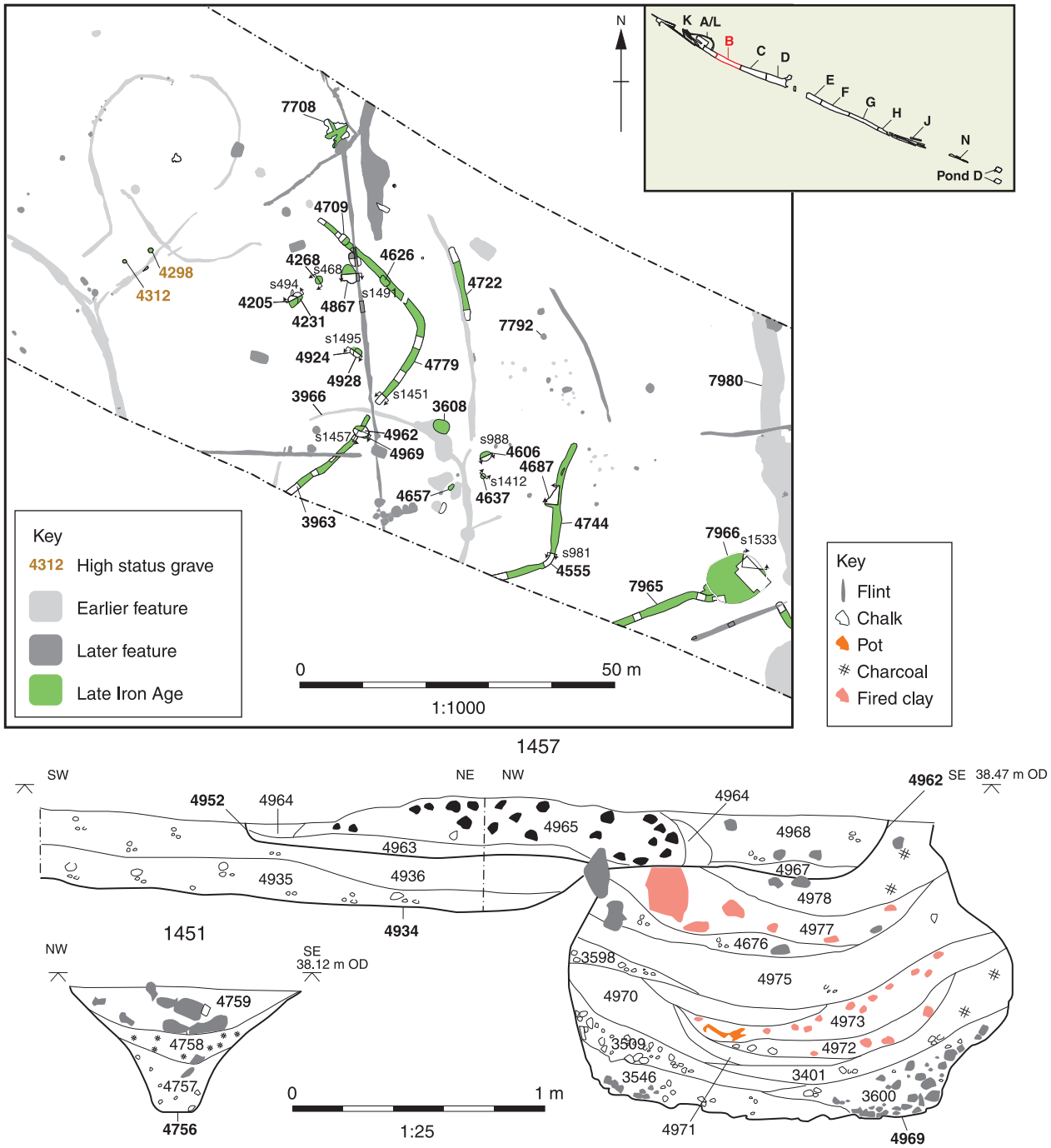


Fig. 3.38 Plan showing late Iron Age features in the western part of the settlement on Site B, together with sections of ditches 3963, 4779 and pit 4969

tiate this. It seems less likely that there should have been an entrance just where the infilled enclosure ditch crossed.

Overall the enclosure ditches produced 2.7kg of late Iron Age pottery, while animal bone was also significant and included dog and hedgehog, as well as the standard domesticates. Fired clay included a residual fragment of a perforated plate (see Fig. 2.41 no. 2). Some intrusive Roman tile and modern glass was present, the former presumably derived from the later Roman fields. A small amount of environmental evidence recovered from ditch 4779 included oat/brome grass and a plum or cherry stone with charred flesh still adhering.

The enclosure ditches were cut by three pits (4962, 4626 and 4709), clearly later than the initial ditch cuts, but still considered to be late Iron Age in date. Pit 4962 also cut pit (4969) immediately adjacent to ditch 4779, which was a beehive pit with the most complex fill sequence in this area (Fig. 3.38). This pit was 2.1 by 1.8m in plan and 1.22m deep with an undercut profile, containing a sequence of 14 fills (Plate 3.28). The basal fill (3546) notably produced a Class 1 potin, similar to those recovered in pits 4148 and 4400 (see above). Subsequent fills contained significant quantities of middle–late Iron Age pottery, charred wheat and animal bone, including most of the skeleton of a male pig (from 3401). Dumped layer 4973 contained a complete but broken fine late Iron Age necked bowl. The upper four fills of the pit were thicker than the lower layers, the earliest of which (4975) clearly represented a large dump of domestic refuse.

Pit 4969 was similar in the complexity of its fills to the middle Iron Age pits in this area discussed above, and the only other analogous contemporary pit was 3662 in the east part of the settlement. The potin in its basal fill links it to the other middle-late Iron Age pits west and east of enclosure 4518, and it was probably of similar date. The difference from these other pits, however, is the presence of clearly late Iron Age forms in the pottery within the middle and upper fills of the pit. The occurrence of the coin may represent the ritual closing of the pit. The presence of a large amount of pig bone above this, as well as the complete fine pottery vessels, may also point to ritual feasting and deposition.

A cluster of late Iron Age pits lay within the area enclosed by ditches 4779/3963. Most produced varying quantities of late Iron Age pottery, charred cereal remains and animal bone indicative of domestic waste. In addition, small, circular pit 4268 contained fragments of a cylindrical pedestal, probably from an oven.

A large (4.5m diameter), shallow (0.25m) and irregular feature (7708), some 12m north of ditch 4779 was also probably late Iron Age (Fig. 3.38). The feature, possibly a utilised tree-throw hole, produced another Class 1 potin coin, in addition to 295g of middle and late Iron Age pottery, animal bones and fragments of fired clay. The use of a tree-throw hole for deliberate deposition is relatively unusual for the late Iron Age, but the potin coin links this feature to pit 4969 and the other pits with special deposits in this area.

Plate 3.28 Pit 4969: Half-section showing large fired clay oven fragment

A second angled ditch (4744) was located *c* 30m east of 4779/3936 (Fig. 3.38). The ditch continued beyond the southern edge of excavation, therefore its full nature is unclear, although it probably formed a further rectilinear enclosure. The ditch entered the site on an east-north-east alignment, turning north after 9m and terminating 19m north of this. It was *c* 1m wide and 0.58m deep with a well-defined V-shaped profile. Overall the feature produced 550g of late Iron Age pottery, 853g of fired clay and fragments of briquetage. Animal bone included a highly fragmented cattle skull from intervention 4555, where the ditch turned. Environmental samples also yielded an assemblage of charred cereal including emmer, barley and indeterminate wheat. The ditch was cut in its northern half by a shallow pit 4687, which also produced late Iron Age pottery, fired clay, animal bone and charred plant remains, along with a virtually complete oven support or kiln bar.

Two late Iron Age pits (4606 and 4637) were located 10m west of ditch 4744 and just east of enclosure 3966. Pit 4606 was the larger of the pair (1.9 x 1.4 x 0.81m deep), and had a classic undercut pit profile. The pit contained nine fills, the first of which contained a Class 1 potin coin. The fills represent a succession of dumps of deliberate backfill containing domestic waste, comprising middle and late Iron Age pottery, animal bone and fired clay. In addition, a large number of residual fragments of perforated oven plate came from a lower fill (see Fig. 2.41, no. 1). The lower two dumps contained pottery described as middle Iron Age, the upper two late Iron Age pottery, suggesting that the pit spans the mid–late Iron Age transition. The location of the potin coin, like that in pit 4969, suggests a ritual significance in the infilling of these pits. The pit was notably charcoal-rich and analysis identified both hawthorn and oak, possibly the remains of fuel for domestic hearths. Pit 4637 was smaller and produced late Iron Age pottery, animal bone and fired clay.

North-east of these, and between ditches 4722 and 7963, was another pit 7792 that dated either to the late Iron Age or very early Roman period. The upper fill contained pottery, a flint scraper, an iron nail and a complete Langton Down copper-alloy brooch (SF 482; see Fig. 3.71, no. 1). This type of brooch is dated early-mid 1st century AD, and much of the pottery came from a single bead-rimmed jar, which could also date either side of the Roman conquest.

Some 17m east of 4744 was another length of ditch (7965) aligned ENE roughly parallel to it. This ditch continued beyond the southern edge of excavation and was truncated to the north by possible quarry pit 7966, but did not continue beyond it. At its northern end the ditch turned eastwards but appeared to be reverting to its previous alignment where cut by 7966, producing a 'kink'. The ditch was *c* 1m wide and 0.35m deep and contained 2–3 fills that produced only cattle bone and worked flint. The ditch was roughly at right angles to trackway 7980 and may have represented a boundary or element of field system.

Both L-shaped enclosure ditches, and ditch 7965, extended beyond the southern edge of excavation, but continuations of these ditches were not visible as cropmarks, nor were they picked up in the geophysical survey (see Chapter 1). None were obvious in the HS1 excavation area some 60m to the south-west.

Eastern Site B/Western Site C

Boundary ditches

The eastern part of the settlement was more extensive in the late Iron Age period than in the middle Iron Age, and comprised a number of substantial boundary ditches (Fig. 3.39). The main boundary of this extended settlement was formed by sickle-shaped ditch 7992 to the west, and slightly curving ditch 7192 to the east. The nature of the enclosure to the north is unknown.

Ditch 7992 measured up to 1.5m wide and 1m deep. The ditch was at its deepest at the southern terminal, where it contained six fills. All were interpreted as gradual deposits, although refuse in the form of late Iron Age pottery, animal bone and fired clay had been thrown into the bottom and top of the ditch. A particularly large faunal deposit was recovered from cut 3830, located at the point where the ditch changed from linear to curving (Fig. 3.39). This was dominated by the bones of domestic animals including dog and horse, but also included cat, hare/rabbit, bird, toad, lizard and rodent bones. Accompanying this was a small assemblage of late Iron Age pottery and fired clay. An environmental sample from 3829 yielded charred wheat and indeterminate cereal.

This deposit of animal bone continued south along the ditch for over 10m into cut 3906, where the bones in fill 3904 included a complete horse skull (SF746). The largest single assemblage of pottery came from cut 4116, where a deliberate dump of 108 sherds (399g) was recovered from the upper fill (4117) alongside animal remains and fired clay. Deliberate deposits also included some smaller, localised layers such as an ashy deposit (3980) within cut 3984, containing 15 sherds of pottery and faunal remains, probably representing hearth debris. An unusual chalk object (SF 472), which may have been an unfinished weight, came from fill 3771 in cut 3804, 10m from the southern terminus.

Ditch 7992 underwent a number of modifications, including recut 8101 at its northern end, the addition of a parallel boundary 7993 meeting the westernmost edge of the curve, and a series of alterations to the entrance area (see below). Ditch 7993 effectively added an annexe north of the curved enclosure, and was clearly still open in the early Roman period, as the uppermost fill in the north-

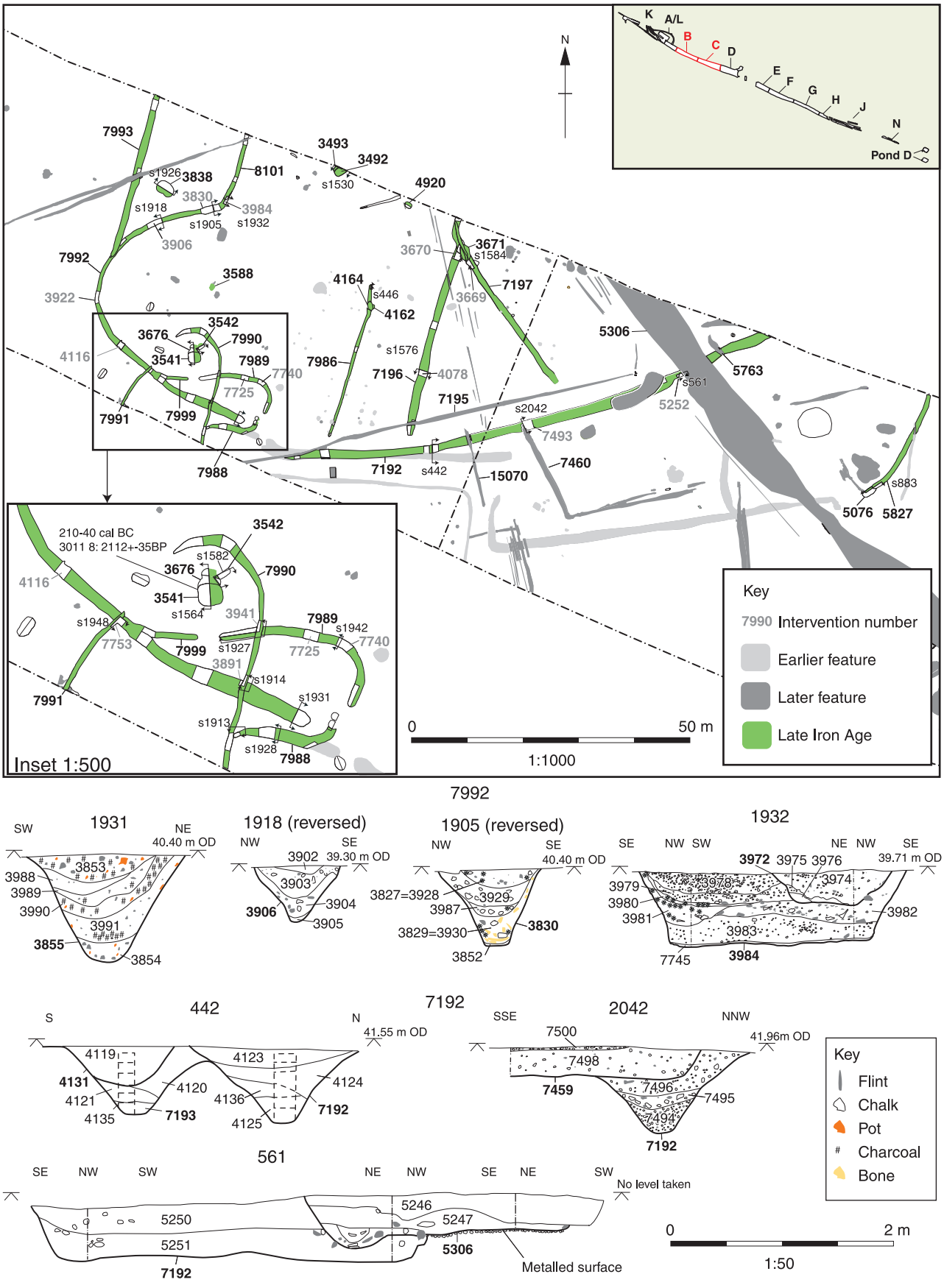


Fig. 3.39 Plan of late Iron Age features in the east half of the settlement in Sites B and C, and sections of ditches 7992 and 7192

ernmost cut (4806) contained early Roman pottery, and shallow Roman ditch 7995 ran into the open hollow of the ditch (see Chapter 4).

Continuing east beyond the terminus of ditch 7992, ditch 7192 was similar in size and profile, measuring between 1.4 and 2m wide and 0.54–0.88m deep (Fig. 3.39). Like 7992, the depth of the ditch decreased as it extended north-eastwards away from the terminus and the entrance to the enclosed area. The ditch contained between two and four fills, generally representing gradual silting with occasional deliberate deposits in the top of the ditch. Just west of the medieval holloway, and east of cut 7539, the width of the ditch decreased suddenly, possibly indicating that there had been a terminus at this point at some stage. East of the holloway, there was a corresponding widening of the ditch just beyond later feature 5763. Unfortunately these termini were not investigated, but it was suggested in cut 5252 that the character of the fills might indicate that the ditch had been deliberately backfilled. There was, however, no evidence of recutting in the ditch sections further west. Ditch 7192 produced small assemblages of pottery, animal bone and fired clay, but no special deposits. The faunal assemblage included red deer, indicative of hunting. The ditch was crossed by Roman ditch 7195 close to the west end, and was almost completely removed for a short distance by post-medieval wheel ruts in holloway 15070, and east of that by medieval gully 5763.

Entrance modifications

The first modification comprised the creation of three separate lengths of ditch/gully (7999, 7989 and 7988) arranged in a tight arc and separated by 2m long gaps, possibly restricting access at the entrance area (Fig. 3.39). The complex appears to have been a modification to an existing entrance and at its earliest may have been contemporary with the main boundary.

The three ditches were variable in nature. The spur (7999) was only 0.6m wide and 0.3m deep, containing a single fill that produced a little animal bone. Ditches 7989 and 7988 were more substantial, around 1m wide and 0.6m deep. Ditch 7988 contained 2–3 fills, predominantly the result of gradual silting, although localised dumping was observed. Three of the four excavated cuts produced small assemblages of pottery and a larger faunal assemblage came from cut 3946 towards the west end of 7988, unusually mainly composed of dog and bird bone. Ditch 7989 contained a sequence of five fills comprising gradual silting layers interspersed with intentional dumps of material. These included a whole late Iron Age pot (SF 480) from context 7782 within the southern ditch terminal (Plate 3.29; Fig. 3.62), and a second, nearly complete pot (SF 479), in context 4739 (intervention 7740). As in ditch 7792, part of a horse skull was also found in intervention 7725. Standard faunal remains, pottery sherds and fired clay fragments were recovered from other deposits.

Plate 3.29 Pot sf 480 and adjacent bones in part-excavated ditch 9789

It is likely that the pit group (3676/3540–2) located to the north of this entrance complex was dug following the construction of this enclosure and preceding the second modification discussed below. The earliest feature within the group was pit 3676, measuring 1.44 by 1.3m in plan and 1.24m deep (Fig. 3.40). The pit contained an interesting sequence of nine fills. The initial fill (3677) was a thin layer of organic, ashy silt, and was clearly a deliberate deposit placed immediately after excavation of the pit. This was overlain by a second, ash/silt fill (3678) that contained a complete saucepan pot (SF460) placed upside down (Plate 3.30). The pot was accompanied by an iron linch pin from a chariot or cart (SF 459), a triangular chalk weight (SF468) and a potin coin (SF 486) (Plate 3.31). There were also sheep bones and fired clay fragments, while an environmental sample yielded wheat grains. The deposit was overlain by two further deliberate deposits with a humic feel that suggested organic material (3679 and 3680), more localised in the northern part of the pit, in turn sealed by another ashy deposit (3681). This contained the remains of a near-complete everted rim jar, possibly smashed *in situ*, (SFs 469 and 471) and the fragmentary remains of a second chalk weight (SF 470) that was oblong

Plate 3.30 Pit 3676 half-excavated with finds at bottom

Plate 3.31 Pit 3676 showing detail of pot, chalk weight and iron linch pin

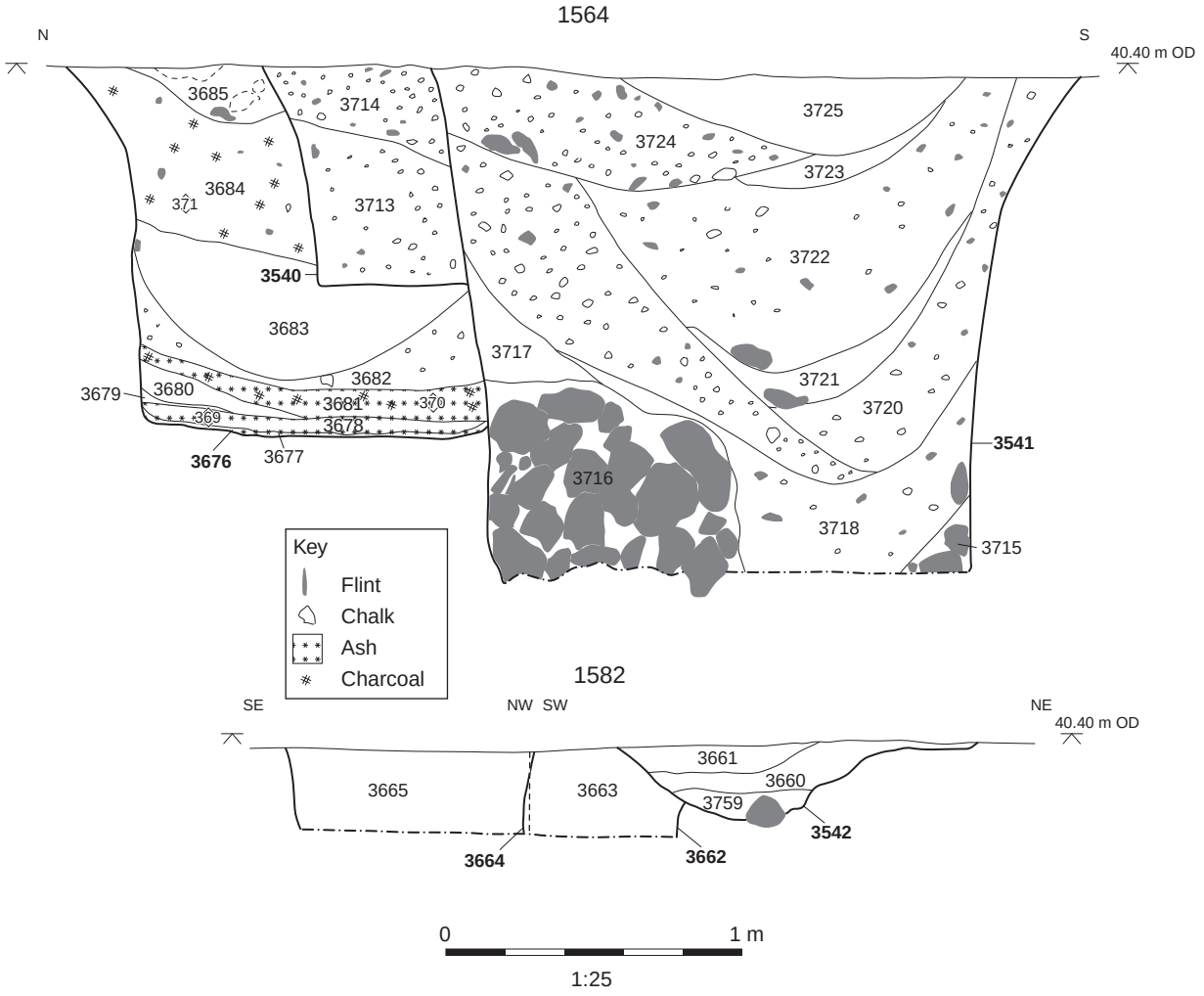


Fig. 3.40 Sections of the pit group 3679, 3540, 3541 and 3542

rather than triangular. Context 3681 also produced cattle bone and charred plant remains including emmer/spelt wheat and weed seeds. The remaining pit fills were a mix of collapse and natural silting and dumped material, among which fill 3684 contained further sherds of middle Iron Age storage jar, animal bone and charred wheat.

The pottery was almost entirely middle Iron Age in terms of forms and fabrics, including the saucepan pot. The associated potin coin indicates a date either in the late 2nd century BC, or more likely the first half of the 1st century BC (Hobbs 1996, 16–17; Holman 2000). Charred plant remains from fill 3678 were submitted for radiocarbon dating, yielding a date of 210–40 cal BC at 91.2% probability (NZA 30118). The latter half of this range is consistent with the expected date of the potin coin, and suggests that a date between 120 BC and 40 BC, ie a transitional middle–late Iron Age date, is appropriate for the filling of the pit. It is possible that the saucepan pot was curated for some time prior to deposition, but it is equally likely that pottery of middle Iron Age character was still in use in the first half of the 1st century BC.

Pit 3676 was cut by pit 3540 to the south and 3542 to the east. The former was almost identical in profile, albeit much smaller at *c* 2.05m diameter and 0.75m deep, containing only two fills, producing eight sherds of middle Iron Age pottery, cattle bone and charred wheat. Pit 3542 was different to the other pits within this sequence, bowl-shaped and measuring 1.2 x 1.04 x 0.27m. It contained three fills including a deposit of burnt material (3660) but did not contain any finds.

Only part of pit 3540 remained, the southern side having been removed by pit or shaft 3541. Like pits 3676 and 3540 this was vertical-sided, except where slightly weathered at the top. The pit was 2.4 by 2.2m in plan and over 4m deep. The base of the pit, to a depth of *c* 1m, was filled with large flint nodules and chalk fragments (3716). The upper part of the pit contained eight further fills, most of which appeared to be deliberate backfills, although some episodes of silting were observed. The upper fills produced small assemblages of pottery, including some dated middle Iron Age, cattle and sheep/goat bone and a single fragment of fired clay. The pit was clearly remarkable in terms of its size, however it

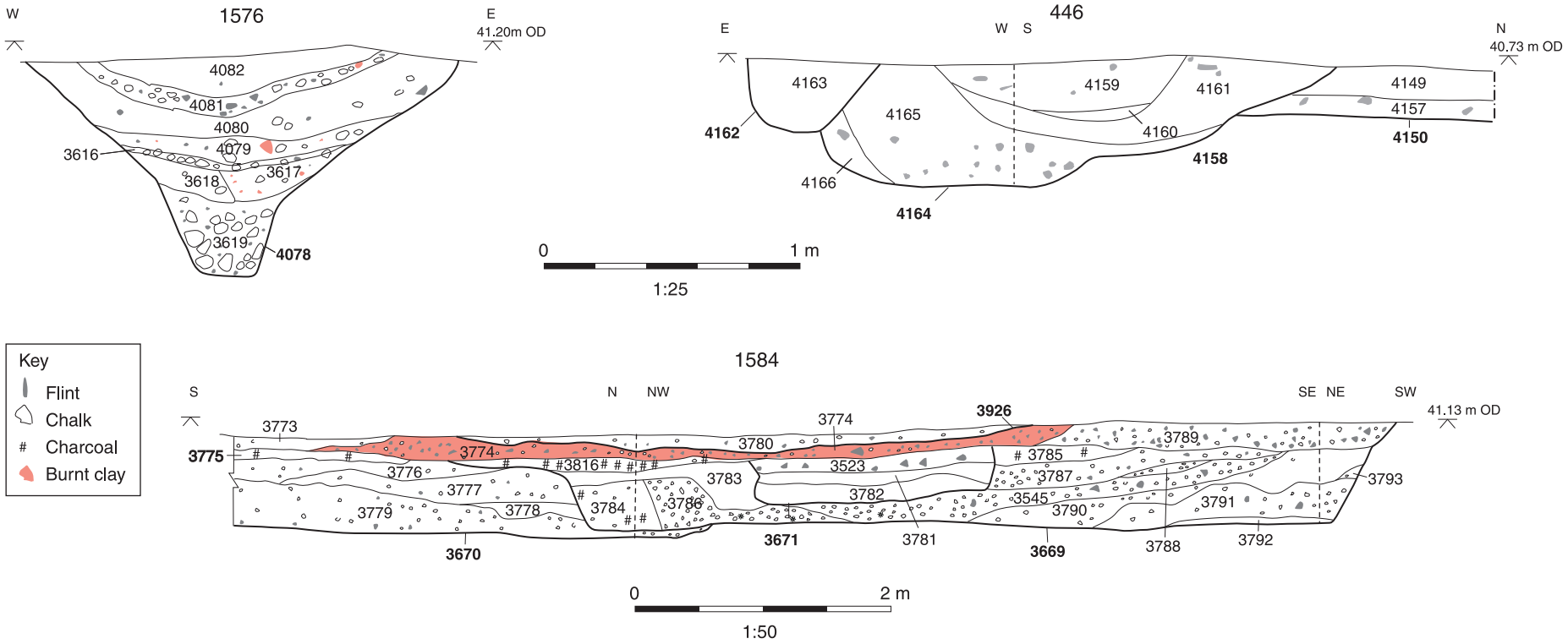


Fig. 3.41 Sections of ditches 7196, 7197 and 7986, pits 4164 and 4162

appears to have been deliberately backfilled with rubble not long after creation, possibly as a result of instability. Its original purpose is unclear although the pit may have had a ritual function related to its placement in an entrance complex.

Further modification of the entrance complex saw the creation of a similar ditch/gully enclosure to complex 7999/7989 and 7988, but this time oriented north-south, surrounding the pit group and continuing south of the large enclosure beyond the limits of excavation (Fig. 3.39). This comprised two curving ditches (7990 and 7991), 7991 ending at the north edge of ditch 7992, with an entrance gap of *c* 7m beyond it on the north-west. This enclosure cut through ditches 7992 and 7989 and the chalk spread from pit 3541.

Features 7990 and 7991 were less substantial than the preceding enclosure ditches, and both produced small assemblages of undiagnostic pottery and animal bone.

Internal features

A number of features were excavated within the main enclosure, presumably representing internal divisions and occupation activity (Fig. 3.39). This comprised three ditches (7196, 7197 and 7986) and a scatter of pits. The most substantial interior division was ditch 7196, which measured 1.1–1.7m wide and 0.64–0.86m deep with a 'v'-shaped profile and was mainly filled with natural accumulations of clay silt and chalk (Fig. 3.41).

Ditch 7196 produced 68 sherds of pottery weighing 480g, much of which came from a single vessel from context 3938 (cut 3670). The pottery, where diagnostic, was dated to the middle and late Iron Age. Animal bones included those of standard domesticate species as well as red deer. A strip of iron binding perforated by a nail hole came from the upper fill of cut 4078.

Before ditch 7196 had fully filled up it was cut by ditch 7197. This ditch entered the site from the north on the same alignment as ditch 7196, but 1m further west, and then after 6m turned sharply to the south-east across the end of 7196, and continued for a distance of *c* 33m, ending 5–6m from ditch 7192. Ditch 7197 also cut across four-post structures 3769 and 3770. The ditch measured 1.1–1.2m wide and 0.62–0.85m deep, and its fills contained a mixture of natural silting deposits and deliberate dumps including containing occasional sherds of pottery, fired clay and larger assemblages of animal bone. Cut 3669, where the ditch intersected with 7196, had 12 fills (Fig. 3.41), finds from which included 104 sherds of middle and late Iron Age pottery weighing 533g and large quantities of animal bone including horse.

The middle fills of ditch 7197 close to this intersection were cut by pit 3671, which contained an apparent deliberate deposit (in fill 3523) that included a large number of fragments of pig cranial bones from at least four individuals, and 14 sherds of late Iron Age pottery (Fig. 3.41). Pit 3671 and the adjacent lengths of both ditch 7197 and ditch 7196 were all sealed by a layer of compacted orange clay 3774, which extended to the very edges of this group of features.

A third, less substantial, 28m long ditch (7986) was located parallel to ditch 7196 and 11m to the west. No dating evidence was recovered from 7986, but it was cut on the west side by posthole 3865, tentatively associated as part of a four-post structure with posthole 3806, from which a charred cereal grain gave a radiocarbon date of 360–110 cal BC (NZA 32306). It is therefore possible that ditch 7986 was in fact a middle Iron Age boundary, associated with 7193 rather than 7192. The integrity of this four-post structure is however doubtful (see above), and given the common alignment of 7196, 7986 and 8101, it is more likely that 7986 was also late Iron Age.

A number of pits were located within the interior of the main enclosure. One isolated pit (3588) was located on the west side, contained three burnt fills, possibly rakeout from a fire. Most of the pits lay along the northern edge of the site and contained the usual assemblages of pottery and animal bone, albeit none in any great quantity.

Exterior features

An additional three features were excavated outside the main occupation area; large pit 3838 to the north-west and ditch 5827 and possible pit 5076 to the east. Pit 3838 was located *c* 3m west of boundary ditch 7992 and measured 3.3 x 2.4 x 1.35m deep. The profile was vertical-sided to the east and undercut to the west with a flat base (Fig. 3.53). It contained a sequence of 11 fills, many of which were probably the result of natural silting, and did not appear to contain any structured deposits.

Ditch 5827 and possible pit 5076 were located *c* 30m east of boundary ditch 7192. Ditch 5827 ran north-east and continued beyond the northern site edge, possibly forming an outer enclosure. The upper fills of the northern part of the ditch produced small assemblages of late Iron Age pottery and animal bone as well as a fragment of iron slag. At the south-west end, and only slightly overlapping with it, there was a slightly broader feature (5076) measuring 2.02 x 1.15 x 0.48m deep, which was interpreted on site as an earlier pit. The late Iron Age pottery from 5076 included an unusually high proportion of sherds with combed decoration, and that from the upper fills in ditch 5827 also included a combed vessel, though there were no matching sherds. This may perhaps indicate the preferential deposition of vessels of a particular character in this part of the site.

Site D

A series of scattered features on Site D are thought to have dated to the late Iron Age (see Fig. 3.35). The most substantial of these was pit or shaft 6916, situated *c* 35m west of middle Iron Age ditch 6944/6945 (Fig. 3.42). The feature measured 3.45 by

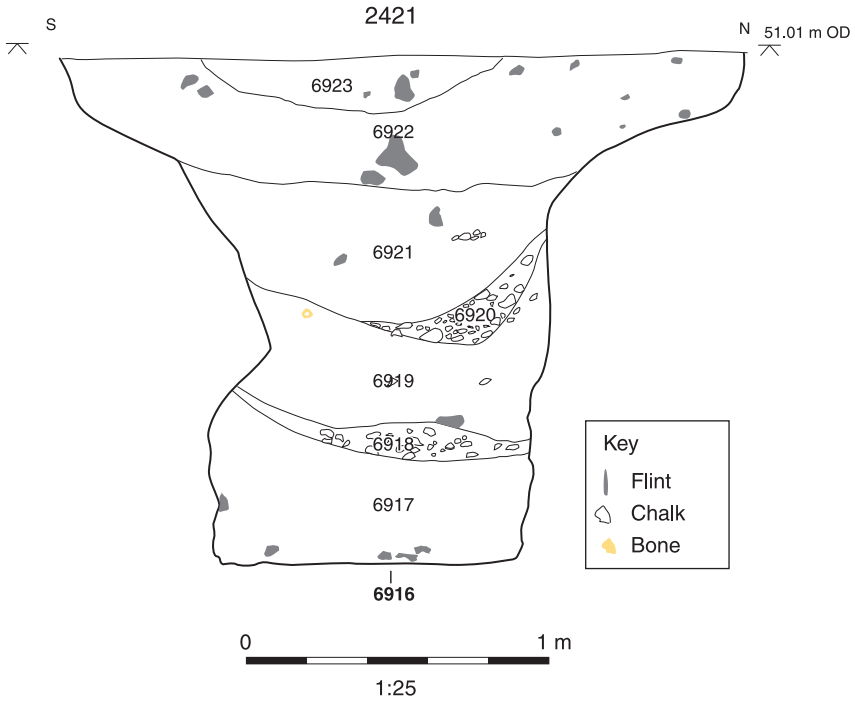


Fig. 3.42 Section of pit 6916 in Site D

2.25m in plan, narrowing rapidly to *c* 1m across at a depth of 0.4m, leaving a bowl-shaped upper part and a lower narrow shaft, with vertical sides and a flat base, reaching a depth of 1.7m. The pit contained seven fills, all of which were identified as natural silting or slump deposits. The only cultural material recovered from the feature comprised five sherds of late Iron Age pottery and animal bone fragments from penultimate fill 6922 and fragments of horse bone from lower fill 6919. Overall the pit appeared to have been dug and left to fill naturally, only incorporating a small amount of anthropogenic material. No special deposits indicative of ritual were found within it, and it may have been a storage pit rather than a ritual shaft.

Pit 6892 lay 22.5m south-east of 6916 (see Fig. 3.35). It was bowl-profiled with a single fill, and produced 11 sherds of pottery weighing 45g. Other features of possible late Iron Age date north-west of 6916 included pits 6129 and tree-throw hole 6508, while further undated pits scattered across this area (including 6386, 6461 and 6498) may also have been Iron Age, but as there was also a Bronze Age cremation burial and medieval or later deneholes and pits in the vicinity, this is uncertain.

A large teardrop shaped pit (6379) was located north of middle Iron Age ditch 6944, measuring 14m long and 3.4m wide at the western end, narrowing to just 1m wide at the east end (see Fig. 3.35). The feature consisted of a ramp running from the east end down into a vertical shaft at the west. A total of six sherds of probably prehistoric pottery was recovered, along with traces of iron corrosion. The pit may have represented a late prehistoric or Roman quarry pit with entrance ramp. Features of similar size and shape were found at the early Roman settlement at Gravelly Guy, Oxfordshire, where a series of wells were accessed by ramps (Lambrick and Allen 2004, 197–204). These were seen as part of a tradition of such features in the Upper Thames starting in the mid–late Iron Age (ibid., 203–4). It is not suggested that 6379 was a well, simply that this method of access to deep features was part of the late Iron Age and early Roman tradition of Southern Britain, to which 6379 may also have belonged. It is equally probable that this was a quarry pit for chalk. Other examples of this type of chalk quarry have been found on the scheme, but these date to the post-medieval period (see Chapter 5). It remains possible that the pottery from the backfilling was residual, but 6379 was thought to be earlier as it was cut to the east by gully 6947.

Gully 6947 was one of a series of five sinuous north-south aligned gullies (also 6948, 6949, 6950 and 6272) extending northwards from the area of later Roman ditch 6941 (see below). The date of these features was made uncertain by the presence of a modern hedge gully on the same alignment, immediately to the east. However, the westernmost gully 6949 was cut by Roman ditch 6941 at its southern end. The gullies varied in length from 4.5m to 19m and the only finds comprised worked flint, animal bone and charcoal.

Pond D North

Pond D North was a difficult site to interpret for a number of reasons. Firstly the character of the natural clayey silt underlying the site made distin-

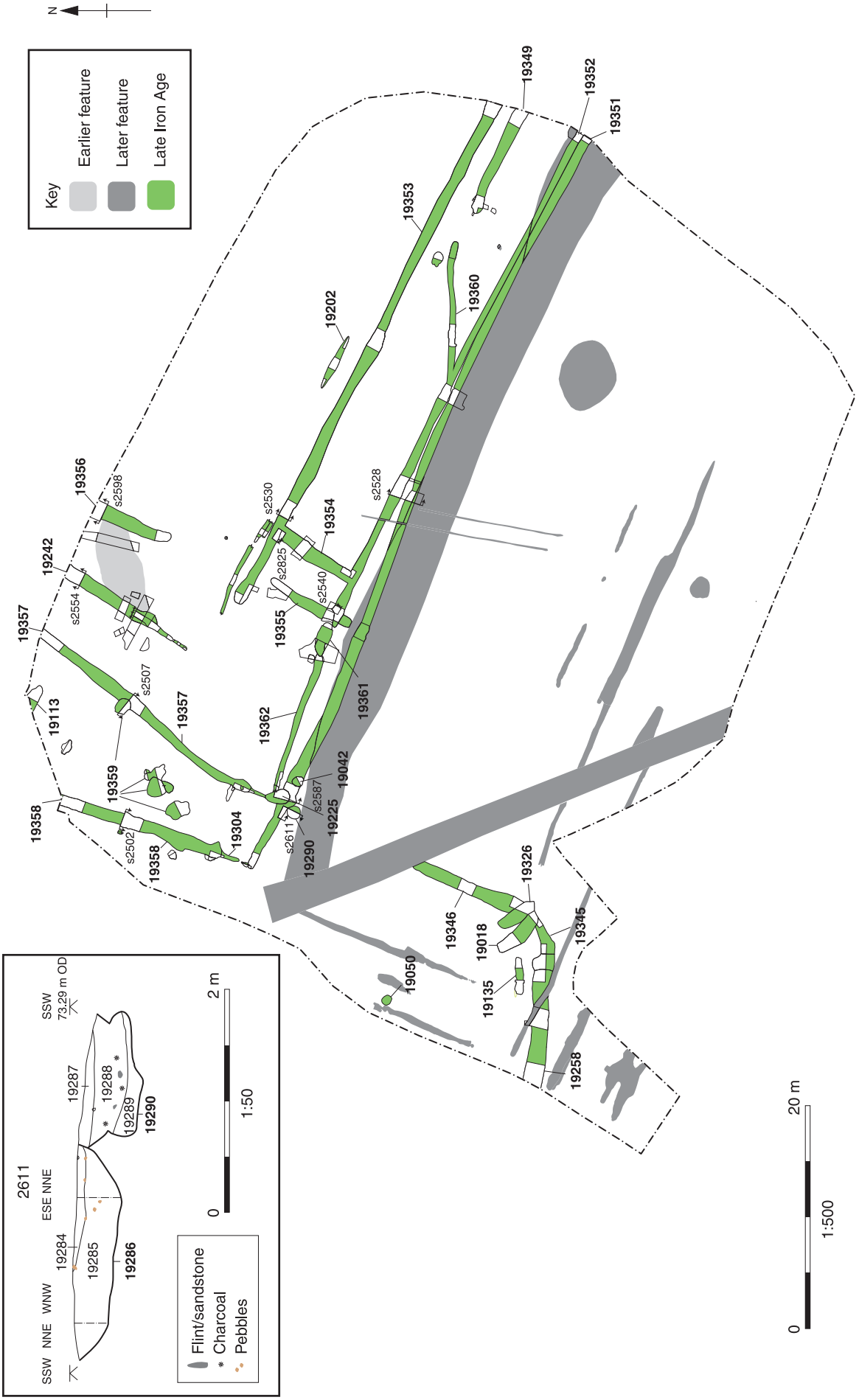


Fig. 3.43 Plan of late Iron Age settlement in Pond D North , plus section of pit 19290 and ditch 13951

guishing features and their respective fills very difficult. Few relationships could be ascertained for this reason and also as a result of the arrangement of features, which often stopped short of one another. In addition little cultural material was recovered from the site. This may have been a product of the nature of the activity and subsequent truncation but in terms of environmental material was also related to poor preservation.

The Iron Age activity in Pond D North was specifically late Iron Age/early Roman in date (Fig. 3.43). Unlike the areas discussed above there was little to indicate any earlier Iron Age activity from which the later activity evolved. Earlier pottery was found in a number of features which may have formed the earliest phase of activity, although the problems of dating highlighted above should be borne in mind.

Northern area

The earliest dating evidence consisted of 19 sherds (33g) of pre-middle Iron Age pottery found within hollow 19243 located in the north-west corner of the site. This was thought to have been a glacial feature filled naturally, and the pottery deposited accidentally, however this does indicate the existence of earlier activity within the area.

Two other features produced middle or late Iron Age pottery. The first was pit 19290 which measured 1m in diameter and 0.5m deep with a typically Iron Age undercut profile (Fig. 3.43). The second potentially earlier feature was ditch 19355.

Ditch systems

Ditch 19355 formed a small element of the ditch system which made up the majority of archaeological activity on Pond D North. The ditch was demonstrably earlier than the bulk of the complex by virtue of being cut by later ditch 19352, and produced 15 sherds (19g) of pottery including some glauconitic sandy ware, possibly dating to the middle Iron Age.

A second ditch (19356) continued the line of 19355, 9.5m to the north, extending beyond the northern edge of excavation. The ditch produced no dating evidence, but this appeared to be the first of a series of enclosures on the same basic alignment. At the very north-west corner of the site a feature which may have been a ditch terminus (19113), 1.1m wide and 0.15m deep, ran north-west and beyond the excavated area. The posited alignment of the feature indicates that it may have belonged to this first phase of the enclosure although its true nature is unclear.

A second phase saw the expansion of the enclosure within the excavated area, with the creation of two parallel ditches 19352 and 19353, over 50m long. These were aligned at right angles to 19355 and 19356, terminating just west of the earlier ditches (19352 cutting 19355), and continuing south-east beyond the site edge. The ditches were *c* 7m apart, 1–1.2m wide and 0.5–0.6m deep, producing small assemblages of pottery. The assemblage from 19352 was too fragmentary to identify, although some of the 9 sherds (72g) from 19353 were dated late Iron Age. Ditch 19352 also yielded a fragment of undateable melted glass and an iron clamp or dog. The layout of the ditches may indicate use as a trackway.

It is probable that these ditches formed part of a larger enclosure complex with ditch 19242. This was positioned at a right angle to the parallel ditches, beginning *c* 7m north-west of 19353, leaving a gap which may have functioned as an entrance to the enclosure. The positioning of the ditch may also indicate that it replaced 19356 as an outer boundary, moving the enclosure north-westwards. Group 19242 was particularly difficult to decipher but appeared to comprise a ditch 1–1.2m wide and 0.34–0.57m deep, recut to a similar width, although slightly shallower. Finally a gully was cut into the southern end of the ditch and may have represented a modification to the enclosure entrance at a later date.

A series of other gullies (19202, 19054, 19056 and 19069) running parallel to ditch 19353 may have related to this proposed modification, being of a similar nature to the gully discussed above. Gully 19202 produced a possible sandstone rubbing stone and 19054 two sherds of undiagnostic pottery. The purpose of these gullies is unclear.

A number of other features may have been broadly contemporary with this phase of enclosure. In particular ditch 19354 and ditches 19360 and 19349 were located between parallel ditches 19352 and 19353. Ditch 19354 may have served to block off the possible trackway formed by ditches 19352 and 19353.

Ditches 19360 and 19349 were located at the eastern end of the site, 19349 extending beyond the site edge. The purpose of these ditches and their date in relation to 19352/19353 is unclear although the gap between them may have served as an entrance.

A further large-scale modification to the enclosure probably consisted of the creation of ditches 19362, 19357 and 19361, once again extending the existing enclosure north and west (Fig. 3.43).

The last phase of enclosure in the north of the site comprised ditches 19351 and 19358 and gully 19364. Ditch 19351 substantially recut ditch 19352, extending slightly further southwards at its western end. It was returned north-east by ditch 19358 which extended beyond the northern site edge and extended the enclosure westwards once more. Gully 19364 may have formed an entrance feature between the two.

Despite the excavation of seven sizeable interventions in ditch 19351, no pottery was recovered. The only numerous finds were struck flints, with some animal bone (horse and hare/rabbit) and burnt stone, plus a possible sandstone processor. Ditch 19358 produced more finds than much of the

surrounding archaeology including seven sherds of pottery weighing 135g, some of which was identified as late Iron Age. Other finds included fragments of fired clay and unidentified animal bone.

Pits

A number of pits or tree-throw holes were scattered amongst the enclosure ditches, some of which had discernible relationships with the ditches. This included possible pit 19029 which cut phase 3 ditch 19357.

A small group of pits (19359) was excavated immediately east of ditch 19358. Their location may indicate that they belonged to the latest phase of the enclosure, just inside this boundary ditch. All the pits contained single fills which appeared to be natural accumulations with the exception of fill 19023, within 19022, which was a deliberate dump of burnt material. Pits 19020 and 19022 produced small assemblages of late Iron Age pottery, however the only other finds were residual flint.

Pit 19004 was located *c* 1m south-west of the main group and produced six sherds of late Iron Age pottery weighing 40g, two fragments of iron slag and a socketed iron tool (SF 1951). The contents of the pit may indicate the presence of metal-working nearby.

A large pit (19267) *c* 7.5m south of ditch 19351 (6 x 5 x 3+m) contained 12 sherds of pottery including diagnostically late Iron Age forms, as well as a coherent late Bronze Age flint assemblage. In order to clarify the dating of the feature a sample of charcoal was submitted for radiocarbon dating and returned an unexpected date of cal AD 400–540 (NZA 32549), as such the pit is discussed in Chapter 5 below.

Late Iron Age–early Roman enclosure

A separate complex of ditches was excavated in the south-west corner of Pond D North which may have related to the enclosure to the north, although the limited dating evidence suggests this was a later addition.

The complex comprised a curving L-shaped ditch sequence incorporating two or possibly three phases of ditch (19345/19346, 19258). The northern terminus of the boundary was not visible and may have been truncated by a modern feature running SE-NW through this part of the site. The visible part of the boundary ran NE-SW for *c* 12m before turning west and extending beyond the western site edge.

The ditches in this area were much richer in cultural material than the enclosure to the north. There was a notable difference between segments 19345 and 19346; 19345 produced six sherds of pottery weighing 26g in addition to the ubiquitous residual flint. In contrast 19346 contained 128 sherds weighing 1735g. These included a near complete vessel (SF1950) and large fragments of others, all dated late Iron Age or late Iron Age/early Roman. The ditch also produced fired clay and a worked sandstone fragment. The east-west ditch 19258, which truncated 19345, was more substantial than the others, and contained 151 sherds of pottery weighing 772g including a near complete late Iron Age/early Roman vessel (SF 1956) from context 19213. Other material included numerous residual flint flakes, mammal bone fragments, calcined bone and burnt stone.

The nature of the main ditches in this area and their finds assemblages may indicate that an earlier boundary (19345), possibly related to the northerly activity, was replaced by two more substantial boundary ditches (19346 and 19258). If so, the later stage of this complex would have enclosed an area to the south and east, leaving a *c* 5m possible entrance gap to the south-east.

This possible entrance was bounded on the northern side by two successive NW-SE aligned slots (19018 and 19326), although it is possible that 19018 was part of ditch 19346. This feature was relatively rich in cultural material, producing 55 sherds of pottery weighing 428g as well as fired clay and charred cereal, including wheat. The pottery was all diagnostically late Iron Age, with a possible early Roman element. Slot 19326 produced only seven sherds of undiagnostic pottery and flint. A further slot (19135) was located *c* 1m west of 19018, aligned roughly east-west and parallel to ditch 19258. This slot produced 13 sherds of late Iron Age pottery weighing 84g, 106g of fired clay and environmental evidence in the form of charred cereal and weed seeds. On the basis of the location and orientation of the slot it is likely that this was a further alteration to the posited entrance, contemporary with 19358.

A single pit (19050) was located in the vicinity of this smaller enclosure sequence, 11m north-west of ditch 19346. This feature was only 0.08m deep with a single fill which produced possible charred barley.

Site J

A number of scattered features excavated on Site J may have been Iron Age in date (Fig. 3.44). The most substantial of these was trackway 11142/11141 which comprised two roughly north-south aligned ditches, *c* 2m apart. Western ditch 11141 was slightly more substantial than 11142 at 1m wide and 0.3–0.5m deep compared to a width of 0.3–0.9m and a depth of 0.1–0.2m. The ditches yielded flint and late prehistoric pottery, some of which was identified as Iron Age. Ditch 11142 was cut by a rectangular pit which was clearly modern in date.

A small gully (11111) was excavated on the west side of the trackway, and may have been contemporary, while a group of postholes or small pits (11081 and 11083) was also located in the vicinity. Located to the east of this area, a further group of later prehistoric pits and postholes was identified including a possible four-post structure (11093). The latter measured 3.5m x 3m and the structure was flanked by two small pits (11036 and 11046) to the

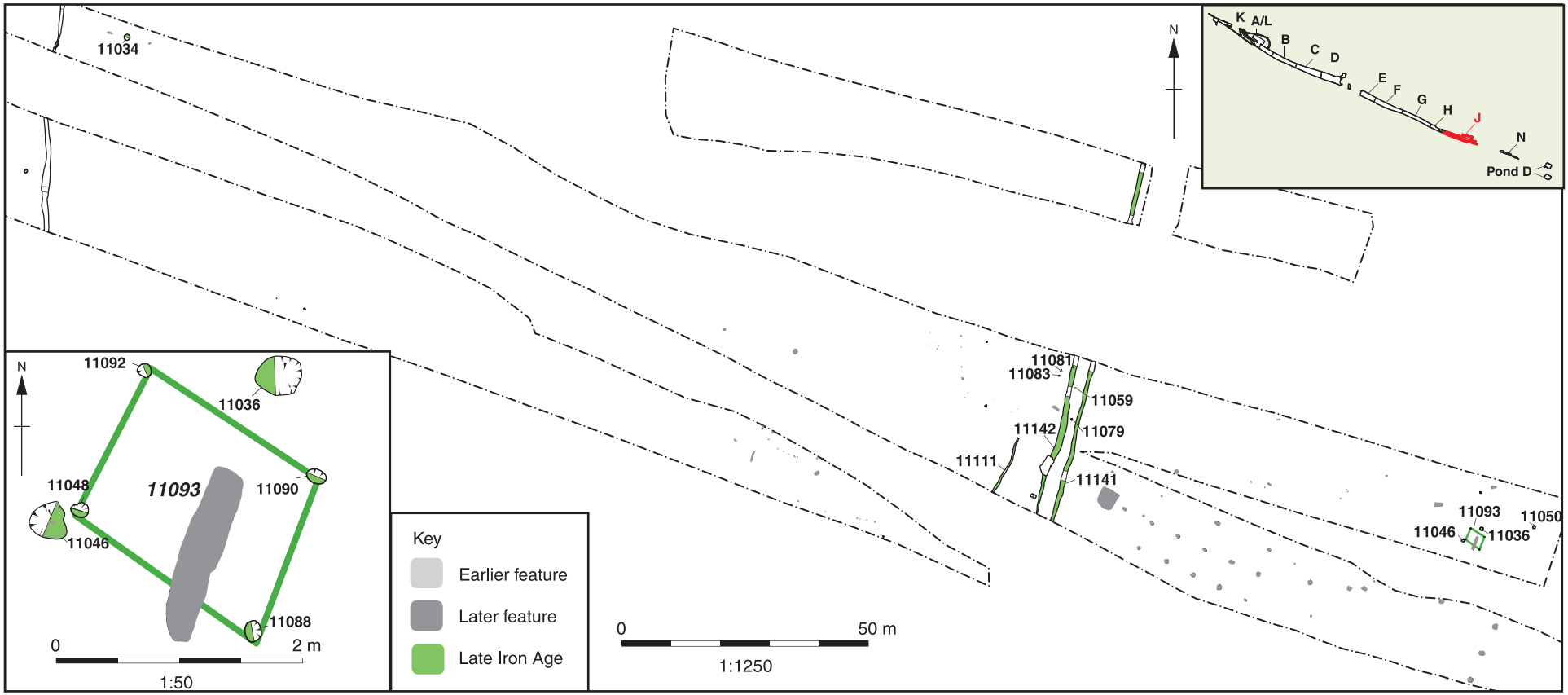


Fig. 3.44 Plan of probable Iron Age features in Site J

north and south-west respectively. Pit 11036 contained two sherds of late prehistoric pottery and worked flint. Pit 11046 contained abundant charcoal, some of which was identified as hawthorn. Pit 11050 was located *c* 9.5m north east of structure 11093 and also produced charcoal and burnt flint.

An isolated pit (11034) was also excavated at the western end of Site J. It contained a single sherd of prehistoric pottery of probable Iron Age date.

IRON AGE FINDS ASSEMBLAGE

Later prehistoric pottery *by Lisa Brown and Peter Couldrey*

A total of 17,353 sherds (122,463g) of later prehistoric pottery from nine sites along the A2 scheme was examined during analysis (Table 3.6). The material was recovered from Sites A, B, C, D, G (East and West), K, L and Pond D North. Later prehistoric pottery from sites F, J and Pond D South was recorded during assessment but not considered further.

The pottery included in this report spans the earliest Iron Age (*c* 900–600 BC) to the pre-conquest late Iron Age. Although the material is considered by period and spatial feature groups in this report, rather than purely on a site by site basis, basic quantification by site is presented here in order to show the relative concentrations of Iron Age pottery across the entire footprint of the scheme, along with the average sherd weight for each area. These figures are accompanied by an indication of the periods represented on each site.

Methodology

The pottery, including sherds recovered from environmental samples, was fully recorded on a spreadsheet by Peter Couldrey during the assessment stage of the project, following standards recommended by the Prehistoric Ceramics Research Group (PCRG 1997).

The pottery was recorded by site and within context groups, using some of the coding standards employed by the HS1 project. All sherds were counted and weighed to the nearest whole gramme. The following characteristics were also recorded: fabric, surface treatment, firing colour, shred thickness and, where applicable, form, decoration, and eves. Where possible, dates were attributed to each context group on the basis of diagnostic forms and decoration. Because the A2 scheme produced relatively little material clearly diagnostic of form, dating was often based on fabric type supported by surface treatment. This system can provide only a very broad indication of chronology.

As the condition of the much of the pottery was poor and the overall average sherd size low at only 7g, even diagnostic sherds (rims, bases, distinctive body shapes and decorated sherds) could often be defined at no higher level than 'flat base', 'everted rim', 'carinated shoulder', 'finger-tipped shoulder' and so on. Because many of these stylistic features persisted through several phases of ceramic production, it was particularly important to take into consideration a range of other factors, including context, stratigraphic position, fabric trends and associated artefacts when attempting to identify, define and date specific vessel forms and to outline the chronological development of the later prehistoric pottery across the site and within the region. This was more straightforward for some periods and types of activity (those which created substantial pit groups, for example) than others.

Fabrics and resources

Relatively little later prehistoric pottery had been recovered from west Kent prior to the main High Speed One (HS1) excavations, so no common standard exists for the region that includes the A2 site. Fabric classification of the later prehistoric pottery was, therefore, undertaken *de novo* by Peter Couldrey. Clearly, fabrics are defined by more than just the main inclusions: the size and sorting of inclusions, the degree of preparation, and other

Table 3.6: Later prehistoric pottery

Site	*Sherds*	*Wt (g)*	*% total count*	*% total wt*	*Mean Sherd Weight (ASW)*	*Date range*
A	558	1682	3	1	3	MIA and LIA
B	4822	37602	27	30	8	Earliest IA - LIA
C	5876	32032	34	26	5	Earliest IA - LIA
D	66	260	0.3	0.5	4	EIA - LIA
G (East)	3435	36139	20	29.5	11	Earliest IA - EIA
G (West)	656	1891	4	2	3	Earliest IA - EIA
K	138	1154	0.7	1	8	EIA
L	1321	8000	8	7	6	Earliest IA - MIA
Pond D North	481	3703	3	3	8	LIA
TOTAL	17,353	122,463	100	100	56	

characteristics play a part, but when small worn sherds are examined the primary inclusion is often the main indication of the fabric category. The A2 assemblage includes a large proportion of such fragments, with the inevitable result that degrees of reliability in classifying these small sherds was correspondingly lower than in the case of larger sherds and those diagnostic of form.

Over 660 individual fabrics were recorded for the later prehistoric pottery, reflecting the lack of standardisation in potting clay recipes used during some periods of the Iron Age. Descriptions of these individual fabrics are available in the digital archive and are referred to in discussion of individual vessels and in the catalogue of illustrated sherds.

The fabrics were further rationalised into five broad ware groups for the investigation of resource procurement and general reporting (see Table 3.7; for fabric proportions by site see digital archive).

Predominantly Flint

F	Flint
FS	Flint and shell
FSS	Flint and shell in sandy clay
FG	Flint and grog
FO	Flint and organic matter

Predominantly Shell

S	Shell
SF	Shell and flint
SO	Shell and organic matter
SS	Shell in sandy clay
SG	Shell and grog

Predominantly Grog

G	Grog

Predominantly Sand

Sa	Sand
SaGl	Glauconitic sandy

Predominantly Chalk

CS	Chalk in sandy clay

In some cases only a broad indication of chronology could be provided by fabric and surface treatment, due to degrees of fragmentation, abrasion, lack of diagnostic characteristics and associated dating evidence. Until more diagnostic sherds supplemented by independent dates are found the fabrics will remain fairly poor indicators of chronology. While the deliberate addition of tempering agents may have conformed to tradition, the tendency to use local clays throughout prehistory necessitates the establishment of chronological sequences at a local level. In the absence of more precise evidence, dates were allocated to sherds using the following broad criteria based on patterns of fabric occurrence within the region recognised to date:

***Flint*:** In north-west Kent flint tempering, sometimes with addition of sand, remained popular from the middle Bronze Age until the early stages of the middle Iron Age, when its use became rare (Couldrey 1988). It reappeared in west Kent in the early Roman period when it was used for 'Belgic' forms in the post-conquest Upchurch and Thameside pottery (Monaghan 1987). In east Kent it was used throughout the middle and late Iron Age, often employed for handmade 'Belgic' forms.

Table 3.7: Fabric proportions total (Sites: A B, C, D, G (East and West), K, L, Pond D North)

Fabric Group	*No.*	*Wt (g)*	*% Count*	*% Wt*	*ASW*
F	1723	7368	10	6	4
FS	2736	17356	16	14	6
FSS	195	1745	1	1	9
FO	69	304	0.4	0.5	4
FG	15	190	0.1	0.5	13
S	3014	20960	17	17	7
SF	4233	44103	24	36	10
SS	407	2162	2	2	5
SO	20	125	0.2	0.2	6
SG	1	9	0.1	0.1	9
G	1822	18449	11	15	10
Sa	707	1885	4	1.5	3
Sa glauconitic	2382	7678	14	6	3
CS	11	19	0.2	0.2	2
	17,335	122,463			

***Grog with Flint*:** Grog tempering with some added flint was used in west Kent during the transition from middle to late Bronze Age (Couldrey 1988) and became very common again in the late Iron Age in both east and west Kent when it was frequently used for mainly handmade Belgic forms (Thompson 1982). Only 15 small sherds in this fabric were recovered at the A2, from both early Iron Age and late Iron Age features.

Fossil Shell: Clays with fossilised shell were commonly used for early prehistoric pottery in west Kent, but are notably absent from local middle Bronze Age assemblages at Gravesend (Barclay 1994) and Cobham Golf Course (Mcnee and Morris 2006). They re-appeared in the late Bronze Age/early Iron Age at Darenth (Couldrey 1984b) and are then found in west Kent throughout the Iron Age, often, but not exclusively, used for larger storage or cooking jars (Couldrey 1984a; 1998). Their use continued there until the late 1st century AD (Pollard 1988, 31) and re-emerged in the late Saxon/early medieval period (John Cotter pers. comm.), when the open bonfire firing produced body sherds often indistinguishable from their prehistoric counterparts.

Fossil Shell and Flint: Clays with fossil shell and added flint are first recorded from the late Bronze Age at Gravesend (Barclay 1994). At Cobham though, they were still absent early in the late Bronze Age (Mcnee and Morris 2006), but appeared in small quantities (<3%) during the late Bronze Age/early Iron Age (Macpherson-

Grant 1996). The practice the adding of flint to shelly clays continued throughout the early Iron Age, apparently largely falling out of use in the middle Iron Age, as at Darenth (Couldrey 1998).

***Sandy Wares*:** Sandy fabrics without flint, shell or grog inclusions occurred during the middle-late Bronze Age and into the early Iron Age, though often accounting for fewer than 1% of the sherds (Couldrey 1999). They became more popular in the middle and late Iron Age, when they account for between 16%–32% of the sherds recovered (Couldrey 1991; 1998; 1999). In west Kent in particular, the use of heavily glauconitic clays is associated with everted rim/footring jars of the middle Iron Age (Couldrey 1984a) with production centred on the Medway valley, and was associated with 'Belgic' forms in the late Iron Age (Thompson 1982).

***Grog*:** Grog without additional tempering was used during the transitional middle Bronze Age/late Bronze Age at Beechbrook Wood and to a limited extent at the same site in the middle Iron Age, where it was associated with saucepan pots (Morris 2006). In the late Iron Age it is recognised throughout east and west Kent associated with 'Belgic' forms.

Manufacture and surface treatment

The early and middle Iron Age pottery was all handmade. The inclusions in the fabrics of the earliest and early Iron Age ceramics were locally available, and the differential firing exhibited on many sherds indicates that firing was likely to have been achieved in a simple bonfire type structure. In common with evidence of prehistoric pottery manufacture and firing from numerous other sites in Britain, these were probably undertaken on a domestic, perhaps household level during this early period. An absence of production equipment and permanent firing sites at the A2 suggests that pottery manufacture was likely to have been a seasonal activity, organised to take place when weather conditions were advantageous for drying and firing. A few sherds showed the bloating and warping characteristic of overfiring or refiring, but as most of these were associated with the residues of heat-related industrial activity, they are best regarded as accidental by-products of these processes.

Deliberate treatment of the surfaces of most vessels dating to the early part of the Iron Age generally involved a basic finishing-off with (evidentially) fingers and vegetation or (presumably) leather, cloth or pebbles in order to mask the worst of protruding inclusions and/or to close the clay to reduce permeability. Some sherds show evidence of the application of a clay slurry. A large proportion of smaller, finer bowls and jars were carefully soothed or burnished before firing, probably again to reduce permeability, but no doubt also to enhance their appearance. Where a clear effort to produce small water-tight vessels is evident, it could follow that they were intended as drinking vessels. A particularly well-burnished complete jar from pit 9010 (no. 9109030) is a rare example from this site of a large early Iron Age jar being afforded such treatment. It formed an element of a special deposit of what may have been a ceremonial 'set' of vessels and may have been specially produced for this purpose, although its fabric does not mark it out as singular.

By the middle Iron Age some of the raw materials and/or finished pots themselves were being brought to the site from further afield, including from localities around the Medway Valley where heavily glauconitic clays outcropped. These were also exclusively handmade but frequently burnished, whilst the more locally produced coarser vessels generally continued to be only roughly finished. Much of the late Iron Age pottery range was also handmade, but exceptions included some of the grog-tempered Gallo-Belgic inspired forms, which showed the characteristic internal striations created by turning or throwing on a wheel. Although grog temper can be prepared wherever fired pottery has been used or discarded, the grog-tempered ceramics which dominated the A2 late Iron Age assemblage were probably mostly brought in from the centralised production centres that were increasingly replacing domestic manufacture of utilitarian vessels by this time.

Form and decoration

The range of vessel forms and decorative motifs are presented by period in a separate section of this report (The Ceramic Sequence, below). A large proportion of the ceramic assemblage had been subject to high levels of fragmentation prior to deposition, with the result that the majority of sherds, even rims, were not classifiable by form. However, several pit and ditch assemblages of all periods produced substantial profiles and even some complete vessels. These have been selected for illustration and presentation as key groups, which include small, less precisely classifiable rim, base and decorated fragments. Other well-preserved fragments that occurred as part of small, mixed assemblages have also been drawn and described in order to ensure that the full range of vessel forms and decorative techniques from the site are represented.

Chronological and cultural framework

Ceramics are generally the most prolific of artefacts recovered from prehistoric excavations in the region, although some metalwork associations are available (Champion 2007). Until the recent HS1 excavations, radiocarbon dates were available from few sites, and not all of these directly associated with pottery. An understanding of the chronology of the Iron Age in Kent has, therefore, been based largely on ceramic typology.

The chronological framework used to define the A2 Iron Age pottery has been based on a combina-

tion of radiocarbon dates, stratigraphic relationships, ceramic typology and on parallels with better understood groups in Kent, southern England and on the continent. The pottery has generally been classified within the following periods: earliest Iron Age; early Iron Age; middle Iron Age; late Iron Age. The chronological ranges of some of these periods, however, remain insecure for a variety of reasons. Despite the discovery at the site of several good Iron Age closed groups, especially from pits, many other groups lacked sufficient diagnostic material or secure stratigraphic provenance to date their currency and deposition precisely. Where such adverse factors applied, definition has been less explicit using, for example, 'early/middle Iron Age' or 'middle/late Iron Age' classifications. The elisions indicate as much that the ceramic date is uncertain as that the feature or deposit may contain material that spans a transitional period.

As is well recognised, the chronological nomenclature of the first part of the Iron Age is subject to problems caused by the wide standard deviation associated with the plateau-affected radiocarbon dates for the period *c* 850–400 cal BC. The choice of nomenclature for the ceramic assemblage of any given site tends, therefore, to vary. At best it relies on associations between radiocarbon determinations and well-stratified, closed assemblages containing distinctive forms and/or representing clear events. For some site assemblages, which lack such associations, ceramic dating has been based largely on typological parallels. The often fragmentary condition, lack of diagnostic sherds and small size of feature assemblages, compounded the difficulty in refining the ceramic chronology of the A2 pottery.

Few sites in Kent have produced evidence for activity across the period boundaries defined above and there remain considerable uncertainties concerning the chronology of the Iron Age as a whole and the development of pottery forms and fabrics within this broad period (Champion 2007b). The transition from the early to middle Iron Age in Kent has been dated on the basis of typological comparisons with other regions, resulting in considerable fluctuations in the dates, and independent dated sequences for west Kent are rare. For the transition from middle to late Iron Age, evidence is beginning to emerge in east Kent, supporting the use of grog tempering as early as the late 2nd century BC, at Bigberry (Clark and Thompson 1989), and at Eyehorne Street and Beechbrook Wood on the HS1 (Morris 2006). However, evidence for such an early use of grog tempering remains elusive in west Kent. The transition from the middle to late Iron Age forms at Farningham Hill, a site lying just south of Dartford on the west side of the Darent valley (Philp 1984), was placed at *c* 50 BC, although Morris has suggested that the date should be revised back to *c* 120/100 BC (Morris 2006).

In east Kent and north of the Thames during the late 1st century BC, the arrival of Gallo-Belgic imports was accompanied by an increase in the range of forms and fabrics, especially fine 'table wares', that continued until the Roman conquest and beyond. In west Kent, however, few sites with Gallo-Belgic vessels have been excavated and imports of early Roman finewares are rare. This can make dating the use of native pottery in the periods immediately before and after the Roman conquest very difficult. Understanding the extent of continued use of native pottery within the associated native farmsteads, and the levels of social upheaval in the immediate pre- and post-conquest periods would be greatly improved with independent chronologies. Beyond merely establishing a ceramic chronology there has been some consideration of evidence for traded ceramics from Kentish sites. Most of the pottery was locally made, but possible copies of continental forms have been found (see below).

A logical springboard for investigation of chronological links between the A2 pottery and other late prehistoric assemblages is a consideration of the material recovered from other Kentish sites west of the Medway, including those excavated at the northern end of the HS1 scheme. For the purposes of chronological distinction, however, the chronological framework used for the HS1 prehistoric pottery (Morris 2006) was only broadly adhered to in analysing the A2 Iron Age pottery, for reasons set out below.

Earliest Iron Age

In ceramic terms the earliest Iron Age broadly corresponds to Barrett's Decorated Phase of the later Bronze Age (1980), a period when the ceramic style range was characterised by more highly decorated types than the preceding plainware post Deverel-Rimbury (PDR) tradition, at least in lowland Britain (Needham 1996, 137). Cunliffe's Highstead 2 style zone, based on the large pottery assemblage from this east Kentish site, corresponds to this phase, with a date of *c* 8th to 6th centuries BC generally accepted for this period, when there was a 'fundamental transformation in the use of metals to both social and technological ends' (Cunliffe 2005). The transitional late Bronze Age/early Iron phase at HS1 is defined as 'earliest Iron Age' (*c* 850–650 BC) rather than the more traditionally accepted 'decorated phase of the later Bronze Age'. This designation is based on the identification of an earliest Iron Age in parts of southern central England, including Hampshire (Davies 1981; Brown 2000), where it was linked to early use of Iron.

The frequency of decoration, however, cannot be described as high within the HS1 and A2 earliest Iron Age assemblages. Along the HS1 route, pottery dated to this period was recovered from two pits at Little Stock Farm and, less reliably, a feature at Saltwood Tunnel (Morris 2006), two sites which lay at the southern end of the route in east Kent. Other east Kent assemblages that correspond to this time frame were recovered at Monkton Court Farm,

Thanet (Perkins *et al.* 1994), Highstead Period 2 (Couldrey 2007), Minnis Bay (Worsfold 1943) and Mill Hill, Deal (Champion 1980), but at these sites they were referred to in the more traditional terminology of 'late Bronze Age/early Iron Age'.

In west Kent pottery of this date is less common, but material from Phase I at Darenth (Couldrey 1988) was dated to 900–500 BC. Small quantities of pottery from the A2 have been dated to the earliest Iron Age, based not on absolute dates (for which none associated with pottery were obtained for this period) nor on an observation of early use of iron, but on the basis that it resembled the early Darenth material. The assemblage of this date recovered at Highstead, despite its distance from the A2 and corresponding contrast of ceramic tradition, provides some basis for comparison of forms, especially of bowls with groove-decorated necks.

An earliest Iron Age date was also used to accommodate feature groups at the A2 that stratigraphically pre-dated early Iron Age activity. However, the A2 assemblage provides little evidence that could help to resolve the question of the arrival date of decorated styles in the area due to the scarcity of metalwork associations and radiocarbon dates, a common problem for this period in Kent. The recognised associations of metalwork and diagnostic pottery at Highstead, Mill Hill and Monkton Court Farm suggest that the production of distinctive pottery of this period corresponded with the end stage use of late Bronze Age metalwork, indicating that a 9th century BC date is appropriate for the appearance of earliest Iron Age pottery in Kent generally.

Early Iron Age

A comprehensive assessment by Macpherson-Grant (1991) considered the then known Kentish early Iron Age pottery assemblage within the context of the wider prehistoric ceramic range. In west Kent pottery of Period II at Keston was dated to the early Iron Age (6th–3rd century BC) (Couldray 1991; 1999) and pottery from both Keston and Darenth share form and fabric traits with early Iron Age material from the A2. Pottery of this period, including briquetage, was also recovered from Tollgate (Morris 2006, fig. 3.7b, 3.7c). To the south-east, contemporary assemblages were found at White Horse Stone, Tutt Hill and Beechbrook Wood (ibid.). Further afield comparative material has been found in Essex (eg Hedges and Buckley 1978; Hamilton 1988), Surrey (where sites of this period await publication; Poulton 2004) and further up the Thames Valley.

The HS1 pottery of the 6th–4th century BC was classed as 'early/middle Iron Age', the term adopted partly because at White Horse Stone, Beechbrook Wood and Cuxton, pottery with early Iron Age characteristics was on rare occasions associated with well-finished saucepan pots (Morris 2006, 53). These associations have not otherwise been widely recognised, and 'early', 'middle' and 'late' Iron Age ceramic classifications have been generally based on previously observed typological sequences in Kent and the surrounding regions, including Sussex and Hampshire, where saucepan pots in their developed form have been generally recognised as a middle Iron Age phenomenon. At the A2, at Tollgate and at Northumberland Bottom, no well-finished saucepan pots were found in early Iron Age deposits.

Middle Iron Age

The middle Iron Age is better represented than earlier periods of the Iron Age in west Kent. Substantial assemblages have been published from Crayford (Ward Perkins 1938), Farningham Hill (Philp 1984, 7–71), Greenhithe (Detsicas 1966) Keston (Philp *et al.* 1991; 1999) and Oldbury (Ward Perkins 1944; Thompson 1986). In east Kent a small assemblage from Bigberry hillfort near Canterbury containing S-profile jars and saucepan pots was dated to the 5th–3rd centuries BC (Thompson 1983, 254) and a ditch assemblage from Beechbrook Wood on the HS1 route included most forms typically found in middle Iron Age groups across central-southern and south-eastern England (Morris 2006). However, the range of forms and fabrics varies a great deal between these sites, probably due to several factors, including chronological, functional or local distinctions. Jars with everted rims and footring bases are known in Essex, Sussex and, less commonly, in east Kent and are also common in the Darent valley. At Farningham Hill several pits produced burnished S-profile jars in glauconitic sandy fabrics associated with coarse shell-tempered jars (Couldrey 1984, figs 12–21, table H).

For the HS1 sites, the 'middle Iron Age' was defined as a period when saucepan pots became more common than previously (Morris 2006, 67). Saucepan pots, common in central southern England as far east as Surrey and Sussex (Cunliffe 2005, fig. 5.5) are rare in west Kent, but better known in east Kent (in part as a result of the HS1 project), where they share traits with Sussex types. At Cuxton, a radiocarbon date of 400–200 cal BC was associated with a well-finished flint-tempered saucepan pot (Morris 2006, 3.8b CUX/22). Cuxton lies just to the west of the Medway River, a topographic boundary that may have notionally as well as physically separated east from west Kent, perhaps representing a boundary in terms of ceramic tradition during the later prehistoric period. The occurrence of this vessel at this location could be significant for that reason and also because the Cuxton pit assemblage is regarded as anomalous, its deposition probably representing a special event (Morris 2006, 42). At Beechbrook Wood, some 45km south of the A2, a similar date of 390–170 cal BC was obtained on material from a pit which was the site of a major deposition event incorporating saucepan pots, S-profile jars and round-bodied and ovoid bowls—a 'classic' middle Iron Age assemblage (ibid., 3.8d, e, f).

During recording of the A2 pottery four sherds were initially recorded as possible examples of saucepan pots but closer inspection verified only one (SF 460)—a complete vessel which lay at the base of a pit (3662/3676) with a relatively late radiocarbon date of 210–40 cal BC (NZA 30118), and in association with a potin coin. Two small fragments of upright rim vessels which could possibly have belonged to saucepan pots were recovered from pits 4606 and 4969, both dated to the 1st century BC on the basis of Class 1 potins lying in their basal fills.

At South-east of Eyehorne Street four pits contained middle Iron Age pottery (Morris 2006, 3.8c), and here a special deposit included an S-shaped bowl and a rusticated ovoid jar. The use of grog temper at the site during this period was confirmed by a radiocarbon date of 400–260 cal BC from a pit that contained an unusual grog-tempered conical cup (ibid., fig. 3.8c EYH/2), and a date of 390–170 BC was obtained for deposits containing grog-tempered vessels at Beechbrook Wood (ibid., 68-9).

The use of glauconite-rich sandy clays, sometimes including flint, became common during the middle Iron Age in Kent and continued into the late Iron Age, when it is associated with 'Belgic' pottery (Thompson 1982). Especially in west Kent, heavily glauconitic clays are associated with middle Iron Age everted rim/footring jars (Couldrey 1984a), but the introduction of glauconitic fabrics during the early/middle Iron Age was noted at White Horse Stone and West of Northumberland Bottom (Morris 2006, 69). To some extent the assignation of a middle Iron Age date to particular A2 context groups has relied on the presence of glauconitic body sherds with a distinctive smoothed or burnished finish, in the absence of otherwise diagnostic material, but these dates should be used cautiously as a variety of fabrics including shelly and, more rarely, flint-tempered wares continued in use from earlier periods.

The A2 middle Iron Age pottery assemblage is largely characterised by S-profile or convex-shaped jars and bowls in glauconitic sandy fabrics, some with footring bases, although earlier forms continued to be used in tandem. Rusticated treatment of surfaces appears to have gone out of favour by this time and decoration is generally uncommon, curvilinear ornament of Mucking-Oldbury style on an everted rim vessel from Site D being a rare exception (see below Fig. 3.58 no. 63760001).

Late Iron Age

The late Iron Age pottery from the HS1 excavations was considered along with the Roman pottery (Booth 2006), but here the A2 pottery from context assemblages lacking clearly Roman types has been included in the later prehistoric report.

Until relatively recently, late Iron Age pottery from non-funerary contexts has been rather uncommon, as demonstrated by Thompson's 1982 survey of grog-tempered pottery from settlement sites. However, 1st century BC domestic assemblages are known, including those from Marlow (Blockley *et al.* 1995) and Highstead (Couldrey 2007) in east Kent. In west Kent small groups include those from Crayford (Ward Perkins 1938), Farningham Hill (Philp 1984), Thong Lane (French and Green 1983), Hillside, Gravesend (Philp and Chenery 1998) and the Roman villa site at Keston (Philp *et al.* 1991; 1999). Several west Kentish sites have been included in studies of late Iron Age grog-tempered pottery (Thompson 1982), Kentish Roman pottery (Pollard 1988) and more locally, the Roman Upchurch pottery (Monaghan 1987).

Continuity of settlement occupation from the middle through to the late Iron Age has been demonstrated on only a few Kentish sites, including Farningham Hill, possibly Highstead and the HS1 site of Little Stock Farm. A case for continuity of occupation could also be made for the A2 on the basis of site morphology and the suite of radiocarbon dates. The late Iron Age settlement on Site B/C appeared to have progressed from the middle Iron Age focus, occupying roughly the same three spatial zones. However, a fairly dramatic shift in ceramic tradition occurred during the first half of the 1st century BC. A crucial change was in the choice of clays and tempering agents at about that time. The proliferation of grog-tempered fabrics had an established pedigree in east Kent, where they had been used since the later Bronze Age but, until the late Iron Age, flint, shell and glauconitic clays were the traditional material used in the manufacture of Iron Age ceramics in north-west Kent. The widespread adoption of grog temper in the late Iron Age in this region represented a major shift, arising perhaps from technical adaptations, specialisation of production and, no doubt, other less demonstrable cultural factors.

A case for the re-introduction of grog-tempering to east Kent during the later part of the middle Iron Age has been argued (Clark and Thompson 1989, 303; Blancquaert and Bostyn 1998, 133) and the middle/late Iron Age date classification distinguished by Morris on the basis of a correlation between grog-tempered wares and saucepan pot forms at Beechbrook Wood (Morris 2006) has been cited above (although these were not linked to radiocarbon dates).

However, despite a thorough search of the A2 data, no reliable evidence of the use of grog before the late Iron Age has emerged. In view of this, the middle and late Iron Age periods have generally been considered separately in this report and dating of late Iron Age features has relied to some degree on the presence of grog-tempered sherds in significant quantities relative to other fabrics, in the absence of otherwise diagnostic pottery.

The A2 ceramic sequence

All of the ceramic phases detailed below include a selection of key groups and accompanying illustra-

tions. A more detailed description of these key groups can be found in the digital archive rerport.

Earliest Iron Age (c 900–600 BC)

Geographically the closest earliest Iron Age assemblage comparable to that from the A2 is the Phase 1 pottery from Darenth in west Kent (Couldrey 1998), which resembles in some respects that from pit 12576 in Site L and from a few locations on Sites B and G. Further afield, the Phase 2 settlement at Highstead in east Kent produced a range of earliest Iron Age pottery, classed there as late Bronze Age/early Iron Age and dated to 900–600 BC (Couldrey *et al.* 2007). Because some of the early pottery from the A2 resembles the Highstead material, the slightly earlier starting point of *c* 900 BC than has traditionally been assigned (Cunliffe 2005; Morris 2006, 54) may also be appropriate for this ceramic phase.

The earliest Iron Age period at the A2 site was not very clearly identifiable in terms of ceramic style. The ceramic phase was defined largely by minor typological affinities with more substantial assemblages from stratigraphically reliable sites. This assemblage was not represented by substantial profiles, but some characteristics typical of an earliest Iron Age tradition were observed. Sherds from a thin-walled, smoothed fineware bowl with small flint 'dust' inclusions from pit 7949 (Site B) is a type common in east Kent, including Highstead (Couldrey 2007). Part of a similar fineware bowl was recovered from pit 12756 in Site L. Otherwise, fabric inclusions for pottery of this period were invariably coarser flint or flint and shell in some combination. Forms included simple, plain rims, finger-tipped decoration on body, shoulder and upright rims. Flat basal sherds distinguished by the adherence of abundant coarse flint fragments to the outer surface were common within the A2 assemblage. Flint-gritted bases are recorded from late Bronze Age deposits at several sites in south-eastern Britain, including Mucking (Jones and Bond 1980, 477), Runnymede Bridge (Longley 1980, 65) and Brooklands, Weybridge (Hamworh and Tomalin 1977, 24). At Highstead the technique spans Period 2 and 3 (900–400 BC) (Couldrey 2007).

The fingertip or nail impressed decoration frequently observed on pottery of earliest Iron Age date was common even earlier—the middle Bronze Age—and persisted into the later part of the early Iron Age in both east and west Kent, so the incidence of this particular device is not period specific.

The distribution of pottery identified as possibly of earliest Iron Age date was widespread but sparse. Material likely to be of this date was recovered from a small subrectangular feature (12576) in Site L. Pits 7228, 7295, 7949, 5923, 5955 and posthole 7289 in Sites B and C contained material probably of similar type, as did pits 9004, 9012 and 9041 in Site G. North-south aligned Ditch 5912 contained no closely dated pottery, but the absence of the very coarse temper characteristic of middle Bronze Age pottery suggests that it was somewhat later. A radiocarbon date of 1130–990 cal BC (NZA 32400) from an abraded bone from 5298, the uppermost fill of this ditch, provides a *terminus post quem* for this assemblage. A group of pits and postholes at eastern end of the settlement (Site C) similarly lacked much diagnostic pottery, but the combination of other factors, including the flint or flint and shell fabric occurrences, to the exclusion of any others, make these features candidates for an earliest Iron Age phase. These include posthole group 5444 (5931 and 5933), posthole 5983 of group 7281 and several isolated shallow hollows 5953, 5955, 5959, 5990. One of a group of four small pits (7295) located in the southern part of this area also contained distinctive early pottery, along with a sizeable collection of structural fired clay. Pit 5923, a much more substantial feature, produced a relatively large pottery assemblage (290 sherds/664g). The sherds were mostly undiagnostic, abraded scraps dispersed throughout five fills, along with structural fired clay (oven daub?), animal bone and charred plant remains. This fill sequence within this type of pit could represent domestic material quarried from an above-ground midden to backfill a decommissioned storage pit.

Sherds of possibly earliest Iron Age date from Site G would most likely have represented settlement activity separated either chronologically or at least physically from the Site C activity, as nothing of this character was found in the intervening area of nearly 1.5km. Notably, no earliest Iron Age undecorated fineware bowls of the type found in Sites L and B were found in this location, supporting an argument for functionally and/or chronologically distinct activity here. However, fill 9570 of pit 9012 produced a bowl fragment in shell- and flint-tempered fabric, decorated with faint horizontal grooves between a rounded shoulder and rim. Similar vessels In Site G East pits 9004 and 9041 produced finger-tipped jar sherds and flint-gritted bases, in both flint- and flint- and shell-tempered fabrics attributable to an early Iron Age period. Posthole group 9031 produced very small, abraded sherds consistent with a long deposition history, which could suggest they pre-dated the early Iron Age, but this is a tenuous point.

Earliest Iron Age Key Groups

Pit 12576 Site L (Fig. 3.45)
1200166 (12577) Fineware bowl. Fabric FS13
1200169 (12577) Everted rim jar. Fabric F5
1200176 (12577) Jar with carinated shoulder and upright rim. Fabric FS20
1200177 (12577) Everted rim jar or bowl. Fabric F29

Pit 7228 Site C (Fig. 3.45)
5100970 (7227) Bowl with slight carination and upright rim. Fabric F16, burnished.
5100971 (7227) Bowl with flat-topped rim and finger-tipped shoulder. Fabric SF18, slurried, wiped.
5100987 (7227) Flaring bowl rim fragment. Fabric F20, smoothed.

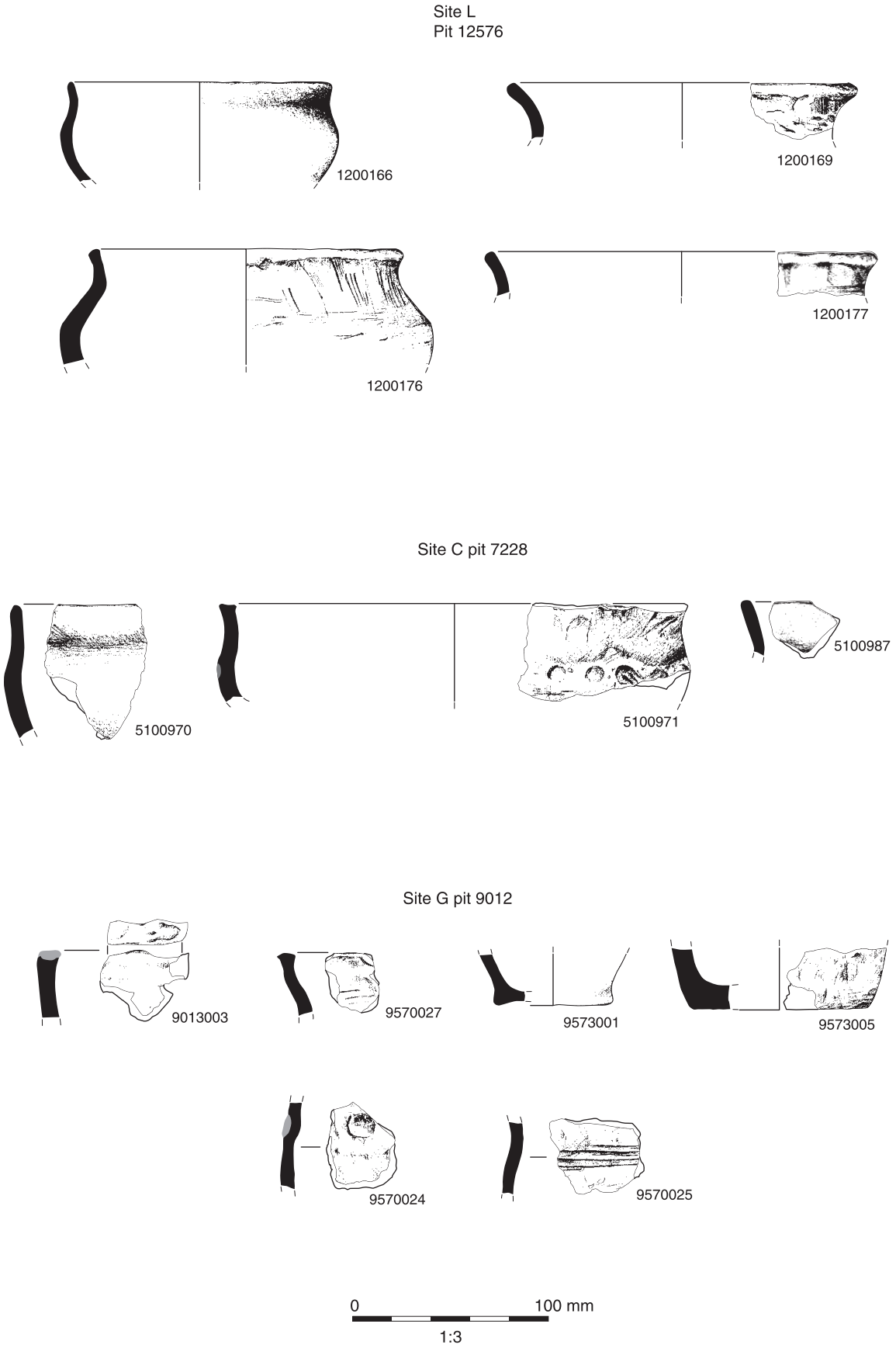


Fig. 3.45 Earliest Iron Age pit groups L-12576, C-7228 and G-9012

Pit 9012 Site G East (Tollgate pit 387) (Fig. 3.45)
9013003 (9013) Inturned rim with fingertip decoration. Fabric FS12
9570027 (9013) Flat-topped bowl/jar rim with grooves on neck. Fabric SF43
9573001 (9573) Footring base of small bowl. Fabric FS199, burnished
9573005 (9573) Flat base. Fabric S12.
9570024 (9570) Sherd with fingertip decoration. Fabric SF21
9570025 (9570) Sherd with light horizontal grooves on shoulder. Fabric SF23.

Early Iron Age (c 600–350 BC)

The early Iron Age was not signalled at the A2 by any sudden break in ceramic style from the preceding period, but rather an embedding of the existing ceramic range within an intensified settlement framework, enhanced by the introduction of a wider variety of vessel forms, decoration and surface treatments. Amongst these innovations was the imitation (albeit on a very limited scale) of continental ceramic traditions, including rustication of vessel surfaces.

In his assessment of Kentish Iron Age pottery, Macpherson-Grant noted that an 'East Kent rusticated tradition' had some close parallels with assemblages from the near continent, and he believed that the device was exclusive to east Kent and the continent (1991, 41–8). Rustication can entail a number of specific treatments—a simple deliberate roughening of the vessel surface, patterned roughening (eg finger furrows), application of clay globules or of a thick slurry, combing into leather hard surface or dense fingertip impressions all over vessel body. It probably served a dual purpose of utility (ease of shifting) and ornament.

The technique, termed on the continent *eclabousée,* occurs sporadically in Hallstatt B groups in the Low Countries, probably derived from earlier urnfield pottery in Germany (Desittere 1967; 1968). By the early La Tène period the technique had spread to north-east France (Gosselin *et al.* 1984; Leman-Delerive 1984; van Doorselaer *et al.* 1987; Hurtrelle *et al.* 1990) and in Belgium it continued in use throughout the Iron Age. Rustication was a standard surface treatment at Highstead in east Kent throughout Period 3 (Couldrey 2007, 121) and was also recorded at Keston Period II, dated to the 6th-3rd century (Couldrey 1991; 1999) and at Hawkinge Airfield, Folkestone (Thompson 2001). Along the HS1 route, rustication was common at White Horse Stone, rare at Tollgate (adjacent to the A2 site), and absent at West of Northumberland Bottom. Despite the evidence from Keston and Tollgate, Morris observed that there was 'every reason to suspect that west of the Medway Valley rustication was not viewed as an acceptable surface treatment during this period' (Morris 2006, 65).

The presence of a few sherds of rusticated ware at the A2 is, therefore, significant. Rusticated sherds were found at three early Iron Age settlement sites, in pits 5066, 5130, 5992 (Site C), in pit 6336 (Site D), and in pits 9010 and 9052 (Site G East). No rusticated pottery was found at Site L. The sherd from Site D is in a sandy ware with flint temper (FS129), as are those from pit 9010, whilst those from the other pits in Sites C and G are in shell- and flint-tempered fabrics (F23, SF7, SF8, SF22, SF26, FS39). They were probably all made locally rather than imported from east Kent as the fabrics match those of the other early Iron Age fabrics.

At Site C rusticated wares were associated with round-bodied bowls, a form generally more common in west Kent, so the connection between what is generally considered west and east Kent traditions is noteworthy. The two pits in Site G East (9010 and 9052) both had associated radiocarbon dates, providing an absolute date of between 510–360 cal BC for the arrival of rusticated wares at the site. This dating provides a more precise time frame than that suggested at Keston, although the occurrences in the undated A2 pits may, of course, have been earlier. It is possible, however, that the technique was adopted in the west of Kent only in the later part of the early Iron Age.

Another distinctive surface finish applied to vessels in parts of Kent and elsewhere in southern Britain during this period was red-finishing or painting, sometimes in the form of a true haematite coating. A small number of sherds of this type were found at White Horse Stone, dated there to the early/middle Iron Age. This technique has been identified amongst material dated to the late BronzeAge/early Iron Age at Minnis Bay (Middleton 1995) and at Highstead (Couldrey 2007). Only two or possibly three sherds displaying this treatment were identified within the A2, assemblage, all on Site L. The sherds are very small, however, and the identification is not certain.

Some characteristics of the earliest Iron Age ceramics persisted into the early Iron Age. Jars with finger-tip impressions on rims and prominent shoulders (and more rarely on the upper body) remained common. Examples of this style were found in pits 1055 and 10547 at Site K, and in large numbers at Sites L, Sites C and Sites G (East and West). Flat bases, with and without flint adhering, also continued, but a small number of sherds hinted at the development of low pedestal or foot-ring basal forms during this period, although all examples were highly abraded.

During this period finger-tipped vessels occurred in association with more rounded profile jars and bowls. Jar rims were flat-topped (some examples expanded inwards) or simple upright or everted (Sites C and G). Well-finished bowls with flaring rims and rounded or carinated bodies (Sites L, Site C, Site G) were often well-smoothed or even highly burnished. Some plain in-turned rims may represent proto-saucepan pots but were generally too fragmentary to be certain. Plain, open 'troughs' or shallow bowls were found at Site C.

Although many of the larger vessels lack distinctive surface treatment, some bear vertical brush

marks produced by wiping with grass, a common practice during the early Iron Age. An increase in the smoothing and burnishing, especially of bowls, was recorded. Other treatments were also noted for this period—coarse combing, generally diagonally applied below the shoulder (Sites K and C), and the application of shallow cordons (Site C). A small sherd from Site C bore a triangular design composed of three finger-tip impressions, which may have been part of a wider decorative scheme. More clearly visual in design are widely spaced cross-hatching and linear grooves (similar to furrowing) on bowls from Site C.

More unusual from the A2 are rims with cabled decoration, as distinct from the very common fingertipping. A bowl from Site L bore this treatment, enhanced with linear grooves on the shoulder. An open bowl (5000451) from pit 5130 (Site C) is a clear example and cabled rims were also recovered from pit 9010 in Site G (East). Parallels for this technique are to be found within the assemblages from Northumberland Bottom (Moris 2006, fig. 3.7, WNB/18) and White Horse Stone (Morris 2006, fig. 3.7, WHS/15 and /24).

Significantly, a possible rare example of a type known in Belgium and France as 'coupes à bord festonnés ('horned', crenellated or festooned bowls) was recovered from pit 9088. The flint and shell fabric in which it was produced matches that of another example from White Horse Stone, believed on the basis of fabric to be a British copy rather than a continental import, but possibly transported to the site from a production site on the south side of the Greater Thames Estuary (Morris 2006). Considering the proximity of the A2 site and White Horse Stone (*c* 15km), the two sites may have participated in a common exchange network. Since rustication is also a common feature of early Iron Age northern French pottery (and also present at White Horse Stone), the A2 examples from Sites C and D may serve to emphasise the connection.

Early Iron Age Key Groups

Pit 10515 Site K (Fig. 3.46)
10520001 (10520) Upright rim and slack shoulder with fingernail impressions. FS223.
10520002 (10520) Open bowl with curved wall and flat-topped rim. Fabric SF9, smoothed.
10520003 (10520) Combed body sherd. Fabric F21.
10520006 (10520) Small slack-shouldered jar. Fabric SS45, slurried wiped.
10520014 (10520) Pedestal base of small vessel. Fabric FS147, smoothed.

Pit 12572 Site L (Fig. 3.46)
1200140 (12573) Combed body sherd. Fabric SF11.
1200153 (12573) Body sherd with single deep groove. Fabric SF27.
1200127 (12573) Small base with projecting heel, very crudely made. Fabric SF12.
1200129 (12573) Small bowl with upright internally expanded rim. Fabric SF12, wiped.
1200144 (12573) Thin-walled vessel with flat, inturned rim. Briquetage? Fabric S7.
1200225 (12617) Open bowl with cabled rim and combed finger-tipped body. Fabric F31.

Pit 12527/12700 Site L (Fig. 3.47)
1200009 (12528) Small jar with upright rim. Fabric FS2
1200012 (12528) Pedestal base with groove above. Fabric F14
1200015 (12528) Carinated bowl with flaring rim. Fabric FS20
1200268 (12701=12528) Carinated bowl with flaring rim. Fabric FS5
1200269 (12701=12528) Carinated open bowl. Fabric FS5
1200270 (12701=12528) Carinated bowl with upright rim. Fabric FS5
1200271 (12701=12528) Bowl with upright rim on rounded shoulder. Fabric FS6
1200272 (12701=12528) Carinated bowl with flaring rim. FS25
1200273 (12701=12528) Jar rim with fingernail impressions. Fabric FS13
1200290 (12701=12528) Barrel shaped jar, fingertip impressed rim/shoulder. Fabric SF30
1200293 (12701=12528) Bowl with upright rim, pronounced rounded shoulder. Fabric SF30
1200294 (12701=12528) Lid or plain bowl fragment. Fabric FS18. Overfired or refired
1200298 (= pot 1200281) (12528) Carinated bowl. Fabric FSS8
1200197 (12579) Jar with slashed decorated rim, vertical grooves on shoulder. Fabric SF30
1200198 (? =1200197). (12579) Fingertipped rim. Fabric SF30
1200547 (12580) SF1271. Shouldered jar, fingertip decoration on neck/shoulder. Fabric SF35

Pit 5992 Site C (Fig. 3.48)
5101058 (7283) Angled shoulder of upright rim bowl. Fabric SF23.
5101076 (7283) Finger-impressed body sherd. Fabric FS103.
5101105 (7283) Everted, flat-topped rim. Fabric SF32.
5101126 (7283) SF817 Everted rim with inturned tip. Fabric SF23, wiped.
5101063 (7283) Open vessel with flat-topped, expanded upright rim. Fabric SF18.
5101064 (7283) Inturned bowl rim with finger-tipping. Fabric SF23.
5101088 (7283) Upright bowl rim. Fabric FOR7, burnished.
5101102 (7283) Upright rim wit coarse grooves below. Fabric SF23.
5100741 (5996) Open bowl with finger-tipped rim. Fabric FS104.
5100696 (5995) Upright rim of fine bowl. Fabric Sa5, burnished.
5100708 (5995) Carinated bowl with flaring rim. Fabric FS96, burnished.
5100709 (5995) Jar with flat-topped expended rim. Fabric SF2, wiped.
5100710 (5995) Shouldered bowl with upright, flat-topped rim and thumbed neck. Fabric SF9.
5100711 (5995) Open bowl with finger-tipped rim. Fabric SF28, wiped.
5100720 (5995) Open bowl with finger-tipped rim. Fabric SF17, wiped.
5101160 (7284) Jar with insloping, expanded rim. Fabric SF35, slurried wiped.

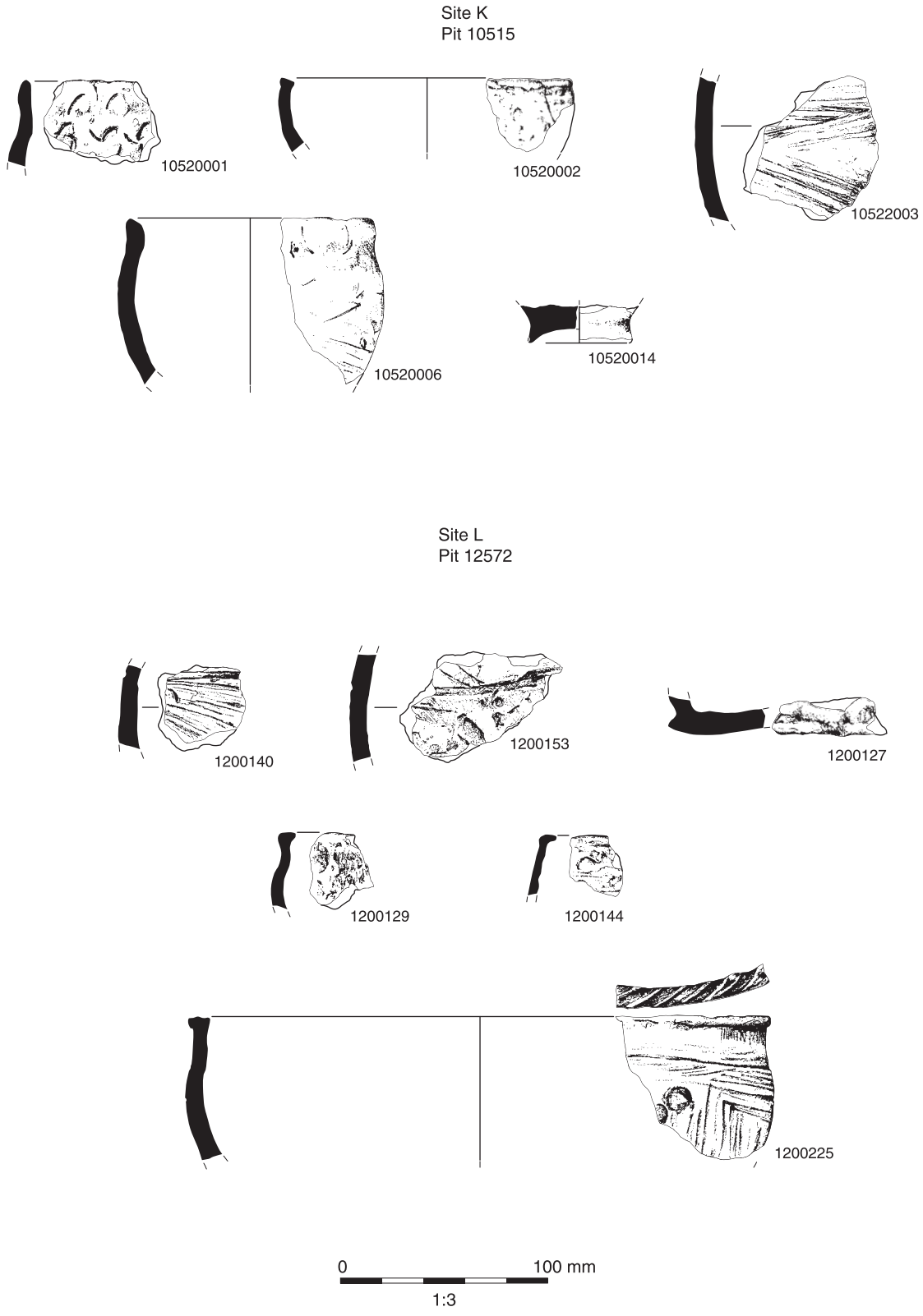
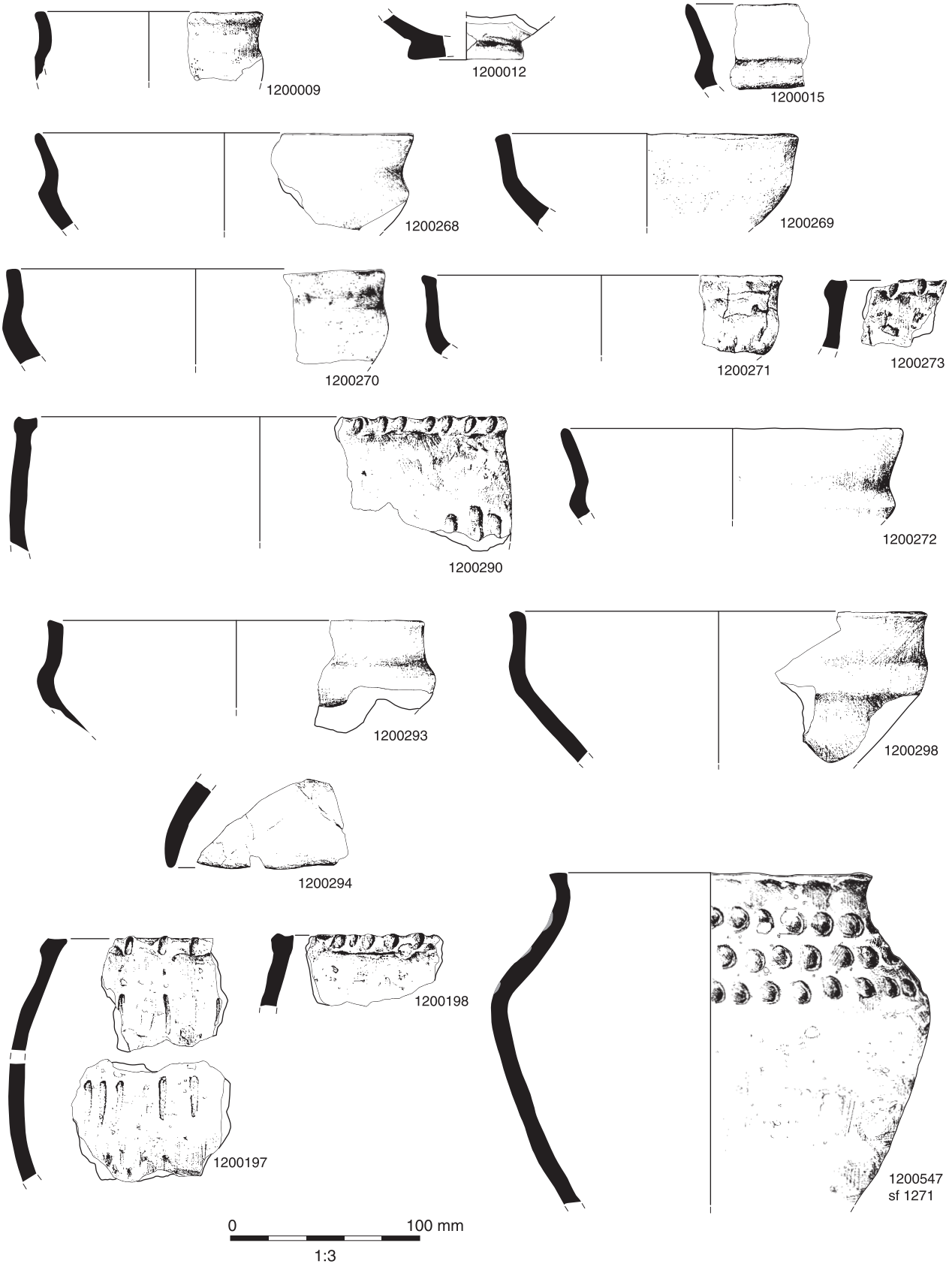


Fig. 3.46 Early Iron Age pit groups K-10515 and L-12572

Fig. 3.47 (facing page) Later early Iron Age pit group L-12527=12700

Site L
Pit 12527 = 12700



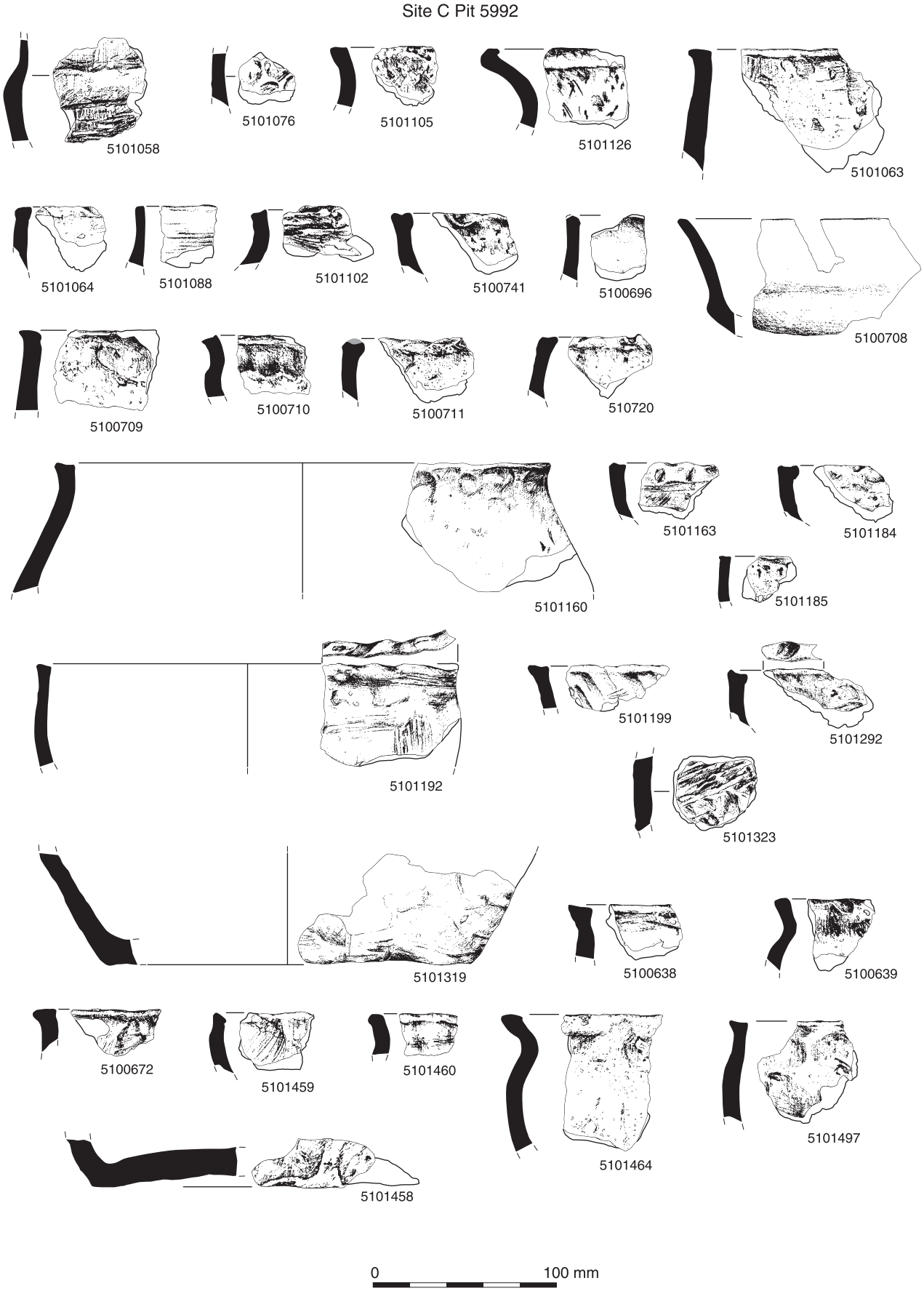


Fig. 3.48 Early Iron Age pit group C-5992

5101163 (7284) pen bowl with finger-tipping below rim. Fabric SF26, wiped.
5101184 (7284) Finger-tipped rim, probably of open bowl. Fabric SF34, wiped.
5101185 (7284) Small open bowl with flat-topped rim. Fabric SF32, smoothed.
5101192 (7284) Deep open bowl with roughly cabled rim. Fabric SF32, smoothed.
5101199 (7284) Upstanding, flat-topped rim of ?jar. Fabric S5, slurried, smoothed.
5101292 (7285) SF822 Open bowl with finger-tipped rim. Fabric SF20.
5101323 (7286) Roughly combed body sherd. Fabric FS127.
5101319 (7286) Flat base of large jar, wiped smooth underneath. Fabric FSS19.
5100638 (5994) Expanded flat-topped rim. Fabric SF7.
5100639 (5994) Everted, finger-tipped bowl rim. Fabric S7.
5100672 (5994) Expanded, flat-topped ri. Fabric SF7.
5101459 (7314) Small hemispherical bowl, Fabric FS45, wiped.
5101460 (7314) Upright rim of small bowl or jar. Fabric SF12.
5101464 (7314) Small jar with everted, folded rim. Fabric SF37, wiped.
5101497 (7314) SF842 Flat-topped, expanded rim on short neck of slack-bodied jar. Fabric SF52.
5101458 (7314) Concave jar base. Fabric St.

Pit 5110/5219 Site C (Fig. 3.49)
5000203 (5132) Fragment of shouldered bowl. Fabric Sa11.
5000204 (5132) SF 525 Everted bowl rim with slight bevel. Fabric Sa25.
5000312 (5156) Everted bowl rim. Fabric FS25.
5000565 (5402) SF 587 Jar with upright rim. Fabric FS50.
5000566 (5402) Everted, bevelled bowl rim. Fabric FS44.
5000643 (5403) Base of small jar. Fabric FS39, burnished.
5000824 (5422) Large jar with finger-tipping on shoulder and rim. Distorted, warped (refired or over-fired). Fabric SF35.
5000831 (5422) Plain rim of open bowl. Fabric FS62.
5000825 (5422) Rim and base of jar with finger-tipped rim. Fabric SF35.
5000842 (5423) Jar with finger-tipped rim. Fabric SF35. Possibly same vessel as 5000825 but finger-tipping is different.
5000843 (5423) Jar with flaring, finger-tipped rim. Fabric SF35.

Pit 5130/5242 Site C (Fig. 3.50)
5000479 (5243) SF591 Bowl or jar with flattened top and short neck. Fabric SF17.
5000395 (5137=5228) Jar base and lower wall. Fabric SF35, vertical wiping.
5000400 (5137=5228) Everted bowl rim. Fabric SF17, wiped.
5000401 (5137=5228) Upright, flattened jar or bowl rim. Fabric SF17.
5000453 (5136=5234) Upright rim of jar or bowl. Fabric SF21.
5000463 (5136=5234) Open bowl with finger-tipped rm. Fabric SF5, smoothed.
5000464 (5136=5234) Everted bowl rim. Fabric S1, wiped.
5000449 (5136=5234) Bowl with pronounced, rounded shoulder and flaring rim. Fabric SF20, wiped
5000226 (5136=5234) Flat jar base. Fabric SF34, wiped.
5000227 (5136=5234) Carinated bowl with elongated, inturned rim. Fabric FS17, burnished.
5000451 (5136=5234) Open bowl with incurving, cabled rim. Fabric FS26, vertical wiping.
5000484 (5155=5244) Small bowl with upright rim and rounded shoulders. Fabric FS60, wiped.
5000671 (5155=5244) Upright bowl or jar rim with fingertip decoration. Fabric SF21, wiped.
5000493 (5153=5245) Flat-topped rim of bowl or jar. Fabric SF17, wiped.
5000280 (5153=5245) Small bowl with upright rim. Fabric SF33.
5000281 (5153=5245) Everted bowl rim. Fabric F40.
5000282 (5153=5245) Flaring bowl rim. Fabric FS9.
5000657 (5175=5406) Rounded bowl shoulder decorated with double groove. Fabric FS63, burnished.
5000685 (5175=5406) Everted elongated bowl rim. Fabric F43, wiped.
5000688 (5179=5408) Upright bowl or jar rim. Fabric FS17, burnished.
5000322 (5179=5408) Flat base of small jar. Fabric F15.
5000690 (5179=5408) Flat-topped, recessed bowl or jar rim. Fabric SF22.
5000801 (5148=5420) Upright, flat-topped bowl rim. Fabric SF44, wiped.
5000802 (5148=5420) Upright, internally expanded rim, lightly finger-tipped. Fabric SF12
5000903 (5427=5429) Neutral form/bowl with flat, expanded rim. Fabric SF26.
5000904 (5427=5429) Jar with rounded shoulder and everted, hollowed rim. Fabric SF18.

Pit 5066 Site C (Figs 3.51–2)
5000408 (5140=5232) Jar with inturning grooved rim. Fabric SF18.
5000410 (5140=5232) Jar with upright fingertipped rim. Fabric SF20.
5000436 (5063=5233) Bowl or jar with flattened inturning rim. Fabric S12.
5000437 (5233=5063) Large necked bowl with flat-topped rim. Fabric SF30.
5000442 (5063=5233) Bowl with angled shoulder and elongated rim. Fabric FS9.
5000444 (5063=5233) Bowl with rounded shoulder and elongated rim. Fabric V.
5000106 (5063-=5233) Narrow flat base flaring to wide-bodied vessel. Fabric F36, smoothed.
5000109 (5063=5233) Elongated everted bowl rim. Fabric S5, burnished.
5000114 (5063=5233) Large bowl, upright flattened rim with diagonal slash marks. Fabric S6.
5000115 (5063=5233) Open bowl with expanded flat-topped rim. Fabric S27.
5000116 (5063=5233) Jar with upstanding, elongated rim and angled shoulder. Fabric Sa22, burnished.
5100137 (5404=5414=5493) Jar with everted rim and rounded shoulder. Fabric Sa41, smoothed (possibly MIA?).
5000719 (5404=5414=5493) Simple flat base fragment. Fabric Sa5.
5000720 (5404=5414=5493) Flat base, slightly projecting heel. Fabric Sa31.
5000721 (5404=5414=5493) Flat base, projecting heel. Fabric Sa5.
5000724 (5404=5414=5493) Small bowl with upright rim and rounded shoulder. Fabric FS34.
5100160 (5415=5495) Narrow neck jar with elongated, finger-tipped rim. Fabric SF27.

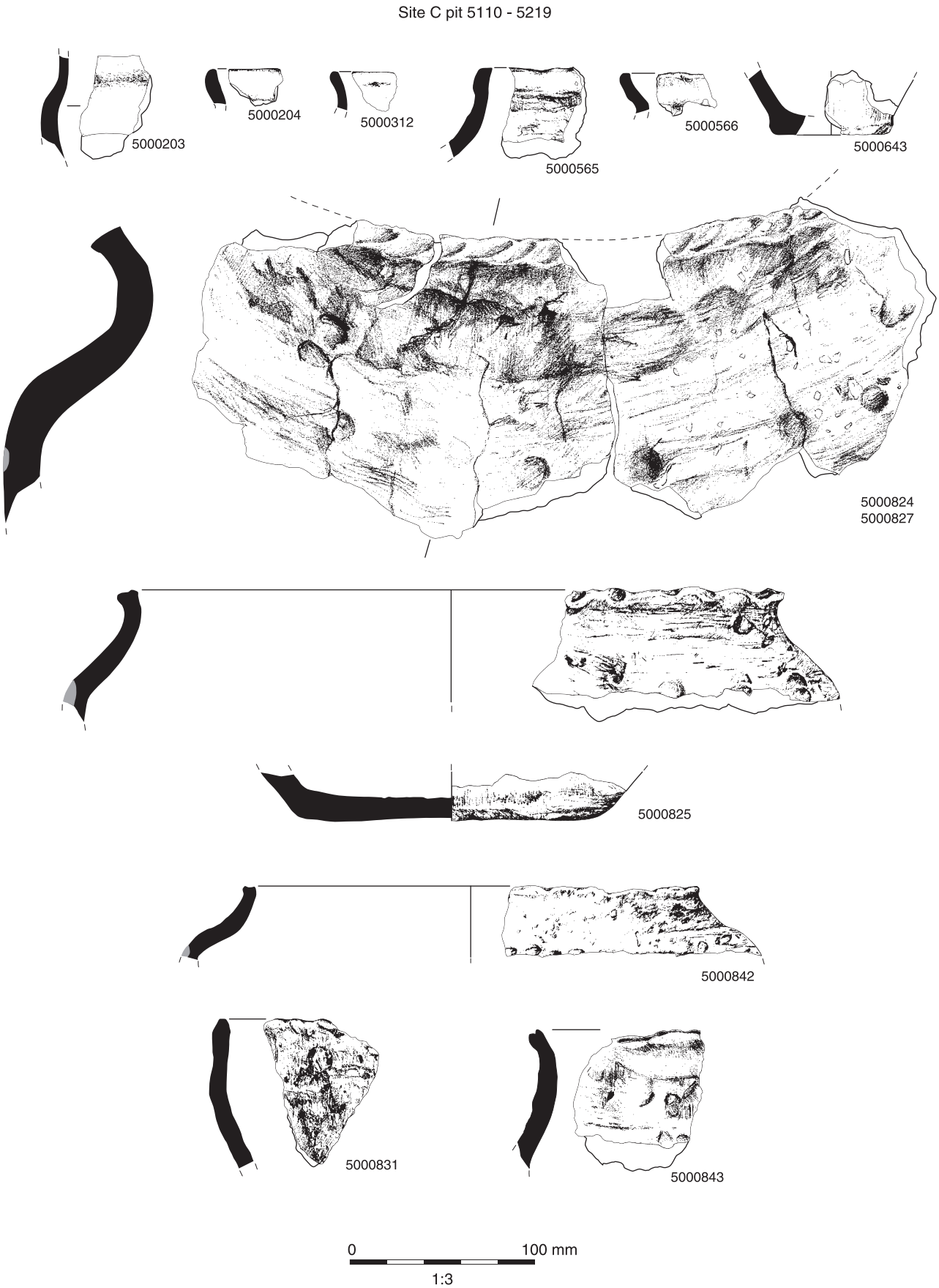


Fig. 3.49 Later early Iron Age pit group C-5110=5219

Fig. 3.50 Later early Iron Age pit group C-5130=5242

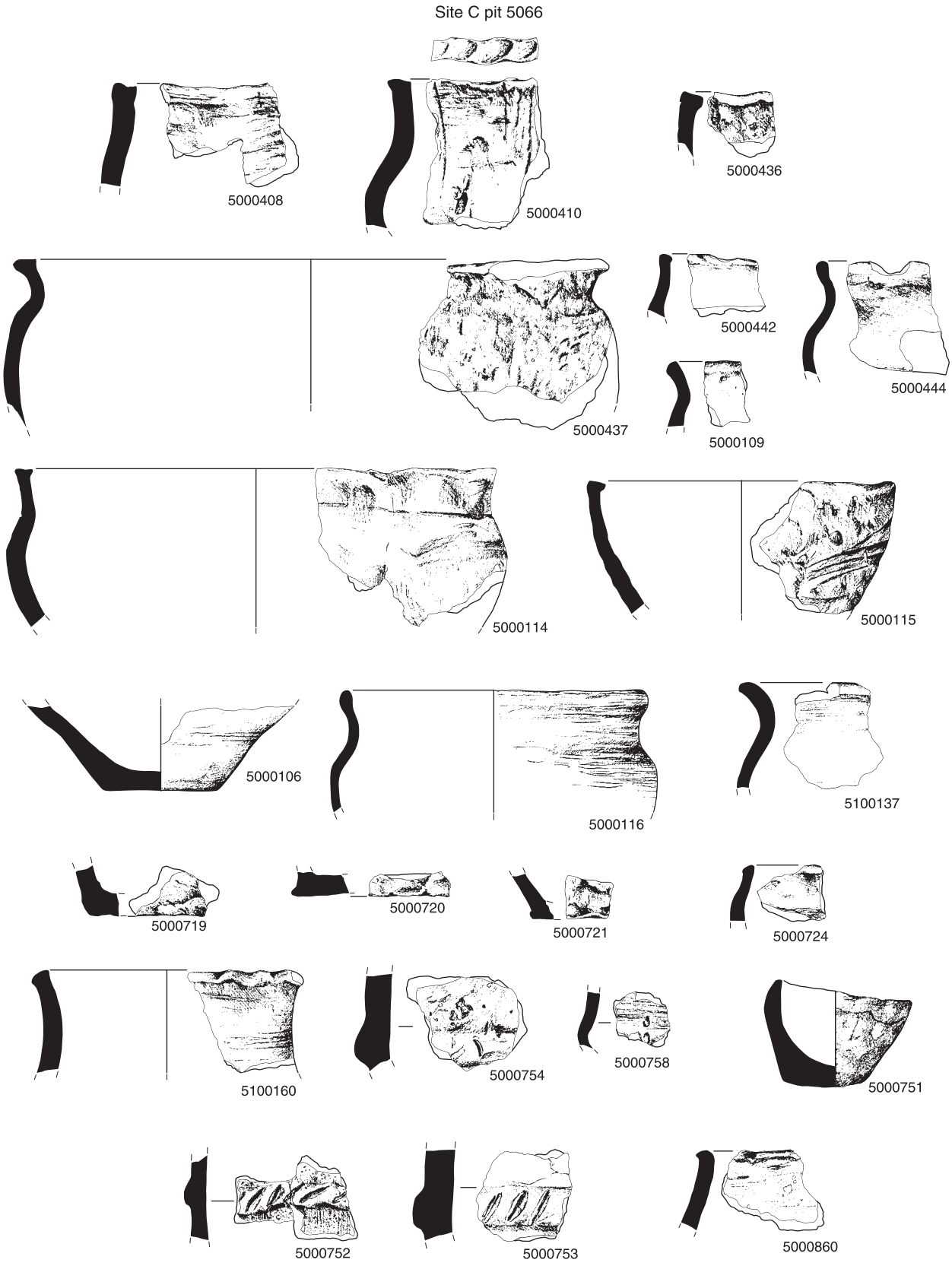


Fig. 3.51 Later early-middle Iron Age pit group C-5066

5000754 (5415=5495) Thick body sherd with wide cordon, possibly fingernail-impressed. Fabric S6. Residual MBA?
5000758 (5415=5495) Carinated bowl sherd, rim missing. Fabric SF40.
5000751 (5415=5495) SF539 Miniature pot or crucible. Fabric Sa24.
5000752 (5415=5495) Straight walled vessel with fingernail-impressed cordon. Fabric SF15. Residual MBA.
5000753 (5415=5495) Thick-walled vessel with fingernail-impressed cordon. Fabric F5. Residual MBA.
5000860 (5425) Upright jar rim with widely spaced fingertip impressions. Fabric S12.
5000865 (5425) Everted bowl or jar rim. Fabric FS17, highly burnished.
5000780 (5416=5496) Narrow base of wide-bodied jar (cf 5000106). Fabric Sa27.
5100302 (5430=5498) Round-bodied bowl. Fabric FS45.
5100309 (5430=5498) Rim of open bowl or shallow trough. Fabric Sa10.
5100330 (5431=5499) Short everted bowl rim with slight internal bevel. Fabric SF43.

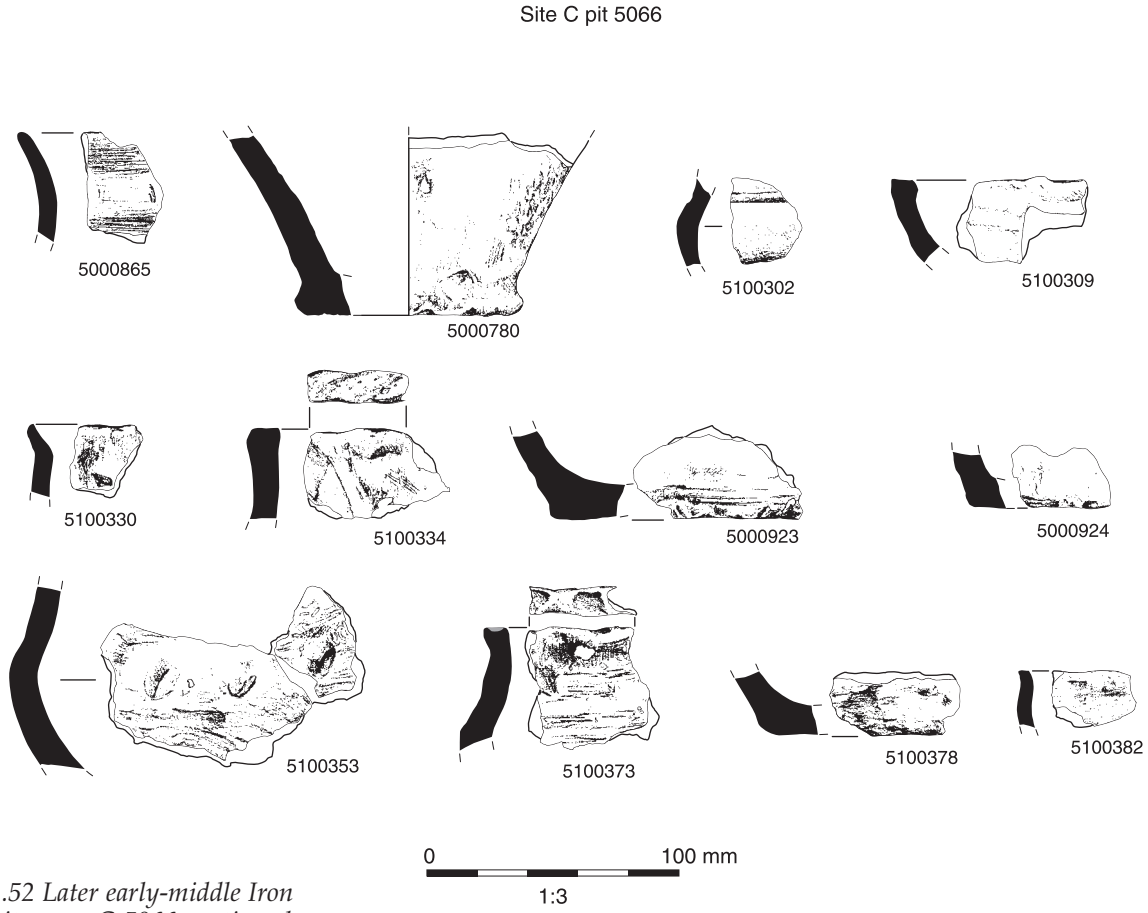


Fig. 3.52 Later early-middle Iron Age pit group C-5066 continued

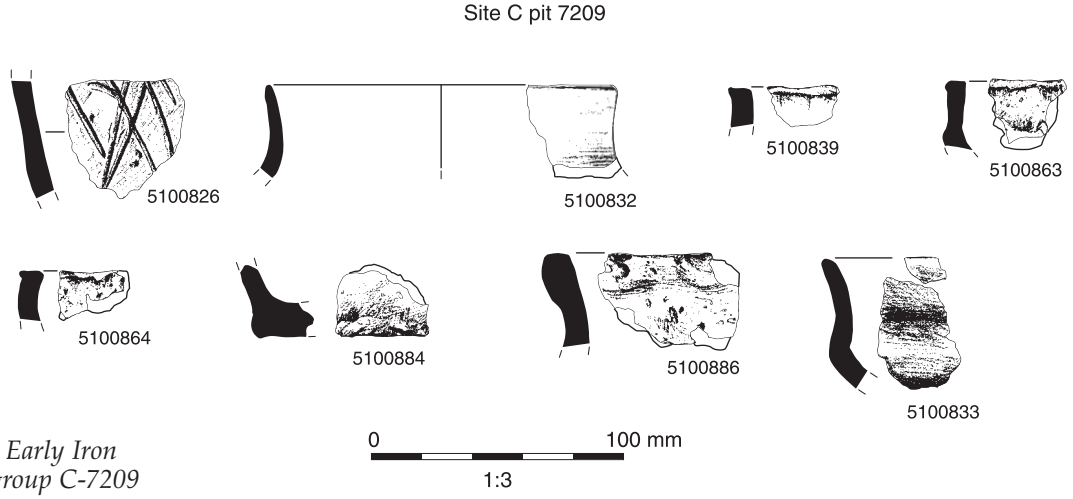


Fig. 3.53 Early Iron Age pit group C-7209

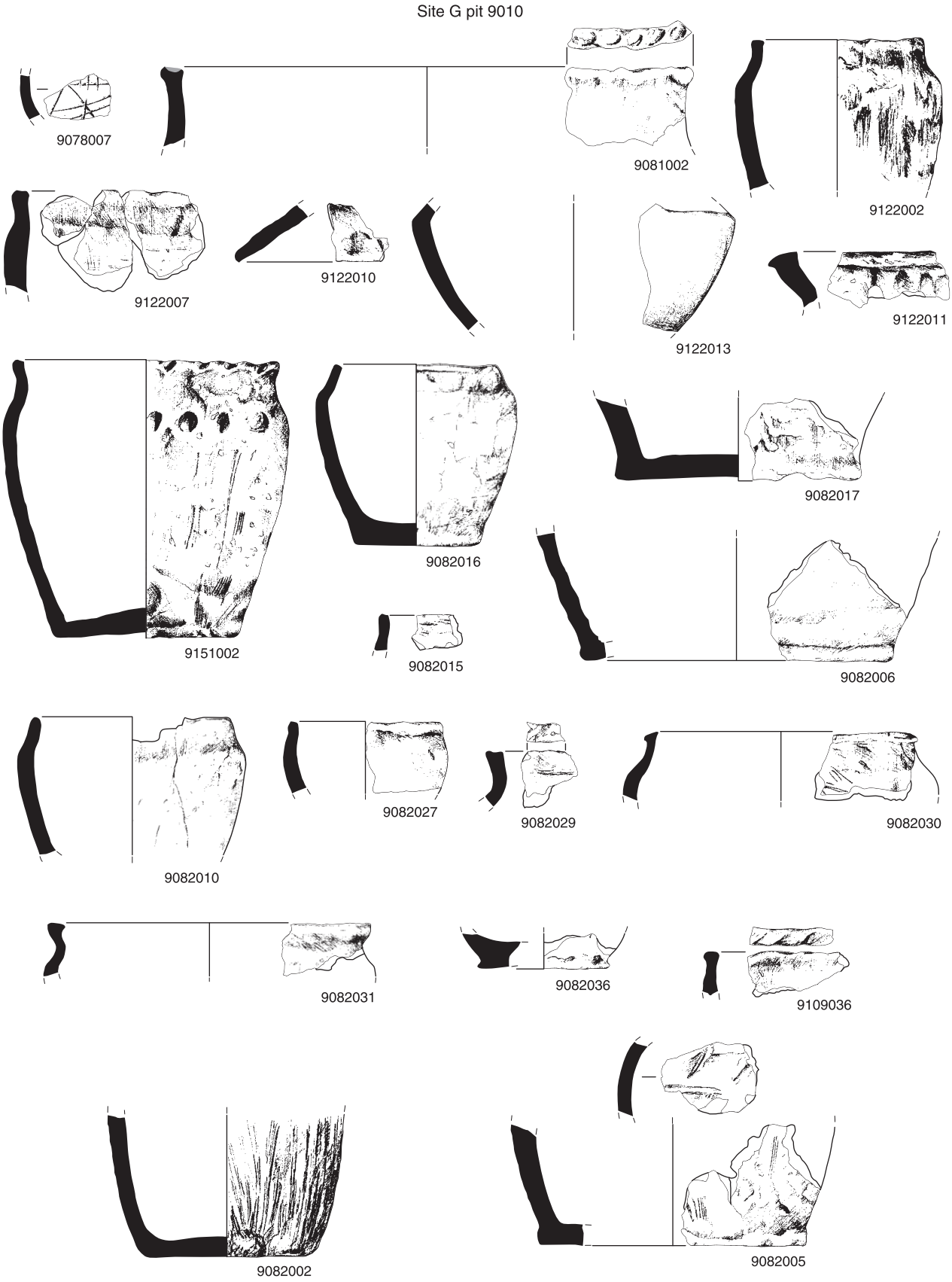


Fig. 3.54 Later early Iron Age pit group G-9010

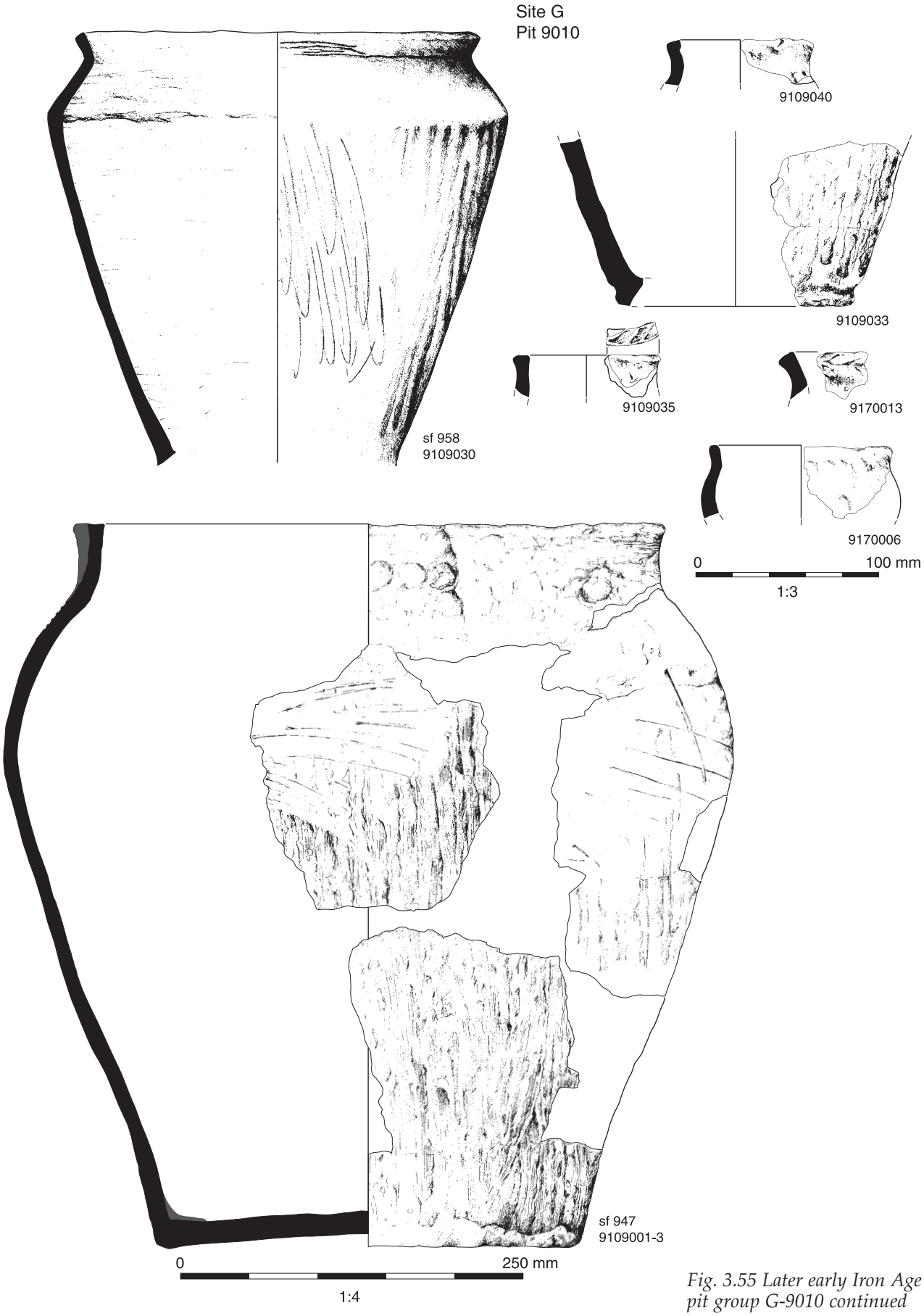


Fig. 3.55 Later early Iron Age pit group G-9010 continued

Fig. 3.56 Later early Iron Age pit groups G-9052 and G-9088/9567

5100334 (5431=5499) Upstanding cabled rim. Fabric SF27.
5000923 (5431=5499) Flat base of large jar. Fabric FS39.
5000924 (5431=5499) Flat base. Fabric Sa10.
5100353 (5500=5433) Large bowl with finger-tipped shoulder. Fabric SF23.
5100373 (5500=5433) Upright finger-tipped bowl or jar rim. Fabric SF22.
5100378 (5500=5433) Flat base, slightly protruding heel. Fabric FS9.
5100382 (5500=5433) Small round shouldered bowl with simple upright rim. Fabric F37.

Feature 7209 Site C (Fig. 3.53)
5100826 (7211) Body sherd with crude cross-hatched decoration. Fabric F21.
5100832 (7212) Flaring bowl rim. Fabric Sa46, burnished.
5100839 (7212) Flat-topped, expanded rim. Fabric FS62.
5100863 (7212) Small, crudely made carinated bowl with upright rim. Fabric F13, wiped.
5100864 (7212) Open bowl with flat-topped rim. Fabric F13.
5100884 (7212) Flat base with slightly projecting heel. Fabric FS39.
5100886 (7212) Upright, finger-tipped jar rim. Fabric SF26.
5100833 (7212) Carinated bowl with flaring rim. Fabric F20, burnished.

Pit 9010 Site G East (Tollgate pit 414) (Fig. 3.54 and 3.55)
9078007 (9078) Sherd with linear burnished decoration. Fabric FS194
9081002 (9081) Large jar with upright fingertipped rim FS187.
9122002 (9122) Small shouldered jar with slight impressions on rim. Fabric FS148
9122007 (9122) Plain upright rim, slight shoulder. Fabric FS149
9122010 (9122) Simple lid. Fabric Sa121
9122013 (9122) Body of carinated bowl. Fabric FS131, burnished.
9122011 (9122) Out-turned rim with expanded flat top. Fabric SF39
9151002 (9082) Near complete jar with fingertipped rim and shoulder. Fabric S16.
9082006 (9082) Flat base, coil-manufactured. Fabric SF20.
9082015 (9082) Upright rim of small bowl. FS134
9082016 (9082) Complete small jar with carinated shoulder and inturned rim. Fabric FS180
9082017 (9082) Base of jar. Fabric SF17
9082010 (9082) Small shouldered jar. Fabric FS187
9082027 (9082) Small hemispherical bowl. Fabric FS134
9082029 (9082) Upright rim with cable decoration. SF48
9082030 (9082) Shouldered jar with flat-topped rim. Fabric SF43
9082031 (9082) Jar with internally expanded flat-topped rim. Fabric FS19
9082036 (9082) Base with slight heel. Fabric FSS23
9109036 (9082) Upright rim with cable decoration. Fabric SF20
9082002 (9082) Bottom half of jar. Wiped surface. Fabric SF60
9082005 (9082) Bottom part of jar with flat base. Slurried surface. Fabric SF60
9109030 (9109, 9170) SF958. Near complete carinated jar profile. Fabric SF134, burnished.
9109001-3 (9109/9170/9082) SF947 Complete storage jar. Fabric SF60, wiped.
9109040 (9109) Small jar rim with fingertip decoration. Fabric Sa70
9109033 (9109) Base of jar with slurried surface. Fabric SF32
9109035 (9109) Upright rim with cable decoration. Fabric SF20
9109040 (9109) Small jar rim with fingertip decoration. Fabric Sa70
9109035 (9109) Upright rim with cable decoration. Fabric SF20
9109033 (9109) Base of jar with slurried surface. Fabric SF32
9170013 (9170) Rim with cable decoration. Fabric SF40
9170006 (9170) Rim of small jar. Fabric FS35

Pit 9052 Site G East (Fig. 3.56)
9063009 (9063) Shouldered jar with upright rim. Fabric FS130, burnished.
9063003 (9063) Pedestal base. Fabric FOR8, burnished.
9065022 (9065) Small bowl with fingertipped shoulder. Fabric SF58.

Pit 9088/9567 Site G East (Fig. 3.56)
9050035 (9050) Flat base, slight heel. Fabric S14
9050003 (9050) Upright slightly expanded rim. Fabric Sa9, burnished.
9050006 (9050) Rim with flat, externally projecting top. Fabric S12.
9050040 (9050) Small vessel with plain upright rim (possibly briquetage). Fabric S5
9050011 (9050) Flat base with slight pedestal. Fabric SF10
9051023 (9051) Upright, slightly projecting rim. Fabric F23
9061001 (9061) Upright, externally expanded rim. Fabric F3
9061002 (9061) Rim with fingertip impressions. Fabric SF33
9061018 (9061) Carinated jar/bowl with upright rim. Fabric F126
9061004 (9061) Jar with finger-tipped rounded shoulder and rim. Fabric SF30
9061079 (9061) Jar with upright, finger-tipped rim. Fabric FS20
9061007 (9061) Shouldered jar/bowl. Fabric FS19
9061072 (9061) Finger-tipped jar shoulder. Fabric SF55
9061042 (9061) Flat base with flaring body. Fabric FS148
9061013 (9061) Possible rim of festooned bowl. Fabric FS216.

Middle Iron Age (c 350–50 BC)

By the end of the early Iron Age in southern Britain, including Kent, large coarseware jars with pronounced shoulder angles and fingertip and -nail decoration were giving way to a range of generally smaller, undecorated vessels. In contrast to the Wessex area, saucepan pots were uncommon elements of this new stylistic repertoire, which was dominated by S-profile bowls and jars and proto-bead rim vessels. These forms were newly introduced in some areas and in others (eg parts of east Kent including White Horse Stone and Beechbrook Wood) were pre-existing forms that became more popular at this time.

The development and proliferation of these forms corresponded to an increase in the use of sandy fabrics, including distinctive glauconite rich

clays. Dating of features at the A2 has relied to some extent on the presence of body sherds in these sandy fabrics when, as was all too often the case, otherwise diagnostic sherds were lacking. A possible middle Iron Age presence at Site L, for example, was detectable in ceramic terms only by through the identification of a few glauconitic sandy body sherds found in pit 13052. A distribution exercise plotting concentrations of glauconitic sandy wares at the Site B settlement was not particularly fruitful, but a particular concentration was noted at the eastern edge of Site C in the area of briquetage-rich early-middle Iron Age pits.

However, the addition of shell temper and, less commonly flint, in potting clay recipes continued in varying degrees throughout the middle and late Iron Age in the region. Undecorated variants of the early Iron Age coarse shell- and/or flint-tempered storage and cooking jars were used alongside the finer, (mainly) sandy sinuous-profile jars and bowls. Two middle Iron Age pit assemblages from the A2/A282/M25 Improvement scheme mirror the trend towards increasing popularity of sandy and shelly fabrics at the expense of flint, together with an abandonment of fingertip decoration (Booth 2011, 113–6).

The most common forms representing the early to middle Iron Age transition and the developed middle Iron Age at the A2 are bowls and jars with everted rims and rounded bodies, producing S-shaped, sinuous or globular profiles. Many have low pedestal or footring bases, some with burnished crosses on the underside. The crosses were sometimes applied with a shallow tool, as in the case of base fragments that were probably residual in late Iron Age ditch 7989 (Fig. 3.62, 400821), but were applied as burnished strips on an example from Pit 4176 (400199 not illustrated) and another from Pit 3968 Site B (400370 not illustrated). Such footring bases with burnished crosses on the underside are known from other sites in West Kent, at Oldbury (Ward Perkins 1944), Greenhithe (Detsicas 1966) and at Farningham Hill (Couldrey 1984, fig. 15, no. 15). In Essex such crosses are believed to include some dating back to the 3rd century BC (Couldrey 1984, 48).

Vessels with an emphasis on rounded bodies, were particularly common at Site B (eg Fig. 3.57, 400070; Fig. 3.58, 400198) and were also present at Sites C and D (eg Fig. 3.58, 5000034 and 64830001). They are often well-smoothed or burnished, but rarely decorated. Curvilinear tooling of the Mucking-Oldbury style (Brown 1991) was identified on a glauconitic sandy ware sherd (Fig. 3.58, 63760001) from ditch 6375 on Site D, the only example of this decorative technique from the site.

A complete undecorated saucepan pot recovered from close to the base of pit 3662/3676 in Site B was a somewhat squat example in sandy flint-tempered ware (Fig. 3.57, 400186). Rim fragments less confidently attributed to saucepan pots were recovered from pit 4606 (400912, fabric S7) and pit 4969 (400912, fabric G52) in Site B and from Ditch 7428 (Group 5335) in Site C (5000551, fabric S2). None of these vessels, including the complete example, corresponds to the tradition of well-finished 'early/middle' Iron Age saucepan pots identified at Cuxton, White Horse Stone and Beechbrook Wood in flint or quartz sand tempered fabrics (Morris 2006). The complete A2 example may be a coarse imitation of the finer saucepan pots being produced in Hampshire, Sussex and Surrey during the later middle and late Iron Age and the others could represent a 'proto-saucepan' tradition or other open vessel form, although the potin coins from pits 4606 and 4969, and the grog-tempered rim from the latter, also support a later middle–late Iron Age date. West of the Darent Valley a crudely made saucepan pot in shelly ware was found in pit 6 at Farningham Hill (Couldrey 1984, fig. 15, 28); a flint-tempered example was found at Bigberry in east Kent (Thompson 1983, fig. 10, 37). The evidence overall suggests that the A2 saucepan pot candidates were generally of the crude imitation tradition dating well into the middle Iron Age, if not somewhat later. This corresponds to the general impression that saucepan pots *per se* remain rare in west Kent tradition during the early and middle Iron Age.

The middle Iron Age pottery distribution at the A2 site was largely confined to an extensive settlement that developed either side of cobbled trackway 7980 at Site B and the western edge of Site C. On the western side of the trackway a banjo enclosure (4518), large circular enclosure (4617) and a smaller curvilinear enclosure (3966) were situated amongst a rather sparse scatter of contemporary pits. These features produced relatively small assemblages of pottery but could be confidently dated to the middle Iron Age on the basis of a few distinctive sherds. The banjo ditch produced a globular shell-tempered jar associated with glauconitic sandy sherds, and two glauconitic sandy sherds were recovered from ditch 3966. Enclosure 4617 was reconfigured over some duration but the sequence of recuts includes a few middle Iron Age sherds that allow the whole to be placed within a period that coincided at least at one point with the existence of the banjo enclosure. Some minor outliers of middle Iron Age activity were represented by pottery of that date in Site A (Feature 3211), Site D (ditch 6944/6945) and Site L (Pit 13052).

Curvilinear tooling of the Muckng-Oldbury style (Brown 1991) is one of few middle Iron Age decorative motifs known in Kent. An example in glauconitic sandy ware (PRN 63760001) was found in ditch 6375 on Site D.

Middle Iron Age Key Groups

Enclosure 3965/3966 Site B (Fig. 3.57)

400089 (4034) Jar with everted rim and narrow flat base. Fabric S12, smoothed.

400100 (4742) S-profile jar. Fabric Sa42, burnished.

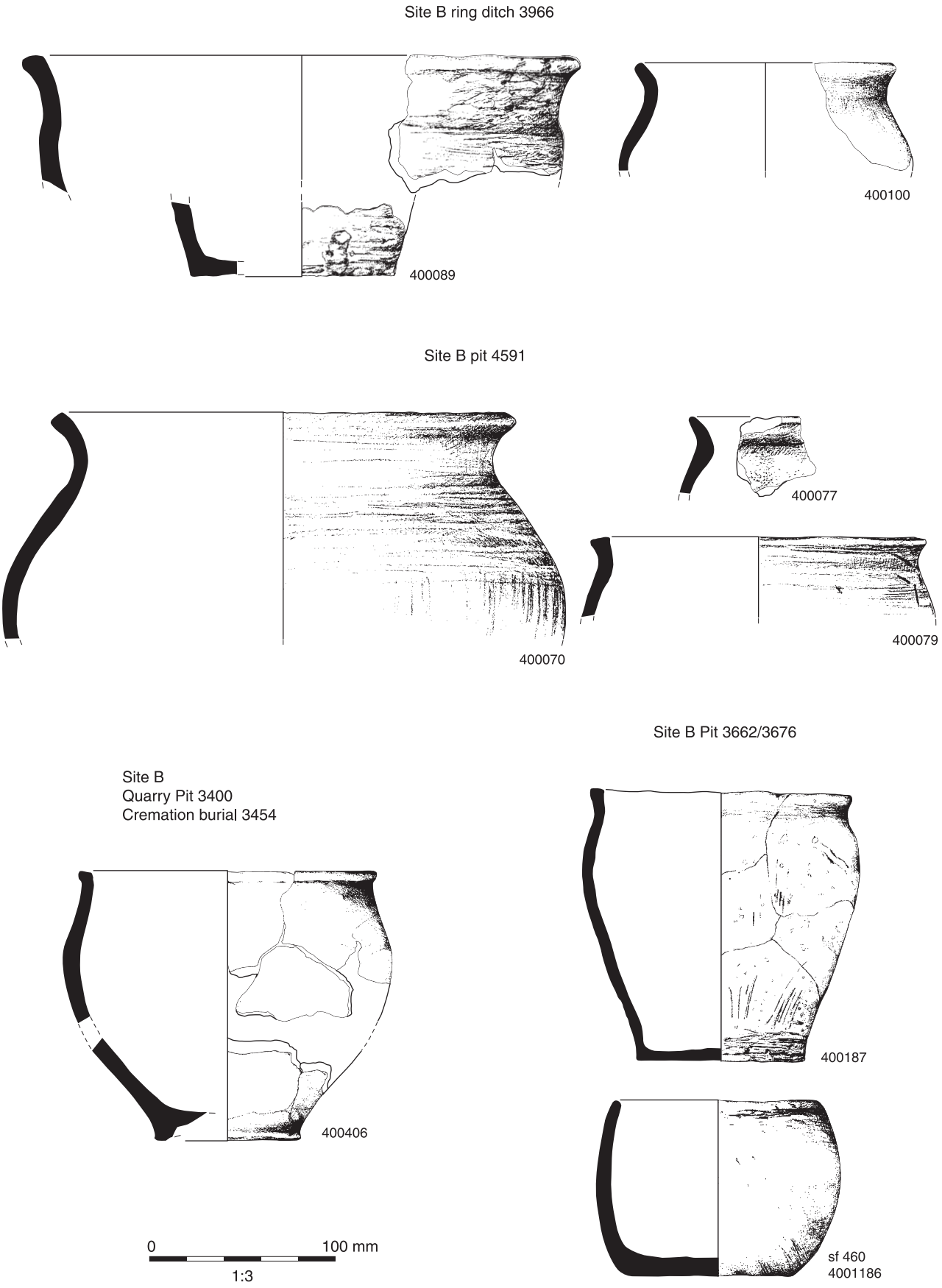


Fig. 3.57 Middle Iron Age ditch group B-3966, pits B-4591, B-3662/3676 and cremation B-3454

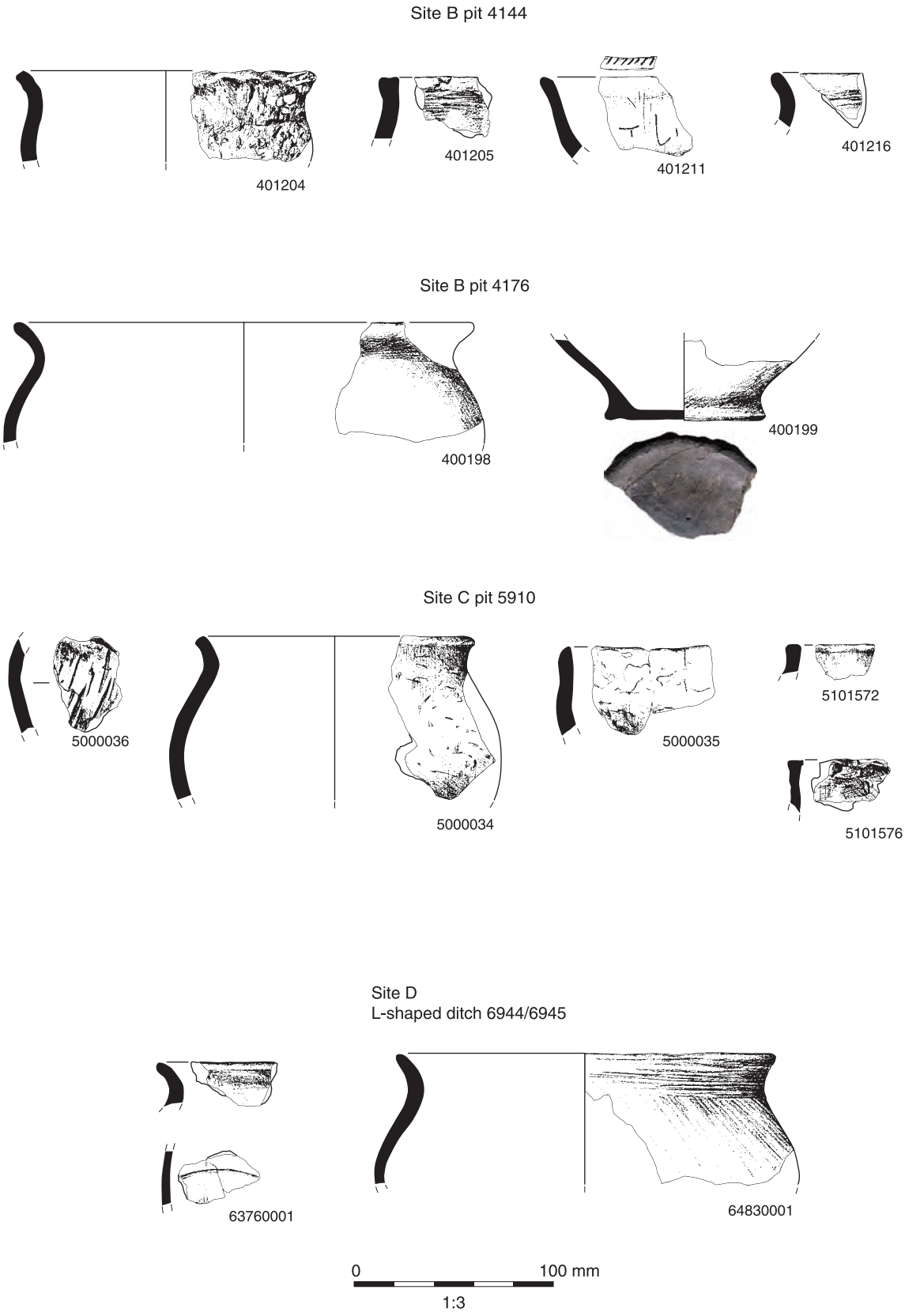


Fig. 3.58 Middle Iron Age pits groups B-4144, B-4176, C-5910 and ditch group D-6944/6945

Pit 4591 Site B (Fig. 3.57)
400070 (4593) S-profile jar. Fabric Sa42, burnished.
400077 (4594) Everted rim bowl or jar. Fabric Sa42, burnished.
400079 (4594) Slack-shouldered jar with flat-topped rim. Fabric Sa42, roughly burnished.

Quarry Pit 3400 and Cremation burial 3454 Site B (Fig. 3.57)
400406 (3454) Rounded profile jar with proto bead rim and footring base. Fabric FS134, smoothed.

Pit 3662/3676 Site B (Fig. 3.57)
400187 (3681) Near complete jar with upright, flat-topped rim. Fabric S7.
400186 (3678) SF460 Complete mini saucepan pot. Fabric FS126, burnished. Ctx 3678.

Pit 4144 Site B (Fig. 3.58)
401204 (4796) Bowl with everted, roughly finished rim. Fabric S12, wiped.
401205 (4796) Upright, flat-topped rim. Fabric S12, slurried surface.
401211 (4796) Flat-topped bowl with hatched-decorated rim. Fabric Sa95, smoothed.
401216 (4796) Everted bowl or jar rim. Fabric Sa82, burnished.

Pit 4176 Site B (Fig. 3.58)
400198 (4177) S-profile bowl. Sa5, burnished.
400199 (4177) Footring base with burnished cross on underside. Fabric Sa5, burnished. (see Farningham Hill Philp1984, fig 15, 15 3rd-1st C BC?).

Ditch 5910 Site C (Fig. 3.58)
5000036 cut 5044 (5042) Body sherd with scored surface. Fabric FOR1. Early Iron Age.
5000034 cut 5044 (5042) Everted rim jar. Fabric FO4, burnished.
5000035 cut 7530 (7529) Simple upright rim of carinated bowl. Fabric FOR. Early Iron Age.
5101572 cut 7530 (7529) Upright flat-topped rim. Fabric SS12, burnished.
5101576 cut 7530 (7529) Upright, inwardly expanded rim. Fabric S5. Early Iron Age?

Site D (Fig. 3.58)
63760001 cut 6375 (6376) Everted rim jar or bowl with curvilinear decoration. Fabric Sa87, smoothed.
64830001 cut 6481 (6483) Everted rim jar. Fabric Sa52, burnished.

*Late Iron Age (*c *50 BC–AD 50)*

In the analysis of the latest prehistoric pottery from the HS1 sites, pottery belonging to a middle/late Iron Age transitional stage (*c* 200–50 BC), characterised by common use of grog tempering accompanying new forms (slack-profile jars, cordoned jars and bowls and bead-rim vessels) was distinguished from a late Iron Age period proper, which was included in the analysis of the Roman pottery (Booth 2006). Conversely, the A2 assemblage was divided for recording and discussion into late Iron Age and early Roman groups on the basis of the presence or absence of clearly identifiable post-conquest ceramic types. The 'late Iron Age' is, therefore, regarded as continuing up to the mid 1st century AD. In this scheme, it is recognised, nonetheless, that distinctive post-conquest pottery would in practice have been used in tandem with native wares which had a long currency spanning the final years of the 1st millennium BC and early part of the 1st millennium AD, and that an absence of post-conquest wares does not guarantee a pre-conquest date in any given deposit.

One of the best comparative assemblages for this period is that from the small late Iron Age farmstead at Farningham Hill on the River Darent. There the transition from the middle to late Iron Age pottery forms was placed at *c* 50 BC (Philp 1984), although in the light of more recent discoveries several authors have suggested a revision of the date back to the second century BC (eg Morris 2006). The assemblage at Farningham Hill includes footring bases with burnished crosses on the underside (eg Couldrey 1984, fig. 15, no. 15). These occur in both middle Iron Age and late Iron Age contexts at the A2, as at Farningham.

The transition from the middle to late Iron Age was characterised at the A2 site by changes in vessel forms and fabric preference (see *Fabrics* above). There is some evidence that the use of grog as an opening agent, sometimes in combination with shell, flint and varieties of sandy and/or glauconitic clays, was re-introduced into east Kent after the Bronze Age as early as the mid 2nd century BC, or possibly even earlier (Clark and Thompson 1989, 303; Blancquaert *et al.* 1998, 133) (see Hockers Lane and Little Stock Farm; Booth 2005). However, the main currency of later prehistoric grog-tempered pottery in west Kent, as elsewhere in southern Britain, was the late Iron Age. Therefore, in the absence of otherwise diagnostic pottery, Couldrey assigned a late Iron Age date to deposits containing grog-tempered sherds where otherwise only undiagnostic material was present. Thompson's seminal work on Kentish grog-tempered pottery (1982) includes the then known west Kentish assemblages, and provides some comparison for the A2 material.

New forms of the earlier part of the transition period (*c* 200–50 BC) included, in a variety of fabrics, barrel-shaped jars with bead-rims. These were probably derivatives of the rounded, convex jar profiles that developed during the middle Iron Age, but during the late Iron Age they were generally produced in sandy or flint-tempered fabrics (Morris 2006). Necked bowls and jars, often with cordons at the base of the neck and/or shoulder, also emerged during this period and there was more extensive use of combing, which is a different technique to the early Iron Age rusticated effect. Combing, thought to be an early trait of the late Iron Age in the region, was a device applied to both grog-tempered and other wares, as exemplified by a flint-tempered bowl from ditch 5827 in Site C (Fig. 3.63, 5100427).

As late Iron Age ceramic stylistic development progressed towards the immediate pre-conquest period, the use of grog-tempered potting clays

increased and the range of forms expanded to include 'Belgic' influenced forms. A notable trend was the proliferation of new tablewares, including cordoned bowls, carinated cups, narrow-neck jars, platters and, mostly in funerary contexts at the A2, elongated, graceful urns with pedestal or 'quoit-shaped' bases, copying north-east Gallic forms. These are probably best regarded as vessels associated with particular forms of social drinking (Hill, in Woodward and Hill 2002, 148). A number of these urns showed clear evidence of manufacturing technique in the form of internal striations from wheel-throwing or finishing. Decorative and manufacturing techniques proliferated to include cordons, cordon and grooves, corrugation (in effect, multiple cordons), burnished finishes and/or decoration (linear and lattice motifs). The adoption of a prolific range of vessels for presenting food on the table signifies a development in food preparation and serving, away from the 'stew pot' tradition of the middle Iron Age towards a more complex, and probably more differentiated approach to cooking and eating. A revised attitude to food preparation and consumption has implications for the wider issues of the social organisation and functioning of the A2 settlement/s and their inhabitants, and also suggests a growing trend for specialisation of the potters' craft.

The distribution of late Iron Age pottery at the A2 was largely concentrated on the settlement area in Site B and C, particularly in the western part of the settlement in Site B, where late Iron Age pottery was found in funerary (burials 4298 and 4312) as well as domestic contexts—mostly enclosure ditches and pits. However, there were small numbers of features containing such material elsewhere on the site. Pit 3014 (3013) on Site A produced a shattered grog-tempered vessel with grooved and cordoned decoration in the 'Belgic' tradition. On Site D pit 6879 produced a straight wall platter in grog-tempered ware of Thompson Type G1-11, which straddles the conquest period. Similar vessels have been recorded in Kent at Oldbury, Canterbury, Swarling and Kennington (Thompson 1982, 471).

A group of enclosure ditches on Site Pond D North produced nearly 500 (3796g) sherds of pottery that would have originated from a late Iron Age or early Roman farmstead in the vicinity. A high proportion of this material is grog-tempered, although flint-tempered and sandy wares are also present (see Table 3.7). The latest material in this group probably dates to the early part of the 1st century AD, although one or two vessels resemble types that Thompson has placed later, straddling the conquest (Type 3–9, 1982, 179). These include a cordoned neck jar (19327001) from ditch 19346. A carinated bowl of Thompson type E1-2 in grog and quartz tempered ware (19213001) came from ditch 19258, whilst ditch 19346 produced a grog-tempered bead-rim storage jar with a band of herringbone decoration (19017002). The decoration on this particular sherd closely resembles that on a storage jar from shallow pit 17 at Farningham Hill, where it was dated to the late Iron Age (Couldrey 1984, fig. 1, 88). The same ditch produced grog-tempered everted rim jars with cordons at base of neck, a type also parallelled in the late Iron Age at Farningham (Couldrey 1984). Associated with these vessels were a sherd with vertical combed decoration and a small fragment of Terra Rubra (ctx 19024), which dates after *c* 15 BC.

There was very little evidence for late Iron Age activity within the Site G settlement area, which had flourished during the early Iron Age. A few scraps of grog-tempered pottery, including a typical late Iron Age cordoned sherd, were present in fill 9018 of early Iron Age pit 9010. The evidence from the adjacent Tollgate site suggests that occupation of this area was re-established only after the mid-1st century AD (Booth 2006, 138).

Late Iron Age Key Groups

Pit 4023 Site B (Fig. 3.59)
400436 (4021) Bowl with simple rim. Fabric G54, wiped.
400442 (4021) Bowl/jar with short out-turned rim. Fabric Sa58, burnished.
400472 (4021) Everted rim. Fabric G45, smoothed.
400424 (4021) Storage jar with herringbone decoration on shoulder. Fabric G55, smoothed.
400485 (4021) Carinated bowl. Fabric G3, smoothed.
400423 (4021) Quoit-shaped pedestal base. Fabric G55, burnished.
400429 (4021) Combed basal sherd. Fabric S7.
400439 (4021) Footring base. Fabric G46, smoothed.
400673 (4022) Base of combed jar. Fabric G45.
400552 (4022) Sherds with burnished lattice decoration. Fabric Sa62.
400655 (4022) Fragment of a possible girth beaker with incised diagonal linear decoration. Fabric S7, wiped.
400540 (4022) Large storage jar with squared bead rim. Fabric S7, slurried surface.
400560 (4022) Straight-walled cordoned sherd with fine combing. Possibly a girth beaker. Fabric G46.
400551 (4022) Round-shouldered jar with lightly combed surface. Fabric 54.
400558 (4022) Narrow-neck jar with cordoned shoulder (Thompson B2-4). Fabric G45, burnished.
400661 (4022) Jar with flattened, inturned rim. Fabric SS16, smoothed.
400539 (4022) Large jar with flattened bead rim. Fabric S7, wiped.

Pit 4969 Site B (Fig. 3.60)
400912 (4977) Saucepan-type pot with inturned, crudely shaped rim. Fabric G52.
400911 (4976) S-profle bowl. Fabric FS134, burnished.
400889 (4975) Everted rim jar. Fabric SS15, burnished.
400890 (4975) Everted rim jar with cordoned neck. Fabric G58, burnished.
400891 (4975) Flat base with vertical coming. Fabric G96.
400893 (4975) Plain rim with combing below. Fabric G43.
400903 (4975) Plain internally thickened rim, horizontal combing below. Fabric S7.
400906 (4975) Combed body sherd. Fabric G29.
408888 (4973) SF455 Cordoned, pedestal bowl/cup (Thompson type E1). Fabric G33.
400885 (4970) S-profile bowl with footring base. Fabric Sa56, burnished.

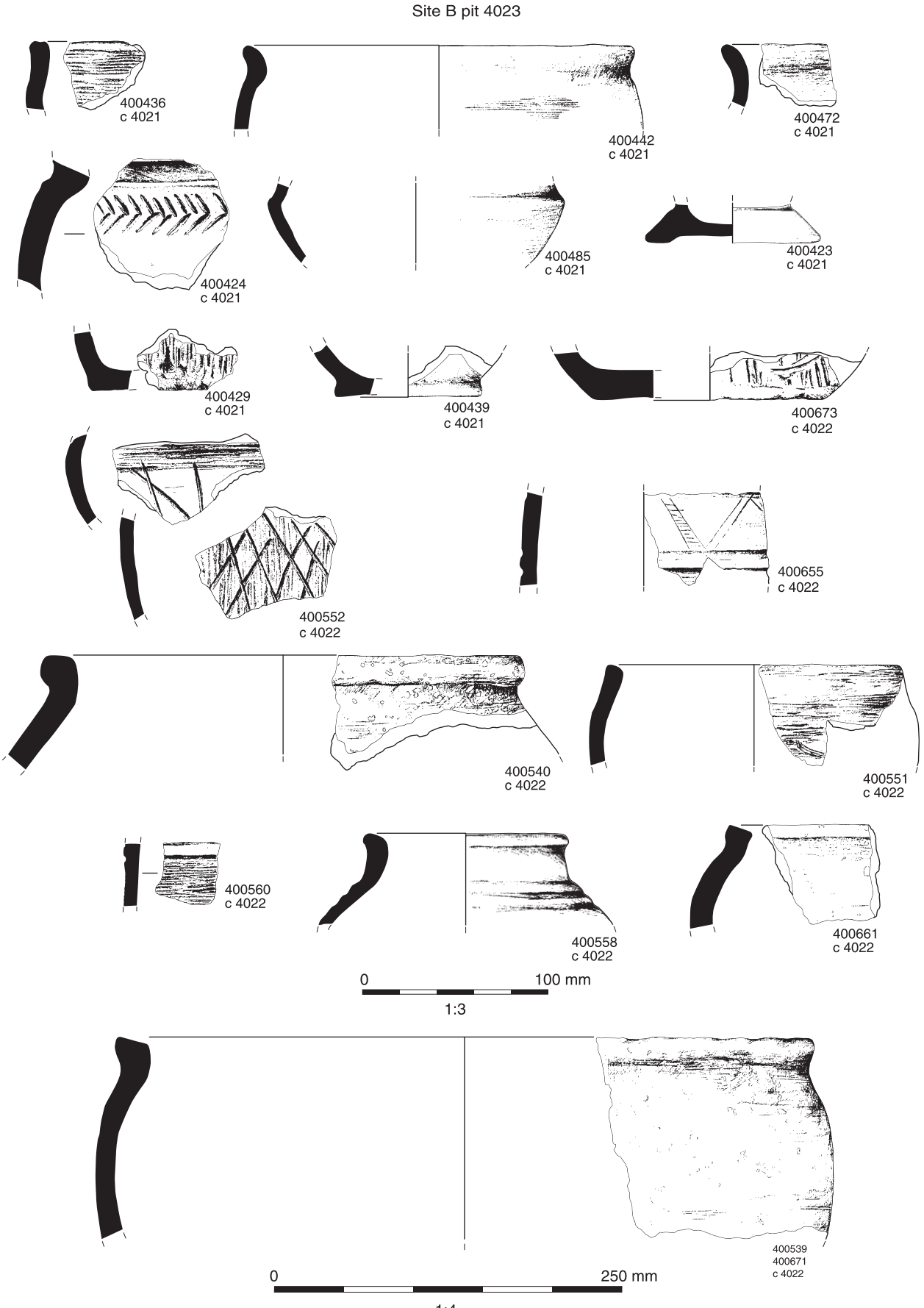


Fig. 3.59 Late Iron Age pit group B-4023

400880 (3401) Storage jar rim. Fabric S7.
400884 (3401) Jar with incurving, bevelled rim. Fabric S7, wiped.

Enclosure 4779/3963 Site B (Fig. 3.61)
400120 Ditch 4779 (4758) Bead rim jar. Fabric S12, smoothed.
400696 Ditch 3963 (4027) Narrow-neck jar with groove at neck base. Fabric G41, burnished.
400699 Ditch 3963 (4027) Storage jar with squared rim. Fabric G68, burnished.
400700 Ditch 3963 (4027) Cordoned bowl. Thompson type D1-1 (1982, 299). Fabric G43, burnished.
400701 Ditch 3963 (4027) Necked jar/bowl with linear burnished decoration on neck. Fabric G43, burnished.
400716 Ditch 3963 (4027) Rounded jar with bead rim. Thompson type C1-2 (1982, 217). Fabric G45, smoothed.
400733 Ditch 3963 (4027) Quoit-shaped base belonging to pedestal urn. Thompson type A1. Fabric G72, burnished.

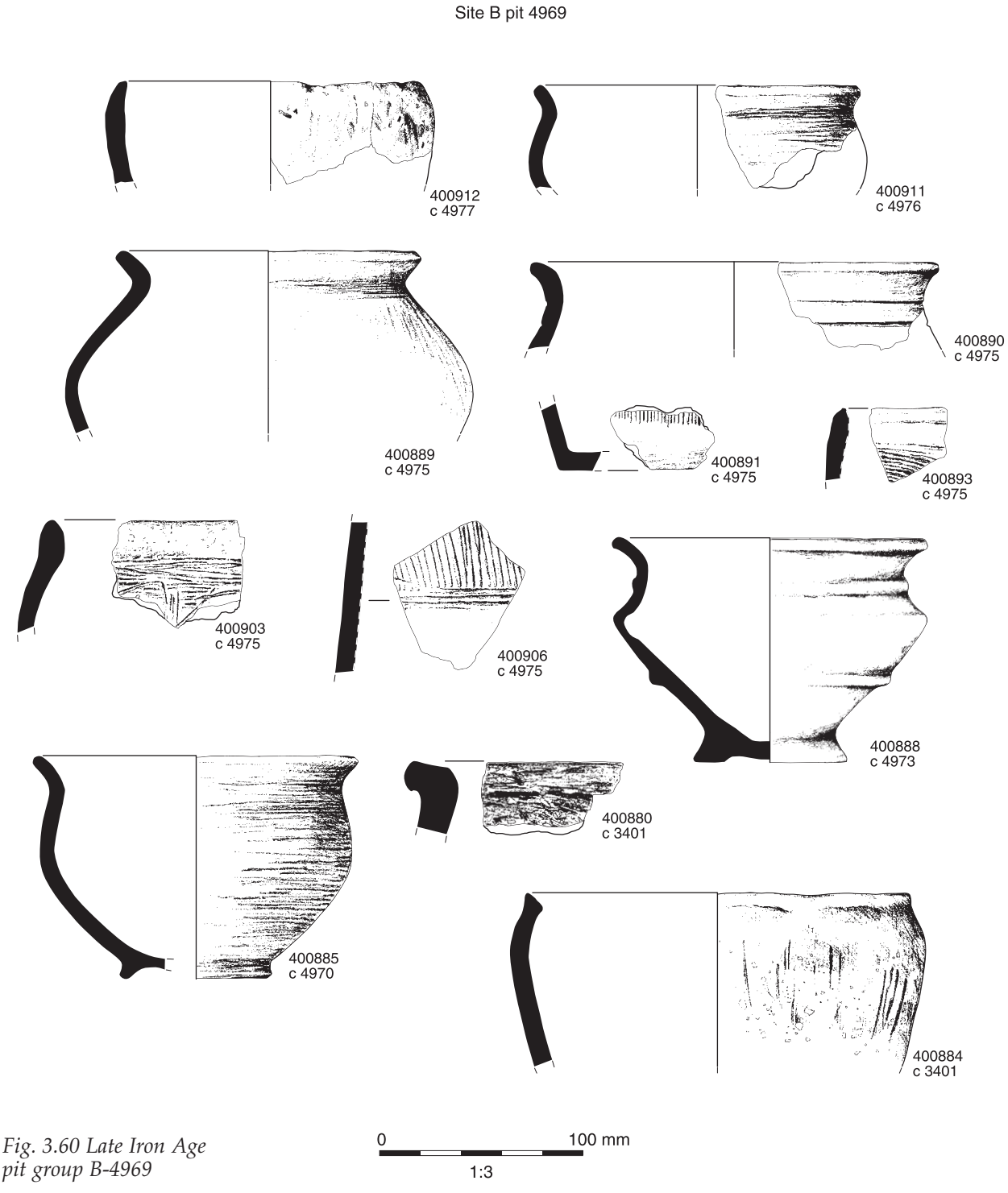


Fig. 3.60 Late Iron Age pit group B-4969

Ditch 4744 Site B (Fig. 3.61)
401495 (4556) Cordoned cup/bowl. Fabric G103, smoothed.
401296 (4556) Cordoned cup/bowl. Fabric G92, burnished.
401290 (4052) Concave base. Fabric G80, wiped.

Ditch 7993 Site B (Fig. 3.62)
400006 (4097) Ovoid bowl with simple out-turned rim. Fabric G20, smoothed.
400009 (4097) Roughly combed body sherd. Fabric G10.

Ditch 7989 (Fig. 3.62)
400821 (3959) Low pedestal base with incised cross on underside. Fabric Sa52, high burnish.
400826 (7739) SF 479 Shouldered bowl with sharply out-turned elongated bead rim and pedestal base. Fabric FS135
400830 (7782) SF80 Bowl with burnished lattice decoration. Fabric G86, smoothed.

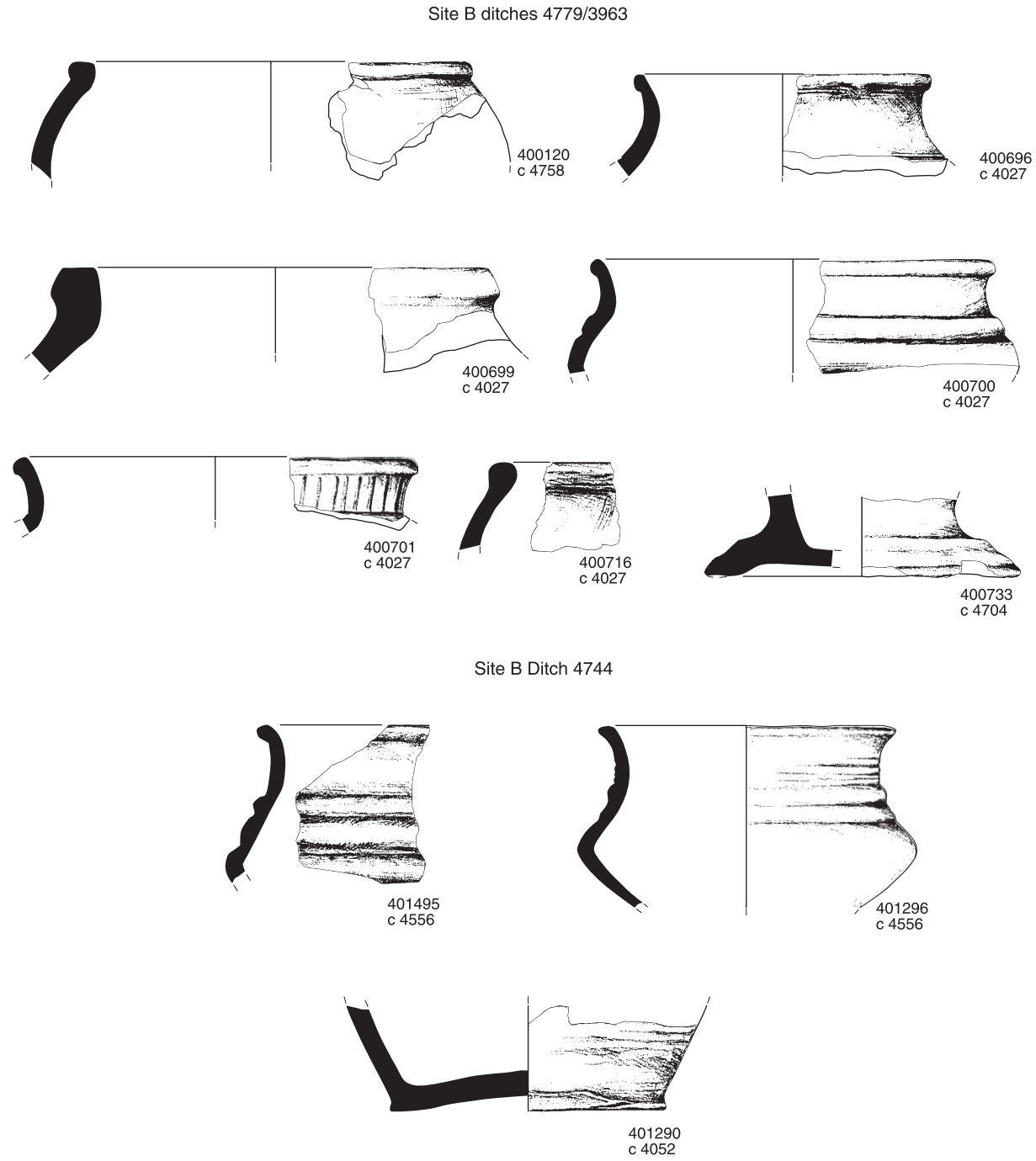


Fig. 3.61 Late Iron Age ditch groups B-4779/3963 and B-4744

Pit 5076 Site C (Fig. 3.63)
5000137 (5078) Base of large jar with vertical combed decoration. Fabric G10.
5000140 (5078) Upright, recessed rim. Fabric FG5.
5000138 (5078) Jar sherd with combed spiral decoration. Fabric G11.
5000139 (5078) Combed sherd. Fabric S3.
5000147 (5078) Combed jar sherd. Fabric G10.
5000152 (5107) Small jar/bowl with out-turned rim. Fabric G5.

Ditch 5827 Site C (Fig. 3.63)
5100422 (5672) Shouldered bowl. Fabric S13.
5100424 (5672) Base of a strainer with pre-firing perforations. Fabric S13.
5100427 (5676) Bowl with vertical and horizontal combing. Fabric F5.

Pond D North (Fig. 3.64)
19327001 Ditch 19246 [19329] (19327) Narrow neck cordoned jar. Fabric G120, smoothed.
19024002 Ditch 19346 [19018] (19024) Large bead-rim storage jar rim. Fabric S12.
19337001 Ditch 19346 [19329] (19337) SF1950 S-profile jar with developed everted rim. Fabric G56.
19017002 Ditch 19246 [19018] (19017) Storage jar with

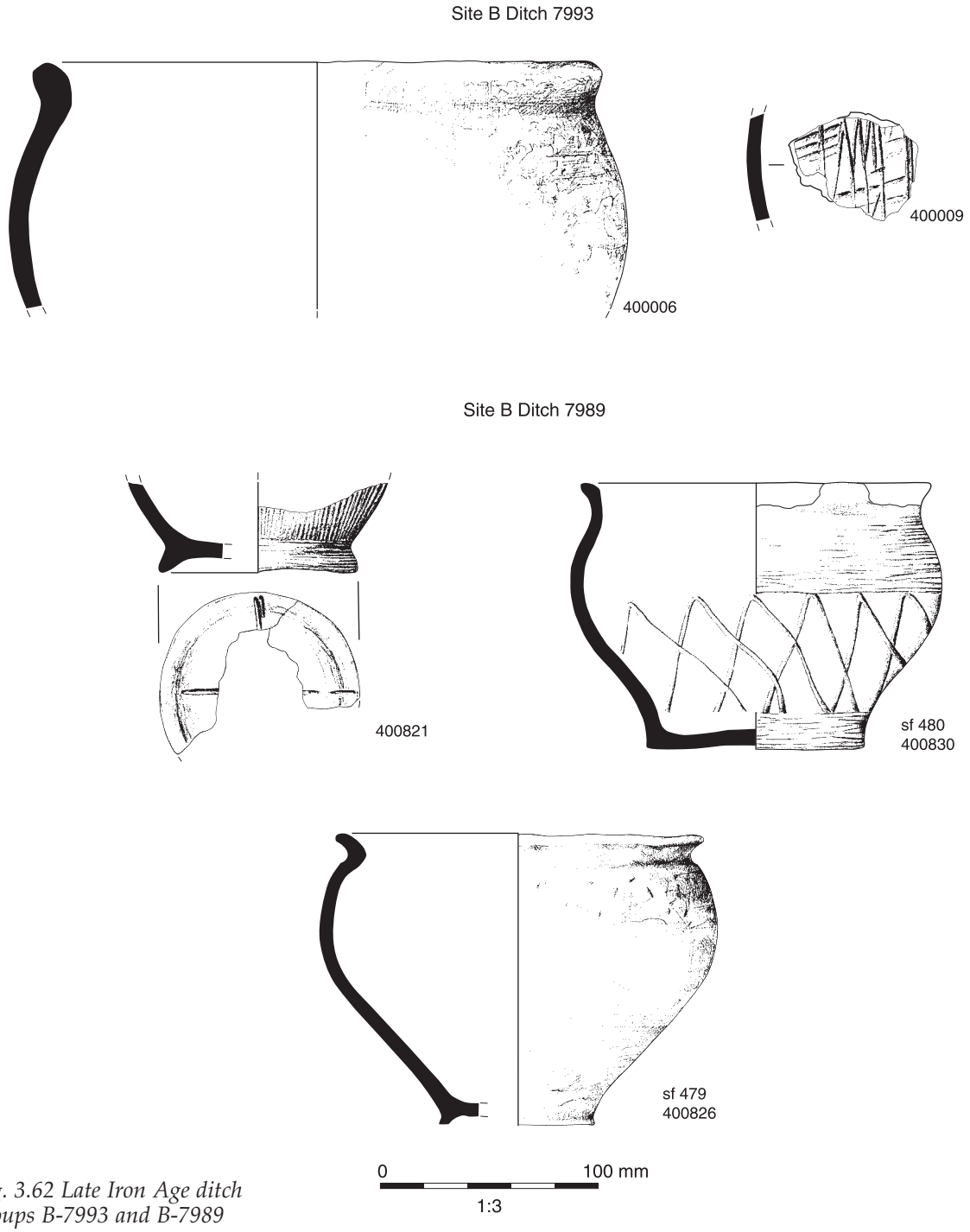


Fig. 3.62 Late Iron Age ditch groups B-7993 and B-7989

herringbone pattern. Fabric G118.
19335001 Ditch 19345 [19336] (19335) Plain upright rim (saucepan pot ?). Fabric G129.
19087003 Ditch 19258 [19088] (19087) Footring base. Fabric G128, burnished.
19087004 Ditch 19258 [19088] (19087) Necked jar rim. Fabric G128, smoothed.
19087005 Ditch [19088] (19087) Flat base (?perforated). Fabric G128.
19213001 Ditch 19258 [19088] (19213) SF1956 Bowl with cordoned neck and burnished linear decoration (Thompson E1-2). Fabric G125.
19064001 Ditch 19063 (19064) Large bead-rim storage jar. Fabric SS34.
19120005 (19120) Everted rim with perforation. Fabric G.
19025002 Pit 19022 (19023) Everted rim bowl. Fabric FSS20, smoothed.
19325003 Feature 19326 (19325) Flattened bead rim. Fabric G56.

Discussion

The use, deposition and disposal of pottery at the A2 represented a continuation of social and cultural processes that unfolded within this area of north-west Kent from the late Neolithic period. The later prehistoric pottery assemblage testifies to activity that extended along this *c* 2.5km stretch of landscape between the late Bronze Age and the emergence of Roman administrative power in Britain.

Ceramic evidence for the late Bronze Age is sparse, but taken together with pottery from the proximate Tollgate site and the nearby sites of West of Northumberland Bottom and Cobham Golf Course (Morris 2006), the general vicinity certainly saw some level of occupation during that period. All the broadly defined Iron Age periods are represented by pottery assemblages of various sizes, but

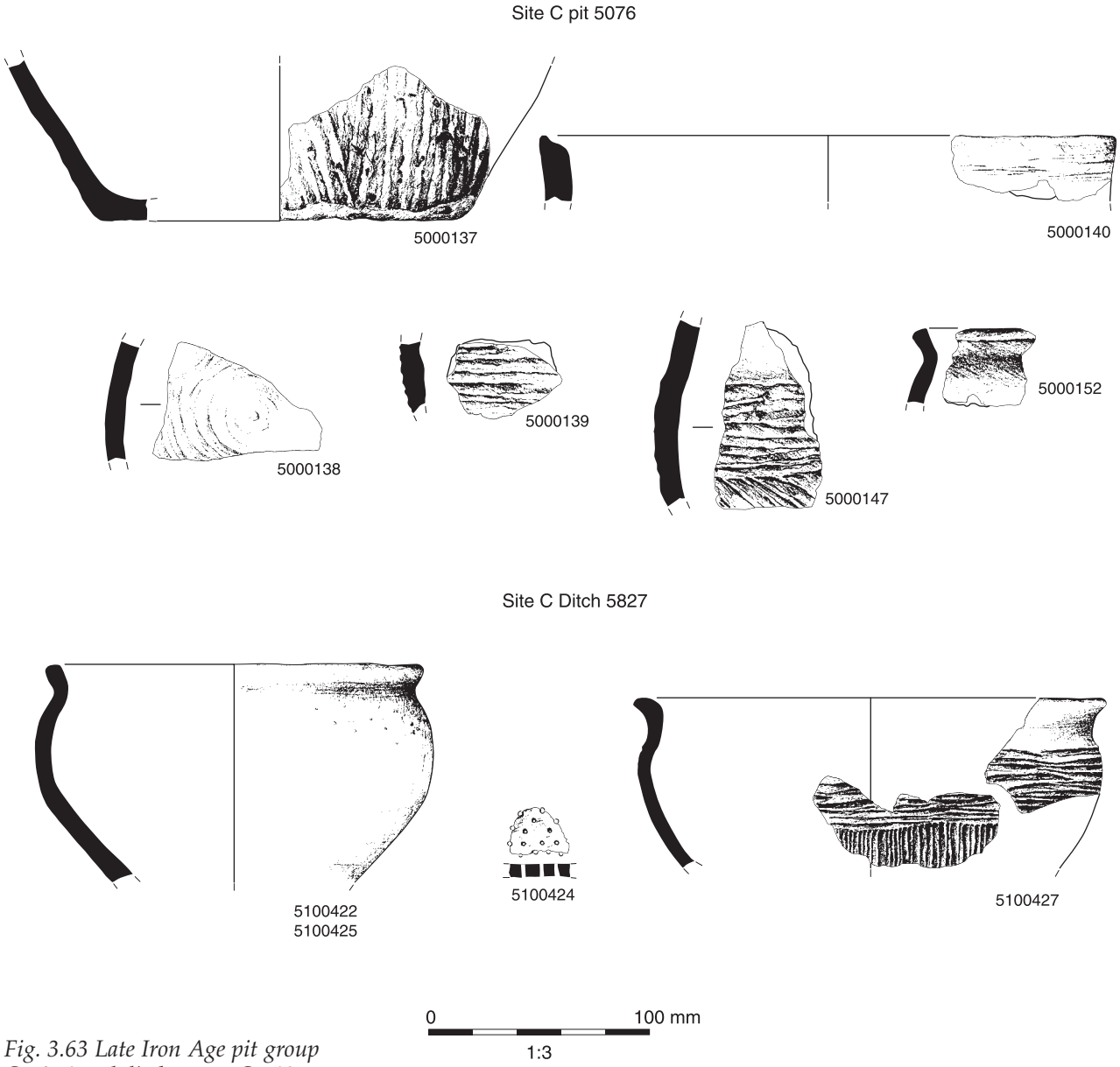


Fig. 3.63 Late Iron Age pit group C-5076 and ditch group C-5827

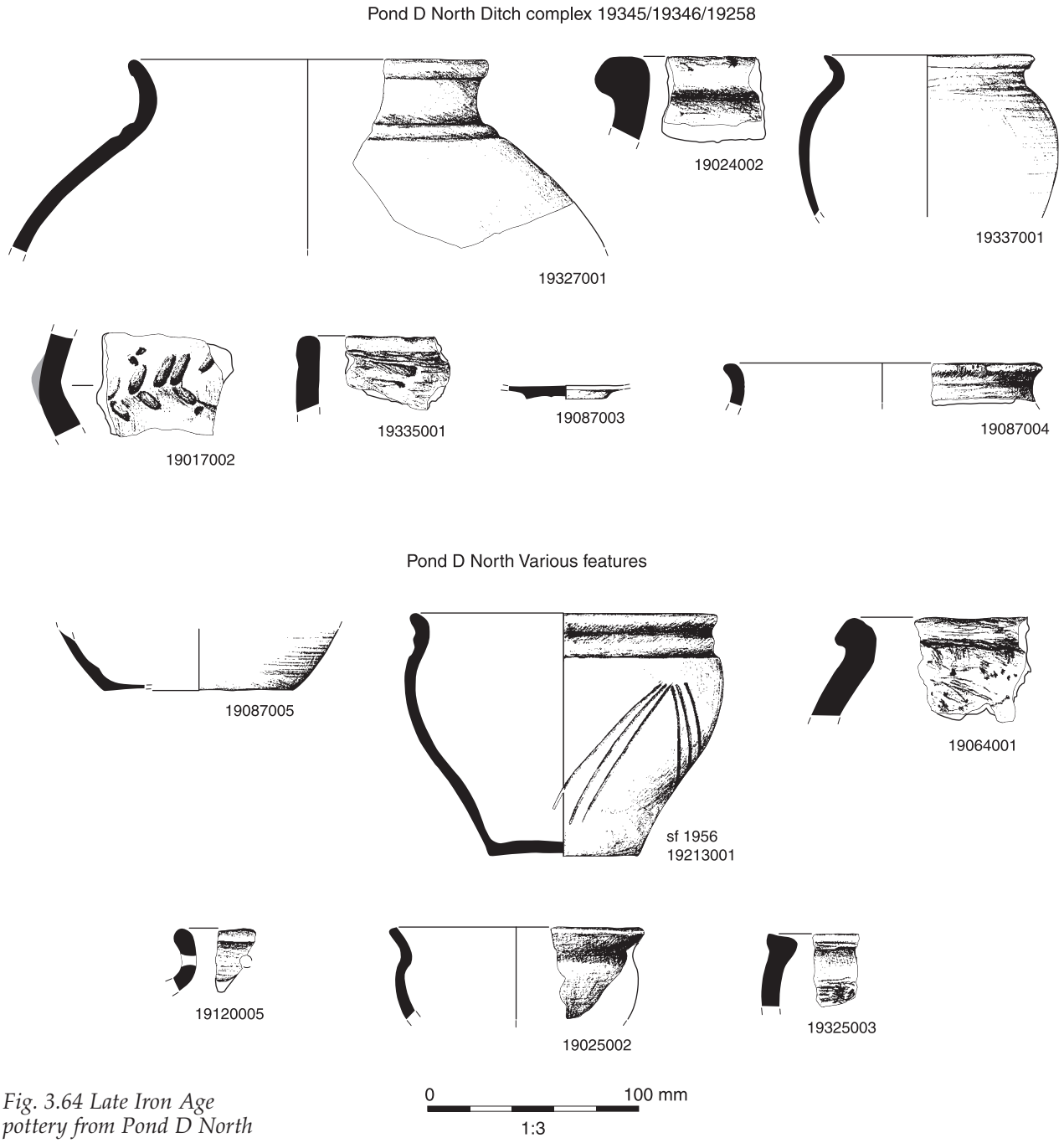


Fig. 3.64 Late Iron Age pottery from Pond D North

the case for continuous occupation *per se* for the duration of the Iron Age remains somewhat uncertain. The period best represented by the pottery is the early Iron Age, dated on the evidence from this excavation to *c* 600–350 BC. In some parts of the site, early Iron Age occupation emerged from pre-existing settlements and, in others, it progressed apparently seamlessly to agricultural developments of the Roman period.

Earliest Iron Age

In the absence of significant numbers of absolute dates associated with earliest Iron Age pottery, the construction of a chronological framework for this period relied to some extent on the limited stratigraphic evidence, but mostly on a few period-specific ceramic indicators that mark this transitional period between the late Bronze Age and early Iron Age. The pottery provided evidence of activity dating to *c* 900 BC to 600 cal BC at three sites along the line of the excavated area—Sites L, B/C and G. There was no indication of very intensive occupation at any of these locations. Only four radiocarbon results potentially fall within this date range. One of 760–390 cal BC (NZA 32280) was from an aceramic posthole in Site B. Another, of 1130–990

cal BC (NZA 32400), was from the uppermost fill of ditch 5912 in Site C, providing only a *terminus post quem* for the final filling and for the otherwise undistinguished group of flint-tempered body sherds it incorporated. Two dates were obtained from sooting on pottery from the HS1 excavation of pits in Site G, one of 850–760 cal BC (NZA-22880) from pit 9054 (HS1 pit 374), which clearly belongs in this period, the other of 760–380 cal BC (NZA 22866) from pit 9012 (HS1 pit 387). The associated diagnostic pottery included bowls decorated with shallow horizontal grooves, which have parallels at Saltwood Tunnel (Morris 2006), the A2/A282/M25 Improvement Scheme at Dartford (Booth 2011) and Highstead (Couldrey 2007).

Most of the earliest Iron Age pottery was recovered from shallow pits on Sites L, B and G and from a small number of postholes on Site B/C, some of which relate to structures 5444 and 7281. Relevant diagnostic features of this early assemblage include a proliferation of small-capacity vessels, such as the fine, thin-walled bowls found on all three sites. The fabrics of associated coarsewares invariably included flint or flint and shell in varying combinations, but these fabrics and the forms and decorative traits associated with them had a long currency—well into the later part of the early Iron Age—and so could not signify a precise date in the absence of other classifiable traits.

Early Iron Age

The most intensive later prehistoric activity dated to the early Iron Age but the absolute dates fall within the range *c* 500–350 BC, at the transition with the middle Iron Age, and most of them within the latter part of this range, *c* 400 BC and later. It is unclear whether the period between 600 BC and 400 BC is represented within the A2 assemblage, because even the radiocarbon dated groups could stylistically fall anywhere within the broader chronological range. However, one of the dates obtained from pit 156 at the adjacent HS1 excavations at West of Northumberland Bottom was 800–420 cal BC, with a 93% chance that the date lay between 800 and 510 cal BC.

Two major early Iron Age settlement foci were identified at the A2, on Sites C and Site G East. At the western end of the site a pit on Site K and two on Site L also produced important assemblages, which were quite diverse in character. A radiocarbon date of 410–230 cal BC (NZA 32308) was obtained from material on the base of pit 12527 (Site L), narrowing the date that the primary use of this feature ended. Thereafter it was initially backfilled with material that incorporated an unusual collection of jars (unique to the site) and, subsequently a set of fineware carinated bowls. Although a 4th century BC date seems stylistically somewhat late for these vessels, use and deposition may have occurred during the earliest part of this century.

The main early Iron Age settlement exposed on Site B/C produced a suite of radiocarbon dates that also placed the deposition of two important pit assemblages at or about the 4th century BC. The middle fill of pit 5110, dated to 510–360 cal BC (NZA 32315), contained fragments of a large fingertip decorated jar that had been distorted by intense heat from industrial activity. Pit 5130 produced a later radiocarbon date of 410–230 cal BC (NZA 32314) from a fill post-dating a deliberate deposit that included a pot base with protruding flint grits, typical of early Iron Age assemblages in Kent.

The two very close radiocarbon determinations (400–350 cal BC (71.6%; NZA 32401) and 405–365 cal BC (NZA 32405)) obtained on fragments of human bone from pit 9010 on Site G provide a date range for a deposition event that involved the burial of an impressive collection of vessels that might have been used in a feasting ceremony, discussed below. The basal fill of a smaller feature in this Site G group, pit 9052, gave a date of 405–365 cal BC (NZA 32406), providing a chronological context for fingertip-impressed jars and a rusticated sherd and indicating that the backfilling of this pit was broadly contemporary with that of 9010.

Middle Iron Age

The ceramic evidence for middle Iron Age activity continuing unbroken at the site is fairly compelling, but nucleation of the settlement within Site B/C during this time indicates some level of rationalisation of the occupied landscape, with only a minor middle Iron Age ceramic signature at Sites L and G. Two burials on Site L, radiocarbon dated to 400–200 cal BC (NZA 30150, NZA 30161), produced no pottery.

An inhumation burial (5129, grave 5064) inserted into the top fill of pit complex 5189 on Site C produced a radiocarbon date of 400–200 cal BC (NZA 30160). Whilst the grave and the underlying hollows produced only undiagnostic body sherds, the burial offers an indication of settlement date, as does a closely similar date of 380–190 cal BC (NZA 32316) from an aceramic posthole (5987) belonging to four-post structure 7316. To the west of trackway 7980 material from two other aceramic postholes, 7874 and 3806, gave radiocarbon dates of 380–200 (NZA 32311) and 360–110 cal BC (NZA 32306) respectively. These correspond well with the 380–200 cal BC (NZA 31265) date of a cremation burial in quarry pit 3400, which was accompanied by a rounded- profile jar with footring base of classic middle Iron Age form.

The combined radiocarbon and ceramic evidence from pit 4969, along with the basal deposit of a class J potin, suggests that this pit was filled entirely sometime after *c* 100 BC, perhaps mid 1st century BC, just at the ceramic transition from the middle to late Iron Age. A date of 170–40 cal BC (NZA 32399) was obtained on material from the basal deposit and a date of 400–160 cal BC (NZA 32281) from higher up the fill. The associated pottery assemblage included large fragments and near complete vessels of both middle and late Iron Age type.

A radiocarbon date of 210–40 cal BC (NZA 30118) was obtained from material in pit 3662/3676. The presence of another potin in the second fill points to a 1st century BC date for the filling of the pit, which involved the placement of a complete squat saucepan pot (400186; SF460) and other objects selected to accompany the coin. A complete slack-shouldered jar, which came from higher up in the pit, must have been in use relatively shortly before it was deposited. It serves as a useful indicator of the currency of this form, which could otherwise have been regarded as a 3rd or 2nd century BC (or even earlier) type on purely stylistic grounds.

Taken together, the association of potin coins with a number of middle Iron Age pottery assemblages, and with assemblages containing virtually complete vessels of both middle and late Iron Age type, strongly suggests that the currency of middle Iron Age forms continued at the A2 into the 1st century BC, and that the transition to late Iron Age types was later than 100 BC.

Late Iron Age

The settlement morphology and the ceramic sequence indicate that the late Iron Age activity immediately succeeded the middle Iron Age settlement at the A2. During the transition between the 1st millennium BC and 1st millennium AD there was a return to the Bronze Age practice of reuse (perhaps 'resurrection') of earlier vessel parts in directed activities of the late Iron Age occupants. These included special deposition of pots and other artefacts, behaviour which may have been a reflection of non-technical concepts involved in using grog as temper. No radiocarbon determinations were attempted for deposits that had distinctive late Iron Age pottery, as the ceramic typology is more precise than the broad range provided by radiocarbon dating.

Pottery sources and procurement

The range of pottery fabrics represented in the A2 assemblage is relatively restricted, despite numerous variations within broad fabric groups. Most of the raw materials could have been procured locally, within 1–5km from the site, but there was no direct evidence for on-site manufacture and firing. The few heat-affected, distorted sherds, such as the large fragments of an early Iron Age jar from pit 5110 (Fig. 3.49, 5000824), were probably products of re-firing during industrial activity within the settlement.

No definite exotic fabrics or components that may have originated outside of southeast Britain (or even Kent) were identified. However, because the geology of northern France is very similar to that of parts of Kent (Stead and Rigby 1999, 30), only extensive scientific analysis (not undertaken as part of this project) could rule out altogether the possibility that some vessels may have been imported to the site from the continent, or from more distant parts of southern Britain, during the Iron Age. The use of grog as a tempering agent, for example, was common in northern France during the middle to late Iron Age (Hurtrelle *et al.* 1990).

Just under 60% of the early and middle Iron Age assemblage contained some proportion of crushed flint, a material easily obtained from the Upper Chalk of the North Downs, on which the A2 site lies. High quality potting clays, including fossiliferous shelly varieties, could be procured within the Woolwich Beds and Reading Beds which outcrop within 5km from the site and along the Thames Estuary.

Only the glauconitic sands used to produce the major component of the middle Iron Age assemblage need be regarded as imports to the A2 settlement, in the sense of requiring organised transport to the site of either the raw materials or the finished products. The Upper Greensand and Gault deposits, located some *c* 10–15km to the south of the site, are the most likely source. These strata are accessible in west Kent along an east-west orientated outcrop that converges with the River Medway just south of its confluence with the Thames Estuary. The river forms the topographic and perhaps symbolic divide between east and west Kent, and there is growing evidence of pottery production centred on the Medway Valley (Jones 2009). The likelihood is that the well-finished, sinuous-profile bowls and jars with footring bases that best represent the exploitation of glauconitic clays during the middle Iron Age were brought to the site as finished vessels rather than being produced closer to the site from imported clay.

Bearing in mind the generally restricted appropriation of raw materials during most of the later prehistoric period at the A2, it could be argued that the settlements located along the route of the scheme were relatively insular during the earliest and early Iron Age, with only a moderate expansion of procurement during the middle Iron Age—a time when centralised production was emerging in many parts of Britain. By the later part of the late Iron Age the influence of 'Belgic' ceramic tradition was clearly making an impression, and the popularity of grog as an opening agent placed the settlements on a par with much of southern Britain during this period. Nonetheless, the ceramic intake included no certain examples of exotic vessels until about the time of the Roman conquest, when continental pottery became widely available.

Pottery and settlement at the A2 Sites

The A2 project area spanned *c* 2.5km, an area that could easily have accommodated several separate co-existing early Iron Age settlement nuclei. A comparison of the early Iron Age pottery, the most substantial ceramic group, from three settlement areas, focussing on Sites K/L, Site C and Site G/Tollgate, highlights some differences in the character of the pottery assemblages, which could, by extension, reveal something about the nature of settlement activity in the three areas.

Site K produced a small assemblage (127 sherds) of early Iron Age pottery incorporating only two

fabric groups—flint and flint/shell—the latter accounting for 95% of sherds. Of only seven sherds diagnostic of form three vessels bore fingertip or cabled decoration. If the adjacent Site L is regarded as part of the same settlement, the range of fabrics expands to include shell-tempered and sandy wares, but flint/shell remains the dominant fabric at 66% by count/76% by weight, with flint-tempered and shell-tempered fabrics taking a 15%/11% and 13%/11% share respectively and sandy fabrics representing only 6%/1% of the total. However, it is unclear precisely what proportion belong to early Iron Age vessels as most are body sherds. The most clearly identifiable forms on Site L were carinated bowls, jars with expanded upright flat tops and fingertip/nail decorated vessels, but most of the carinated bowls were recovered from the top fill of a single atypical pit (12527). The same pit produced a unique set of decorated jars. A few sherds of comb-decorated pottery were found in pit 10515 in Site K and pit 12572 in Site L, suggesting a common, contemporary potting tradition. One of these from Site K (Fig. 3.46, no. 1200225) was a bowl with a cabled rim, a feature of several vessels from the Site C settlement (see below). Overall, however, so few features were excavated on Sites K and L that it was difficult to gain an overview of the mainstream settlement activity in this area from the pottery, especially considering that one of the most prolific assemblages derived from a pit fill that testified to somewhat unusual behaviour.

The range of early Iron Age fabrics identified at the Site C settlement were similar to those of Site K/L, but the proportions slightly different, with flint/shell tempered wares dominating ata higher margin of 74%/80% of the total, shelly wares at only 8%/16% and flint-tempered at only 5%/3%. Whether this slight disparity is significant in terms of site function is hard to tell. Otherwise similar forms were present, with a total of 20 fingertip decorated vessels and four cabled rim bowls. An obvious disparity between the Site K/L and Site C assemblages is the evidence for industrial activity at Site C that included a crucible (pit 5066) and produced heat-affected sherds (eg pit 5110). A more notable difference is the absence at Site C of evidence for the deposition of complete or near complete pots and for 'sets' of pots of different sizes and functions occurring in the same feature.

Pit deposition of the type seen in pit 12527 on Site K/L was, however, identified in several pits on Site G/Tollgate, the best example being pit 9010/TLG414, where a set of large complete jars was associated with several small jar/beakers. Pits TLG 372 and 374 also contained large numbers of near complete vessel profiles. The fabric range and proportions again broadly resemble those of both Sites K/L and C in that flint/shell wares are dominant by far, but even more so here, at 92%/86%, with flint-tempered and shelly wares taking an even smaller share and most of this group belonging to one complete vessel (no. 9151002), and sandy fabrics present in negligible quantities. Numerous finger decorated vessels and cabled rim forms were present in the Site G assemblage, as was the case for the other two settlements, the much larger numbers of these forms here reflecting the large pit groups excavated.

Salt-affected sherds and/or briquetage were present in some quantity on both Sites C and G/TLG, evidence that salt production was one of the domestic activities that characterised these settlements. That only two possible salt-affected sherds were found on Site K/L may signify either a chronological lag, a difference in settlement activity or merely the small number of features explored on that site.

Common elements shared by the three settlement assemblages during the early Iron Age were a dominance of flint/shell fabrics progressing from the Bronze Age preference for mainly flint inclusions and an almost exclusive preference for fingertip/nail decoration (or cabling) at the expense of almost any other. These features could suggest that the settlements were broadly contemporary in that they shared a ceramic tradition. The presence of three rusticated sherds on each Sites C and G, and none at Site K/L, may merely be a product of the small size of the latter assemblage, but does provide a chronological and stylistic link between Sites C and G, especially considering this treatment is regarded as rare in west Kent generally.

Local and regional affinities

Excavated Iron Age sites of any date are still relatively uncommon in west Kent, but pottery assemblages from Farningham Hill, Darenth and Oldbury provide a basis for comparison with the A2 pottery. The ceramic evidence from the sites more recently excavated as part of the HS1 scheme, especially Tollgate, on which the A2 works impinged, and the nearby Northumberland Bottom, Cuxton and Cobham are especially relevant.

The A2 Site G settlement was a significant adjunct to the HS1 Tollgate site. At Tollgate, apart from a single pit containing late Bronze Age pottery, most of the later prehistoric pottery was of early/middle Iron Age date (in Morris' phasing scheme), recovered from three concentrations of pits. About a quarter of sherds belonged to briquetage containers and some of the pottery itself showed evidence of salt-related use (purple staining and residue). Two of the Tollgate pit groups (41023 and 41027) were re-exposed and further examined during the A2 excavations. In the A2 dating framework, the pits belonging to these groups (9010, 9012, 9053 and 9054) are classed as early Iron Age on stylistic grounds. Two radiocarbon dates of 405–365 cal BC (NZA 32405) and 400–230 cal BC (NZA 32401) from pit 9010 indicate that backfilling occurred towards the very end of the early Iron Age, but burnt residue on a sherd from pit 9012 (HS1 387) gave a date of 760–380 cal BC (NZA 22866). Whilst the radiocarbon date range permits these two pits to

be contemporary, the pottery assemblages are quite different in size and character. Pit 9012 incorporated decorated bowl fragments consistent with an earliest Iron Age date.

In considering the range of early Iron Age vessel sizes at Tollgate, Jones (2006) determined that a total of 35 vessels had measurable diameters ranging from 8 to 40cm. Of these, one was very small (<10cm diameter), nine small (10–18cm), 15 medium (20–28cm), nine large (30–38cm) and one very large (40cm +)—hence a clear dominance of medium sized vessels. A similar number of vessels (33) from pits 9010 and 9088 showed a somewhat different pattern of three very small vessels, 20 small vessels, eight medium, one large and one very large—a dominance of 20 small vessels, which is more common for the Iron Age. However, if the figures from both assemblages are combined, as they must be considering they derive from a single settlement, the overall bias is in favour of small vessels (29), with 23 medium sized-vessels, a result that conforms to early Iron Age sites generally.

Morris reported that the early/middle Iron Age pottery assemblage from Tollgate was dominated by salt-affected jars in a variety of shell-, flint- and shell and flint-tempered fabrics (Morris 2006, 40), and was associated with fragments of briquetage containers. Whilst several of the settlement G pits contained significant quantities of briquetage and other fired clay associated with salt production, salt-affected vessels that could otherwise be classed as domestic were not very common. Of the total Site G East assemblage, only 5% by count/11% by weight had evidence of contact with salt, in the form of purple/pink staining or cream coating. The affected fabrics were similar to the range identified at Tollgate but, apart from two jar bases, these sherds were undiagnostic of form. A few salt-affected sherds were also identified from the fills of pits 5066, 5130 and 5992 in Site C and the fills of ditches 4085, 4615, 7990, 7974, 7982 and 7988 in Site B. Unfortunately, none of this small group of sherds was distinctive of form. All were either in shell/flint fabrics of fine sandy wares and some of the latter fabric group may actually be briquetage rather than pottery.

Located some *c* 8km east of the A2 Site G settlement, the Cobham Golf Course site produced a relatively small middle and late Bronze Age pottery assemblage. The latest vessels were mostly flint-tempered plainware forms dated to the 9th century cal BC, and were associated with salt-production material, including briquetage containers, ceramic spacers and hearth or oven lining. The A2 excavations produced no pottery or settlement evidence that was definitely contemporary with the Cobham settlement, but the evidence for salt production during the early Iron Age at A2 Site G/HS1 Tollgate so close to Cobham strengthens the case for an early origin and continuing practice of salt production, with related domestic activity, along this strip of landscape at the base of the North Downs during the later prehistoric period.

At Cuxton, located some *c* 10km from the A2, a collection of pottery dated to the early/middle Iron Age was incorporated in the fill of one of three pits, with smaller quantities from postholes and two irregular features interpreted as treethrows (Morris 2006). The pit produced a radiocarbon date placing the contents in the 4th–3rd century BC and the pottery assemblage (and small quantity of briquetage) included an unusually wide range of fabrics making up the 50 individual vessels represented. Warped and burnt sherds indicated that some of the material had been heat-affected post-manufacture, possibly during a ritual event. The fabrics include glauconitic sandy wares and a number of rounded profile and burnished or smoothed vessels, alongside vessels that would traditionally be dated to the early Iron Age, such as a red-finished bowl and fingertipped jars. A footring base with burnished cross on the underside (Morris 2006, fig. 3.8b CUX/10) resembles those found in both middle and late Iron Age assemblages at the A2. Such correspondence of early forms (and fabrics) and more 'classic' middle Iron Age styles is a common feature of the assemblages dated to the middle Iron Age at the A2.

At West of Northumberland Bottom, located west of Site C and south-east of Site L, an assemblage of 'early/middle' Iron Age date included both vessels that would have served the range of domestic functions required at a settlement site and industrial vessels in the form of briquetage evaporation containers. The domestic pottery includes fingertipped and cabled jars, plain open bowls and a saucepan pot, associated with rounded shoulder burnished vessels in glauconitic sandy fabrics, which at the A2 mark the emergence of middle Iron Age settlement.

The rim diameters from 37 measurable vessels from WNB ranged from 12cm to 38cm, with an overall size bias typical for the Iron Age, peaking in the smaller range of sizes (Morris 2006). However, Morris notes some unusual features within this vessel group. There were no very small vessels (<10cm dia), and the most common rim diameter was four centimetres larger than the norm (cf Brown 1995 fig. 25; Woodward and Blinkhorn 1997, fig. 1). Also, this relatively large assemblage included six vessels with diameters greater than 28cm, notably larger than other assemblages in England of similar date. The large size of some vessels may indicate that they were used in salt-related activities.

At Pepperhill, close to Northumberland Bottom, there was some evidence of settlement activity, possibly emerging during the earliest Iron Age. Ceramic evidence for this was slight -a single 'swan-necked' jar rim and undiagnostic thin-walled sherds, and a flat-topped jar rim could date to the early/middle Iron Age. The combined evidence from these two sites indicates settlement activity at this location contemporary with that found at the A2 Sites L, B/C and G sites.

Site B/West of Northumberland Bottom

Activity at the middle and late Iron Age settlement at Sites B/C appears, based on the character of the succeeding Roman pottery assemblage, to have ceased soon after the conquest (see Biddulph, this vol). The picture is somewhat different for the area of this settlement excavated as West of Northumerland Bottom (WNB) in the HS1 scheme, where reasonably significant quantities of samian ware (1.2% of site total) and black-burnished ware 2 (2.6%) testify to activity continuing into the 2nd century AD (Booth 2006). Perhaps because of this, the phasing scheme there gave even those context groups lacking distinctive Roman-period finewares a post AD 43 date (Every 2006). It may well be the case that the southern (WNB) part of the settlement did see more activity continuing later than the northern part (Sites B/C on the A2), but nonetheless over 61% of the WNB assemblage consisted of 'Belgic' type E wares, most in grog or shell-tempered fabrics. The collection of 2474 sherds (22108g) from Site B classified as late Iron Age is similar in composition, with 56% grog-tempered and 30% shell-tempered fabrics. Much of the Site B pottery classified as Roman (see Biddulph this vol) was also in these ware groups, so dating either side of the conquest for many features, in the absence of finewares, is uncertain. The range of late Iron Age/early Roman forms present at WNB and Site B show a high degree of overlap, with numerous bead rim jars alongside slash-decorated storage jars and narrow-neck cordoned jars (Booth 2006, figs. 4.5 and 4.6).

Pottery and protocol

Throughout the prehistoric period at the A2 pottery featured in a range of activities that transcends the prosaic utilitarian functions of storage and the preparation and serving of food. The latter can be deduced to some extent from the shape and size of vessels, abrasion patterns and limescale, sooting and charred residues. Information about raw materials sources and procurement of pottery can also be obtained relatively easily through data collection and scientific analysis. The significance of other activities preserved within pottery assemblages are more difficult to interpret, but an examination of the deposition histories of the A2 pottery has highlighted various trends that hint at the nature of prehistoric and protohistoric ritual in this small stretch of west Kentish landscape.

A shallow square hollow, pit 12576, lying within an apparently unenclosed setting on Site L, was filled in a single event with material incorporating 433g of pottery, a significant quantity for such a small feature. The only classifiable vessels, four bowls, were produced in fabrics that suggest production before the fashion for burning and crushing flint for temper became mainstream in the early Iron Age. Although the deposit incorporated no complete vessels, or even large sherds, either the amassing of the pottery beforehand or the deposition event itself reflect deliberation and selection rather than the mere disposal of domestic waste.

Site L also offered an insight into an event that took place close to the end of the early Iron Age, between 402–299 cal BC. An unusual decorated jar, lacking its base (Fig 3.47, 1200547), was carefully placed at the edge of pit 12527 in an ash and charcoal rich deposit that sealed a cache of charred grain on the base. Fragments of at least four other jars of a type unique to the site lay mostly within this burnt fill, with a few smaller fragments in overlying layers. These vessels may have all been procured from the same production site, possibly even made to order. Several incomplete carinated bowls were found exclusively in the upper fill of the pit, suggesting an intended separation of drinking/serving vessels and coarse but distinctive jars (see key group 12527; Fig. 3.47). The bowls were not newly issued for this event, as they show varying degrees of wear. The jars may have been used for cooking, but no charred or sooted residue survived. The pottery deposited in this pit may be the remains of a ceremonial feasting set.

A group of complete and near complete vessels from pit 9010 on Site G may represent a similar display of conspicuous consumption at roughly the same period (403–355 cal BC) but at the other end of the site. The range of vessels could be seen as a 'stair-step' set of a large jar (deliberately shattered), medium jar and small jar, each very different to the other in form and treatment. A group of tiny jars of similar form, with an average rim diameter of *c* 100mm, may be beakers (Figs 3.54 and 3.55). Fragments of human bone could provide a clue as to the purpose of the event that ended with the burial of the pots, part of a burnt sow and other animal bone, a set of loomweights/oven bricks, amongst other artefacts that no doubt served a role in this event.

Whilst assumptions of a link between the human bone fragments and pottery in pit 9010 must remain tenuous, the purposeful arrangement of pottery with conventional cremation and inhumation burials was commonplace during the Bronze Age and late Iron Age. More unusual, however, is to see this association in a middle Iron Age context, a time when the proffering of grave goods was uncommon. The cremated human bone, accompanied by a heat-affected middle Iron Age jar and other offerings, in quarry pit 3400 is notable. The bone was perhaps a cenotaph deposit as it represented only the partial remains of an individual. The quarry may have represented a favoured location for activity of this type, enhanced by its proximity to the trackway (7980) that crossed the settlement.

Two other cremation burials were inserted in purpose-dug features close together in the entrance of the earlier 'banjo enclosure' (4518), a location that perhaps retained symbolic importance after its original function had been superseded. Both were

high status late Iron Age burials, as was clear from associated artefacts, including complete (when buried) pottery vessels. Burial 4298 was dated to 50 BC–AD 50 on the evidence of two Knotfibulen type brooches, and the four accompanying vessels, two pedestal urns, a carinated cup and a cordoned cup/bowl, were in all grog-tempered fabrics. Two pedestal urns accompanying burial 4312 had been sheared off near the base (Plate 3.33), but the basal forms indicate a date at least broadly contemporary with burial 4298.

Although the vessels selected to accompany the burials were of high quality, they were not apparently exclusively manufactured as grave goods. Quoit-shaped bases from pedestal urns were found in domestic contexts on Site B, including one from pit 4023 (Fig. 3.59, no. 400423) and another from ditch 4029 (Fig. 3.61, no. 400733), for example. The enclosure ditches associated with this settlement produced a number of vessels copying Gallo-Belgic forms. L-shaped ditch 4744 produced fragments of two high quality carinated, cordoned cups (Thompson type E2.1) and a wheelmade cordoned jar (Fig. 3.62, no. 400804) was found in the fill (3816) of ditch 7197.

Briquetage *by Elaine L Morris*

A total of 7017 fragments of briquetage (46,695g), the ceramic material made specifically for use in salt production and distribution, was recovered from five sites along the route of the A2 Widening Scheme, with the great majority found in two pits at Site C (Table 3.8). Fragments from evaporation vessels or containers, supportive pedestals, and heating structures were identified along with a small amount of miscellaneous or undiagnostic pieces. This assemblage includes both hand-retrieved material and pieces recovered during the processing of environmental samples, ranging in size from tiny split flakes of container sherds weighing a little as 1g each up to 706g for the largest structural fragment. This is the second largest collection of later prehistoric (middle Bronze Age through middle Iron Age) briquetage by weight in the country.

The purpose of this contribution is to characterise and quantify the range of forms and fabrics present in the assemblage, determine if all of the material could have been made from locally available clay resources, establish the shape, size and capacity of the evaporation vessels, chronicle the periods of salt production and use, explore the locations of production evidence in the landscape topography, and establish the nature of salt distribution transported in briquetage containers in north-west Kent. A study in the variation of artefact deposition into the two rich pits in Site C is also presented. In addition, an attempt will be made to identify who the saltmakers may have been. A more detailed version of this report is presented in the digital archive publication.

Table 3.8: Quantification of briquetage by count and weight for each site (weight in grammes)

Site	*Count*	*Weight*
K	7	122
L	49	158
B	173	753
C	6745	45341
G	43	321
Total	7017	46695

Methodology

All hand-retrieved briquetage was analysed and recorded following a combination of the current guidelines for examination of later prehistoric pottery established by the Prehistoric Ceramics Research Group (PCRG 1997; 2010) and a more recent methodology first developed for the examination of briquetage from eastern England (Morris 2001a). The assemblage was examined to determine the frequency by class of material (container, class C; support, class S; structural material, class ST; or undiagnostic, miscellaneous fired clay associated with salt production, class M) in order to compare the ratio of classes in this assemblage to significant assemblages from other production sites in the wider region (Lane and Morris 2001). The briquetage fragments were analysed and recorded within context, counted and weighed to create records of their fabric type, form type, surface treatment, wall thickness, vessel size by form type, and evidence of use.

Fabrics were defined with the use of a binocular microscope employing x10 power microscopy. The fabric codes allocated to the briquetage assemblage were 500-onwards to differentiate them from pottery fabric codes. Nine samples were selected to assist in the characterisation of the fabrics using petrological analysis as indicated with an asterix (*) in the detailed fabric descriptions below and the sherd or fragment sampled is listed at the end of the description by briquetage database record entry code (BRN).

The thickness of container sherds was recorded by using established briquetage thickness codes (Morris 2001a) as follows: less than 7mm, code 2; 7–9.9mm, code 3; 10–12.9mm, code 4; 13–15.9mm, code 5; and split sherds or flakes, code X. The extant height and the minimum and maximum wall-sides of support pedestals were measured in millimetres. The extant thickness of structural material was recorded in millimetres if a single surface was present. Evidence of use in the salt production process was recorded by the presence and location of white-colouring: WH2, exterior; WH3, interior; WH1 throughout; WH10, top of rim; WH12, underside of base; WH, uncertain location; and (WH), traces present.

Fabrics

The briquetage was made from three fabric groups which are easily distinguishable in hand specimen: fine quartzose (Q-series), shell-gritted (S-series), and organic-tempered (V-series). The most common fabric group based on weight is the Q-series which represents 52.3% of the assemblage (24.4kg), with the S-series representing 46.5% (21.7kg) (Tables 3.9–10). Organic-tempered fabrics are distinctive but relatively rare in this assemblage (1.2%; 0.6kg). There is a total of nine fabric types within these three main groups. Based on petrological analysis of thin sections in many cases, these could have been made from locally available clays. However, this does not prove that they were all made from these specific resource locations. Detailed descriptions of these fabric types can be found in the digital archive publication.

Fine Quartzose Fabric Types

Q501 fine-grained sand and silt fabric (*)
Very common (30%), well-sorted, angular to subangular with rare subrounded quartz, ≤ 0.2mm across, and rare grains up to 0.3mm, sparse (3%) linear vesicles, ≤10mm long, rare (1-2%), rounded glauconite, ≤ 0.15mm, of high sphericity, and rare (1%), rounded to subrounded iron oxide, ≤ 0.6mm, of low sphericity (thin-sectioned sample BRN 1093).

Q502 fine-grained sand and silt fabric with glauconite (*)
Moderate (10-15%), well-sorted, angular to subangular quartz and quartzite, ≤ 0.2mm, and rare (1%), subangular to subrounded quartz and quartzite, 0.3-0.5mm, sparse to moderate (7-10%), rounded, well-sorted glauconite, ≤ 0.2mm, sparse (3%) linear vesicles, ≤ 2mm long, and rare to sparse (2-3%), rounded, opaque iron oxides, ≤ 0.8mm, with low sphericity (sample BRN 1362).

Q503 medium to fine-grained sand and silt fabric with infrequent glauconite (*)
Common (20%), angular to subangular, well-sorted quartz and quartzite, ≤ 0.2mm, and rare (2%) rounded to subangular quartz and quartzite, 0.3-0.5mm, sparse (5%), rounded glauconite, less than 0.2mm, and sparse (5%), rounded iron oxides, ≤ 0.4mm, as well as very rare (< 1%), rounded, ferruginous fine sandstone rock, less than 1.8mm (sample BRN 1425).

Q504 fine-grained sand and silt fabric with infrequent calcareous matter (*)
Very common to abundant (30-40%), well-sorted, angular to subangular quartz ≤ 0.2mm with rare subangular to subrounded grains from 0.3-0.6mm, sparse to moderate (7-10%), well-sorted, rounded glauconite, ≤ 0.2mm with rare examples up to 0.5mm, rare (1%), poorly-sorted, rounded, unidentified calcareous matter, ≤ 1.3mm, and very rare linear vesicles, less than 2mm long, in a slightly micaceous clay matrix (BRN 1135).

Q505 fine-grained glauconite-rich, silty fabric with cylindrical vacuoles (*)
Abundant (40%), rounded, well-sorted glauconite, ≤ 0.2mm, moderate (10%), angular to subangular quartz, ≤ 0.15mm, sparse to moderate (5-15%), haematised or pyritised, plant-like matter, ≤ 15mm long and ≤ 2mm in diameter, and a single, rounded clay pellet-like inclusion of low sphericity which is micaceous, ferruginous and appears to display bedding planes as well as some iron-rich, linear, variable and almost wavy smears of clay-like matter (sample BRN 1102).

Shell-gritted Fabric Types

S501 fossil shell-rich, laminated fabric (*)
Abundant (40-50%), poorly-sorted, angular fossiliferous shell, ≤ 6mm, sparse (5%), creating a laminated fabric with rounded iron oxide, majority ≤ 0.3mm but up to 0.9mm, and rare (1%), subangular to subrounded quartz, majority ≤ 0.1mm but up to 0.3mm (sample BRN 1080).

S502 fine-grained, glauconitic, quartzose sand and silt fabric with shell-shaped vesicles (*)
Moderate to common (15-20%), rounded, well-sorted glauconite, ≤ 0.2mm, moderate (10%), angular to subangular, well-sorted flint, ≤ 0.1mm, moderate (10%), angular to subangular, well-sorted quartz, ≤ 0.1mm as well as rare (<1%), rounded quartz, 0.2-0.5mm, rare (1%), rounded iron oxides ≤ 0.8mm and sparse (3-5%), shell-shaped vesicles, ≤ 0.3mm (sample BRN 1359).

S503 sparse shell as lenticular vesicles and linear vesicles in fine sand and silt fabric (*)
Common to very common (25-30%), angular to subangular, well-sorted quartz, less than 0.2mm, and rare (1%), angular to subangular quartz, 0.2-0.5mm, sparse (5%), shell-shaped, lenticular vesicles, ≤ 3mm, sparse (5%), linear vesicles, < 2mm long, rare (2%), rounded, opaque iron oxides, ≤ 0.3mm and rare (1%), rounded glauconite ≤ 0.1mm (sample BRN 1806).

Organic-tempered Fabric Type

V501 organic-tempered, vesicular fabric (*)
Sparse to common (7-20%), linear vesicles, ≤ 5mm with majority ≤ 1mm, common (20%), angular, well-sorted flint, ≤ 0.2mm and one at 0.6mm, moderate (10%), angular to subangular, well-sorted quartz, ≤ 0.2mm with 1% measuring 0.2-0.5mm, sparse (7%), rounded glauconite, ≤ 0.2mm, rare (<1%), rounded, opaque iron oxides, 0.7mm, and rare (1% or less) calcareous matter of various sizes (BRN 1820).

Fabrics Discussion (resources and production locations)

It appears that there were three different general sources of clays chosen to make the briquetage recovered from sites along the A2 Widening Scheme corridor. The most obvious source is the Woolwich Formation, which was exploited for its shell-rich clays to make fabric S501. The second general source appears to be the London Clay Formation, or Head derived from London Clay, used to make fabrics which have glauconite and quartz sand (Q501, S503), as well as the unusual combination of algal tubes (vacuoles) and abundant glauconite found in fabric Q505. The third source could be the Upnor Formation, which may have been selected to make fabrics which have various quantities of fine angular to subangular flint fragments and rounded glauconite, with (Q504) or without (Q502, Q503) shell depending upon proximity of the deposit selected to Woolwich Formation deposits. All of these clay resources are found within 7km of the A2 corridor,

Table 3.9: Quantification of briquetage from each site by fabric, class and form types (weight in grammes)

SITE	CLASS/FORMS	FABRICS																		Site Total Count	Site Total Weight
		Q501		Q502		Q503		Q504		Q505		S501		S502		S503		V501			
		CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT		
K	Containers (C)																				
	B3																	4	81	4	81
	P1																	3	41	3	41
	Site Total																	7	122	7	122
L	Containers (C)																				
	R1																	1	3	1	3
	B99																	2	13	2	13
	P1											1	2					43	134	44	136
	Class sub-total											1	2					46	150	47	152
	Miscellaneous (M)																				
	FC1																	2	6	2	6
	Site Total											1	2					48	156	49	158
B	Containers (C)																				
	R1											1	6							1	6
	R4											1	3							1	3
	B1											3	15							3	15
	B2											6	18							6	18
	B3											2	15							2	15
	B4											2	9							2	9
	B6											1	4							1	4
	P1											141	352					13	51	154	403
	Class sub-total											157	422					13	51	170	473
	Supports (S)																				
	PD4	1	207																	1	207
	PD5	1	70																	1	70
	Class sub-total	2	277																	2	277
	Structural Material (ST)																				
	HFL1	1	3																	1	3
	Site Total	3	280									157	422					13	51	173	753

C	Containers (C)																				
	R1	27	602			2	147					65	707	45	834					139	2290
	R2	1	18									1	25							2	43
	R3													1	36					1	36
	R4																	2	6	2	6
	B1	9	169									43	496	2	52					54	717
	B2	33	526									36	439	7	184					76	1149
	B3	1	9									8	295	1	32					10	336
	B4	15	566			1	31					15	270	20	819					51	1686
	B5					1	51													1	51
	B6																	1	8	1	8
	B99	28	311									36	386	32	592			32	24	128	1313
	P1	911	6761	10	19	1	16					3051	9951	1098	6084	21	16			5092	22847
	Class sub-total	1025	8962	10	19	5	245					3255	12569	1206	8633	21	16	35	38	5557	30482
	Supports (S)																				
	PD1	26	1395																	26	1395
	PD2	3	866							2	250									5	1116
	PD3	3	300																	3	300
	PD99	21	146																	21	146
	Class sub-total	53	2707							2	250									55	2957
	Structural Material (ST)																				
	HFL1	28	1155			1	77	41	2291	92	1378									162	4901
	HFL2									54	634									54	634
	HFL3	7	269					12	1174	34	1357									53	2800
	HFL5	1	20							2	64									3	84
	HFL98									1	42									1	42
	HFL99	295	1092					48	392	343	1332									686	2816
	Class sub-total	331	2536			1	77	101	3857	526	4807									959	11277
	Miscellaneous (M)																				
	FC1	152	537			3	60	2	4	10	18	7	6							174	625
	Site Total	1561	14742	10	19	9	382	103	3861	538	5075	3262	12575	1206	8633	21	16	35	38	6745	45341
G	Containers (C)																				
	B4																	2	56	2	56
	P1	4	15									13	49					16	133	33	197
	Class sub-total	4	15									13	49					18	189	35	253
	Structural Material (ST)																				
	HFL1	7	66																	7	66
	Miscellaneous (M)																				
	FC1									1	2									1	2
	Site Total	11	81							1	2	13	49					18	189	43	321
	GRAND TOTAL	1575	15103	10	19	9	382	103	3861	539	5077	3433	13048	1206	8633	21	16	122	558	7017	46695

Table 3.10: Quantification of briquetage from each site by feature and fabric (weight in grammes)

SITE	CLASS/FORMS	FABRICS																		Total Count	Total Weight
		Q501		Q502		Q503		Q504		Q505		S501		S502		S503		V501			
		CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT		
K	pit 10515																	7	122	7	122
	Site Total																	7	122	7	122
L	pit 12571											1	2							1	2
	pit 12647																	48	156	48	156
	Site Total											1	2					48	156	49	158
B	pit 3686	1	207																	1	207
	pit 4005	1	3															5	27	6	30
	ditch 4053																	4	16	4	16
	ditch 4063											1	1					1	1	2	2
	ditch 4069											11	22					2	5	13	27
	ditch 4083											95	222							95	222
	ditch 4085											38	115							38	115
	ditch 4357											1	20							1	20
	ditch 4408	1	70																	1	70
	ditch 4455											3	13							3	13
	ditch 4797																	1	2	1	2
	ditch 4991											8	29							8	29
	Site Total	3	280									157	422					13	51	173	753
C	pit 5052	5	9									53	74	5	1	21	16	32	29	116	129
	pit 5066	971	10237	6	9	6	265	102	3855	371	3901	888	5154					1	3	2345	23424
	pit 5110	579	4197	4	10	3	117	1	6	167	1174	2298	7188	1199	8623			2	6	4253	21321
	pit 5130/5242	2	291									4	19							6	310
	pit 5225	1	7									1	32	2	9					4	48
	pit 5992	3	1									11	43							14	44
	pit 7209											1	9							1	9
	pit 7235											6	56							6	56
	Site Total	1561	14742	10	19	9	382	103	3861	538	5075	3262	12575	1206	8633	21	16	35	38	6745	45341
G	pit 9010	7	66															6	96	13	162
	pit 9052									1	2	4	4					2	17	7	23
	pit 9088	4	15									9	45					10	76	23	136
	Site Total	11	81							1	2	13	49					18	189	43	321
GRAND TOTAL	1575	15103	10	19	9	382	103	3861	539	5077	3438	13049	1201	8632	21	16	121	556	7017	46695	

some within 2km, and therefore the briquetage fabrics were probably made from locally available resources (Geological Survey Sheet 271; Ellison 2004).

Fabrics only used for containers, however, for example Q502, S501–S503 and V501 (Table 3.9), could have been made from sources located further afield with these vessels transported to the site for use. Only fabrics Q501 and Q503 were used to make containers, supports and saltern structural material, thus indicating both the on-site making of containers as well as the production of salt. Fabrics Q504 and Q505 were also most likely to have been made from local resources because they, too, were used to construct salt production equipment, primarily for making saltern hearths.

The possibility that some containers were transported as fired vessels to Site C East, rather than transporting the raw clay itself, is suggested by layers of quartzose clay found on the exterior surfaces of shell-rich fabric S501 sherds, presumably to re-seal them. A total of 94 sherds, all from pit 5066, display this exterior surface treatment (Fig. 3.65, no. 1). Containers made from S-series fabrics appear to have been easily shattered, as indicated by the frequency of split sherd flakes compared to Q-series sherds (Table 3.11). Between 44% and 56% of S-series sherds are flakes compared to only 17% of Q501 sherds, making S501 and S502 fabric containers approximately three times more susceptible to fracturing. The application of a layer of fine silty quartzose clay to the exterior of S501 vessels may thus have been a strategy to offset this technological weakness. This application indicates that raw quartzose clay was available at the production location to use in emergencies to repair stressed containers, and strongly suggests that it was created from clay which could be found at or very near to the site of salt production.

Forms

All four classes of briquetage established during the study of assemblages from prehistoric and Roman period salt production sites (salterns) in the Fenland region of eastern England (Morris 2001a & d) were identified in this assemblage. These comprise: evaporation vessels or containers (C), supports (S), structural material (ST), and miscellaneous fragments of fired clay associated with production (M) (see Table 3.9).

Containers (C)

Evaporation vessels or containers are represented by rim, base and body sherds. The most common rim form is type R1 with a flaring, conical profile indicating that the original vessel had no restrictive neck or shoulder zone (Fig. 3.65, nos 1–4). This rim type had been flattened consistently on the top edge. A total of 141 examples of R1 rim form were identified. Three other minor types were identified. Type R2 has a conical profile as well but the rim is made by taking the top flap of clay and folding it over to the interior rather than simply flattening it with the fingers (Fig. 3.65 no. 5 and Fig. 3.66 no. 6), type R3 is a pointed rather than flattened rim (Fig. 3.66, no. 7), and type R4 is curled over or hooked with an inwardly curved profile (Fig. 3.66, nos 8–10). There are four types of base which are differentiated by the method of their finish: type B1 is a simple flat base with crisp or smooth base angle that is straight in plan, while type B2 is also straight in plan but was roughly finished with curls and lumps of un-removed clay on the exterior that disguise the base angle and result from pinching the base plate onto the vessel wall (Fig. 3.66, nos 11–12). Base type B3 is the curved in plan version of B1 (Fig. 3.66, nos 13–15) and B4 is the curved in plan version of B2 (Fig. 3.66, nos 11–12 and 16–18). The presence of the B3 and B4 examples indicates that the vessels were rounded in plan. The majority of container sherds, however, are simply body sherds (form type P1).

The correlation of vessel form types to fabric types reveals that type R1 was made from all three fabric groups, R2 only from fabrics Q501 and S501, R3 from fabric S502 and the curled over type R4 in both S501 and V501. This general trend, that any commonly found rim form type was made from at least one fabric group if not all three fabric groups, holds for base types as well. The commonest forms, pinched types B2 and B4, were made from all three fabric groups. The less common, plain types B1 and B3 were made from Q-series and S-series fabrics only. Amongst the large collection of base plates (B99), the majority derive from the S-series rather than Q-series which may be a result of the fracturing nature of the laminated S501 fabric and possibly poorer adhesion of some shell-bearing fabrics.

A distinctive deep finger-wiping or -smearing technique was used on the rim sherds of all fabric

Table 3.11: Frequency of container sherds by full wall thickness or flaked condition in major fabrics only

	Fabric							
	Q501		*S501*		*S502*		*V501*	
Container Thickness	*CT*	*%*	*CT*	*%*	*CT*	*%*	*CT*	*%*
Full wall	859	83.5	1521	44.4	673	55.8	56	47.1
Flake	170	16.5	1905	55.6	533	44.2	63	52.9
Total	1029	100.0	3426	100.0	1206	100.0	119	100.0

groups and also to bind the walls of the vessels together. The wiping was used diagonally across the tops of the rims in the flattening or finishing process and therefore looks like a pie-crust effect along the rim tops (Fig. 3.65, no. 1). On the walls of the vessels it was used horizontally, vertically or diagonally (Fig. 3.65, nos 2 and 4 and Fig. 2.66 no. 19). The rim wiping could even be interpreted as a type of decoration. The wall smearing is very pronounced with clear finger-width ridges displayed. This technique may have provided additional strength to the walls during the drying process prior to firing, and also produced a rough exterior that may have been useful during lifting.

The longest piece of rim sherd in profile measures 88mm, and does not appear to be thickening as it would if approaching the base. In addition, the bases are 9–16mm thick and with the attached base angle zone would also have been at least 30–40mm tall at a minimum. Therefore, there is every reason to suspect that the evaporation vessels at this site were considerably taller than 120mm.

It has however proved difficult to reconstruct the profile and size of these evaporation vessels. Some of the bases have quite flared, lower walls and many are curved or rounded in plan while the rims display a diameter that is considerable and much larger than the base footprint. The upper parts of these vessels may have been quite significantly flared beyond the footprint of the bases. If so, they would have been ideally manufactured to provide the maximum possible surface exposure in order to speed the evaporation of the heated water. All of the briquetage from pit 5066 was laid out in order to attempt the reconstruction of a single vessel and provide the necessary evidence for general profile, shape in plan and size of containers. Of the 1848 container sherds from this pit, 960 sherds are Q-series and 888 sherds are S-series fabrics indicating that fragments from a minimum of two vessels based on fabric group and five based on fabric types and vessel sizes were deposited.

Despite examining all the rims, very few could be refitted. The same was the case for base sherds. Nevertheless, the refitting rims and others from pit 5066 did provide enough of the container circumference to enable sections of four different rims to be determined at three sizes in several fabrics: 360mm (Q503; Fig. 3.65, no. 3), 380mm (Q501; Fig. 3.65, no. 2), and 400mm (Q501, Fig. 3.65, no. 1; S501, Fig. 3.66, no. 6). Similarly, sections of refitting bases and others were established which measured around 100mm (S501, Fig. 3.66, no.13), 120mm (Q501; Fig. 3.66, no. 16), 150mm (S501, Fig. 3.66, no. 14), 180mm (Q501, Fig. 3.66, no. 11) and 220mm (S501, Fig. 3.66, no. 12). This suggests that sherds from at least five vessels were deposited in this pit, and one other has been illustrated (Fig. 3.65, no. 5). In addition, it was possible to obtain rim diameter measurements from fragments of two different vessels recovered from the assemblage of 3572 container sherds and flakes from nearby pit 5110 (during the assessment). A fabric Q501 rim measured 380mm in diameter (Fig. 3.65, no. 2) and a fabric S502 rim was found to be the largest example at 420mm in diameter (Fig. 3.65, no. 4). The diameter of only one base from this pit could be determined, at 220mm (Q501, Fig. 3.65, no. 17). At least three vessels are represented in this pit based on fabric types alone, in addition to two small sherds from at least one fabric V501 container (Table 3.10).

It is possible that only 10–20% of any vessel had been recovered from the complete excavations of these two pits, but there is no possible way of determining this due to the degree of fragmentation and loss of the uppermost pit deposits through ploughing. Because the rim diameters range from two to four times larger than the base diameter range and there are no shoulder sherds or angled sherds of any kind in the entire assemblage, it is most likely that these vessels were flared, conical basins or deep bowls measuring well over 120mm tall (see Fig. 3.68). The manufacturing technique used to make these containers appears to have been coil building due to the presence of 45˚ angle breaks on several sherds, but the use of slab-building technique cannot be ruled out.

For the V-series containers, only two bases from different sites provided evidence of vessel form and size. One is a type B3 and the other a type B4 (Fig. 3.66, nos 15 and 18). Both measure 110–120mm in diameter and have only slightly flared profiles. None of the bases displays finger-smearing evidence. So little remains of the rim sherds in fabric V501 that diameters cannot be reconstructed nor vessel heights determined but none of the few rims made from this fabric displayed finger-smearing on top (eg Fig. 3.66, nos 9–10). However, some body sherds of V501 are finger-wiped on the exterior.

The large, flared, conical basin or deep bowl-shaped briquetage containers found on the A2 sites are very similar to those recovered from the nearby Tollgate site located along the HS1 route. The best example was illustrated as a circular, flared vessel reconstructed at 300mm in diameter and displays finger-smearing along the top rim edge and down the walls of the vessel (Edgeley-Long 2006, 50). At Highgate (Thanet), however, large pieces of shallow evaporation pans made in a flint-tempered fabric appear to be a combination of shallow and long-sided in plan with horizontal finger-wiping or at least medium in height (more than 70–80mm) and sub-rectangular in plan (Macpherson-Grant 2007a, 269–70, figs 90, 375 and 96, 447). Therefore, it seems that there are two different styles of salt evaporation vessel in Kent—shallow sub-rectangular, flint-tempered pans from east Kent and deeper, flared, conical basins made from a range of fine sand or shell-gritted fabrics from west Kent. The east Kent material is similar to salt production evaporation vessels found in Holland at Hooindonksche Akkers (van den Broeke 1980, fig. 25, 2–4 cited in Couldrey 2007, 156, fig. 55-site 35). The west Kent material is presently unique to that area, and this is discussed further below in relation to the saltmakers

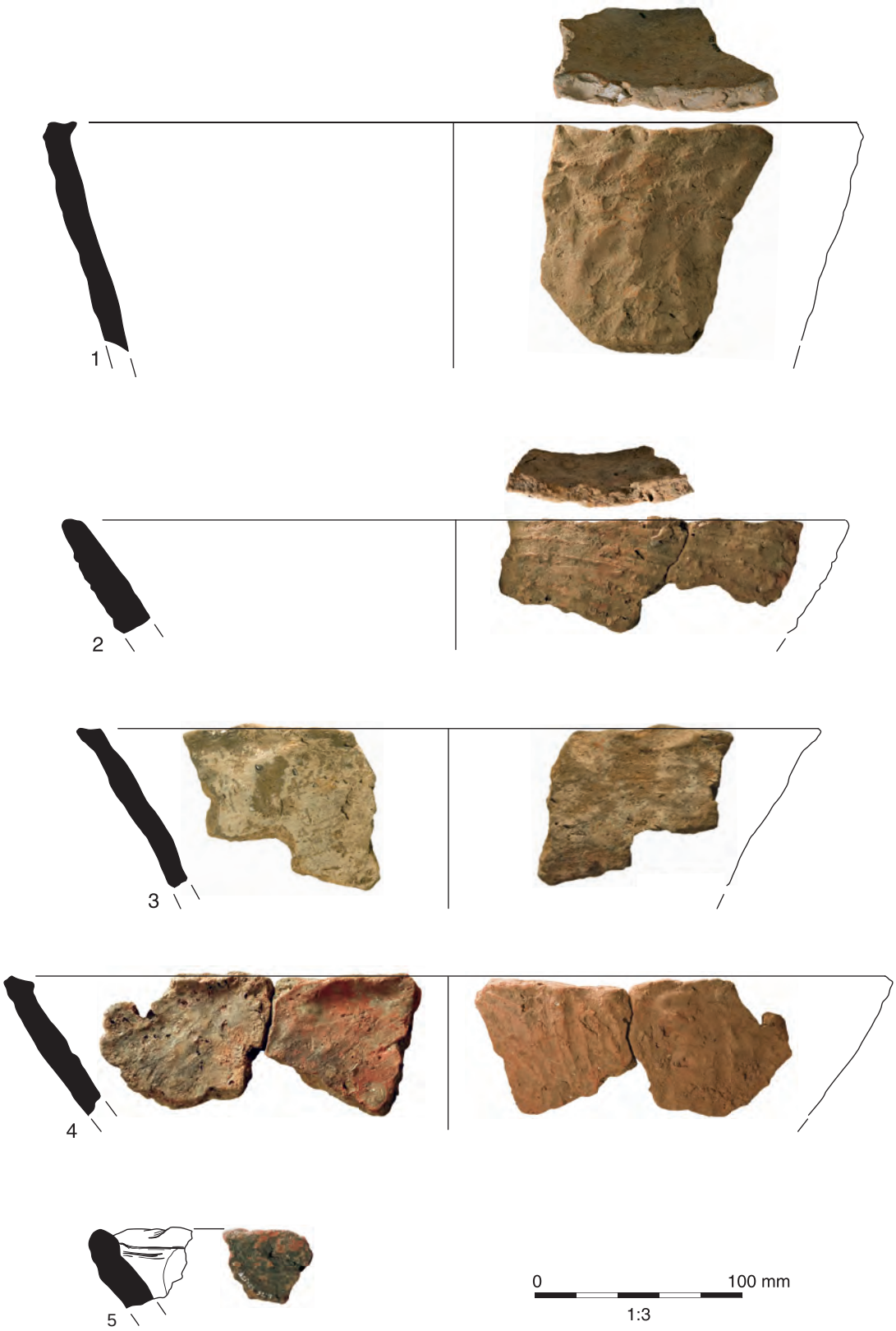


Fig. 3.65 Briquetage containers, 1–5

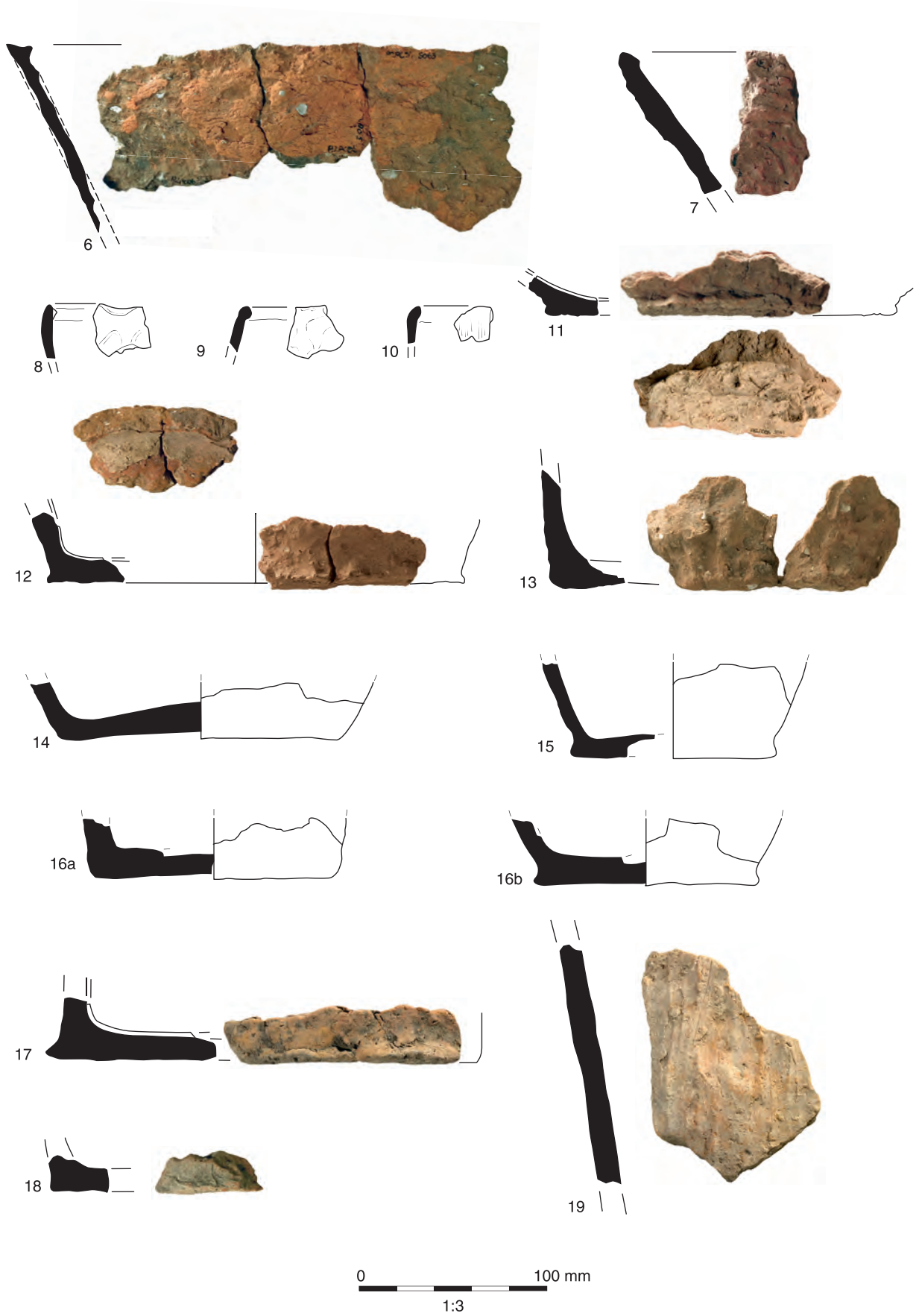


Fig. 3.66 Briquetage containers, 6–19

themselves. The more convex-profile, type R4 examples made from shell-gritted or organic-tempered fabrics could be more like the east Kent pans but this is far from certain.

Repairing of containers has already been discussed above but in addition to this distinctive surface treatment on the exterior, a small number of body and base sherds, in all three fabric groups, displayed what appears to be an additional, same-fabric layer or lining on their interior surfaces (eg Fig. 3.66, no. 17). This lining seems to have provided a smooth, Teflon-like effect to ease the removal of dried salt crystals or to repair the interior surface of vessels where scraping of salt had been severe.

Rims (Figs 3.65–6)

R1 upright to flared, flattened rim from conical-profile, open vessel (Nos 1–4)
R2 upright to flared rim with lip folded over to interior on conical-profile, open vessel; possibly manufacturing variation of R1 (Nos 5–6)
R3 upright to flared, pointed rim (No. 7)
R4 curled or rolled-over, hook-like rim on vessel with upright or convex-profile (Nos 8–10)

Bases (Fig. 3.66)

B1 plain, flat base, straight in plan (not illustrated)
B2 pinched, flat base, straight in plan (Nos 11–12)
B3 plain, flat base, curved in plan (Nos 13, 16a)
B4 pinched, flat base, curved in plan (Nos 11–12 and 16b–18)
B99 central, flat zone of a flat base unattached to vessel wall angle (not illustrated)

Body sherd (Fig. 3.66)

P1 undiagnostic body sherd with no specific profile features (No. 19)

Supports (S)

Five different types of pedestals (ie supports used to raise evaporation containers above the heating source to dry the brine and create salt crystals) were identified. Four pits contained complete or fragmented type PD1 supports, which are rectangular, hand-moulded objects which may be referred to as brick-like. The complete example measures 58mm wide, 64 mm thick and 115mm tall and most likely was positioned vertically on the hearth floor due to the presence of salt-bleaching from overspill of brine down one side (Fig. 3.67, no. 21). Two pits contained fragmented type PD2 supports, which are shorter, hand-shaped, sub-square objects with visible fingering not greatly dissimilar to PD1 pedestals (Fig. 3.67, no. 22). The best example measures 85mm wide, 100mm thick, and 98mm tall and was also positioned vertically on the hearth floor due to the firing condition of the object which shows that the lower part was immersed in ash.

Two pits contained fragments of type PD3 supports which are very similar to PD1 pedestals but had been pierced with a plain rod during the wet clay/leather-hard manufacturing stage, probably when the pedestals were being secured into position within the hearth (Fig. 3.67, no. 23). The rods would have held the pedestals in place during their first firing. It is very easy to misinterpret fragments of these perforated pedestals as deriving from contemporary triangular, perforated clay weights but they are actually brick-like in shape and the perforations are at a different angle to those in clay weights because they provided a completely different function. Brick-shaped pedestals have been identified in early Roman briquetage assemblages at Morton Saltern (Crosby 2001) and Holbeach St Johns (Gurney 1999) in Lincolnshire and March (Lane *et al.* 2008) in Cambridgeshire. Single examples of middle Iron Age and middle-late Iron Age perforated pyramidal-shaped pedestals have been found at Langtoft (Morris 2001b, fig. 90, 13) and Market Deeping (Morris 2001c, fig. 95, 21), but the early Iron Age PD1–3 examples from Site C East are currently unique.

Two other very different types of pedestals were found in the assemblage. They are slight rather than substantial and are represented by single examples, each in a separate pit on Site B with no other briquetage material. Type PD4 is a narrow, thin, flat pyramid (Fig. 3.67, no. 24) measuring 35mm wide and 100mm long at the base, 20mm thick along the body, and 75mm tall to the top of the apex. Similar examples of thin, pyramidal pedestals have been recovered from early Iron Age saltworking activity at Billingborough (Cleal and Bacon 2001, figs. 32, 48 & 34, 84; Morris 2007, fig. 3, 11–12), a middle Iron Age saltern at Langtoft (Morris 2001b, figs. 89–90), and middle–late Iron Age deposits at Market Deeping (Morris 2001c, figs. 94, 18–20 & 95, 21–22) in Lincolnshire. The pottery found in association with this example from pit 4686 is middle Iron Age (see Brown and Couldrey, this vol.).

Type PD5 is a round-stemmed pedestal with thick, disc-shaped footplate (Fig. 3.67, no. 25). The stem varies between 32–36mm in diameter; while the plate is 49mm in diameter and 12–13mm thick. The entire exterior surface of the stem and upper surface of the footplate had been salt-bleached. This broken pedestal fragment measures 41mm tall extant, which may be about half the original height. Identical types of slight pedestals with stems, or shafts, and footplates were recovered from late Bronze Age sites in Essex at Corringham (Barford 1984-5, fig. 1, 1) and the North Ring at Mucking (Barford 1988b, 15, 17-18; 1988c, figs. 36–37), both in association with fragments of briquetage containers. Very similar examples come from north-east Kent at Swalecliffe (Masefield, *et al.* 2003, fig. 28, pot 4), without other briquetage material. Briquetage recovered from nearby Cobham Golf Course as part of the HS1 fieldwork included two fragments of possible horizontal rods made from organic-tempered fabrics found in association with container fragments and pieces of structural material from late Bronze Age contexts (Morris 2005a, 1–2). The rods just might be from similar types of slight, stem-and-footplate pedestals. This suggests that the A2 fragment of type

Fig. 3.67 Briquetage pedestals 21–5 and oven structure 26–9

PD5 originally may have been late Bronze Age in date, and was residual in ditch 4618, of which cut 4408 was a part. However, late Bronze/early Iron Age (Hallstatt final/La Tène A) examples have been found with small evaporation containers at the saltern site of Vignacourt (Somme), northern France (Prilaux 2000, figs 7–9). Neither of the A2 pedestals was found with any other briquetage; it is possible that they may have been late Bronze Age objects rediscovered and reused during the Iron Age period. A second example of this type, in a different fabric, and without evidence of salt-bleaching, was recovered from a late Iron Age ditch in Site B (Fig. 3.69). It is therefore also possible that the type was still in use later in the Iron Age, though not necessarily in connection with salt production.

Pedestals (Fig. 3.67)

PD1 substantial, hand-moulded, rectangular pedestal which is imperfectly square in cross-section and brick-like in appearance; roughly constructed with visible fingering; positioned in vertical plane when in use due to evidence of salt-bleaching along one side only from overspill of brine (No. 21)

PD2 substantial, hand-shaped, rectangular pedestal with indistinct edges creating a sub-square cross-section; may have visible fingering (No. 22)

PD3 similar to PD1 with the addition of a diagonal, pre-firing perforation that may have been used to secure the brick-like pedestal into hearth position at the first firing; not a reused, triangular clay weight because of the angle of the perforation and the brick-like rectangular shape of the object (No. 23)

PD4 small, thin, truncated, pyramidal pedestal with flat, rectangular cross-section (No. 24)

PD5 small, round-stemmed pedestal with flat, footplate; type of top to pedestal uncertain because only example broken (No. 25)

PD99 fragment of pedestal but uncertain as to type (not illustrated)

Structural Material (ST)

Hearth flooring material consists of irregularly fractured, thick fragments of fired clay material which can have one flat, usually well-smoothed, surface with curved edges, and even the possibility of walls based on the presence of two wattle marks amongst the large quantity of briquetage hearth material (Fig. 3.67, nos 26–29). Of the 967 fragments of structural material, 17% displayed strong evidence of salt-bleaching while an additional 45% had slight or faint evidence for use in association with brine. The infrequency of curved edges may indicate that the hearth structures were quite large. The pieces of hearth flooring fracture quite easily, making reconstruction impossible. The well-broken hearth flooring material found in features on the A2 sites is the result of the demolition of hearth structures and deliberate deposition of the fragments into the features; no saltern hearths were recovered *in situ* during fieldwork. The irregular fracture of the pieces also indicates that the construction of the hearths was relatively simple with handfuls of well-wedged, damp clay pushed, meshed and smoothed to create the upper floor surface. Occasionally layers of clay can be identified.

Nearly all of the hearth flooring material found in pit 5066 is made from fabrics Q504 and Q505, while that found in nearby pit 5110 had been made from fabrics Q501 and Q505, and suggests that at least three hearth structures had been constructed in the immediate area. The quantity of saltern structural material found along the route of the A2 widening scheme is currently unique for early Iron Age Kent; none was found at Tollgate during the HS1 fieldwork located further to the southeast in this same landscape.

Hearth Flooring (Fig. 3.67)

HFL1 generally thick fragment of hearth flooring material with one flattened, usually smoothed, surface and a distinctively irregular appearance otherwise (No. 26)

HFL2 fragment of HFL1 with wattle impression (No. 27)

HFL3 fragment of hearth flooring material that are curved in plan, No. 28b with two flattened surfaces representing a change of angle direction that may be a corner (No. 28a-b)

HFL98 fragment of HFL99 with part of a wattle impression visible and, therefore, similar to HFL2 (No. 29a)

HFL4 fragment of hearth flooring material with wattle impression and an external curve suggesting that it might represent the edge or corner of a hearth (No. 29b)

HFL99 fragment of hearth flooring material with no flattened, smooth surface; irregular all over (not illustrated)

Miscellaneous (M)

A small amount of undiagnostic fired clay material was recovered which showed evidence of having been associated with salt production (due to the firing colours of the fragments or salt bleaching evidence discussed below). These fragments were too small to confirm that they derive from hearth structures. They were therefore recorded as fired clay.

Container performance

It was surprising that three different fabrics (Q501, S501, S502) were used to make containers while the forms of the containers were relatively uniform (Table 3.9). There is no other salt production site in Britain that displays such fabric variability with an associated consistency of evaporation vessel shape. In addition, there is further evidence about the nature of container variation that is likely to have been strongly correlated to this fabric variation for technological reasons.

Table 3.12 presents the evidence for vessel wall thickness frequency by fabric. A total of 70.8% of the Q501 sherds which still retained both surfaces of each sherd measure between 7–9.9mm thick (thickness code 3). Only 2% are thinner than this (code 2, less than 7mm). Thicker sherds include 26.7% at

Table 3.12: Frequency of briquetage container sherds by wall thickness code and fabric (code 2, < 7mm; code 3, 7-9.9mm; code 4, 10-12.9mm; code 5, 13-15.9mm)

Thickness Code	Fabric												Total Count	Total %
	Q501		Q502		Q503		S501		S502		V501			
	CT	%	CT	%	CT	%	CT	%	CT	%	CT	%		
2	17	2.0	1	20.0	-	-	200	13.1	16	2.4	11	19.6	266	8.5
3	608	70.8	1	20.0	1	20.0	1164	76.6	399	59.3	29	51.8	2202	70.1
4	230	26.7	2	40.0	1	20.0	152	10.0	257	38.2	16	28.6	658	21.0
5	4	0.5	1	20.0	3	60.0	5	0.3	1	0.1	-	-	14	0.4
TOTAL	859	100.0	5	100.0	5	100.0	1521	100.0	673	100.0	56	100.0	3140	100.0

code 4 (10–12.9mm) but only 0.5% measured within code 5 (13–15.9mm). In contrast, the S501 data reveals that while there is a similar frequency of code 3 sherds (76.5%), only 10.0% are code 4 but 13.1% are the very thin code 2. Therefore, the trend is for sherds made from fabric Q501 to be significantly thicker than those made from fabric S501. What is equally noteworthy is that the S502 sherds are even thicker, overall, than the Q501 sherds. Just fewer than 60% of these sherds register at code 3 and only 2.4% at code 2, while a massive 38.2% measure between 10–12.9mm (code 4).

One of the reasons for the use of three different fabrics to manufacture most of the evaporation vessels may be that the saltmakers realised that the life expectancy of an S501 evaporation pan was much shorter than that of a Q501 or S502 pan. This can be demonstrated by the relative rate of sherd splitting (code X) amongst these three fabrics. Table 3.11 above shows the frequency of container sherd splitting by fabric type compared to the frequency of full wall thickness sherds using both actual numbers of sherds and by percentage. Only 16.5% of the Q501 sherds were recovered as split sherd flakes, which is in tremendous contrast to the significantly high flake frequency amongst the fabric S501 sherds (55.6%) and slightly lower frequency for fabric S502 sherds (44.2%). If saltmakers were expecting to use their vessels over a period of time, ie repeatedly for some time, then it would have been more efficient to make them from fabric Q501. If this is the case, then it is worth examining the data in Table 3.13 which presents the amount of each fabric used to make containers by both count and weight of sherds for the two pits on Site C East with the greatest amount of briquetage. It is tempting to suggest that the deposition of briquetage into pit 5110 took place prior to that in pit 5066 nearby where just over half of the container sherds were made from fabric Q501 and much less from fabric S501 compared to pit 5110. The majority by weight in pit 5110 had been made from fabric S502, the fabric with the thickest container sherds. However if the number of sherds is considered relevant, two-thirds is fabric S501, one-third fabric S502 and a very small number had been made from Q501 in pit 5110. It may be that we are looking at a process of experimentation between successive saltmaking seasons using different fabrics for container manufacture. However, this may not be the only reason for the interesting variety of container fabrics; another reason may simply be different access to clay resources discussed below.

Dating of salt production evidence

Nearly all of the briquetage was recovered from features in association with Iron Age pottery. On Site C East, each pit with briquetage (see Table 3.10) also contained diagnostic pottery dating to the early Iron Age, and in some cases this was refined as later early Iron Age or early middle Iron Age if specific

Table 3.13: Quantification of briquetage container sherds by fabric in pits 5066 and 5110 (weight in grammes)

Pit 5066 Fabric	CT	% CT	WT	% WT	Pit 5110 Fabric	CT	% CT	WT	% WT
Q501	951	51.7	8485	62.2	Q501	73	2.0	474	2.9
Q502	-	-	-	-	Q502	4	0.1	10	0.1
Q503	-	-	-	-	Q503	3	0.1	117	0.7
S501	888	48.3	5154	37.8	S501	2291	64.1	7182	43.8
S502	-	-	-	-	S502	1199	33.6	8623	52.5
V501	1	<0.1	3	<0.1	V501	2	0.1	6	<0.1
TOTAL	1840	100.0	13642	100.0	TOTAL	3572	100.0	16412	100.0

vessels were present; pit 5052 (2 sherds, 0.02kg), pit 5066 (1018 sherds, 5.7kg), pit 5110 (510 sherds, 3.4kg), pit 5130/5242 (690 sherds, 8.1kg), pit 5225 (146 sherds, 1.6kg), pit 5992 (913 sherds, 6.3kg), pit 7209 (118 sherds; 0.7kg), and pit 7235 (31 sherds; 0.2kg) (see Brown and Couldrey this vol.). Pits 5110 and 5130/5242 produced radiocarbon dates of 510–360 cal BC (NZA 32315) from charred grain in context 5423 and 410–350 cal BC (NZA 32314; 84.5% probability) from charred grain in context 5406 respectively, absolute dates which are in complete agreement with the pottery dating. This occurs again on Site G where all three features with briquetage contained considerable quantities of early Iron Age pottery; pit 9010 (1191 sherds, 21.4kg), pit 9052 (192 sherds, 2.1kg) and pit 9088 (695 sherds, 7.4kg), the latter containing the distinctive horned, crenellated, *coupes à bord festonnés* bowl discussed elsewhere (see Brown and Couldrey this vol.; Fig. 3.56, 9061013). Pit 9052 returned a date of 405–365 cal BC (NZA 32406) from faunal remains found in context 9083, a date virtually in distinguishable from the previous two. Therefore, the fabric Q-series and fabric S-series briquetage containers, pedestals and hearth material are representative of early Iron Age salt production activity at these sites, and may specifically belong to the end of the early Iron Age and beginning of the middle Iron Age in particular the earlier 4th century cal BC. The three pits with briquetage on Site G also contained a total of 18 larger fabric V501 container sherds (189g), indicating that organic-tempered briquetage containers were also being used at this time. In addition, 35 pieces of V-series briquetage were recovered from five of the Site C features but these small fragments weighed only 38g.

On Site B, the majority of briquetage was recovered from ditches with no associated pottery, and often no other finds. However, four of the 12 features with briquetage did have small quantities of Iron Age pottery; pit 3686 with the only PD4 support, ditch 3961/cut 4083 and ditch 4069 with its re-cut ditch 4085. Pit 3686 contained distinctively middle Iron Age pottery and ditch 4085 re-cutting 4069 is late Iron Age. Cut 4083 of ditch 3961 contained early, middle and late Iron Age pottery, and was probably contemporary with ditch 4069/recut 4085. Ditch 4408 with the only PD5 support had no associated pottery. Therefore, the redeposited early and middle Iron Age pottery on this site appears to have been accompanied by the redeposition of contemporary briquetage with small mean fragment weights, material which is primarily fabric S501 examples (157 pieces, mean weight 2.7g) with a small amount of fabric V501 briquetage (13 pieces, mean weight 3.9g).

Sites K and L have significant amounts of V-series briquetage, and pit 10515 had the largest mean fragment weights of this fabric in the entire A2 assemblage (7 pieces, 122g; 17.4g mean weight). Pit 12647 contained 48 pieces weighing 156g (3.3g mean weight). The pottery from pit 10515 was early Iron Age but no pottery was recovered from pit 12647. Neither pit had any other briquetage, but one very small sherd (2g) from a fabric S501 container was identified amongst the late early Iron Age pottery from pit 12571.

Therefore, briquetage containers, pedestals and hearth material made from the Q-series and S-series fabrics were both in use during the early Iron Age, and the bulk of this salt production was taking place at the end of the 5th century and earlier 4th century cal BC on Site C East. The fragments of V-series containers recovered from five different sites along the A2 route, often found in association with Q-series and S-series material, indicate that organic-tempered briquetage was probably contemporary with these more common wares. However, in the absence of pedestals and hearth material made from fabric V501 it is not possible to prove that salt production using this fabric group took place here. It is most likely that a few containers made from this fabric brought salt to these sites in small quantities by trading with neighbours or by neighbourly visits during feasting and production events, such as people living and making their own salt in the Medway Valley to the east. Sherds from organic-tempered briquetage containers were recovered from the early–middle Iron Age sites at Cuxton on the west side of that valley and White Horse Stone on the east side (Morris 2006). The location of salt production which used organic-tempered briquetage has yet to be found, but may have been somewhere in the estuary of the River Medway.

Evidence of use and intensification of salt production

It is possible to determine if ceramic materials, including fired clay fragments and vessels, had been used in association with salt production due to the distinctive array of oxidisation colours which result from direct contact with brine and the subsequent loss of oxidised clay colouration as this association intensifies into bleaching of the iron from the clay. This effect was first noticed by Matson (1971) on pottery from Mesopotamia, observations confirmed by Peacock (1984) through experimentation as a method for understanding the so-called 'white slip' on the exterior of amphorae produced on the North African coast in Tunisia. The white slip appearance was simply bleaching of iron oxides from the clays due to saltwater being used in the manufacture of the amphorae.

Bleaching can occur both on briquetage and on pottery associated with salt production. If this effect is observed on pottery, the pots are usually considered to have been used secondarily as either brine carrying or storing containers (and occasionally even as salt evaporation containers). The role of pottery vessels in salt production activity on the A2 sites is discussed elsewhere (see Brown and Couldrey this vol. and archive report on the petrological analysis of two flint-tempered pottery fabric types).

If salt production occurred over a number of centuries in an area, it is possible to suggest whether intensification of production occurred through time (Morris 2007). The types of evidence used to assess this include an increase in the number of saltern sites, the change from direct to indirect heating structures, and increased bleaching of container sherds due to longer or repeated use to produce more salt. In north-west Kent, small quantities of late Bronze Age briquetage suggestive of salt production evidence were found at Cobham Golf Course (Morris 2005a) and Hoo St Werburgh (Moore 2002, fig. 4, 1–2). For the early/middle Iron Age the only direct saltern production evidence currently known in this area was found at Site C East. Early Iron Age salt production in north-east Kent has been suggested on the Isle of Thanet but the evidence is very slight (Macpherson-Grant 2007). It is only in the late Iron Age and Roman periods that there appears to have been an increase in the number of recognised and documented salterns, both along the south-side of the Thames and Romney Marsh on the south coast (Miles 1975; Barford 1982; Detsicas 1984; Philp and Willson 1984; Barker 1998; Philp 2002).

The frequency of examples displaying salt bleaching and the degree and depth of this effect into the walls of the container sherds are modest characteristics in the A2 assemblages. A total of 479 container sherds (8% of the total) display clear evidence of bleaching. A similar total of 476 sherds displayed a range of faint traces of bleaching. This infrequent evidence of sustained use of vessels was also observed in the Tollgate and West of Northumberland Bottom briquetage assemblages (Morris 2006). This suggests that the repeated or long-term use of briquetage containers was not occurring in north-west Kent during the early Iron Age.

This contrasts considerably with the frequency of affected examples and degree of bleaching found amongst the container sherds in several late Iron Age and early Roman assemblages from the Fenland (Morris 2007). The nature of production at Site C East was thus most likely small-scale and conducted to make salt for local use and limited, intra-regional exchange. The difference in the intensity of repeated or long-term use of containers between the mid 1st millennium BC and the early Roman periods is striking and indicates that the mode of production in the Fens had changed significantly during these 500 years. A second characteristic of use observed in the A2 briquetage collection is abrasion on the interior surface of some container sherds and on others an additional, interior layer of clay on top of an original bleached surface. Abrasion would have resulted from the scraping of salt out of the containers and this relining would have given containers a longer span of use. Donnelly and Anderson-Whymark (this vol.) noted a modest flake-oriented assemblage of 95 flints in good condition from the large pits in Site C East. It may well be that these were employed as scrapers to remove the salt.

A third characteristic which suggests a lack of intensive use amongst the fabric S501 vessels in particular is their overall firing condition which is different from the Q501 and S501 fabric vessels. The majority of Q501 and S502 sherds are completely oxidised (oxidised through the wall thickness), while the majority of S501 sherds are unoxidised on the interior, which suggests that these vessels were not repeatedly heated in an oxidising atmosphere which could have changed their fired appearance. It would not be surprising to learn that the S501 vessels had been used only once or twice.

Quantity of salt produced

Proposed reconstruction of briquetage containers in the A2 collection based on the refitting exercise of the sherds in pit 5066 allows for consideration of the quantity of salt produced during the episodes represented by the deposit of container material recovered. If the vessels were flared in profile, measured between 380–400mm in diameter at the rim, 140–200 mm at the base and over 120mm in height, then an approximate calculation which uses the formula of π x radius squared x height for the cubic centimetres within a cylinder can be adapted for this conical shape (Fig. 3.68). Taking the radius squared as 20cm x 20cm x height of approximately 15–20cm x 3.14 results in a range from 18840cc to 25120cc, or 18–25 litres of salt for a *cylindrical* shape with these measurements. The *conical* shape of an actual briquetage container would reduce this amount by approximately one-third to 12–17 litres of salt per container if used only once to its full capacity. There is no evidence to indicate whether the containers had been used to achieve this amount or not; this is simply an approximation of what might have been achieved. In pit 5066 there were fragments from at least three to five different briquetage containers based on different vessel sizes and fabrics. If these calculations are broadly correct, then the amount of salt produced using these containers could have been in the region of 36–85 litres. Such amounts at the lower range would have been useful to a group of two or three families salting meat, making cheese and butter and flavouring meals for a year, while at the higher range the amount could have satisfied twice that number of people or more.

Deposition and spatial variation

The vast majority of briquetage was recovered from two early Iron Age pits, 5066 and 5110, located at the eastern end of Site C (Tables 3.10 and 3.13). They are part of a group of artefact-rich pits, others being 5130/5242 and 5992. These and smaller early Iron Age pits 7209 and 7235 all contain some briquetage, but in limited quantity. Therefore this discussion will focus on pits 5066 and 5110 only.

There are seven briquetage-bearing layers in pit 5066 and ten layers in pit 5110. The term 'layer' is used here to differentiate from the traditional use of

the word context because many of the contexts only represent that part of a layer in one-half of the sectioned pit. For example, contexts 5063 and 5233 are the same layer in pit 5066 and contexts 5132 and 5224 are the same layer in pit 5110. Table 3.14 presents this summarized data for 'layer-contexts' and shows how much variation exists between the two pits. A massive amount of briquetage was deposited in one layer in pit 5066, layer-contexts 5063/5233, and it is the only layer of significance in this pit; all other layers contained less than 1kg of briquetage. In contrast, pit 5110 contained four significant layers of material. Pit 5110 also had five other layers with more than 500g of material while pit 5066 had only one other layer. Therefore, it appears that there were several significant dumps of broken fragments of briquetage weighing between 2 and 7kg into pit 5110 but only one extremely large dump of 22kg into pit 5066.

Group 5750 briquetage altogether includes equivalent amounts of both Q501 and S501 container fragments but only pit 5110 also has numerous fabric S502 sherds. Pits 5066 and 5110 revealed nearly the same quantity of briquetage by weight (23kg and 21kg respectively) but the amount of each specific container fabric varies considerably by weight, with two and a half times more Q501 in pit 5066 than pit 5110, 28% more S501 in pit 5110, and the appearance of 8.6kg of fabric S502 in pit 5110 but none in 5066 (Table 3.14). Both pits contained rare container sherds made from fabric V501 (Table 3.10). At least six times more hearth structure material by weight was recovered from pit 5066 than pit 5110 (Table 3.10). In addition, nearly all of the pedestal fragments from the A2 excavations were found in these pits. Therefore, there are similarities and differences in the deposition of briquetage into these two pits.

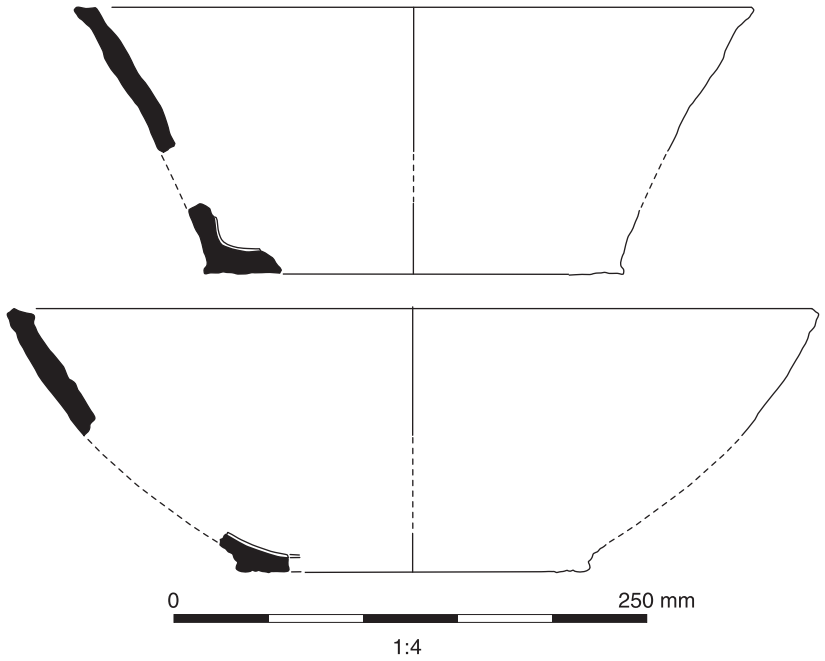


Fig. 3.68 Potential reconstructed vessel shapes

Table 3.14: Quantification of briquetage by layer-contexts in pits 5066 and 5110 (weight in grammes)

Pit 5066			*Pit 5110*		
Layer	*CT*	*WT*	*Layer*	*CT*	*WT*
5062/5227	66	286	5111/5220	115	451
5140/5232	121	846	5112/5221	100	648
5063/5233	2129	22074	5113/5222	312	305
5414	6	34	5125/5223	215	870
5416/5496	18	92	5132/5224	1006	5199
5431/5499	2	32	5149	713	2609
			5155/5230/5156	972	6758
TOTAL	2342	23364	TOTAL	3433	16840

The nature of briquetage fragmentation is also different between pits 5066 and 5110, and it would not be inappropriate to suggest that the behaviour associated with the fragmentation and deposition of briquetage into pit 5066 was different from that associated with pit 5110. As discussed above, this may be a chronological difference of as little as one to ten years or a generation (20–25 years). Or it may be a personal difference with different saltmakers or saltmaking groups depositing into the two pits at the same time or at different episodes. The variability encountered may also include a sequence of experimentation with different clay resources; first the shell-rich fabric (S501; 7.2kg) to make containers, followed by the sparse shell, silty fabric (S502; 8.6kg) and then the simply silty fabric (Q501; 4.2kg) deposited in pit 5110 followed some time later by the use of primarily silty fabric (10.2kg) but also shell-rich fabric (5.1kg), but interpretation of the likely sequence is not obvious. Another possibility is may be that these three dominant fabrics, Q501, S501 and S502, represent the local clay resources available to three different saltmakers in the local area, who chose to work together during the saltmaking season but preferred using their own clays (see also below).

For the hearth structure material, variation is again apparent between these two features (see archive report for details), and altogether the evidence seems to point towards possible experimentation and selection of different clay resources by saltmakers at slightly different times. If clay resource selection is the dominant explanation for the deposition patterns recovered, then that selection could indicate different saltmakers bringing their local clay, containers or both to this location at the same time to make salt and deposit briquetage.

Not only is there variation in the frequency of specific fabrics chosen for briquetage construction, fragmentation and deposition but the lack of completeness of any class of briquetage material is striking. The amount of either Q501 or Q505 fabric hearths is small, no container of any fabric is complete or even offers a total profile, and only two of the pedestals have complete dimensions, all of which begs the question—where is the rest of the briquetage? It may be that the focus of salt production takes place further north, and the A2 corridor is at the edge of this activity.

Salt production methods and the salt production landscape

The evidence of salt production presented above does not include an *in situ* saltern hearth or water management features. The large pits where quantities of briquetage have been found were not clay lined and, therefore, unlikely to have been constructed for the storage of saltwater during production procedures. This suggests that the saltern hearth(s) may have been located somewhere just north of Site C East, and that what was recovered in these pits was simply the disposal or special deposition of large quantities of production debris from a nearby saltern along with other materials.

Both Site C East and Tollgate are not unique in their raised location about 50m above sea level and 3–4km distance from seawater. They are located just opposite the Thames from the late Bronze Age saltworking site at Mucking North Ring (Barford 1988a, fig. 27; 1988b, fig. 36–8), which was located on a terrace at 30m above OD and 1km north of the present day Mucking Creek which leads into the Thames estuary (Bond 1988, fig. 1). The early Iron Age saltworking site at Bishopstone was located in a raised position at 44–50m above OD on the east side of the River Ouse in East Sussex (Bell 1977, 122). In northern France, a Hallstatt D/La Tène I salt production site was excavated on a terrace at Vignacourt, 7–8km north of the River Somme and 55km inland (Prilaux 2000). An even more extreme example is that of the Belgic (Atrebatic) period saltern found at Actiparc, near Arras more than 100km inland (Jacques and Prilaux 2003). It is possible that this apparently inland position was not the case during the second half of the 1st millennium BC due to the effects of the Dunkirk I transgression (Evans 1953; Devoy 1979), an environmental condition which has been used to explain the location of Iron Age salt production some 12km inland from the modern coastline of Belgium (Thoen 1975). This transgression appears to have prevented typical settlements being established in the foreshore area we know today (cf. Sealey 1996, 61). In north-west Kent, there are a number of north-south valleys coming off the Thames estuary and recent investigations have revealed that in the Ebbsfleet Valley brackish water conditions existed at least as far as mid-way between Northfleet villa and Springhead and levels for the waterfront at Northfleet villa in particular suggest tidal levels 1–1.7m OD during the Roman period (E. Stafford, pers. comm.). Bell (1977) has suggested that the raised position of the Bishopstone site may indicate that brine had been concentrated in the tidal zone using natural evaporation and then transported to that site where many bars and containers typical of salt production were found. It is not inconceivable, therefore, that during the early Iron Age saltwater creeks may have been closer to this section of the A2 and salt production may have been removed to the higher ground on the dip-slope of the North Downs at Site C East.

It was suggested that the contents of the three early Iron Age pit clusters at Tollgate, which held nearly 25kg of briquetage container fragments but no pedestals or hearth material, may have represented a crystallisation stage in the salt production process due to its distance from the Thames shore (Morris 2006). With the appearance of the Site C East pit group and the presence of pedestals and hearth material at the same distance from the

present shoreline of the estuary, that interpretation has less credence.

Who were the saltmakers?

The discovery of significant quantities of salt production ceramic equipment from primarily two pits on Site C East provides an opportunity to investigate who were the actual workers at this site. Were they craftspeople from Essex or Lincolnshire where salt production had been conducted since the late Bronze Age? Or were they continental European saltmakers who came to north-west Kent and showed local people how to make salt?

Clues to the answers may lie amongst the fabrics and fingering visible on the containers. Shell-gritted fabric S501 is an early–middle Iron Age type of pottery fabric commonly employed in north-west Kent which was also used to make briquetage containers found on the A2 sites. The presence of finger-smearing diagonally across the tops of briquetage container rims is not necessary for the functional performance of these large conical bowls; rather it is a type of decorative cultural marker. When other fabric types such as the fine, ungritted fabric Q501 and the slightly shell-gritted, fine fabric S502 were used to make containers, these vessels were also finger-smeared across the rims. Finger-smearing diagonally along the tops of pottery vessels (both jars and bowls) seems to be a style zone marker of early Iron Age pottery from the Medway Valley to the Darenth Valley, as at White Horse Stone, Cuxton, Tollgate, West of Northumberland Bottom and Farmingham Hill. Only occasionally is it found in east Kent (Couldrey 2007, figs. 82, 290, 85, 316 & 86, 320). It is not dissimilar to finger-tip impressions but is more piecrust-like in appearance. The similarities between contemporary pottery vessels and briquetage containers are strong enough to suggest that the makers of briquetage containers were most likely to have been potters. Otherwise, why waste time on an industrial processing medium (briquetage containers) when the decoration was not necessary in the saltmaking process? Early Iron Age potters were likely to have been women who made pottery on a part-time basis because the pottery is handmade, bonfired and used locally which is modelled as *household production* (Peacock 1982, 13–17) with some pottery production of glauconitic sandy wares destined for intra-regional distribution (Morris 2006) and referred to as *household industry* (Peacock, op cit., 17–25). The same potters could have made briquetage containers on a seasonal basis when saltmaking was optimal (cf. Bradley 1975; Gurney 1986, 141–4).

However, the effort to make all of the ceramics required to win salt from brine is time-consuming and physically challenging. Making the large conical bowl containers, the brick-shaped pedestals and the hearth structures as well as carrying the brine, even if it has been partially evaporated in the tidal zone, to the upslope location for the next stage of heating, would have been physically demanding. It is therefore likely that saltmaking was a family, if not community, activity with groups of women making containers, young girls and boys helping with hearth and pedestal making as less skill is required for these tasks, and men transporting the saturated brine. An additional task would have been collecting the fuel required to heat the brine, which may be represented by the various deposits of ash and charred plant remains found in the three pits at Site C East. Tending the fire, topping up the brine in the containers and removing the salt, when crystallised, were the final tasks in the process. The timing of optimal salt production is during the summer and this special activity could have been an annual opportunity for several communities or families in the immediate area to come together for this special event to celebrate and socialise while working and feasting—after winning the salt.

Fired clay *by Dan Stansbie with Tim Allen*

A total of 8665 fragments of fired clay, weighing 106,039g was recovered from Iron Age contexts in 13 sites (A–E, G, H, K, L and Pond D North) along the course of the road scheme. The largest concentrations of material occurred on Sites C and L with smaller amounts from Sites B and G, while the remainder produced relatively negligible quantities. The assemblage largely derived from deposits dated to the early Iron Age, although a relatively large quantity of material came from undated deposits and small but significant assemblages from the middle Iron Age, the middle to late Iron Age and the late Iron Age.

The composition of the Iron Age fired clay is summarised site by site below, in geographical order from west to east.

Site assemblages

Site K

The fired clay assemblage from Site K comprises 74 fragments, weighing 1888g and derives entirely from contexts assigned to the early Iron Age phase. It comprises some structural material in fabrics A, A2 and E, along with two fragments of triangular oven brick/loomweight in fabric A, one of which showed some evidence of burning. Both fragments were recovered from pit 10515.

Site L

The fired clay from Site L comprises 1017 fragments, weighing 25836g and is dominated by material from the early Iron Age phase, supplemented by smaller amounts from the earliest Iron Age, the middle Iron Age and the late Iron Age to early Roman period.

The early Iron Age material, including the fired clay from the single context phased to the earliest

Iron Age, is dominated by triangular oven bricks/loomweights in fabrics A, A2, E and F. Complete oven bricks/loomweights and oven brick/loomweight fragments were recovered from pit 12527/12700. Pit 12527 produced thirteen complete oven bricks/loomweights and 13 fragments. The oven bricks/loomweights were supplemented by some structural material in fabrics A and F and some unidentified material. Some of the structural material had internal wattle impressions and may have derived from oven walls and covers. All of the three early Iron Age contexts that produced oven bricks/loomweights also contained such structural material. Middle Iron Age fired clay comprises four fragments of structural material in fabric A. The late Iron Age to early–middle Roman material largely consists of structural material in fabric A, although there is also a small amount of unidentified material. The fired clay from unphased contexts is again dominated by structural material in fabrics A, A2 and E, with some unidentified material also present.

Site A

Very little fired clay from this site came from Iron Age contexts, but unphased layer 3067 produced a possible pedestal or oven plate, weighing 94g in fabric E.

Fired Clay from Site B

The fired clay from Site B comprises 1937 fragments, weighing 21,399g. It derives largely from middle or late Iron Age features, although there are also small amounts of early Iron Age material. The early Iron Age material is exclusively structural and comprises fabrics A, A2 and E. The middle and late Iron Age fired clay is dominated by structural material in fabrics A and E, although fabrics A2 and D are also present. Much of this middle and late Iron Age structural material has internal wattle impressions and probably derives from oven walls or covers.

This is supplemented by a number of objects, which are largely oven-related including two triangular oven bricks/loomweights and a pedestal base of triangular profile in fabric E from pit 3686 (see Fig. 3.67 no. 24). Part of a pedestal base of cylindrical cross-section in fabric E came from ditch 4408 (Fig. 3.67 no. 25), and another in fabric A2 from pit 4268 layer 4266 (Fig. 3.70), while a pedestal of square shape in fabric A was recovered from ditch 4744 context 4688 (Fig. 3.70). The triangular and cylindrical forms are believed by Morris to be associated with briquetage production, and are support types PD4 and PD5, but the square type may have been used in ovens. Wall daub in fabric E came from pits 4969 and 4606. There are also two fragments of perforated oven plate in fabric B, from late Iron Age ditch 4583 and pit 4606. These are very similar to late Bronze Age examples, and may be residual (see Chapter 2 Fired clay). The material from late Iron Age to early Roman and early Roman contexts is largely structural and comprises fabrics, A, A2 and E. It probably derives from similar sources and activities as the material from the middle and late Iron Age phases. A small amount of structural material also derives from unphased contexts.

Site C

Site C produced 3254 fragments of fired clay, weighing 41,963g. The assemblage is dominated by material from the early Iron Age phase, although this is supplemented by small amounts from the middle to late Iron Age phase. In addition there is a small amount of material from unphased contexts. The fired clay from features containing pottery in fabrics current in the late Bronze Age to early Iron Age phases, all of which are considered to be early Iron Age, is largely structural material in fabrics A, A2, B, D and E. The internal wattle impressions suggest that this is probably derived from ovens and cooking related activities. There is also a cylindrical oven brick/loomweight in fabric A from context 5553, probably residual from the adjacent middle Bronze Age enclosure.

Material from features with diagnostic early Iron Age pottery is again dominated in terms of numbers of contexts by fired clay derived from probable oven structures in fabrics A, A2 and E, although fabrics B, D and F are present in smaller amounts. In addition there were 12 triangular loomweights/oven bricks: pit 5110 contained eight in fabrics A, D and E, pit 5130 produced three in fabrics A and E and pit 5066 produced one in fabric E. Pit 5130 also contained a residual cylindrical oven brick/loomweight in fabric A2, and pit 5992 a fragment of oven plate in fabric A2. Material from unphased contexts, in addition to structural material included a triangular oven brick/loomweight from posthole 5465.

Site D

Only a very little fired clay from Site D is of Iron Age date (145 fragments weighing, 781g) and belongs to the middle Iron Age. This material is structural, and in fabrics A and E.

Site E

The fired clay assemblage from Site E is small, comprising only 41 fragments, weighing 48g and the majority of it comes from contexts dated to the Iron Age phase, with a small amount coming from unphased features. The vast majority of this material is unidentified, being less than 5mm in diameter. Of the identifiable material the single fragment from an Iron Age context is structural and made in fabric E. Five fragments of structural material in fabric A come from an unphased context.

Site G

Site G produced 2284 fragments of fired clay, weighing 15,773g. This largely comprises material from contexts within the early Iron Age, supplemented by material from undated features. The fired clay from the early Iron Age phase is also

Fig. 3.69 Fired clay loomweights/oven bricks sf 473 and 1285

largely structural and mostly made in fabrics A and E, supplemented by small quantities of fabrics A2, B, D and F. This material has frequent wattle impressions and some burning on the exterior surfaces, suggesting that it derives from oven walls and covers. There are also fragments of two triangular oven brick/loomweights made in fabric E, along with fragments of five more possible oven bricks/loomweights in fabrics A and E from pit 9010 and an additional fragment of triangular oven brick/loomweight from pit 9567. The remaining material comes from unphased contexts and comprises structural material in fabrics A and D and fragments of a triangular loomweight in fabric A.

Site Pond D North

Pond D North produced 65 fragments of fired clay, weighing 434g. Most of this material belongs to the late Iron Age phase, is entirely structural in character and made in fabric A. No wattle impressions were noted, but it likely to derive from oven walls and covers.

Discussion

The large quantities of generic structural material deriving from all of the sites probably mostly represents broken up oven walls and covers, and less commonly, wall daub from buildings.

Two types of object were found in the Iron Age features: triangular oven bricks/loomweights and pedestals. The pedestals were very varied in type, but many have been identified as associated with salt production, and so are described and illustrated in the briquetage report (see Morris this vol. and Fig. 3.67). A second example of her cylindrical support type PD5 was only identified late in the preparation of the report, so is illustrated on Figure 3.70. On the basis of very similar pedestals from Essex, Morris suggested that this type of pedestal was of late Bronze Age date reused in the Iron Age, but the example from context 4266 was part of a larger group of fired clay, all in the same fabric, within a clearly late Iron Age pit. Although no pottery was found in ditch cut 4408, the ditch overall (4618) contained middle Iron Age finds. It is therefore more likely that these pedestals were still in use in the mid–late Iron Age, rather than being residual.

Triangular oven bricks/loomweights dimensions, fabrics and phasing

The majority of the triangular oven brick/loomweights from the A2 scheme date to the early or early–middle Iron Age, although examples were also found in both middle and middle–late Iron Age contexts (eg pit 3696). There was no systematic variation in size between phases, with the majority being between 50 and 70mm thick, having a side length of between 120 and 160mm and weighing 1kg on average. Two were between 70 and 80mm thick, with a side length of between 180 and 190mm and weighed around 2kg each. Of the two larger examples one came from a middle Iron Age context and one from an early Iron Age context. Perforations in the oven bricks/loomweights were generally worn around the edges, and several of them had grooves worn in the fabric between the holes.

Typologies of loomweights from Essex suggest that triangular varieties in the east of England date to the early Iron Age (Barford and Major 1992, 118–19). This fits the accepted chronology for such objects in Wessex and the Thames Valley. Elsewhere in Kent triangular loomweighs/oven bricks are common, as at Keston (Philp *et al.* 1991, 151–2 and

Fig. 3.70 Late Iron Age fired clay pedestal (context 4266) and square oven brick (context 4688)

fig. 42) and at White Horse Stone on the route of High Speed One (Hayden 2006a). Local examples were recovered from middle Iron Age pits at Farningham (Philp 1984, fig. 14) and at Hillside, Gravesend (Philp and Chenery 1998, 19).

Traditionally triangular objects have been interpreted as loomweights, although recent studies (Poole 1995a) have argued that they in fact functioned as oven bricks, serving as hearth or oven bases and/or as supports for oven plates (ibid, 285). Triangular ovenbricks/loomweights along the course of the road-scheme were largely confined to large cylindrical pits or shallow sub-circular pits of early Iron Age date. No material was recovered from any features identified as ovens or hearths; however, the vast majority of the features containing these objects also contained large quantities of material identified as oven structure debris. This may be seen as lending weight to the argument that the objects functioned as oven/kiln furniture rather than loomweights.

Illustration catalogue (Figs 3.69–70)

1 SF 473 triangular oven brick/loomweight; fabric E; pit 3686 layer 3760
2 SF 1285 triangular oven brick/loomweight; fabric A; pit 12527 layer12616
3 Fragment of small cylindrical pedestal of Late Iron Age date, fabric A2, pit 4268 layer 4266.
4 Square oven brick of Late Iron Age date, fabric A; ditch 4744 layer 4688

Potin coins *by David Holman*

A total of six Iron Age coins were recovered during the course of the excavations, all from the Iron Age settlement area in Site B. These are all potin coins belonging to the latter stages of the Flat Linear I series, dating from the middle to latter part of the second quarter of the 1st century BC. Using Derek Allen's classification (Allen 1971), they all belong to his classes J and L. Flat Linear I potins have long been accepted as being of Kentish origin and are found across much of the county (eg Holman 2000).

Of these coins, five came from separate, securely stratified contexts in different Iron Age pits. In several cases, these pits contained other material of a nature which gives reason to consider the possibility of deliberate deposition, perhaps votive in character (eg Hill 1995). No later Iron Age coins were recovered, perhaps surprising given the proximity of the major Iron Age and Roman site at Springhead, only 2km to the north-west, from where a significant assemblage of Iron Age coins has been recorded, principally consisting of struck bronzes dating from the later 1st century BC onwards. Conversely, only three Flat Linear I potins, all late types, have been recorded from Springhead and constitute only a very minor part of the assemblage there. This might suggest that the potins from the present site were deposited prior to the main phase of deposition at Springhead, ie before *c* 30 BC, otherwise one might reasonably expect later coins to also be present.

A further 68 potin coins have to date been recorded from that part of North Kent between the rivers Medway and Darent which includes the site discussed here. Of these, 29 are of Flat Linear I, marginally more numerous than those of the earlier Kentish Primary Series. The Flat Linear I coins from this area are split roughly evenly between early and late types. Other than those from Springhead, the closest multiple finds from archaeological excavation are three unspecified later Flat Linear I potins from Stone Castle Quarry, Greenhithe, some 5½km to the WNW of the current site (Detsicas 1966, 188). Also from this area, excavations on an Iron Age site at Cliffe, 10km to the ENE of the current site, recovered five Flat Linear I potins, three of which were stratified in Iron Age features and associated with contemporary pottery; these included two of Allen class L (Haselgrove 1998, 63–4). A small number of other, single Iron Age coins are recorded as having come from close to the current site, including three noted as coming from the same grid square (TQ 6371) but none of these are late Flat Linear I potins.

Beyond the aforementioned rivers, numerous other multiple finds of stratified Flat Linear I potins have been recorded. Of the thirteen potins known from the major site at Rochester, 10km to the ESE of the present site, six are of Flat Linear I but the coins from here are poorly recorded and a breakdown of types is currently not available. Further east, at Canterbury, 21 of the 78 recorded potin coins, all from excavation, are of Flat Linear I types, and virtually all of these are Allen L types; many, however, come from disturbed, residual contexts because of large-scale later activity (Holman 2005). Somewhat further west, from Keston, four unspecified Flat Linear I potins were recovered from a single pit together with one from the early part of the series from another pit (Philp 1999, 85).

By far the majority of Iron Age coins in Kent have been found by metal-detector users in ploughed fields. Those from archaeological excavations account for less than 20% of the total and stratified coins are rarer still, especially from primary contexts and associated with other material; excavated coins not infrequently come from later features as a result of their having been disturbed by subsequent activity, as is frequently seen at Canterbury. As such, the coins from the present excavations are of some importance and represent a useful addition to the small corpus of securely stratified Flat Linear I potin coins from a primary context.

Metalwork *by Ian R Scott*

For the overall introduction to the metal finds, please refer to Chapter 5. Among the Iron Age features, which spanned the earliest to the late Iron Age, were two high status cremation graves, 4298 and 4312. The finds from these included a bronze-bound bucket and metal cup, and a collection of six

brooches, and these are presented in a separate report following the description of the graves at the end of this chapter. This report deals with metalwork from other Iron Age contexts (Fig. 3.71).

Only scraps of metal were found in early Iron Age features across the site, although metalworking in the early–middle Iron Age is demonstrated by smelting slag from pit 5066 on Site C. Among these were fragmentary strips of copper-alloy in pit 10520 on Site K, presumably binding of some sort. Metalwork was, however, recovered from the middle and late Iron Age settlement on Sites B and C west, and from a pit at the east end of Site C. Six potin coins were found, and are reported upon separately (see Holman above).

Site assemblages

Site B

Site B crossed an Iron Age and early Roman settlement, comprising a series of ditched enclosures either side of a metalled trackway. On the west side of the area two high status late Iron Age burials (4298 and 4312) were found, and as stated above, the finds from these are reported upon separately.

Other than this Iron Age finds were few, but include two of great intrinsic interest. Firstly, there is an Iron Age linch pin of distinctive type, with a curved stem and plain loop terminal (SF 459; Fig. 3.71. no. 3). Secondly, there is also a Langton Down brooch (SF 482; Fig. 3.71, no. 1), a type which is dated to the early 1st century AD, and therefore potentially represents a pre-Roman brooch. Structural items, which cannot be dated closely, comprise a collar (context 4591) and three clamps or dogs (contexts 3467, 4022 x 2).

1 **Linch pin (Fig. 3.71, no. 3)**, with looped head and curved stem. The head is well-formed with a slightly thicker section at the top of the loop. Immediately beneath the loop the stem is pierce by a narrow rectangular section slot running front to back. This portion of the stem is square in section. Lower down the stem tapers and becomes circular in section. The curved end terminates in a plain button or knob. Fe. L: 148mm; W: 49mm. Site B, context 3678, pit 3676, sf 459.

A very distinctive object, it is best paralleled by a linch pin from the Llyn Cerrig Bach deposit (Fox 1946, 19–20, 78–9, pl ii, A, & pl xxxviii, no. 43; Savory 1976, 57 and fig. 29, 2). The Llyn Cerrig Bach material seems to have been deposited over a very long period of time and therefore it is not possible to use this item to provide independent dating. There are similar though much less well-preserved examples from a chariot burial at Garton Station (Stead 1991, 44, fig. 36), which Stead compared to examples from Jonchery-sur-Suippe, Marne (Stead 1965, fig.16: 3). The Garton Station and Jonchery examples have a much more

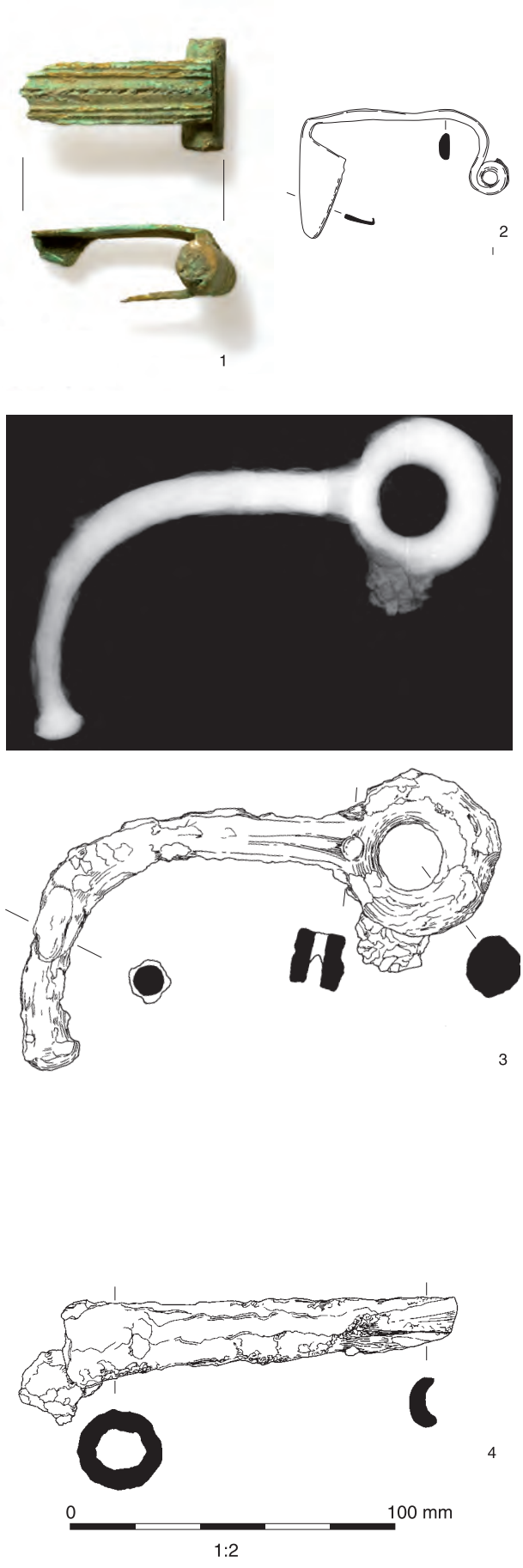


Fig. 3.71 Metal objects from middle and late Iron Age contexts: linch pin sf 540, gouge sf 564 and brooch sf 482

pronounced curve than the A2 example. Another example comes from the Waltham Abbey hoard and is dated by Manning to the very late Iron Age (Manning 1985, 72–4, 184, & pl. 31: H39). The loop of the Waltham Abbey example is incomplete but the identity and form of the linch pin is quite certain.

A radiocarbon determination of 210–40 cal BC (NZA 30118) was obtained on a charred seed from a deposit immediately overlying this object.

2 **Langton Down brooch (Fig. 3.71, no. 1)** with straight flat reeded bow and enclosed spring. The bow has almost no curve and is short. Most of the catch plate is extant. Cu alloy. L: 31mm; W: 17mm. Site B, context 7793, ditch 7792, sf 482. Dated to the early 1st C AD.

Site C

Site C was dominated by evidence for a medieval rural settlement, but also included the edge of the Iron Age and early Roman settlement to the west in Site B. Iron Age metalwork is rare on Site C but those finds that were recovered are of note. There was a single tool, a socketed gouge (SF 564; Fig. 3.71, no. 4). The gouge, which was found in a pit alongside a Neolithic ground stone axe, was probably Iron Age in date. There is also a simple one piece sprung brooch (a so-called 'Nauheim derivative') (sf 522; Fig. 3.71, no. 2), found in a medieval ditch within the middle–late Iron Age settlement, that could be of late Iron Age or early Roman date.

3 **Socketed gouge (Fig. 3.71, no. 4)**, with closed socket. No visible nail(s) to secure object. Blade incomplete, but there is clear evidence that the blade had a hollow curved cross-section. Fe. L: 201mm; Socket D: 28 x 27mm. Site C, context 5954, pit 5953, sf 564.

Socketed iron gouges are known from both the late Iron Age and the Roman period (Manning 1985, 24). There is an example from Old Down Farm, Hampshire from a middle Iron Age pit (Davies 1981, 124, fig.29:14) and two socketed gouges and a socketed chisel from Danebury (Sellwood 1984, 351, fig 7.11: 2.44–6). Other Iron Age examples can be cited from Glastonbury Lake village (Bulleid and Gray 1917, 372, 383, pl. lxi, i, 62) and from the Waltham Abbey hoard (Manning op. cit., 24, pl. 11: B45). Manning dates the Waltham Abbey hoard to the late Iron Age or early Roman period (Manning op. cit, 184).

4 **Simple one piece brooch (Fig. 3.71, no. 2)**, the so-called 'Nauheim derivative'. Bent and incomplete. Originally *c* 50mm long. Cu alloy. L extant: 32mm. Site C, context 5092, ditch 5091, sf 522.

Area D

Only a small number of Iron Age features were found in Site D, none of which produced any metal objects. The ditches of a large rectilinear enclosure produced several brooches of 1st century AD date, but the enclosure and its finds are believed to be early Roman (see Chapter 4).

Iron Slag *by Lynne Keys*

A very small assemblage of Iron Age slag, recovered both by hand and from environmental samples, was examined for this report. Examined by eye and categorised on the basis of morphology, each slag or other material type in each context was weighed.

Activities involving iron can take two forms:

1) Smelting: The manufacture of iron from ore and fuel in a smelting furnace. The slag produced takes various forms depending on the technology used: furnace slags, run slag, tap slag, dense slag or blast furnace slag.

2a) Primary smithing: This took place in periods before the late post-medieval development of casting iron. It involved the hot working (by a smith using a hammer) of the iron lump on a stringhearth (usually near the smelting furnace) to remove excess slag. The slags from this process include smithing hearth bottoms and micro-slags, in particular tiny smithing spheres.

2b) Secondary smithing: hot working, using a hammer, of one or more pieces of iron to create or repair an object. As well as bulk slags, including the smithing hearth bottom, this generates micro-slags: hammerscale flakes from ordinary hot working of a piece of iron (making or repairing an object) or tiny spheres from high temperature welding to join or fuse two pieces of iron.

Most of the slag in the assemblage was undiagnostic, ie could not be assigned to either smelting or smithing either because of its morphology or because it had been broken up during deposition, re-deposition or excavation. Other types of debris in the assemblage may be the result of a variety of high temperature activities—including domestic fires—and cannot be taken on their own to indicate iron-working was taking place. These include fired clay, vitrified hearth lining, cinder and fuel ash slag, all of which may be produced by domestic fires.

Discussion of the assemblage

On Site C, pit 5066 contained a small amount of iron slag, including a possible fragment of pre-Roman furnace slag. It has relatively large, burnt-out, charcoal inclusions, often the case with Iron Age smelting slag. This pit is early–middle Iron Age, so the possible furnace slag is of some interest. Previous work on iron slag from the HS1 sites such as Leda Cottages and White Horse Stone changed long-held ideas concerning iron-smelting techniques in the Iron Age (Keys in Hayden 2006a).

Site G, pit 9567=9052, produced a very tiny quantity of iron flakes, coal and a micro-run in soil sample 908. The pit was radiocarbon-dated to the early–middle Iron Age so the presence of a tiny quantity of coal is unusual. Fragments of coal were also recovered from another pit on Site G, from a prehistoric posthole on Site E, and from a late Iron Age ditch on Pond D north, raising the possibility

that coal was used as a fuel in the Iron Age. These features were, however, all shallow except for pit 9567, and this pit was part-excavated during the HS1 excavations, so the coal may be intrusive.

Worked stone *by Ruth Shaffrey*

Iron Age contexts (excluding late Iron Age) produced the greatest number of worked stone items, mainly from Site B (Table 3.15).

Querns and processors

Two cobbles of quartzite and flint were recovered from late Iron Age ditch fills (19232 and 19123) at Pond D North and another from an undated gully of probable late Iron Age date (19188). All three stones have some evidence for wear, either percussion wear or polish from rubbing and both can be classified as hammerstones or processors.

A total of seven probable querns were recovered, two of which are positively identifiable as saddle querns. One is roughly formed but heavily damaged and burnt and now in two fragments (SF 1288, SF 1354). It is of sandstone probably from the Hythe Beds of the Lower Greensand and its two fragments were recovered from early Iron Age pit fill 12528=12701 on Site L. The other definite saddle quern was found in a middle Iron Age pit on Site B (SF 467, fill 3760). It is roughly shaped all over and is also made from a Hythe Beds sandstone. This same pit produced two further fragments of another sandstone from the Hythe Beds (3689, SF 465 and 466). Although these are not adjoining they appear to be from the same quern and are counted as one item; they are not sufficiently complete to determine whether they are from a rotary quern or saddle quern.

A single probable saddle quern fragment was recovered from early Iron Age pit 5110/5219 on Site C (5422, SF 543); it is made from a very sparkly quartz sandstone with weathered feldspar inclusions of unknown origin. Two probable quern fragments are of the purple ferruginous sandstone used during the Bronze Age; one was recovered from an early Iron Age ditch fill on Site G (9237) and another from a probable late Iron Age ditch or gully on Site A (3083).

Table 3.15: Iron Age worked stone

Category	*Site L*	*Site A*	*Site B*	*Site C*	*Site G*	*Pond D North*	*Grand Total*
Quern	1	1	3	1	1		7
Weight			6				6
Processor						3	3
Spindle whorl			1		1		2
Other			1			3	4
Total	1	1	11	1	2	6	22

A large fragment of Millstone Grit was recovered from the final fill of pit 4962 (layer 4968) on Site B (SF 454). Pit 4962 contained pottery sherds indicating a date of deposit during the 1st century AD, and in the absence of any clearly Romanised forms or fabrics, probably before AD 70. As it could therefore be early Roman, this object is described in detail in the stone report in Chapter 4.

A single small rotary quern fragment also recovered from a pit fill on Site B (3646, SF 481) is of probable Lodsworth Greensand. Lodsworth Greensand has only recently begun to be recognised in Kent with several notable examples from nearby Springhead town (Shaffrey 2011a). This particular example, however, may push the known use of Lodsworth Greensand in Kent back from late 1st century/early 2nd century AD into the late Iron Age. Rotary querns Lodsworth Greensand occur in the Upper Thames Valley at this time (Shaffrey and Roe 2011), so it is possible that the querns were also being transported downriver.

Although the quern fragments appear to demonstrate greater variety of lithology than those from earlier phases, they are mainly variants of glauconitic calcareous sandstone or ferruginous sandstones from the Lower Greensand Hythe and Folkestone Beds (see Chapter 2). These are the most common Iron Age quern materials in north-west Kent, with nearby examples from the A2/A282 Improvement scheme, Dartford Football club and Darenth Gravel Pit as well as sites across the rest of Kent (Shaffrey 2011b; Philp *et al.* 1998, 43).

The two exceptions to this pattern of using Kentish lithologies are one fragment of possible Lodsworth Greensand and the fragment of Millstone Grit, both found on Site B. The Lodsworth Greensand belongs to a feature dating to the late Iron Age, but the Millstone Grit could be early Roman. These predate the main import period for both materials and are of some significance. It is not clear whether they are a reflection of matrimonial links/evidence for gift giving or an indication that Site B had access to items not available elsewhere for other reasons.

Worked chalk

Two plain chalk spindle whorls were recovered from Site B (3454, SF 451) and G (9078). One example (SF 451, Fig. 3.72, no. 2) is of typical B2 form but is heavy and large for a spindle whorl at 94g and also has a wide perforation at 12mm minimum. The second item is incomplete and is good evidence (along with the chalk weights) for the manufacture of chalk products on site. It was recovered from pit fill 9078 (Fig. 3.72, no. 1) and is roughly circular in shape with partially cut perforations evident on both faces. Although it is only partially shaped and thus larger than the intended product, it compares well to the first example, being larger (78mm diameter) and heavier (169g) than finished typical spindle whorls. It is possible these

Fig. 3.72 Two chalk weights (sf 401 and sf 408) from pit 4011

two discs may have served an alternate function, perhaps as net sinkers (Walton Rogers 2007, 25) although excavations in Townwall Street, Dover did produce a large assemblage of comparably large and heavy items, definitively interpreted as spindle whorls (Riddler and Walton Rogers 2006, 282).

A group of five complete chalk weights, one partially made weight and a number of apparently unworked, but presumably related chalk fragments were found on Site B (SF 468, 470, 400, 401, 408, 472). Three of the weights are of a distinctive form with the top corners removed and perforated edge to edge in a projection above the top of the weight (SF 400, 401, 408 Fig. 3.72, nos 3–4). These were all recovered from fills of pit 4011. Two further weights were recovered from pit 3676 (SF 468, 470 Fig. 3.73, nos 5–6). One of these is a large roughly triangular cobble of chalk with a natural perforation running from edge to edge and some shaping. The other is a long oblong of chalk, clearly shaped but also with the remains of a natural perforation. These have more obviously made use of naturally occurring pieces of chalk but the cobble in particular is very similar to the first three weights. The same pit also

Fig. 3.73 Two chalk weights (sf 468 and sf 470) from pit 3696

produced a number of further broken pieces of chalk and a large cobble of roughly the same weight as the finished items, but in this case not worked at all (SF 469). One further piece of chalk recovered from late Iron Age ditch fill 3771 appears to be a partially worked weight (SF 472 not illustrated). It does not have a perforation but has some tool marks on one side suggesting the process of shaping had begun. This piece could have originated in pit 3676 as the top of that pit was truncated by another feature whose upcast was used to backfill the nearby ditches.

All the weights bear some evidence that they were suspended, although it is not consistent between weights. Some have narrow grooves worn into the outside edges but one has very distinctive wear across the top of the stone, suggesting a tight loop was attached to the stone with the top of the loop cutting into the stone. Several of the stones bear evidence for wear on the main faces of the stone suggesting they rubbed against something during the course of their use.

Chalk weights such as those found on the A2 are not uncommon finds on Iron Age sites but are more likely to be found in areas with natural chalk reserves such as here. As long ago as 1917 a brief survey by Bulleid and St George Gray listed at least eleven sites in the Wessex area with chalk weights and there are more recent noteworthy assemblages at Danebury and Maiden Castle (Brown 1984; Wheeler 1943). Easton Lane Winchester produced seven similar chalk weights and although they were not as carefully worked, they were all recovered from the fill of the same middle Iron Age pit (Fasham 1989, 108–112, fig 102).

In most of the British archaeological literature, these large chalk and stone weights are referred to as loomweights. This interpretation seems largely based on their similarity in shape, size and weight to Iron Age fired clay objects generally interpreted thus for example at Rushey Mead (Pollard 2001, fig 7.1) and Glastonbury Lake Village (Bulleid and Gray 1917). An alternative interpretation for these triangular fired clay objects has been offered (Poole 1995a) but can be eliminated for the chalk here by the presence of wear marks consistent with suspension. The most notable assemblage of chalk weights of this type was found at Danebury and they were interpreted as loomweights on the balance of ethnographic evidence. Indeed, despite some in depth searching of the literature, few references could be found to large chalk weights in the British literature that did not refer to them as loomweights.

Despite the apparently overwhelming indication that these items are loomweights, interpretation of their function is rare (with the notable exception of Danebury) and appears to be a result of the perpetuation of an early assumption of function. However, at between 2 and 3kg the A2 weights are all heavier than is ideal for weaving (Walton Rogers 2007, 30-31) and it seems unlikely that they can have functioned as loomweights. In addition, although the Glastonbury examples were recorded under the heading of loomweights, doubt was cast within the report on this interpretation (Bulleid and Gray 1917, 574–5). In the Danebury report several alternative functions were considered and the author has commented that the interpretation of loomweight is by no means certain (Brown pers. comm.). Furthermore, the weights also bear a striking resemblance to a large assemblage of fishing weights rescued from the River Thames near Oxford (Thomas 1981, 129–33). Although these are thought to be of a much later date, their presence is a warning that other interpretations should be considered.

This raises the question of what function did they serve? The different shapes of the weights may indicate that they were made by different people or that they had a different function; the more crudely shaped examples may have functioned as fishing weights although not in the immediate vicinity. The careful attention paid to at least three of the examples implies they were intended to be visible; this would probably eliminate their use as fishing weights. The orientation of the perforation on these examples is certainly significant—by perforating edge to edge the weight could have been suspended flat against a surface more easily than if the perforation was through the faces. This is supported by the presence of wear on some of the faces. This may suggest that the weights were suspended against a flat surface, perhaps as thatch weights or more likely as gate/door posts which would have involved the weights moving up and down and banging/rubbing against the gate or door.

Whatever their function, it is clear that some serious thought was given to the design and manufacture of these weights. Their deposition as a group within a pit whilst still fully functional also lends credence to the idea that they were objects of some importance, either as personal belongings or to a particular property. Their deposition in this sort of context mirrors the evidence from other sites including a notable group of seven from the bottom of a single pit at Mount Caburn Camp (Bulleid and Gray 1917, 577). It is possible their deposition represents an act of ritual closure, especially if their function is related to access to an enclosure or building.

The partially made weight, in conjunction with the unfinished spindle whorl, provides good evidence that chalk was being worked on the site. This is not unexpected given that the local chalk was soft and easy to work and would have been available on the site. One other piece of worked chalk from a late Iron Age pit fill on Site B (3845) is a tooled structural block which may indicate that chalk was also worked for export from the site.

Worked bone *by Ian R Scott*

The quantity of Iron Age worked bone is limited, with just two bone objects from Site G. A possible

toggle made from a complete small bone, with the ends cut and polished (Context 9082; Fig. 3.74, no. 2) came from pit 9010. The second object was a fragment of weathered cut antler (Context 9061: Fig. 3.74, no. 1) from pit 9088. Both pit 9010 and pit 9088 contained pottery of early Iron Age date, and radiocarbon dates of the late 5th–early 4th century cal BC were obtained from both pit 9010 and pit 9052 beneath pit 9088.

A small cylindrical object with a very fine piercing through its centre was recovered from posthole 7142 in Site E, within a concentration of four-post structures. A late Bronze Age radiocarbon date was recovered from another posthole (not belonging to a structure); the rest were undated, but are likely to date either to the late Bronze Age or Iron Age. This object may have been a small cylindrical bead although the hole is so fine (<1mm) that it is difficult to image how the bead could have been threaded, and it may simply have been an offcut. An object this small may easily have been intrusive, and a prehistoric date is not considered likely.

1 **Handle fragment? (Fig. 3.74, no. 1)** Piece of cut and worked antler. L: 50, W: 25, Area G, Context 9061, Pit 9088
2 Possible **toggle (Fig. 3.74, no. 2)** made from a complete caudal vertebra (tail bone) from a large mammal (cattle or horse). The bone narrows in the centre and its ends have been smoothed and polished. L: 39, D: 11, Area G, Context 9082, Pit 9010
3 Possible **cylinder bead** (not illustrated). Small cylindrical bone object, with an extremely fine hole bored through its length, L: 4.5, D: 3.5, Area E, Context 7143, Posthole 7142, Sf 700

Fig. 3.74 Worked bone objects from contexts 9061 and 9082

IRON AGE OSTEOLOGICAL AND ENVIRONMENTAL EVIDENCE

Human remains *by Mark Gibson, Ceridwen Boston, Sharon Clough and Nicholas Marquez-Grant*

Inhumations and cremation burials were discovered in five areas along the A2 Road Scheme. Iron Age burials comprised a rare early Iron Age cremation deposit and two high status late Iron Age cremation burials on Site B, one middle Iron Age inhumation in a pit on Site C, and two middle Iron Age inhumations, one in a purpose dug grave, the other halfway up a large boundary ditch, on Site L. The high status cremation burials from Site B are described seperately at the end of this chapter.

Disarticulated human bone was retrieved from the fills of an Iron Age pit and ditch on Site B and one Iron Age pit on Site G. Radiocarbon dating was undertaken on four burials and one of the disarticulated bones, and the results are included in this report (for details see Radiocarbon dating report below).

Osteological analysis of the cremated human remains was undertaken in accordance with recommendations set out in McKinley (2004), while unburnt human remains were examined in accordance with national guidelines (Brickley and McKinley 2004; Mays *et al.* 2004). Skeletal age was assigned according to the categorised displayed in Table 3.16. A full methodology can be found in the digital archive report.

Iron Age cremation burial

Early–middle Iron Age in Site B

One of the upper fills (3454) of a large quarry pit or dene hole (3400) on Site B contained a quantity of early Iron Age pottery and a small deposit of cremated human bone (see Fig. 3.27).

Bone weight and skeletal part representation

The human bone from fill 3454 was well-preserved, displaying little, if any, post-mortem erosion or weathering. Trabecular bone was poorly preserved, however. The total bone deposit weighed 158.6g, indicating that it represented only a small proportion of the complete cremated skeleton. Deliberate selection of only a 'token' amount of bone by mourners is likely to be the most significant factor in the size of this deposit.

The most represented anatomical region by weight were the lower limbs (14.6g), followed by the skull (15.4g), the upper limbs (14.6g) and the axial skeleton (5.8g). The skull was represented by cranial vault fragments, including the occipital and parietal bones, and a styloid process fragment. In addition, there were four dental fragments (0.5g).

Table 3.16: Age categories for human remains

Age category	*Age*
Neonate	0-1 months
Infant	1.1 months-2 years
Young Child	2.1-5 years
Older Child	6-12 years
Adolescent	13-17 years
Subadult	<18 years
Young Adult	18-25 years
Prime Adult	26-35 years
Mature Adult	36-45 years
Older Adult	> 46 years
Adult	> 18 years
?	Unknown

The axial skeleton was represented by several vertebral fragments and rib shaft fragments. The upper limb was represented by the scapula, shaft fragments of radius, ulna, humerus, and intermediate phalanx, and a complete distal hand phalanx. Lower limb bone fragments present included the femur, tibia, fibula, talus and other tarsals, two proximal phalanges and one distal phalanx.

Palaeodemography

A minimum of one individual was present in the deposit. The general size of the cranial vault and long bone fragments tentatively suggested an adult individual. Sex could not be attributed due to the absence of diagnostic traits.

Palaeopathology

Healed periostitis, in the form of striated new bone formation overlying the original bone surface, was present on one fragment of right ulna and another possible ulnar fragment. Periostitis is a non-specific inflammation of the periostium or bone surface, which may develop in response to local or systemic infection, bleeding around the bone (for example from direct trauma, or due to nutritional abnormalities, such as scurvy or excessive Vitamin A intake) or secondary to other local or systemic disorders, such as venous ulcers or chronic pulmonary disease.

Colour

The majority of the cremated bone was yellow-white, but a mixture of white with blue and grey was noted on some fragments of the skull, axial skeleton, upper and lower limb fragments, indicating near but not complete combustion of the skeleton. Complete combustion occurs in sustained temperatures above 700°C (Holden et al. 1995).

Fragmentation

The largest fragment (a tibia shaft fragment) measured 33mm. The bulk of the assemblage showed a high level of fragmentation, however, deriving from the <5mm fraction. Observations of fissuring, cracking and splitting of the bone was limited by the small fragment size. However, in some of the bigger fragments of long bone transverse, longitudinal checking and warping were identified, indicating that the bone was 'green' or fleshed when burnt (Ubelaker 1989).

Discussion

This cremated human bone deposit within upper fill 3454 of quarry pit 3400 was dated by early–middle Iron Age pottery within the same deposit, and by a radiocarbon date of 380–200 cal BC (NZA-31265). The low bone weight indicated that only a small proportion of the complete adult skeleton was represented, although all body parts were present. The absence of other evidence of burning (such as burnt flint or soil or charcoal) suggested deliberate burial, as opposed to the dumping of pyre material within a pre-existing feature. Its association with much of a single pottery vessel might suggest that this was accompanied by grave goods or formed part of a 'special deposit' that included pottery but may not have been a burial *per se*.

Cremation burial appears to have been an uncommon rite in south-eastern England in the early and middle Iron Age. Prehistoric cremation burial is more usually associated with the early and middle Bronze Age and late Iron Age (Taylor 2001), although in recent years, an increasing number of unaccompanied and otherwise undated isolated burials have been radiocarbon dated to the late Bronze Age. It is possible that early–middle Iron Age cremation deposit 3454 represents the persistence of this late Bronze Age rite. At White Horse Stone, near Aylesford, Kent, both late Bronze Age and an early–middle Iron Age cremation burials were found, the latter accompanied by metalwork, a whetstone and a pot containing grain (Hayden 2006a).

Iron Age inhumation burials

Middle Iron Age in Site C

Unaccompanied skeleton 5129 was discovered within an isolated grave or pit (5054) on Site C (see Fig. 3.33). The body occupied one side of this sub-rectangular pit, and lay upon chalk at the bottom of the pit. It was orientated north-south and had been laid out in a flexed position on its left side, with the elbows flexed and the hands in front of the chest. Both the orientation and the body position is commonly found in the Iron Age in Britain. Residual pottery within the backfill was of late Bronze Age date. Radiocarbon dating of bone from the skeleton gave a date range of 400–200 cal BC (NZ30160).

Palaeodemography

Bone preservation was moderate to poor, with 50–60% of the skeleton preserved. Trabecular bone, in particular long bone epiphyses and pelves, was

largely destroyed, adversely affecting ageing, sexing and stature estimation. The skeleton was a probable female, aged 25–30 years.

Pathology

Surface erosion of the cortical bone may have obscured more subtle lesions, but enthesophytes on the lesser tuberosity and intertubercular groove of the proximal humeri were identified. The posterior femoral shafts displayed enthesophyte formation at the insertion point of the *Gluteus maximus*. Enthesophytes are small ridges of rugose bone formed by the ossification of damaged tendons and muscle fibres where they insert into bone. They are thus often associated with repetitive strenuous physical activity involving particular muscles or muscle sets.

Dental disease was present in the form of a medium- sized caries on the mesial surface of the right first maxillary molar (1/19 teeth), the loss of the crown of the first right maxillary premolar, and ante-mortem tooth loss of four mandibular teeth (4/20 sockets).

Metrics

Epiphyseal damage precluded stature estimation, although other measurements were possible. The platynemic index was 61, indicating marked flattening of the femoral shaft, whilst the tibia was in the mescnemic range (63). Such low indices are prevalent in modern non-western populations, and have been found in other prehistoric Britons, such as the Arras culture of the Yorkshire Wolds (Leese 1991, 172). The femora of two early Bronze Age males from Northumberland Bottom, Gravesend, Kent, displayed less flattening (87 and 75.1) (White 2006) than skeleton 5129. In contrast, the platycnemic index of one early-middle Iron Age skeleton from Little Stock Farm, Kent, was consistent with skeleton 5129, at 62.6. These indices have been associated with behavioural practices involving the lower limbs, including squatting.

Middle Iron Age in Site L

A large Iron Age to Roman ditch (13161) contained three skeletons (12750, 12778 and 12986) (see Fig. 3.23), a small deposit of pyre debris (12785) and fragments of disarticulated unburnt human bone (12681) and (12831). A small oval pit (12742) just south of the ditch terminus contained the crouched remains of an adolescent skeleton (12744). Skeleton 12778 proved to be of Roman date, while infant skeleton 12750 could be of Iron Age or Roman date; both are described in Chapter 4.

The human remains were recovered at different levels within the ditch, the earliest being an older child/early adolescent skeleton (12986) located towards the base. The skeleton lay largely prone with both arms flexed at the elbows and the left hand lying beneath the pelvis. The legs appeared tightly flexed, but the lower left leg was completely missing (possibly due to later truncation). The absence of a grave cut, the crouched body position and broadly north-south orientation of the burial is typical of the Iron Age pit/ditch burial tradition found widely across southern England (Taylor 2001), but the prone body position is less common, although not unknown. The disorganised arrangement of the arms and largely prone position of the torso suggested to the excavators that this had been a casual interment—that the corpse had been thrown into the ditch. This is not consistent with the careful arrangement of the legs, however, nor with the deliberate covering of the corpse with a dump of chalky rubble that was found to overlie the skeleton.

Skeleton 12986 was radiocarbon dated to the middle Iron Age (400–230 cal BC; NZA 30150) making this skeleton broadly contemporary with adolescent burial 12744 (380–200 cal BC; NZA 30161) located in a small oval pit or grave just beyond the ditch terminus. The tightly crouched body position and north-south orientation of skeleton 12744 on Site L is consistent with normative Iron Age inhumation burial practices. Unlike the more widespread practice of interment within pre-existing storage pits, however, oval pits or graves such as that for 12744 appeared to have been purpose cut. Early and middle Iron Age inhumation burials are rare in Kent, comprising only a few examples of isolated crouched inhumations (Parfitt 2004, 16; Mays and Anderson 1995), such as two burials from Mill Hill Deal, one dated 765–385 BC and the other *c* 200 BC (Parfitt 1995; 2004). More locally, a single adult male skeleton at Pepperhill Roman cemetery was radiocarbon dated to 350–40 cal BC (Witkin and Boston 2006). Burial practices differed from those of the Site L inhumations, however, in that this individual had been laid out prone and extended within a purpose-cut sub-rectangular grave.

Isotope analysis of skeletons 12986 and 12744 was carried out as part of the wider study of human skeletal material on Site L, and the results are presented alongside the Roman skeletons in Chapter 4.

Preservation and completeness

Bone preservation of skeleton 12744 was fair, whilst skeleton 12986 was fair to good. Cortical bone was eroded in places, fragmentation was moderate and the bone was fairly robust. Preservation of trabecular bone was fair. Both skeletons were approximately 70% complete, and all parts of the skeleton were represented.

Age and Sex

Both skeletons were broadly similar in age, being 12–13 years old.

Dentition

Skeleton 12986 had a very small carious lesion on the occlusal surface of the left lower first molar (1/16). In addition, there was a small groove on the

enamel of the right lower canine, possibly dental enamel hypoplasia (TPR 2%). No pathology was noted on the dentition of skeleton 12744. Both already displayed extra-masticatory wear of the incisors.

Disarticulated human remains

Iron Age pit and ditch deposit in Site B

The upper fill (4107) of shallow pit 4109 (se Fig. 3.32), dated to the Iron Age, contained adult foot bones. These were left 1st and 4th metatarsal, right 3rd and 1st metatarsal and 1st proximal phalanx. Although these bones were damaged post-mortem at the articular ends, the surface of the bone was complete. These bones represent a pair of feet.

The uppermost fill (3787) of ditch 3669 (see Fig. 3.39), dated to the late Iron Age, contained a fragment of the proximal tibia. This was an adult sized unsided fragment of the articular surface.

Iron Age pit deposits in Site G

The disarticulated skeletal remains of two individuals were recovered within the fill of a large early–middle Iron Age pit (9010) on Site G (see Fig. 3.17).

Preservation and completeness

The preservation of the two bones from Site G was very good—Grade 1–2 (McKinley 2004)—and displayed very little surface damage or weathering. The remains comprised of a near complete left parietal bone (fill 9077) and a complete manubrium (fill 9109).

Age and Sex

The small quantity of human bone recovered severely limited the osteological potential. Whist there was insufficient skull available to implement ectocranial suture closure ageing (Meindl and Lovejoy 1985) accurately, it was observed that fusion at the lambda had begun, but no other fusion had occurred. Combined with other evidence of advanced age (such as arachnoid granulations or the deepening of the meningeal arteries), this suggested that this individual was a young to prime adult. The small size of the manubrium in fill 9109 indicated that it was part of an older child. It was not possible to sex either individual.

Non-metric traits

Five wormian bones were observed on the occipital bone, with one located at lambda. The angle of the ossicles suggested that the individual had had an occipital bun.

Discussion

Taphonomy

The osteological potential of the A2 skeletal assemblage was greatly reduced by poor preservation of the bone. In general, cremated bone survived better than unburnt bone, as is usually the case, but even in the former, loss of trabecular bone was observed, and would have contributed to the low weights of most deposits. The acidic areas of Thanet Sands and brickearth on Sites D affected preservation the worst, and elsewhere preservation was better; the skeletons recovered from the ditch and adjacent grave on Site L showed markedly better bone preservation. Similarly, disarticulated bones recovered from Iron Age pit fills on Sites C and G were well preserved. In general, these findings are consistent with other Kentish burials, where the osteological potential has been severely limited by poor preservation, particularly in unburnt bone (eg Mays and Anderson's (1995) review of burials in Kent, and McKinley's (2006) Schemewide report on HS1 human remains).

Wider context of the Iron Age burials

The inclusion of both articulated and disarticulated unburnt human remains within storage pits in settlements is a widespread and frequently encountered Iron Age phenomenon in southern Britain, as at Danebury, Hants (Cunliffe and Poole 1991), Gravelly Guy, Oxfordshire (Lambrick and Allen 2004) and White Horse Stone, Kent (Hayden 2006a). The burial of skeletons in boundary ditches, of which skeleton 12986 is an example, is also well-known (eg Allen *et al.* 1993).

Less common are Iron Age inhumations within purposely-dug graves, although examples do occur, as at Frilford and Little Wittenham in Oxfordshire (Harding 1972; Allen *et al.* 2010), and groups of these are appearing, as at Yarnton, Oxon. (Hey *et al.* 2011), Suddern Farm, Hants (Cunliffe and Poole 2000) and Spring Road, Abingdon, Oxon (Allen and Kamash 2008). These are often associated with significant features, such as houses (Abingdon) or fenced enclosures (Frilford), but burial 12744 is clearly associated with the terminus of boundary ditch 13161, suggesting a link with burial 12986 in the ditch some 20m away. The different treatment of these two individuals, the one formally deposited in a grave, the other in the open ditch, and only covered by a little chalk rubble, is striking, although the significance of this remains unclear.

The middle Iron Age cremation burial in quarry pit 3400 is a rare instance of cremation during this period. While common in the middle and late Bronze Age, cremation burial is largely absent from the early and middle Iron Age, only becoming popular again in the late Iron Age. Another example of similar date was found at White Horse Stone (Hayden 2006a), however, so perhaps in Kent cremation continued alongside inhumation.

Animal bone *by Andrew Bates, Jacqui Mulville and Adrienne Powell*

A total of 2278 animal bones from Iron Age contexts were identified to species, along with a further 278

Table 3.17: Iron Age animal bone by species and site collected by hand; bone of the same individual counted as 1 NISP; figures in brackets are, or include, data from the CTRL excavations (Kitch forthcoming)

Species/Site (with associated sub-phases)	*Site*							*Total*
	K	*L & A*	*B & C*	*D*	*E*	*G*	*Pond D North*	
	EIA	*EIA/LIA*	*EIA/LIA*	*EIA/LIA*	*EIA/ MIA*	*EIA/ MIA*	*LIA/ ERB*	
Cattle	2	35	722	22	1	42		824 (387)
Sheep/goat	6	36	373	8		32		455 (84)
Sheep		6	77			7		90 (2)
Goat	1		3			2		6
Pig		16	428	3		58		505(69)
Horse		10	10			1		21
Ass		1						1
Equid sp		35	74	1		6(5)	1	117(10)
Roe deer		1	1	1		8(1)		11 (2)
Red deer	2		14			14(7)		30(93)
Dog		5	56	3		2		66
Hare			4					4
Toad		16	53			1		70
Frog			29			1		30
Snake			46					46
Wood/yellow necked mouse						1		1
Hedgehog			1					1
Total	11	161	1891	38	1	175	1	2278
Principal stock animals								
Cattle			45.1			36.7		44.0 (50.1)
Sheep/goat			28.1			25.9		29.1(26.1)
Pig			26.8			37.3		26.9 (23.8)

Table 3.18: Iron Age animal bone collected from soil samples by species and site; bone of the same individual counted as 1 NISP; figures in brackets are, or include, data from the CTRL excavations (Kitch forthcoming)

Species/Site (with associated sub-phases)	*Site*					*Total*
	K	*L & A*	*B & C*	*D*	*G*	
	EIA	*EIA/LIA*	*EIA/LIA*	*EIA/LIA*	*EIA/MIA*	
Cattle		1	14		1	16 (1)
Sheep/goat	1	6	76		10	93 (4)
Sheep			4		1	5
Pig	1	1	25		10	37 (12)
Equid sp			2		1	3
Dog			11	1		12
Toad			30		6	36
Frog		1	14			15
Snake			2		1	3
Lizard		1	4			5
Common shrew			5		26	31
Water shrew			2			2
Pygmy shrew			1		1	2
House mouse			14		1	15
Wood/yellow necked mouse			1		2	3
Total	2	10	205	1	60	278

collected from soil samples (Tables 3.17 and 3.18). Sites K, L and A were all in close association with each other, at the north-western end of the easement. Sites B and C were adjacent to each other and contained related features. In addition, at the south-eastern end of Site C, six early Iron Age pits were located in the vicinity of the L-shaped Bronze age enclosure ditch, 5892. The animal bones associated with the high staus late Iron Age cremation burials are described along with other aspects at the end of this chapter. A full methodology and analysis can be found in the digital report.

Comparing hand-collected bone (Table 3.17) to those recovered from the 67 soil samples (Table 3.18), bone of sheep/goat and pig would appear under-represented in comparison to those of cattle. Sheep/goat remains were predominantly excavated from pit features, and cattle from enclosure ditches, although significant numbers of both species appear in both feature types. Pig bone appears to be found in roughly equal numbers from each feature type (Table 3.19). The number of interventions by feature type will therefore have an effect on the overall proportion of bone of the principal domestic stock animals in the archaeozoological archive (see discussion).

The occurrence of cattle and sheep/goat bones within ditches is generally low per deposit with some exceptions such as ditch 7992. Within pits there is a similar low rate of deposition, and the tendency towards sheep/goat is indicated in Table 3.19, although five deposits in pits 4591, 3671, 3838, 3608, 4867 from Site B are skewed towards greater numbers of cattle bones than average. The same is true of shallow pit 9484 in Site G. Pits 3608 and 4591 truncated the middle Iron Age ring ditch, 3968, and pit 3671 truncated the late Iron Age ditches, 7197 and 7196. All three ditches contained greater quantities of cattle bone compared to other species and, as such, arguments could be made for residual material entering these pits. Pit 3838 was located in close proximity to abundant bone deposits in ditch 7992, and deposition of bone within the upper deposits of this pit maybe related to the same depositional activity seen in ditch 7992. Pit 9484 was an isolated deposit in Site G west, and was broad and shallow, similar to a ditch. Pig bones were typically of low occurrence per deposit, but a number of pits and a ditch that produced greater quantities of pig bone are discussed below under ABGs.

Table 3.19: Distribution of species by feature type; sheep/goat and sheep have been totalled; articulated or associated bone groups of the same individual counted as 1 NISP and ditch group 7992 excluded

Species	*Ditch*	*Pit*	*Other*	*N*
Cattle	57.4	39.2	3.4	716
Sheep/goat	27.1	67.4	5.5	543
Pig	45.9	45.9	8.2	427
N	104	68	21	193

Associated or articulating bone groups

Early Iron Age Pit 12527, Site L

Pit 12527 of Site L (see Fig. 3.6) produced a large number of sheep/goat bones, thought to be derived from a single sheep. The feature has been interpreted as an early Iron Age grain storage pit, measuring 2.12m by 1.44m and 0.62m deep. The seven deposits within it containing significant quantities of cultural material were deposited after the final use of the pit. The sheep bones within the fifth deposit of this feature, deposit 12579, were not excavated as an articulated animal. A number of cut marks on the femoral head of the left femur are evidence for the dismemberment of this hip joint. The bones are generally in a good condition, with less than 50% of the surface of the limb bones eroded, but it is quite feasible that a good butcher would not have left many further cut marks to be recorded. There was no evidence of the skull. A single first phalanx had been scorched at its distal end. Although the limb bones clearly pair up with their opposing counterparts, or articulate with adjacent bones, assigning this phalanx to the same animal is not as clear cut. Its browner colour in comparison to the other bones may suggest that this was an incidental inclusion from another animal. Similarly, an additional metatarsal is also present. The age of this animal was estimated using both mandibular tooth wear and epiphysial fusion states, which suggest that the animal was most probably slaughtered at the end of its second year or the beginning of its third year of life.

Early Iron Age Pit 9010, Site G

Pit 9010 (see Fig. 3.17) had been partially excavated to a depth of 0.7m by the HS1 excavations, truncating deposits down to the depth of 9078, with the remaining 1.15m left undisturbed. The feature is an early Iron Age storage pit, measuring 2m by 1.4m in size and 1.85m deep. Sixteen deposits were recorded by the OA excavations, most of which contained only a small number of bone per species.

Significant quantities of pig bones were recovered from context 9082, a deposit of burnt material. These remains were recognised on site as belonging to two articulated pig skeletons, but collapse of the section prevented their photography and recovery as individuals. Examination of the bones suggests that a minimum of four individuals were present, with the two older animals being female. The first of these comprised elements of the skull, including the mandible, and parts of both forelimbs. Elements of pig hind-limb fragments are also likely to be of this individual, but these elements were only represented by small fragments. Mandibular tooth wear and epiphysial fusion suggest an animal between

one and two and a half years of age. Most of the bones of this individual were charred. The second female appeared to be almost complete, but with the skull and the radius and ulna of the right forelimb missing. The unworn deciduous fourth premolar suggests an animal only a few months old. Two further pigs are indicated by a calcined foetal scapulae, feasibly the young of the first burnt animal described, and a second scapulae of a young animal clearly not of the other two individuals. No butchery marks were present on the bones from this deposit (see below), but at least one of them had clearly been cooked on the bone.

Also placed within deposit 9082 was Pottery vessel 9151. From its fill a charred occipital condyle of a neonatal pig, and an unfused proximal epiphysis of a pig femur, were recovered. Other animal remains from 9082 comprised a fragment of roe deer antler, a sheep/goat distal tibia, and a cow humerus fragment. The 31 toad bones from deposit 9082 are of the same individual and, as with the three toad bones from deposit 9170, potentially entered the feature in the same manner as into a pit fall trap.

A number of pig bones were also recovered from deposit 9109 below 9082, including a charred but near complete pig femur with dismemberment marks upon it, a partially calcined foetal femur, and an unburned humerus of a young animal with both dismemberment and filleting marks upon it. It is thought likely these bones are of the same charred and uncharred sows found in the deposit above.

Other articulating bones from this feature included a cow calcaneum and astragalus from deposit 9011, the pit's uppermost fill. No further deposits of bone were made that were similar to the material excavated from 9082. A complete red deer antler was recovered from deposit 9078 about halfway down the feature. The antler had been shed from a live animal, and therefore its deposition would have represented the loss or deliberate placement of a valued raw material.

Early Iron Age Pit 9052, Site G

Some 45m to the south-east of pit 9010, and very similar in style and form to the aforementioned feature, was a second early Iron Age storage pit, 9052 (see Fig. 3.18). It measured 1.8m in diameter and 1.6m deep and also contained significant quantities of animal bone from its lower fills.

Associated bone groups were excavated from two deposits. The remains of a young deer were excavated from deposits 9083 and 9065. Of the 211 NISP of pig in deposit 9065, 204 of them were from a single piglet. Most parts of a red deer skeleton were present, although some elements were absent, such as the left mandible and some of the smaller bones. Although most of the forelimbs, the mandible, vertebra and ribs were recovered from deposit 9083, the fragmented skull and hind limbs were largely recovered from deposit 9065. It is thought likely that these remains were pressed into the underlying clay deposit, 9083, after being deposited at the interface of these two layers (Mike Donnelly pers. comm.). The jaw of the deer had all of the deciduous premolars erupted, but unworn, with the first molar visible in the aveolus but as yet not erupted above the bone. The M1 on deer comes into wear after erupting in the first five months of life (Brown and Chapman 1991, 525). All long bone epiphyses were unfused, with the body of the vertebra centrum in the process of fusing to the vertebra arch. The animal must therefore have been no more than two months old at most. No butchery marks were present on these bones, but the bones were not found as an articulated skeleton.

The piglet remains found in deposit 9065 include most of the animal, with only a number of the very small bones missing, most likely due to the problems of preservation and recovery. Tooth wear and tooth eruption states suggest an animal only a few months old at death. Again, no butchery marks were visible on these remains, but the bones were not found as an articulated skeleton.

Part of an incomplete raven skeleton was also associated with the remains in deposits 9065 and 9083, all the bones except for one of the humeri coming from deposit 9083. Elements of both wings, part of the main body of the bird (including the sternum and ribs), and part of the left leg were present. Other bone fragments from these basal fills are thought to have been fragmented prior to deposition, although these included a mandible and maxillary fragment of roe deer.

Early Iron age Pit 7228, Site C

Pit 7228 was an early Iron Age pit, measuring 1.8m in diameter and 1m deep (see Fig. 3.11). Deposit 5974 was formed early in its depositional history, after the initial primary deposition from the sides of the feature. Neonatal piglet bones belonging to at least two individuals were recovered from environmental sample 1591 taken from deposit 5974. The bones included elements of the skull, mandible, and the fore- and-hind limbs.

Early Iron Age Pit 5992, Site C

Pit 5992 was a former storage pit, measuring 2.2m by 1.8m in size and 1.15m deep (see Fig. 3.10). The six deposits within it contained relatively small quantities of bone per deposit. Of the 14 sheep/goat bones from deposit 5994/7287, eight are thought to be from a partial skeleton which comprised the back legs of the sheep. Epiphysial fusion of the long bones suggests an animal over three years of age.

Early Iron Age Pit 5130/5242, Site C

Fifteen deposits were identified within pit 5130 (see Fig. 3.9), none of which produced animal bone in any quantities, although there was part of a red deer skull (sf 546) positioned with other objects in deposit 5420. It is quite likely that both antlers were removed prior to the placement of the skull.

Early Iron Age Pit 7381, Site C

A partial sheep/goat skeleton was identified during the recording of animal bone recovered from the only fill of pit, 7381, deposit 7380 (see Fig. 3.7). Elements of the forelimb, hind-limb and a mandible were recovered. Although a firm identification was not made, the animal was most likely a sheep. Tooth wear and epiphysial fusion of the long bones suggest a yearling lamb, between one and a half and two years of age. No butchery marks were visible on the bones, but the bone surface had been highly eroded by acid root etching. The remains were not removed as an articulated skeleton, but most parts of the body are represented. It is feasible that more of the animal remained in the unexcavated half of this feature.

Middle Iron Age ditch group 4617/4623 and ditch HS1271, Site B

A large curvilinear enclosure (see Fig. 3.28) collectively contained a quantity of animal bone with a slight bias towards pig bones. There is, however, no direct evidence for a high concentration of pig bone in any specific deposit in this group. It is worth noting that curvilinear ditch group 3966, *c* 29m to the east of 4617/4623, also contained quantities of pig bone, although again in no specific concentrations.

Middle to late Iron Age Pit 4969, Site B

Pit 4969 (see Fig. 3.38) was a former storage pit containing 14 deposits, with one deposit (3401) containing significant numbers of pig bones. The pig bones predominantly derived from a single immature male, including most parts of the skeleton, with only some very small bones from the vertebra and feet missing, potentially a result of preservation and recovery problems. Mandibular tooth wear suggests an animal aged between six months and one year of age. A single butchery mark on the right scapula demonstrated at least some dismemberment of this animal. Also included in this deposit were three cattle bones, including fragments of the skull, mandible and astragalus, as well as two sheep/goat tibias and the metatarsal of a sheep.

Late Iron Age enclosure ditch group 7992 and pit 3838, Site B

Ditch group 7992 comprised the sickle-shaped enclosure group near the division of Sites B and C (see Fig. 3.39). Significant numbers of animal bone were recovered from a *c* 20m section of the ditch, including interventions 3984, 3830, 3927, and to a lesser extent 3906. More specifically, this material is overwhelmingly from the second and third deposits of these interventions.

From an examination of the sheep/goat bones where the same element occurred with some frequency, ie sheep/goat mandibles, it was evident that there were many different animals. In contrast, dog bones from this feature are considered to be of just two young animals, with an age of four to five months for one individual, and around one and a half years for the second. A number of hare/rabbit bones were also excavated from this ditch, but are thought most likely to be an intrusive deposit of rabbit bones.

Three sheep/goat and eight pig maxillas demonstrate the presence of fragmented skulls. In the unidentifiable categories, three large mammal and two medium mammal vertebra, as well as four large mammal and six medium mammal rib fragments, were recorded. Generally most parts of the animals are present, but sheep/goat has a greater abundance of mandibles and hind-limb, followed by the forelimb. Vertebra and ribs are generally of a low occurrence considering the number that exist in one individual. An MNI of two cattle, six sheep/goat or sheep and four pigs was calculated.

Pit 3838 was located *c* 3.2m from the edge of the enclosure ditch group 7992 and is of the same period as this enclosure ditch (see Fig. 3.39). The majority of bone from this pit was excavated from its uppermost fill, deposit 3839. A smaller quantity of bone was excavated from pit 3838 than the adjacent ditch interventions, including 13 cattle, 12 sheep/goat or sheep and three pig bones, but its proximity to ditch group 7992 may suggest that secondary deposition within its upper deposit was related to that in group 7992.

The quantity of animal bone in comparison to that from other features suggests a peak in bone deposition in the vicinity of the ditch and pit. Alternatively this represents secondary deposition of material directly into these features, with material originally accumulated elsewhere such as in adjacent middens. Cattle, sheep/goat and pig appear to be represented by only a small number of individual bones per animal, as opposed to being predominantly from one or two individuals. In contrast, the dog bones appear to represent just two individuals.

In addition, a horse skull (SF 3916) was located as the base of ditch 7992, from intervention 3906, *c* 7m to the south-west of intervention 3830/3927. No horse mandible was present. A fragment of pig mandible was noted just below the skull within deposit 3604, although this may be an incidental inclusions.

Late Iron Age pit 3671, Site B

In addition to potentially residual bone in late Iron Age pit 3671 (see above), its third deposit (3523) contained significant numbers of pig bones (see Fig. 3.41). The pig remains were predominantly loose teeth and skull fragments, with a small number of post-cranial bones. Calculating an MNI by the method of the most frequently occurring diagnostic zone by side suggests an MNI of three for the pig bones. However, the wear patterns of the third molar demonstrate that none of the maxillary third molars are of the same individual, and therefore at least four individuals are present. At least two were

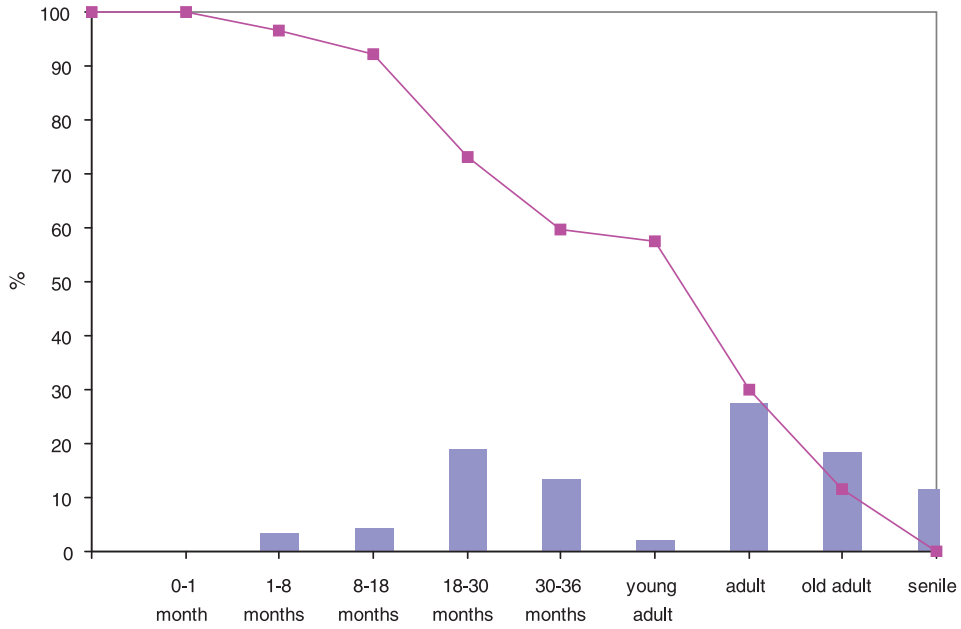


Fig. 3.75 Percentage of Iron Age cattle mandibles per age class; N=45

female and one male, with all these animals either 1–2 years of age or older.

Late Iron Age cremation pit 4298, Site B

In total, cremation pit 4298 contained four pottery vessels. Fragments of a pig atlas and axis (the two vertebra located below the skull) were recovered from the fill of a shallow bowl, 4355, with a sheep/goat pelvis fragment and poorly preserved cow astragalus (of the ankle) recovered from the fill of pottery vessel 4349. These could not be said to be associated with choice food offerings, and maybe considered as a symbolic token offering.

Species represented

Cattle

The majority of mandibles from which an age of death could be estimated were recovered from Iron Age deposits (Fig. 3.75). Of the Iron Age cattle, the mandible wear data suggest that by two years of age just over 40% of the herd was culled, with animals predominantly culled between one and a half years and two years of age. The remaining cattle have been slaughtered as adult animals. Of the cattle pelves, 14 were attributed to a sex, all identified as from female animals.

Of the biometric data from cattle, the distal tibia produced the most frequently occurring measurements, also suggesting a predominantly older female herd. Very few cattle bones had evidence of butchery upon them, although where they did occur they predominantly comprised knife marks.

Body part analysis was completed for Iron Age cattle remains excavated at Sites B and C, and it is suggested that whole animal carcasses are represented at the site (Fig 3.76). Those elements of lower frequency are either associated with low bone density or lower recovery rates via hand collection due to their smaller size. A comparison of cattle body parts in ditches with those in pits produced similar results.

The husbandry of cattle in the Iron Age would suggest that a mixed strategy was being practised, with predominantly males most likely to be culled after gaining some meat weight, with a population of older adult dairy cows or working cattle. A small number of cattle were killed as very old animals (Fig. 3.75).

Three pathological cattle bones were excavated from phased deposits. The mandibular hinge of a middle Iron Age cow jaw had evidence of necrosis of the bone, resulting in a hollow in the condyle. This is the result of an infection in this part of the jaw, which has cut off part of the blood supply to the bone. The resultant dead bone has either been dissolved by the puss, been ejected via an abscess, or remained in the body as a sequestrum. Additional bone growth has developed around the area of the infection, extending the condyle slightly. This non-specific infection may have derived from adjacent surrounding tissues, or haematogenously from elsewhere in the body (Baker and Brothwell 1980, 63–8). A second middle Iron Age mandible had its pre-molar tooth row angle at around 45° to the molar row. No further pathology was evident, such as infection, although the surface of the bone was fairly eroded. This angle must have occurred from a break to the mandible, which evidently has healed well, potentially early in the life of the animal. There was also an instance of osteochrondrosis dissecans, on the distal articular facet of a late Iron Age navicular-cuboid of the ankle. Osteochrondrosis dissecans is defined as the focal

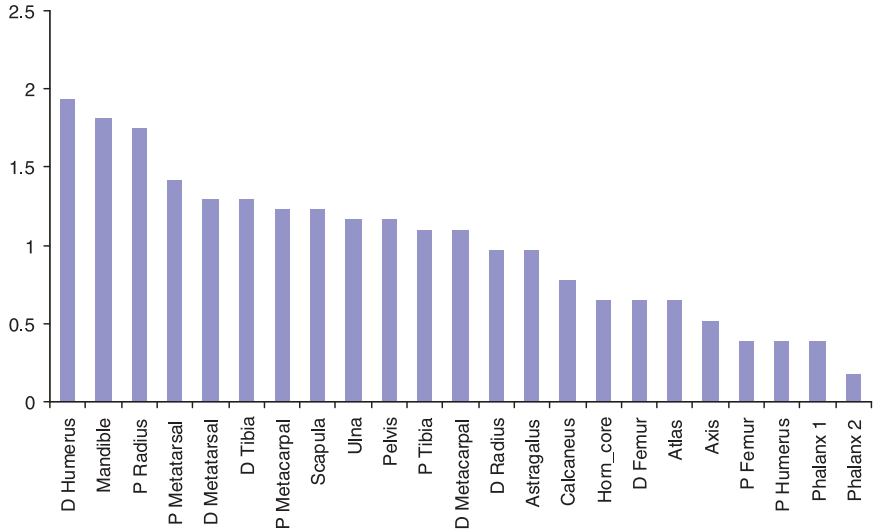


Fig. 3.76 MNE of Iron Age cattle bones from Sites B and C

ischemic necrosis of the growth cartilage initiated by necrosis of the cartilage canal blood vessel during growth of the bone (Ytrehus *et al.* 2007, 445).

Sheep and goat

Of the sheep/goat categories, where the division could be made, the majority of specimens proved to be sheep. Although goat was present at the site, it is considered to be a relatively minor species. Most of the sheep/goat mandibles from which an age of death could be estimated were excavated from Iron Age deposits, which indicated that 72% of the flock appear to have been culled by three years of age, with a steady decline after a significant cull in lambs in the latter half of their first year (Fig. 3.77). The division of mandibles by sub-phase reduces the sample size considerably, although in general each sub-phase has the same trend. The greater quantities of animals culled in their second and third years from early Iron Age deposits cannot be considered statistically significant, this percentile drop representing only two mandibles.

Sexing data from pelves were scarce, but pelves excavated from Iron Age deposits were predominantly identified as of female animals. A similar pattern is suggested by the biometric data. Sheep appear to have been husbanded primarily for their meat, with only a relatively small older population, predominantly of females or wethers maintained as breeding stock. Wool and milk would also have been available from the flock, with at least a two of clips of wool harvested from each sheep prior to being culled. Butchery data were scarce, but where present predominantly comprised knife marks.

Body part analysis was completed for Iron Age sheep/goat and sheep bones from Sites B and C (Fig. 3.78). Tibias and mandibles appear somewhat over-represented in the assemblage in comparison to other robust elements of long bone such as proximal radii and distal humeri and metapodials.

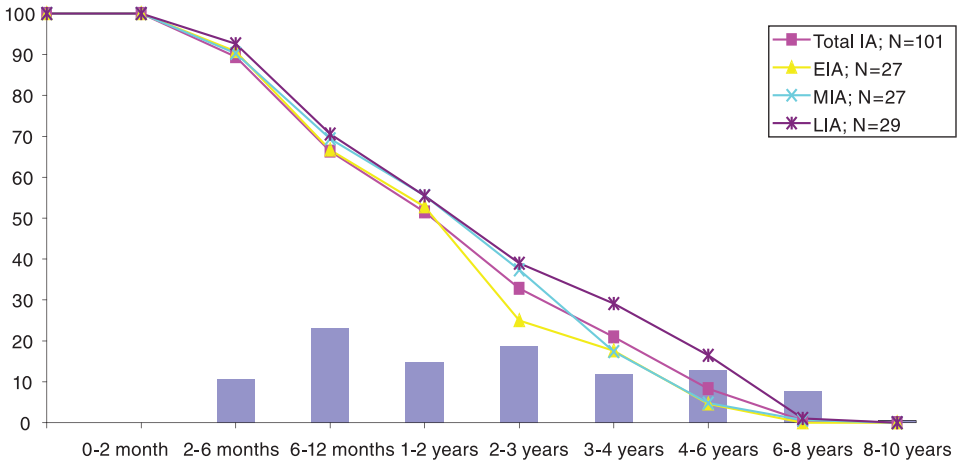


Fig. 3.77 Percentage of Iron Age sheep/goat and sheep mandibles per age class

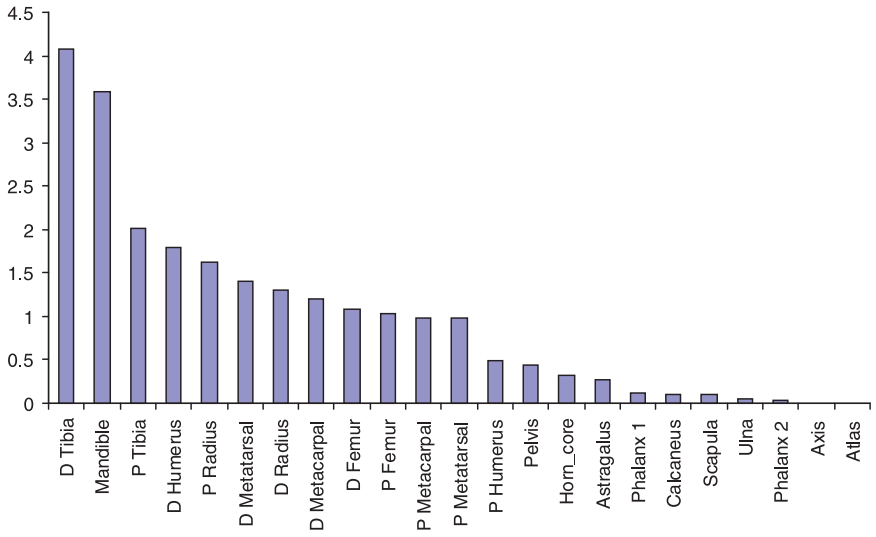


Fig. 3.78 MNE of Iron Age sheep/goat and sheep bones from Sites B and C

Although the sample is small, the recorded epiphysial fusion states of metapodials suggest most had not fused prior to slaughter, making them more prone to attritional processes. This is perhaps emphasised by the frequency of metapodials in pits and ditches, metapodials proving to be slightly more abundant in pits where there is the potential for more rapid burial. The same reasoning cannot, however, be applied to distal humerii and proximal radii, although tibia mid-shaft fragments do have high bone density values. Of the tibia and mandible, elements of the distal shaft and the mandible tooth row and diaphysis are most abundant. It is clear that the mandible and tibia have similar depositional characteristics, being the most frequently occurring bones at the site and recovered from the most features. The difference between fore- and hind-limb cannot entirely be put down to rates survivability.

Hill (1995, 49) observed that at Balksbury and Winnall Down in deposits from the upper thirds of features the tibias of sheep were better represented. This was also true of cattle, which is not the case in this instance. In addition, pig also does not have the same abundance of tibias on the A2 sites. A similar pattern was also noted at the Eton Rowing Course (Bates forthcoming) and Stansted Airport (Bates 2008). An alternative explanation for the apparent abundance of the rear limb and mandible is the lack of the forelimb in the archaeozoological record, which may point towards differential treatment of the forelimb in the processing of the carcass. One explanation would be that the tibia was discarded with the initial butchery waste, with further processing or the forelimb at a later date. This would mean discarding the shank of the bone, of relative high food utility unless the meat and probably the tendons were stripped from it first. There is no evidence for chopping through the distal end of the tibia to remove the foot. Comparison of the tibia to the femur and pelvis is problematic, however, due to the low bone density values of these elements.

One pathological sheep/goat bone was recovered from Iron Age deposits. A single late Iron Age mandible had evidence of periodontal disease in the form of localised periostitis around the buccal margins of the second and third molar, the result of an infection in the gum, potentially caused by a foreign body impacting upon it (Baker and Brothwell 1980, 153).

The occurrence of an additional foramen on the buccal side of the sheep mandible, in the area of the second pre-molar, is a congenital trait present in about a third of the late Iron Age sheep population. This may not necessarily be hereditary, but a high occurrence of a congenital trait may be the result of a limited gene pool in the stock.

Pig

As with cattle and sheep/goat, the number of mandibles from deposits other than those of the Iron Age was too small to be useful. Mandible wear stages of Iron Age pig mandibles are presented in Figure 3.79. Division by sub-phase produced small

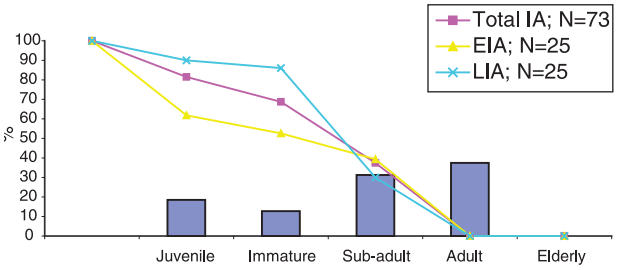


Fig. 3.79 Percentage of Iron Age pig mandibles per age class

sample sizes, but also a noticeable difference in the percentage of juvenile culls. However, all of these early Iron Age juvenile mandibles were recovered from ABG's within the pits described above. It is highly likely therefore that there is little change in the age of slaughter of pigs. The species, which may support a high rate of immature mortality, is husbanded primarily for its meat.

There is a large discrepancy between the number of Iron Age mandibles and loose lower canines attributed to a sex. It is quite likely that this is a factor of preservation. Where most male animals are culled at a younger age, there is potential for more male mandibles to be broken up due to the lower bone density in a younger mandible. The pig herd is likely to have produced roughly equal numbers of male and female animals, but it is suggested that, of the older animals, mostly sows were maintained as breeding stock. Butchery data was scarce, but when present were predominantly knife marks.

The distribution of pig bones at the site by element is presented in Figure 3.80. Whole carcasses are represented, with no obvious bias in the bone assemblage except those caused by taphonomy and recovery. The mandible has a high frequency in NISP counts, as described for cattle.

A single pathological pig bone was recovered from a phased deposit. A late Iron Age tibia had significant bone growth (exostosis) on the distal (lower) shaft in the position where the ulna lies beside the tibia. The result of osteoperiostitis, an infection within the periosteum, of non-specific origin but potentially originating from adjacent infected tissues or from infecting agents carried via the blood (haematogenous) (Baker and Brothwell 1980, 63–8). One congential defect was identified on the remains of a very young piglet. A maxillary canine and incisor from an early Iron Age piglet were sharing a root (syndactyle).

Equids

Separating horse from ass (donkey) and the two hybrids of ass and horse, mule and hinneys, has proved problematic in the archaeozoological record. However, the prehistoric equids are unlikely to be ass or a hybrid, as the ass is considered to be a Roman introduction into Britain (Clutton-Brock 1992, 117). Within Iron Age features, horse bones and teeth were recovered predominantly from ditches, often in association with other animals. There is no evidence to suggest the carcass was not treated in a similar manner to cattle, and is likely to have been eaten. Three skulls had butchery marks upon them. Knife marks on the occipital condyles of two skulls excavated from Iron Age ditches demonstrate where the skull has been removed from the neck of the animal. Knife marks below the orbit of the skull, angled towards the mandible, show where the masseter muscle has been cut to remove the mandible from the skull.

Age estimates were calculated from measurements taken from 41 horse teeth excavated from Iron Age deposits. No teeth were from animals below five years of age; 43% were of animals between five and 10 years; 26% 10–15 years, and 31% were over 15 years. No unfused long bone shafts or epiphyses were excavated from the Iron Age period. There was, therefore, no direct evidence for horse breeding. Wither heights of horse were calculated from three Iron Age specimens, all within the size range of ponies (1219 to 1391mm).

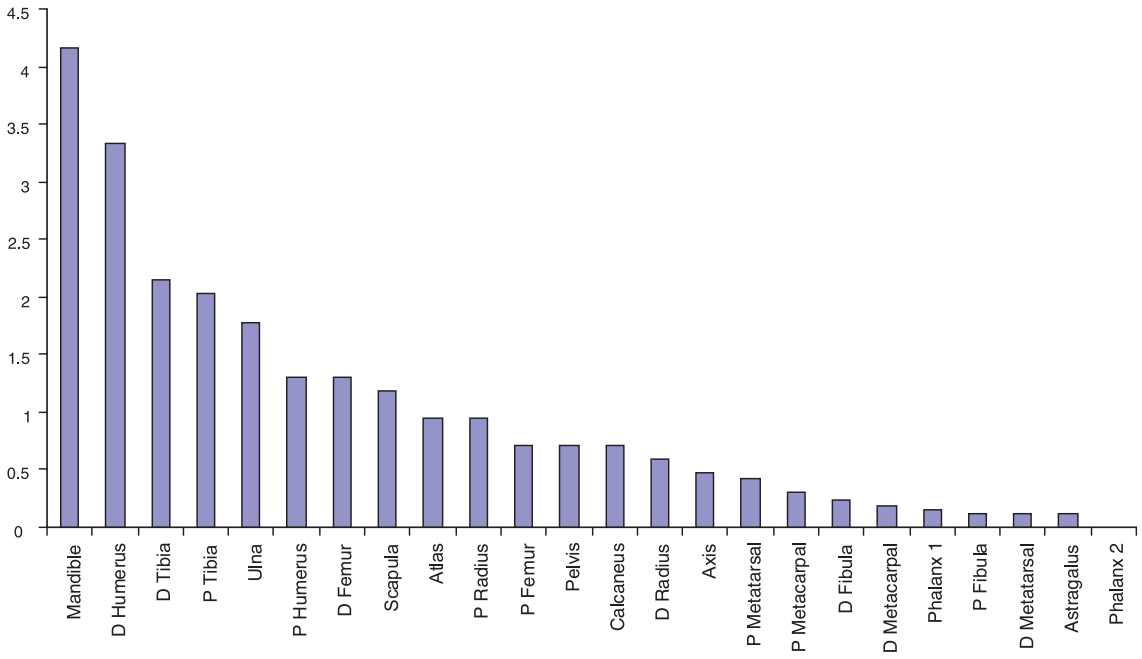


Fig. 3.80 MNE of Iron Age pig bones from Sites B and C

One Iron Age horse bone with pathology was recorded. The late Iron Age articulated lower rear leg from ditch group 7197 had pathologies caused by spavin in the animal's hock or ankle. Included in the articulated bones were the tibia, all the tarsal bones, as well as the metatarsal. The lesions affected the navicula, the cuboid and the metatarsal proximal articulation, with anklylosis (union) of the navicula and cuboid bones. The aetiology is undetermined, but hereditary factors affecting the confirmation of the joint, and concussion due to heavy work or faulty shoeing may be factors (Baker and Brothwell 1980, 117–18).

Dog

Unarticulated dog bones were recovered from Iron Age deposits, although the species was relatively scarce. No butchery marks were recorded on dog bones. A single late Iron Age dog metatarsal of the rear foot had evidently been broken. The fracture had healed well, with additional bone growth along the length of the shaft.

Wild species

A small number of deer bones were excavated from Iron Age deposits, with only single occurrences in later phases. A single deer burial was excavated from storage pit 9052 (see early Iron Age Pit 9052, Site G). Unlike cattle, most of the deer bones from Iron Age deposits were from excavated pit features suggesting some difference in the treatment of these animals.

Five red deer antler or antler fragments were recovered from Iron Age deposits, and one roe deer antler fragment from an Iron Age deposit. At least one of the red deer specimens had been naturally shed from the live animal, and as such must have been collected from the wild. Tool marks on antlers included two sawn red deer antler fragments, with knife marks recorded on the beam of two red deer antlers.

Hare bones were also present in small numbers from Iron Age deposits. No butchery marks were present on these bones, but hare would undoubtedly have been hunted and consumed, with potential uses also found for its pelt.

Bones of pine marten and cat were also recovered from middle Iron Age pit 147 during the excavation of the HS1 adjacent (Kitch in Askew 2006), indicating that a local wildcat population was present until late in prehistory.

Birds

A small number of bird bone fragments were recovered from Iron Age deposits (Table 3.20). No butchery marks were recorded on any bird bones. The early Iron Age raven was an articulated or partially articulated skeleton within storage pit 9052. It is unlikely that the species list given here represents the full list of wild bird species hunted and consumed by the inhabitants of the area, but they do not appear to have made a large contribution to the diet.

Small mammals

A number of voles and shrews were recovered from most periods, as well as one bone of a hedgehog, most likely incidental inclusions within the features. Bank vole, common shrew and pygmy shrew may live in areas of scrub, banks and hedges, rarely in open land but where cover is provided (MacDonald and Barrett 1995). Hedgehogs are found in deciduous woodland, hedgerows and grasslands (ibid.).

House mouse (*Mus musculus*) bones were recovered from four Iron Age features. The early Iron Age is an early date for the species in Britain, although not unparalleled. Mice of the genus *Mus* originated in Asia, and are found on mainland Europe by the Bronze Age, but were more common in Britain in the Roman period (Yalden 1999, 124). Early Iron Age house mouse bones were also excavated at Gussage All Saints (Harcourt 1979, 155), and from late Iron Age deposits at Danebury (Coy 1984, 526).

Amphibians and reptiles

A small collection of frog and toad bones was present, including a number of articulated skeletons. Frogs may have been consumed, but 80% of these came from pits that could have acted as pit fall traps. Eleven lizard bones were recovered from Bronze Age to Roman contexts, all but one being identified as slow worm or probable slow worms. It would be tempting to associate slow worms with midden deposits, modern-day compost heaps being an attractive habitat for the species. Two Iron Age specimens were recovered from deposits in ditch group 7992, interpreted as midden deposits.

The remains of a grass snake were recovered from early Iron Age pit 5992, and a viper vertebra from late Iron Age pit 3838. Unidentified snake vertebrae were recovered from early Iron Age pit 9010 and mid- to late Iron Age pit 4969. None of these remains had evidence of burning or butchery associated within them.

Discussion

It has been shown that the proportions of the principal domestic animals are often greatly affected by the feature type in which they are found; in particular, taphonomic and depositional factors may over-represent cattle in ditches. Interventions

Table 3.20: Bird bones from Iron Age contexts; bones of the same individual counted as 1 NISP

Species	*No.*
Raven	1
Carduelidae sp (finch)	1
Passerine (perching brids)	3
Goose sized bird	1
Total	6

into the middle Iron Age to early Roman enclosure ditches contribute significant numbers of cattle bone to the totals. Wilson (1996) demonstrated that the greater proportions of cattle in ditches at Iron Age sites may reflect differences in the processing of animals due to their size. To a degree this may hold true in the prehistoric and Roman phases, but a number of ditches with larger sample sizes do not reflect this pattern (Table 3.21; Ditch groups 5892 and 7992 are also discussed further below). Either the deposition within these features differs from other ditches, or the proportion of animal bones in other ditches is greatly affected by taphonomic factors. An interpretation of adjacent middening activity, as suggested for ditch groups 5892 and 7992 in the descriptions of their associated ABGs, could also have been taking place adjacent to ditch groups 13161 and 6941.

Despite the quantity of bone from pits in the early Iron Age, cattle and sheep/goat NISP totals are much of a par. On balance, it seems quite likely that, in the later Iron Age and into the Roman period, sheep flocks were increased in size in comparison to the cattle herds; this trend may have begun in the middle Iron Age. It has been suggested that this is a trend visible across central England in the late Iron Age (Albarella 2007, 394).

Generally, most of the carcasses of Iron Age cattle, sheep and pigs are represented at the site. The abundance of hind limbs of sheep in comparison to forelimbs, measured by the abundance of tibias in comparison to elbow joints represented by the distal humerus and proximal radii, was looked at in some detail, with some speculation to different treatments of the fore and hind limbs (see Sheep/Goat above). It is noticeable that ditch group 7992 produced a similar pattern of sheep/goat elements to that of the site as a whole, despite the femur, which is a fairly fragile bone, being well represented. This pattern of apparently abundant tibias was not observed in Iron Age cattle or pig bones from ditch group 7992, or from the site as a whole. It was suggested that the tibia was more frequently stripped of meat and discarded as butchery waste, with the forelimb removed elsewhere and treated differently, such that fewer elements of the forelimb entered the archaeozoological record. The butchery of sheep in this manner is perhaps best demonstrated by the ABG described in pit 5992, in which the pelves and tibias are present, but most if not all of the upper part of the body, as well as the femurs, are separated as meat on the bone. An assumption that sheep and pig carcasses were treated in a similar manner, due to their comparative sizes, does not therefore appear to hold true, either in the treatment of the carcass or their deposition in features. Iron Age sheep/goat bones are predominantly found in pits, whereas pig bones were excavated equally from both.

The mortality profiles of cattle, sheep and pig are generally consistent throughout the Iron Age. Cattle during the Iron Age appear to have been husbanded for mixed purposes, most animals being grown to gain meat weight before slaughter, with around 60% of the stock slaughtered as adults. These probably represent older females kept for milk production. The absence of very young animals may be due to taphonomic bias, as the skeletons of six calves were found in a middle Iron Age pit 147 along the line of the HS1 adjacent to Site B (Kitch in Askew 2006). Comparable sites in the region suggest a variety of husbandry strategies in cattle, albeit often with only small sample sizes available (Hambledon 1999, 82). Similar mortality profiles of cattle were also seen at the settlement of Owslebury and Winnall Down in Hampshire, where a mixed strategy in the husbandry of cattle is also suggested (Maltby 1987; 1985, 129). In comparison to settlement sites of the upper Thames Valley, there is potentially less emphasis on meat (Hambledon 1999, 82; Mulville and Levitan 2004, 469–70).

The husbandry of sheep at the site during the Iron Age would appear to be have been fairly consistent throughout the period, geared toward a mixed strategy of obtaining meat, wool and probably milk. This is perhaps typical of the period, as demonstrated in Hambledon (1999, 74). There was, however, no evidence of the much higher rate

Table 3.21: Relative percentages of the principal stock animals in enclosure ditches with N greater than 20

Sub-period	*Group*	*Cattle %*	*Sheep/Goat %*	*Pig %*	*N*
Early Iron Age	5912	75.0	19.4	5.6	36
Middle Iron Age	3966	35.7	21.4	42.9	28
Middle Iron Age	6944	75.0	20.0	5.0	20
Middle to Late Iron Age	3961	19.0	45.2	35.7	42
Middle to Late Iron Age	4617/4623	22.4	38.2	39.5	57
Early to Late Iron Age	4617+CTRL271	15.6	26.6	57.8	109
Middle to Late Iron Age	7192	43.3	20.0	36.7	30
Late Iron Age	4744	69.0	17.2	13.8	29
Late Iron Age	7197	66.0	12.0	22.0	50
Late Iron Age	7989	65.8	18.4	15.8	38
Late Iron Age	7992	38.9	29.4	31.7	262
Iron Age to Roman	13161	38.3	42.0	19.8	81

of slaughter at six months to one year seen at a number of other sites of southern England. Most of the flock appears to have been over-wintered into at least their second year, with a significant percentage of the population culled by three years of age (Hambledon 1999, 71–4; Albarella 2007, 394).

Pig is typically husbanded for its meat, but the importance of this animal is discussed below (see Storage Pits). Wild species were only present in small numbers, and do not appear to have played an important role in the calorific intake of Iron Age peoples of Britain (Grant 1981, 205).

Associated or Articulated Bone Groups (ABGs)

A number of pits produced significant quantities of animal bone from ABGs. Those from the site can be categorised into four types: complete or partial skeletons (sometimes associated with specific features types or other objects); the placement of skulls; partially articulated limbs (as described in Hill 1995, 57); and large deposits of bone from secondary deposition from a number of individuals. No bone deposits of vertebral columns and ribs were identified. The location and discussion of these are considered by feature type below.

Storage pits (Table 3.22)

Deposition of whole animal carcasses was found at the base of storage pits 9010 and 9052 on Site G. Deposited in the basal fills of 9010 were the limb bones and mandible of a piglet, and the head and parts of the fore- and probably hind limbs of the same pregnant sow. The latter individual had evidently been cooked, with its meat on the bone. It would be tempting to see the animal cooked in the nature of a hog roast. However, the absence of any evidence for the vertebral column and ribs of either of these animals may suggest some disarticulation of both the charred and uncharred pig. It can not be shown whether this occurred prior to or after the cooking of the charred animal.

The basal fills of pit 9052 contained the near-complete remains of a piglet and a relatively new-born red deer calf. It remains inconclusive as to whether these animals had been defleshed, but neither was excavated as an articulated animal. In addition, part of a raven was deposited with these remains. At Danebury, the occurrence of bird bones in association with special deposits was shown to be statistically significant, raven and crow being the most frequently occurring species (Grant 1984, 540). In Celtic mythology, the raven, symbolic of darkness and death, is also a prognostic bird associated with oracles and closely bound up with prophecy (Green 1997, 166 and 174).

Two further mid to late Iron Age pits have similar depositional characteristics. Storage pit 4969 on Site B had a potin coin located in its primary fill. A male piglet had been placed at the base of the feature, between six months to one-year-old. Similarly, at the base of pit 7228, two neonatal pigs had been deposited. Young piglets were also found at the base of Bronze Age storage pit 3030 of Site A (see Chapter 2). Most of these animals were very young, often only a few months old and, in one feature, neonatal.

ABGs of sheep were recovered from two storage pits. Pit 12527 contained the remains of a one to two-year-old sheep, with its skull and most of its spinal column missing, and a single cut mark demonstrating the dismemberment of the animal. These remains were excavated from the fifth of seven deposits. Pit 5992 contained the back legs, excluding the femurs, of a sheep over three years of age. In neither instance were the deposits from the initial disuse of the storage pit, and it is difficult to assess whether the deposition of these sheep are referencing the pits in a similar manner to animal bone groups at the base of storage pits.

The association of red deer skull SF456 at the base of pit 5130 with other objects demonstrates the use of animal skulls as deliberately placed objects. Its inclusion in an apparently ritualised act reflects the totemic significance of the deer. The skull was not complete, and is likely to have been fragmented prior to deposition, although the maxillas were recovered from the same deposit. Other partial or near complete skulls were recovered from the excavations, but no others had the same direct association of artefacts. Data concerning skull fragments at the base of features, as potentially representing brushed partial or completed skulls, was too limited to assess any statistical significance.

The deposition of a complete red deer antler, part way through the depositional history of pit 9010, may be a similar act of deposition, referencing these pits. It was also noted that, of the few deer bones excavated from the site, most (discounting identi-

Table 3.22: Animal bone ABGs in selected pits

Feature	*Site*	*Animal*	*Sex*	*Age*	*Butchery marks*	*Other Objects*
Storage pit 9010 (deposits 9082 and 9109)	G	Charred pig	Female	1-2.5 yrs	Yes	Yes
		Uncharred pig	Female	Few months	Yes	
Storage 9052 (deposits 9065 and 9083)	G	Red deer		Few months		
		Pig		Few months		
		Raven		Adult		
Storage pit 4969	B	Pig	Male	6 months-1 year	Yes	Yes
Pit 7228	C	Pig		Neonatal		

fied ABGs) were recovered from the alignment of Iron Age storage pits in Site G.

Pigs are considered to have had a significant role as a high status food consumed at feasting during the British Iron Age (Parker-Pearson 1999, 46). The manifestation of this in the treatment of the animal's carcass may vary regionally, and their appearance as a regional phenomenon in Iron Age burial practices is one form of this. In southern England, large numbers of pigs are likely to have been a luxury at the expense of cereal cultivation, hence their perceived association with wealth or prestige and their decline in numbers in the later Iron Age (Mulville 2008, 230). The placement of pigs, either consumed or not, in the base of pits may reflect the perceived value of the animal and the feature. The placement of very young, even neonatal, remains in these features is possibly linked with a belief in the power of chthonic deities and fertility associated with grain storage pits (Cunliffe 1992, 79). Similarly, the placement of a charred neonatal pig skull fragment and unfused proximal epiphysis of a pig femur within pottery vessel 9151, placed within deposit 9082 of pit 9010, may also be a manifestation of this.

Shallow pits

Four shallower pits, ie c 0.5m deep or less, typically interpreted as rubbish pits, were found to contain significant quantities of bone per deposit. At least part of a disarticulated yearling lamb was deposited in the early Iron Age pit 7381. The late Iron Age pit, 3671, produced fragmented pig skulls and a small number of limb bones. This represented the deposition of at least three pigs, a fourth being represented by a loose tooth, but this may be incidental. Most of the post-cranial bones are missing, but the slaughter and consumption of three to four animals in one event would have produced a significant quantity of meat for consumption. This pit could be said to have similar depositional characteristics to storage pits 9010, 9052 and 4969, although in this instance fewer bones from the carcasses had been deposited.

Cremation pits

Animal bones within cremation pit 4298 would appear to represent symbolic offerings, with little or limited food value (see below). Some of the meat from the spare rib may have been attached to the pig vertebra within pit 4298, but the astragalus from a cow ankle recovered from the fill of a pottery vessel is unlikely to have much meat attached to it.

Enclosure ditches

Enclosure ditches generally produced few animal bones per intervention, with material distributed vertically through the deposits and along the length of the ditch. Where bone did occur in any numbers, such as ditch groups 7992 and 5892, there seemed no reason to suppose that the bones were derived from the same animals, although exceptions to this were identified in the deposition of dog bones. Deposition of the principal stock animals within the ditches is thought to be primarily secondary deposition of the bone. As such, they differ to the ABGs found at the bases of pits. The erosion of animal bone from adjacent middens, or even the deliberate deposition of midden material into the ditch, would account for these collections of animal bone.

Within these two ditch groups, it was noted that skulls of cattle and sheep were poorly represented, although a number of pig maxillas were recovered from ditch group 7992. Similarly, the vertebra and ribs of these animals were frequently absent. Either they have not survived into the archaeozoological record, or were not deposited in the same location.

Other, more complete skulls, were excavated from two ditches. The rear part of a late Iron Age cow skull was excavated from close to the base of ditch intervention 4555 in enclosure ditch group 4744. A complete late Iron Age horse skull was excavated from near the base of ditch intervention 3906 in the sickle-shaped enclosure ditch group 7992. Similarly, an articulated lower part of a horse's leg was excavated from the base of the ditch of an internal division within the same enclosure, intervention 3669 of ditch group 7197.

The data from the middle to late Iron Age curvilinear enclosures on Site B were inconclusive, albeit with some bias seen towards pig bones in ditches 4617/4623 and 3966. However, bones excavated from intervention 271 of the HS1 excavations, potentially of the same enclosure as 4617/4623, produced significant numbers of pig reinforcing this bias. The bias towards pig bones in these enclosure ditches maybe a spatial variation in comparison to deposition in other enclosure ditches, hinting at settlement activity within the enclosures. Alternatively, or in concert with, the symbolic importance of pig in the Iron Age may highlight feasting activities within the enclosures.

Other ABGs of the HS1 excavations

A much smaller bone assemblage was recovered from excavations in advance of High Speed 1 (Kitch 2006a/b). Early to mid Iron Age features were mainly located on Site B. The most significant animal bone finds of this period were recovered from pit 147, which contained the partially articulated remains of a minimum of six calves and three juvenile red deer.

Conclusion

The focus of the analysis of the animal bone of the depositional characteristics of the material has highlighted specific Associated or Articulated Bone Groups (ABGs), beyond those identified during the excavation. As a result, it is considered that the symbolic or totemic importance of pigs suggested elsewhere in Iron Age archaeology (Parker-Pearson 1999; Mulville 2008) is evident in the treatment and deposition of these animals. The deposition of deer

* Total identifications are only for that fraction of the flot & heavy residue sub-sampled. NQ = Not quantified.

Fig. 3.81 Relative proportions of charred plant remains in early Iron Age to late Iron Age/early Roman features

Table 3.23: Summary statistics for early Iron Age to late Iron Age/ Roman period CPR samples

SAMPLE	527	1501	911	928	934	935	1208
CONTEXT	5125	5406	9063	9082	9109	9170	12712
CONTEXT DESCRIPTION	pit 5110 (?kiln)	pit 5242	pit 9052	pit 9010 (upper-most fill)	pit 9010 (2nd lowest deposit)	pit 9010	pit 12700
SITE	C	C	G	G	G	G	L
PHASE	EIA	EIA	EIA	EIA	EIA	EIA	EIA
SAMPLE VOL (L)	10	40	50	80	40	40	3
FLOT VOL (ML)	30	75	1000	315	126	100	45
PROPORTION OF SAMPLE SORTED	100.0%	50.0%	25.0%	25.0%	50.0%	25.0%	50.0%
SEEDS PER LITRE OF SEDIMENT	11.9	11.4	33.4	31.5	25.2	56.4	158.0
TOTAL IDENTIFICATIONS (FLOT)	118	227	415	630	504	564	237
TOTAL IDENTIFICATIONS (HEAVY RESIDUE)	1	0	2	0	0	0	0
TOTAL FLOT + HEAVY RESIDUE	119	227	417	630	504	564	237
TOTAL SCORE (FLOT + HR)							
CEREAL GRAIN	31	57	68	5	13	7	206
CEREAL CHAFF	23	11	155	285	89	365	16
DETACHED EMBRYO/ SPROUT	0	13	3	0	0	0	0
OTHER CROPS	0	0	0	0	0	0	0
TREE/ SHRUB	2	0	0	0	0	0	0
WEED/ WILD	38	74	137	261	289	91	15
UNIDENTIFIED/ INDETERMINATE	25	72	54	78	113	101	0
RELATIVE PROPORTION (FLOT + HR)							
CEREAL GRAIN	26.1%	25.1%	16.3%	0.8%	2.6%	1.2%	**86.9%**
CEREAL CHAFF	19.3%	4.8%	37.2%	45.2%	17.7%	**64.7%**	6.8%
DETACHED EMBRYO/ SPROUT	0.0%	5.7%	0.7%	0.0%	0.0%	0.0%	0.0%
OTHER CROPS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TREE/ SHRUB	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEED/ WILD	31.9%	32.6%	32.9%	41.4%	**57.3%**	16.1%	6.3%
UNIDENTIFIED/ INDETERMINATE	21.0%	31.7%	12.9%	12.4%	22.4%	17.9%	0.0%

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). All calculations are based on the combined results for flot and heavy residue.

bones, and in one instance a complete antler, also appears to be associated with activities focusing on the former grain storage pits that have ABGs in their basal fills. The husbandry of animals through the Iron Age is generally consistent, although it is thought that the sheep flocks were increased in the mid- to later Iron Age.

Charred plant remains *by Wendy Smith*

The reports on charred plant remains in this and other chapters present the results from a major programme of archaeobotanical sampling carried out during excavations along the A2 Pepperhill to Cobham widening scheme. The sampling approach and details of each individual flot are given in the Post-excavation Assessment and Updated Research Design (Allen *et al.* 2009).

Table 3.23 and Figure 3.81 present the results and relative proportions of plant remains for the Iron Age archaeobotanical assemblages taken to full analysis. Charred remains of cereal crops (grain and chaff) and any accompanying weeds of crop dominate all of the samples, although traces of other crops and wild foodstuffs were present in samples from the middle Iron Age onwards.

Results

Twenty samples of early Iron Age to late Iron Age/ Roman date were selected for further analysis (Fig. 3.81; Table 3.23). In general the cereal remains (either grain or chaff) were not well preserved and were often highly fragmented. As a result, most identification could only be made to the general level of genus or group of species. The majority of samples studied (N = 15) are from pit deposits, and these come from all periods within the Iron Age. In addition, one middle–late Iron Age post-pipe (sample <508>, context 5059); two late Iron Age samples from ditch 7992 (sample 385, context 3829 and sample 793, context 3930) and one unphased, but putatively Iron Age posthole (sample 713, context 7085) were analysed. Different areas of the A2 excavations date to various phases of the Iron Age (see Table 3.23 for details).

Table 3.23: Summary statistics for early Iron Age to late Iron Age/Roman period samples (continued)

SAMPLE	1263	1265	445	370	371	369*	508
CONTEXT	12578	12580	4173	3681	3684	3678	5059
CONTEXT DESCRIPTION	pit 12527	pit 12527	pit 4172	pit 3676	pit 3676	pit 3676	post-pipe 5274
SITE	L	L	B	B	B	B	C
PHASE	EIA	EIA	MIA	MIA-LIA	MIA-LIA	MIA-LIA	MIA-LIA
SAMPLE VOL (L)	40	32	30	10	30	15	20
FLOT VOL (ML)	35	3060	100	45	60	85	100 ml
PROPORTION OF SAMPLE SORTED	100.0%	0.78%	25.0%	100.0%	100.0%	rapid scan	100.0%
SEEDS PER LITRE OF SEDIMENT	1.4	2468.0	30.7	22.0	6.1	-	42.6
TOTAL IDENTIFICATIONS (FLOT)	54	596	222	220	184	0	850
TOTAL IDENTIFICATIONS (HEAVY RESIDUE)	0	21	8	0	0	0	1
TOTAL FLOT + HEAVY RESIDUE	54	617	230	220	184	0	851
TOTAL SCORE (FLOT + HR)							
CEREAL GRAIN	34	424	120	7	19	0	92
CEREAL CHAFF	2	0	36	35	44	++++	0
DETACHED EMBRYO/ SPROUT	0	130	9	0	1	0	5
OTHER CROPS	0	0	0	0	1	0	8
TREE/ SHRUB	0	0	0	1	1	0	0
WEED/ WILD	15	50	39	113	60	0	570
UNIDENTIFIED/ INDETERMINATE	3	13	24	64	58	0	175
RELATIVE PROPORTION (FLOT + HR)							
CEREAL GRAIN	63.0%	68.7%	**52.2%**	3.2%	10.3%	0.0%	10.8%
CEREAL CHAFF	3.7%	0.0%	15.7%	15.9%	23.9%	**100.0%**	0.0%
DETACHED EMBRYO/ SPROUT	0.0%	21.1%	3.9%	0.0%	0.5%	0.0%	0.6%
OTHER CROPS	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.9%
TREE/ SHRUB	0.0%	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
WEED/ WILD	27.8%	8.1%	17.0%	51.4%	32.6%	0.0%	**67.0%**
UNIDENTIFIED/ INDETERMINATE	5.6%	2.1%	10.4%	29.1%	31.5%	0.0%	20.6%

*sample 369 was primarily fine charcoal and hundreds of extremely fragile fragments of charred to silicified indeterminate wheat awn. It was not possible to quantify such highly fragmented material, so this sample was only rapidly scanned and semi-quantified to provide some indication of the nature of its content.

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). All calculations are based on the combined results for flot and heavy residue.

Iron Age samples often are dominated by emmer (*Triticum dicoccum* Schübl.) wheat, but spelt (*Triticum spelta* L.) and barley (*Hordeum* sp.) also are present. In general the samples only contain cereal crops; however, a few middle Iron Age–late Iron Age/Roman samples contain small quantities of flax/linseed (*Linum usitatissimum* L.), common vetch (*Vicia sativa* L.) and/or garden pea (*Pisum sativum* L.). Potentially useful wild fruits/nuts such as elderberry (*Sambucus nigra* L.), hazelnut (*Corylus avellana* L.) and a tentative identification of blackberry (cf. *Rubus* section Rubus) may also have been collected; however, tree fruits or nuts such as elderberry or hazelnut can also be inadvertently burned along with wood fuel/kindling The charcoal report (see Challinor this vol.) does make it clear that hazelwood was a significant source of fuel. The A2 Iron Age assemblages are not uniform, some are dominated by cereal grain, some by cereal chaff, some by weed seeds and others are fairly even mixtures of all three of these plant categories.

The limited recovery of other crops, or wild fruits and nuts, should not be taken to mean that these are of little or no importance to Iron Age diet, but instead most likely reflects the limited opportunities for such foodstuffs to become charred, even accidentally. In early prehistory charred wild foodstuffs, especially hazel nutshells, are commonly recovered in archaeobotanical assemblages (eg Moffett *et al.* 1989); however, this is likely to reflect the regular use of heat in their preparation as a foodstuffs (eg G Jones 2000). This pattern clearly changes from the Bronze Age, when charred plant remains are most often dominated by cereal grain/chaff and any accompanying weeds of crop (M Jones 1985). However, when organic remains are preserved in other ways, such as by mineralisation, other plants can be recovered (eg Iron Age mineralised weed/wild plant remains from Potterne, in Carruthers 2000).

The weed assemblage associated with these cereal-rich Iron Age samples is of particular interest,

Table 3.23: Summary statistics for early Iron Age to late Iron Age/ Roman period samples (continued)

SAMPLE	385	484	793	481	713	936
CONTEXT	3829	4865	3930	4806	7085	9189
CONTEXT DESCRIPTION	ditch 7992	pit 4867	ditch 7992	ditch 7993	posthole 7086	pit
SITE	B	B	B	B	E	G
PHASE	LIA	LIA	LIA	LIA - ROM	unphased IA?	unphased IA?
SAMPLE VOL (L)	30	40	40	40	10	40
FLOT VOL (ML)	150	110	200	150	20	80 ml
PROPORTION OF SAMPLE SORTED	25.0%	25.0%	50.0%	50.0%	100.0%	100.0%
SEEDS PER LITRE OF SEDIMENT	33.9	39.1	7.7	19.8	16.3	6.4
TOTAL IDENTIFICATIONS (FLOT)	254	391	153	395	163	254
TOTAL IDENTIFICATIONS (HEAVY RESIDUE)	0	0	0	0	0	0
TOTAL FLOT + HEAVY RESIDUE	254	391	153	395	163	254
TOTAL SCORE (FLOT + HR)						
CEREAL GRAIN	16	87	20	118	142	6
CEREAL CHAFF	114	2	57	195	3	144
DETACHED EMBRYO/ SPROUT	3	0	1	4	1	0
OTHER CROPS	0	0	0	3	0	0
TREE/ SHRUB	0	0	0	0	0	1
WEED/ WILD	107	200	46	50	9	52
UNIDENTIFIED/ INDETERMINATE	13	102	29	25	8	50
RELATIVE PROPORTION (FLOT + HR)						
CEREAL GRAIN	6.3%	22.3%	13.1%	29.9%	**87.1%**	2.4%
CEREAL CHAFF	44.9%	0.5%	37.3%	49.4%	1.8%	**56.7%**
DETACHED EMBRYO/ SPROUT	1.2%	0.0%	0.7%	1.0%	0.6%	0.0%
OTHER CROPS	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%
TREE/ SHRUB	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
WEED/ WILD	42.1%	**51.2%**	30.1%	12.7%	5.5%	20.5%
UNIDENTIFIED/ INDETERMINATE	5.1%	26.1%	19.0%	6.3%	4.9%	19.7%

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). All calculations are based on the combined results for flot and heavy residue.

primarily because of the remarkably small size of the weed seeds (all <4mm, and most usually 2mm or less). These included: small-sized wild grass caryopses (certainly including several probable annual meadow-grass – cf. *Poa annua* L. caryopses); indeterminate birds-foot-trefoil/medick/melilot/clover (*Lotus* spp./*Medicago* spp./*Melilotus* spp./*Trifolium* spp.); goosefoot/orache (frequently the abraded, indeterminate internal structure of *Chenopodium* spp./*Atriplex* spp.); smaller-sized dock (*Rumex* spp.) and eyebright/bartsia (*Euphrasia* spp./*Odontites* spp.). What is notable is that such weed seeds are more likely to be recovered in deposits with substantial quantities of cereal chaff, if not dominating an assemblage themselves (eg samples 370 and 508). For example, very few weed seeds at all were recovered in grain-rich sample 1208 (context 12712, pit 12700); 1265 (context 12580, pit 12527) or 713 (context 7085, posthole 7086). Smaller-sized weed seeds are easily removed from cereal grain by sieving (usually with a mesh size of *c* 2mm) and such fine-sieving waste is a recognised by-product of cereal crop processing (eg G Jones 1984; 1987; 1996 and Hillman 1981; 1984a–b; 1985) and is the most likely explanation for deposits of small chaff fragments and small-sized weeds encountered here.

In general, the Iron Age assemblages analysed from the A2 include all variations of cereal crop products and by-products (*sensu* G Jones 1984; 1987; 1996 and Hillman 1981; 1984a–b; 1985). Several samples have produced what could be viewed as a pure assemblage of cereal grain (eg samples 713, 1208 and 1265 and possibly samples 445 and 1263). Three of these samples come from a single pit (12527/12700) on Site L, the others are from a middle Iron Age pit on Site B (pit 4172) and the last from a posthole on Site E. Samples such as 1263 (context 12528, pit 12527) and 445 (context 4173, pit 4172) have a more substantial weed/wild component, but sample 1263 was very small (54 identifications from 100% of a 35ml flot from a 40L sample) and the weed/wild plant category from sample 445 is in fact dominated by indeterminate oat/brome grass (*Avena* spp./*Bromus* spp.) caryopses, both of which could have in fact been crops in their own right or, at the very least, a tolerated impurity. The latter can be defined as seeds which are of similar size to cereal

grain, do not adversely affect the taste of the cereal-based product and, possibly more relevantly, are difficult to fully remove from cereal grain (eg Campbell 2000, 48; de Moulins 2006, 69–71). Indeterminate wild/cultivated oat/brome grass is frequently recovered in the A2 Iron Age assemblage. Brome (*Bromus* spp.) grass is often recovered in these samples, regardless of whether the samples are grain-rich or chaff-rich. At present both brome and the indeterminate wild/cultivated oat are classified as a weed/wild plant primarily because we cannot assume they were cultivated intentionally. Given their relative abundance in some samples, however, they are perhaps better regarded as a crop in their own right, even if not necessarily for human consumption. Certainly, Campbell (2000, 50) has speculated that brome was cultivated for fodder at early Iron Age Danebury (and environs) and was then replaced by oat in the late Iron Age. The development of hay meadows for the intentional cultivation of grass feed for livestock also dates to the late Iron Age (eg Hodgson *et al.* 1999).

Discussion

The Iron Age pit deposits—rubbish or special deposits?

Cynthia Poole's (1995b) detailed study of some 1670 pits at Danebury and J D Hill's (1995) wider analysis of a major group of pit assemblages from Wessex should perhaps be credited with the first systematic study of deposits from pits in terms of their formation through ritual activity or, indeed, rubbish disposal. To identify an archaeobotanical assemblage as a 'special deposit' rather than one that is the accretion (rapid or gradual; see Poole 1995b for modes/classification of pit infilling) of ordinary domestic or agricultural rubbish is not straightforward. CPR does not arrive with a convenient label informing the archaeobotanist of its origins. Instead, it is more typical to find archaeobotanical reports regularly listing a plethora of potential routes of entry for CPR into a particular deposit.

In the case of the Iron Age samples from A2, the majority (15 samples out of a total of 20 analysed) are from pit deposits, some of which were identified during excavation as being potential 'special' deposits because of the recovery of complete animal skeletons or complete/largely intact pottery vessels. The pits that have been selected for CPR analysis from Iron Age features, however, should first be reviewed in terms of their archaeobotanical assemblages before considering the context of their deposition.

Table 3.23 presents the critical data for these samples in summary. Obviously an offering can be quite small, it may not necessarily be pure but it would have to be charred in order to survive for this analysis. The relative number of charred plant remains per litre of sediment sampled can provide an indication of whether a deposit has a high or low density of plant remains. Approximately 10 seeds per litre of sediment sampled would represent a low density of plant remains, whereas over 100 seeds per litre would be considered a relatively high density. A sample with thousands of plant remains per litre of sediment would be approaching a pure charred deposit of that particular plant(s). The vast majority of Iron Age samples from the A2 are in fact of low to moderate density (typically <50 seeds per litre). Two samples from pit 12527/12700, however, sample 1208 (context 12702) above sample 1265 (context 12580), were exceptionally rich, with 158 and 2468 seeds per litre of sediment sampled respectively (see Table 3.23).

In addition to exploring which samples have a high density of plant remains, we can then consider whether a sample contains any unusual or exotic plant remains, or whether samples are highly dominated by a single class of material, such as cereal grain. In terms of the Iron Age A2 samples, the early Iron Age assemblage from pit 15015 did contain a single unusual or remarkable plant remain, a possible example of broomcorn millet, but this seed could not be securely identified as a cultivar, so is discussed separately (see below).

The pit samples consistently produced the usual mixtures of cereal grain, cereal chaff and crop weeds consistent with other results from the region. The relative proportions of these three plant categories, however, were highly variable (see Table 3.23). In general assemblages with >75% of identifications from a single plant category can be considered relatively pure. Only four samples from the Iron Age phases from the A2 could be viewed as 'pure' on this basis. Three early Iron Age samples were dominated by cereal grain and derived from pit 12527/12700, including sample 1208 (context 12702); sample 1263 (context 12578) and sample 1265 (context 12580). In addition, a middle/late Iron Age sample from pit 3676 (sample 369, context 3678: NZA 30118; 210–40 cal. BC) was not quantified, but produced abundant highly silicified (nearly ashed) wheat (*Triticum* spp.) awn and glume fragments.

Two samples (1208 and 1265) from early Iron Age pit 12527/12700 have already been identified as having a high density of CPR (see discussion above). The density of CPR decreases up the pit profile, from 2468 seeds identified per litre of sediment to 158 seeds per litre of sediment and then 1.4 seeds per litre of sediment sampled.

Sample 369 (context 3678) from the middle/late Iron Age pit 3676, is dominated by unquantified minute, silicified (burnt nearly to ash) indeterminate wheat (*Triticum* spp.) awn and glume fragments. This deposit was the lowest of three samples analysed from this pit, the other two of which contained moderate to low densities of highly mixed assemblages of charred cereal grain, cereal chaff and accompanying weed seeds (samples 370 and 371). Some experts have speculated that ashy deposits such as this may be used to intentionally line a pit, which possibly necessitated the burning of the previous contents of a pit before

storing a new crop (eg Monk 1991, 106; van der Veen and Jones 2006, 222). Certainly ash is a highly effective insecticide and is traditionally used to coat storage rooms/vessels (eg Hakbijl 2002). Nevertheless, ash also has a well-recognised use in ritual (eg Hill 1995, 110 citing Hodder 1987b). In pit 12527, a smaller deposit of ash (12581) was associated with a largely intact decorated pottery jar close to the base of the pit, strengthening the possible association of ash with deliberate placement of other materials. The detection of 'special deposition' of ash (by which I mean unidentifiable, highly silicified remains of plants) at archaeological sites remains problematic, especially if this is also taking place alongside the regular day-to-day deposition of spent fuel/burnt domestic debris into similar features. As Hill (1995) and Poole (1995b) suggest, it is most likely the confluence of a number of factors (eg location, horizontal/vetical position and associated finds) that best enables us to recognise a 'special deposit'.

This ashy material from pit 3676, as well as the low-levels of charred material recovered in the other two samples studied from this pit, is associated with a whole pot buried upside down, an iron linch pin, a triangular loomweight and a potin coin. These remains are considered by Allen and others on the project to suggest that this deposit is 'special' (*sensu* Hill 1995). However, an opening or closing offering (related to a protecting a stored crop or thanking for the safe storage of a crop) does not necessarily mean that the plant material (in this case charred debris) is related to these offerings. The ash could simply be the pit lining and, therefore, solely related to the functional use of the pit. Although it is understandable to engage in speculation of significance beyond functional interpretation, untangling other deeper meanings for charred plant remains is still highly problematic (eg Campbell 2000; Cunliffe 2000).

Out of all 20 Iron Age samples fully analysed, only four pit samples produced assemblages which could be considered notable either for their high density of charred plant remains or the purity of the deposit. The ash from sample 369 in pit 3676 has already been discussed. Pit 12527/12700 contained all of the other three, which in itself makes the contents of this pit out of the ordinary. Given the decreasing density of charred plant remains per litre from the analysed samples up the profile, it is conceivable that the upper two samples both derive from the reworking of the richest deposit (sample 1265 from context 12580) at the base. In this case pit 12527 would have contained only one sample with a high density of relatively pure cereal grain (in this case 2/3 emmer to 1/3 barley, on the basis of the identifiable grain recovered), rather than a sequence of such deposits. Whether containing only one or more separate deposits, rich assemblages of charred grain from Iron Age pits are relatively common, and are generally considered to be 'rubbish' rather than a ritual or 'special' deposit (eg van der Veen and Jones 2006; 2007). Campbell (2000, 53) notes, in her review of CPR associated with 'special deposits' at Danebury, that there is no discernable pattern—both grain-rich and chaff-rich assemblages have been recovered from such deposits suggesting it is the pattern of disposal that is critical. Van der Veen and Jones (2006, 222) argue that a predominance of grain-rich samples should be interpreted as an indicator for large-scale cereal processing, either as part of production of the crop (eg cereal crop processing stages) or as part of the consumption of the crop (eg food preparation). With only one exceptionally grain-rich pit (pit 12527/12700) from the A2 it is not possible to ascertain any pattern in the specific deposition of charred grain. Some (eg Campbell 2000, 53; van der Veen and Jones 2006, 424; 2007, 222) argue that charred grain is most likely produced by accident, probably occurring during crop processing. Such accidents should, however, be rare and arguably are likely to be rarer than ritual behaviour, which tends to have a cyclical dimension, whether seasonal, annual or over a longer period of time.

The function of pit 12527/12700 is also worth considering further. It was 0.66m deep and flat bottomed; the grain-rich lower deposits also contained structural fired clay with wattle impressions, and the upper fills contained numerous triangular oven bricks/loomweights (see Stansbie, this vol.). If correctly interpreted as oven bricks, this evidence would all be consistent with an oven structure, perhaps similar to the circular cereal drying floors known at Danebury (Poole pers. comm.). Whether the contents of this feature represents the dismantling of such a structure, or even its remains *in situ*, and whether this could have some sort of ritual dimension is, however, not proven on the basis of the charred plant remains alone.

The question as to why charred grain would be recovered from pits ostensibly used for the storage of harvested grain remains hotly debated (eg reviews by van der Veen and Jones 2006; 2007). Certainly pits as a form of storage in the Iron Age are more likely to be for the storage of surplus grain rather than seed corn (eg Fenton 1983; see also detailed discussion in van der Veen and Jones 2006, 223–5; 2007, 425–426). Van der Veen and Jones (2006, 222) suggest two prosaic explanations for the recovery of grain-rich deposits in pits: they are related to debris from day-to-day cereal processing events or the deliberate burning of pit linings (to clean pits prior to storing a new crop). Regardless of which explanation applies here, the recovery of charred grain and cereal chaff, sometimes in extremely high densities, in Iron Age deposits (especially pits) from the A2 widening scheme indicates 'the large-scale handling of cereal produce' (eg van der Veen and Jones 2006, 222) at the site.

In her review of pit function for the Danebury environs project, Campbell (2000, 53) argues that only one of the Danebury pits can be considered to

be stored grain burnt *in situ* (pit P1078). She (ibid.) believes most charred grain and/or chaff-rich assemblages represent disposal of accidentally burnt grain or intentionally burnt chaff (either as part of disposal, for fuel or for pit lining/cleaning). Although she considers the possibility of ritual disposal and explores any patterning in the deposition of grain/chaff into pits (specifically for Nettlebank Copse; ibid.), she ultimately concludes that the pattern of deposition most likely reflects proximity to areas where activities involving heat (ovens/parching floors) and cereal processing regularly take place. What is notable is that the distribution of different forms of crop processing by-products and products in well-sampled pit assemblages can occasionally provide an insight into areas of activities. At the Danebury Environs site of New Buildings, pit assemblages produced a pattern whereby pits along the boundary produced winnowing waste and those within the enclosure were dominated by glume bases, with Cunliffe (2000, 172) interpreting the latter 'as being derived from parching'.

Whether such large quantities of emmer/spelt glume bases would be highly charred during parching of emmer/spelt grain still encased within its spikelets, however, initially seems unlikely as one would not want to risk greatly altering the taste of the grain or, at worst, burning the grain. However, in Peña-Chocarro's (1996, 139) observation of traditional glume wheat harvesting methods in Asturias, Spain, she notes that there is a strong tradition of singeing harvested glume wheat crops prior to threshing, to remove awns. Notably this activity is carried out near the granaries and not in the field. In addition to the possibility of charring during parching/singeing, it is also probable that chaff-rich wastes from crop processing could be used as fuel for ovens/kilns. If the charred cereal grain, cereal chaff and weed/wild plants recovered from the A2 pits are largely re-deposited rubbish from large-scale crop processing, then we are dealing with an agricultural economy which has fully moved from subsistence to surplus (eg M Jones 1985). Although possibly less exciting than the ritual placement of deposits in pits, the regular disposal of crop processing waste into Iron Age features at A2 does speak to the relative prosperity of the Iron Age inhabitants of the area and has implications for their health and, indeed, social status. Surplus grain means healthier people (especially children), healthier livestock and can result in expressions of prosperity, such as feasting (eg van der Veen 2007).

What these crops were processed for remains unclear. Obvious explanations such as parching prior to milling/storage are highly likely. There is no direct evidence for malting in the Iron Age charred plant remains at the A2. Small quantities of detached indeterminate cereal grain embryos were frequently encountered in the Iron Age deposits, but they all were clearly undeveloped. It therefore seems likely that these separated from accompanying cereal grain through mechanical damage, probably during excavation or flotation.

Mixed assemblages and the possibility of Iron Age Maslin Crops

The Iron Age assemblages include mixtures of different cereal crops, often containing emmer (*Triticum dicoccum* Schübl.) and barley (*Hordeum* spp.) or emmer, spelt (*Triticum spelta* L.) and barley. In most cases the low density (see Table 3.23) of charred plant remains recovered suggests that there may be some mixing of deposits. The rich and relatively pure early Iron Age deposit from sample 1265 at the base of pit 12527/12700, however, which comprised 2/3rds emmer and 1/3rd barley, raises the possibility of the cultivation and harvesting of maslin (mixed) crops. Although several lenses of cereal remains were observed within this layer, allowing for the possibility that the sample resulted from a mixture of several different dumping events, the purity of the deposits throughout the profile of the pit suggests that this layer was deposited rapidly and was unadulterated.

If this assemblage does represent a single dumping event of either accidentally or intentionally charred cereal grain, then the relative proportions of emmer to barley is of interest. If barley had represented <10% of the assemblage, it could easily be considered a contaminant. To represent as much a 1/3 of the assemblage suggests that it may have been intentionally mixed with the emmer before processing or that it even could have been grown with the emmer as a maslin. Certainly, there are clear advantages to growing crops in a mixture to buffer against vagaries of weather or disease (eg G Jones 1995). However, just because two crops are found together does not necessarily mean that they were grown together. Moreover, van der Veen (1995) has argued that emmer and barley were not grown together elsewhere in England. It is alternatively possible that the two crops were deliberately mixed before charring, or after charring and before deposition.

The recovery of a panacoid caryopsis from early Iron Age pit 10515

One extremely tentative identification of possible broomcorn millet (cf. *Panicum miliaceum* L., known as common millet in Stace 1997, but broomcorn millet in Zohary and Hopf 2000) grain was made from sample 1051 (Pit 10515 Area K). This is a remarkable find for Britain, certainly Tomlinson and Hall (1996) in their survey of all archaeobotanical finds in the British Isles only record two other finds of *Panicum miliaceum* L in England—one from Roman London (2nd century AD cesspit) and one from medieval pit or watercourse from Kingston-upon-Hull, Humberside (post 1575 AD). However, Allan Hall (pers. comm.) has argued that there are problems even with these identifications and Stace (1997, 910) considers broomcorn millet a birdseed

alien. Thus, the consensus view is that millet was not a cultivar in Iron Age Britain and its recovery is extremely unusual. Unfortunately the caryopsis is so small that it cannot be directly dated itself. *Cecilioides acicula* L. snail shells, some of which were clearly modern, were noted in this deposit. This snail can burrow to great depth, so we cannot rule out the possibility that this small, charred grass caryopsis is intrusive and was later re-worked into this deposit.

Comparison with other archaeobotanical results from Kent

Two sites from the Channel Tunnel Rail Link excavations—Northumberland Bottom (Davis 2006a) and Tollgate (Davis 2006b)—are immediately adjacent to the excavations at A2 and, therefore, are directly comparable.

Tollgate has produced four interpretable early–middle Iron Age archaeobotanical assemblages, which have provided very similar results to those presented here. Like A2, at Tollgate emmer (*Triticum dicoccum* Schübl.) is the dominant cereal cultivated, but spelt (*Triticum spelta* L.) and barley (*Hordeum* spp.) were also recovered. Mid–late Iron Age deposits from Northumberland Bottom were fairly poor (<100 identifications) but barley, emmer and spelt were identified. The weed/wild flora from both Northumberland Bottom and Tollgate, is quite limited but is generally consistent with the results from A2.

In general the early–middle Iron Age pit deposits from Tollgate were relatively poor, but one sample from oven 503 produced abundant emmer grains. The direct association of this rich assemblage of cereal grain with an oven strengthens the interpretation of the assemblage from pit 12527 on the A2 as deriving from the destruction of an oven. Whether there was a ritual dimension to this activity, however, is not provable on the basis of the charred plant remains alone. Certainly, this suggests that rich assemblages of cereal grain are more likely to be associated with day-to-day crop processing on a large scale or else as accidents, as van der Veen and Jones (2006; 2007) have proposed.

Wood charcoal *by Dana Challinor*

The early Iron Age pit samples came from three different sites: K, C and G west to east, which are separated from one another by about 1km (Table 3.24). Sites C and G were on the chalk plateau while Site K was in a dry valley. The radiocarbon dates suggest that the pit groups mostly date from the same period (5th–4th century BC). Any differences in the local environment of the sites cannot be discerned from the charcoal, since there was only one sample from Site K, which was dominated by oak, and did not appear to contain any unusual or different taxa.

Some of the early Iron Age pits, in particular pit 9010 from Site G, were exceptionally rich in charcoal

Table 3.24: Results of the charcoal analysis from Iron Age contexts

	Phase	early Iron Age							
	Site	C	C	C	G	G	K		
	Feature type	pit	pit	pit	pit	pit	pit		
	Feature	5066	5110	5225	9010	9052	10515		
	Context	5062	5143	5402	5234	9077	9082	9063	10522
	Sample	515	536	597	567	922	928	911	1051
	% identified		37.5	12.5			25	3.13	
cf *Ulmus* sp.	elm			1					
Quercus sp.	oak	++	38h	68h	++	++	89h	64rhs	++++ h
Corylus avellana L.	hazel		15r	6		+	14r	3	+
Alnus/Corylus/ Carpinus	alder/hazel/ hornbeam		6		+ r	+++	13r		
cf *Rosa* sp.	rose								
Prunus spinosa L.	blackthorn			6r					
Prunus avium L.	wild cherry								
Prunus cf *avium*								3r	
Prunus sp.	cherry type	+							+
Maloideae	hawthorn group	+++	27r	2	+	+	14r	9r	
Cytisus/Ulex	broom/gorse								
Acer campestre L.	field maple		6r	22r	++	+		29r	
Fraxinus excelsior L.	ash						3		
Indeterminate bark							1		
Indeterminate			16	4			10r	3	
Total		++++	108	109	++++	++++	144	111	++++

r= roundwood; h=heartwood; + = <5; ++ = 5-25; +++ = 25-100; ++++ = >100

and had been extensively sampled. All of the samples were scanned and the results recorded in full in the archive, but Table 3.24 presents only a selection of the results showing variations in the assemblage compositions within features. In general, there were no significant variations; the samples with the greatest degree of difference came from pit 9010 where sample 928 was dominated by oak, but hazel/alder/hornbeam group dominated sample 922. Since the rest of the assemblages were similar in taxa presence and the character of the wood (ie some large trunkwood but mostly small roundwood), these variations are not believed to be significant.

Oak was abundant and represented the greatest taxon in terms of fragment count, but the samples were generally quite mixed, with an average of four taxa. Hazel forms an important component of the assemblages, and there is a strong presence of hedgerow type species, including hawthorn group, blackthorn/cherry and field maple. Blackthorn and ash are light demanding trees and, whilst they could have grown in woodland margins, the general picture indicates a reasonably cleared landscape. Many of the fragments came from small diameter roundwood, consistent with small branches or fallen deadwood. The presence of broom/gorse in pit 4741 indicates the use of heathland, and is the first evidence for the use of this resource at this site. The middle Iron Age date finds a parallel in a pit from Dartford (Druce 2011), which might, tentatively, suggest that increased clearance in this period led to the occasional use of heathland resources. Additionally, there was no broom/gorse charcoal found at the adjacent HS1 sites from samples earlier than the Iron Age.

The evidence from the charred plant remains (see Smith, this vol.) suggests the regular disposal of crop processing waste into features along the route of the A2. She concludes that there was large scale processing of cereals remains, leading to high densities of charred material, though of differing proportions, throughout the pits. The charcoal is consistent with the types of fuelwood generally used for domestic contexts and crop processing in Iron Age Kent (eg Barnett 2009; Aldritt 2006b). The diversity of taxa and the consistent use of small diameter roundwood indicate common gathering practices from a fairly limited range of locally available resources. The occasional pit entirely dominated by oak (such as 10515) may relate to a specific (though unknown) activity but, if domestic debris, it is not without parallels. The nearby site of Northumberland Bottom produced a mid–late Iron Age pit containing charcoal entirely composed of oak, including heartwood (Challinor 2006a).

Land snails b*y E Stafford*

For details of the approach to the study of land snails on this scheme, please refer to Chapter 2, Bronze Age Land Snail Analysis.

Site B

Middle Iron Age

Overall 20 samples deriving from six interventions of middle Iron Age date (ditch groups 3966, 4615, 4617 and 7194) were initially assessed (see Fig. 3.28). Shell preservation was generally poor to moderate from many of the features. Shell was entirely absent in samples from ditches 4168 and 4072 (Group 7194) and very poor in samples from 4238 and 4406 (Group 4617). Of the four samples retrieved from 4903 (Group 3966), only the uppermost sample, from fill 4905, produced a flot. Shell was quite abundant here but the assemblage was mixed (zonitids, *D. rotundatus*, *P. elegans*, Clausiliidae, *Vallonia* sp. helicids and *P. muscorum*).

The 13 samples retrieved from middle Iron Age ditch 4455 (Group 4615) were rather more productive. Overall molluscan preservation was good. The majority of the samples were dominated by shade-demanding species although occasional samples had more mixed assemblages. This feature is the same ditch analysed from the HS1 site at Northumberland Bottom (ditch 332 ARC WNB98) which produced similar assemblages. For this reason ditch 4455 was not subject to detailed analysis. The results of the HS1 analysis of ditch 332 are summarised below (Stafford 2006).

The profile from ditch 332 can be divided into four zones. Zone A spans the primary fills. In the basal fill (362, 1.30–1.40m), *P. elegans* was numerous. The remainder of the assemblage comprised mainly shade-demanding taxa, *D. rotundatus* and *Aegopinella nitidula* along with *Aegopinella pura* and *Oxychilus cellarius* with lesser quantities of Clausiliidae. Significant quantities of *Carychium tridentatum* were also noted. Open-country species were generally few in number, although *V. costata* was noted. Some elements of the assemblage may derive form soil falling into the ditch when it was cut and may thus reflect conditions prevailing immediately prior to construction. Other elements may reflect very local conditions prevailing in the base of the feature during the initial stages of infilling. *P. elegans*, as previously stated, is often abundant is areas of ground disturbance where it burrows into the loose soil and is often associated with woodland or scrub clearance. It could also have been attracted to the unstable nature of the feature edges. The shade-demanding elements of the assemblages are consistent with open woodland or scrub conditions. *V. costata*, although common in open country assemblages, does occur in small numbers in shaded habitats (Evans 1972). It is subsequently considered one of the first species to colonise recently cleared areas of ground. Between 1.30m and 1.20m shells were very sparse either due to poor recovery, or possibly because surfaces in the primary fill were unstable, dry and unvegetated, producing a hostile environment for snails.

In Zone B, between 1.20m and 0.80m (fill 258), the assemblages were dominated by shade-demanding taxa. *P. elegans* was noted as only a few worn apices which may indicate fewer disturbances within the ditch perhaps as the edges became stable and vegetated. Catholic species also appeared at this level including *Trichia hispida*, and *Cepaea* sp. *V. costata* continued in small quantities, otherwise open-country species were absent. The rapid colonisation of the ditch by shade-demanding taxa suggests refugia were present in the vicinity from which shade-loving species could colonise. The general paucity of open-country species apart from *V. costata* suggests any clearance associated for construction of the feature may have been localised or temporary, at least in the immediate surroundings.

In Zone C, above 0.80m (fills 256 and 249), *P. elegans* again became more abundant possibly indicating renewed disturbance in the vicinity. In Zone D, above 0.40m, shade-loving species are still present, particularly *C. tridentatum*, but open country species are more important with *V. costata* joined by *V. excentrica* and *Helicella itala.* Open-country species comprised approximately one third of the assemblages. The obligatory xerophile *T. cylindrica* is also present along with *P. muscorum* and *V. pygmaea.* These changes in the upper fills of the ditch may be associated with late Iron Age to Roman activity on the site.

Middle to late Iron Age

Sixty-one samples were assessed from 14 interventions of middle to late Iron Age date (including groups 3961, 4619, 4622, 4779, 7192, 7196, 7197, 7979, 7990, 7992, 7993). Overall shell preservation was quite variable ranging from absent or very poor to very good.

In the samples from the curvilinear enclosure in the western part of Site B shell was only moderately preserved in the uppermost fills of interventions; 4423 (Group 4619) and 4499 (Group 4622). Here, assemblages were dominated by open-country taxa, mainly *Vallonia* sp and *H. itala* with *P. muscorum* and *T. cylindrica*, along with the catholic *T hispida*. Preservation was better, however, in the incremental samples from the secondary fills of ditch 4502 (Group 3961). Assemblages appeared to be dominated by as similar range of open-country taxa. However more shade-demanding species, predominantly the zonitids, were noted. These may reflect the microenvironment and growth of shadier vegetation, such as long grass, growing within the feature.

In the central area of Site B three interventions produced useful assemblages. All were quite similar and dominated by quite a diverse range of shade-demanding species. These included, the three uppermost spits in 4803 (Group 7993), one spot sample from ditch 4675 (Group 7979) and four samples from ditch 4116 (Group 7992). This is similar to the results of the HS1 analysis immediately to the south (ARC WN98). Here, two contexts dated from the late Iron Age to early Roman period were examined (ditch fill 526, and pit fill 565) produced mixed assemblages, although shade-demanding species predominated. Most numerous were *A. pura* and other zonitids, with lesser quantities of *D. rotundatus, Ena obscura, Acanthinula .aculeata* and Clausiliidae. Open-country species, including xerophiles *T. cylindrica* and *V. excentrica,* however, made up an important component comprising about one third of the assemblages (Stafford 2006).

In the eastern area of Site B shell only was poorly to moderately preserved. In the uppermost fills of 4078 (Group 7196) assemblages were dominated by open-country taxa. Assemblages from the six samples from ditch 4122 (Group 7192), however, were quite mixed.

Site C

A single bulk sample was assessed from early Iron Age pit 5505 (see Fig. 3.8). Shell was moderately well-preserved but the assemblage quite mixed (e.g.

Table 3.25: Molluscan data from middle Iron Age ditch 6944 (cut 6375), Site D

Sample		1980	1982
Context		6376	6488
Depth		0.20-0.30	0.40-0.50
Sediment processed (kg)		2	2
Taxa	Habitat		
Pomatias elegans (Müller)	S-D	5	2
Carychium tridentatum (Risso)	S-D	1	2
Cochlicopa sp.	C	1	
Truncatellina cylindrica (Ferussac)	O-C	22	1
Vertigo pygmaea (Draparnaud)	O-C	3	
Vallonia costata (Müller)	O-C	107	
Vallonia excentrica (Sterki)	O-C	163	
Vallonia sp.	O-C	46	
Acanthinula aculeata (Müller)	S-D	2	2
Punctum pygmaea (Draparnaud)	C	14	1
Discus rotundatus (Müller)	S-D	10	1
Vitrina pellucida (Müller)	C	5	1
Vitrea sp.	S-D	8	2
Aegopinella pura (Alder)	S-D	1	
Aegopinella nitidula (Draparnaud)	S-D	6	1
Oxychilus cellarius (Müller)	S-D	1	1
Clausilia bidentata (Ström)	S-D	2	1
Helicella itala (Linné)	O-C	19	14
Trichia hispida (Linné)	C	6	5
Cepaea/Arianta sp.	C	3	1
Monacha cantiana	C	1	
Limicidae			
% Shade-demanding		8.45	34.29
% Catholic		6.81	22.86
% Open-country		84.51	42.86
No. individuals/sample		426	35
No. individuals/kg		213	18
Shannon Wiener Index (H')		1.93	2.11
Brillouin Index (HB)		1.86	1.70
H'-HB Index		0.08	0.41

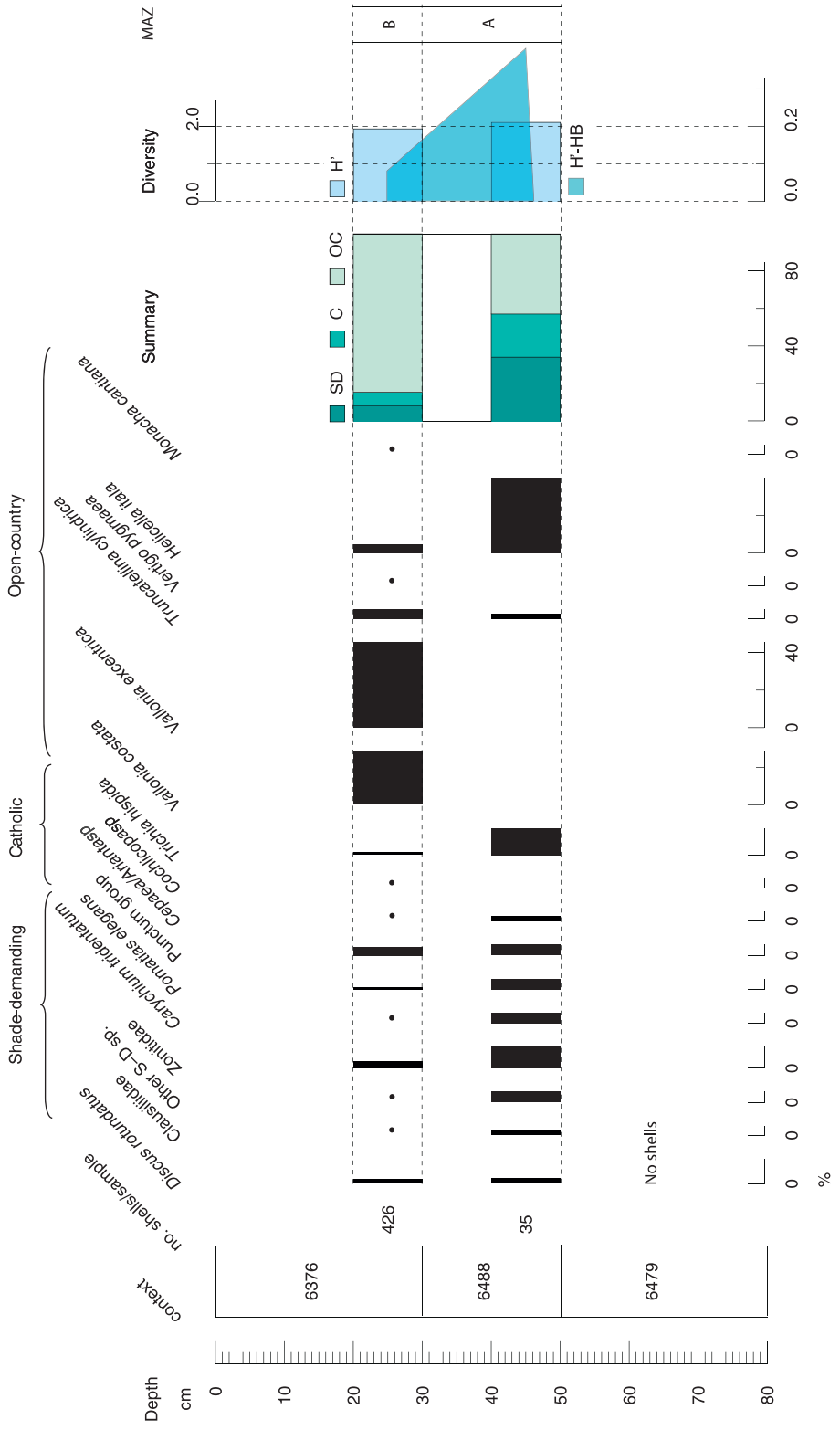


Fig. 3.82 Percentage molluscan diagram from middle Iron Age ditch 6944 (cut 6375), Site D

many *Vallonia* sp. *P. elegans*, *C. tridentatum*, *D. rotundatus*, zonitids, *A. aculeata*, *Lauria cylindrica*, Clausillidae, occasional *T. cylindrica*).

Site D

Group 6944 comprise part of a segmented ditch on Site D dated to the middle Iron Age (see Fig. 3.35). A single profile from cut 6375 was sampled for molluscs. Assessment of seven samples indicated shell was variably preserved. No shell was preserved in the primary fill 6479 which comprised redeposited chalk rubble. Shell was slightly better preserved in the middle fill 6488 and well preserved in the upper fill 6376. Two samples from 6488 and 6376 were therefore analysed in detail. The mollusc counts from the sampled fill sequence are presented in Table 3.25 and the histogram in Figure 3.82.

The sample from fill 6488 produced only 35 shells of mixed ecology. The shade-demanding component was quite diverse comprising a range of species and may represent a residual component from a previous landscape phase. The open country component on the other hand was confined to two species, *T. cylindrica* and *H. itala*, indicative of short-turfed grassland.

In the sample from the upper fill 6376 shell was much more abundant at 426 individuals. The environmental signal here is very clear. Open-country species dominate at 85%. *V. excentrica* is numerous, followed by *V.costata. T. cylindrica*, *V pygmaea* and *H. itala* are also present. It appears that the environment in the vicinity of the feature during the infilling of 6376 was very open, most likely established short-turfed grazed grassland. Shade-demanding and catholic taxa are present in insignificant numbers which may suggest the ditch itself, which by this time was much shallower, was also being grazed.

Site G

Ditch Group 9609, dated to the early Iron Age, marked the eastern extent of archaeological activity on Site G (see Fig. 3.16). Cut 9478 was the best preserved, surviving to a depth of at 0.45m and 0.60m wide. Pottery, flint, bone, shell and burnt stone were recovered mostly from upper fill 9479. Four mollusc samples were retrieved from this profile. The mollusc data is presented in Table 3.26 and the histogram in Figure 3.83. Shell was only moderately preserved in this ditch profile ranging from 13 to 94 individuals. The composition of the assemblages is

Table 3.26: Molluscan data from early Iron Age ditch 9609 (cut 9478), Site G

Sample		1815	1816	1817	1818
Context		9479	9480	9481	9481
Depth		0.00-0.13	0.13-0.26	0.26-0.36	0.36-0.45
Sediment processed (kg)		2	2	2	2
Taxa	Habitat				
Carychium tridentatum (Risso)	S-D	3	2		
Cochlicopa sp.	C	2	2		
Vertigo pygmaea (Draparnaud)	O-C				2
Vallonia costata (Müller)	O-C	2	1		
Vallonia excentrica (Sterki)	O-C	6	30	43	7
Punctum pygmaea (Draparnaud)	C	3	10	12	
Vitrina pellucida (Müller)	C			4	
Vitrea sp.	S-D	1		2	
Nesovitrea hammonis (Ström)	C		1	1	
Aegopinella pura (Alder)	S-D	2	1		
Aegopinella nitidula (Draparnaud)	S-D	6	5	3	
Oxychilus cellarius (Müller)	S-D	5	9	2	
Clausilia bidentata (Ström)	S-D			1	
Helicella itala (Linné)	O-C	13	8	14	3
Trichia hispida (Linné)	C	5	4	10	1
Cepaea/Arianta sp.	C			1	
Limicidae	C			1	
% Shade-demanding		35.42	23.29	8.51	
% Catholic		20.83	23.29	30.85	
% Open-country		43.75	53.42	60.64	
No. individuals/sample		48	73	94	13
No. individuals/kg		24	37	47	7
Shannon Wiener Index (H')		2.17	1.85	1.74	
Brillouin Index (HB)		1.87	1.65	1.58	
H'-HB Index		0.3	0.2	0.17	

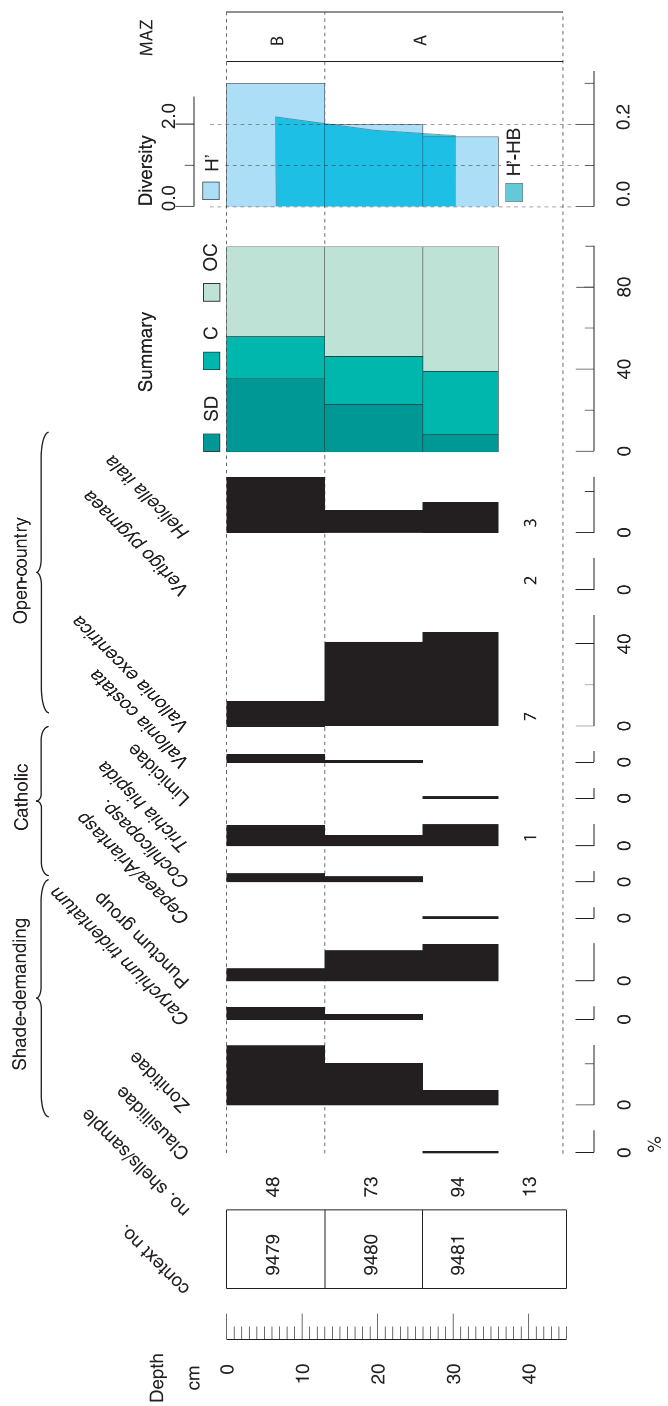


Fig. 3.83 Percentage molluscan diagram from early Iron Age ditch 9609 (cut 9478), Site G

quite similar with only minor differences towards the top of the profile. Two molluscan assemblage zones have been identified from ditch 9478.

In Zone A (0.13–0.45m) the basal sample from fill 9481 produced too few shells for interpretation. Above 36cm shell was a little more abundant, at 73 and 94 shells per sample. The assemblages are dominated by open country taxa at 50–60%. Most numerous was *V. excentrica*, although *H. itala* was also significant. *V. costata* and *V. pygmaea* were present in low numbers. Catholic species made up to *c* 20–30% of the assemblages, mainly the Punctum group and *T. hispida.* Shade-demanding taxa accounted for 9% increasing up-profile to 23%, mainly the zonitids and to a lesser extent *C. tridentatum.* The composition of these assemblages suggests this feature was constructed in an open environment of probably short-turfed but not intensively grazed grassland. The catholic and shade-demanding components were probably attracted to the microenvironment of the feature and are consistent with the development of long grass within the base of the ditch as it infilled.

In Zone B (0.00–0.13m) the uppermost fill 9479 does show some change. There is a notable reduction in shell abundance, a decrease in the proportion of *V. excentrica* and a corresponding increase in *Helicella itala* and the zonitids. These changes are difficult to interpret, particularly given the low numbers of shell. Field records suggest this artefact rich context may represent a deliberate dump of material, so that these slight difference may be of little consequence for the overall environmental interpretation.

Discussion

Data for the early and middle Iron Age comes from a number of sources. The single early Iron Age ditch sampled on Site G (9609) east of the Tollgate dry valley indicated a environment of probably short-turfed but not intensively grazed grassland. Lush vegetation such as long grass and herbs probably grew within the base of the ditch as it infilled.

West of the Tollgate dry valley, assemblages from the middle Iron Age ditch 4455/HS1332 on Site B argue for open woodland or scrub cover, and the rapid colonisation by shade-demanding taxa suggests that any clearance associated with the construction of the feature may have been short-lived. Similar refugia for these species must have been present close by from which the species could spread. There is no real evidence for large established tracts of short grassland or arable in the immediate vicinity of this feature during the initial infilling; had this been present a more significant open-country element would have been expected alongside the shade-demanding snail species. Such mixed assemblages do not occur until later in the sequence. In contrast on Site C the uppers fills of ditches 4583 and 5297 indicate disturbance and more open conditions than in the Bronze Age. On Site D, assemblages from the middle Iron Age ditch 6375 indicate an open environment, most likely established short-turfed grazed grassland, and it is possible the feature itself was being grazed by livestock.

Radiocarbon dating *by Rebecca Nicholson and Tim Allen*

A series of 19 samples was submitted for radiocarbon dating from features in an attempt to define the nature and duration of Iron Age settlement across the scheme more closely (Table 3.27, Fig. 3.84). Within the Iron Age there is, however, an unfortunate radiocarbon plateau from around 800–400 cal. BC. As a result, while it would have been useful to be able to use radiocarbon dating to provide very close dating for the ceramics, this was considered unfeasible. Samples were usually selected for dating because the features could not be dated reliably by other means, or because the features were thought likely to be later Iron Age.

Dating and sequencing four-post structures

Four-post structures occur widely along the scheme, but the postholes rarely contain sufficient artefactual evidence for secure dating. These structures are found both on later Bronze Age and Iron Age sites, and are traditionally interpreted as raised granaries or storehouses. H Gent, who reviewed the evidence for their use as granaries (Gent 1983), believed that the case was strengthened for some examples by the discovery of charred cereal grain in quantity in one or more postholes.

On the A2, four-post structures are generally clustered and the intention was to date one or more structures in each group, to assist in establishing the range of dates of these structures for each group, and across the project as a whole. Charred grain from one four-post structure was dated to the late Bronze Age (see Chapter 2).

Charred grain from four-post structure 3772, at the eastern end of Site B

A single four-poster from Site B produced several cereal grains. A charred wheat grain (*Triticum dicoccum/spelta*) from posthole 3734 gave an early Iron Age date (NZA 32280: 760–390 cal BC) demonstrating that there was some early Iron Age activity in the area of the later nucleated settlement.

Radiocarbon dates from four post structures from the eastern end of Site C also demonstrated early Iron Age activity, while others from Site B suggest early–middle or middle Iron Age occupation (see below).

Charred grain from pits and four-post structures at the east end of Site C

Two large circular pits (5130/5242 and 5110/5219) in Site C contained large assemblages of briquetage, in addition to large pottery assemblages. In pit 5110, solitary or small groups of cereal grains were recov-

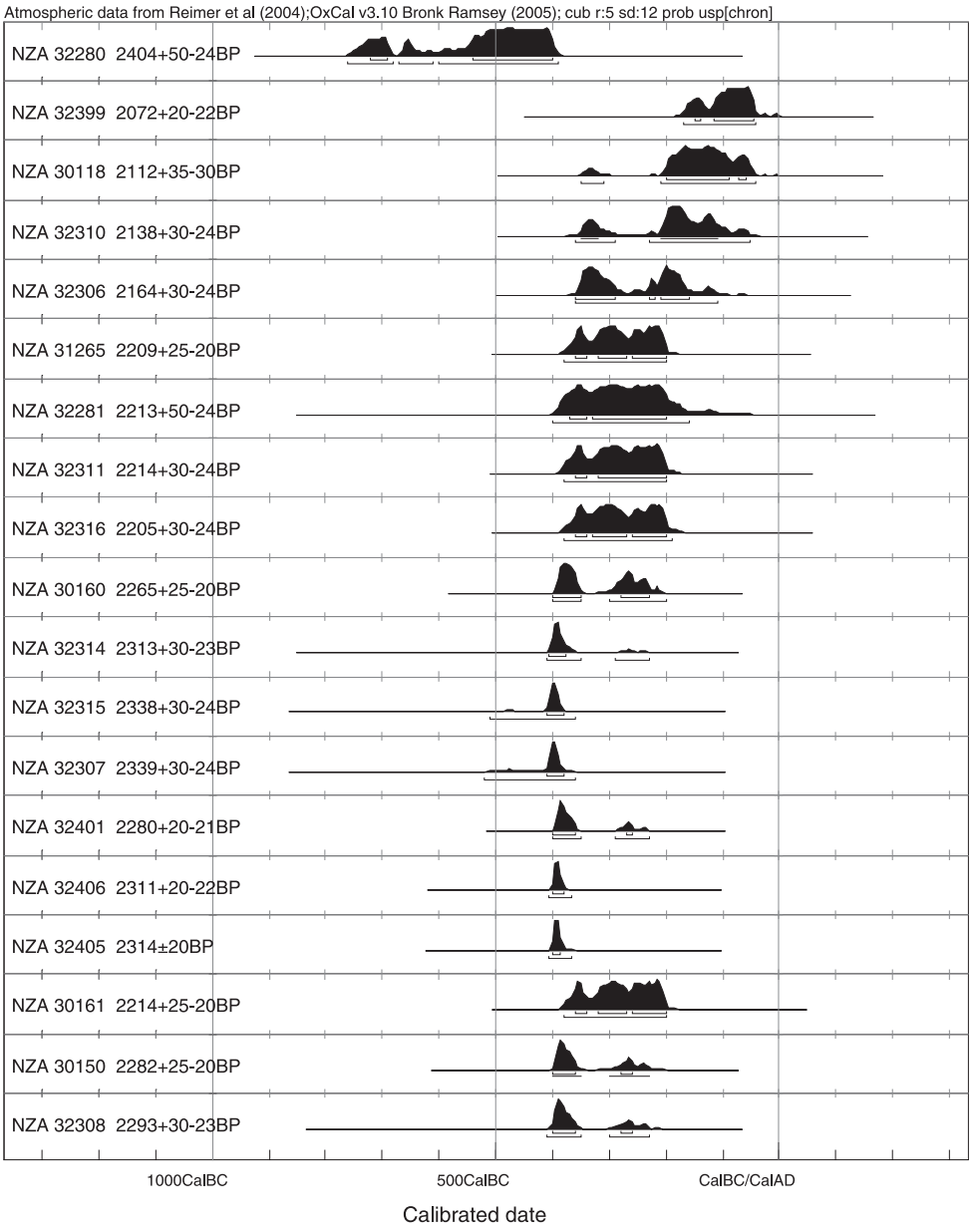


Fig. 3.84 Radiocarbon distributions for the Iron Age features

ered from eight fills near to the base and included emmer wheat, indeterminate wheat, barley and oats. A single wheat (*Triticum* sp.) grain was dated to 510–360 cal BC (NZA 32315), with a 67% chance of lying between 420 and 380 cal BC, while a similar date was obtained from a single wheat grain (*Triticum* sp.) in pit 5130 (NZA 32314). Both dates suggest occupation in the very late 5th or earlier 4th century BC.

A charred hazelnut shell from the fill of posthole 7207 in four-post structure 7327 produced a date of 520–360 cal BC (NZA 32307), very similar to that from the pits. It is thus likely that the pits and at least one four-poster belong to a single phase of occupation.

Four-post structure 7316 was, however, later. A single charred wheat grain from fill 5986 from posthole 5987 provided a date of 380–190 cal BC (NZA 32316), with a 67% chance that the date lies after 330 cal BC.

Dating of other Iron Age features

Animal and human bone from Pits 9010 and 9052 in Site G

These two large and deep pits contain clear evidence of structured deposition, and included several complete or partial animal skeletons. A fragment of human skull from 9077 within pit

Table 3.27: Iron Age radiocarbon dates

Laboratory number	*C14 Age BP*	*Error*	*Site*	*Sample/ small find no.*	*Context No.*	*Feature*	*Material*	*$\delta^{13}C$ (‰)*	*Calendrical date cal. BC/AD (95.4% unless stated) Calibrated using Oxcal 3.10*
NZA 32280	2404	50	B	Sample 367	3734	3772	Charred emmer/spelt grain *(Triticum dicoccum/spelta)* x1	-24	760 - 680 cal. BC (16.6%); 670- 610 cal. BC (7.4%); 600- 390 cal. BC (71.4%)
NZA 32399	2072	20	B		3401	4969	Mammal bone-pig frontal	-21.7	170 - 40 cal. BC
NZA 30118	2112	35	B	Sample 369	3678	3676	Charred seed *(Galium aparine)*	-30.3	350-310 cal. BC (4.2%); 210 - 40 cal. BC (91.2%)
NZA 32310	2138	30	B	Sample 1466	7889	7964	Charred wheat grain (*Triticum* sp.) x1	-23.5	360- 290 cal.BC (17.9%); 230- 50 cal. BC (77.5%)
NZA 32306	2164	30	B	Sample 785	3805	3892	charred grain (*Triticum* sp.) x1	-24.2	360 - 110 cal. BC
NZA 31265	2209	25	B	Sample 487	3454	3400	Cremated human bone	-19.9	380- 200 cal. BC
NZA 32281	2213	50	B	Sample 494	4975	4969	Charred wheat grain (*Triticum* sp.) x1	-23.7	400-160 cal. BC
NZA 32311	2214	30	B	Sample 1464	7872	3875	Charred grain (*Avena/Bromus* sp.) caryopsis	-23.7	380-200 cal. BC
NZA 32316	2205	30	C	Sample 1546	5986	7316	Charred wheat grain (*Triticum* sp.) x1	-23.5	380 - 190 cal. BC
NZA 30160	2265	25	C	Skeleton 5129	5129	5064	Human bone - tibia	-20.3	400- 350 cal. BC (47.1%); 300BC-200 cal. BC (48.3%)
NZA 32314	2313	30	C	Sample 1501	5406	5130	Charred wheat grain (*Triticum* sp.) x1	-22.8	410 - 350 cal. BC (84.5%); 290 - 230 cal. BC (10.9%)
NZA 32315	2338	30	C	Sample 1509	5423	5110	Charred wheat grain (*Triticum* sp.) x1	-24	510 - 360 cal. BC
NZA 32307	2339	30	C	Sample 812	7802	7237	Charred hazel (*Corylus avellana*) nutshell	-23.9	520 - 360 cal. BC
NZA 32401	2280	20	G		9109	9010	Mammal bone - 3x piglet phalanges	-21.4	400 - 350 cal. BC (71.6%); 290 - 230 cal. BC (23.8%)
NZA 32406	2311	20	G		9083	9052	Mammal bone -juvenile deer rib frags	-22.2	405 - 365 cal. BC
NZA 32405	2314	20	G		9077	9010	Human bone - skull frag	-19.7	405 - 365 cal. BC
NZA 30161	2214	25	L	Skeleton 12744		12742	Human bone - tibia shaft frag	-20	380 - 200 cal. BC
NZA 30150	2282	25	L	Skeleton 12986		12987	Human bone	-19.7	400 - 350 cal. BC (65.5%); 300 - 230 cal. BC (29.9%)
NZA 32308	2293	30	L	Sample 1210	12713	12527/ 12700	Charred emmer wheat grain *(Triticum dicoccum)* x1	-22.9	410 - 350 cal. BC (68.9%); 300BC - 230 cal. BC (26.5%)

9010 gave a date of 405–365 cal BC (NZA 32405) and articulated phalanges from piglet 9109 gave a date of 400–350 cal BC (71.6%) or 290–230 cal BC (23.8%) (NZA 32401). Articulating ribs from a juvenile red deer from pit 9052 were similarly dated to 405–365 cal BC (NZA 32406). All of these dates indicate activity probably in the first half of the 4th century BC.

Pit 12527/12700 in Site L

This pit has pottery of early Iron Age character and was the circular storage pit with the clearest evidence of structured deposition on Site L. Fills included successive layers of charred grain, whole pots and a layer of animal bone. The pottery suggests a date towards the end of the early Iron Age and a wheat grain (*Triticum dicoccum*) from basal grain-rich layer 12713 produced a date of the 4th or 3rd century BC (NZA 32308). This pit thus appears to be of similar age to those in Sites C and G.

Dates in the 4th century BC for assemblages of early Iron Age character have also been obtained for pits excavated along the High Speed One (Allen 2006). This seems to indicate widespread activity occurring within a relatively short period of time, spanning the end of the 5th century and the 4th century BC.

Cremation 3454 in Site B, accompanied by sherds of an early/middle Iron Age bowl

Cremation deposit 3454 was found in the middle fills of a large quarry pit. Much of a highly fired pottery vessel described as transitional early–middle Iron Age was found in association with the cremated remains, but since early and middle Iron Age cremations are extremely rare the date needed to be tested in case the cremation was earlier. At 380–200 cal BC (NZA 31265) the cremation proved to be of similar date to the pot, so pot and burial can be considered to belong together. This therefore provides important evidence for cremation rites at this period in south-east England.

Extended inhumation 5129 in Site C

The burial lay within an unusual large sub-rectangular pit. A fragment of human tibia shaft yielded a middle Iron Age date, of 400–200 cal BC (NZA 30160). The inhumation and cremations in this settlement therefore appear to be broadly contemporary, suggesting that parallel burial rites were practised during the early–middle Iron Age.

Seeds from four post-structures at the east end of Site B

Of the four-poster structures dated from Site B, two suggest occupation in the early–middle or middle Iron Age and overlap with the date for cremation 3454. Oat or brome grass caryopses (*Avena/Bromus* sp.) from posthole 7874 (group 7875) were dated to 380–200 cal. BC (NZA 32311) while a wheat grain (*Triticum* sp.) from posthole 3806 (group 3892) was dated to 360–110 cal BC (NZA 32306).

Seeds from four-post structures at the west end of Site B

A group of four-post structures lies west of the cobbled Iron Age trackway, but these are largely undated. The only example with a reasonable quantity of charred plant remains was posthole 7888 from group 7964; a wheat grain (*Triticum* sp.) provided a date of 360–290 cal BC (17.9%) or 230–50BC (77.5%) (NZA 32310) for this feature, ie in the middle or middle–late Iron Age.

Sample 369 from layer 3677 in pit 3676, Site B

This pit had an iron linch pin from a cart or chariot placed, together with a complete pot and a potin coin, near to the base of the pit. Such linch pins are rare, especially on settlement sites, and are not well-dated. The pot is a straight sided vessel, possibly a saucepan pot and so provisionally dated to the middle Iron Age (350–50 BC). A middle or middle–late Iron Age date was confirmed by the dating of a single seed of cleavers (*Galium aparine*) from this feature (NZA 30118: 210–40 cal BC, 91.2%).

Animal Bone from pit 4969 in Site B

This deep circular pit contained a potin coin and two largely complete pots, as well as abundant charred plant remains and a partial piglet skeleton. A piglet frontal bone from layer 3401, which also contained the coin, was dated 170–40 cal BC (NZA 32399). A wheat grain from layer 4975, higher up in the fill sequence, gave an earlier date of 400–160 cal BC (NZA 32281) and may be residual.

Crouched human skeleton 12744 in a purpose-dug grave just beyond ditch 13161 in Site L

This unaccompanied inhumation was situated at the very end of the major boundary ditch, and adjacent to the Roman inhumation cemetery. A fragment of human tibia shaft was submitted for dating, and the result indicated a middle Iron Age date of 380–200 cal BC (NZA 30161).

Human skeleton 12986 in the cemetery, Site L

Partial human skeleton 12986 in ditch 13161 in Site L was covered by dumped layers that included a little pottery dated to the later 1st century AD. However, a fragment of human bone was dated to the middle Iron Age (NZA 30150: 400–350 cal BC or 300–230 cal BC) which is much earlier than expected.

HIGH STATUS LATE IRON AGE BURIALS IN SITE B

Two highly significant cremation burials (4298 and 4313) associated with a rich assortment of metal-work and pottery were revealed during excavations in Site B. They were dated to the late Iron Age and lay within the middle Iron Age 'banjo' enclosure, to the west of a series of contemporary pits and enclosures (see Fig. 3.38)

The circular pits containing the high status Iron Age graves (4298 and 4313) both contained two pedestal jars, of which truncation had removed all but the base and lowest part of the body (Figs 3.85 and 3.88). The pottery and metal grave goods therefore became visible very shortly after excavation began, and it was immediately clear that the graves had been severely truncated by ploughing. Due to the known risk of theft by illegal metal-detecting, these burials were excavated as quickly as possible. The approach adopted was to carry out sufficient excavation to determine the approximate layout of objects within the grave, plan and photograph the contents *in situ*, remove large objects such as pottery vessels to clarify the extent of other remains, and to block-lift as much of the remaining grave fill as possible for excavation under laboratory conditions. The further excavation was carried out at the conservator's laboratory following X-ray of the soil blocks by archaeologists with osteological training in the recording of cremated human remains.

In both graves half-sections were laid out across the grave and one half was excavated first, and in both cases the majority of the pots were included in the first half. Burial 4298 contained four pottery vessels, the pedestal jars being accompanied by two necked bowls, which survived largely intact (Fig. 3.85). In the case of grave 4313 there were only two vessels, both pedestal jars (Fig. 3.88). All of the pots were fully exposed, and were planned and photographed. Due to the small size of the graves, and the fragility of the pots, these were then lifted to allow excavation of the remainder of the graves to proceed.

Grave 4298 (Fig. 3.85)

Grave 4298 was the more northerly of the two high status burials and was c 0.8m diameter and 0.22m deep. A group of four copper-alloy brooches in pairs was placed just south of the centre of the grave, surrounded by the cremated bone. Two of the brooches were Knotenfibeln or boss-on-bow brass brooches joined by a very fine chain, the others,

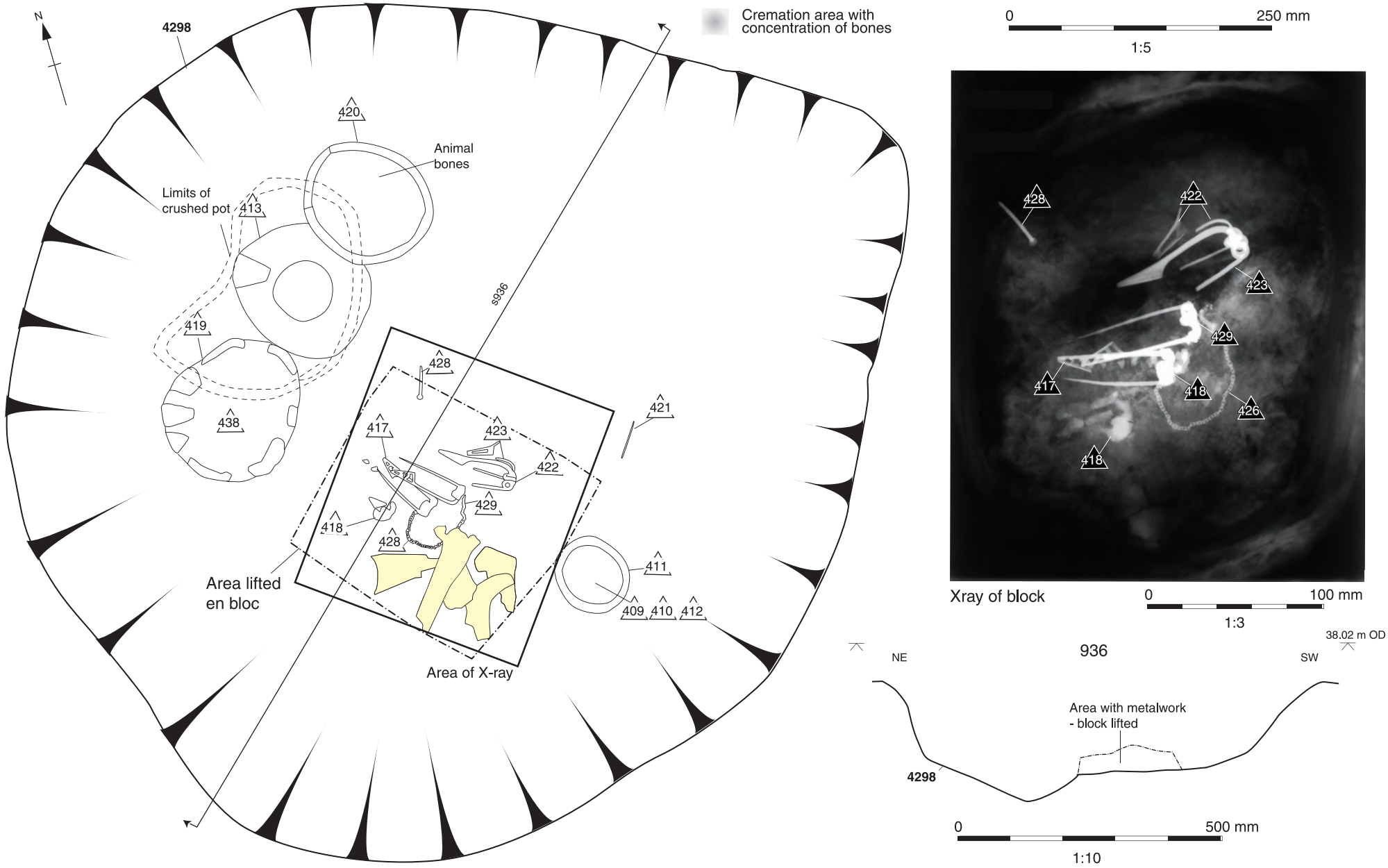


Fig. 3.85 Plan and profile of grave 4298 including X-ray of brooches

Plate 3.32 Late Iron Age cremation burial 4298 during excavation, looking north-west

which lay just to the north-east, comprised a simple bow brooch and a smaller La Tène III brooch. Both of the latter were made of leaded bronze. Fragments of two further iron brooches lay adjacent to the Knotenfibeln on the south-west, making six brooches in all. The cremation, which consisted of only 284g of bone, lay over and around the brooches. Traces of wood were also present, possibly indicating that these objects had been contained in a box or overlain by a wooden board.

The cremation was surrounded by four ceramic vessels, one on the south-east and three on the north-west, running in a line NNE-SSW. The two large pedestal-based jars (sfs 413 and 411) were placed on either side of the cremated bone, and the smaller vessels (sfs 420 and 419) were placed north and south of vessel sf 413 on the west (Plate 3.32). There was only one grave fill (4299), a friable mid-brown silty loam, but the fills of the pottery vessels were each given a separate number. Three short lengths of copper-alloy strip bent at the ends (sfs 409, 410 and 412) were found in one of the pedestal jars (sf 411), and were presumably attached to other organic objects, while a circular disc with a perforation off-centre and four equally-spaced nicks in the edge (sf 438) was found within one of the bowls (sf 419) on the west side.

Pottery from grave 4298 (Fig. 3.86) *by Peter Couldrey and Lisa Brown*

The vessels accompanying this burial are distinctive late Iron Age 'Belgic' forms in grog-tempered fabrics. A tall, unornamented jar (400815 sf 411) and another with a narrow, cordoned neck (400813 sf 413), both with quoit-shaped bases, were types frequently placed in burials during the 1st century BC. The quoit-shaped bases of the pedestal jars resemble fragmentary examples, also grog-tempered, from pit 4023 and ditch 4029, and are likely to be broadly contemporary. The plain jar form had a currency up to the immediate pre-conquest period, but the cordoned jar form is probably no later than AD 20. Both correspond to Thompson's Type A1 (1982, 35). The necked bowl with single cordon (400819 sf 420) was a widely circulated form with a long currency in south-east England, frequently grog-tempered and hand-made in Kent, with a date range of the last quarter of the 1st century BC to the post-conquest period (Thompson Type E3–1, 391–2). The carinated wide-mouthed cup/bowl with multiple cordons (400816 sf 419), however, is a type that does not often occur in post-conquest contexts. This form is related to the Gallo-Belgic form Cam. 51, for which an early dated provenence is the late 1st century BC at Braughing (Thompson Type E1–2, 357–8). It commonly occurs in settlement as well as burial contexts.

400813 (4349) sf 413 Cordoned pedestal jar with quoit-shaped base. Fabric G56, burnished.
400815 (4352) sf 411 Pedestal jar with quoit-shaped base. Fabric G56, burnished.
400816 (4351) sf 419 Carinated cup/bowl with footring, Thompson type E. Fabric G85, burnished.
400819 (4355) sf 420 Cordoned necked cup/bowl with everted rim. Fabric G41, burnished.

Metal objects from grave 4298 (Fig. 3.87) *by Ian R Scott*

The metalwork comprises a pair of Knotenfibeln (sfs 429 and 417; Fig. 3.87 nos 1–2) joined by a copper-alloy chain (sf 426; Fig. 3.87 no. 3), a La Tène III brooch (sf 422; Fig. 3.87 no. 4) and a simple sprung

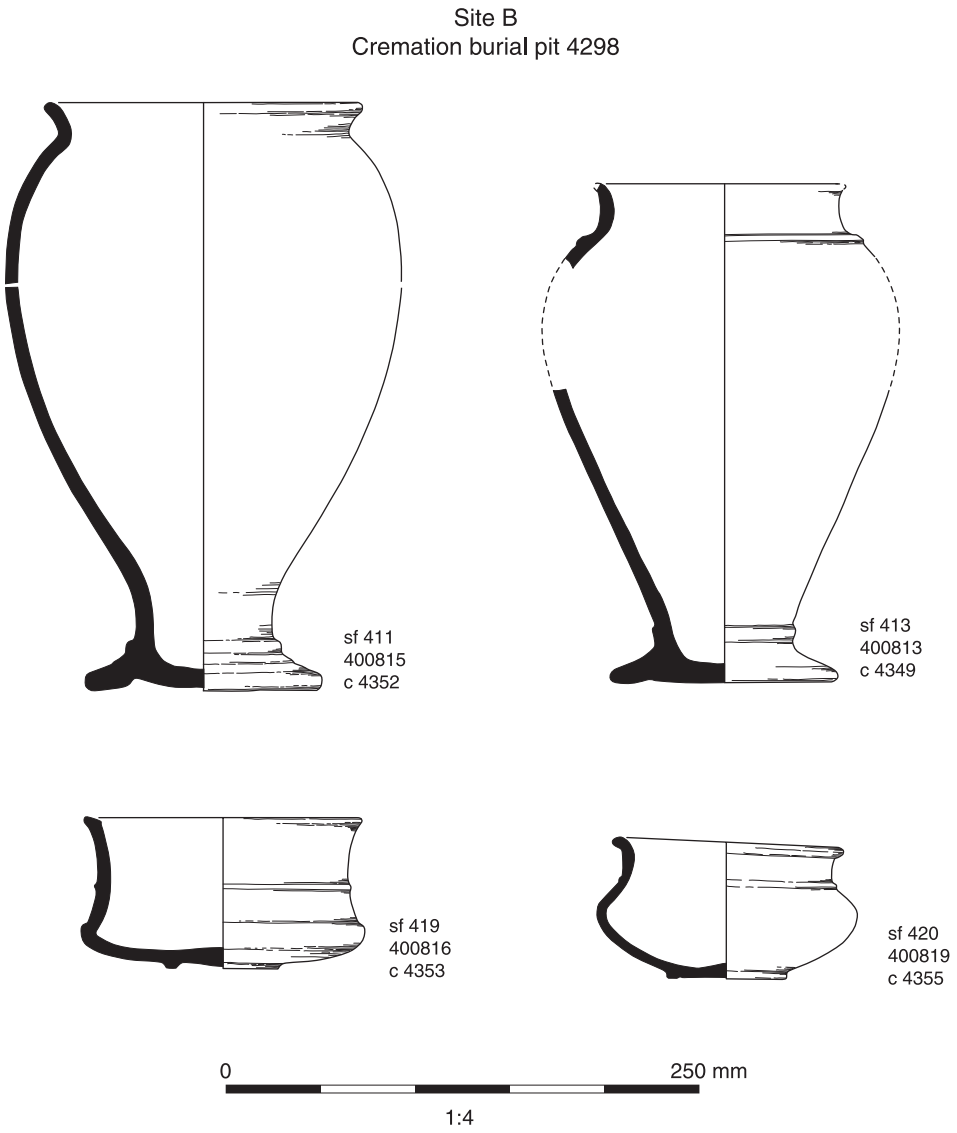


Fig. 3.86 Illustrations of the ceramic vessels in grave 4298

brooch with internal chord (sf 423; Fig. 3.87 no. 5). The latter objects are dissimilar but may have formed a second pair of brooches. Both of these were broken, but the end of the pin of the simple sprung brooch, sf 421, was found lying further north-east. The tip of the other brooch pin is missing.

There are hints from the x-ray plates that there was a third pair of simple iron sprung brooches now almost completely mineralised. Fragments of only one brooch were recovered by hand excavation (sf 418). Further fragments were recovered through sieving of soil samples, but are not readily identifiable (Sample 433). Three small fragments of small copper-alloy clips or clamps (sfs 409, 410, 412; Fig. 3.87, nos 7–9) were found in a pedestal jar (sf 411), and a notched thin circular plate (sf 438; Fig. 3.87 no. 10) in the bottom of one of the cup/bowls (sf 419). The function of the latter object is not clear. None of these objects appears to have been burnt, so it is unlikely that they come from objects burnt on the pyre.

1–2 Two **Knotenfibeln**, with sprung pins and internal chords. They are very well-preserved, and were found with a linking chain (sf 428) now detached. The bow of each brooch is quite plain but with knobs and mouldings below the head. The foot-plate of each brooch is similarly decorated with cut-outs and tooled borders. The two brooches are very similar. Both brooches have bands formed from thin sheet wrapped around their springs. On sf 417 the strip forms a plain band, but on sf 429 the ends of the strip have pierced loops to which the chain was presumably linked. L: sf 429: 73mm; sf 417: 74mm; Context 4299, sfs 417, 429, grave 4298.

3 Two lengths of what was originally a single chain, one of 34 links, and the second of *c* 40 links. The chain is formed from simple butt-jointed circular or perhaps slightly oval, links. The smaller links are *c* 3mm in diameter. L: 78mm & 75mm. Context 4299, sf 428, Grave 4298.

These brooches are particularly fine examples of Knotenfibeln or 'boss-on-bow' brooches. A good

parallel for a pair of copper alloy Knotenfibeln joined by a chain comes from Argentomagus, St Marcel, Indre (Albert and Fauduet 1976, 57 & pl iv, no 20). The number of brooches of this type from Britain is comparatively small, and Stead has argued (1976, 402) that they are a good type fossil for the Welwyn Phase of the Aylesford Culture. There are two incomplete silver brooches forming a pair together with a copper alloy brooch from the Aylesford Y burial (ibid., fig 1 no 1 & fig. 4, no 1). There are a pair of copper alloy brooches from Swarling (ibid. 403 & fig. 2, no. 2). Other similar brooches were found at Mill Hill, Deal, at Folkestone, at Faversham and at Borough Green, all in Kent, and at Great Chesterford, Essex (ibid. 404, 406–7, fig. 1, nos 3–4; fig. 2, nos 2–6; fig. 3, nos 1–3).

Fig. 3.87 Copper alloy brooches and other objects from grave 4298.

Further afield there are examples from Hitchin, Herts (ibid., 407–8, fig. 3, no. 4) and from Guildern Morden, Cambs. (ibid, 408, fig. 3, no. 5). The Knotenfibel from pit CF7 at Stanway are dated to the period 60–25/20 BC (Crummy *et al.* 2007, 14–15).

A number of the Knotenfibeln from Britain are made of silver. These include two examples from Aylesford Y, two brooches from Faversham, and four brooches forming two pairs from Great Chesterford. More recent discoveries include an incomplete silver Knotenfibel from Shillington, Beds (*Treasure Report 2000*, 15–6 & fig. 7) and a complete silver example from Malden Hall Farm, Essex (Lavender 1991, 205–6, & fig. 4.1). Another silver example was found as part of the le Catillon hoard on Jersey (Fitzpatrick and Megaw 1987; 1989, fig. 1, no. 2).

A pair of gold Knotenfibeln joined by a 'loop in loop' chain formed part of the recently published late Iron Age hoard from near Winchester (Hill *et al.* 2004, 12–3, figs 1 & 10, a) and were found with a second pair of gold fibulae of Gallic la Tène III type. A closely comparable pair of Knotenfibeln again with a 'loop in loop' chain has been found at Corent, Puy de Dome (Poux *et al.* 2007).

The quality of the Grave 4298 brooches is very marked and sets them apart the majority of copper alloy Knotenfibeln from Britain. They should perhaps been viewed in the context of the silver and gold brooches. Mathieu Poux has argued that the gold and silver brooches were produced in Gallia Cisalpina and spread North of the Alps in the middle decades of the 1st century BC, whether as gifts in diplomatic exchanges, through trade or other channels (Poux *et al.* 2007, 207–21).

Knotenfibeln/'boss on bow' brooches date to the later 1st century BC, and their distribution of is strongly concentrated in the south-east of England and in particular immediately to the north and south of the Thames.

4 **La Tène III brooch**. Complete except for tip of pin, in 4 pieces. The bow is broad and flat expanding to the head. It has a simple plain tooled border. The catchplate is open. The spring is broken but complete, and has an internal chord. L: *c* 58mm. Context , sf 422, grave 4298.

5 **Simple sprung brooch with internal chord**. The pin (sf 421) is detached but the brooch is complete. Brass. L: 75mm. Context 4299, sf 423, 421, grave 4298.

6 **Simple sprung brooch of iron**, now very mineralised and fragmentary. The spring can just be identified (see x-ray, Fig. 3.85). Context 4299, sf 418, Grave 4298.

7–9 Small **copper-alloy clamps** or **collars**. Sf 409 has a curved back, which may be an original feature. One end has been clenched, the other end appears incomplete. Sf 410 is a small angled fragment from a clamp or collar. Sf 412 is a small collar, or clamp, made from thin strip. L: sf 409: 42mm; sf 410: *c* 10mm extant; sf 412: 23mm. Context 4299, sfs 409, 410, 412, grave 4298.

10 **Notched disc**. Regular circular disc, with circular hole just off centre. There are four opposed V-shaped notches slightly asymmetrically position and aligned on the central hole. The edge of the disc between the notches reveals fine notches or cuts around the circumference of the disc. Both faces of the disc, which is quite flat, show irregular surface scoring although it is more marked on one face. D: 28mm. Context 4354, sf 438, grave 4298

The Knotenfibeln or Aylesbury brooches and the la Tène III brooch with open catch plate all date to the 1st century BC. The simple sprung brooch may date to the first half of the 1st century AD or to the period of the Roman conquest (Bayley and Butcher 2004, 147). Olivier (1988, 38) stresses that the dating of the brooches is difficult inspite of the large numbers known. He dates the type to the immediate pre-Conquest period, but notes that examples are found in later contexts. Dungworth (1996) states that the earliest date for the regular production of brass in the Roman Empire is 25 BC. A boss-on-bow brooch from Stanway, a type normally dated to the 1st century BC, was made of brass, and on stylistic grounds was dated to the later 1st century BC (Crummy 2007, 314–5). No simple sprung brooch was recovered from a funerary context at Stanway (ibid., table 47).

The small notched copper-alloy disc cannot precisely be paralleled. However, there are a number of perforated iron discs from late Iron Age cremation burials, some with notches on the circumference, which may be related. The iron discs are generally larger; most have a diameter in the range 75mm to 85mm as in the examples from King Harry Lane, St Albans, cremation 325 (Stead and Rigby 1989, 358 & fig. 157, no. 10), Maldon Hall Farm, Essex, burial 3 (Lavender 1991, 205–6 & fig. 4, no. 2) and Biddenham Loop, Beds, grave S357 (Luke 2008, 222 & fig. 9.13, RA118). The metal of these iron discs is thicker in the centre and thins toward the outer edge. Some examples have a collar fitted into the central hole (eg Biddenham Loop, Beds, grave S357; Luke 2008, loc.cit). There are however smaller examples from (among others) Danebury, Hants (Cunliffe 1984, 370 & fig. 7.23 no. 2.174; diam.: *c* 70mm), and from Hinxton Rings, Cambs, cremation 2 (Hill *et al.* 1999, 253–6 & fig. 10; diam.: 45mm).

The discs have sometimes been interpreted tentatively as circular knives (eg Luke 2008, 222; James and Rigby 1997, fig. 42) or as measuring devices (James and Rigby 1997, loc.cit.). The example from King Harry Lane is a plain disc without notches (Stead and Rigby 1989, fig. 157, no. 10) and might well have been a circular knife, perhaps for cutting leather. By contrast there are quite elaborate notches on some examples: the disc from Biddenham Loop (Luke 2008, fig. 9.13, RA118) has a double notch with a raised point in the centre, and that from Alkham, Kent, burial 3 (James and Rigby 1997, fig. 42), has a broad notch with a smaller v-shaped notch at its centre. Although these notches and cut-outs may have been decorative, they would have affected the efficiency of these 'knives', and may have served a functional purpose.

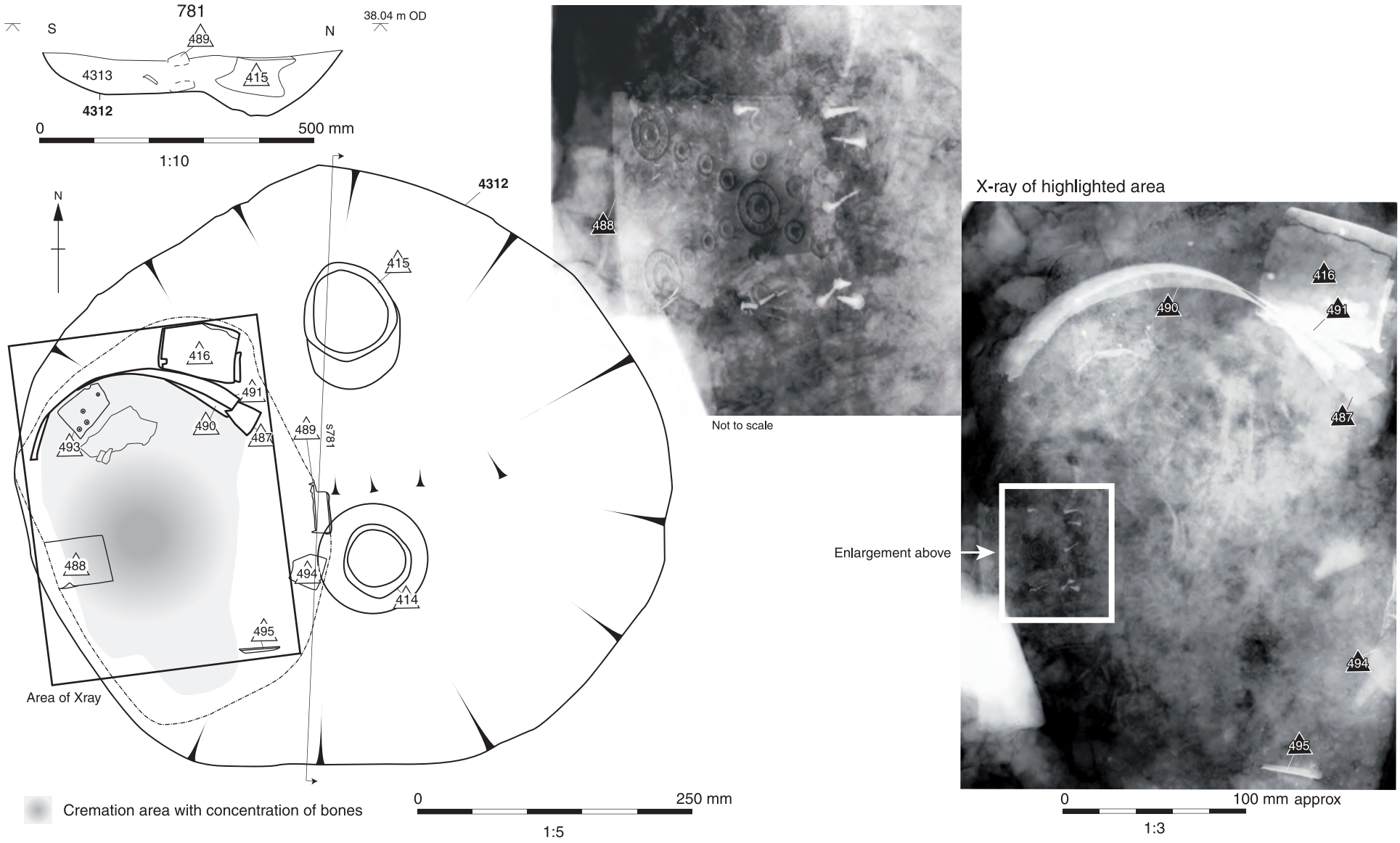


Fig. 3.88 Plan and section of grave 4312, including X-rays of bucket and feet

The closest parallel in terms of context to that from grave 4298 is the disc from Hinxton Rings cremation 2. This disc (D: 45mm) was found fused together with a smaller oval plate or disc (32mm x 35mm), four brooches, a chain, a pair of copper-alloy tweezers and a nail cleaner (Hill *et al.* 1999 253–6 & fig. 10). Both discs appear to have had central perforations. The similarity of the finds as a group to those from grave 4298 is striking, and some association with personal adornment or grooming, as also suggested by Hill, seems most likely.

Animal bone from grave 4298 *by Andy Bates, Jacqui Mulville and Adrienne Powell*

A small quantity of animal bone was recovered from cremation pit 4298. Fragments of a pig atlas and axis (the two vertebra located below the skull) were recovered from the fill of a shallow bowl sf 420. In addition a sheep/goat pelvis fragment and poorly preserved cow astragalus (of the ankle) was also recovered from the fill of pottery vessel sf 413. In addition, sixteen unidentified bone fragments were recovered from the backfill of the pit.

The animal bones would appear to represent a symbolic offering, with little or limited food value. Some of the meat from the spare rib may have been attached to the pig vertebra, but the astragalus from a cow ankle recovered from the fill of a pottery vessel is unlikely to have much meat attached to it. Offerings of pork in graves are found both in Iron Age Britain and Europe (Philpott 1991, 205; Green 1992 116–19). In some instances the offerings have been suggested to be more symbolic than literal, with the bones of the animals defleshed prior to burial (Legge 1991, 114; Philpott 1991, 199). The choice of the joint of meat placed in the grave may reflect the status of the individual, the animal having totemic significance to the funeral party. Evidence from Iron Age burials in East Yorkshire associates the place of pig remains with the elite, and sheep with the commoners (Parker-Pearson 1999, 60). In this case only fragmentary bones are present, but these represent all three main domestic species.

Grave 4312 (Fig. 3.88)

Cremation grave 4312 lay *c* 5m south-west of grave 4298 and was *c* 0.6m diameter and 0.12m deep. The grave pit had two pedestal-based jars in the middle, one north of the other (Plate 3.33). East of this the pit appeared to be empty. Part of a decorated metal plate was visible in the section, and further metal edges, together with a fragment of highly polished bronze, were found around the periphery of the western half of the grave. As soon as the outer limits of the metal were established, the entirety of the remainder of the grave fill was lifted in its entirety as a block for excavation in the conservator's laboratory.

X-ray of the block, and excavation in the conservation laboratory, showed that the metal bands belonged to a bronze-bound bucket. Two plain high tin-bronze bands (sfs 490 and 491) from one side of the bucket survive, together with three of the plates used to solder the bands together (sfs 487, 494 and 495). There were also three rectangular foot-plates at the bottom (Sfs 488, 489 and 493), which are decorated. Tacks attaching the decorated plates to the bucket also survive (Fig. 3.88 x-ray detail). The bucket must have stood against the west edge of the grave, and the cremated bone, some 848g in total, lay entirely within the bucket. Wood from the

Plate 3.33 Bases of two footring jars exposed in grave 4312, looking east.

bucket has been preserved behind all three of the decorated plates.

Immediately north of the bucket was part of a bronze cup with a rolled rim and a straight edge at the bottom (sf 416). A projecting rivet on the inside at the bottom shows that there was originally a base, either an organic material that has decayed, or more likely a metal base that has been removed by the plough. A band near to the rolled edge running around the outside is rough and has iron concretion attached, perhaps suggesting that the copper-alloy sheathing was originally further decorated with iron.

Pottery from grave 4312 *by Peter Couldrey and Lisa Brown*

The truncated bases of two pedestal based jars were recovered from this cremation burial (Plate 3.33). These vessels have since been mislaid, so few further details are available. Both were in grog-tempered fabrics and, on the evidence of the photograph, both were quoit-shaped. They likely belonged to jars of similar type and date to those accompanying burial 4298.

401378 SF434 (4313) Pedestal base of truncated vessel. Fabric G41

401379/40 SF1492 (4313) Pedestal base of truncated vessel. Fabric G41

Metal objects from grave 4312 (Figs 3.89–90) *by Ian R Scott*

The metalwork comprises two highly polished bucket hoop fragments with associated joining plates, and three rectangular plates originally attached to the feet of the bucket, together with an incomplete cylindrical object, probably part of an Eggers type 16 cup (sf 416).

The extant bucket hoops are undecorated except for their raised and rolled edges and highly polished surfaces. They were joined by small rectangular, or sub-rectangular, plates that had been soldered to the back of the hoops. There is no evidence for pins or nails to fix these hoops to the bucket. The decorated plates for the feet are also highly polished with stamped decorative motifs and have pin holes to fix them to the bucket. Some fragments of the wooden feet of the bucket were also recovered.

Small find 416 comprises part of a cylindrical object, with a rolled edge at one end. The other end has evidence for the attachment of a base. On the interior there is a distinct line where the base ended some 9mm from the end of the cylinder, and a single extant rivet about 2mm thick.

1–2 **Bucket hoop fragments**. Plain, but highly polished fragments of bucket hoop, with slightly raised simple border. One end of sf 490 is an original cut end and has a rectangular patch of solder on the back of the hoop, which matches the solder on junction plate sf 494 (no. 4). There is a second apparent patch of solder on one edge of the band near the broken end. The surviving band has a uniform curve suggesting an original diameter of *c* 250mm for the complete hoop. No pin or nail holes. L around curve: 259 and 247mm; L of chord: 217 mm; W: 39–7 mm. Context 4313, sfs 490–1, grave 4312.

3–5 **Rectangular junction plates for bucket hoop.** Each slightly curved through its length. There is clear evidence for hammering on the back, and solder on the front face. L: 42–4mm; W: 34–7mm. Context 4313, sfs 487, 494–5, grave 4312.

6–8 **Rectangular decorative plates from bucket foot**. Each comprises a highly polished rectangular plate decorated with punched 'ring and dot' motifs radiating in lines from a central ring dot motif, which is surrounded by rays with an outer concentric ring. The bands were attached by means of small tacks or nails. L: 72–9mm; W: 53–8mm. Context 4313, sfs 488–9, 493, grave 4312.

9 Small **nail** or **tack** with flat circular head. L: 10mm. Context 4313, sf 492, grave 4312.

The bucket from this grave survives only in part. Clearly there is no handle and handle mounts, and there must originally have been at least three or four hoops. However, enough of the bucket survives to allow some observations about the construction and appearance of the bucket. The position of the surviving pieces of hoop and of two of the decorative plates for the feet (sfs 488 and 493) show clearly the overall diameter of the base of the bucket, which would have been about 250mm. The third foot plate (sf 489) appears to have been slightly displaced.

Two of the decorative foot plates (sf 488 and sf 489) have marks on their top edges indicating where the lowest bucket hoop overlapped. The foot plates were further secured by small copper-alloy pins or tacks. The possibility that a rectangular patch of solder on the edge of hoop sf 490 represents a point where a foot plate was attached is disproved by the fact that the solder patch is significantly narrower than the width of the decorative foot plates, and it is also deeper than the width of the band on the top edges of the foot plates. Another possibility is that the solder patch on sf 490 presents the end of a vertical strip running up the side of the bucket and held in place by the bucket hoops. No such vertical strip however survived, and there was no evidence of a further patch of solder on the surviving length of the second bucket hoop.

The hoops that survive are plain and highly polished. In this they are similar to the tiny bucket from Great Chesterford, which has two plain polished hoops and a third wide decorated hoop. This bucket is tiny: its reconstructed height is 6.3 inches (160mm) and its diameter 6.3 inches (160mm) (Stead 1971, 278-79, pl xc1). What is noticeable is the variety of sizes and forms that the buckets take. The examples from Aylesford burial Y has copper-alloy bands, while the bucket from Aylesford burial X has iron bands. The bucket from Baldock has been reconstructed as completed encased in its copper-alloy bands (Stead 1971, fig. 11).

The bucket from grave 4312 differs from most of the published buckets in having bands which appear not to have been nailed or pinned to the wood of the bucket; more surprisingly the components of the bands were soldered together rather than being riveted together. The match between one of the linking plates and soldered patch on one of the surviving hoops is conclusive in this matter. Since both surviving fragments of band are

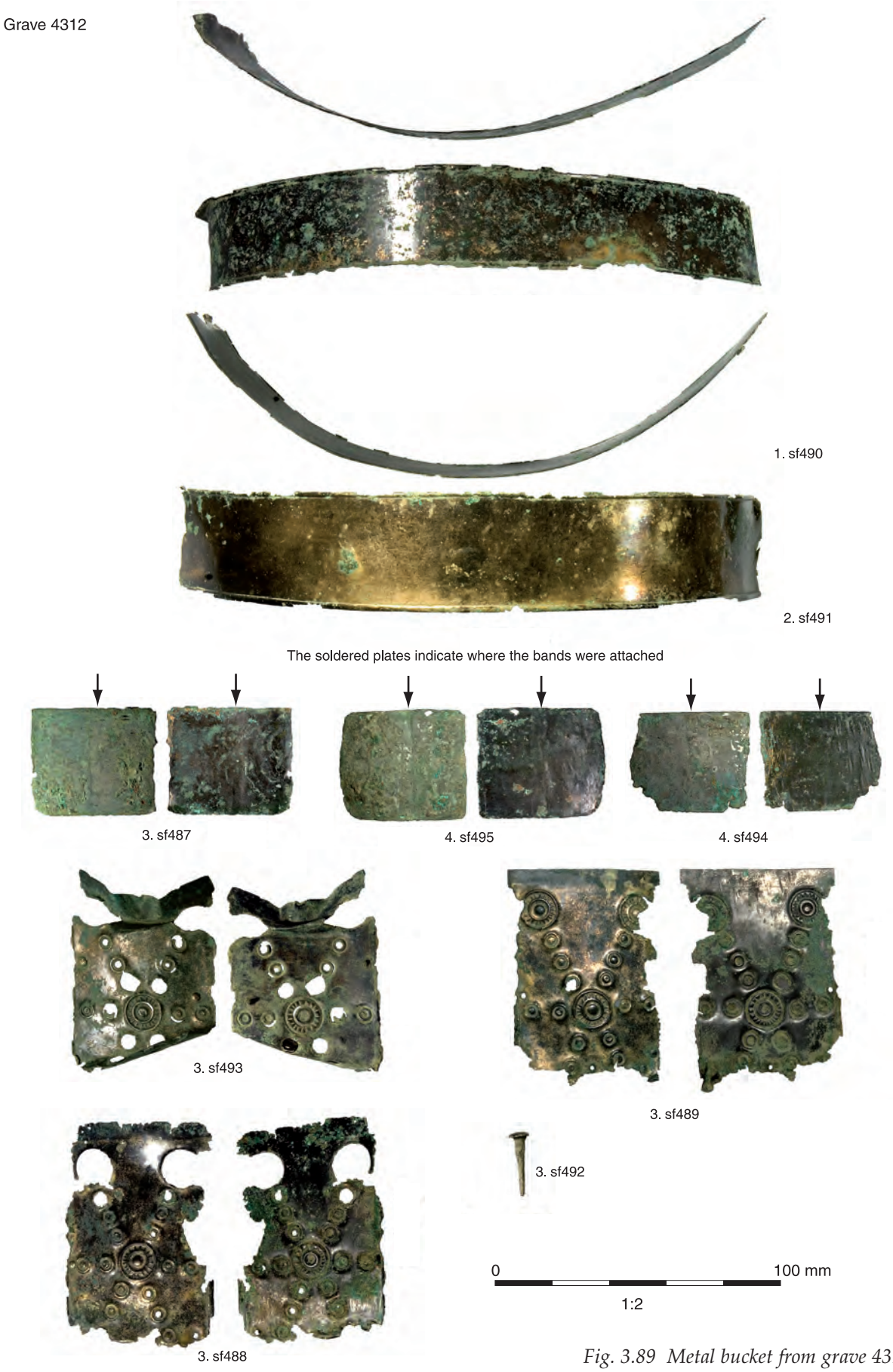


Fig. 3.89 Metal bucket from grave 4312

incomplete it is uncertain whether each hoop consisted of a single strip or whether each was composed of more than one segment. The two surviving sections of hoop were found together one inside the other. This, together with the fact that the two pieces are of very slightly different widths, indicates that they were parts of separate bands, one around the base, the other presumably a little above. The wider band (sf 491) may have been the higher of the two. Exactly how many hoops or bands the bucket had is uncertain. The evidence from the surviving Iron Age buckets from Britain suggest that generally their heights and diameters were broadly similar. If this was the case with the grave 4312 bucket then it could be suggested that there may have been three or four hoops or bands binding the bucket.

The plates for the feet of the bucket are decorated with repoussé rings and dot motifs. The motifs are similar to those found on the Baldock, Great Chesterford, and Aylesford Y buckets (Stead 1971, pls lxxxviii-lxxxix, xcl). It may be that the upper bucket hoop was wider then the

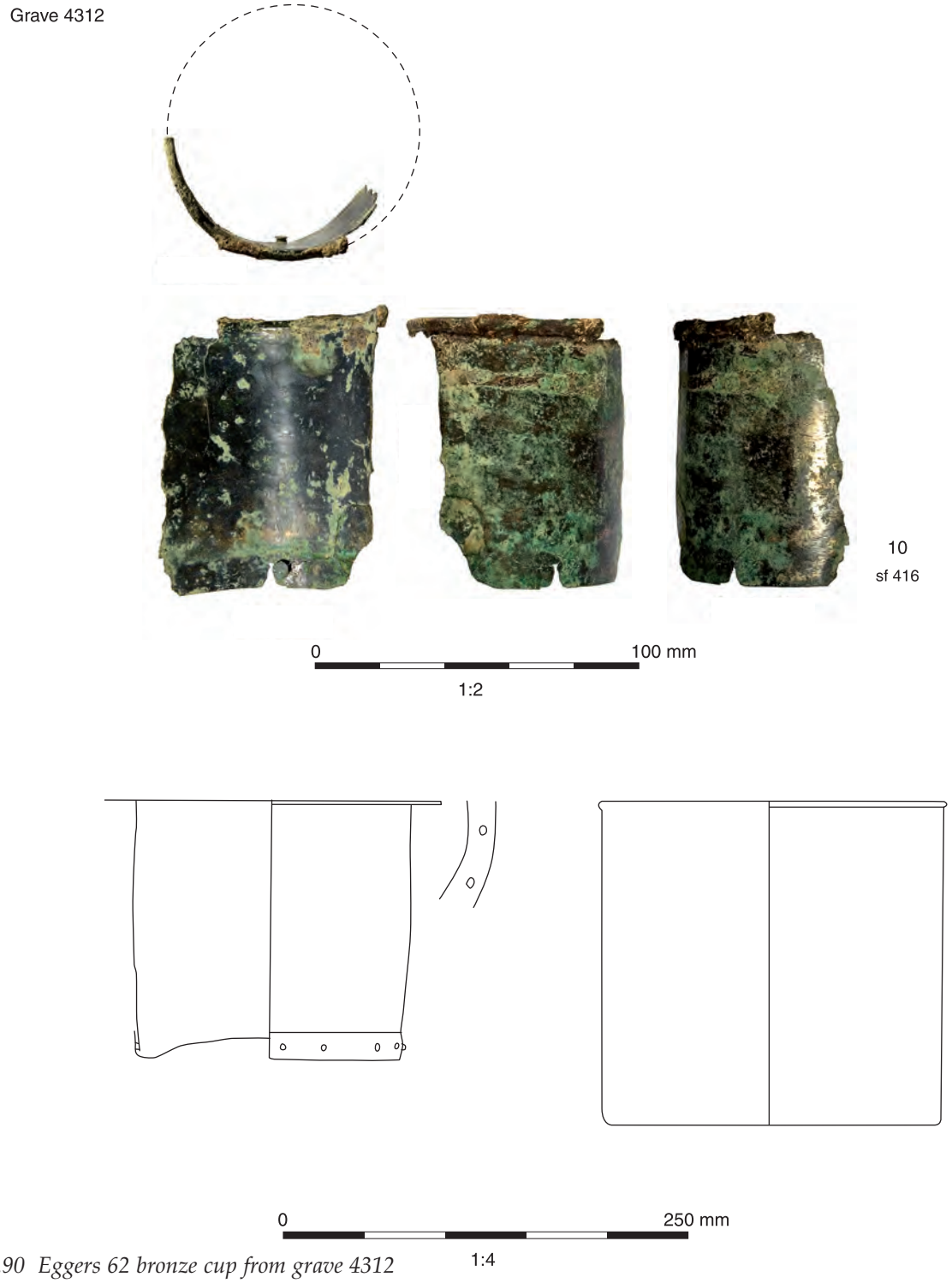


Fig. 3.90 Eggers 62 bronze cup from grave 4312

plain hoops and was decorated with ring and dot motifs echoing those on the feet.

The four unpublished late Iron Age cremation burials excavated at Alkham in Kent included two buckets in adjacent graves (Philp 1991, 51). One of these buckets has a top hoop or band decorated with small circular repoussé ring and dot motif (James and Rigby 1997, fig. 80) similar to those used on the feet of the present bucket. The Alkham bucket also has rectangular feet, but it is unclear whether they have any decoration. There are no details of the means of securing of the bucket hoops on the Alkham bucket. Unlike the present bucket, the Alkham bucket illustrated by James and Rigby is more or less complete and has a handle and handle mounts.

Although the buckets found in very late Iron Age graves vary markedly they are one of the recurring features of burials of the Aylesford culture. Buckets are also found quite widely in contemporary burials in Europe and in particular in France. When Vidal published the complete bucket from Vieille-Toulouse in 1976 he also reviewed the evidence for la Tène III buckets. The distribution of these burials is of considerable interest (Vidal 1976, fig. 6), stretching from Toulouse in south-west France across to the Rhineland. Buckets appeared to be absent from northern France and the Low Countries. If the distribution is real then it raises a number of questions about the occurrence of buckets in the south-east corner of Britain, and about the links in the late Iron Age between Britain and the Continent.

10 **Cylindrical object**, incomplete, approximately half survives. Its original appears to have been about D: *c* 75 mm. One end has a rolled over lip, the other is a simple straight edge. However on the inside of the straight edge is clear evidence for a junction with another object/material, in the form of a 9mm wide band of staining, and a single extant rivet. The rivet indicates that whatever joined the cylindrical object was less than 2mm thick. About 10–20mm below the rolled over lip is roughened band *c* 7–8mm wide which may be evidence for some applied decoration. There are two large joining fragments, and four much smaller fragments. L: 80mm; W: 73mm. Context 4313, sf 416, grave 4312.

It is possible that this item was a small cylindrical vessel with a metal base that was lost to the plough, but which was held in place by rivets. No exact parallel for a vessel such as this is known from Britain, but there are similarities to cylindrical vessels or situlae of Eggers Type 16 (Eggers 1951, Taf 3, no. 16; Guillaumet 1991 passim; see also Barrate *et al.* 1984, 26–8 & pl xiv–xv, nos 26–30) found on the Continent from France to the former Yugoslavia. Guillaumet defined five variants on the basis of rim form. The example from Grave 4312 with its rolled rim is Guillaumet's variant 4 (1991, 8 & fig. 2). Cylindrical vessels of Eggers type 16 vary considerably in height and diameter (ibid., 10) although most are larger than the present example; the smallest vessel cited by Guillaumet is an example from Ornavasso with a diameter of 124mm. There is an example of an Eggers 16 vessel with a base attached by rivets; the vessel was recovered from the Saône at Chalon or Lux (Barrate *et al.*, 27 & pl xv, no. 27). Guillaumet suggests that Eggers 16 vessels date to the first half of the 1st century BC, but that they continue in use until the first decade of the 1st century AD (Guillaumet 1991, 10).

Analysis and metallography of copper-alloy metalwork from late Iron Age graves *by Peter Northover*

A number of vessels and fibulae from high status late Iron Age and Roman graves excavated during the A2 widening project were submitted for metallurgical analysis by electron probe microanalysis and optical metallography. The purpose of the analysis was to determine the alloys used and the methods of manufacture, as well as to consider whether the objects were of local manufacture or imported from the Continent.

Samples were taken either by cutting with a jeweller's saw or scalpel, or drilling with a handheld modelmaker's electric drill with a 0.9mm diameter bit. Details of sample preparation and analysis are given in the digital archive. The individual analyses from each sample and their means in weight % and normalised to 100% are given in Table 1 (Digital archive), and microphotographs of the cut samples in Figures 1–18 (Digital archive); in both cases they are presented in the order in which the vessels are discussed, not in sample order.

Grave 4298

This grave contained four fibulae, the two Knotenfibeln (sfs 417,429) being linked by a chain and clearly a pair, while the other two, of simpler types, may also have been worn as a pair.

The two Knotenfibeln must have been made together since they have effectively identical compositions. They are made of unleaded brass with 19.8–20.0% zinc, 1.0–0.9% tin, and 0.21–0.22% lead; the principal impurities are 0.22–0.24% iron and 0.11–0.08% silver, together with traces of nickel, arsenic, antimony, bismuth, and sulphur. The 1% tin could well have been a deliberate addition to improve castability.

Zinc contents in the range 19–22% are common in Roman brass (Bayley and Butcher 2004; Dungworth 1996, Northover 2004) and may be regarded as something of a standard. The fact that the brooches are made of brass means that they cannot really date from before the last quarter of the 1st century BC. There is no evidence of brass-making in southern Britain at that time, but imported brass must have been re-worked because it appears in brass coins of the Trinovantes inscribed ANDOCO and DIAS (Northover 1992). However, it is not unreasonable to believe that these Knotenfibeln were imported as a set with their chain. It is also noted that a boss-on-bow brooch from Stanway, and dated most probably to the late 1st century BC, was also made of brass (Crummy 2007).

The two other fibula samples analysed, sf 422 from the pin and sf 423 from the body, were both made of unleaded bronze of very similar character to that used in the grave goods analysed from Grave 4312. The tin contents were 11.1% and 12.1% respectively and, again, impurities were at a low level.

Also analysed from this grave was the notched disc, sf 438. This, too is in an unleaded bronze with 13.1% tin and very low levels of impurities with the exception of 0.13% iron. Metallography (Digital archive Figures 17–18) revealed a fully recrystallised equiaxed grain structure with annealing twins and slip traces showing it had been left in a moderately cold worked state.

Grave 4312

Six samples were cut from sheet bronze bucket mounts from a wooden bucket (Context 4313, sfs 488–91/94–95). All were formed from medium tin bronzes with 11.6–13.5% tin, and with lead only present as a trace element or minor impurity; zinc was scarcely detected at all. Metallographic examination of the samples (Digital archive Figures 1–11) shows that all contained sufficient sound metal for the analyses to be unaffected by corrosion.

The total weight of metal involved in these sheet bronze parts is sufficiently small for all to have been formed from one blank forged out into sheet. However, examination of the tin contents and the impurity patterns show that this was not the case. Allowing for a certain amount of inhomogeneity it is probable that the two hoop bands (sfs 490, 491) are cut from the same sheet (12.9/13.5% tin, 0.06/04% nickel and 0.04/0.03% arsenic), while the two analysed plaques from the feet (sfs 488, 489) make another pair (12.84/12.16% tin, 0.06/0.08% iron, 0.13/0.11% nickel an 0.07/011% silver). Of the two junction plates sf 494 is quite close in composition to the two decorative plaques from the feet but has higher iron (0.13%) and nickel (0.16%), while the other (sf 495) is more like the two hoops and could very easily be from the same piece. The high tin contents would have allowed the metal to achieve a good golden colour and a high polish.

The metallography shows that the thin strips and the thicker plaques were handled rather differently. The two hoop bands (Digital archive Figures 1–4) have a fully recrystallised grain structure with annealing twins and a fine grain size of about 15□m with some secondary recrystallisation and a little residual cold work, possibly incurred when the hoops were fitted to the bucket. The analysed junction plate (Digital archive Figures 5–7) has a much larger grain size of 50–100μm, possibly the result of longer annealing, but perhaps also caused by the heat of soldering. Figures 5–6 (Digital archive) show a taper section through the solder joint; the two shade of grey depict the ϵ and η phases while the darker material may be corroded η phase but is more probably corroded tin. The bronze attached to the other side of the joint could be expected to have a similar structure. The two plaques from the feet (Digital archive Figures 8–11), have an intermediate grain size of about 30μm and with no residual cold work. As the compositions indicate, the two hoop bands were almost certainly made together, while the two decorative plaques are also clearly a pair.

Also from the same grave is the cylindrical vessel fragment sf 416. This is made from a bronze that is broadly similar to the above but with higher tin (14.0%), iron (0.59%), arsenic (0.25%, and lead (0.10%), although there may be some enhancement of the measured tin content through corrosion. The metallography (Digital archive Figures 12–14) show that the section sampled is made of an unleaded sheet bronze with a fine-grained, equiaxed, recrystallised grain structure with annealing twins but no coring or visible residual cold work. The grain size is of the order of 15μm, so the general style of working is very similar to that in the bucket hoops. The sample area is deeply penetrated by corrosion, initially intergranular.

The origin of the bronze

Extensive analysis of later Iron Age bronze (Northover 1984; 1987; 1991; 1992; 1994a; 1994b; 2000; 2004a; Barnes 1985) has shown that in the 1st century BC and the first part of the 1st century AD unleaded bronze was typical for sheet and for many cast products. Leaded bronze began to appear from the middle of the 1st century BC onwards, a result of contact with Romanised Gaul, and was followed a few decades later by brass. Less studied have been the impurity patterns: in the scheme developed for the Iron Age by the present writer (Northover 1991), the majority of the compositions from the two graves fall in to Group 0, ie low impurities. Those with rather more arsenic and nickel could relate to Group 6 but if they do their much lower impurity total suggests a mixing with bronze from Group 0. Such bronze occurs sporadically throughout the Iron Age in southern Britain but is rather more common in later phases, and it could come from either British or continental sources. Given the long tradition of metal trade across the English Channel going back to the early Bronze Age and the consequent use of imported metal in south-eastern England (Northover 1983), it is reasonable to suppose a common circulation of bronze on both sides of the Channel. It should perhaps also be noted that the Roman technology for smelting and oxidative refining copper produced ingots with low impurity totals.

Mineralised wood and other organic remains

by Dana Goodburn-Brown

Table 3.28 presents the results of SEM analysis of mineralised wood and horn from Grave 4298. The species identifications are 'probable' only, based on experience with similar materials from UK excavations (J Watson and Damian Goodburn, pers. comm.). Wood types suggested and some of their associated features are:

Sweet Chestnut (*Castanea sp.*): ring porous, uniseriate rays, simple perforation plates

Table 3.28: Results of SEM analysis of wood and other samples from Grave 4298

Object No.	*Type of object*	*SEM identification* **refers to epiluminated examination by Lisa Gray*	*Technological information/notes* **diagnostic features observed*	*Comments*
Grave No: 4298				
	Box/tray or board	Chain & brooches appear to have been in a box, or laid on a plank		
	chain	sweet chestnut		
	brooch	"		
	Unknown – vessel or instrument	*Striations on corrosion as if object had been finished on a lathe*		
Sf.416	Rim from vessel/instrument	horn	Thickness can be measured by gap between wall and stud	
	Bucket	yew		
	Stave frag	** Yew*	** softwood, reddish hue, gradual transition from early to late wood, dense spiral seen in tangential longitudinal section, no resin ducts thickening in rays (quite a clear identification but no pitting visible in the rays due to deterioration of the wood)*	

Yew (*Taxus sp*): conifer with no resin canals, but spiral thickening in the tracheids. Paired rays, ray pits, cupressed ray pits

Osteology of the high status burials *by Mark Gibson, Ceridwen Boston, Sharon Clough and Nicholas Marquez-Grant*

Two circular graves containing cremated human remains (4298 and 4312) were discovered within a banjo enclosure on Site B (see above). The burials were accompanied by high status late Iron Age grave goods. The cremated bone within pit 4312 was contained within the copper-alloy remains of a bucket, whilst five or six brooches and a chain were recovered within the bone deposit of pit 4298. Both graves included pottery vessels of late Iron Age date.

Due to the presence of metal grave goods within the deposits, the two cremation burials were block-lifted and excavated by an osteologist in the more controlled environment of the laboratory. In accordance with recommended practice (McKinley and Roberts 1993), samples were wet sieved and sorted into >10mm, >4mm and >2mm size categories. The sorted bone and the residues were then analysed.

The cremated bone in burial pit 4312 was excavated and recorded as a single context (4313), but the cremated bone from pit 4298 was assigned several context numbers (4299, 4320 and 4385) in the field. These are all part of a single deposit, and henceforth are referred to under the number of the largest context 4229.

Results

Weight and element representation

Deposit 4299 weighed 284.1g and deposit 4313, 848.2g (Table 3.29), which indicated that neither burial represented the remains of a complete skeleton. Both burials were heavily truncated by agriculture and machining that had destroyed approximately two-thirds of the bucket of burial 4313, and all but the base and lower body of the pedestal vessels in both burials.

Cranial vault bones were far the most common identified element in the two cremation deposits, which tentatively suggested favouring the head in the selection of body parts for burial. The cranial vault is the most easily recognisable element in a osteological analysis, however, thereby creating a bias towards recognition of this element.

Landmarks present were the supra-orbital margin of two frontal bone fragments and the nuchal line of occipital fragments from deposit 4299. Facial bones were absent, apart from the maxillary alveolar fragment in deposit 4313. Mandibular fragments were present in burials 4299 and 4313. Tooth roots were recovered from both deposits. A left incus bone was recovered from deposit 4299. The axial skeleton was under-represented in both burials. In deposit 4313, most vertebral fragments were pedicles and superior articular processes, one of the superior latter being from the axis. The shoulder and pelvic girdle was poorly represented, such that the age and sex of the individuals could not be identified from these bones. Upper limb bone fragments were recovered from both cremation deposits, largely comprising

Table 3.29: Summary of weights for the Site B late Iron Age cremated bone deposits (g)

	Deposits	
	4299	*4313*
Skull	46.1 16.2%	116.6 13.7%
Axial	2.1 0.7%	20.6 2.4%
Upper limbs	6.5 2.3%	18.7 2.2%
Lower limbs	28.1 9.9%	27.9 3.3%
TOTAL (g)	284.1	848.2

ulnar or radial fragments. The femoral shaft was fairly well represented in both 4299 and 4313, however, with fragments of condyle identified in the latter. Hand and foot bones are also poorly represented. A single proximal metatarsal fragment was found in 4299 and a distal metatarsal fragment and the trochlear surface of a talus in 4313.

Palaeodemography

Neither deposits included the remains of more than one individual. The individuals comprising deposits 4299 and 4313 were adults, as both contained fully formed third molar roots, suggesting an age greater than 18 years at the time of death (Ubelaker 1989). In addition to this, the syndesmophyte on the axis of deposit 4313 tentatively suggested an older adult.

Sexually diagnostic features were present in both cremation deposits. In burial 4299, the frontal bone fragments lacked a pronounced supra-orbital ridge, indicating a female, but sex estimation from the sharpness of the orbital margin was ambiguous. In deposit 4313, a fragment of occipital bone exhibited a fairly marked inferior nuchal line, suggestive of a male.

Palaeopathology

The only pathological lesion observed was a single syndesmophyte in deposit 4313 located near but not overlying the articular process of the axis. Syndesmophytes are associated with joint disease, which may be caused by joint degeneration from general wear and tear of advancing age, but may also be caused or accelerated by repetitive activities (such as carrying heavy weights on the head) (Roberts and Manchester 1995).

Fragmentation

The most frequent fragment size for both cremation deposits ranged between 10mm and 5mm. In deposit 4313, fragments greater than 10mm were better represented than those less than 5mm (Table 3.30). Many were cranial vault fragments. Both cremation deposits exhibited clear fissuring, transverse and longitudinal checking and splitting of larger bone fragments, indicating that they were 'green' or covered with flesh when cremated (Reverte 1986; Ubelaker 1989).

Table 3.30: Percentage of bone fragments larger than 10mm, between 10-5mm and smaller than 5mm

	Context number	
	4299	*4313*
>10 mm	102.7 g 24.3 %	335.9 g 43.7 %
10-5 mm	200.8 g 47.5 %	358.4 g 46.6 %
<5 mm	119.6 g 28.2 %	74 g 9.7 %
TOTAL (g)	423.1	768.3

Colour

The cremated bone of burial deposit 4229 was predominantly white or predominantly white with very occasional flecks of light grey or blue, indicating near complete cremation. Burial deposit 4313 was also largely white, but included hues of grey (approximately 25% of the sample), black (5%) and unburned trabecular bone (2%). Occipital bone fragments showed incomplete burning, containing grey or black diploë with white or grey cortical bone, whilst other cranial vault fragments were also incompletely burnt. One tooth root was charred black, whist the other two were white and grey. A number of femoral shaft fragments were largely black on the internal surface whilst the external surface of the cortical bone was grey. Thus, bone colour varied with white bone comprising only 68% of the deposit, the remainder being only partly burnt or unburnt. Whilst parts of the cremation pyre had reached the high temperatures needed to fully oxidise some of the skeleton, burning was not consistent across the skeleton, suggesting that the pyre was too small or that cremation had not been sustained. Being towards the edge of the pyre, the head would have been exposed to lower temperatures than the more centrally placed trunk and upper limbs. Unburned or slightly charred trabecular bone also indicated incomplete cremation.

Discussion

Due to considerable modern truncation of burials 4298 and 4312, interpretation of the osteological data and burial archaeology was problematic, although there was much similarity observed in the cremation processes and burial practices. Both were unurned, but the discrete concentration of bone within the burial pits suggested that originally they were contained within an organic container (a bucket with copper-alloy bands in the case of 4312). Both were accompanied by a rich array of grave goods, including pottery and fibulae. Given their close proximity and artefactual dating, they appeared to be contemporary.

Whilst in many ways similar, the two deposits did differ in the completeness of the combustion of the bone, however. Although availability of fuel is often seen as a significant factor in the completeness of cremation, other factors such as poor pyre construction that impedes oxygen circulation throughout the pyre, or indeed, adverse weather (such as a sudden downpour) may also be responsible for incomplete cremation.

DISCUSSION *by Tim Allen*

The nature of the surviving evidence

Before the Iron Age evidence can be discussed, we need to obtain some idea of the level of survival of

that evidence, in order to distinguish between what may have been removed by truncation and what was never present. Truncation in many parts of the scheme has clearly been considerable. Some indication of the degree of truncation may perhaps be obtained from the high status cremation burials in the western part of Site B. Both grave 4298 and 4312 had contained pedestal jars, of which only the bottom 120mm survived intact. Reconstruction of one of the vessels from 4298, of which a small fragment of the rim survived, suggests that it was originally 300mm high. In grave 4312 only the feet and parts of two of the bronze bands surrounding the bucket survived, and the middle band had dropped behind the lowest. Nothing of the band around the rim or of the handle survived. It is possible to estimate the diameter of the bucket from the surviving bands, and from this to estimate the likely height as around 250mm, with perhaps another 50mm for the handle attachments. The original graves are likely to have been at least 0.25m deeper than this, or not less than 0.55m deep, and probably more. Allowing 0.2m for the depth of the Iron Age topsoil, at least 0.2m of chalk has been lost through ploughing at this point, and more than 0.4m of the Iron Age features.

This was clearly not the case right across the site, as the survival of the metalled road in Site B shows. This feature, however, occupied a local hollow in the chalk plateau (see Chapter 2, Fig. 2.4), and became less well-preserved as it rose to the south-east. The metalling in Site G was similarly only preserved on the south side of the enclosure, where the ground was dipping into the glacial hollow, and where the metalling itself lay within a pre-existing slight holloway. The survival of a line of metalling in Site C is more extraordinary, as this ran across the highest part of the chalk plateau, but it was clear from the adjacent excavations in the A2 Activity Park that the metalling was added to a holloway (Dawkes 2010, 16), and it is likely that what survived along the line of the A2 was the very base of this feature, some distance below the contemporary ground surface.

The loss of 0.4m over much of the site means that only substantial postholes are likely to have survived, and that at the level of their uppermost surviving fills, ditches, gullies and pits were still substantial negative features, and could have remained in use beyond the latest date of the finds recovered from them.

The local context of the discoveries

In order to put the discoveries from the A2 widening scheme into context, the results of the adjacent excavations along the line of the HS1, at Coldharbour Road and in the A2 Activity Park, are all shown together and have been phased to match the phasing used for the A2 widening scheme. (see plans by inside front and back covers). The later prehistoric features along the line of the HS1 were phased according to a slightly different ceramic framework than that derived from absolute dates on the current scheme, so have been adjusted to correspond. The results from the A2 Activity Park are those described in the assessment report, and so are provisional; there is some discrepancy between the dating offered in the main text and in the pottery report, and in general the dating suggested by the pottery report has been followed in revising the phasing here.

Two four-post structures of early Iron Age date were found on the line of the HS1 some 50m south of the west end of the Site B settlement (Askew 2006, fig. 10). The pottery from this area was divided into an early/middle Iron Age phase, characterised by sub-angular shouldered jars often decorated with finger-tipping and upright pots, and a late middle Iron Age characterised by round-bodied burnished vessels. Twigs in pit 156, which contained the largest pottery assemblage of the early/middle phase, gave a radiocarbon date range of 800–420 cal BC (NZA 22728), putting this clearly into the early Iron Age phase in the A2 excavations. Indeed the date is considerably earlier than those from the A2, most of which fall in the later 5th or early 4th century cal BC. Another of the pits (331) produced a copper-alloy La Tène 1 brooch, showing that activity did continue into the 5th/4th century BC, but the pottery shows that this is still contemporary with the late early Iron Age pits along the A2. Both the pits and four-post structures will therefore be discussed together with the early Iron Age activity on the A2.

Earliest and early Iron Age chronology

Evidence for earliest Iron Age activity along the route, like that of the late Bronze Age, is very sparse. Only single pits on Sites L and G can be attributed with confidence to this period. There is a similar shortage of evidence from the adjacent lengths of the HS1, though a radiocarbon-dated residue on a potsherd in Site G clearly belongs to this period. Champion (2007b) noted the very limited evidence of activity of this period in West Kent, though occupation of this period has been found not far away at Darenth (Couldrey 1988). The A2 and HS1 excavations have demonstrated that activity of this period was occurring in this area, but that either this area was peripheral to settlement at this time, or that settlement was of a kind that left little trace below ground.

Early Iron Age activity on the route of the A2 is more widespread, but where radiocarbon dating has been carried out the dates have almost all fallen towards the very end of this period, in the late 5th or 4th centuries cal BC. The radiocarbon dates from the A2 were not, however, selected at random; they targeted pits with particularly rich assemblages, and may therefore not be a representative selection of early Iron Age activity (see below for further discussion of these pits). Dates on four-post struc-

tures represent a better sample of the date of use of these structures, biased only by the survival of charred material associated with them. Among the four-post structures there is one potentially of late Bronze Age date, and one in Site B with a more usual early Iron Age date spanning the radiocarbon plateau between 760 and 390 cal BC, and with a 71% chance of dating after 600 cal BC. One further four-post structure dates, like the pits in Site C, to the 5th or earlier 4th century cal BC, the remainder falling in the 4th century or later.

One of the radiocarbon dates from Northumberland Bottom on the HS1 also falls on the radiocarbon plateau, but has a 93% chance of falling before 520 cal BC (Askew 2006). Excluding the rich pits, the number of early Iron Age samples dated was not very large, and on the basis of this limited sample it is therefore likely that these sites included early Iron Age activity of the 6th, as well as the 5th and 4th centuries BC. The fact that earliest Iron Age features or potsherds were found on all of the sites where early Iron Age activity was present, and only on these sites, perhaps argues for some level of continuity of activity throughout the early Iron Age in these locations.

Settlement evidence – general characteristics

The earliest and early Iron Age pit groups from the A2 enlarge and refine the evidence already gathered from the adjacent HS1 excavations. Excavations at Tollgate revealed three clusters of pits within 200–400m of each other (Bull 2006), one of which was re-examined in Site G, and a somewhat larger group of 15 pits west of Downs Road on a slight knoll at Hazell's Farm (Askew 2006). The A2 excavations have added a further cluster on Site C, the highest point of the chalk plateau between the dry valleys at Downs Road and Tollgate Junction. The Activity Park excavations have shown that this loose grouping extends further north into the Activity Park (Dawkes 2010), with an outlier north of the old A2 at Coldharbour Road some 200m to the north. Other scattered pits have been found on Site L and north of Hazell's Farm at Site K. This again suggests extensive, though not necessarily intensive, use of this landscape.

Further excavation has also expanded the range of other features associated with these pit groups. At Site G, for instance, there is now good evidence of a number of four-post structures (see below), and a linear boundary on the east. A similar scatter of four-post structures has been found adjacent to the pits on Site C, and one structure of this type on Site B has also been radiocarbon dated to the early Iron Age. Other undated examples on Site B may also belong to this period. None have come to light on Sites L or A, but very few postholes have been found on these sites, and their absence may be due to truncation. Site K has shown that early Iron Age activity extends north from Hazell's Farm onto the valley bottom, and an arc of postholes may possibly indicate a roundhouse of this date, although this may alternatively be later Bronze Age. No other roundhouses of this period have come to light during the HS1, A2 or A2 Activity Park excavations.

The artefacts and ecofacts recovered from the early Iron Age pits, whether they derive from everyday refuse disposal or from more selective and purposive placement, provide evidence of a wide range of activities. Apart from pottery, there are fired clay loomweights or oven bricks and pedestals, spindle whorls, structural fired clay from ovens and charcoal, briquetage containers and trays for salt evaporation, smelting slag, charred cereals, quernstones and rubbers, a worked bone toggle and a handle. These include most of the usual types of find from settlements of this date across Southern England where roundhouses are also present. The pottery also represents a varied assemblage characteristic of the period, with a few vessels showing decoration or designs indicative of contact with East Kent or beyond, and its manner of deposition encompasses both complete, or complete but smashed vessels, and also fragmented and abraded material suggesting middening before burial. Both the pottery and the quernstones indicate contact with geologies further south in Kent, but still relatively local to the site.

Animal bones indicate mixed animal husbandry, but with cattle predominating over sheep/goats and pigs, and a fair number of horses. Contact with the Thames and the sea is indicated by remains of both freshwater and marine fish (a tooth, possibly from pike, a herring vertebra, a tiny cyprid vertebra, a scad vertebra and a plaice or flounder vertebra; identifications by R Nicholson). Some hunting is also suggested by the bones of red and roe deer, and of hare. The charred plant remains are dominated by emmer wheat, with lesser proportions of spelt and hulled barley, and include a small number of layers of almost pure cereal grains. The majority, however, are mixed assemblages of cereals and weeds. The charcoal is similarly mostly mixed species suggesting the use of local hedgerows, although one sample dominated by oak was present.

The briquetage and metalworking slag are particularly interesting, as salt processing would normally be expected to have occurred on the coast, and while there are extensive iron deposits on the Weald, they are not found this far north in Kent. Briquetage had previously been recovered from the late Bronze Age settlement at Cobham Golf Course some 10km further east, and in early Iron Age pits at Tollgate, during the HS1 excavations, but while at Cobham this material had included containers, pedestals and hearth or oven-lining (Morris 2006; Champion 2007b), that at Tollgate had included only container fragments (G P Jones 2006). The Cobham material comprised several kg of briquetage, however, and was interpreted as relating to a cottage industry using salt brought to the site, evaporation having taken place elsewhere. The quantities at Site C on the A2, including both

pedestals and hearth material, necessitate a rethink of this interpretation, raising the question whether salt production in North Kent in later prehistory was in fact a two-stage process, involving the portage of incompletely processed salt or brine to more elevated sites inland to finish production there.

As Site C lies several km from the present coastline, and at an elevation of 55m OD, the importation of briquetage material from the coast for deposition, rather than on site production, would at first sight seem more plausible. The clay from which the pedestals were made is, however, almost certainly that on the site itself, and is not of good quality, making it unlikely that this would have been sought out had production been taking place elsewhere. Quantities of fuel ash slag were also recovered from the pits with briquetage debris, demonstrating that industrial processes were certainly taking place in the vicinity of the pits. It has also been suggested from excavations in the Ebbsfleet valley that the shoreline, or at least the limit of marine transgression, was considerably further south in the Iron Age than today, and may have been no more than 1.5km from the site (Stafford pers. comm.). This would have reduced the distance to transport brine before completing the production of salt, though it would not have removed this awkward task.

Another factor that may have influenced salt production may have been the availability of suitable fuel. If wood was scarce close to the shoreline, or was very carefully managed, it is possible that it was easier to bring the salt inland than to cut wood or brush and carry or float it down to the shore. Other factors such as social constraints may have affected the process. However unlikely this may seem, recent discoveries in Normandy and Brittany, albeit somewhat later in the Iron Age, have shown unequivocally that salt production was taking place at sites some 3km from the coast (M Yvanne Daire pers. comm.; Poole pers. comm.). Recent excavations west of this scheme at the A2/A282 junction, again several km from the coast, have produced late Iron Age briquetage including shallow open vessel fragments and pedestals (Poole 2011). Similar and larger-scale evidence was also recovered at Springhead, and Poole (ibid.) suggested that these sites were also evidence of a local tradition of two-stage salt production in North Kent.

The lump of smelting slag, which reflects the processing of ore that is certainly not very local to the site, leaves open the possibility that the briquetage, and in theory other types of find, could all have been brought to the A2 sites from settlements elsewhere. Given that the majority of the finds were recovered from pits with rich and varied assemblages of material, and included items such as complete pots and loomweights, the A2 sites could possibly have been locations visited for specific rituals by communities from a variety of locations in the wider area. The evidence for the incorporation of middened material might support the idea of periodic visits, the sites marked by the upstanding middens, material from which was included in the backfilling of pits after the rituals had been completed. In this interpretation, four-post structures would also have been a routine part of such sites.

Structural evidence

The interpretation of the evidence presented above might explain the lack of permanent houses, but given the partial investigation of the sites in question, it would be unwise to base too much on current lack of evidence. More importantly, such an interpretation requires there to be a series of other, better-defined permanent early Iron Age settlements, for which at present there is very little evidence. Most other substantial early Iron Age settlements in Kent, such as White Horse Stone and North Foreland, contain a similar mix of pits and four-post structures, and also lack clear evidence for houses (Hayden 2006a, 145–6; Champion 2007b, 106). Only two sites with ring-gullies are known, both in East Kent (Champion 2007b, 107). The range of artefacts and ecofacts is also very much the same as is found in the middle Iron Age, where they are found in both pits and enclosure ditches on sites usually interpreted as permanent settlements. Taking into consideration the evidence for local procurement of many of the resources, it is therefore simplest to interpret these sites as the remains of truncated local settlements, though it remains possible that their houses were less permanent structures than in some other parts of the country.

Looking at the middle and late Iron Age settlement in Sites B and C, and in the adjacent HS1, there is a similar lack of evidence for buildings as in the early Iron Age. Excavations further up the Thames, for instance at Mingies Ditch in Oxfordshire or Claydon Pike in Gloucestershire, or indeed at Danebury in Hampshire, have shown that buildings in the middle Iron Age can be built with stakes that leave little trace in the ground (Allen *et al.* 1984; Cunliffe and Poole 1995). Other forms of construction, such as mass-wall (eg cob walling), also leave little or no trace; this tradition of building has a long history in Kent, and could have begun in later prehistory. The degree of truncation at the A2 and the adjacent HS1 sites would have removed all but the doorpost-holes of such buildings.

It is, however, noticeable that none of the roundhouse-sized enclosure gullies so common in the Upper Thames, in Wessex or in the Midlands, have been found in association with this site, although such features are known in the local area. One was apparently present at Hillside, Gravesend, only 3km to the north-east (Philp and Chenery 1998), and another was visible as a cropmark between Sites B/C and Hillside, although this was not confirmed by excavation. On some sites these gullies are slight, and gullies such as these could also have been removed by truncation, but on others (such as

Hillside) they can be more than 1m in depth. In other areas where roundhouse gullies were sometimes used, practice clearly varied considerably even within adjacent settlements, so it would be unwise to attempt to define the status of occupation, or its permanence, on their presence or absence.

At least 18 four-post structures were found along the scheme, but of these less than half were securely dated either by finds or by radiocarbon dating, so a phased analysis of their characteristics is not possible. It is, however, possible to be confident that four-post structures were present from the early to the late Iron Age, and possibly had their origins in the late Bronze Age on this scheme. Almost all were between 2 and 3m across, most around 2.5m square. There were therefore none of the larger type (3.5–4.3m across) found at White Horse Stone (Hayden 2006a, table 34). The most substantial was 3772, the only such structure firmly dated to the early Iron Age, nearly 3m square and with postholes 0.7–0.8m across. The postholes were larger than those of the other examples, possibly indicating a more massive construction than that of the rest. Amongst the smaller examples the postholes varied considerably in size and depth, but it is difficult to be certain that this was not partly an artefact of variable truncation, rather than an indication of the solidity of their construction and the loads they were intended to bear. There was certainly no correspondence between the size of structure and that of the postholes.

Two structures were particularly small: 7180 in Site E at only 1.6m square and 7191 in Site B at 2.1 by 1.1m, though both falling within the range of small structures identified at White Horse Stone (ibid.). The latter example is so different from the others at the A2, however, and with such a small enclosed area, that it is likely to have had a different function, perhaps being a pair of adjacent two-post structures, or perhaps the doorposts and porch of a roundhouse. A few structures had postholes of very different sizes: had the differences been between pairs of posts, this might have indicated a different construction, and possibly a different function, to the rest, but mostly these were at opposite corners, making it possible that these were no genuine structures.

There were no examples of recut postholes to suggest that four-posters had been rebuilt in the same location. These structures did tend to occur in groups, most notably the tight cluster of seven or eight in Site E, but this is the only location where a zone of four-posters appears to have been present. No other activity areas, eg groups of pits, houses or workshop areas, were found in the vicinity, so the reason for this clustering is unclear. In the description of this area it was postulated that the structures might have been successive rather than contemporary, although the lack of any intercutting structures perhaps argues against this. If the group was largely contemporary, then it was surrounded by areas largely devoid of contemporary archaeological features. The group of central four-post structures at Gussage All Saints, although within the ditched enclosure, was similarly isolated from pits and other types of feature (Wainwright 1979), though the absence of neighbouring structures may have been the result of truncation. Possibly the group on Site E represented an area of communal storage surrounded by fields, or alternatively the structures may have had some other purpose that required their separation from other everyday activities.

The other four-post structures were associated with pits, and later with ditched enclosures that contained settlement evidence, but on current dating evidence do not appear to have occupied clearly-demarcated or separated areas, nor were they organised in lines or patterns suggesting that they were respecting above-ground boundaries, unlike the much larger numbers at White Horse Stone.

Pits and special deposits

There were 125 probably later prehistoric pits found along the scheme, although 40 of these were undated. These include 36 pits belonging to the earliest or early Iron Age (including those with pottery dated only middle Bronze Age to middle Iron Age), 29 middle Iron Age pits (including those dated mid–late Iron Age) and 20 late Iron Age pits (including one late Iron Age/early Roman example). As there was very little earliest Iron Age activity, and only three pits have been dated to this phase, this perhaps represents 33 pits between 600 and *c* 350 BC, 29 from *c* 350–80 BC, and 20 from 80 BC to AD 50. If, however, only the closely dated examples are considered, then there are 20 early Iron Age pits, 22 middle Iron Age and 17 late Iron Age examples.

The proportions of pits of different shapes and pit profiles in the early, middle and late Iron Age are given in Table 3.31. As almost all of the beehive types were dated, it would appear that beehive-shaped pits, or at least pits with undercut sides, were most common in the early Iron Age, and cylindrical pits more common later on. When the depth of the pits is plotted by phase, the average is around 0.7m in all three periods, but beehive pits will have had a greater capacity than other types of the same depth. As Table 3.31 shows, there are also considerably more dated pits over 1m deep in the early Iron Age than in the middle Iron Age and late Iron Age. Pits between 0.5m and 1m deep are also more numerous in the early Iron Age and late Iron Age than in the middle Iron Age. Taken at face value, it would appear that in general fewer and larger pits were dug in the early Iron Age. This might perhaps indicate a change from agriculture carried out communally to one in which ownership of resources was becoming parcelled out, perhaps into individual families or close kinship groups. Alternatively, it may simply reflect the deliberate division of storage to provide insurance in case the contents of any one pit were spoiled. Bearing in

Table 3.31: Breakdown of early, middle and late Iron Age pits by shape in plan and profile

Shape	*Date*	*Beehive*	*Cylinder*	*U-shaped*	*Bowl*	*Saucer*	*Irregular*	*Conical*	*Total shape*
Circular	Early	5	2	-	-	1	1	-	9
	Middle	1	3	2	1	1	-	-	56.25%
	Late	-	3	1	-	-	-	-	
Oval	Early	2	-	2	-	1	-	-	5
	Middle	-	5	-	-	-	-	-	31.25%
	Late	1	4	-	2	-	-	-	
Sub-rect	Early	-	1	-	-	-	-	-	1
	Middle	-	1	1	-	-	-	-	6.25%
	Late	-	3	1	-	1	-	-	
Irregular	Early	-	-	-	-	-	1	-	1
	Middle	-	-	-	-	2	1	-	6.25%
	Late	-	1	1	-	-	1	1	
Total	Early %	7 77.78%	3 13.04%	2 25.00%	-	2 33.33%	2 50.00%	-	16 29.63%
	Middle %	1 11.11%	9 39.13%	3 37.50%	1 33.33%	3 50.00%	1 25.00%	-	18 33.33%
	Late %	1 11.11%	11 47.83%	3 37.50%	2 66.67%	1 16.67%	1 25.00%	1 100.00%	20 37.04%

mind how many pits are undated, or only loosely dated, however, it would be unwise to base too many conclusions upon these figures. This trend is the opposite of that observed at Danebury, where larger pits were more common as the Iron Age progressed (Whittle 1984, 132).

From his experiments in storing grain in pits below ground at Little Butser, Reynolds suggested that the loss of stored grain (in percentage terms) decreased with volume, and that the loss was greater at the pit surface (Reynolds 1974, 126–7), so that pits with a greater depth than diameter were best. For his experiments he always used pits with these proportions, and with a minimum depth of 1m (ibid., 120–1). At the A2, 19 pits survived deeper than this, and allowing for 0.3–0.4m of truncation, the majority of the 25 pits within the 0.5–1m range would also have met his criterion. None of these pits was more than 2m in diameter. Some groups of pits, such as the early Iron Age large pits on Sites C and G, would have been particularly suited to this function. Another eight of the 33 pits from the adjacent HS1 excavations also survived over 1m deep, and seven more (allowing for later truncation) might well have been. In this respect the dimensions of the pits on the A2 settlements differ considerably from those at White Horse Stone, the only other large group on the HS1 (Hayden 2006a), where the greatest surviving depth was 1.1m, and very few pits approached 1m in depth, but a substantial proportion of the pits were over 2m in diameter, and the range extended to over 3m across (ibid. figs 91–3). Even allowing for truncation, a smaller proportion of the pits at White Horse Stone would appear to have been appropriate for grain storage.

In some areas (K and L) the pits appeared to be widely scattered, but in others (Sites C and G in particular) the early Iron Age examples formed loose clusters. There were, however, no tight dense groupings such as are common in the pit-cluster settlements of the Upper Thames Valley (Lambrick with Robinson 2009, 105–9) or as recently discovered at Taplow in the Middle Thames (Hart and Mudd forthcoming), nor any intercutting areas of pits like that at White Horse Stone (Hayden 2006a, fig. 69). Although the group in Site G form a rough line, this is widely spaced, and there is no clear pattern to the arrangement of the pits in these loose clusters to suggest a defined area for storage, or a boundary against which they might have been dug. The middle and late Iron Age examples are not tightly grouped within the enclosures, nor (as far as the limited chronology allows) do they appear to be strictly separated from other types of feature of the same phase. On present evidence, therefore, early Iron Age settlement appears to have been less ordered, a view also borne out by the lack of boundary ditches and gullies, except for those at the east end of Site G and (possibly) in Site H.

A proportion of the pits, including most of the deeper examples, contain rich and structured assemblages of finds that indicate structured deposition rather than simply chance discard of rubbish. The largest group are those of the early Iron Age, and particularly those in L, C and G that date to the later 5th/4th centuries BC, but a number of others are known in the middle and late Iron Ages, clustering at the transition between these two phases of the Iron Age.

Although the numbers of pits containing these objects is relatively small, the variety of materials included in this structured deposition is very wide. In the early Iron Age this comprises: pots (whole or smashed), fired clay loomweights/oven bricks, quernstones (and probably spindlewhorls), metal-working debris, briquetage, human and animal bones (the latter including whole and partial skeletons of both domestic and wild animals, together with deer skulls and shed antlers), a raven skeleton, fishbones and marine shells, charred cereals and

hazelnuts and ash. If the pits from the adjacent part of the HS1, which clearly belong to the same (or neighbouring) communities, are included, then early La Tène brooches, an awl, bone tools and stone sharpening tools can also be added (Askew 2006; Bull 2006). In the middle and late Iron Age deposition of these types of materials along the A2 project continues, and is added to by a polished Neolithic axe (probably reused as a burnishing or polishing tool), chalk weights, iron objects, oven structure and potin coins.

This covers virtually the full range of types of material suggested by Poole from her study of ritual deposition at Danebury (1995b). It is clear that much the same practices were at work in Iron Age Kent as in Iron Age Wessex and the Upper Thames Valley. Isolated examples of ritual deposition had been found, though not always recognised, in Kent, such as pit 16, half-full of complete and partly-complete pottery vessels, or pit 10 with a potin coin at the base, at Farningham Hill (Philp 1994). An unusual example of such structured deposition, comprising the multiple burials of calves and deer in pit 156 at West of Northumberland Bottom, was found adjacent (Askew 2006), but on neither this nor on the adjacent Tollgate stretch of the HS1 (Bull 2006), was an approach to the excavation of pits designed to examine this issue, indeed the strategy was only to excavate the second halves of pits if finds had not been forthcoming from the first half (Askew 2006). While more than 100 early–middle Iron Age pits were examined at White Horse Stone on the HS1, and structured deposition on this site was examined (Hayden 2006a), the pits were shallower there, with correspondingly smaller numbers of fills. This site was also much further east, raising the possibility of comparing depositional practice geographically as well as over time. The presence of groups of deep pits with large numbers of varied structured deposits on the A2, and the persistence of this practice throughout the Iron Age, has therefore provided a good opportunity to examine structured deposition during the Iron Age in north-west Kent.

The variety of materials spread amongst these pits, and their relatively small number, makes analysis of repeated patterns of filling unproductive, but structured deposition can still be examined at three levels: by considering the sequence and characteristics of deposition in some individual pits, by the associations of types of deposit across groups of broadly contemporary pits, and by a consideration of the chronological patterning of deposition within the Iron Age.

Among the individual pits, pit 12527=12700, which is radiocarbon dated to 410–350 cal BC (NZA 32308; 68.9% confidence), has a striking sequence of deposits whose characteristics are particularly clear. At the base were two successive deposits of clean charred grain, separated by a layer of ash associated with most of a decorated pottery vessel placed at one side of the pit. The association of this pot with the ash and charred cereals emphasises the deliberate deposition of the environmental remains (see Smith this vol.). The absence of any *in situ* burning on the pit sides, and of sprouted grains, shows that this was not the result of firing the pit to sterilise it after removing the stored grain. The second layer in 12527 contained a large assemblage of pottery including barrel-jars not found elsewhere on the scheme, and a part-skeleton of a sheep. This was followed by an almost sterile sealing layer, except for one triangular clay loomweight or oven brick. In contrast, the top surviving fill contained 12 further triangular clay bricks, charcoal, two quernstone fragments and another large pottery assemblage. The pottery included rimsherds of two further barrel jars stylistically similar in manufacture to those below, but was dominated by fine bowls not found in the lower fills.

A number of pits at White Horse Stone shared primary fills of clean charred grain (though without associated ceramic vessels) and large assemblages of pottery and animal bones in the upper fills. The separation of two pottery-rich fills that were clearly linked, but of differing pottery types, is a refinement not previously noted, as is the association of part-skeletons with the jars, and of clay bricks with the pottery bowls and quernstones. It is also possible that there were further deposits of charred grain, although Smith (this vol.) has interpreted these as derived by post-depositional movement from the primary deposit at the base.

If the triangular clay objects are oven bricks rather than loomweights, as is suggested (see Stansbie this vol.), the whole assemblage may represent materials associated with feasting. The present author has noted a preponderance of large cooking pots and of fineware bowls in association with the skeletons of lambs in an early Iron Age pit at Castle Hill hillfort, Little Wittenham, Oxfordshire (Allen *et al.* 2010), and has linked this to feasting (ibid., 255–6). The contents of pit 12527 also show that the rituals attached to the commemoration of such a feast could be complex, involving the deliberate separation and deposition of a wide variety of materials in particular associations.

Pit 9010 on Site G, whose radiocarbon dates are 405–365 cal BC (NZA 32405) and 400–350 cal BC (NZA 32401 at 72% confidence), very like that of pit 12527, has also been linked to feasting, and its structured deposits contain both similarities and differences to those of pit 12527. Here, overlying the primary fill were two layers of silt and ash containing the smashed remains of a very large storage vessel with roughened exterior and a highly burnished black tripartite jar, together with a fragment of human skull. Sitting upon the smashed large jar was a virtually complete smaller fingertip-decorated jar, and with the remains of several small crude pots, possibly beakers, in the surrounding fill. The pottery represents a set of vessels of different sizes and finishes (Fig. 3.91), very similar to 'feasting' sets found in pits in

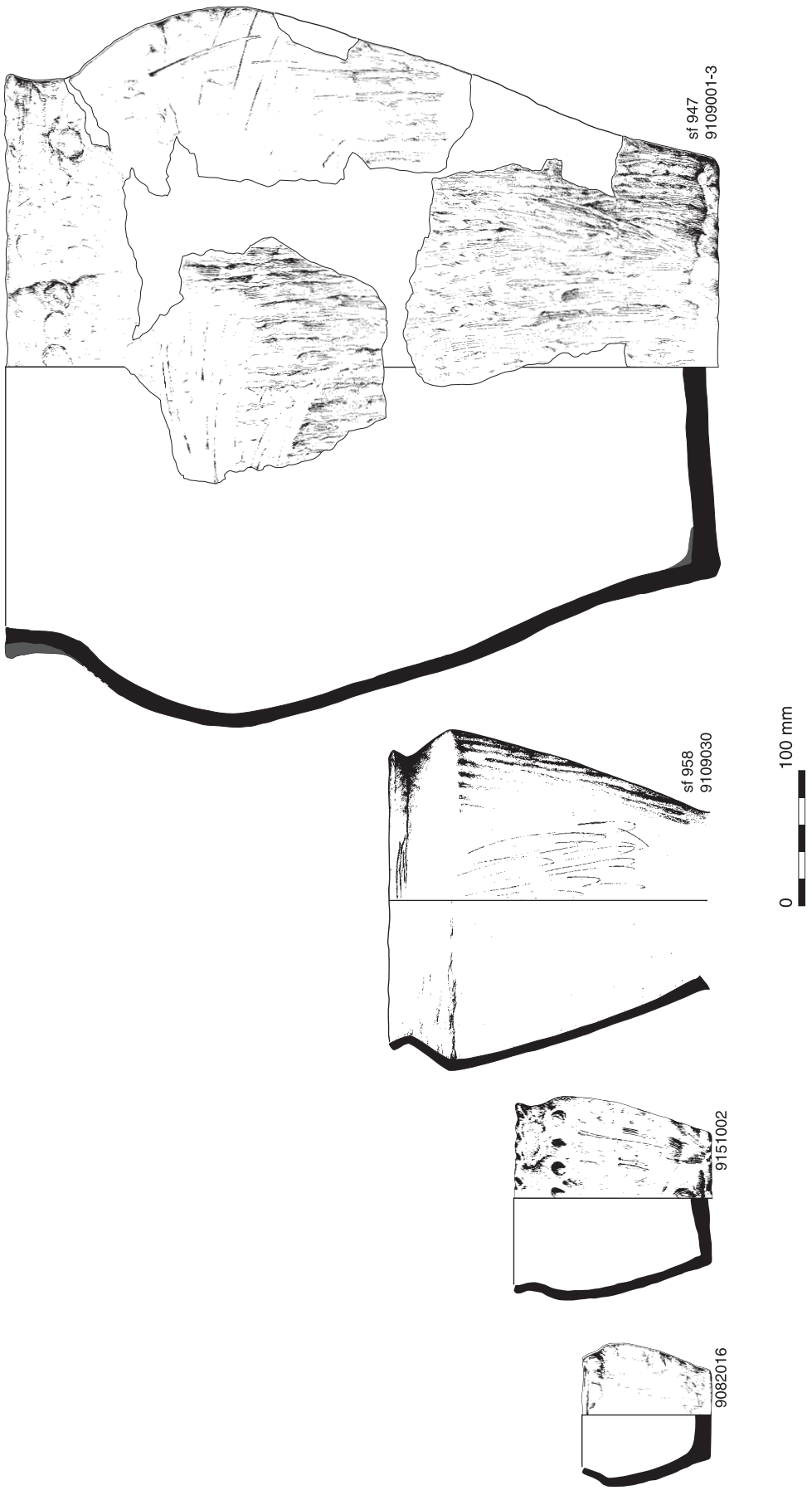


Fig. 3.91 Set of vessels of graduated size and finish in pit 9010

Warwickshire associated with late Bronze Age cremations (Woodward 2008, 303–5). Woodward links the presence of very large vessels to communal feasting events, and suggests that such feasting sets disappear in the Iron Age proper, but this assemblage would suggest that, in Kent at least, such traditions continue. How such concepts were transmitted raises interesting questions about social relations and travel at this time, as similar assemblages have not otherwise been identified in the Thames Valley.

The complete pot contained fish bone, marine shell and a pig bone, and associated with the 'beakers' were four triangular clay bricks and a bone toggle. Also in this layer were the remains of two sows, one of them burnt, and bones from two piglets, one also burnt. After a period of natural silting and possible deliberate sealing with sterile fill, a further ash deposit was associated with a chalk spindle whorl, a complete shed red deer antler, and another piece of human bone. The presence of a marine fish bone and marine shell demonstrates the inclusion of resources brought from several km away, but the small numbers of marine shells and bones does not suggest that marine resources were consumed in any quantity. Part of an articulated cattle leg was also included in the top fill of the pit. This mixture of wild and domesticated animals indicates the range of resources incorporated into the rituals of deposition, and the absence of deer bones, and of cattle bones, before the middle fills of the pit, may also be deliberate.

The presence of human bone, which only occurs at this period in this particular pit on Site G, may be connected to the feasting vessels represented in this pit. If so, the pits from the A2 would appear to indicate that different types and combinations of vessels were appropriate for different feasting events.

A third pit, 5992 on Site C, also showed evidence for the selection, or perhaps avoidance, of particular types of pottery vessel. Although it contained over 6kg of pottery, the assemblage was notable for the absence of fineware bowls. The back legs of a sheep/goat skeleton were also included in the fills, but there was less distinction between the types of material deposited in the successive fills, and in the associations between them.

Overall the choice (and combinations) of animals for consumption or sacrifice was varied. Although sheep/goat was found in pits 12527 and 5992, and pig and cattle in pit 9010, another pig was buried over a red deer and a raven skeleton in a second pit on Site G, and in Site C the bones of at least two neonatal piglets came from pit 7228, and a red deer skull from pit 5130. Pit 156 in the HS1 excavations contained calf and deer skeletons. If there is any pattern, it is perhaps that wild and domesticated species could be mixed more easily than different types of domesticated animal.

Champion (2007b) has noted that Iron Age spindlewhorls were only found in association with human bones along the line of the HS1, and only at White Horse Stone, where the two spindlewhorls from the site were found with an inhumation burial in pit 2296 (Hayden 2006a, 158). The spindlewhorl in pit 9010 was also the only example of this period from the A2 scheme, and although unfinished was also associated with a human bone. A similar association with burials has been noted in Oxfordshire, for instance at Gravelly Guy, Stanton Harcourt, where a shale spindlewhorl was buried with an adult female in pit 2118 (Lambrick and Allen 2004, 232) and, less certainly, half of a spindlewhorl was found with a male inhumation in a grave at Spring Road, Abingdon (Allen and Kamash 2008, 18). At Spring Road this was again the only spindlewhorl from the site, but at Gravelly Guy there were others with no apparent association with burial. It may be significant that one of the few other grave goods at Gravelly Guy, this time accompanying an adult male, was a bone toggle (ibid., figure 6.1). The only bone toggle from the A2 excavations was again that found in pit 9010. These objects clearly had other, practical uses, but were objects suitable for deposition with the dead, perhaps seen as particularly personal due to their use, and on some sites the circumstances in which they could be deposited may otherwise have been circumscribed by custom or taboo.

In contrast to the complete, or at least reconstructable materials in the lower fills of pit 9010, the final filling of this pit included broken up and abraded pottery, possibly derived from a surface midden. This was a characteristic of the pottery from many of the layers within the pits of this date on Site C, which contained very large overall assemblages of pottery, although there were some deposits of fresher material, and one virtually complete miniature vessel (possibly a crucible) in pit 5066. Champion (2007b) noted a similar phenomenon in the large early Iron Age assemblage from Tutt Hill on the HS1, and suggested that, although not representing immediate deposition after significant social events, they should still be regarded as event-marking or closure deposits.

Middening is a recognised phenomenon on a variety of later Bronze Age and early Iron Age sites, the most extreme examples being the huge middens of the Vale of Pewsey such as Potterne, East Chisenbury and All Cannings Cross (McOmish 1996). Smaller but still extensive examples have now been recognised at Little Wittenham, and possibly at Woodeaton, in Oxfordshire (Allen *et al.* 2010, 262–4). These monumental middens were clearly the result of centuries of accumulation, and the huge numbers and diversity of finds from them has led to their interpretation as the sites of large communal gatherings. While middens on this scale are still relatively rare, and possibly restricted to certain tribal groupings, it is plausible that middens were also created more widely as the outcome of social gatherings, and that material from them, the repository of previous gatherings, was considered suitable for inclusion in pits at the conclusion of later rituals.

The pits on Site C, however, also included some of the clearest examples of structured deposition, including a red deer skull with the antlers chopped off on top of two triangular oven bricks and a large charred wooden board, and the enormous deposits of briquetage in the upper fills of two of the pits. The residues of industrial activity of various kinds were common, characterised in several pits by reddened soil layers overlain by burnt flints and charcoal, and on Site K by two successive deposits of this kind. A number of the selected items from the early Iron Age pits appear to have been related to processes of transformation, such as the metal-working slag, the (unused) crucible and the briquetage trays and pedestals, and this may also have been the case with other industrial residues, although the precise processes involved are unclear. This may also be true of the unfinished spindle-whorl. It is even possible that the sow with neonatal piglets and the charred cereal grains stored as seed corn were seen in this light, although more prosaic explanations for these are also possible.

A similar-sized group of pits, almost all dated to the early Iron Age, was excavated at White Horse Stone, and was analysed for evidence of structured deposition. Significant variations were noted in the fills of some, but the incidence of placed or smashed vessels, and of animal skeletons or part-skeletons, was considerably less, while in contrast deposits of cleaned grain at the base of pits were more common.

In the middle and late Iron Age structured deposition of these materials continues, not only into deep pits, but also into shallow ones, and into ditches. Few of the pits have such complex sequences of fill, but two pits stand out; pit 4969 with fourteen fills and pit 3676 with nine. In 4969 the sequence of deposits comprised a potin coin, a pig skeleton and a smashed handmade pot of middle Iron Age type, ash and charred cereals, a very large piece of clay oven and a further complete but broken late Iron Age pot, topped by four deposits rich in mixed finds and environmental remains. This was the only very large piece of structural fired clay from the site; sizeable fragments were otherwise only found in the earlier pits with briquetage, but Poole (1995b, 263) notes the deliberate inclusion of parts of oven within her catalogue of structured deposits.

Pit 3676 had a basal layer of ash, and also had a potin coin, but in association with an inverted complete saucepan pot, an iron linch pin and a chalk weight. All of these finds were in a second layer of ash, and higher up a further layer of ash contained another smashed vessel and chalk weight. Poole (1995b, 262) noted a strong association between metal objects and carbonised layers, particularly at the base of pits. She suggested that some objects were the remains of composite wood and metal objects previously burnt, but that others were associations of carefully placed materials. In this case the association with ash rather than charcoal, and the presence of the other finds, makes it clear that this was a deliberately placed deposit.

While there were no animal skeletons, the lower deposits were associated with sheep/goat bones, the second with cattle bones, perhaps suggesting deliberate choice of bones to accompany the other deposits. The use of potin coins in structured deposits like these is particularly clear on the A2, and matches examples from other sites such as Keston and Cliffe (see Holman this vol.). The number of coins (five or six) deposited in this way on the Site B/C settlement, both singly and in association with other deposits, is also unusually large.

A pair of largely complete pots was also recovered from pit 226 at Eyhorne Street, from which a radiocarbon date of 400–260 cal BC was recovered (Hayden 2006b, 22–7). In that case, however, the pots appear to have been deposited together, like those in early Iron Age pit 9010, whereas in both the later pits at the A2 the impression is of successive deposits, in one case spanning the middle–late Iron Age transition.

In addition to these deep features, however, shallow pits were also selected for deposition, such as pit 5953 in Site C, which contained an iron gouge and a Neolithic polished granite axe, the latter probably valued for the exotic material of which it was made and its shape. In Brittany Neolithic axes are commonly found in Iron Age sites, and are believed to have been used as polissoirs, ie polishing or burnishing tools (the author is grateful to Yves Menez for this information).

Ditches, of which there were very few in the early Iron Age, also contain structured deposits in the middle and late Iron Age. These include both complete or smashed pots, such as the two found in the ditches surrounding pit 3676, and large deposits of animal bones. Animal skulls and skeletons have long been known in Iron Age ditches further up the Thames, for instance at Farmoor and Gravelly Guy, Oxfordshire (Lambrick and Robinson 1979, fig. 13; Lambrick with Robinson 2009, 285), and virtually complete vessels from ditch termini at several sites, including Little Wittenham (Allen *et al.* 2010, 161).

Regrettably not all of the middle and late Iron Age ditches were excavated, and combined with the effects of truncation this has left an incomplete pattern of deposition within them. The clearest associations are all with the sickle-shaped enclosure east of the metalled trackway, or with the small curving enclosure ditches next to it that surrounded pit 3676 and later shaft 3541 just inside its southern terminus. The pots within these ditches appear to be supplementing, and perhaps reinforcing, the deposits made within pit 3676, though whether the purpose was apotropaic, or placatory, is unclear.

Looking at the structured deposits overall, there appears to be a clustering of deposition at two particular periods within the Iron Age, one in the late 5th and earlier 4th century BC, the other at the time when potin coins were in use, at the transition from the middle to late Iron Age. The early Iron Age

pits that were radiocarbon dated all cluster in the late 5th or earlier 4th centuries BC, and this is not the dating profile that would be expected had pits been receiving structured deposits with consistent regularity throughout the early Iron Age. Indeed, given that pits with complex series of fills were targeted for radiocarbon dating, this only emphasises the relatively short periods in which complex deposits were occurring.

It could be argued that the early Iron Age dates simply reflect the late start of early Iron Age activity on the scheme, but there is also evidence for early Iron Age activity on the site before this. It may also be relevant that at White Horse Stone, where the whole of the early Iron Age was more clearly represented, such complex sequences of deposits in pits were rare, and the most complex was a pit of similar date to those at the A2 (Hayden 2006a). More importantly, this number of complex pits is not found at the A2 during the succeeding middle Iron Age until the period in which potin coins were in use.

Current orthodoxy suggests that potins were manufactured from the late 2nd to the late 1st centuries BC (Hobbs 1996), and remain in circulation for some time afterwards, but all of the pottery associations on the A2 are with middle Iron Age pottery, or with a mixture of middle and late Iron Age pottery including virtually complete middle Iron Age vessels. It therefore seems reasonable to conclude that the potin coins on the A2 were not residual or curated items, but were deposited during their main period of manufacture and use. Champion (2011) argues that the transition from middle to late Iron Age pottery should be dated around 100 BC, but the evidence is not particularly secure, and although Hobbs (ibid., 16–17) does not follow Allen's classification of potins into earlier and later types, Holman would prefer to see the A2 potins dating to the mid 1st century BC (Holman this vol.).

To some extent, exactly what date we give to the potins is less important than the fact that they represent a fairly brief period of structured deposition that stands out from what went before and after. Both periods in which complex deposition occurred were at times of transition, one from the early to the middle Iron Age, the second at the transition from the middle to the late Iron Age. Cunliffe has argued (1995, 80–8) that the structured deposits in pits were offerings, perhaps to cthonic deities, and he has also suggested (ibid., 87) that at Danebury what were relatively 'rare offerings of this kind were only made in extreme conditions when conditions of stress prevailed'. The increase in offerings, and in their complexity, over time at Danebury was argued to indicate an increase in stress over time. The pits from the A2 would seem to offer plausible evidence for two periods of particular stress at the site, both coinciding with periods of transition within the Iron Age.

For the later period, which can most probably be dated to the first half of the 1st century BC, a direct link to events in Gaul, if not in Kent itself, could be made with the advance of Rome to the channel, and even to Britain, during this time. The stresses are, however, just as likely to be the indirect social stresses caused by the bow-wave of Roman ideas and technology, and the threats to traditional beliefs and social interactions that these entailed. For the transition from early to middle Iron Age, the changes evident in material culture are less clearly reflected in other ways, although in Kent the main period of hillfort construction appears to belong to the middle, rather than the early Iron Age (Champion 2007b, 118–9), suggesting major changes in society at the transition.

Other aspects of middle–late Iron Age settlement

Large boundary ditches

Even allowing for truncation, the dimensions of the enclosure ditches of the middle and late Iron Age settlement are not particularly substantial, and (except perhaps for ditch 4615=HS1 ditch 332, western Site B), not defensible. Even this ditch was, however, narrow in relation to its depth, such that a bank made from the upcast would not have been particularly high, nor the ditch difficult to leap. Ditch 4615 appears to have been a straight boundary 130m long, and as such is more akin to the major ditched boundaries on Sites L and A than to any other features within the settlement. This group of boundaries do not form any defensible or continuous barrier, there is no evidence of any middle Iron Age activity protected by ditch 13161 in Site L, and each is significantly different to the others. They were thus clearly not designed as one, nor necessarily dug at the same time, and may have originated as separate boundaries whose purpose was as much symbolic as practical. Long boundaries of middle Iron Age date are now beginning to be recognised in the Upper and Middle Thames Valley, (Lambrick with Robinson 2009, 66–7), although none of these have such large gaps, and no others are as substantial as ditch 13161.

This system of interrupted boundaries is more reminiscent of the large dykes of late Iron Age date associated with some oppida (Lambrick with Robinson 2009, 268–70). The individual lengths of ditch may have been linked symbolically in the late Iron Age, when it appears that a settlement, and possibly a ritual focus, developed at Springhead at the source of the river Ebbsfleet. These ditches could then have been seen as marking one edge of the dry valley leading down to the spring head, and also leading to a trackway that was created in the late Iron Age along the east side of the Ebbsfleet. This trackway is described in the report as a 'processional way' (Andrews *et al.* 2011).

The arrangement at the south end of 4615=332 in the HS1 excavations, where the ditch ends just before a ditched droveway continuing south-west, is however on the same alignment as the system of ditches forming fields west of the boundaries in

Sites L and A. It therefore seems most likely that all three long ditches came to form part of one system, marking a significant landuse boundary between the chalk plateau and the Downs Road dry valley.

The placing of burials within and adjacent to such large boundaries is not uncommon in the middle Iron Age; similar examples are known at Roughground Farm, Lechlade, Glos., Horcott Pit and Latton Lands, Glos. (Allen *et al.* 1993, 45–6; Lambrick with Robinson 2009, 309–311). On Site L, these burials may have marked the start of a long-lived tradition of burial that continued throughout the Roman period (see Chapter 4 below), and this may have been a wider pattern locally, as two middle Iron Age inhumation burials, again without apparent adjacent occupation, were also found within the Roman cemetery at Pepperhill (Biddulph 2006, 9–11).

The layout and organisation of the Site B/C settlement

Understanding the overall organisation of this settlement is not helped by the partial nature of excavation, to which cropmarks and geophysical survey data unfortunately add very little. The problem is also exacerbated by the nature of much of the HS1 investigation, which was carried out as a Watching Brief; it is evident from the plan that in some areas ditches were either truncated before recording, or were not adequately exposed and recorded.

Although the plan clearly indicates that the metalled trackway ran through the middle of the site, and that the enclosures, four-post structures and pits lay to either side, there is not any indication of a planned layout, rather of organic development over time. Although some of the enclosure ditches are considerably deeper than others, there is no clearly-defined principal enclosure within either the A2 or the HS1 excavation areas, and the limited cropmark and geophysical evidence does not add clarification. Local parallels for this type of settlement are few; perhaps that partly revealed at Keston (Philp *et al.* 1991, fig. 5; Philp *et al.* 1999, figs 1 and 66–7) is closest in west Kent.

On the west side the earliest features were a pair of curvilinear enclosures, with the smaller 'banjo-shaped' enclosure added on the north (see Fig. 3.24). The western of these enclosures was bisected by the addition of ditch 4615, and the western part may well have been abandoned, the enclosure becoming D-shaped. The late Iron Age ditches were more rectilinear (see Fig. 3.38), and the plan of 4779/4626 in particular suggests that it was added to the south-east side of the banjo-shaped enclosure, which may have survived as boundary above ground. On the east the sequence is apparently different, with part of a rectilinear enclosure adjacent to a trackway evident on the south (see Fig. 3.32, ditch 7194), and two lengths of ditch that probably formed part of a large enclosure (5910 and 5827) east of that. There was an entrance between these two ditches, and a corresponding entrance through ditch 7192 may be indicated by a sudden change in the width of this ditch just west of intervention 5252. There may therefore have been a way into the Iron Age enclosures along much the same line as the later medieval holloway, and it was tentatively suggested that this entrance might have been secondary. Whatever the truth of this, in the late Iron Age the eastern settlement had a large curving enclosure made up of ditches 7992 and 7192, possibly accompanied by an outer annexe between 7192 and 5910/5827, if the latter ditches continued in use. This enclosure was subsequently both enlarged and divided by several NNE aligned ditches, and again on the east side by a NW-SE ditch 7197. The alignment of this ditch may support the idea that the putative entrance through 7192 was secondary

There are a number of differences between the character of the west and east halves of the settlement, although how much significance should be attributed to these, given that only part of the settlement was examined, is uncertain. Four-post structures were few on the west side, and were limited to a line close to the trackway, a suitable location for access from the fields and for transport elsewhere. East of the trackway there were more of these structures, though few closely dated, and they appear to have formed two clusters in lines running just west of south-north. It is possible that the western group were positioned for access from the entrance between ditches 7992 and 7192 on the south, and the eastern group was approached via the entrance between 5910/5827. The principal subdivision of the large curving enclosure was dug between these two groups of four-post structures, perhaps indicating the existence of two families within this part of the settlement, or the partition of the enclosure belonging to one family between two descendants at some point.

The distribution of structured deposits clearly varied. Although large pits containing complex deposits were present in both halves of the settlement, there was a greater concentration of smaller pits with structured deposits in the west, particularly in relation to potin coins, although these were not clearly grouped. In contrast, pit 3676 was surrounded by a small enclosure, of whose ditches 7989 also contained structured deposits, and this subsequently became the site of a shaft, which was not bottomed.

The contents of these pits cannot necessarily be used as indicators of adjacent activities. Discounting the finds from them, the quantity of most types of finds is too small to detect differences across the site, or specific activity areas. A predominance of pig bones was, however, noted in both of the curvilinear Iron Age enclosures on the west side of the site, and this matches a predominance of pig bones in HS1 ditch 271 to the south. These are not articulated bone groups, and whether this relates to status (pigs being regarded as an indicator of high status consumption), or simply to differences in animal husbandry, is

unclear. In the late Iron Age, there was also an articulated pig skeleton from pit 4969 on the west side of the site, but as there were also bones from several pigs in pit 3671 on the east side, there may not have been any difference by this stage. On the east side, very large numbers of animal bones were recovered from ditch 7992, involving bones of all of the main domestic species, but dominated by the mandibles of nine sheep/goats. The bones were not articulated groups, indeed few bones of most individuals were present, and the distribution of elements did not clearly indicate what activities had generated this material. It was suggested that this might have been secondary material previously deposited on middens, although larger numbers of the bones of two dogs, and a complete horse skull, were also present. A combination of carcass processing and domestic consumption may have been involved.

Human bones from the settlement were few, but the only cremation burial came from a large pit or quarry on the west side of the metalled trackway, while one complete inhumation and an articulated group of foot bones were both deposited in pits in the eastern half. The high status cremation burials were also located on the west side of the settlement, though with the long period between these and the previous cremation burial, this is unlikely to be significant.

Iron Age human burials and other bones found on the A2 scheme all fall within the range of categories seen across most of Southern Britain, namely: crouched inhumations in purpose-dug graves (1 in Site L), inhumations in pits (1 in Site C), whole or part inhumations in ditches (2 in Site L), articulated groups of bones in pits and ditches (1 in Site A and 1 in Site B) and individual bones in pits (2 in Site G). As discussed previously, the early–middle Iron Age cremation burial in pit or quarry 3400 is more unusual, but another burial of similar date was found at White Horse Stone (Hayden 2006a, 159). Both cremation burials were accompanied by grave goods, and this is important as evidence of a pre-existing native Iron Age tradition of accompanied cremation burials before the arrival of Aylesford-Swarling burials in the late Iron Age. Both the vessel that accompanied the cremation in 3400, and that containing the cremation at White Horse Stone, were refired and thoroughly burnt, and so had been placed on the pyre, rather than being intended as a container for the ashes.

The settlement at Pond D North

Also dating to the late Iron Age was the settlement partly uncovered at Pond D North (see Fig. 3.43). Only a single small pit here may possibly have dated to the middle Iron Age. The principal occupation appeared to represent part of a rectilinear enclosure, whose ditched boundaries shifted position several times, possibly due to the friable nature of the soil and its tendency to erode rapidly into the ditches. Finds from this were very few, and there were no associated internal features in the limited area exposed. On the south-west, however, was part of a second enclosure, apparently added to the first, whose ditches contained two virtually complete pots, one upright, the other inverted in the ditch fill. These were very reminiscent of the pots found in ditch 7989 around pit 3676 in Site B, but no similar pit was found in the limited area exposed within this enclosure.

Due to the acidic nature of the soil here, there was no animal bone, and there was very little other environmental evidence. It seems unlikely that the areas exposed were close to a domestic focus, or were involved in industrial activity of any kind. Possibly these were agricultural enclosures for stock and for the storage of produce. The focus of the settlement may have lain to the west, under the Cobham Service Station. Given that only a part of the settlement was investigated, occupation of Roman date may have continued further west or north.

The high status cremation burials

Burials 4298 and 4312 lay on the edge of the late Iron Age settlement, and may not necessarily have been within an enclosed area. There was a concentration of pits containing structured deposits in the surrounding area, particularly of those containing potin coins, but chronologically these are very likely to predate the burials. This concentration of deposits may well have denoted an area of particular significance within the settlement, however, influencing the choice of burial site.

The high status graves represent the fifth site in Kent where bucket burials have been found, and the first in north-west Kent (Fig. 3.92). The burials at Aylesford and Swarling were recovered a long time ago during the course of quarrying, so details of their wider context are uncertain, but they were clearly small cemeteries (see also Fitzpatrick 1997, 234 and fig. 136). The third group, at Alkham, also consisted of at least four burials; it was found during construction work in 1989, and the archaeological excavations that followed by the Kent Archaeological Rescue Unit appear to have been of limited extent (Philp 1991). These sites therefore represent cemeteries, unlike the two graves on Site B. The burial at Westhawk Farm was also found during construction on a building site, and was salvaged (Booth *et al.* 2008). No other burials were noticed, but due to the heavy truncation of this site by ploughing, and the circumstances, it is uncertain whether this burial was isolated, or part of a larger group.

As stated above, the relationship of these other bucket burials to contemporary settlement is uncertain, though none appears to have been particularly close, unlike those at the A2. Indeed Champion (2007b, 126) speaks of the organisation of formal cemeteries away from areas of occupation. In the case of Westhawk Farm, for example, the nearest known late Iron Age settlement is at Brisley Farm, some 700m distant. At Brisley Farm, however, there

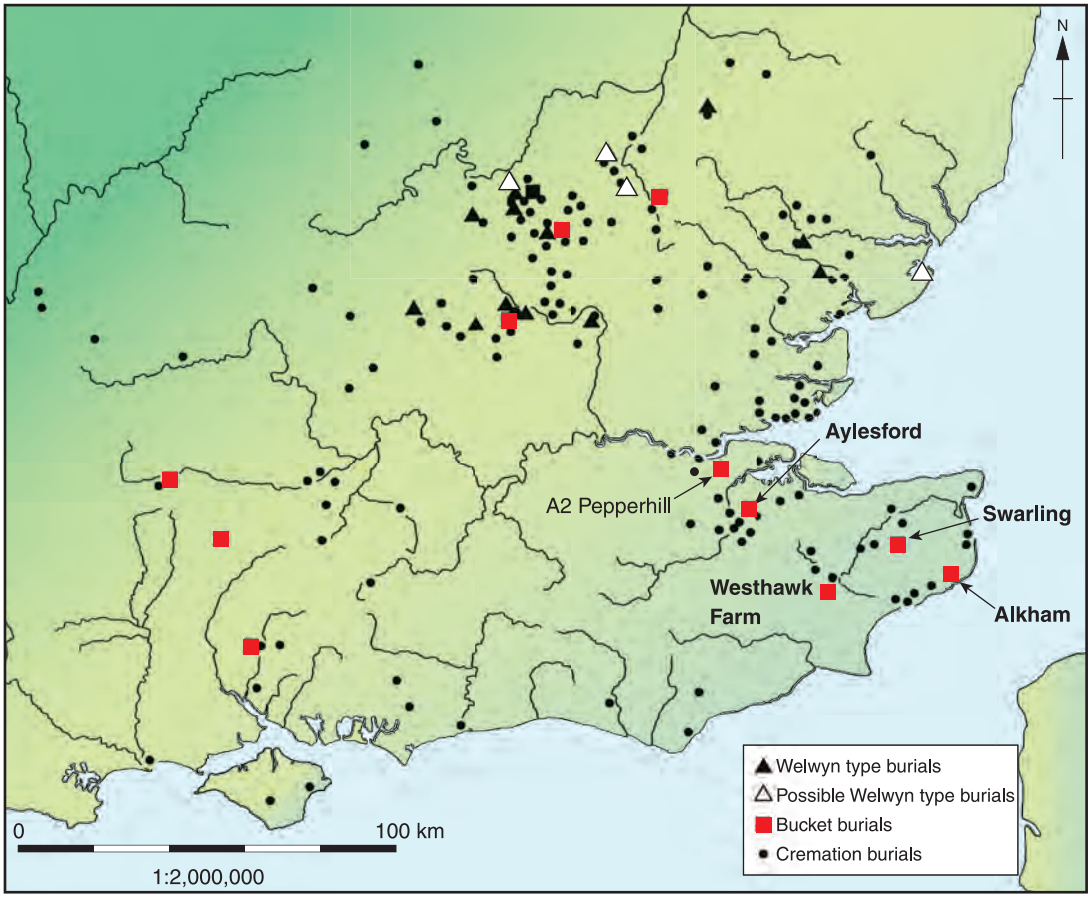


Fig. 3.92 Cremation cemeteries of the Aylesford-Swarling culture (after Cunliffe) showing location of bucket burials

were a variety of other burials, including warrior burials, more closely associated with settlement, and Hamilton notes other such associations (Hamilton 2007, 89)

The graves are circular rather than square or rectangular, like many of those of the late Iron Age, for instance at Aylesford and at Hinxton Rings, Cambridgeshire (Hill *et al.* 1999). The arrangement of the objects within the graves was not haphazard, the two jars in grave 4312 lying along the north-south central axis of the grave, with the bucket containing the cremated bones between them on the west, while in grave 4298 three pottery vessels were in a row on the west, with the brooches overlain by the cremated bones in the centre, and one further vessel on the east. Nevertheless, the pots in grave 4312 were not arranged according to the cardinal points of the compass, but SW-NE, possibly following the line of the adjacent former enclosure ditch. It is, however, difficult to make comparisons with the other high status graves in Kent as most were not recorded in detail, or have not been published. The cremated bones in grave 4312 were contained in the bucket, as they were at Swarling and in at least one of the bucket-burials at Alkham (Stead 1971; Stead pers. comm.). In the case of grave 4298 the cremated bones were heaped over the brooches; this was also commonly the case at Westhampnett, although at Hinxton Rings the metal finds were separate from the cremated bones (Hill *et al.* 1999). Practice clearly varied. In the absence of any accompanying fittings, it is difficult to determine what the wood next to the iron brooches represented. Possibly this was the remains of a board covering the cremation; the remains of boards were found overlying the bones in Cremation 1 at Hinxton Rings, and in a number of graves at King Harry Lane (Hill *et al.* 1999, 247; Stead and Rigby 1989, fig. 44).

In a review of the British and continental buckets, or fragments of the same, and drawing upon Stead's study of the British examples (Stead 1971), Vidal showed that, while some might date to the late La Tène period, the most closely-dated continental examples (those at Vieille-Toulouse, Montfo, Hérault and Goeblingen-Nospelt) were deposited in the last quarter of the 1st century BC (Vidal 1976). Among the more recent continental discoveries are the three buckets from the grave at Antran, Vienne, part of a very rich collection of finds dated AD 1–25 (Pautreau 1999). The Aylesford patera and jug are dated 50–15 BC, and probably after 25 BC (Stead 1976, 412). In Britain, iron bands probably belonging to bucket burial were found at Westhampnett (Fitzpatrick 1997, 193 Grave 20622), where his preferred dating for the cemetery falls in the first half of the 1st century BC. In

Kent, two further buckets, each in a separate grave, have been found at Alkham, and another bucket during excavations at Westhawk Farm (Booth *et al.* 2008). The former have not been published, but the associated finds, which are now in the British Museum, indicate that one bucket was accompanied by two tazze, and the other by ripple-decorated jars, perhaps indicating dates in the 1st century AD (*pace* Champion 2007b, 127). The Westhawk Farm example was accompanied by a patera and ewer of Nuber's Hagenow service (Cool in Booth *et al.* 2008, 31–3), and these suggest a date in the 1st century AD, probably not long before the Roman conquest.

The remains of the bucket in burial 4312 does not include anything that aids its dating. This can only be narrowed down by the Eggers Type 16 cup, since the quoit-shaped pedestal bases could date anywhere between 50 BC and AD 50. As Scott (this vol.) has shown, Eggers Type 16 cups are dated to the latter half of the 1st century BC, with continuing currency for another decade (Guillaumet 1991, 10). This continental dating may be too precise, but indicates that the burial probably dates to the later 1st century BC, or possibly to the early 1st century AD.

The brooches from grave 4298 include two boss-on-bow brooches made of brass. Stead dated this brooch type largely to the later 1st century BC (Stead 1976, 412). In the light of more recent finds, for instance at Westhampnett, the dating has been pushed back (Fitzpatrick 1997, 204). A boss-on-bow brooch was found at Stanway, Colchester, though not in association with other finds, and Crummy dated the type to 100–25/20 BC, although she noted a possibly later example at King Harry Lane (Crummy 2007, 314–5). Like the pair in grave 4298, however, the boss-on-bow at Stanway was made of brass, which Dungworth suggests was not widely used in the Roman Empire until the last quarter of the 1st century BC (Dungworth 1996). It would therefore seem likely that this type of brooch was still being made after 25 BC. Another of the brooches in grave 4298 was a simple bow brooch, a type dated stylistically to shortly before the Roman conquest. This was a leaded bronze brooch, which gives no metallurgical clue to closer dating.

The pottery vessels accompanying the cremation included a necked bowl and carinated cup of types not usually found before the last quarter of the 1st century BC, and one of the pedestal-based jars is of a type that was probably not produced after AD 20 (Brown and Couldrey this vol.). These dates make no allowance for curated items or heirlooms, and may in any case be a little too precise. None of the surviving sherds, however, suggested that any of the pottery vessels was an antique, and the dating of the brooches and the ceramic vessels is generally in good agreement, suggesting a date after 25 BC and possibly after AD 1, but not later than AD 25. As the simple bow brooch is such a straightforward type, it is possible that this example may be a little earlier than the given date range, rather than that the other items in this grave were curated, and that the grave dates to the second quarter of the 1st century AD.

Only a proportion of the bone normally generated by modern cremation was present in either burial. This was probably due to truncation, rather than the inclusion of only a token amount of bone during burial. The surviving bone fragments showed that both individuals were adults, and suggested that the bucket burial 4312 was that of a male, and the brooches burial 4298 was probably that of a female. The individual cremated at Westhawk Farm was also probable male (Booth *et al.* 2008, 306). Unfortunately, details of the sex of other individuals accompanied by buckets is insufficient to identify this as a distinctively 'male' burial assemblage. It was not possible to sex cremation 2 at Hinxton Rings, which contained a similar assemblage of finds to that in grave 4298 (Hill *et al.* 1999), but brooches accompany a large proportion of late Iron Age cremation burials in Britain, and no difference in the provision of brooches was noticed between male and female at King Harry Lane (Stead and Rigby 1989, 102). At Alkham, three and four brooches respectively accompanied the two bucket burials.

The finds from the A2 graves all fall within the general range of other late Iron Age high status burials in Britain, and among these were not particularly richly furnished. The Aylesford buckets were accompanied by a variety of other metal vessels, and the Alkham bucket burials by groups of brooches and by other metal toiletry items. While the number of brooches in grave 4298 is larger than in most others, four brooches are not unusual, and these brooches of brass and bronze, not of silver like those from Great Chesterford (Hill *et al.* 1999, 256) and Maldon Hall Farm, Essex, or of gold, like those from a hoard in Winchester (Crummy 2007, 315). Nevertheless, the metal cup of Eggers Type 16 is the first of its kind to be found in Britain, demonstrating the continental links of its owner. Its size is particularly small compared to the others in this class, but matches very closely the height of the bronze-sheathed wooden tub or cup found accompanying the bucket from Aylesford Grave Y (Stead 1971, 271 fig. 10), which Earwood thought might be a drinking vessel (Earwood 1993, 71–2). It was in the late Iron Age that tankards, wooden stave-built vessels with bronze fittings, first appear, and the earliest of these was from grave Z at Aylesford, though not found with a bucket (ibid., 72–5). Whether the Eggers metal cups developed from wooden prototypes, or whether these cups and tankards were intended to mimic the metal vessels using wood, is uncertain; the Aylesford vessel may represent a fusion of two different traditions, the wooden tub or cup being British, and derived from vessels such as those found at Glastonbury (Bulleid and Gray 1917), and the metallic sheathing deriving from cups like those of the Eggers series. Whatever the explanation, it does, however, indicate that the practice of including small cups, tubs or tankards was shared by at least two bucket burials in Britain.

Despite its very partial preservation, the bucket has one feature that sets it apart from most other British and continental examples. This is the absence of any tacks to attach the metal bands to the wooden bucket, the bands being soldered onto backing plates (Fig. 3.93). No mention is made of such plates, or of soldering, in any of the accounts of the other British examples, nor in those reviewed by Vidal, or the three from Antran. It is possible that others of the buckets were originally attached in this way, but that the solder failed, and that the backing plates were then replaced by tacks. Re-examination of the insides of bands from some of the other buckets might resolve this point. Otherwise, this appears to represent an experiment in fixing that was not followed elsewhere.

As is the case almost without exception for buckets associated with burials, the bucket at the A2 was made of yew, a toxic wood. Buckets of the 1st century BC in wells without burials are rare, but an important group has recently come to light at Tregueux in Brittany (Allen *et al.* 2012), and these are a mixture of oak, yew and other species. It therefore appears that yew was used for receptacles of this kind in other circumstances, but was preferentially selected for the manufacture of decorated examples used in burials.

Stead (1971, 276–8) argued that the buckets were the Iron Age equivalent of the wine-mixing bowls that accompany patera and ewer sets in the Roman world (see Chapter 4 grave 6260). Fitzpatrick, however, suggested that the patera and ewer sets were used for washing or ritual cleansing, and not as part of a wine service (Fitzpatrick 1997, 208). It is true that no examples of such wine-mixing bowls have been found in pre-Roman burials in Britain, but it is also clear that buckets are more often found, as on the A2, without these other Roman vessel types, and in Kent, are never accompanied by amphorae. For the present, therefore, use in relation to wine-consumption remains unproven. On the continent wells are used as graves (puits funéraires), and the association of well-graves and buckets, as at Vieille-Toulouse (Vidal 1976), does indicate a strong link between water and burial, and perhaps the role of water in preparation for burial. One possibility is that buckets were used more widely in dining, and may have held the water obtained for ritual cleansing, either of the corpse or of the mourners, perhaps obtained from springs of particular significance, such as that at Springhead.

Fig. 3.93 Artist's reconstruction of the bucket from grave 4312

Neither of the graves shows the level of interest in personal hygiene evident at Alkham or at Hinxton. One point of interest, however, is the mixture of copper-alloy brooches found in grave 4298, two of them of the same type linked by a chain, and two others of different sizes and types. Hill noted that cremation 2 at Hinxton Rings had three large brooches, two probably linked by a chain, and one smaller type, and that seven examples of the same also came from the King Harry Lane cemetery at St Albans (Hill *et al.* 1999, 254). These presumably indicate a particular means of arranging clothing, the paired brooches and chain probably on either side of the neck, and the two others used to fasten items of different bulk, perhaps a cloak and an item of headgear.

Overall settlement pattern

The excavations along the line of the A2 widening scheme, in conjunction with those of the HS1, have indicated that in the early Iron Age there was a cluster of activity, consisting of pits and probably four-post structures, spaced at intervals of 1–1.3km across this landscape. The principal foci were at Hazells Road diversion/Site K, Site C/A2 Activity Park and Site G/Tollgate. The last of these had smaller foci of pits at a distance of around 200m to the west and south, and the cluster of four-post structures. On the edge of the Tollgate dry valley, 800m west of this, and the same distance east of Site C, was a cluster of four-post structures, some probably early Iron Age. Some 300–400m west of the Site C cluster there were scattered features including a four-post structure, and 200m to the north an early Iron Age pit was found at Coldharbour Road (Mudd 1994, 365–6). There was a sprinkling of pits beyond this in Sites L and A, and the large pit found in Site K lay around 150m north of the Hazells Road site. Each focus was therefore surrounded by a dispersed spread of further features, and unenclosed four-post structures were apparently dotted around the landscape.

Environmental evidence indicates that by the early Iron Age the landscape was fairly open,

although trees and shrubs may have grown along some of the ditches, perhaps as hedges. The foci at Sites C and G may well have been intervisible, and certainly the four-post structures will have been visible from one or more of these, although that at Hazells Road lay within the Downs Road dry valley out of sight. The absence of ditched enclosures, and the presence of these (?storage) structures scattered around the landscape, would suggest a relatively ordered and peaceful environment.

Since radiocarbon dates have shown that activity at Sites L, C and G at least was taking place within the same 70 years or so, it would appear that this landscape was well-utilised. Whether the activity represented domestic occupation has already been discussed, but it remains possible that these were sites visited only periodically, though repeatedly, rather than being permanent farmsteads. Evidence of industrial activity has been recovered from Hazells Farm in the form of probable bowl furnaces, and at Site C in the form of large quantities of briquetage, a little iron-smelting debris and an unused crucible. The evidence from Site G is less certain, although substantial quantities of briquetage were also recovered here, as was a firepit for cereal processing and antler-working. It is therefore possible that occupation was seasonal or periodic, attached to the performance of particular industrial activities. Against this, Bull (2006, 14–15) argued that the scale of cereal-processing at Tollgate suggested more permanent occupation in the immediate area. The storage structures and pits scattered about the landscape could be interpreted as supporting the seasonal interpretation, each being the focus of an activity carried out in a round of visits. In the absence of proven evidence for other types of settlement this is, however, speculative. A large cropmark enclosure just 300m south of Site E includes what appears to be a circular enclosure 100m across, overlapped by a rectangular enclosure containing pits, but these are currently undated.

In the middle Iron Age many of these sites were abandoned, and occupation was concentrated in a band of enclosures between the Downs Road and Tollgate dry valleys. The settlement area was spread over 500m west to east, The southern limit is provided by the line of the HS1 excavations; only in the centre did a single enclosure, which appears to have had late Iron Age origins, continue south across the line of the HS1. To the north, the A2 Activity Park excavations demonstrate that the site did not continue further east, and also provided a norther limit to the eastern part of the settlement. The corner of a rectilinear enclosure was however found just over 100m north of the trackway, and was dated by three sherds of later prehistoric pottery to the middle Iron Age (Dawkes 2010, 17). This enclosure was also cut by a number of inhumation burials, which were undated but believed to be Roman. Although it is equally likely that the enclosure is of late Iron Age, or even early Roman date, it does suggest that a considerable portion of the later Iron Age settlement may lie (as yet undiscovered) in this direction.

Springhead, at the head of the Ebbsfleet, lay 2km to the north-west, but currently excavations have not revealed any early or middle Iron Age activity associated with the spring. A settlement, or possibly a ritual centre, appears to have come into existence at the start of the 1st century AD (Andrews *et al*. 2011). The appearance of high status graves at Site B, and the commencement of late Iron Age settlement at Springhead, are close in date, but the nature of the relationship between these events, if any, remains unclear. The nearest other certain middle and late Iron Age settlement is at Hillside, just under 3km to the east (Philp and Chenery 1998). There the scale of excavated middle and late Iron Age activity was relatively slight, but this was concentrated on the very western boundary of the excavation area, and it is possible that more substantial settlement lay in the unexcavated areas further west. There is also a cropmark site 400–500m south-west of this, and just 400m to the north-east of Site G, which comprises a complex of curvilinear enclosures, including a sub-rectangular enclosure that from its shape is very likely to be of middle or late Iron Age date. This would suggest another extensive focus of middle and late Iron Age activity in this area, perhaps indicating that the same process of nucleation was at work here.

The partial enclosure at Pond D North lay some 800m south-east of this, alongside what was later to become Watling Street. On present evidence the construction of the road may have signalled the end of this settlement, rather than a stimulus to greater activity. The settlement to the north-west at Hillside was much more extensive in the early Roman period than before (Philp and Chenery 1998), and it is possible that further nucleation of the late Iron Age settlements in this area, including the cropmark site north of Singlewell, took place at this time, leading to the abandonment of Pond D North.

Chapter 4: The Roman evidence

by Tim Allen and Kelly Powell

Roman activity was confined almost entirely west of Tollgate (Sites L, A, B, C and D; Fig. 4.1). At the start of the Roman period the focus of settlement moved from the late Iron Age site spanning Sites B and C to a new location overlooking the Tollgate dry valley in Site D. Here a large trapezoidal enclosure was constructed on the chalk plateau that shelved gently downwards west to east, and was divided internally by ditches into several parts. The south edge of this enclosure was uncovered and investigated during the construction of the HS1, and revealed a settlement that was predominantly of 1st and 2nd century date (Bull 2006a).

The line of the A2 widening scheme crossed the northern edge of this enclosure, and revealed a single large high status burial in the north-east (6260), and two further high status graves (6635, 6645), together with other burials, in a small square ditched enclosure just to the north-west. Other activity in this area was relatively limited, but included several large pits and three large postholes possibly belonging to one end of a timber building. Ancillary ditched plots were found to the east, together with a working hollow.

To the west, limited activity continued in the former settlement on Sites B and C, but on a much reduced scale. More early Roman activity appears to have taken place in that part of the settlement further south on the line of the HS1 (Askew 2006). Further west again, the major Iron Age land boundaries in Sites L and A continued in use, and were supplemented on the south-west side by a series of ditches running downslope, forming a system of fields or paddocks.

Very little Roman activity was found east of the Tollgate dry valley, although part of an intrusive Roman coin was recovered from an Iron Age pit on Site G. Activity at Pond D north may have continued into the very early Roman period, but this is uncertain (see Chapter 3).

THE ROMAN SETTLEMENT IN SITE D

The line of the road cut across the north end of the large rectilinear enclosure, part of whose plan was known from cropmarks and from a geophysical survey carried out before excavation began (Fig. 4.2). The geology here varied considerably. In the central part of the site ploughsoil came down directly onto chalk, but to the west this was overlain by up to 1m of bluish-green sandy clay (Plate 4.1). On the east edge of the site, the chalk was overlain on the edge of the dry valley by an orange brickearth, deposited on the side of the valley. The visibility of cropmarks and of archaeological features varied considerably between these geologies, as did the survival

Plate 4.1 Aerial photograph of Site D from the north, showing the varied geology, the Roman enclosure and other features

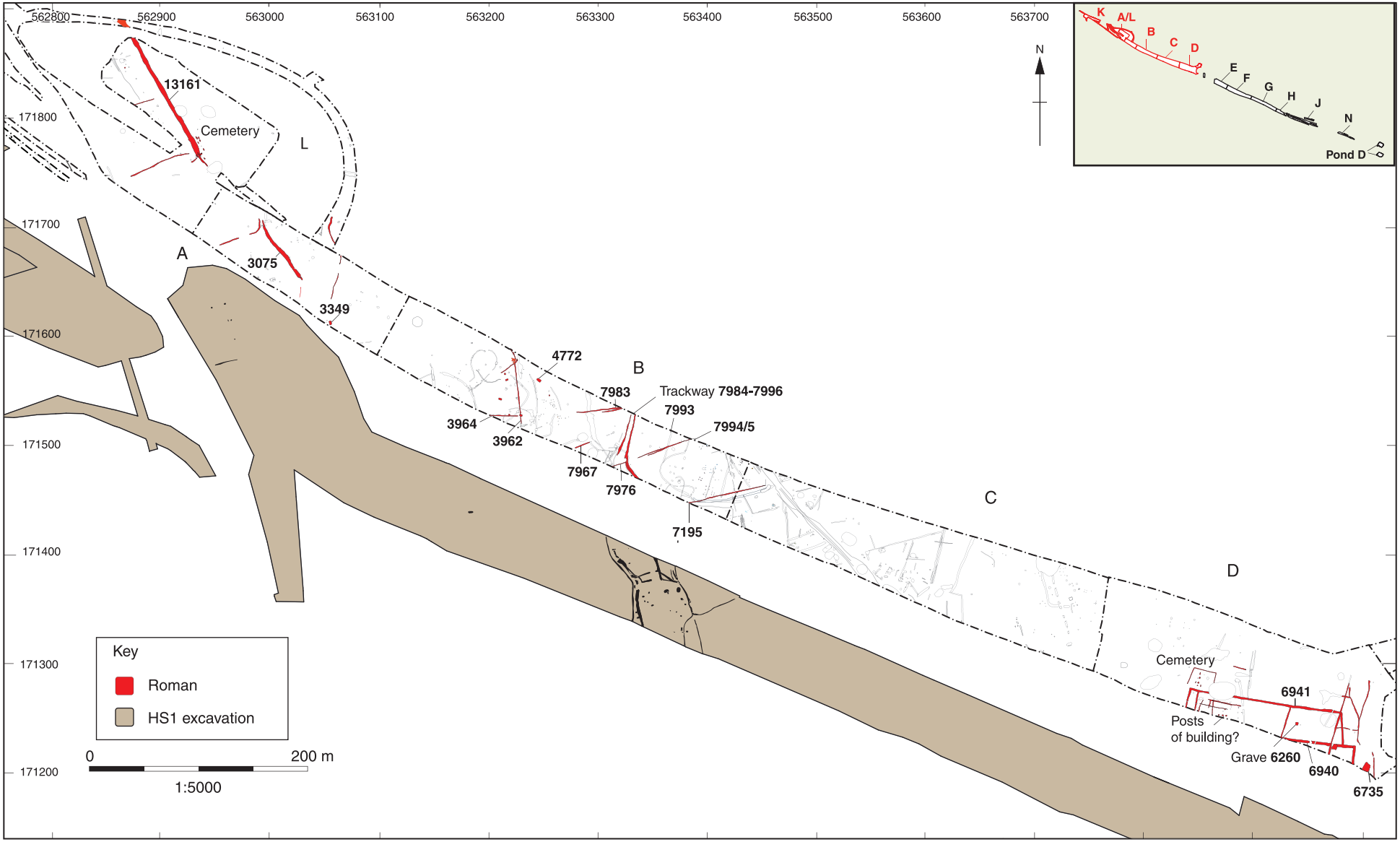


Fig. 4.1 Plan of Sites L–D showing Roman features only

of artefacts and ecofacts. The calcareous chalk provided a much more benign environment than the sandy clays either side.

Only the northernmost part of the enclosure lay within the scheme, and excavation suggested that the northern boundary of the enclosure may originally have been ditch 6940, so that only the extreme north-eastern corner of the primary enclosure was examined (Fig. 4.2). This contained pottery dated AD 50–70.

Some 13m north of this, a square pit 2.4m across was found, which proved to contain an early Roman high status burial (6260), also dated AD 50–70 (see below). The enclosure was subsequently extended northwards (ditch 6941), enclosing the burial, although the burial was the sole Roman

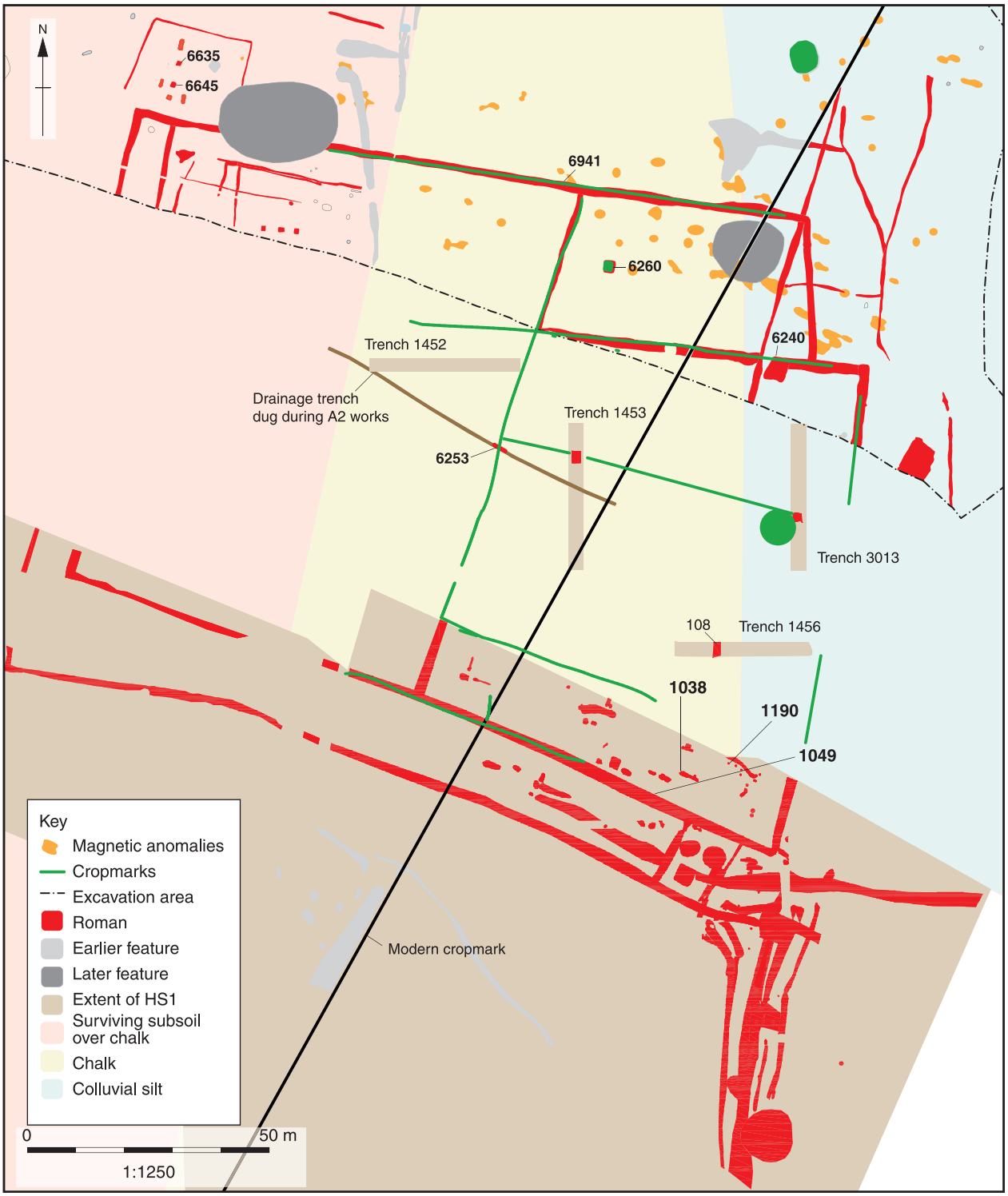


Fig. 4.2 Plan of Site D including the HS1 excavation, cropmarks, evaluation trenches and the underlying geology

feature within the noth-east part of the extended enclosure. A dump of pottery within this ditch is dated AD 60–80. Two further high status early Roman burials (6635 and 6645), in square pits just over 1m across, were found just outside the north-west corner of the extended enclosure, surrounded by other early cremations and later inhumation burials. The high status burials, and two of the other cremations, are also dated within the period AD 50–70, and may therefore predate the extension of the enclosure. For this reason, these and succeeding burials will be described in their entirety first, and the development of the enclosure and its other features follow afterwards.

BURIALS IN SITE D

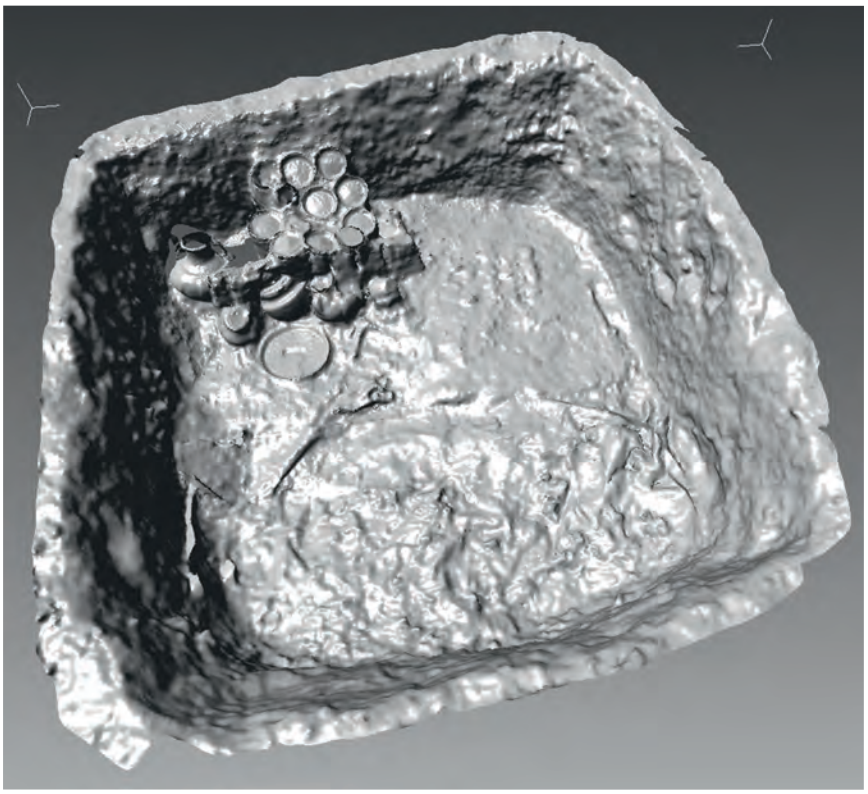
On Site D a single early Roman high status cremation burial accompanied by a wide range of exotic metalwork and pottery grave goods was found within the large Roman enclosure, and an attached burial enclosure contained a further six early Roman cremation deposits (two of these also being high status), plus two early Roman and one late Roman inhumation burials (Fig. 4.2). A methodology for the excavation of the high status burials is presented below and is followed by a complete account of all the burials in this site, complete with their associated finds and relevant osteological information.

Methodology employed for the excavation of the high status graves

The first half of pit 6260 (Fig. 4.3) was excavated by mattock and shovel, and revealed no finds until scattered beads, dice and two bronze handles of a gaming board were discovered on the very base of the grave. The second half of pit 6260, and all of pits 6635 and 6645, were excavated by hand in spits no greater than 0.1m deep. A metal-detector was used at each spit level during excavation to provide advance warning of metal finds, and to aid in their location. Upon the completion of each spit the feature was planned at a scale of 1:20 and photographed both digitally and using 35mm cameras for colour slides and black and white prints medium to record contextual information and the location of any artefacts. Although excavated in spits all contexts were dealt with separately and were sampled individually. Each context was bulk sampled for environmental remains and all remaining spoil was sieved on site for artefacts.

All artefacts or burial deposits were left as far as practicable *in situ* until the base of the grave was revealed, in order to obtain as complete an overall view of the disposition of grave goods as possible. Where appropriate soil was left adjacent to artefacts to ensure stability, without compromising stratigraphic information. In the case of grave 6260, a

Plate 4.2 View of grave 6260 with first half fully dug and second half part-excavated, showing the pots and the line of metal studs and strips partly exposed and protected with wax



Laser scan of Grave 6260

Photograph of Grave 6260

Fig. 4.3 Laser scan of grave 6260 and photograph of grave goods in situ

laser scan of the finds *in situ* was arranged with Birmingham University (Fig. 4.3), and so all of the dishes and cups were emptied of spoil just before this took place. Once emptied the opportunity was taken to dampen the interiors and take final record photographs (eg Fig. 4.3). The pots in other graves were not emptied of soil, as the conservator advised that this would increase the likelihood of the pots fracturing, particularly in the more clayey soils into which the other Roman graves were dug.

The position and orientation of all artefacts was three-dimensionally recorded. Surveying of objects was carried out by Total Station and by measured planning. A GPS was used to tie the pits into the wider landscape. Where it was necessary to remove objects in order to excavate the remainder of the pit these objects were planned, photographed and recorded in detail before removal.

Inhumation or cremated remains were exposed as far as was practicable on site, and were recorded by an on-site osteologist. Where cremated remains were included in blocks of soil lifted for excavation in the laboratory, the excavation was carried out by a trained osteologist from OA. Each context was bulk sampled for environmental remains and all remaining spoil was sieved on site for artefacts.

Conservator Dana Goodburn Brown was on call to advise on the excavation and conservation of materials as they were uncovered, and supervised the block-lifting of *in situ* fragile and complex remains. Metal objects found within the graves were left partly covered in soil, and exposed areas were coated with a protective wax to prevent deterioration (Plate 4.2; see digital report on Conservation Assessment). All complex or fragile objects were lifted in blocks of soil and taken back to the conservation laboratory for x-ray prior to excavation (see Figs 4.5, 4.23 and 4.34).

Once recorded, each object was tagged with its unique find number so that the results of further examination and analysis (such as the impressions of organic substances on corrosion products and the orientation of wood grain) could be related to the drawing, enabling a fuller picture of the original function of these objects to be obtained.

Preliminary spot dating of the pottery from the graves was carried out on site by Paul Booth, who also visited the conservation laboratory to oversee the unwrapping of the pottery vessels, their sampling for lipid residue analysis and washing prior to transport to Oxford for recording. In general the pottery vessels from grave 6260 are better preserved than those from the graves dug into the head deposits. Very few of the pottery vessels remained whole, and the thin-walled flagons and large beakers in particular have fragmented considerably since first being exposed. In some cases, particularly those of vessels made in

Plate 4.3 Grave 6635 under excavation by Jim O'Brien, Sarah Lane and Dana Goodburn-Brown from the north-east, showing the multiple layers of stacked ceramic and metal objects

local fabrics, the degree of fragmentation is such that reconstruction would be extremely time-consuming, if possible at all.

In grave 6635 grave goods were stacked several layers deep, ceramic vessels on the base of the grave being overlain by further pots, and then by metal vessels and other metal items (see Plate 4.3). This made it particularly difficult to lift the metal vessels, which had begun to fragment and were covered by organic material, in blocks of soil without damaging the pottery vessels underneath, but except in one case this was achieved without appreciable damage to the pots.

The high status burial pits and other burials were extensively sampled by spit, by skeletal body-part locations, by cremation deposit and by artefact (pot or bronze vessel) fill. The fills of the vessels were mostly processed as bulk samples, ie floated and sieved, but proved largely sterile. Additionally, a grid of soil samples was taken close to the base of each of the Roman grave pits to examine spatial variation in magnetic susceptibility and chemical composition of the soils, in an attempt to identify degraded organic remains. In the event this study was not carried out, due to the density of the finds within the graves, the survival of organic material in places, and the non-specific nature of the likely results even from a detailed study.

Sherds from a selection of the pottery vessels were removed without direct handling and were wrapped in foil for lipid residue analysis (See Heron and Spiteri below). Not all of the vessels were so sampled, and samples from some vessels came from the rim, others from the body or base.

Plate 4.4 Microscribe being used to record the roundels and strips from grave 6260

X-ray revealed that blocks from graves 6260 and 6645 contained complex arrangements of nails and other finds, which needed detailed recording in 3 dimensions (see Figs 4.5 and 4.34). A Microscribe, comprising a freely moving arm with a point attached to a computer, was used to record points in three dimensions to an accuracy of 2mm (Plate 4.4). Rather than simply recording points, however, drawing the point across surfaces enabled the representation of the orientation and plane of larger objects. This was not intended to be a detailed record of these objects, but to provide a more accurate representation of the objects for subsequent interpretation. The resulting plots can be viewed on-screen from any angle, aiding the interpretation of the relationship of these objects to each other (see also Fig. 4.18).

Grave 6260

The cremated remains and associated deposits were placed in a large grave pit (6190) cut into the chalk, which was approximately 2.4m square and aligned NNE-SSW (Fig. 4.4). The pit had near-vertical sides and a level almost flat base, and survived up to 0.7m deep. This pit was initially half sectioned, the northern half being excavated by hand with mattock and shovel. Close to the base of the pit in the north-west quadrant two well-preserved copper-alloy drop handles were found, attached to edging strips within which a small amount of degraded wood was preserved (see Fig. 4.20). Their condition was so fresh that these were originally believed to be post-medieval, and were removed without a detailed record being made, although it was noted that both handles lay to the north-west of the copper-alloy edging strips. It was only when scattered glass counters and fragmentary bone/antler dice were found south of this that the discovery was recognised as a Roman gaming board. A copper-alloy hinge in two pieces (sfs 647/648) and fragments of strip (sf 611) were recorded *in situ*, and confirm the position of the east edges of the folding board. All of the spoil from this half of the pit was subsequently sieved, retrieving further glass counters and copper-alloy strips (sf 631) and part of another hinge (sf 636), possibly from the gaming board. Nothing was recovered from the north-east quadrant of the pit.

Excavation of the second half of the pit was carried out stratigraphically, but in spits no more than 100mm thick. There were two fills in section, the lower fill being fine-grained, the upper containing chalk spills and lumps (Fig. 4.4). The upper fill extended almost to the edges of the pit, and deepened towards the middle. Excavation of the uppermost two 100mm spits was carried out using mattock and shovel. Excavation of the second spit came across one of three pottery vessels lying

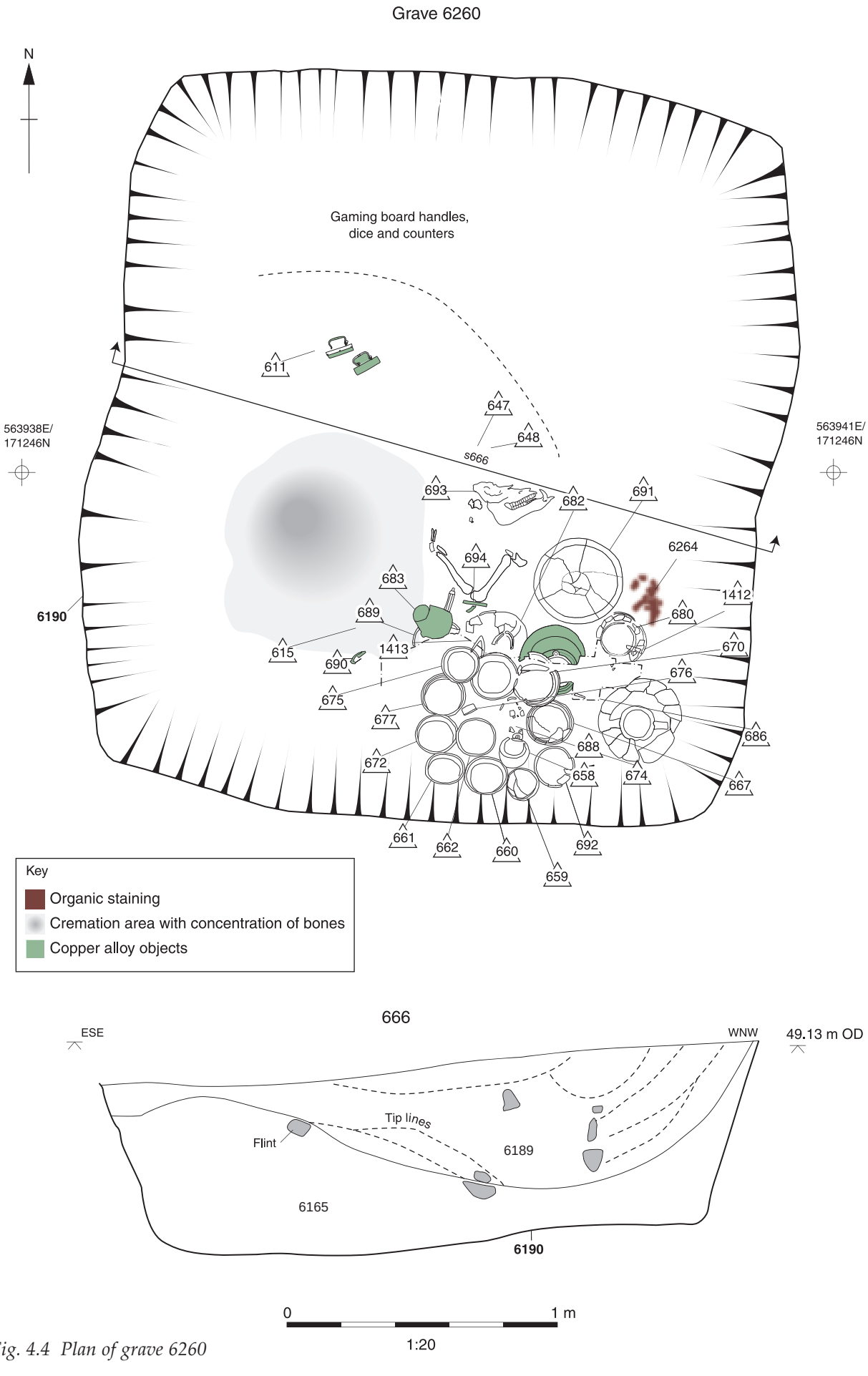


Fig. 4.4 Plan of grave 6260

against the edge of the pit on the south side. Once this had been located, further excavation was carried out using trowels or more delicate tools. It rapidly became clear that 13 pottery vessels lay close together in a rectangular area 0.3–0.4m above the base of the pit, and these were left *in situ* while further spits were removed around them. The only other finds at this level were scattered nails, which are not believed to form any meaningful pattern. A line of bronze tacks with large decorated round heads was, however, exposed just below the north edge of the rectangular area of pots, which subsequently proved to have been preserved *in situ*, perhaps decorating a piece of furniture (Fig. 4.5 and Plate 4.5).

The south-east quadrant of the pit contained the majority of the grave goods. A large two-handled flagon (sf 674) sat upright on the base of the pit in the south-east corner, east of the raised group of pots (Figs 4.3–5). To the north, and partly underlying the raised pots and the lines of decorative tacks, was another flagon (sf 682) between a bronze three-footed wine-mixing bowl (sf 681) and a bronze ewer (sf 683) inverted over a patera (sf 689). An upright pottery butt-beaker (sf 680) lay east of the wine-mixing bowl and north of flagon (sf 674), and a large pottery platter lay on the base of the pit north of the butt-beaker and the wine-mixing bowl. East of this close to the pit edge was a patch of darker soil (6264), possibly decayed organic material (Plate 4.6). West of the large platter and north of the flagon, patera and ewer were the skull and forelimb of a pig, with a large copper-alloy hinge (sf 694) between this and the flagon.

The south-west quadrant of the pit floor was covered by the cremation deposit, with a copper-alloy brooch (sf 690) at the south-east corner, west of

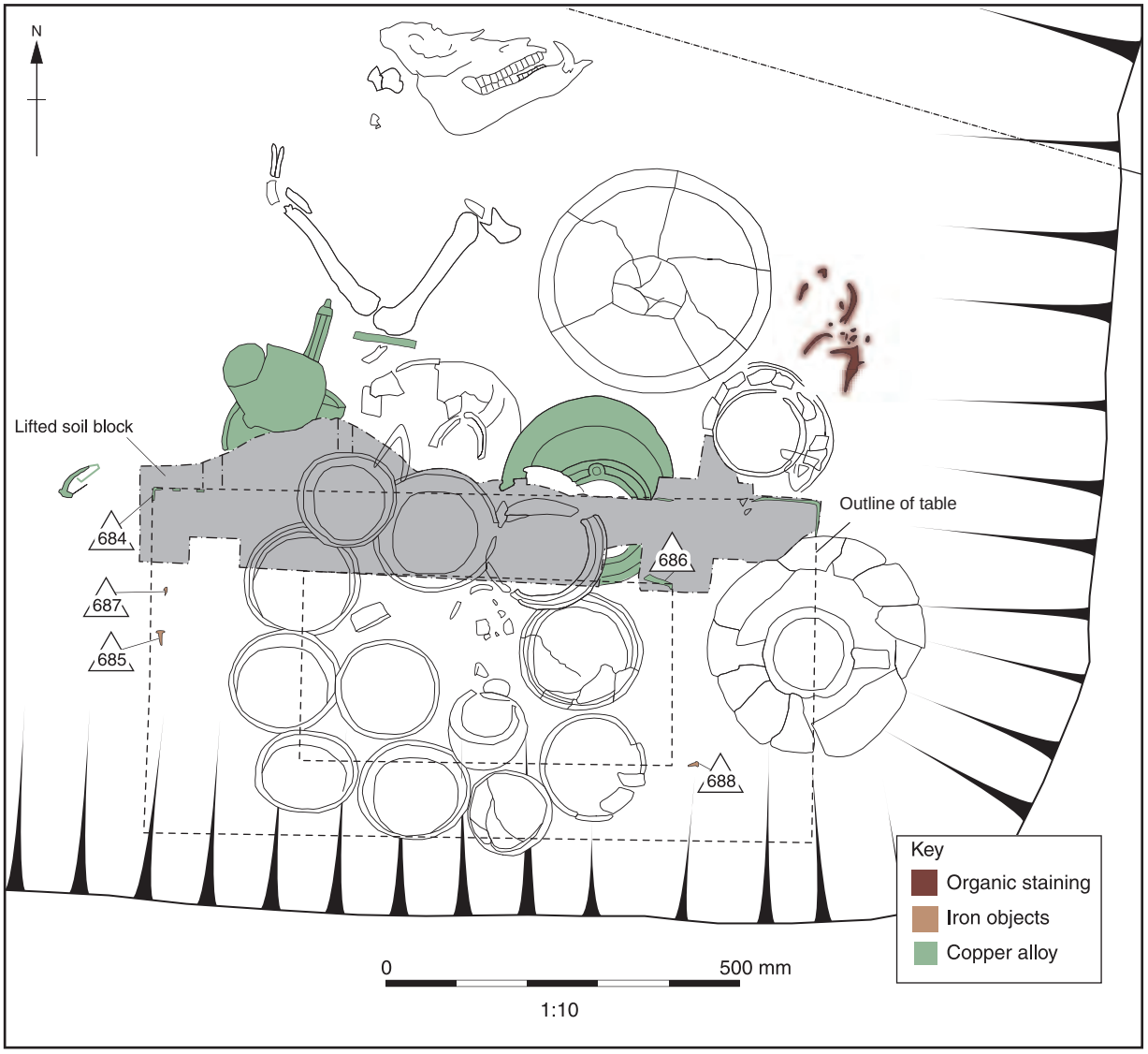


Fig. 4.5 Plan of the south-east corner of grave 6260, showing the area lifted en bloc, the position of the copper alloy edging strips, studs, and of iron nails

Plate 4.5 Detail of metal and ceramic vessels from the north, showing roundels and metal strips visible in situ above these and below the layer of pots

Plate 4.6 View of grave goods in 6260 from above, including the dark patch on the grave floor east of the large platter

the patera and the raised group of pots. The volume of cremated bone (360g) indicated that only a small proportion of the bone had been collected for burial. Analysis of the cremated bone suggested that only one individual was present, and that this was an adult, but it was not possible to determine the sex of this individual (see below).

Once as much as possible had been exposed without undermining the raised group of pots, the soil was emptied from all of the shallow vessels, final photographs taken, and an *in situ* laser scan of the grave group was carried out (see methodology above and Fig. 4.3).

The grave assemblage comprises three bronze vessels and 18 ceramic vessels, a brooch, the remains of one folding gaming board and a large hinge possibly belonging to another, plus the decorative fittings of a piece of furniture. This constitutes a very rich burial assemblage of the early post-conquest period in Britain. One of the grouped vessels at a high level in the grave was broken, possibly during the backfilling, and the larger vessels had all collapsed on themselves in the grave, but there was no indication of deliberate breakage, or evidence that the vessels were not complete when placed in the grave. Although detailed recording was not carried out, it is also likely that the gaming board went into the grave in one piece, although it may already have been damaged, as the hinge was found in two pieces. This may, however, have occurred during excavation before the significance of the object was realised.

The south-west quadrant of the grave was occupied only by the cremated bone and by the brooch, in other words by the individual and a personal item of adornment. The south-east quadrant was occupied by objects relating to eating and drinking, and to associated activities such as ritual washing, while the north-west quadrant contained items associated with entertainment. Grass or straw impressions were found in the corrosion beneath both the patera, its handle and the feet and bottom of the wine-mixing bowl, showing that parts of the base of the grave were covered before the objects were placed in the grave (see Figs 4.10 and 4.13). These impressions extended a little way up the side of the patera, indicating that there was some depth of grass or straw. Mineralised wood impressions were also found on top of the patera handle (se Fig. 4.13), presumably derived from the wooden object to which the adjacent hinge (sf 694) belonged. This supports the view that there was a second folding board, possibly laid flat over the patera handle and the pig foreleg, in this part of the grave. Textile impressions were seen on the handle and rim of the wine-mixing bowl, showing that this was covered with a cloth (see Fig. 4.10). The north-east quadrant was apparently empty, a feature shared with graves 6635 and 6645 (see below).

Catalogue of pottery from Grave 6260 by Valery Rigby

The burial includes an unusually large group of functionally specialised pots, predominantly imported table wares (Fig. 4.6). There are ten imports and eight local products only one of which, a cordoned carinated bowl, represents the continuation of a local late Iron Age form. They were complete, standing and upright when deposited, which may indicate that some had contents as part of the offerings. Lipid residue analysis was carried out on a selection of the vessels, and identified pitch, perhaps used to aid the sealing of the vessels, but no other substances (see Heron and Spiteri this vol.). The smaller flagon from this grave, sf 682, had a dipinto (painted lettering) on the outside, but although likely to indicate the contents it has not been possible to decipher this (see Tomlin below).

Due to the soil conditions it is not possible to decide whether all had been acquired new for the burial or if some represent possessions of the deceased or mourners. The softer fired TR platters have been particularly severely affected so that little or no surface finish survives. However, the condition of the stamps on the TN suggests that they were new or at least little used. Since the butt beaker *Cam* 113 is inherently fragile and shows no repairs, it cannot have seen much use. Despite being stamped with two different dies, the five local *Cam* 16 platters are so similar they were almost certainly commissioned for the ceremony from one workshop, Workshop 1 (see report on potter's stamps, this vol.).

Gallo-Belgic imports

691	FORM	Large platter *Cam* 2, functional foot-ring
	FABRIC	Terra Nigra (GAB TN 1). White sandy matrix, with occasional dark grey inclusions; abraded blue-grey surfaces; traces of metallic grey polished finish. Upper surface – three evenly spaced incised circles; guide circle incised on underside of base.
	DATE	10BC–AD60
	CONDITION	Restorable to complete
	CONDITION AT BURIAL	Complete
667	FORM	Small platter *Cam* 8/7, functional foot-ring.
	FABRIC	Terra Rubra 2 (GAB TR 2). Fine dense red matrix; no finish survives.
	CONDITION	Almost complete base circuit standing; incomplete rim circuit

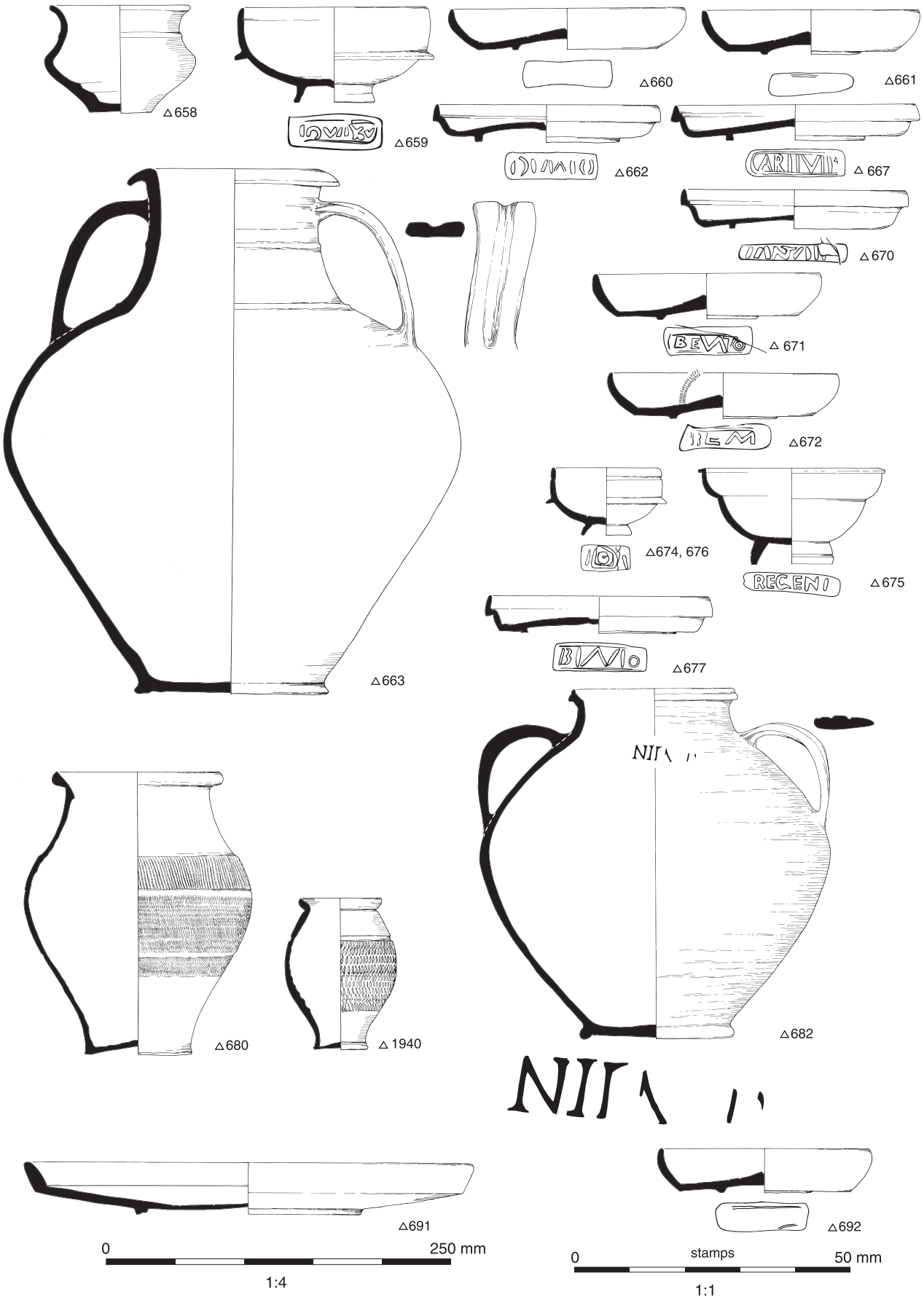


Fig. 4.6 Pottery from grave 6260

	CONDITION AT BURIAL	Complete
	POTTER	Carevir [G-B database P70 Die 01A01]
	STAMP	CARIIVIR bordered [G-B database V1079]
	SOURCE	Marne-Vesle potteries, Rheims the likely kiln site
	DATE	AD 25–50
662	FORM	Small platter *Cam* 8/7, functional foot-ring.
	FABRIC	Terra Rubra 1C (GAB TR 1C). Fine dense red matrix; traces of a darker red slip; no finish survives.
	CONDITION	Complete base circuit standing
	CONDITION AT BURIAL	Complete
	POTTER	Dimio [G-B database P117 Die 01A01]
	STAMP	I)I/\ / \I( ) reads DIMIO [G-B database V1077]
	SOURCE	Marne-Vesle potteries
	DATE	AD 25–50
677	FORM	Small platter *Cam* 8, functional foot-ring.
	FABRIC	Terra Nigra (GAB TN 1). White matrix; abraded patchy blue-grey surfaces; no finish survives; one double incised circle around stamp.
	CONDITION	Complete
	CONDITION AT BURIAL	Complete
	POTTER	Binio/Benio III [G-B database P50 Die 01A01]
	STAMP	BI/\/Io [G-B database V1075]
	SOURCE	An import, possibly Sept-Saulx in the Marne-Vesle potteries or Trier
	DATE	AD 45–70
670	FORM	Small platter *Cam* 8, functional foot-ring.
	FABRIC	Terra Nigra (GAB TN 1). White powdery matrix with sparse fine dark grey inclusions; patchy blue-grey surfaces; abraded with traces of polished finish; two incised circles around stamp.
	CONDITION	Less than half standing base circuit; incomplete rim circuit
	CONDITION AT BURIAL	Complete
	POTTER	Iantasio [G-B database P362 Die 01A01]
	STAMP	I/\ /\/T /\[....] reads IANT A [SIO] [G-B database V1074]
	SOURCE	Trier, Kapellenstrasse kilns
	DATE	AD 50–70
659	FORM	Hemispherical flanged cup *Cam* 58L
	FABRIC	Blanched Terra Nigra (GAB TN 1). Blue-white matrix with sparse fine dark grey inclusions; pale blue-grey surfaces, streaked.
	CONDITION	Half circuit standing after recent fragmentation
	CONDITION AT BURIAL	Complete
	POTTER	Ux [G-B database P42 Die 01A01]
	STAMP	IOVAY.V reads VXAVOI = UX AVO(T)I(S) [G-B database V1078]
	SOURCE	Marne-Vesle potteries, possibly Courmelois
	DATE	AD 50–85
674	FORM	Cup *Cam* 58 small.
	FABRIC	Terra Nigra (GAB TN 1). White fine matrix with sparse fine dark grey inclusions; patchy blue-grey surfaces; abraded with traces of polished finish; one incised circle around stamp.
	CONDITION	Standing base circuit; incomplete rim circuit.
	CONDITION AT BURIAL	Complete
	POTTER	II0II [G-B database ZP P363 Die 01A01]
	STAMP	A pattern mark read as I[o]I [G-B database V1076]
	SOURCE	import, possibly Trier.
	DATE	AD 50–80
1940	FORM	Barrel beaker *Cam* 112, a miniature version
	FABRIC	Terra Rubra 3 (GAB TR 3). Pink fine smooth matrix with argillaceous inclusions; oxidised to red ware; smoked patchy black and grey finish from inside rim to lower body. Interior and exterior base area protected from smoke by stacking. Decoration – rouletted. Finish and firing typical of small versions.
	CONDITION	Standing
	CONDITION AT BURIAL	Complete
	SOURCE	Marne-Vesle potteries
	DATE	AD 40–60

North Gaulish import

680	FORM	Butt Beaker *Cam* 113, KHL Variant 2E4
	FABRIC	White fine sandy ware (NOG WH3 North Gaulish Gallo-Belgic Sandy White Ware 3). Typical fabric and finish for the type. Cream fine sandy textured matrix with sparse red grog inclusions; self-coloured surfaces; burnished zones at rim, neck and base. Decoration – rouletted.
	CONDITION	Restorable base circuit.
	CONDITION AT BURIAL	Complete
	SOURCE	Possibly near Amiens
	DATE	AD 30–60

Local products—copies of imports

671	FORM	Small platter copying *Cam* 16
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red-brown; dark brown: burnished finish.
	CONDITION	Two thirds of circuit standing
	CONDITION AT BURIAL	Complete
	POTTER	Bent(i)o / Benio II [G-B database P5 Die 03C01]
	STAMP	BE\/\TO [G-B database V1080]
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 50–85
692	FORM	Pair to 671. Small platter copying *Cam* 16.
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red-brown; dark brown: burnished finish.
	CONDITION	Complete base circuit and half rim standing
	CONDITION AT BURIAL	Complete
	POTTER	Bent(i)o / Benio II [G-B database P5 Die 03C01]
	STAMP	BE\/\TO [G-B database V1080]
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 50–85
672	FORM	Small platter copying *Cam* 16.
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red-brown; dark brown: burnished finish.
	CONDITION	Complete and standing, spalled sherd at rim.
	CONDITION AT BURIAL	Complete
	POTTER	Benio I [G-B database V1081 P4 Die 02C01]
	STAMP	BE/\/IO [G-B database V1081]
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 50–85
660	FORM	Small platter copying *Cam* 16
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red-brown; dark brown: burnished finish.
	CONDITION	Half circuit standing.
	CONDITION AT BURIAL	Complete
	STAMP	BE/\/IO [G-B database V1082]
	POTTER	Benio I [G-B database P4 Die 02C01]
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 50–85
661	FORM	Small platter copying *Cam* 16
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red-brown; dark brown: burnished finish.
	CONDITION	Base circuit standing and rims
	CONDITION AT BURIAL	Complete
	STAMP	BE/\/IO [G-B database V1083]
	POTTER	Benio I [G-B database P4 Die 02C01]
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 50–85
663	FORM	Two-handled flagon with pie-dish rim
	FABRIC	Oxidised sandy mixed-tempered sandwich. Grey core with much fine white, red and grey inclusions; orange-red surfaces; abraded but traces of burnished finish on the body

	CONDITION	Rim and base circuits restorable to complete
	CONDITION AT BURIAL	Complete
	SOURCE	north Kent Marshes
	DATE	AD 45–75
682	FORM	Handled jar/'honeypot' with grooved rim
	FABRIC	Oxidised sandy mixed-tempered sandwich. Pale blue/grey core; light yellow shading to orange surfaces where white, red and black inclusions are noticeable; facetted burnished finish.
	CONDITION	Rim and base circuits restorable to complete
	CONDITION AT BURIAL	Complete
	SOURCE	[probably] north Kent Marshes
	DATE	AD 45–85

Local products—late Iron Age form

658	FORM	Cordoned carinated bowl
	FABRIC	Sandy mixed-tempered sandwich. Grey core; red/dark-brown surfaces; faceted burnishing outside with matt band below carination.
	CONDITION	Standing, lacking two opposing rim sherds, old fracture edges.
	CONDITION AT BURIAL	Probably incomplete, lacking one rim sherd.
	SOURCE	Workshop 1, north Kent Marshes
	DATE	AD 45–65
675		Dr 27g, South Gaul. Near complete (for details see samian report by J M Mills in pottery report below)

Catalogue of small finds from grave 6260 *by Ian R Scott*

This grave contained a bronze wine mixing bowl or cauldron (Eggers form 33; Cat. no. 1), a patera (Cat. no. 2), and a ewer or jug (Cat. no. 3). The vessels are all apparently of Italian origin. There is also a highly decorated and well-preserved Rearhook or 'Dolphin' brooch (Cat. no. 4).

In addition to the vessels and brooch, there is a wooden structure, perhaps a table or similar object, decorated with copper-alloy strips and two sizes of embossed studs with rolled sheet pins (Cat. no. 5). There is also a gaming board (Cat. no. 6) with copper-alloy drop handles found with a set of glass counters (Cat. no. 7) and two bone, or antler, dice (Cat. no. 8). Probably associated with this board were a narrow elongated hinge cast in copper-alloy, complete but in two pieces (sf 647, 648), and fragments of copper-alloy strip (sf 611 and 631). There was probably another wooden object, possibly another folding board, represented by a complete and slightly larger hinge (sf 694). Half of a third hinge (sf 615) came from within the backfill, as probably did fragments of a fourth (sf 636).

The wine mixing bowl (Cat. no. 1; Figs 4.7–10) of Eggers form 33 is probably contemporary with Nuber's Hagenow service. The very small number of examples from Northern Europe seems to be from early contexts. Although vessels of this precise form are apparently absent from Pompeii, there is at least one vessel with some of the features of the grave 6260 vessel (Tassinari 1993, vol 2, 336, inv. no. 1963) and it is clear from other vessels at Pompeii that the decorative features—the interlace borders with eye motifs, vine leaf handle mounts and distinctive cast handles with duck heads—continued to be a feature of vessels in use until late in the 1st century AD.

The presence of these decorative features at Pompeii may simply indicate that individual vessels were kept and used over a long period. Indeed it is very likely that vessels such as these would have been prized possessions and would have been kept with care and therefore very likely would have been buried long after they were made.

The patera (Cat. no. 2; Figs 4.11–13) is of a type associated with Nuber's Millingen service, which dates from the reign of Claudius and after (Nuber 1972, 53–4). The form is common at Pompeii (Tassinari 1993, vol 1, 59, listing 22 examples).

The ewer (Cat. no. 3; Figs 4.14–15), can be assigned to Nuber's Hagenow service and on the evidence of a very similar vessel from Stanfordbury A, it could date to the very end of pre-Roman Iron Age or the immediate aftermath of the Claudian inavsion. Nuber (1972, 38) states that the Hagenow service was the earliest type of Italian service to appear in the western provinces and Free Germany following the Augustan conquest. It continued in use until the reign of Claudius. However, another example of a similar jug was found in a cremation burial of Flavian date from Winchester (Toynbee in Biddle 1967, 240–2, fig 8, pl xliv). This particular form of jug is not common at Pompeii; Tassinari (1993, vol. 1, 42) lists three examples, only one of which is directly comparable to the grave 6260 example (ibid, vol 2, inv. no. 18763).

The final piece of metalwork that can be dated is the Rearhook brooch (Cat. no. 4; Fig. 4.16), which is a type securely dated to the mid 1st century. This may be the key piece of dating evidence, placing the

burial in the mid 1st century. On the balance of evidence from the metalwork, the likelihood is that the burial was made and the grave goods interred at about the time of the Claudian conquest or shortly after.

Catalogue

1 **Wine mixing bowl/cauldron** (Eggers 1951, form 33). Fig. 4.7. (sf 681, context 6231.) It has a more or less hemispherical lower body supported on three knob feet (now detached). The knob feet are attached by means of plates or escutcheons of slightly irregular or asymmetrical outline, which were soldered to the body of the vessel (Figs 4.8 & 4.9). There are patches of solder that show where the feet were attached. The bottom of the vessel has traces of a central point and faint concentric circular marks, which may indicate that the vessel had been finished on a lathe, or may have been the remains of 'marking out' lines which guided the process of hammering to shape. There is a sharp almost right angle break to an almost horizontal shoulder and then a further break to a short neck which is turn leads to a decorated square rim. The decoration on the rim comprises two interleaved bands forming eye motifs (Fig. 4.10). The eyes appear to be either inlaid or formed from a slightly different metal from that of the rim. Above the interlace is a border of inverted arcading. Below is a crudely executed cable pattern.

The handle and attached plates were cast. The lower portion of the attachment plates are in the form of vine leaves, with the details of the leaves picked out with fine engraved lines. Above the leaf on each plate is a double line with a slight moulding surmounted by a simple arcade of engraved semicircles. Above this is a cast horizontal border decorated with two interleaved bands with eye motifs, which echoes the border on the rim of the vessel. Above and below running eye pattern are raised borders decorated with double punched lines. At the top of each attachment plate is a cast circular ring to hold the handle. As with the feet the handle plates were soldered to the vessel. There is no evidence for riveting. The cast handle has hooked ends which are decorated with what appear to be ducks' heads. Each duck's head hook springs from a calyx moulding part way up the arc of the handle bow. One hook is clearly

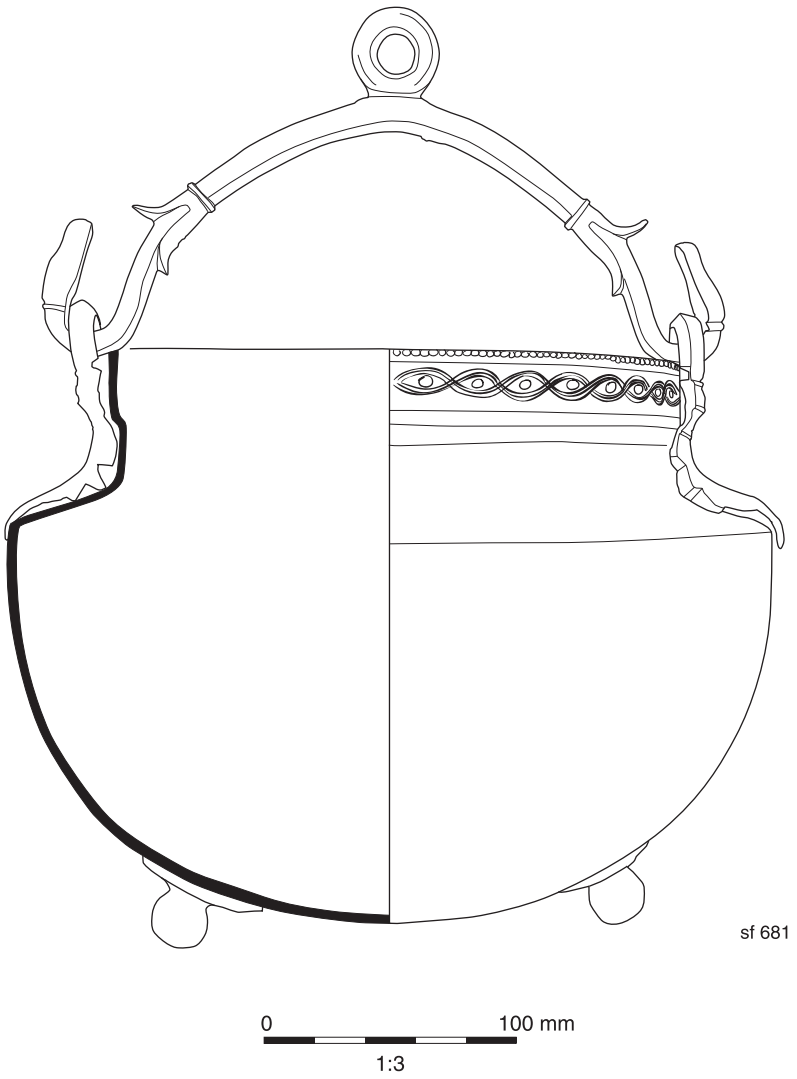


Fig. 4.7 Drawing of wine-mixing bowl sf 681

larger than the other making the handle is slightly asymmetrical. Near to but not actually at the centre of the arc is a cast circular ring for hanging the vessel. Forged low tin bronze vessel with leaded bronze cast handle, attachments and feet (lead/tin solder). Vessel: Overall D: 267mm; Rim D: 198mm; H of body: *c* 200mm. Handle: L: 239mm. Handle mounts: (i) H: 85mm; W: 82mm; (ii) H: 84mm; W: 81mm.

This vessel is Eggers Type 33 and can be paralleled by vessels from Nienbüttel, Kreis Ulzen, near Hamburg (Schwantes 1914; Eggers 1951, 120, no. 1069, Taf 5, 33) and from Holubice/Holubitz, near Prague (ibid, 142, no. 1776; Berger 1884, fig 1; Pič 1907, 408, Taf liii, 13; Sakař 1970 29, pl. ii, 2; Karasová 1998, 16–7, 70, Abb. 4).

The vessel from Nienbüttel has round knob feet like the A2 vessel but with symmetrical escutcheons. The Nienbüttel vessel has a similarly decorated square rim with double interlace, but the interlace is edged above and below by a cable pattern border. The circular inserts or eyes in the interlace appear to be either inlaid or of a different metal from the rest of the vessel, just as is the case with the grave 6260 vessel. There are also some fine concentric engraved lines around the shoulder and neck. The Nienbüttel vessel was found without handle, but one handle mount was in place. The design of the mount had a border of opposed horse heads.[1]

The Eggers 33 vessel from Holubice has a rim decorated with triple interlaced, with circular inserts in the interstices. It lacks feet and handle mounts (Sakař 1970 29; Karasová 1998, Abb. 4). A related vessel form with hemispherical lower body is Eggers form 32, with a single example from Sønder Jernløse, Seeland, Denmark (Eggers 1951, 87 no 216, Taf 5, 32). This vessel differs slightly in detail from the Eggers 33 and has feet in the form of lion's paws.

The Holubice vessel was found in a cremation grave, with fragments of other vessels, and two 1st-century fibulae (Almgren types II 26 and III 45) (Eggers 1951, 142; Pič 1907, pl liii). Kunow (1983, 19), and Berke (1990, 17) date Eggers form 33 'vor 79 n. Chr.', that is before AD 79. Karasová (1998, 62) dates the form no later than the first half of the 1st century AD.

The form of Eggers type 32 and type 33 vessels is distinctive and are not closely paralleled by any vessel from Pompeii. The Pompeian vessel closest in form to Eggers type 33 is form X2110 (Tassinari 1993, vol. 2, 336, inv. no. 1963) which has some features in common—a round lower body, a horizontal shoulder and square rim—but which is quite distinct in form, and quite different from Eggers form 33. Furthermore its handle mounts are quite different and its handle is plain, but it does have interlace decoration on its rim.

The decorative features of the Grave 6260 vessel—the vine leaf handle mounts, the interlaced border around the rim of the vessel, and the detailing of the handle—can all be paralleled on vessels of form X1100 (= Eggers 31) from Pompeii (Tassinari 1993, vol. 1, tavoli xx-xxi, inv. nos 1115 and 18677). The vine leaf handle mounts on the Pompeian vessels are more stylised in outline and less naturalistic than those of the A2 vessel. The handles of these vessels have duck head hooks, but no calyx mouldings. A stylised vine leaf handle mount with a double interlace border very similar to the Pompeian mounts has been found in Kent, in Canterbury (Chadwick Hawkes 1975). It is clear from its profile that the Canterbury mount is from an Eggers form 31 vessel similar to those from Pompeii.

Other examples of Eggers type 31 have been found at Mehrum, on the right bank of the Rhine (Willers 1907, 26 Taf v; Fürtwangler 1913, 391-400 Taff 42-3; von Uslar 1938, 95, 213 Taf 37; Gechter and Kunow 1983; Menzel 1986, 193-94 Taff 160-65) and Ehestorf, near Hanover, in the Lower Elbe region (Schwantes 1914; Wegewitz 1937, 131-33 Taf 30, 7499; Wegewitz 1962, 26-8, Taf 59).

The Eggers form 31 vessel from the Mehrum burial was found with, amongst other finds, two stamped South Gaulish samian dishes of form Drag 18: one stamped OF.CANTI (Cantus: AD 30–60) and the other OFI.BASSI.CO (Bassus and Coelius: AD 40–80). The burial is interpreted by Gechter and Kunow as that of a German in the service of the Roman Army and dated to AD 60–70 (ibid. 452). One of the Eggers type 24 vessels has triple interlace decoration on its handle mounts (ibid. Abb. 3, Kat.Nr 1), and on its rim (ibid. Abb. 14). Its handle mounts are each in the form of a quite naturalistic vine leaf with a well modelled female face (ibid. Abb. 4). The Eggers type 31 vessel also has triple interlace decorating its rim (ibid. Abb. 11 & 13, Kat. Nr.3). Its handle mounts are formed by more stylised vine leaves (ibid. Abb.11), very like the single handle mount from Canterbury. However, the handle though broadly similar to the grave 6260 handle, has the hooks decorated with horse heads rather than duck heads (ibid. Abb. 12, Kat. Nr.3). One of the type 24 vessels has similar horse heads (ibid. Abb. 5, Kat. Nr 1), but the second vessel has duck heads (ibid. Abb. 8, Kat. Nr 2).

The Ehestorf vessel was found in a cremation in the Lombardic cemetery of Ehestorf-Vahrendorf with finds that included a fragment of a silver Rollenkappenfibel (Almgren type II 24), two copper-alloy brooches: an Augenfibel (Almgren type III 45) and an Almgren type I 10 all dating to the early 1st century AD (Wegewitz 1937, 132–3 Abb. 61, 2-6; Taf 30, 7501-7503; Wegewitz 1962, 28, Taf 59; Eggers 1951, 117, no. 971). The Ehestorf vessel had vine leaf handle mounts comparable to the Mehrum vessel and the Canterbury mount. The mount had a border of triple interlace. The decoration of the rim is also a triple interlace (Wegewitz 1937, 131, Taf. 30, 7499). The vessel has no extant handle.

The evidence of the Mehrum and Pompeii vessels suggests that Eggers type 31 vessels were in use at a slightly later in date than Eggers type 33, and that the latter form dates no later than the mid 1st century AD.

2 **Patera** or **handled dish** (Figs 4.11 and 4.12). (sf 689, context 6262.) Wide shallow bronze dish with a low base ring and strongly curved sides. The bottom of the dish, both outside and in, shows clear evidence for turning or finishing on a lathe. Externally there is a central spot with concentric raised bands and grooves. Internally there are concentric grooves. The dish appears to have a simple thickened rim, although the poor state of preservation—the rim is laminating—means that it is impossible to identify its form precisely. There is a pair of engraved lines just below the rim on the outside of the vessel. The leaded bronze handle is cast hollow in one piece with the ram's head terminal and the escutcheon. The handle

[1] The Nienbüttel vessel is housed in the Museum für Kunst und Gewerbe, Hamburg (inventory-no. 1921.364). I am indebted to Dr Frank Hildebrandt of the Museum's Antikensammlung, for providing photographs of this vessel and a copy of the 1914 publication by Schwantes.

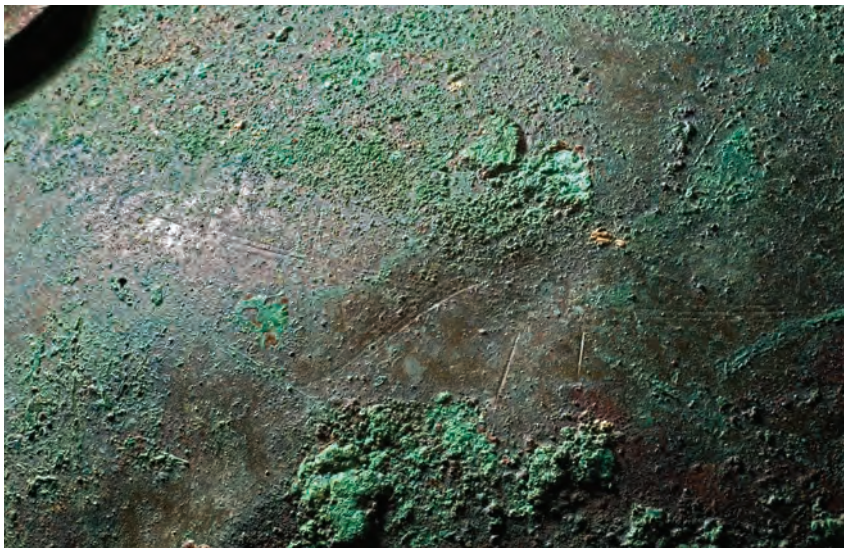


Fig. 4.8 Photographs of wine-mixing bowl and details of construction

Fig. 4.9 Photographs of the handle, decorative leaves and feet of the wine-mixing bowl

is decorated with fluting on either side, but is not fluted on the top and bottom. The ram's head is well formed with neat curled horns and well defined face (Fig. 4.13). The wool is represented by punched circles. The escutcheon is incomplete but was clearly shaped and is decorated with engraved lines. Bowl of worked bronze, handle of cast leaded bronze. Bowl D: 210mm x 220mm; H: 67mm; Handle L: 142mm; Overall vessel L: 318mm.

This patera is comparable to a number of vessels from Pompeii classified by Tassinari as type H2311 (Tassinari 1993, vol. 1, 132-37). This form of patera with its low cast foot ring forms an element of Nuber's Millingen service (Nuber 1972, 45). The escutcheon with its incised decoration is comparable to escutcheons on paterae of type H2311 from Pompeii, and on patera 3 from Welshpool (Boon 1961, fig. 4, 3; pl viii). Nuber dates the start of the Millingen service to the reign of Claudius and argues that

Fig. 4.10 Photographs showing detail of 'eye' motif and decorated handle of wine-mixing bowl, plus textile impression and grass impressions on feet

for its continued use through the 2nd century (Nuber 1972, 53–4).

Clay found within patera handle sf 689 in grave 6260 *by Chris Doherty*

The patera handle was hollow, and the internal void was filled with soil. Although compact, the soil was not obviously fired, and it was unclear whether this was the original clay core from the manufacture of the handle, or was soil that had accumulated within the grave after burial.

The fill of the hollow patera handle was examined to determine whether the clay core might assist in determining where the patera was made. To verify the identities of specific minerals and corrosion products, coarse particles were separated from the bulk sample and

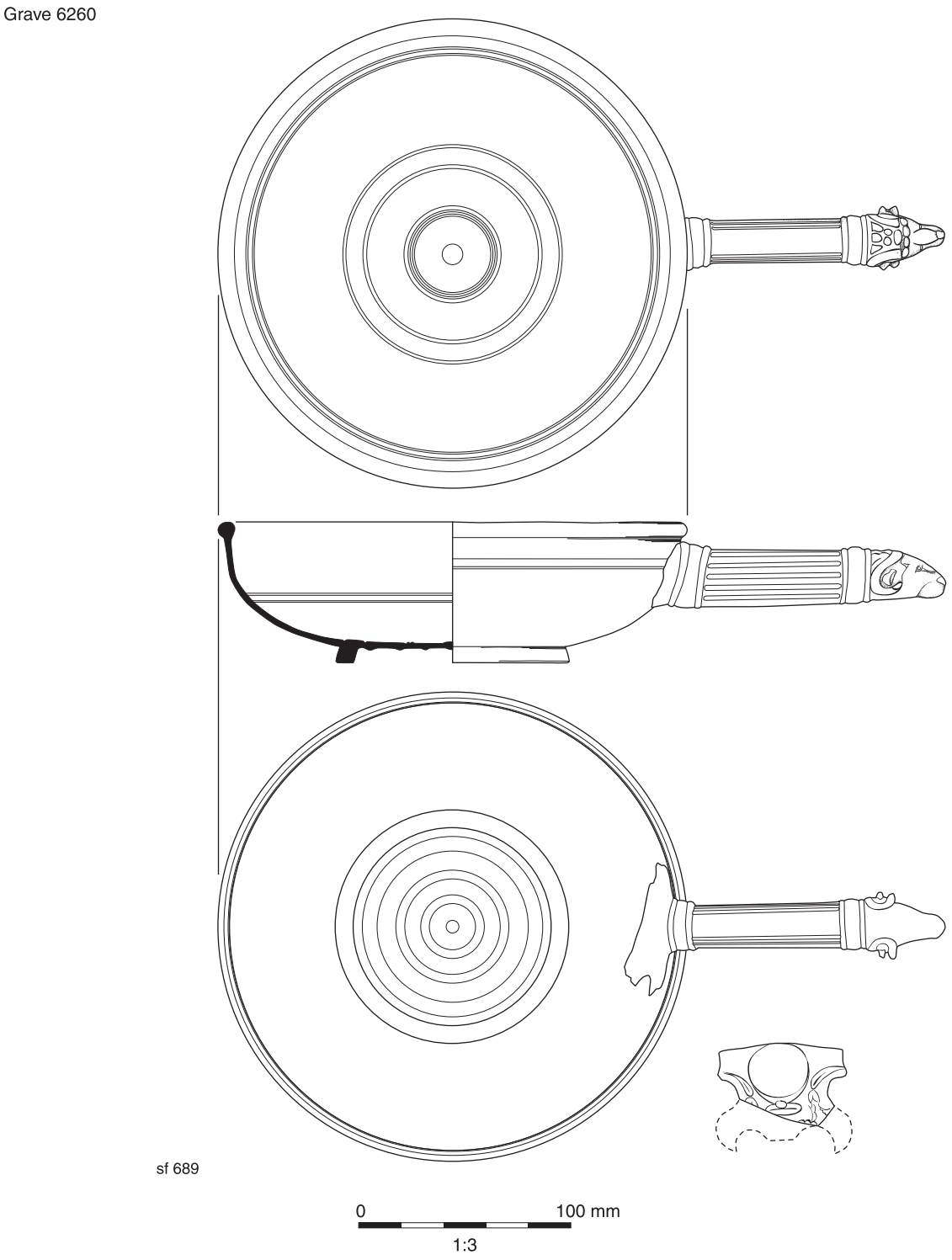


Fig. 4.11 Drawing of patera sf 689

analysed using a Cameca SU30 scanning electron microscope (SEM) with an energy dispersive analyser. The analysis shows that this sediment is a later infill of the patera handle, and was not present during casting. This is a non-calcareous clay with fine sand-sized (less than 0.75mm diameter) inclusions of quartz, potassium feldspar, sodium feldspar and muscovite mica. Together, these suggest a granitic source, and a very rare fragments of weathered granite were also observed. Compositionally this matches the Tertiary sediments around Gravesend, which have a similar granitic signature, being formed by the erosion of the Dartmoor granite.

3 **Trilobate ewer** or **jug** with cast handle (Figs 4.14 and 4.15). (sf 683, context 6232.) The brass base of the jug, now detached, was separately made and soldered on. The bronze jug has a concave neck of oval section, a marked rounded shoulder and gently curved sides

Fig. 4.12 Photographs of patera sf 689

Fig. 4.13 Detail of decoration on ram's head at end of patera handle, plus grass/straw impressions on underside and wood impressions on top, grass impression inside patera and seed at x50 magnification

tapering to the base. The body of the jug is quite plain and somewhat eroded and encrusted with corrosion products. The rim of the trilobate mouth is plain. The lower part of the body has suffered some crushing damage, which means that although it is almost complete it has become somewhat distorted.

The handle has the head of a woman at the top, with her arms outstretched as if grasping the rim of the jug. The hands have not been modelled in detail. There are engraved lines which show the V opening and folds at the front of the garment The features of the face are not very well defined. The brow is clearly shown but the eyes are just hinted at, the nose is almost flat and the mouth is ill defined. The styling of the hair is quite well-defined with tight rolls of hair to either side of the face and the hair on the top and back of the head parted in the centre. The hair is indicated by fine engraved lines. There is a moulding which appears to represent a roll of hair at the back of the neck. Below this roll there are engraved lines on the top curve of the handle representing folds or perhaps a hood. The lower part of the handle ends in a face mask escutcheon. The long face is quite well defined with slanting eyebrows, clearly delineated eyes and large broad nose and small mouth with thick lips. There are single rolls or bunches of hair hanging down either side of the face. The top of the head has thick slightly wavy hair parted in the centre. The moulding above the hair may represent a diadem. The identity of the face is uncertain. Forged bronze vessel with brass base, leaded bronze handle and lead/tin solder.

Overall H: 167mm; D vessel: 124mm x 130mm; D. of base: 69mm; L of handle: 134mm; W of handle: 71mm.

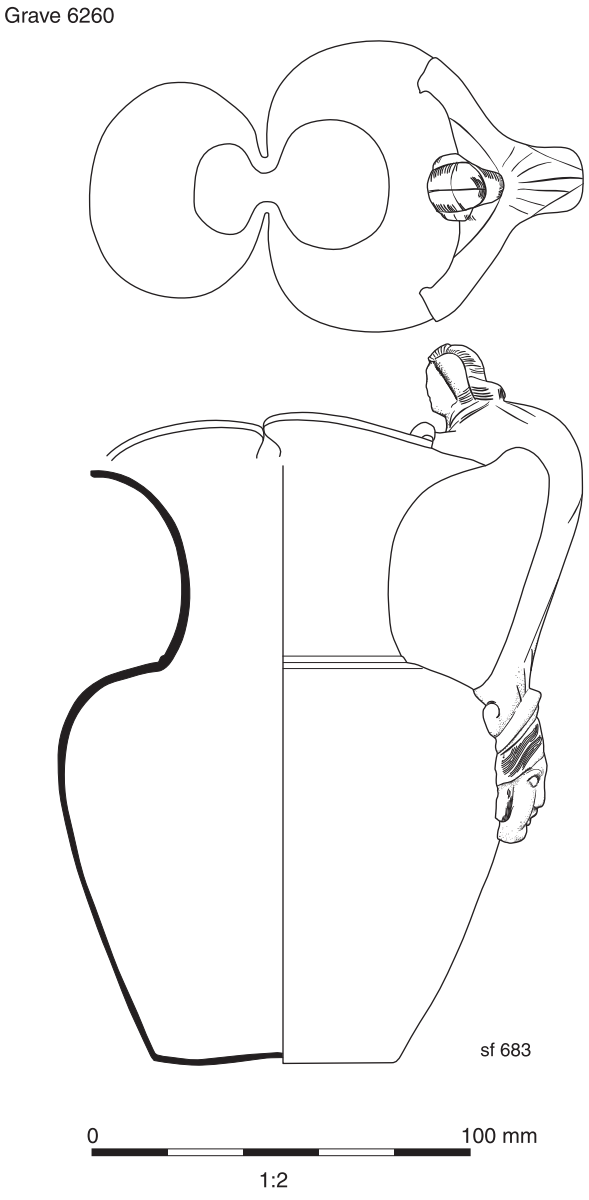


Fig. 4.14 Drawing of ewer sf 683

This vessel is closely comparable to jugs from the late pre-Roman Iron Age burial Stanfordbury A (Toynbee 1962, 175, pl. 130), and from a Flavian burial at Winchester (Toynbee in Biddle 1967, 240–2, fig 8, pl xliv), and very like a jug from Prag-Bubeneč (Novotny 1955, obr. 6-7; Nuber 1972, Taf. 3, 2). The form belongs to Nuber's Hagenow service (ibid. 38–44). In the case of the jugs from Winchester and Prag-Bubeneč the female represented by the bust on the top of the handle wears a diadem, which Toynbee suggested indicated that the figure represented a goddess (in Biddle 1967, 241). The female heads on the jugs from the grave 6260 and from Stanfordbury A do not wear diadems.

The lower escutcheon on Winchester jug handle has female mask with a diadem. The hair over the forehead appears to be in rolls, with three ringlets or locks either side of the face. The Bubeneč jug has a female mask with a diadem, with hair and triple ringlets. It differs in detail from face mask on the Winchester escutcheon. The Stanfordbury A jug has an escutcheon with two comic masks (Toynbee 1962, 175) placed one above the other (Dryden 1845, 15–6 pl ii, nos 1 & 2).

The Hagenow service appears in the western Roman provinces and Free Germany following the Augustan conquest, and seems to go out of use in the reign of Claudius (Nuber 1972, 38). The dating of the Stanfordbury and Prag-Bubeneč jugs falls within this time frame. Stead has dated Stanfordbury A burial to his group of late Welwyn type burials, dated *c* 10 BC to AD 50, and suggested that they might be the latest burials of this group (Stead 1967, 44, 47, table iii). The grave 6260 jug probably dates to the latter part of Huber's suggested period. The provenance of the Winchester jug is a little later, but it could easily have been made earlier in the century. There is a similar jug from Pompeii (Tassinari 1993, vol.1, tavola cv, no. 18763; vol 2, 65, inv. no. 18763), although the lower escutcheon on this example is in the form of a bearded male face mask, possibly representing Dionysus (ibid., vol 1, 218 tavola cv, 3-4) or Pan (Cool 2008a, 32); a similar handle with a escutcheon mask perhaps representing Silenus was recovered from a burial at Westhawk Farm, near Ashford (loc. cit.). A jug from Pompeii (Tassinari 1993, vol. 2, 65, inv. no. 11482), with a variant handle form has a lower escutcheon with female face mask (ibid. vol. 1, tavola cxix) more like that on the grave 6260 jug. The very limited number of jugs of this form from Pompeii supports the suggestion that they were not in wide circulation after the reign of Claudius.

4 Rearhook brooch, highly decorated (Fig. 4.16). (sf 690, context 6165) The bow is decorated with mouldings at its head and along its back; along its sides

Fig. 4.15 Photographs of ewer sf 683

sf 683

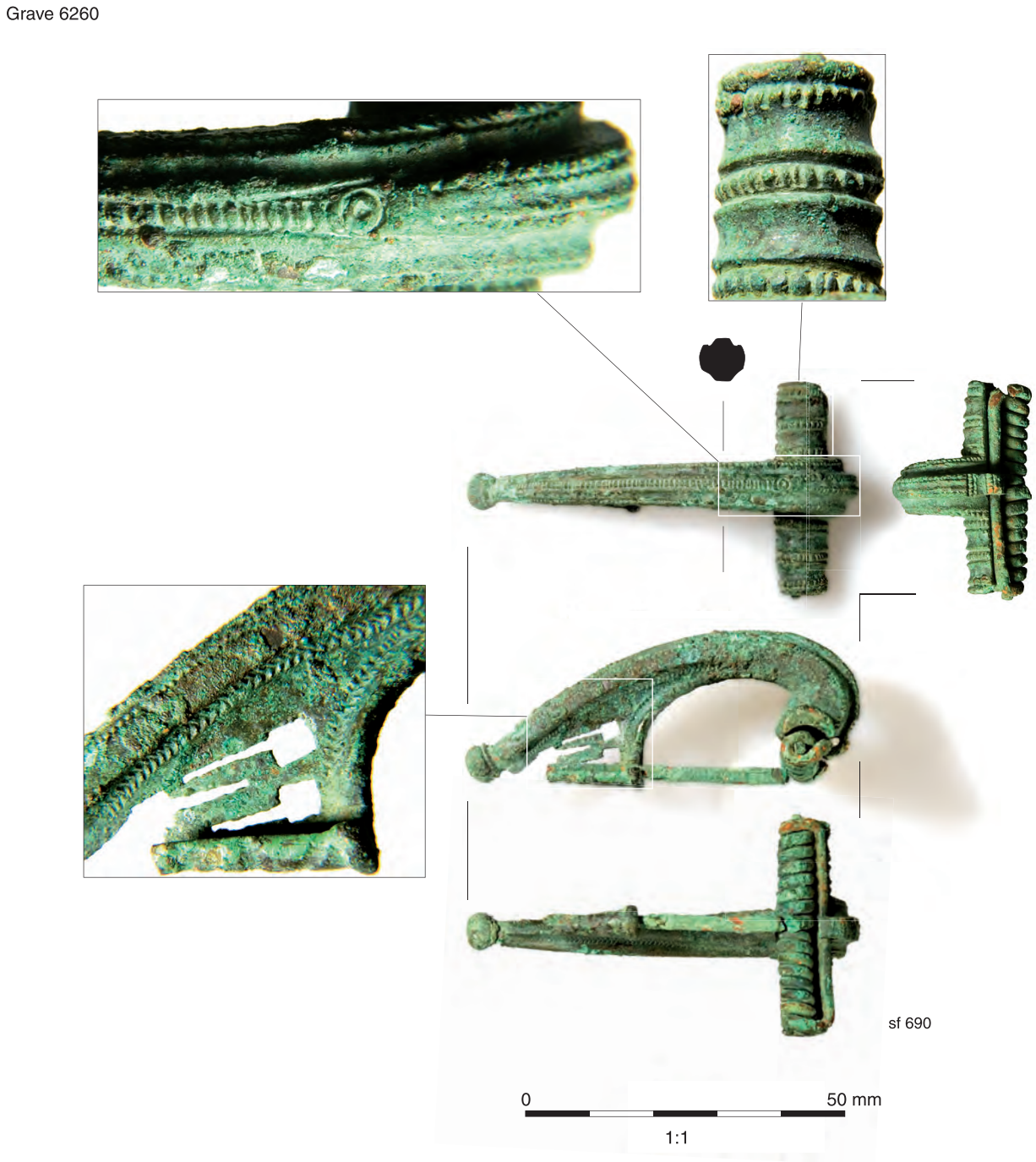


Fig. 4.16 Photographs of brooch (sf 690) showing details of decoration

there is chased decoration. The latter extends onto the catchplate. The catchplate is further decorated with a pattern of cut-outs. There is also a broad zigzag decoration on the underside of the catchplate. The bow and catchplate terminate in a collared knob. At the head the bow, the hook is decorated. The brooch has 12 or 13 coils. The wings are also highly decorated. Brooch: copper, tin, (zinc). Wire: copper, tin, zinc. L: 60mm.

Rearhook brooches are dated to the mid 1st century AD. This example is comparable in quality with the Rearhook brooch from the 'Doctor's grave' at Stanway (Crummy 2007, 215–17, 316-17, fig. 109, CF47.17). Like the example from Stanway and a group of high quality brooches from Gloucester published by Cracknell (1990, passim) it has decoration in the form of crosses and lines on the underside of the catchplate. Precisely what the significance of these markings was is unclear, but they do seem to occur on better quality, more highly decorated brooches.

5 Wooden table or frame *by Tim Allen and Ian R Scott*
This was located in the south-east corner of the grave pit with the pottery vessels and other grave goods. It was identified by the presence of repoussée decorated copper-

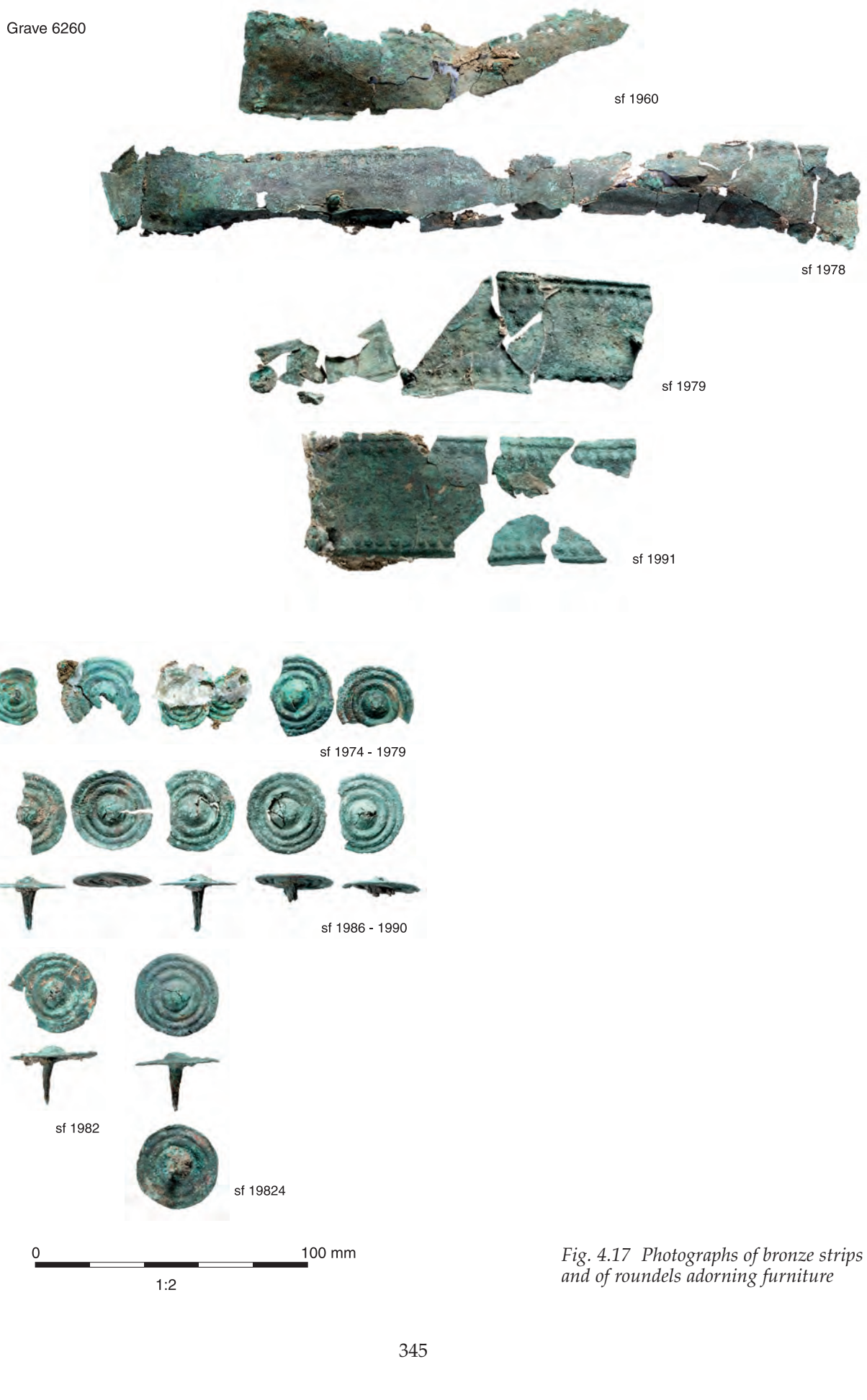


Fig. 4.17 Photographs of bronze strips and of roundels adorning furniture

Plate 4.7 Detail of metal wine-mixing bowl with diagonal rows of roundels in situ above (seen from the south ie from the back)

alloy strips and lines of circular studs or mounts (Fig. 4.17). The strips were decorated along their lengths and at the ends with a slight embossed plain raised border with a close set row of repoussée dots parallel to it on the inside. The strips were secured by copper-alloy tacks or nails with quite large plain circular heads. The studs all had embossed decoration comprising a central boss with concentric rings. There were two sizes of roundel. Small roundels had heads of 20mm diameter, while the larger roundels were 28mm to 30mm in diameter. Their tapering stems were formed from rolled copper-alloy strip, which was then soldered to be the back of the roundel with high tin/lead solder.

The object was lifted as a block and subsequently a detailed 3D record was made of the positions of the decoration copper-alloy fittings. Most of the decorative metalwork has mineral preserved wood, which provides some evidence for the timber structure (see Fig. 4.18 and Mineralised Wood report, Goodburn-Brown below). The object appears to have consisted of two horizontal pieces of wood and two vertical pieces (Fig. 4.18). The first horizontal was the longer piece and formed the top of the object and had a line of applied decorated strips and studs. The two parallel verticals began just below this, but were set back by around 100mm from it, and were decorated with applied decorated metal strips. The longer of these was at least 210mm long, and these may have been applied to the legs. Between these two 'legs' was the second shorter and wider horizontal. This was decorated with a further line of circular studs, and above this, by three diagonal lines of studs running up to just below the upper horizontal (Plate 4.7).

The long horizontal, which is interpreted as the edge of the top of the object, was formed probably by a single length of wood or a board. This piece of wood was decorated with a strip at each end with a row of studs in the space between the strips. The most complete strip (sf 1978.1) measured 265mm long and 40mm wide. This was bent at a right angle towards the outer end, possibly where it encased a corner of the wooden horizontal. The less well-preserved strip (sf 1960.1 & 1960.2) at the other end, which had similar decoration, was originally of similar length and width, and also had the end bent round; the surviving sections of the strip were also *c* 40mm wide. The horizontal strips were secured by tacks (sfs 2004–2010).

Between the two strips was a line of 20 studs (sfs 1961–1966, 1967.1, 1968–1970, 1971.1, 1971.2, 1972, 1973.1, 1973.2, 1974-1977). Both small and large roundels were used. The larger studs (sfs 1961, 1964, 1967.1, 1970, 1972, 1974, 1977) appear to have alternated with pairs of smaller studs (sfs 1962/1963, 1965/1966, 1968/1969, 1971.1/1971.2, 1973.1/1973.2; 1975/1976). Some of these pairs

Plate 4.8 Detail showing lines of roundels during excavation of the block

Fig. 4.18 Three-dimensional record of decoration from the front, from below and in profile

were found overlapped and fused together: eg. sfs 1962 and 1963, sfs 1965 and 1966, and sfs 1975 and 1976. The evidence for the direction of wood grain from both the end strips and the circular studs suggest that they were attached to a single piece of wood with its grain aligned along the object. The bent ends of the strips indicate that the total length of this wood was 0.94m long.

The decorated strips on the verticals (sfs 1979 and 1991) were similarly decorated to those on the horizontal, but were slightly wider (W: 44mm). Again the strips were secured by plain tacks with circular heads (sfs 2000-2003). The second horizontal between the verticals was marked by a row of close set regularly spaced large decorative roundels (sfs 1982–1990). The vertical strips continued below the horizontal rows of roundels, and are interpreted as decorating the legs of the piece of furniture. These legs were probably just over 50mm wide, and formed two corners of a frame just over 0.5m long and 0.4m wide.

In the space defined and enclosed by the horizontals and verticals were three groups of roundels, two groups of three (sfs 1981/1993/1994; and sfs 1997/1998/1999) and one group of two (sfs 1993/1996), perhaps vertically, but possibly diagonally, aligned (Plate 4.8). The groups were close set so that the roundels were touching or perhaps even overlapping. The roundels are all large, but there may have been selection by size; in the row sfs 1997/1998/1999, the uppermost roundel (sf 1999) was the smallest with a diameter of 28mm, while sfs 1997 and 1998 were both 30mm in diameter. In the case of sfs 1996 and 1995, the uppermost roundel sf 1996 was again 28mm in diameter, while sf 1995 was 30mm x 29mm in diameter. However, there does not appear to be such a clear differentiation in the case of the third row: all three roundels were 29mm in diameter.

Both the groups of large vertical or diagonal roundels and the lower horizontal row of roundels lay on the same vertical plane, some 100mm behind the top row of strips and roundels (Fig. 4.18). It seems likely that there was a horizontal timber 100–110mm wide between the legs, to which this decoration was attached. This horizontal presumably formed one side of the frame joining the legs and supporting the table top.

As found the vertical strips have a kink partway down, bending out at 90 degrees before bending back and continuing vertically, as if the legs had projected further forward than the horizontal frame (Fig. 4.18). A possible reconstruction of this object is given (Fig. 4.19). The step in the vertical strip 1979 is not on the same level as the second horizontal row, perhaps due to slight settling as the timber rotted. It is also possible that the kinks in both vertical strips occurred due to settling as the table legs decayed. Roundel sf 1980 was found adjacent to one of the vertical strips and was very probably displaced from its original position.

Excluding sf 1980, a total 37 roundels were found *in situ*, 12 small roundels and 25 large roundels. A further 11 roundels and 8 detached stems were located in the grave. Several of these came from within the wine-mixing bowl, others were found in the top of the infilled patera (Plate 4.9), and one large roundel without a stem was located on the base of the grave next to the wine mixing bowl (Cat. no. 1, sf 681).

Very similar roundels and repousé decorated strips were recovered from the Doctor's grave at Stanway (Crummy 2007, 232–6, fig.119, CF47.25a-25f, fig. 120, CF47, 25g-j). The roundels are identical in their construction and similar in design. The roundels and decorative strips were found together with traces of wood and have been interpreted as the remains of a tray or a box.

The remains from grave 6260 indicate a large flat piece of wood on top of a smaller but deeper wooden object, and one that appears to have a step in its profile. Interpretation of the evidence as a single box or chest is not possible, as the patera, flagon sf 694 and the wine-mixing bowl all lie directly beneath the upper line of decorated tacks and strips, ie they cross the edge of any possible box. While it is conceivable that the evidence

Plate 4.9 Working shot showing roundels and metal strips in the top of the metal patera and wine-mixing bowl

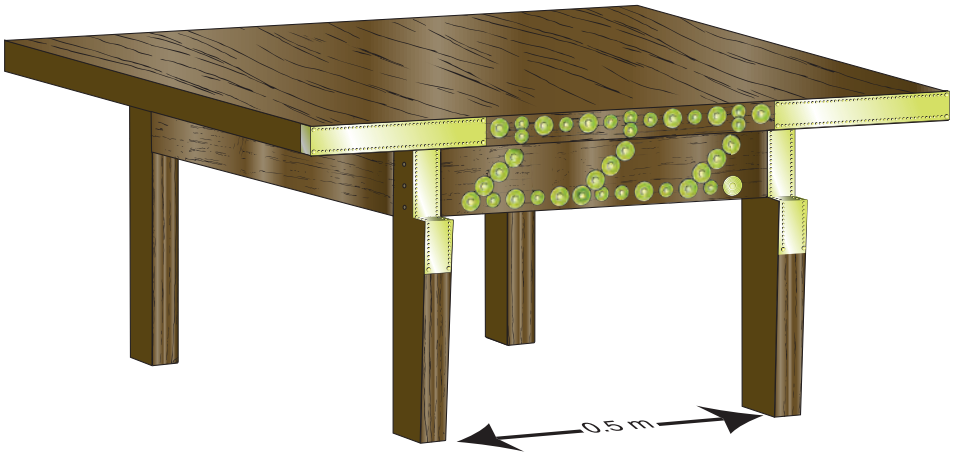


Fig. 4.19 Reconstruction of table in burial 6260

could have represented two separate objects, the upper of which was a tray resting upon a smaller box, the box does not include any of the usual fittings associated with early Roman box burials. The 'step' might perhaps have been due to the collapse of the object, the lower part being less robust than the upper, but the similarity of the decoration throughout strongly suggests that this was a single object, probably a table or bench on and about which the grave goods were laid.

Only the front of the table appears to have been decorated. Evidence for surviving Roman furniture is limited, most coming from Herculaneum (Mols 1999), but there are examples of furniture that was placed against a wall and was much more ornate at the front. A recent review of Roman furniture that also includes the literary evidence and depictions on wall paintings makes the same point regarding both benches and side-tables (albeit in stone) from Britain (Croom 2007, 112 and 83). The

Plate 4.10 View of grave goods in grave 6260 from the west, showing the brooch in the foreground, and the sloping angle of rest of the 13 ceramic vessels above the other objects in the grave

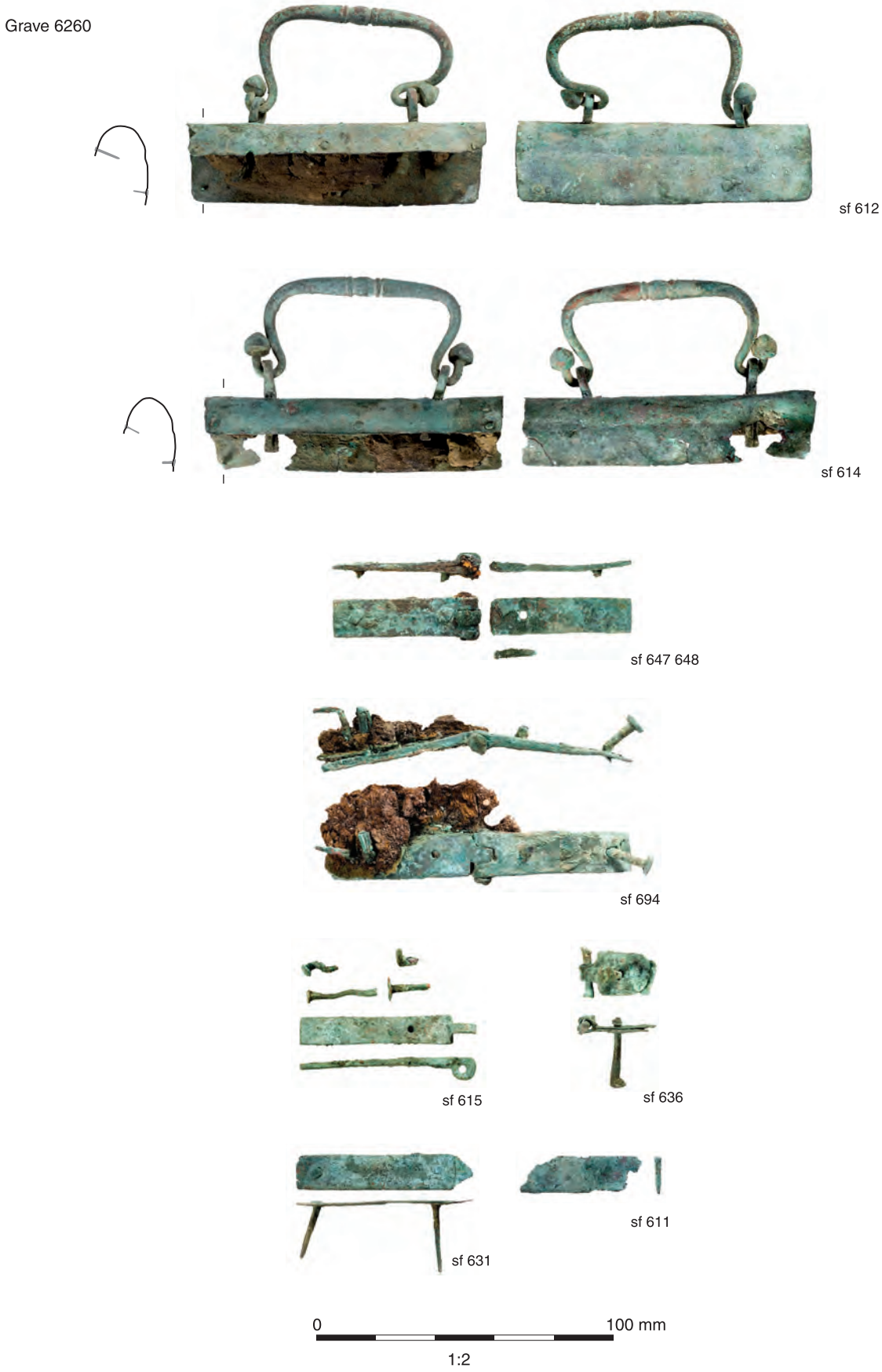


Fig. 4.20 Copper alloy fittings of gaming board and other hinges and strips

height of this table is slightly uncertain, as some degree of settling may well have occurred when the wood decayed, and indeed this is indicated by the slight tilt on the pots that had rested against the south side of the grave (Plate 4.10). The fact that the decorative bronze had kept its shape, however, and that the pots remained in position, suggests that this was minor. The levels of the southern-most dishes against the side of the grave suggests that the table was no more than 0.40m high.

Croom states that most Roman dining-tables were circular, 3-legged and around 0.60m high (Croom 2007, 69), although she mentions a fashion in the north-western provinces for rectangular tables (ibid., 74). The height of the table from grave 6260 is however much lower, and the fact that it was decorated only on one side suggests that it was instead a side-table or abacus, which were often also used as display-tables. The wall-painting in the tomb of Victorius Priscus at Pompeii illustrates this very clearly; the table is decorated at the front, and is used for a display of 19 vessels of silverware (ibid., colour plate 13), while a patera and ewer sit underneath, just as in grave 6260. A similarity of function, and of funerary context, is indicated.

The table in the wall-painting is however somewhat higher than that in grave 6260, and the piece of furniture in this grave is rectangular, not square. A closer parallel may be to a bench, examples of which commonly had a decorated front and a plain back for use against a wall (Croom 2007, 110–11). Croom lists the dimensions of known Roman benches, which all fall between 0.37 and 0.48m high, with two clusters, one just below 0.4m and the other 0.45–48m. Benches are found at all levels in Roman society, including the seats of senators or judges (ibid., 110), particularly at large gatherings. The example in this grave may well have had multiple functions, and ended its life as a display table.

Comparison with other British finds in graves shows that objects decorated in a similar fashion were relatively common. Very similar decorative roundels and strips are found at Stanway (Crummy 2007, fig. 101) and, albeit more elaborate, at Snailwell (Lethbridge 1952, 33, pl. I), while domed studs formed lines at Welwyn Garden City and at Hertford Heath that suggested large wooden barriers, screens or furniture (Stead 1967, 27–9 and figs 4 and 15). The evidence from Stanway does not provide any additional clues, and it may well be that the Stanway finds do represent a tray or box. The cremation grave excavated at Snailwell, Cambridgeshire, had strips with plain raised borders and rows of repoussé dots, but they also had circular motifs decorated with concentric repousé circles, which were similar in appearance to the separate roundels from grave 6260 and from Stanway. There were also separate roundels in the Snailwell burial just like those from grave 6260. Lethbridge (1952) described the pins that fixed the strips and roundels as being 'too weak to have been hammered through the ¾ in wood and must have been set in slots already cut for them'. He further suggested that they were glued into place (ibid. 33). He suggested it was likely that the fragments of copper-alloy 'ornamented some part of a funerary couch or litter', rather than a box (loc. cit.). The Snailwell grave belongs to Stead's late group Welwyn type burials, which he dated broadly to *c* 10 BC to AD 50 on the basis of their imported ceramics (1967, 46–7, table iii).

6 Gaming board and other fragments (Fig. 4.20). The evidence for a folding gaming board comprises two copper-alloy drop handles (sf 612 & 614), a copper-alloy hinge in two pieces (sfs 447–8), copper-alloy strip fragments with nails (eg sfs 611, 631, 645–6, 649–50), and several small iron nails (sfs 632, 638, 653–4). The remains of the gaming board were found in the north-west corner of the burial. The two drop handles had profiled attachment plates intended to fit around the edges of the board. There appear to be no other edge bindings. What were found were fragments of copper-alloy strip (sfs 626, 631, 646, 649, 652) that may have served to decorate and reinforce the edge of the board. Two parts of a cast hinge (sfs 647–8), and part of the hinge formed from strip (sf 636), were also found. Twenty three glass counters (Cat. no. 7) and two bone dice (Cat. no. 8) were found with the board (Fig. 4.21).

Drop handles and attachments (sfs 612, 614). The cast handles have loops at each end and terminate in knobs. There is a baluster moulding at the centre of each handle. The handles and attachment plates were secured to the edge of the board by two split spike loops; the loops held the handles and the spikes attached them to the board. The mounting plates are plain rectangular pieces of copper-alloy sheet rolled to form a double curved profile. The gap between the edges of the attachment plates suggested that the board was *c* 18mm thick. One handle (sf 612) had a gap of 22mm, the other (sf 614) had a gap of 18mm. The mounts were attached by means of six small copper-alloy tacks, three on each long side. L: 97mm; and 98mm.

Hinges. Two joining pieces of a broken hinge (sfs 647–8; L: 91mm; W of plates : 11mm; W at hinge: 16mm) probably belonged to the gaming board. One complete long thin cast hinge (sf 694; L: 99mm) was found, but was separate from the board, and must indicate another wooden object in the grave. One half of a similar but narrower cast hinge (sf 615; L: 59mm; W: 9mm) was found in the backfill. Each plate has two nails. Part of a hinge plate formed from strip, and with a single extant nail (sf 635 (or 636); L extant: 26mm; W: 14mm) was also found in the spoil from the northern half of the grave. This could represent a repair to the board, or have come from the backfill. The nails associated with the cast hinges and hinge plates are commonly burred, that is, filed flat, or bent over at the ends, implying that they had penetrated right through the wood. Hinge (sf 694) was apparently attached to wood 12–14mm thick, hinge sf 636 to one *c* 18mm thick.

Strip fragments. Several strip fragments were found, they vary in length but are about 12mm wide (eg. fragment with two nails: sf 631; L: 61mm; W: 12mm). sf 611 was found close to the board handles, and may well have belonged to it. sf 631 was found in the spoil from the excavation of the first (northern) half of the grave pit. If it did belong to the board, the nails attached to sf 631, which show no burring or bent ends, suggest that the board may have been more than 23mm thick, unless the strip was attached to the outer edge as a protection. There are no obvious corner pieces, unlike those decorating the board in grave 6635). (Context 6165, sfs 611, 631).

Nails (6165, sfs 632, 638, 653-54, 664, 666, 668, 679, 687–8, 1417) Only a very few of these may have come from the gaming board. Several others (e.g. 685, 687–8) may have been used in the piece of furniture on which the 13 pots sat, but the majority were found within the backfill of the grave, and in the upper levels.

Unfortunately the gaming board handles were found before the significance of the grave had been recognised, and due to their excellent state of preservation (including wood surviving within the mounting plates) were initially thought to be recent. As a result their exact position was not planned, although a sketch was made. It is clear that both handles lay adjacent to one another, and that the mounting plates were facing in the same direction, implying that the board was closed when placed in the grave. The positions of the gaming pieces, which were clustered with an outlying scatter, and of hinge 647/648, confirms that the board was not laid out with pieces in play.

The gaming board and associated playing pieces invite comparison with the recently published boards and pieces from the Doctor's burial (Crummy 2007, 217-220, figs 110–11), and from the Warrior's grave (Crummy 2007, 186–93, figs 89–91) at Stanway. The counters from these graves are glass and similar to those from Grave 6260. The edgings of the boards are a little different. The board in the Doctor's grave had corner bindings which enclosed the edge of the board and protected it from knocks and bumps (Crummy 2007, fig. 111, CF47.20a). The hinges were similar to those from Grave 6260 (ibid. fig. 111, CF4720b-20c). The edge bindings in the Warrior's grave are more elaborate (ibid. fig. 91) and reveal that the latter board was substantially thicker than that in the Doctor's grave. The edge bindings fragments also reveal show how this board could be locked open, could be folded, or could be taken apart. The carrying handles with the latter board are particularly fine (ibid. fig. 90, BF64.29a–b).

7 **Glass gaming pieces** (Fig. 4.21). (Sfs 613, 617, 620-25, 629-30, 633-35, 637, 639–44, 651, 655, 656, context 6165.) There are 23 glass playing pieces, 11 opaque white pieces, 9 complete (sfs 629-30, 635, 637, 639-41, 643-44 [One piece sf 656 is now missing.]) and 1 a small fragment (sf 620), and 12 opaque blue or black pieces (sfs 613, 617, 621–5, 633–4, 642, 651, 655). The counters were all formed by dropping molten glass onto a flat surface, and so have flat bases and a domed upper side. They vary a little in diameter, from 16 x 17mm to 21 x 21mm, and in thickness from 6mm to 7mm. Although the variations in diameter are evenly spread between black and white counters,

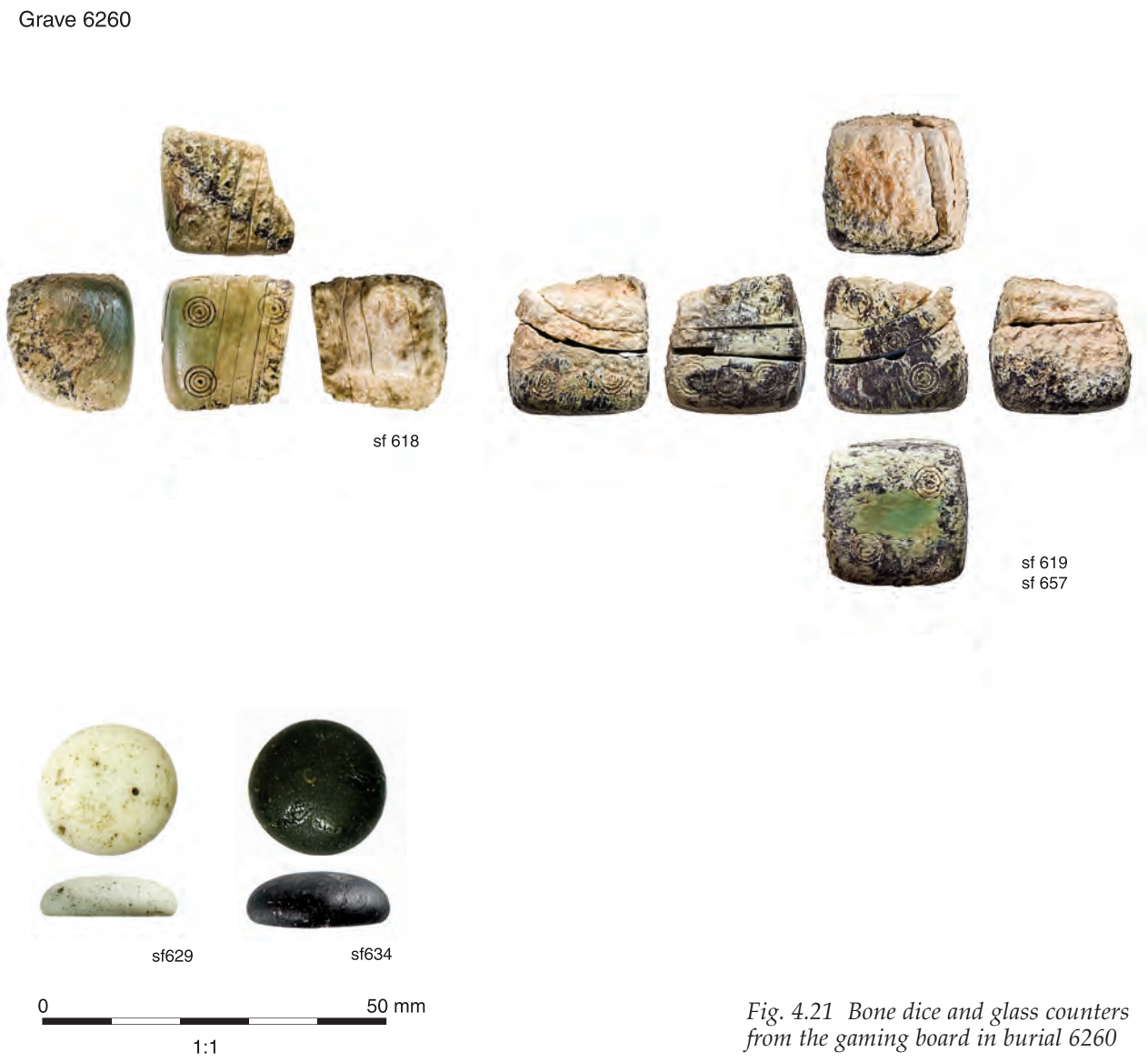


Fig. 4.21 Bone dice and glass counters from the gaming board in burial 6260

the white counters tend to be slightly thinner. Eight white counters are 6mm thick but only one is 7mm thick. All the black counters are 7mm thick.

8 **Bone** or **antler dice** (Fig. 4.21). (sf 618, and sfs 619 & 657, context 6165.) Three fragments from two dice were recovered, all much eroded on one side, but well preserved with a high polish on the other side. One die comprises two fragments (sf 619 & 657) and the other (sf 618) is in one piece. The numbers are marked with double ring and dot motifs, and are arranged so that the opposing faces add up to 7. sf 619 & 675: 20mm x 20mm x 19mm extant; sf 618: 20mm x 19mm x 19mm extant.

Mineralised wood and other organic remains from grave 6260 *by Dana Goodburn-Brown*

Table 4.1 presents the results of SEM analysis of wood and some other samples from grave 6260. Wood types suggested and some of their associated features are:

Sweet Chestnut (*Castanea sp*.): ring porous, uniseriate rays, simple perforation plates

Hazel (*Corylu sp.):* predominantly uniseriate rays and occasional aggregate rays (a group of short multiseriate

Table 4.1: Results of SEM analysis of wood and some other samples from grave 6260

Object No.	*Type of object*	*SEM identification *refers to epiliuminated examination by Lisa Gray*	*Technological information/notes *diagnostic features observed*	*Comments*
Grave No: 6260				
	Gaming board		Hazel identified within the	
sf 612	Cu alloy drop handle mount for gaming board	* possibly hazel – SEM analysis after treatment: Probably birch rather than hazel	handles. Possibly radially faced hardwood, diffuse porous, pores solitary and paired, rays heterogeneous – mostly homogeneous, rays 1 to 3 wide, rays 15-30 cells long, fragment of sclariform plate and broken ends of four bars seen	Sample taken from object, therefore, orientation not secure Wood very degraded in radial and tangential section, multiseriate rays not seen SEM: sclariform plate seen, therefore birch
sf 6	Cu alloy drop handle mount for gaming board	*possibly hazel	*hardwood, diffuse porous, pores solitary and paired, rays 1 to 3 and multiseriate rays, small and numerous pitting in pores	as above, wood very degraded and radial and tangential sections unclear, perforation plates not seen
sf 694	Cu alloy hinge from folding board	Probably maple or lime	?tangential face/foreign body ?insect Spiral thickening and rays *c*.3 cells wide, probably indicate maple or lime.	Not possible to equate the hinge find with the handles. This is part of a different board
	Lining in pit		Grass/straw	
Sf 681	Wine-mixing bowl	Cellular structure of a seed head Textile on handle		Not possible to identify species (Dr. A. Hall, pers com.)
	Furniture within grave 6260		All wood seems to be Maple, or lime. Grain directions indicate planks of wood in specific orientations	
sf 1966	Cu alloy roundel from top row	Maple or lime		
sf 1968	Small cu alloy roundel from top row. Paired with sf 1969	Maple or lime		Maple is more probable
sf 1969	Small cu alloy roundel from top row. Paired with sf 1968.	Maple or lime		
sf 1977	Large cu alloy roundel from top row	Maple or lime		Maple is more probable
sf 1979	Vertical decorated cu alloy strip.	Unclear		
sf 1991	Vertical decorated cu alloy strip.	Maple or lime	fibres: short lengths, striated	Maple is more likely
sf 1996	Large cu alloy roundel, one of a group of two (sf 1993 and sf 1996) aligned diagonally below top row.	Maple or lime		Maple is more likely.

rays separated by just wood fibres), scalariform perforation plates with 4-7 bars.

Lime (*Tilia sp*.) and Maple (Acer sp.): both have multiseriate rays c. 3-5 cells wide. Homogeneous ray type, simple perforation plates, spiral thickenings in the vessels. The two are really only distinguishable in the tangential section.

Although most of the species identifications are only 'probable', the most likely identifications have been provided, based on the SEM images and from experience with other mineralised wood evidence surviving from this period (J Watson, pers. comm.). By comparing the samples with one another, it has been possible to assess the likelihood of multiple metal objects having been attached to the same timbers, or if there is evidence for marquetry or differing associated materials. In the case of the furniture from grave 6260, it appeared that the wooden object was of relatively straightforward construction, and did not involve marquetry.

The north-west cemetery (Fig. 4.22)

Just outside the north-west corner of the extended main enclosure (ditch 6941) a group of nine further burials was discovered. Central to this group were two cremation burials (6635 and 6645) in pits just over 1m square, both oriented approximately just west of south-north. Both burials lay just west of the line of ditch 6727, and on the same orientation.

The cemetery was first discovered when highly truncated pottery vessels (sf 601–605) were found on the stripped surface during the characterisation phase of excavation, the most complete of which (sf 601–2) were found together associated with cremated bone in cut 6068. Vessel sf 603 also contained sufficient sherds to suggest that this also may have accompanied a burial (cut 6069), but only 12g of cremated bone was found. Feature 6098 contained sf 604, which comprised only 14g of pottery and a very few fragments of cremated bone, and 6099 contained sf 605, totalling only 6g of pottery, and a similarly small amount of cremated bone. These two deposits lay at the edge of grave 6635, and it is possible that they were part of the backfill of the grave, possibly including a little material from the area of the pyre, rather than the remains of funerary vessels. The pottery was not burnt, and so is unlikely to have come from vessels burnt on a pyre.

This part of the Roman enclosure was cut not into chalk but into Thanet Sands overlying the chalk (see Fig. 4.2), and it was extremely difficult to distinguish archaeological features. Late on in the excavation, however, favourable ground conditions and good light enabled the recognition of a small ditched enclosure (6299) surrounding the burials. This was rectangular in plan and measured 22.5m by 18m. It lay immediately north of the north-west corner of the main ditched enclosure, and had an entrance *c* 4m wide at its south-west corner (Fig. 4.22). The south-east end of the enclosure ditch had been destroyed by dene hole (6632/6323), removing any possible relationship between the cemetery enclosure and ditch 6941. The gully only survived to a very shallow depth (0.08–0.18m) and was extremely narrow (0.34–0.44m). Only six scraps of early Roman pottery weighing 6g were recovered from the seven interventions excavated. The only other finds were residual worked flints. Despite this, the common alignment of the early Roman burials and the enclosure around them indicate a probable early Roman date for the cutting of this feature. It seems likely that the burial enclosure ditch was dug after ditch 6941, but whether it was dug contemporary with the first burials in the cemetery, or was added later, is unclear (see also below).

The interior of the burial enclosure (6299) was re-cleaned by machine and by hand excavation, and the soil removed in thin spits to look for further burials. This revealed an additional six graves comprising three cremation burial pits and three inhumations (Fig. 4.22). Once recognised, the two largest graves, which were approximately 1m square, were excavated in spits following the same general methodology as used for burial pit 6260 (see above).

A number of other discolourations in the Thanet Sand deposits on which this cemetery lay were investigated by hand (eg 6854) in case they represented further graves, but none were found. The only reasonably regular feature was a roughly square pit (Fig. 4.22, 6869) some 2m across, which was 0.36m deep with sloping sides and a flat bottom. This was without finds, and appeared to have been backfilled immediately after it had been dug, the backfill being more mixed than the Thanet Sands around it. Possibly this was an aborted grave, although it lay at an angle to the other graves.

Grave 6635

The richest grave in this group (6635) was sub-square and just over 1m across (Fig. 4.23). This grave was only discovered during the machining, which revealed the rim of a flagon resting against the north edge of the grave (Plate 4.11). Following this all excavation was carried out by hand. The grave had near-vertical sides on the south-west, and vertical or slightly undercut sides elsewhere. It survived 0.28–0.32m deep after machining, and had a flattish virtually level base.

Excavation revealed that all but the north-east corner of the grave was filled with grave goods (Plate 4.12). The grave contained fourteen pottery vessels including two lagenae (two-handled flagons, sfs 1538 and 1539), a beaker (sf 1540), a cup (sf 1569), a decorated samian bowl (sf 1541) and nine dishes/platters. Only two vessels, the decorated samian bowl and one of the lagenae, were imported. The dishes mainly lay in the south-east quadrant of the grave, although one (sf 1559)

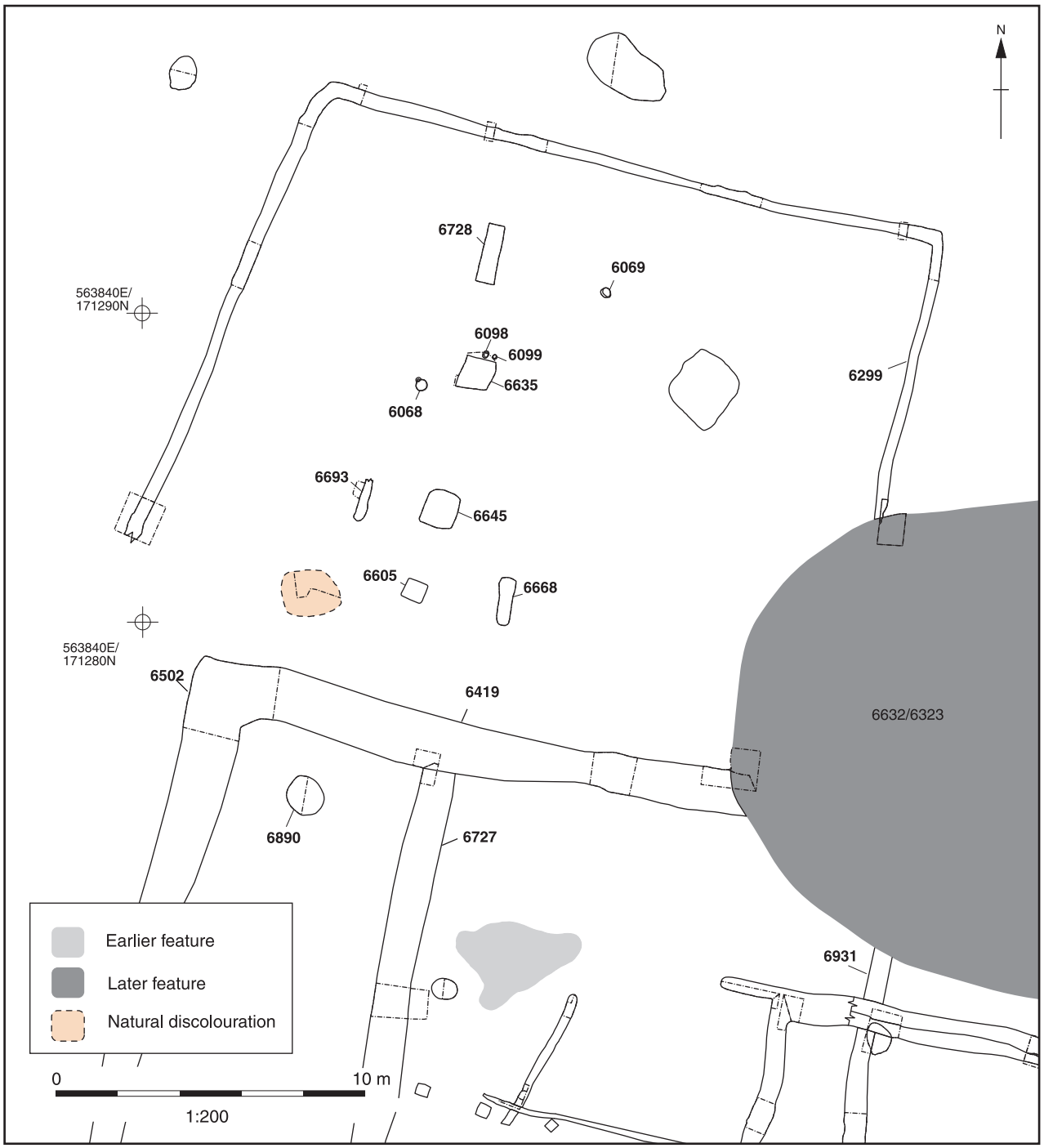


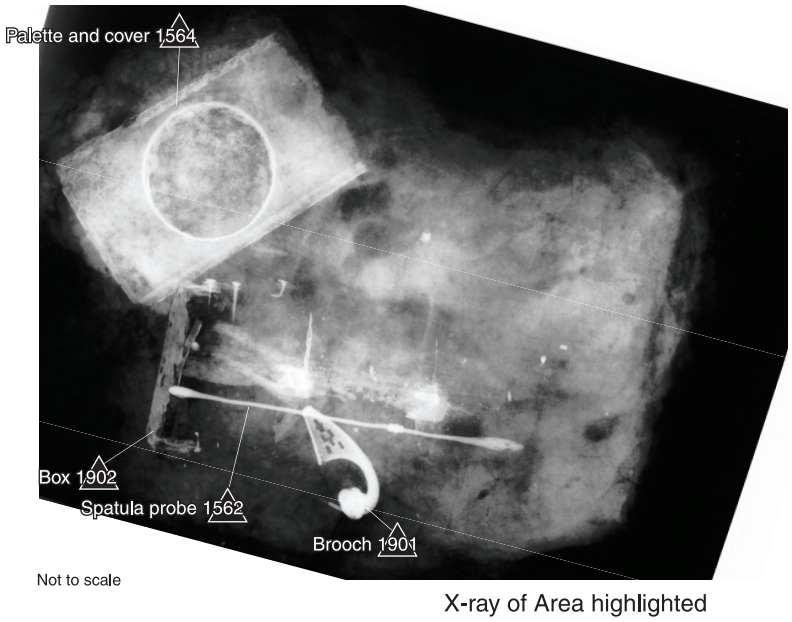
Fig. 4.22 Plan of cemetery within ditch 6299 at north-west corner of the enclosure

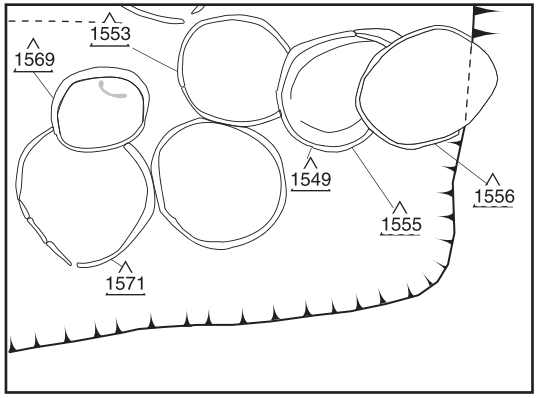
lay north of the others in line with the larger lagena (sf 1538). Most lay on the base of the grave. The lip of sf 1555 overlapped the rim of sf 1553, and sf 1555 was partly overlain by sf 1556 against the east edge of the grave. Dish 1571 contained a worked bone object (sf 1947), and during excavation of the block surrounding the patera a group of small mammal bones was found underneath, possibly a deliberate offering made within another of the dishes. The two lagenae and the beaker (together with dish sf 1559) occupied the north-west quadrant of the grave, and all sat upon the base of the grave. The larger lagena (sf 1539) had a graffito scrawled on the lower body.

The cremation lay on the base of the pit halfway along the western side south of the beaker, but only 165g of bone was deposited, covering a small area. The cremation of bone from this individual was very varied, but enough was identifiable to indicate that this individual was adult, and was probably female (see Boston *et al*. below). There was a brooch (sf 1901) on the south edge of the cremated bone, which could perhaps have secured a bag containing

Plate 4.11 Grave 6635 looking south with the rim of a flagon visible on the north edge

Plate 4.12 Grave 6635 looking south showing stacked vessels and other objects





0 500 mm
1:10

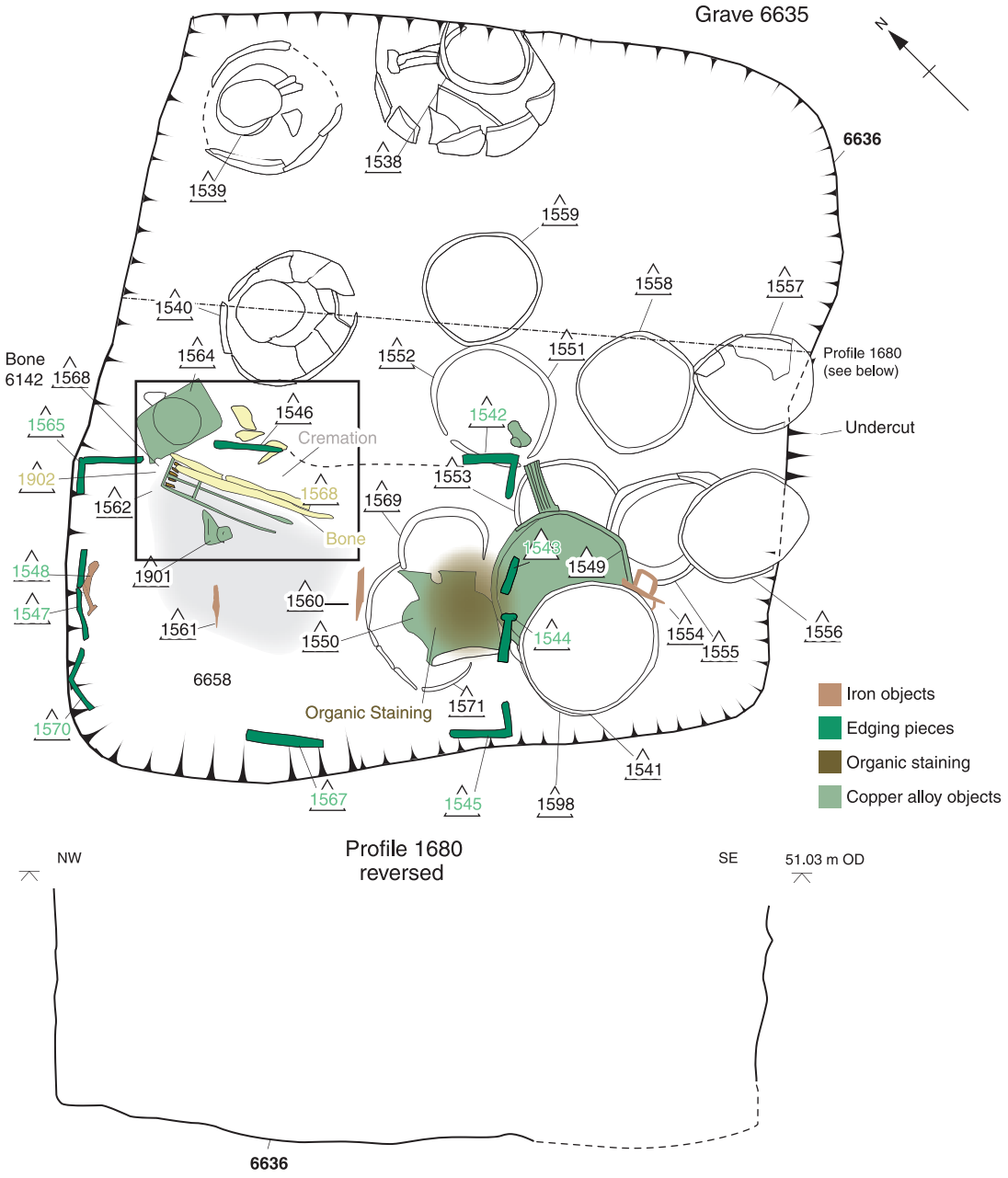


Fig. 4.23 Plans and profile of grave 6635 and X-ray of lifted soil block

Plate 4.13 Grave 6635 looking down on the ewer and one foot and part of the curving handle within vessel sf 1571

the cremated remains. This brooch had a decorated catchplate (see Fig. 4.30) similar to that of the brooch in grave 6260.

Overlying these primary grave goods in the southern half of the grave were others. Two metal vessels, a patera (sf 1549) and a ewer (sf 1550), lay in the south-east quadrant. The ewer lay adjacent to the patera on its side, with the handle underneath. The patera overlay dishes sf 1553, 1555 and 1598, while the ewer overlay dish sf 1571 and cup sf 1569. A curve of copper alloy staining in the top of cup sf 1571 north of the ewer. This probably came from the top of the handle, and if so, indicates that the handle was either deposited already separate from the ewer, or (more likely) became separated in the grave by the weight of the overlying soil (Plate 4.13).

The cremation deposit and the brooch were overlain by a copper-alloy-sheathed small box oriented ESE (sf 1902). A stone mixing palette that was encased in a copper-alloy sheath with a hemispherical projection on the top (sf 1564) overlay its north-west corner and was placed at an angle, the long axis oriented SW-NE. The hemispherical projection partly disintegrated upon excavation. The box was divided into six compartments, one of the central compartments of which contained several calcined fragments of bone and at least one probable fish vertebra (see Fig. 4.32). Laid along the length of the box was a copper-alloy ligula (sf 1562). This slanted down from east to west, the west end, which lay up against the end of the box (Plate 4.14), being covered by highly degraded wood that extended for around 30mm from the west end, ending in an approximately straight edge parallel to the end of the box. This was overlain in places by fragments of copper-alloy sheet. The wood, which was not found elsewhere along the box, perhaps represents the top of the box at this end, and may indicate that this was a short length of wood that was fixed and sheathed in copper-alloy.

Also laid along the top of the box were two very fragmentary lengths of unburnt bone, probably longbones from their size (see Plate 4.12). These were not conclusively identified, although it was thought that they were animal rather than human.

Above this a line of four iron fittings ran west-east across the south end of the grave parallel to the side (Fig. 4.23 and Plate 4.12). Their common align-

Plate 4.14 Detail of ligula placed on the emerging cosmetic box, and underlying wood at the north end

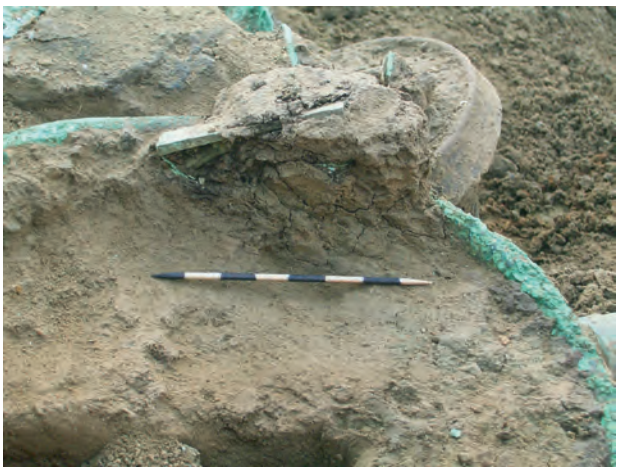


Plate 4.15 Detail of part of hinge of folding board found overlying the top of patera sf 1549

Plate 4.16 Grave 6635 Detail of lip of ewer and vessel sf 1571 showing part of the dark layer over the ewer

ment and position within the grave suggests that they were all attached to one object, although the purpose of this is unclear. The spacing between sf 1548 and sf 1561 was the same as between sf 1561 and sf 1560, and sf 1554 was twice that distance further east. No clear evidence was, however, found of another iron object midway between sf 1560 and sf 1554. The easternmost (sf 1554) overlay one of the pottery dishes and the patera (sf 1549), to whose lip it had fused (Figs 4.23 and 4.33), indicating that the object originally sat above it in the grave. The westernmost (sf 1548) lay not far below a copper-alloy hinge (sf 1547) belonging to a folding board opened out and laid flat over the south-west quadrant of the grave.

The surviving metal fittings of this board were four L-shaped corner protectors, two straight pieces halfway down the long sides, and two hinges midway along the short sides. The copper alloy nails through the hinges were 18–22mm long, and were burred or hammered flat at the ends, showing that the board was 18mm thick. Small areas of copper alloy sheeting were found at the ends of the nails, ie on the underside of the board, on both hinges, and were described on site as having holes in, so were provisionally interpreted as washers. None survived lifting intact. The south-west corner piece (sf 1570) had become wedged against the clayey edge of the grave, showing that it had been placed 0.3m above the bottom of the grave (see Plate 4.12). The northern half of the eastern hinge of the folding board (sf 1543) clearly overlay the edge of the patera (Plate 4.15), and the southern half (sf 1554) was planned as overlying the ewer that sat adjacent (Fig. 4.23) The folding board therefore appears to have overlain all of the other objects in the south-west part of the grave. No counters or dice were found to suggest that this was a gaming board.

Both the ewer and the eastern hinge of the folding board were covered by an black layer (see Fig. 4.23 and Plate 4.16). This may simply have been the result of chemical alteration of the soil due to the decay of these copper alloy objects, or may derive from the decay of something organic such as a leather bag or hide. For the stratigraphic reasons given above, chemical alteration is more likely, but if it had been an organic object, it might indicate that the ewer originally lay upon the folding board, and so was placed in the grave later than the patera. It is also possible, though perhaps less likely, that the hide was placed on the east end of the open board, and that it survived longer than the wood of the board, slumping through onto the ewer below.

A decorated samian bowl (sf 1541) was the final offering in the south-east quadrant of the grave, overlying the patera up against the south edge, and immediately east of the folding board, at much the same level.

The backfill of the grave was divided into two: 6639, of which 6658 was a darker variant affected by the decay of the wooden box and associated objects, overlain by 6637. Both, however, were very similar, consisting of friable clayey silt with fine sand, and with frequent patches of green-grey sandy clay, and only differed in that 6636 was lighter in colour and mottled by iron staining. The material was very similar to the Thanet Sands into which the grave was dug, the sandy clay patches deriving from the layer exposed towards the base of the grave, and confirm that the backfilling was carried out using the soil dug from the grave.

Catalogue of pottery from grave 6635 by Valery Rigby

The pottery assemblage is notably different than that from grave 6260 (Fig. 4.24); there are fewer pots, 14 in total, only two of which are imports, a large two-handled flagon and a South Gaulish Drag 29 bowl of Tiberian or early Claudian date (see Mills, below). Like 6260, the vessels were complete and upright when consigned to the grave so that some contents may have been present. As with grave 6260, several of the vessels were subjected to lipid

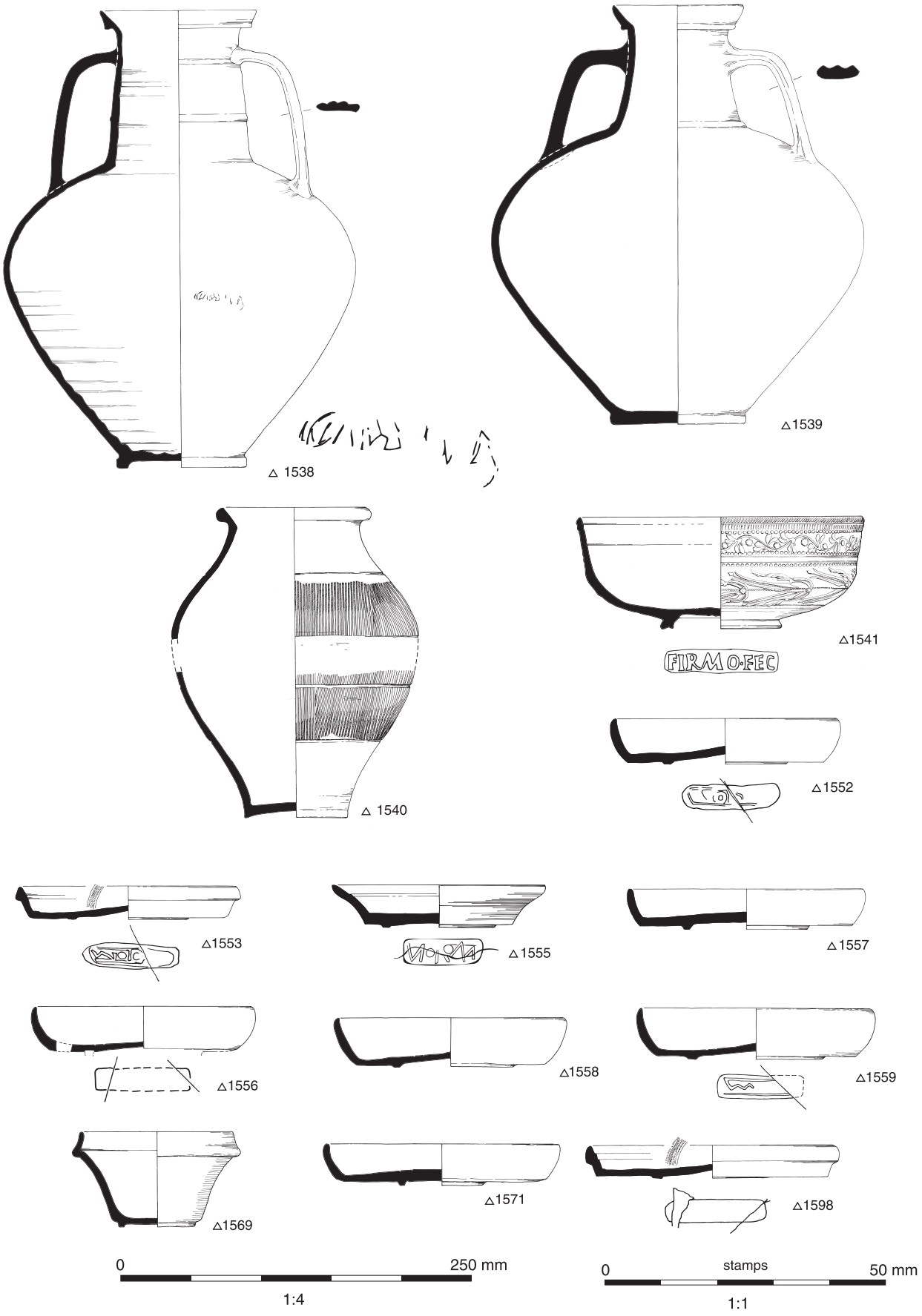


Fig. 4.24 Pottery from grave 6635

residue analysis, but apart from the pitch nothing was identified (see Heron and Spiteri this vol.). The larger flagon had a graffito scribbled on the lower body, but this cannot be interpreted.

All but three of the local vessels appear to be from the same source area and made using the same late Iron Age techniques as those in burials 6260 and 6645. The exceptions are in so-called A2 Tollgate ware, made in the north Kent Marshes and consisting of a glossy black cup and platter and a two-handled flagon in an oxidised version assigned to Workshop 5; this could well be the earliest secure context for such products. Assessing the typological details of the remainder, there appear to be one pair of *Cam* 8/7 and a matching group of four *Cam* 16 platters made and stamped at the same workshop (Workshop 2) and an unstamped pair acquired from a different source (Workshop 4). The butt beaker copy could have been made at either of these workshops.

North Gaulish and Rhineland imports

1538	FORM	Two-handled flagon *Cam* 161. KHL variant GL6.
	FABRIC	North Gaulish Gallo-Belgic pipeclay (NOG WH1). Typical fine white ware; abraded surfaces. ?Graffito on the body.
	SOURCE	possibly Cologne
	DATE	AD 20–60

Local products—copies of Gaulish imports

1553	FORM	Foot-ring platter copying *Cam* 8/7. Although not identical, probably to be classed as one of a pair with 1598.
	FABRIC	Micaceous glossy burnished ware. Dark grey/black and brown fine sandy matrix with black argillaceous inclusions; patchy brown/black surfaces; abraded soapy texture, with traces of a highly polished interior finish and less glossy burnished exterior base. Decoration—one bordered rouletted wreath.
	CONDITION	Restorable to complete
	CONDITION AT BURIAL	Complete
	STAMP	POTTER MARK 1
	READING	\/\IOIOI..\ bordered
	SOURCE	Workshop 2, north Kent Marshes
	DATE	AD 45–85

1598	FORM	Foot-ring platter copying *Cam* 8/7, as 1553
	FABRIC	Micaceous glossy burnished ware, as 1553
	CONDITION	Restorable to complete
	CONDITION AT BURIAL	Complete
	STAMP	POTTER MARK 1
	READING	\/\IOIOI..\ bordered
	SOURCE	Workshop 2, north Kent Marshes
	DATE	AD 45–85

1552, 1556, 1558 and 1559

	FORM	Four almost identical platters copying *Cam* 16
	FABRIC	Sandy mixed-tempered sandwich ware. Under-fired so that surfaces abraded and little or no finish survives and severely fragmented condition. Decoration—pair of burnished circles around the stamp.
	CONDITION	Severely fragmented, complete rim and base circuits
	CONDITION AT BURIAL	Complete
	STAMP	POTTER MARK 1
	READING	Stamps are severely abraded, but size, shape and surviving motifs demonstrate that they were impressed with the same die as that used for 1553 etc.
	SOURCE	All from the same workshop and almost certainly made by the same potter. Workshop 2, north Kent Marshes
	DATE	AD 45–85

1557 and 1571

	FORM	A pair of foot-ring platters copying *Cam* 16, not stamped
	FABRIC	Sandy mixed-tempered sandwich ware. Dark grey/black matrix; thin red-brown under-surface; variegated brown/black surfaces; abraded and severely fragmented, traces of highly polished finish survive.
	CONDITION	Fragmented
	CONDITION AT BURIAL	Complete
	SOURCE	Workshop 4, north Kent Marshes
	DATE	AD 45–85

1569	FORM	Carinated cup copying *Cam* 56. A reasonable copy of the shape and proportions but lacks the interior lip groove and the off-set cornice at the base is copied as a shallow channel.
	FABRIC	Pepperhill ware. Dark grey/black matrix, with fine white sand grains and black argillaceous inclusions; thin brown interior under-surface; uneven brown/black surfaces; soapy finish, highly polished interior and rim, less glossy exterior.
	CONDITION	Incomplete rim and base circuits
	CONDITION AT BURIAL	Probably complete
	SOURCE	Workshop 5, north Kent Marshes
	DATE	AD 45–70
1540	FORM	Grooved Butt beaker copy *Cam* 119. Grooves define and divide the decorative zone.
	FABRIC	Sandy mixed-tempered sandwich. Grey core; oxidised surfaces; smoky brown finish from rim to lower groove; severely weathered, no finish survives. Decoration—vertical combing, neatly and evenly executed with a narrow seven- or eight-pronged comb.
	CONDITION	Severely fragmented, complete rim and base circuits restorable
	CONDITION AT BURIAL	Complete
	SOURCE	north Kent Marshes
	DATE	AD 40–80
1539	FORM	Two-handled flagon with grooved collar
	FABRIC	Oxidised Pepperhill ware. Thick black fine sandy core, inclusions not visible; thin brown interior body surface; orange-brown interior neck and exterior, black and micaceous inclusions visible; traces of a burnished finish, vertical on the neck and horizontal on the body.
	CONDITION	Rim and base circuits restorable to complete
	CONDITION AT BURIAL	Complete
	SOURCE	Workshop 5, north Kent Marshes
	DATE	AD 45–70
Local products		
1555	FORM	Foot-ring cordoned platter. There is no obvious imported prototype.
	FABRIC	Pepperhill ware. Dark grey/black and brown fine sandy matrix; patchy micaceous brown/black surfaces; abraded soapy texture, with traces of a highly polished interior finish and less glossy burnished exterior base. Decoration—a single burnished circle around the stamp with a triple circle beyond.
	CONDITION	Rim and base circuits restorable to complete
	CONDITION AT BURIAL	Complete
	STAMP	POTTER MARK 2
	READING	I/IoI\o/\/ bordered
	SOURCE	Workshop 5, north Kent Marshes
	DATE	AD 45–85
Samian		
1541		Dr 29, South Gaul. Complete when deposited, although now in several sherds (for details see samian report by J M Mills in pottery report below).

Catalogue of small finds from grave 6635 *by Ian R Scott*

This grave contained a patera (Cat. no. 9; Figs 4.25–7), a ewer or jug (Cat. no. 10; Figs 4.28–9), a Rearhook or 'Dolphin' brooch (Cat. no. 11; Fig. 4.30), and a pharmaceutical, or cosmetic, set comprising pharmaceutical box (Cat. no. 12; Fig. 4.31), palette and cover (Cat. no. 13; Fig. 4.32), and spatula probe (Cat. no. 14). The ewer and jug, like those from grave 6260, are probably of Italian manufacture.

The patera (Cat. no. 9), which has no footring, but originally had three cast feet lost in antiquity, belongs to Nuber's Hagenow service (Nuber 1972, 39, Taf 3, 1a–b). The ewer (Cat. no. 10) on the other hand can be assigned to Nuber's later Millingen service (Nuber 1972, 45, 48, Abb. 7, Taf. 4,1). The combination of these two pieces of metalwork suggests a date in the mid 1st century AD for the deposition in this burial deposit. The presence of a fine example of a Rearhook or 'Dolphin' brooch (Cat. no. 11), a type securely dated to the mid 1st century, would seem to confirm this dating.

The pharmaceutical, or cosmetic, set comprises a box, which was sub-divided by copper-alloy partitions (Cat. no. 12), a stone palette, which slides into a copper-alloy sheath with a hemispherical boss that would have served as a mixing bowl (Cat. no. 13); and a spatula probe (Cat. no. 14). This ensemble is a less sophisticated version of a pharmaceutical assemblage recovered from a grave in Lyon (Boyer and Guineau 1990). This comprised a sub-divided

pharmaceutical box with integral mixing bowl and palette, together with a separate cylindrical instrument case with instruments. The ultimate expression of this assemblage is perhaps seen in the small boxes which incorporate all the elements—storage compartments, mixing bowl, palette and instrument case—in one box. There are good examples from Trier (Biernert 2007, 242–46) and Andernach (Riha 1986, Abb. 17).

In addition to these finds was an arrangement of copper-alloy straight and right-angled plates or strips, which together with two hinges represented the outline of a folding board or table (Cat. no. 15; Fig. 4.33). There were no playing counters, which suggests that the object may not have been a gaming board.

In addition to the copper-alloy finds there were four iron objects (Cat. no. 16; Fig. 4.33) from the grave, which were found laid parallel to one another in a line below, and extending beyond, the folding board. The purpose of these objects is not clear.

The dating of the vessels and brooch from grave 6635 would suggest a date for the deposition of this burial firmly in the middle of the 1st century AD. The key evidence from the metalwork for the date of the burial is the Rearhook brooch. The patera could date from the early 1st century AD and may have been old when buried. The ewer on the other hand is probably later in date and was probably quite new when buried.

Catalogue

9 **Patera**. (sf 1549, context 6661; Figs 4.25–7) This vessel has a shallow bowl, with gently curved sides and small out turned horizontal rim. It is is quite thin walled and some metal is now missing. The vessel has no cast footring, but instead would have had three cast feet soldered to the base (see below). No trace of the solder now remains. The base of the vessel is defined by a step in its profile. It is clear that the bowl was formed by beating.

The inside of the base is decorated with an incised pattern (Figs 4.25 and 4.27). At the centre is a small flower with eight petals, enclosed within a fine border which follows the outline of the flower. Around the flower are two separate concentric bands of decoration. Both bands are defined by double inner and outer borders of fine lines and divided into four large segments and four small alternating segments. The large segments each form almost one quarter of the circumference of the bands. The small segments which separate the larger segments are undecorated. The small segments in the inner and outer bands are aligned. In the inner band two of the large segments are filled with an incised chevron pattern. The other large segments are undecorated. In the outer band two large segments are filled with what is best described as a 'fish scale' pattern, and two are left undecorated. The decorated segments of the inner band align with the undecorated segments of the outer band and vice versa.

The cast handle of the patera is detached and was made in two pieces (Fig. 4.27). The cast ram's head terminal is separate from the hollow cast shaft of the

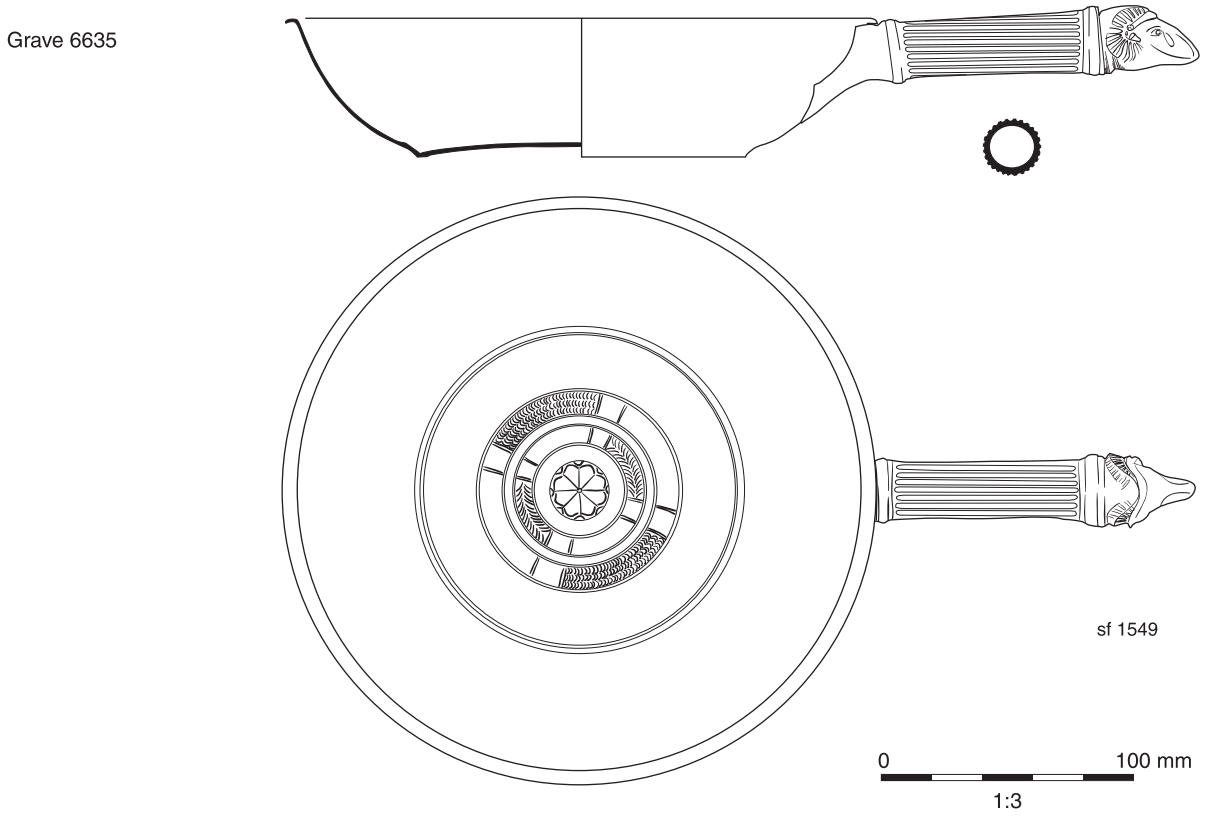


Fig. 4.25 Drawing of bronze patera sf 1549

Grave 6635

sf 1549

0 100 mm

1:3

Fig. 4.26 Photograph of bronze patera sf 1549

Grave 6635

NOT TO SCALE

sf 1549

Fig. 4.27 Detailed photographs of design on the interior and on the rams head on patera sf 1549

handle. The handle is uniformly fluted all around. The inner end of the handle is marked by a moulded collar and then opens out to an asymmetrical plain escutcheon. The top of the handle between the escutcheon and collar has a slight square recess to fit under the rim. The outer end of the handle has a plain expanded collar to which the ram's head terminal would have been attached. The ram's head terminal is well-shaped but lacks fine detailing. The horns are clear although sketchily represented, but the ears are crudely represented and small. While the eyes are clearly drawn, the rest of the facial features are barely shown. There was some attempt, limited to a small area above the ears, to represent wool. Bronze bowl, leaded bronze handle shaft and leaded bronze (lead filled?) ram's head. Bowl D: 233mm x 235mm; H: *c* 50mm; Handle shaft L: 121mm; Ram's head terminal L: 38mm; Overall handle L: 160mm.

This patera is to be assigned to Nuber's Hagenow service. The bowl of the patera is quite plain except for the incised decoration in the centre of the bowl, and it has no extant feet. The closest parallel for this vessel comes from an inhumation burial found in 1948 in Prague-Bubeneč (Novotný 1955, obr. 5; Nuber 1972, Taf 3, 1a–1b). The latter has a similarly shaped bowl form and has inscribed decoration on the inside base. Although the decoration on the two vessels differs in detail, it is very similar in composition. The fluted handle of the Prague-Bubeneč vessel lacks a ram's head, or other animal, terminal, but is otherwise similar to the grave 6635 vessel. It is likely that the terminal, which was separately cast, has been lost. The Prague-Bubeneč vessel has three separately cast pelta-shaped feet. It is likely that the A2 vessel originally had similar feet, but that they became detached, possible even before the vessel was buried. No evidence for feet was recovered from the grave. The Bubeneč vessel also has a drop handle opposite the ram's head handle and attached to the pan by means of cast plate in the form of a sleeping dog. Given the somewhat eroded condition of the grave 6635 patera it is not possible to determine whether or not originally it had a similar drop handle, although the likelihood is that it did not. In addition to the patera, the Prague-Bubeneč burial contained amongst other finds a jug or ewer comparable to that from Grave 6260 (Cat. no. 3 above) (Novotný 1955, obr.6-7), a decorated bowl or dish with foot ring and drop handle (Eggers type 92) (ibid, obr. 2–3), a small saucepan or dipper (Eggers type 131) (ibid. obr. 4) and six brooches (ibid, obr. 9). The Prague-Bubeneč burial is dated to the early 1st century AD (Karasová 1998, 78).

The patera bowl from the Welwyn-type burial at Snailwell, Cambridgeshire, is similar to the grave 6635 patera in form, although it has lost its handle (Lethbridge 1952, 33, pl. vi, a, vii, a–b). It has one surviving cast pelta-shaped foot (ibid. pl vii, a), and an incised pattern on the inside of the base of the bowl (ibid. pl. vii, b). The pattern is formed of concentric elements like the pattern on the grave 6635 patera, although the elements are quite different. It is probable that the patera buried at Westhawk Farm, was of a similar type. The latter vessel was represented only by small thin fragments from the body of the vessel, its three cast feet, and fragments of its fluted handle and escutcheon (Cool, 2008b, 303–5, nos 2–6, fig. 8.1).

10 **Trilobate ewer** or **jug** with cast handle. (sf 1550, context 6663; Figs 4.28–9) The hammered bronze vessel has a short rounded broad body, with almost horizontal shoulder where it meets the neck. There are two closely set concentric lines on the shoulder of the jug. The sides of the vessel curve to its base where there is a well defined step to the base, which is almost flat. The rim of the vessel is plain.

The cast leaded bronze handle is well-formed. A lion's face looks into the top of the jug (Fig. 4.29). The lion's front legs are out stretched to grip the rim of the jug. The handle has a well-moulded profile and tapers down to a face mask at its junction with the body of the vessel. Running down the outside of the handle is a snake, its head at the top of the curve of the handle and its tail ending just above the face at

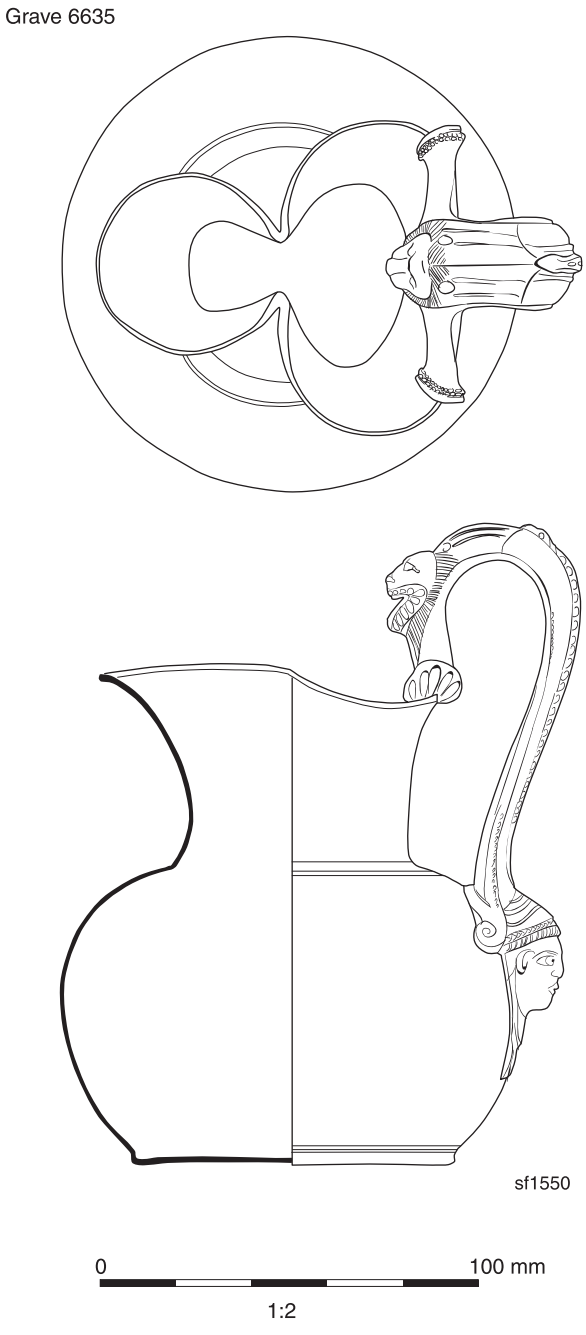


Fig. 4.28 Drawing of bronze ewer sf 1550

Fig. 4.29 Photographs of bronze ewer sf 1550

the lower end of the handle. To either side of the top of the head the mouldings of the handle terminates in volutes. The mask is well moulded. The face is smooth with no indication of facial hair. Although it appears that there is hair parted in the middle and held by a head band, in fact it is possible that the head is covered, and that the cloth hangs in folds on either side of the head, with a stray curl of hair peeking out from the folds on either side of the forehead. It appears that the cloth is also wound tightly around the neck and up to the chin. The alternative interpretation is that hair is represented, though sketchily shown, but this does not convince because of the otherwise well modelled features of the handle. It is not possible to identify the figure represented, although the likelihood is that it is a female face that is represented. Bronze body, leaded bronze handle. Ht: 133mm; D of vessel: 127mm; D of base 82mm; L of handle 135mm; W of handle 75mm.

This jug is paralleled in form, if not in the detail of its decoration, by examples from Pompeii (Tassinari 1993, vol 2, 67–8, esp. inv. nos 5017, 10662, 7265). An example from Geldermalsen, the Netherlands is very similar in its handle and decoration, but has a squatter and wider body. It is assigned to Nuber's Millingen service by Kloster (1997, 80, no. 107). Another example of unknown provenance in the Museum at Speyer has been published by Menzel (1960, 33, Taf 43). A ewer of similar form was found in the Warrior's burial at Stanway (Crummy 2007, 185–6, fig.87, BF64.25). A variant of this design has a similarly decorated handle, but instead of a face mask the lion's rear paws form the escutcheon at lower end of the handle. This is exemplified by a jug from Santon Downham (Eggers 1966, Abb. 37; Toynbee 1962, pl. 131) which Toynbee (ibid., 175) dates to the 1st century AD, and amongst the finds from Thornborough Barrow, Buckinghamshire (Liversidge 1954, 31, pl 3a; Eggers 1966, Abb. 38). Liversidge dated the deposition of the finds from Thornborough to the later 2nd century on the basis of the associated pottery (Liversidge 1954, 31). Nuber dates the start of the Millingen service to the reign of Claudius and argues that it continued in use through the 2nd century (Nuber 1972, 53–4).

11 '**Dolphin', or Rear hook**. (sf 1901, context 6165; Fig. 4.30) The bow is undecorated but may have been tinned or silvered. The catchplate is decorated with a pattern of cut-outs and lines of very fine punched dots. The bow and catchplate end in a low knobbed terminal. On the head of the brooch the hook is apparently inset into the bow The wings are decorated with simple mouldings. Cu alloy. L: 57mm.

This brooch is comparable to the example from grave 6260, but less highly decorated. Like that example it dates to the mid 1st AD.

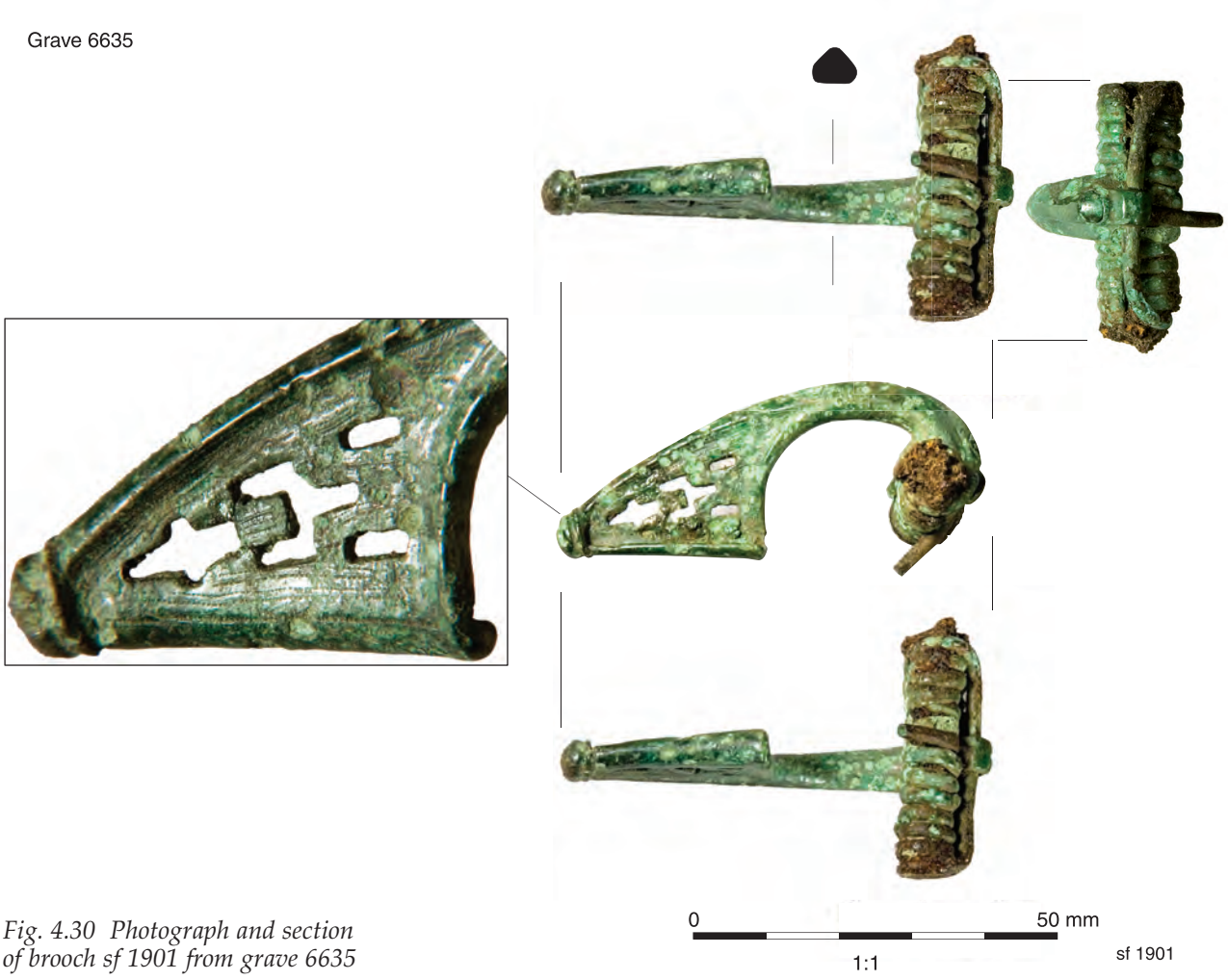


Fig. 4.30 Photograph and section of brooch sf 1901 from grave 6635

12 Pharmaceutical or **cosmetic box** ***by Ian R Scott and Tim Allen*** (sf 1902.1, context 6787; Fig. 4.31) The box is divided into six similar sized compartments, in two rows of three. The divisions are formed by a single longitudinal copper-alloy strip set on its edge, with short sub-divisions on either side formed from short lengths of copper-alloy strip. The bottoms of the longitudinal strip and the short sub-dividers are folded at a right angle to form flanges. The ends of the longitudinal divider appear to be straight with no flanges, but the shorter strips are folded at each end in opposed directions. There are a number of small copper-alloy tacks to fix the dividers. There is limited evidence that the box sides were made of copper-alloy: one end of the box appears to be formed from a strip of copper-alloy, but evidence is lacking from the other end of the box which is much less well preserved and consequently not so well defined. Although the top of the box is eroded—the dividers have suffered from obvious irregular reduction—the bottom of the dividers appear complete with their flanges intact, and there is no evidence for a copper-alloy base to the box. The conclusion must be that the box was constructed of wood with copper-alloy dividers. The small copper-alloy tacks would support this notion. Indeed one tack is clenched in such a way as to show exactly how thick the sides of the box were (7–8mm). It is likely that all four sides and the base of the box were made of wood. The copper-alloy strip at the better preserved end may well have wrapped around the wood and been secured by small tacks to strengthen and protect the end of the box.

The north end of the box clearly underwent some form of repair, as two much longer nails are visible on the X-ray in the north-western compartment, and one of these passes through two layers of copper-alloy sheet. The X-ray also shows a number of regularly-spaced holes in the copper-alloy sheet at this end of the box, but there are no nails. The spacing of these holes is similar to the length from the corner to the surviving tacks on the sides of the box. It is therefore possible that the box was modified, the end nails perhaps being removed, and the end plate being secured by longer nails through a thicker piece of wood inserted or wedged into the north-east compartment. The surviving tack and the ligula indicate that the north-western compartment was still in use.

As found, the ligula that lay along the box was angled, so that its north end dipped into the box. This end of the ligula stopped just short of the end plate, ie within the end compartment, and was overlain by a highly fragmented piece of wood, apparently covered in places with fragments of copper-alloy sheet, suggesting that at this end the lid of the box was of wood (see Plate 4.14). The wood was only drawn at 1:10, so measurements are only approximate, but it appears to have extended for around 30mm from the west end of the box. This wood had a relatively straight edge parallel to the end of the box, so rather than reflecting the survival of the lid only at this end of the box, it may have been a short fixed piece of wood, the remainder of the lid being a separate, sliding piece (see reconstruction Fig. 4.31). If this was of wood, it may have been carved and/or painted. L: Box: Overall L: 170mm extant; Overall W: 80mm extant; H: 20mm extant. Box original (estimated): L: 180mm; W: 90mm; H: 20mm.

The box from Grave 6635 was clearly buried open, ie without the lid in place. Although the width of the mixing pallete and its cover (Cat. no. 13) is almost identical to that of the box, and so could perhaps have acted as the sliding lid of the box, it may be too wide to have allowed for a groove into which to slot the palette. The palette is shorter than the box, but the presence of wood at the north end may indicate that a short length of the box at this end had a permanent wooden top, making this less of an objection. Such palettes are also found separately, and the box may instead have had a wooden sliding lid. There is a fine example of a box made of yew found in 1917 at Eenum terp, municipality of Loppersum, now in Groninger Museum (Inv. Nr.1949/IV 1). Another box was found in 1840 at Nijmegen. It was less well preserved than the Eenum box, but was found in a stone sarcophagus together with glass and bronze vessels and a set of surgical and medical instruments of 3rd century AD date (Künzl 1983, 93-6, Abb. 74–6).[2]

The construction of this box is quite different from the construction of most copper-alloy pharmaceutical boxes. The walls of these are often built of copper-alloy sheet folded to form hollow box like sides (eg Beck 1977 pl. 1–2 & 7). It is more usual for pharmaceutical boxes to have five compartments, with pairs of smaller compartments at each end flanking a single larger compartment across the middle of the box. Often the compartments have separate lids (eg Beck 1977 pl. 1–2 & 7; Bliquez 1994, no. 296, ill.196). Some have individual lids that simple lift out (eg Bliquez 1994, no. 296) while others have hinged lids to the internal compartments (Beck 1977, pl. 2, 5, 7; Boyer and Guineau 1990, figs 22–4). The boxes were often closed by a sliding lid, which prevented the small interior lids from accidently opening; see the examples from Wehringen and Cologne (Boyer and Guineau 1990, figs 23–4) and Echevronne (Beck 1977, pl. 1–2). A box from Pompeii with no internal lids was closed by a sliding sleeve (Bliquez, 1998, pl. xxiv).

There are examples of pharmaceutical boxes with integral mixing bowls and palettes. An example from a grave found in Lyon example incorporated a small mixing bowl and stone palette (Boyer and Guineau 1990, figs 12–14). It appeared to be a box with five internal compartments with individual hinged lids and a sliding outer lid (ibid, fig. 18). However its base incorporated an integral fixed mixing bowl, some of the internal partitions being shallower to accommodate the bowl, and a palette that slides out for use (ibid. figs 11–14 & 27). The box in grave 6635 could not have had an integral hemispherical bowl, as the metal divisions within the box were all of full depth. The Lyon box was found with its contents, which included a number of stamped tablets (*collyria*) (ibid. fig. 28). The stamped labels, which were in Greek, could be read and in some instances the chemical composition of the tablets could be determined by analysis (ibid. 235–43). Also found with the Lyon box was a cylindrical case for medical instruments (ibid. figs 7 & 25). The Lyon box is a more sophisticated example of the pharmaceutical set than the example from grave 6635.

[2] References to the wooden boxes from Eenum Terp and Nijmegen I owe to Ralph Jackson of the British Museum, who also discussed the box, palette, and spatula probe

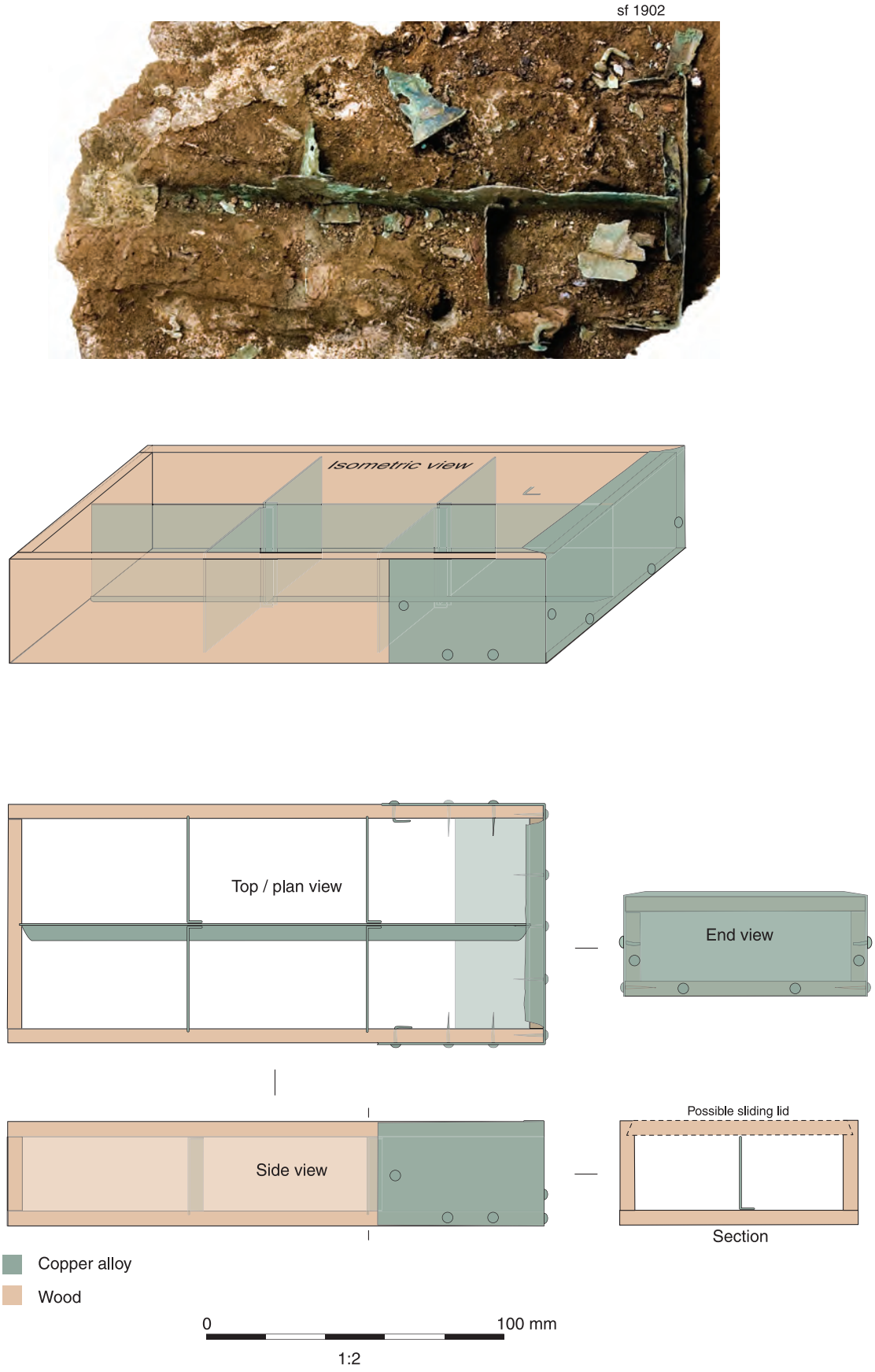


Fig. 4.31 Photograph of cosmetic box sf 1902 and isometric reconstruction

A small number of these boxes has been recovered from Pompeii (eg Bliquez 1994, 66–7, 191–2, ills 189–92, pl xxiv), and individual examples have been recovered from across the Empire (see Beck 1977; Künzel 1983: Künzl 2002; and esp. Boyer and Guineau 1990, fig. 21), suggesting that these were not common items even in the houses of the well to do, but might have found in the houses of the very wealthy, and were used perhaps both for cosmetics and for personal medicines.

13 Palette and cover. (sf 1902.2, context 6787; Fig. 4.32) This comprises a rectangular limestone palette and a copper-alloy cover that slides over it. The cover incorporated an integral hemispherical bowl, which has now largely disintegrated. Where the bowl and flat portion of the cover meet there are inscribed lines. The bowl has a pair of inscribed lines or mouldings just above the point where it joins the cover, and there are concentric inscribed lines on the flat portion of the cover around the bowl. The palette is well worn in the centre of its upper face. The underside of the palette has chamfered or angled edges. The copper-alloy cover has folded edges on its two long sides and one end. These served to retain the palette when not in use. Palette: L: 129mm extant; W: 75mm; Th: 9mm. Cover: L: 133mm extant; W: 89mm.

A recently published example of a stone palette and cover from the Insula of Menander at Pompeii very closely resembles the Grave 6635 palette (Allison 2006, 208, pl. 97, cat. no. 1529). In Allison's catalogue it is described as a whetstone, and it is argued that the bowl was intended to hold 'a sponge to keep the whetstone moist'. It is clear from the wear on the stone palette from grave 6635 that it was not used as a whetstone, but as a palette to grind and mix powders and pastes, whether pharmaceutical or cosmetic. Over 40 palettes have been found in Roman Britain. Others, some with sliding covers, are known from Augst (Riha 1986, 43–55). Some examples incorporate a stone palette, integral mixing bowl, small box or compartment and tube for spatulas and probes (eg Bienert 2007, 242–5, Kat.-Nr. 287; see also Riha, op. cit., Abb. 17, from Andernach). As noted above (Cat. no. 12) the pharmaceutical box from Lyon incorporated a small mixing bowl and palette (Boyer and Guineau 1990, figs 7, 12–14, 17 & 27). The palette from 6635 with its cover forms a set with the pharmaceutical box (sf 1902.1) above (Cat. no. 12) and the spatula probe (sf1562) below (Cat. no. 14).

14 Spatula probe. (sf 1562, context 6706; Fig. 4.32) This instrument has a spatula at one end and a probe at the other. It is L: 168mm.

This single spatula, together with the pharmaceutical box (Cat. no. 12) and palette and mixing bowl (Cat. no. 13) formed part of a pharmaceutical or cosmetic set. Very often such sets include a number of implements housed in a separate cylindrical box (eg Lyon: Boyer and Guineau 1990, figs 7 & 25). There are examples of pharmaceutical sets which incorporate the box, mixing bowl and palette and the cylindrical instrument holder all in one object: there are examples from Trier (Biernert 2007, 242–5) and Andernach (Riha 1986, Abb. 17). These comprise a rectangular palette and mixing bowl combination, with a small decorated box fixed alongside the bowl and a cylindrical instrument box attached to one long side.

Fig. 4.32 Photographs and cross-section of palette and bronze sheath from grave 6635

15 Folding board or table (Fig. 4.33). The evidence for the folding board or table is provided by four L-shaped corner reinforcements of copper-alloy strip (sfs 1542, 1545, 1565 and 1570) which were positioned in the western corner, halfway up the grave. As found they defined the corners of a rectangular board measuring approximately 625mm x 410mm. Between the corners on the longer sides were further copper-alloy strips (sfs 1546 and 1567). At the centre of the short sides were hinges (sfs 1543, 1544 and 1547), indicating that the board folded. The L-shaped corner pieces and the other strips had signs of mineral replaced wood confirming that they had been attached to wood, but no nails, suggesting that the strips and corner pieces had been recessed into the wood of the board or table and glued.

L-shaped corner pieces (sfs 1542, 1545, 1565 and 1570). There are four L-shaped pieces that are interpreted as corner reinforcement for the board. Four of these pieces were found in the south-west corner of the grave marking out the position of the board. Sf 1570 was in the very south-west corner of the grave. The adjacent corners were marked by sfs 1565 and 1545; the fourth corner was marked by sf 1542. These pieces did not have any nails to attach them to the board. Mineral preserved fragments of wood were found, and sandwiched between the wood and metal strips on sfs 1545 and 1570 were traces of a thin white layer, possibly representing a glue. sf 1542 – L overall: 70mm; W overall: 50mm; W of strip: 11mm; sf 1545 (2 x fragments)– L overall: *c* 70mm; extant W overall: 30mm; W of strip: 11mm; sf 1565, fragmentary (3 x fragments) – L overall: *c* 70mm; extant W overall: *c* 40mm; W of strip: 11mm; sf 1570, poorly preserved – L overall: *c* 62mm; extant W overall: *c* 46mm; W of strip: 11mm.

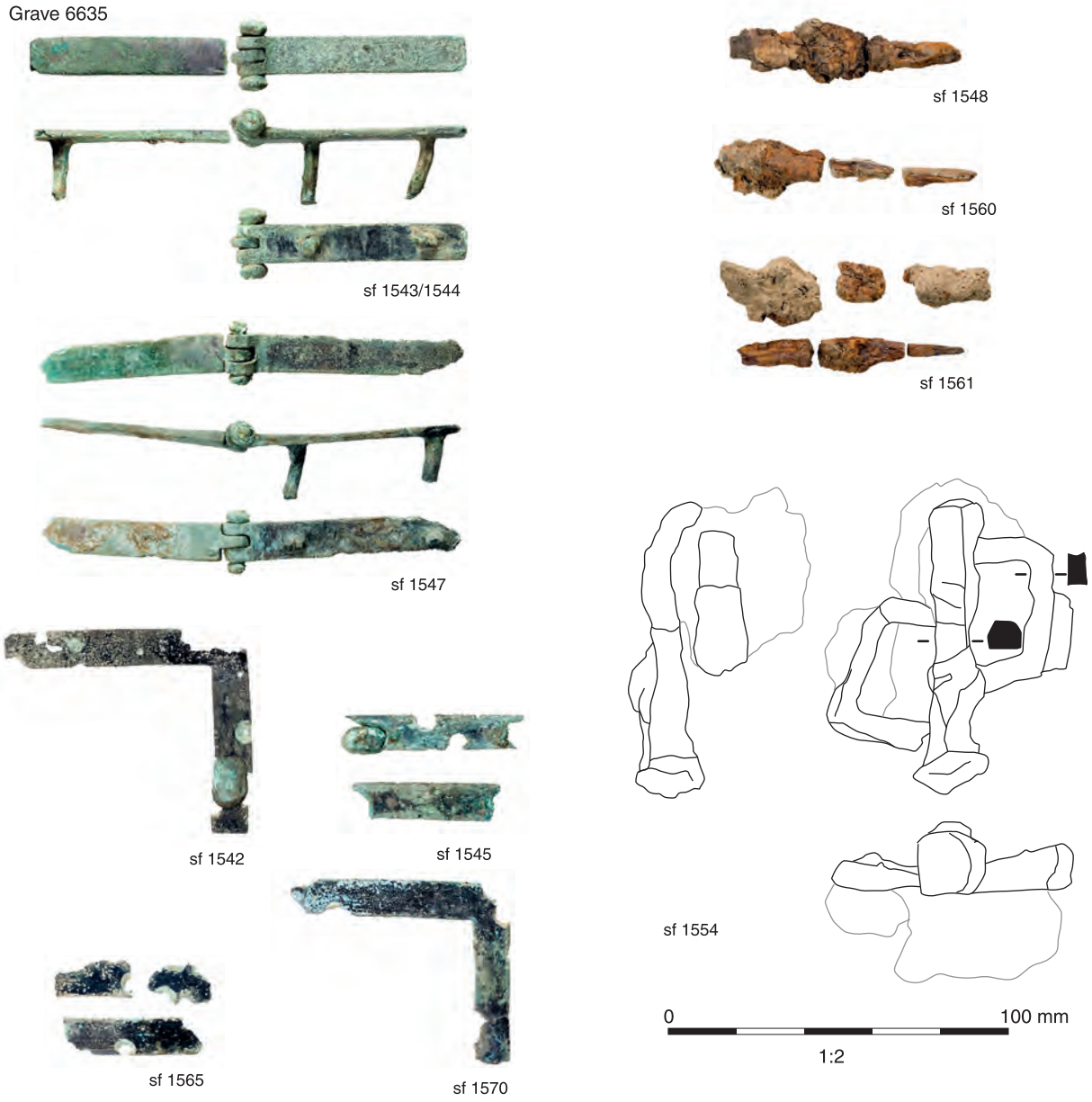


Fig. 4.33 Photographs of hinges and edging plates of folding board, plus iron objects below it, together with an X-ray of iron object sf 1554

Straight intermediate strips (sfs 1546 and 1567) had signs of mineral replaced wood confirming that they had been attached to wood. They had no nails or nail holes. sf 1546 – L overall: 70mm; W of strip: 11mm; sf 1567: 2 fragments. L: 35mm and 20mm, W: 11mm.

Cast hinges (sfs 1543/1544 and 1547) Long narrow cast hinges with tinned surfaces. The hinge pivots in both cases have quite large prominent but plain terminals. They were secured to the board by rivets burred over at each end. Assuming that the hinge plates were set into the board, the length of the rivets on both hinges suggest that the board would have been *c* 19–20mm thick. The hinges were positioned in the centre of the short sides of the board, with hinge sf 1547 at the north-west end between corners sf 1570 and sf 1565, and hinge pieces sf 1543/1544 at the south-east end between corners sf 1545 and sf 1542. sf 1543/1544, two fragments of cast hinge – sf 1543 L: 56mm; W of plate: 10mm; sf 1544 L: 69mm; W of cast plate: 11mm; W over pivot bar and terminals: 21mm; hinge sf 1547 – L: 120mm; W of plates: 11mm; W over hinge pivot 19.5mm.

16 **Iron objects**. Sfs 1548, 1560 1561 and 1554. There are four iron objects. These include three small iron rods or bars, which all taper to a point at each end, range from 68mm long to 85mm long, and were found lying under the folding board or table (Cat. no. 15). They were laid parallel to each other in a line and spaced about 190mm apart. The objects were aligned on the centre line of the folding board. Their function is unclear, but they seems to have been associated spatially with the folding board (see Plate 4.12). Sf 1548 was found close to hinge sf 1548 at the north-west end of the board. Sfs 1561 and 1560 were positioned on the mid line of the board. The spacing of the three rods suggests that it is possible that originally there had been a fourth rod or bar positioned close to hinge sf 1543/1544 at the south-east end of the board.

The fourth iron object (sf 1554) comprises a nail and two small dogs or staples. They were found together up against the patera (sf 1549) . The nail is clenched over at the tip. The two staples were found on either side of the nail in lightly staggered positions and slightly angled in relation to each other. It appeared that these three objects had been fixed to a piece, or pieces, of wood in precisely the relative positions in which they were found. This group of three objects was on the same line as the three pointed objects (above) and apparently on the same level within the grave. sf 1548 – L: 68mm; sf 1561 – L: *c* 70mm; sf 1560 – L: 85mm; sf 1554 – overall L: 83mm; W: 60mm; Nail – extant L: 83mm; Staples – L: 40mm & 41mm.

Mineralised wood and other organic remains from grave 6635 *by Dana Goodburn-Brown*

Table 4.2 presents the results of SEM analysis of wood and some other samples from grave 6635. Wood types suggested and some of their associated features are:

Hazel (*Corylus* sp.): predominantly uniseriate rays and occasional aggregate rays (a group of short multiseriate rays separated by just wood fibres), scalariform perforation plates with 4–7 bars.

Oak (*Quercus* sp.): ring porous, has both both very wide and uniseriate rays, simple perforation plates.

Beech (*Fagus* sp.): diffuse porous, rays are 5–10 cells wide, simple perforation plates.

Willow (*Salix* sp.) and Poplar (*Populus* sp.)—uniseriate rays (homogenous ones indicate Poplar), simple perforation plates.

Grave 6645

Like burial 6635, grave 6645 was only identifed during the lowering of the interior of enclosure 6299 by machine (Fig. 4.34). Situated 3.4m to the south of 6635, the grave was almost square, but was slightly longer (1.2m) NNE-SSW, and 1.1m wide. The north-east and south-west corners were sharp, but on the north-west and south-east the corners were angled inwards. The sides of the grave were close to vertical, and the base nearly flat, but slightly deeper on the south than the north, with a maximum depth of 0.45m.

This grave was dug by hand from the top. The grave goods were less numerous than in the other two graves, and more fragmentary, so that their layout and function did not become apparent until late in the excavation. The discovery of a number of copper-alloy fittings behind a Terra Rubra platter on edge against the east side of the grave, and of a glass unguent bottle adjacent to a copper-alloy decorated plate with wood in between, suggested that there might have been a box in this part of the grave (Fig. 3.34), and in consequence a large block of soil from the south-east quadrant was lifted for X-ray and excavation in the conservation laboratory.

The cremated bone occupied the centre of the west side of the grave (Plate 4.17). There was considerably more cremated bone than in the other two graves, the weight representing something approaching half the weight of a modern cremation. The bones included more large fragments, from which it was deduced that the individual was adult and probably female. At the south edge of the cremated bone were the highly corroded remains of two bow brooches (sf 1900), one almost completely masked by bone. Within the northern part of the cremated bone spread, and initially masked by it, was a ceramic cup (sf 1528), while beyond the brooches to the south was a dish (sf 1574) sitting flat upon the base of the grave.

On the east side of the grave and towards the south-east corner of the grave there was a concentration of finds suggesting a box or casket (see Scott below). Evidence for the west side of the box consisted of a decorated copper-alloy plate with wood behind (to the east) of it, and a glass unguent bottle standing upright against the inside, with other copper-alloy or iron objects to the south and north on the same line (Plate 4.18). The north and south limits of the box are indicated by rows of nails

Table 4.2: Results of SEM analysis of wood and some other samples from grave 6635

Object No.	*Type of object*	*SEM identification *refers to epiliuminated examination by Lisa Gray*	*Technological information/notes *diagnostic features observed*	*Comments*
Grave No: 6635				
	Folding board + substructure or legs of table		*Board appears to have been made of different types of wood components.*	
sf 1543	cast cu alloy hinge strap for folding board	Beech or oak	Marked rays	
sf 1545	L-shaped cu alloy corner piece with white corrosion	Too amorphous	Tabbed cu alloy pieces seemed to have been embedded in lead, which itself was inlayed into wood	White corrosion is lead, but wood structure is not well preserved in this matrix.
sf 1546	Cu alloy edge strip, from folding board	willow, poplar, hazel or alder	possibly radial face cut	
sf 1547	Cast cu alloy hinge, from folding board	Probably beech, maybe oak	Simple perforation plate with scaring. Wood fibres in 2 directions. Prob. Radial or near radial surface	The bias would be towards beech
Sf 1560	Iron rod or bar. One of 3 rods or bars (sfs 1560, 1548, 1561) found below the board	Possibly oak	Wide ray as in radially cleft pale or board	'Possibly oak'
	Pharmaceutical box.		*Copper alloy and wood compartments within a wood and metal box with a limestone pallette and copper alloy mixing bowl and spatula associated.*	
Sf 1902.1	Pharmaceutical box.		Hardwood (scalariform plate), radial face	Wood traces were found at base of box and alongside some of the compartment walls. (images included in the conservation report on-line, www.)
Sample 70	Red fibrous wood fragments		Si, Fe, Cu	Inconclusive SEMEDS analysis of samples from compartments in the pharmaceutical box.
Sample 69	?rock		Al silicate + P + Ca + Fe + Cu + Pb	

(Fig. 4.34). On the east the box sat up against the edge of the grave (Plate 4.19). Here a ceramic dish (sf 1573) stood on its edge against the grave side; a drop handle and a hasp were found some way off the bottom of the grave behind this dish, suggesting that they had been on the side of the box and had remained *in situ* due to the weight of the plate. Most of the area of the box was lifted as a single block, on which further details of the position and size of the box are indicated by lines of small tacks and by the presence of rings and other box fittings. This box appears to have sat upon the base of the grave.

From the west edge to the middle of the grave pit, and lying around the edges of the cremation, was a small number of metal finds, possibly forming part of the metal furniture of a further box (Cat. no. 18). These included tacks and nails (sfs 1906 (x 2), 1917(x 4) and 1919) and indeterminate small iron plate fragments (sf 1920), but more significantly a narrow rectangular iron plate or label (sf 1533) found on edge partway up the grave fill (Plate 4.20), and part of an iron lock plate (sf 1581). The iron lock plate was just above the partly collapsed remains of an upright ceramic beaker (sf 1566), against whose south side a ceramic platter (sf 1572) was found on edge and aligned west-east across the grave. Given the presence of a platter on edge within the box on the east side, it seems plausible that this other platter may also have been placed up against the north edge of a larger box across the centre of the grave, whose position may be indicated by the nails, the iron label or plate, the platter on edge and the lock plate, as well as the extent of the cremation (see Fig. 4.34). Just east of the dish, and lying flat over a small nail fragment (sf 1919), was a rectangular high tin-bronze mirror (sf 1912; Plate 4.21). This had a leather backing, possibly patterned (Fig. 4.38). If the nail belongs to a box, then this may have been leant against the corner of the box behind the dish, and have slumped flat when the wood decayed.

The fittings include several incomplete objects, and the nails were insufficient to outline a complete box. It is possible that the box was originally made entirely of wood, the nails repre-

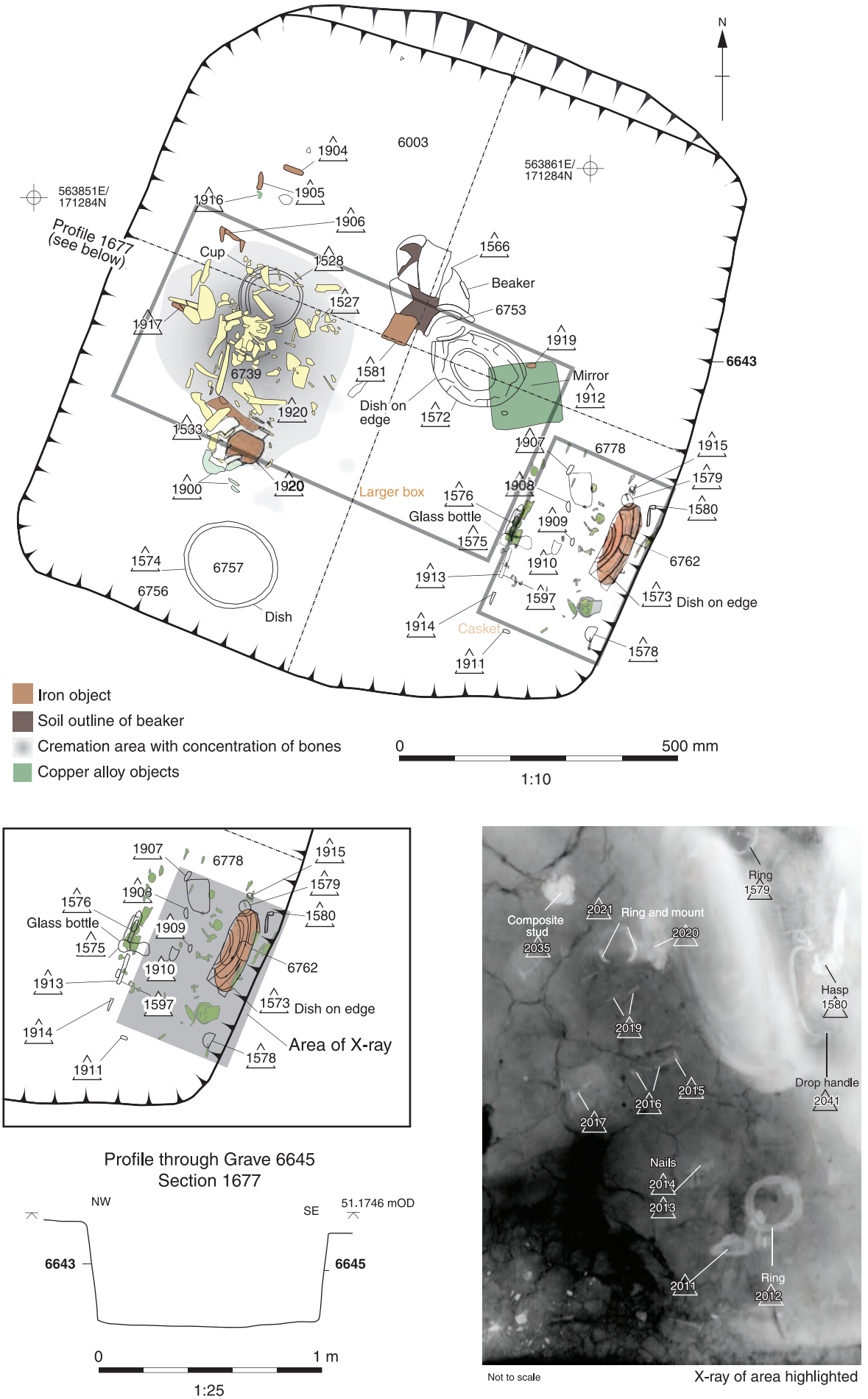


Fig. 4.34 Plan of grave 6645 showing positions of casket and possible larger box, together with a profile of the grave

Plate 4.17 Grave 6645 partly excavated looking north, showing main grave goods

senting repairs. Alternatively any box furniture may have been deposited with the cremated remains, rather than as part of a box containing the cremation. Two nails that are unlikely to be *in situ* (sfs 1904 and 1905) were recovered from the north-west part of the grave, and may represent stray finds incorporated with the backfill. A trail of cremated bone was also found in the upper north-west part of the grave, and may alternatively indicate later disturbance in this part of the grave (see also below).

Four numbers were attributed to the grave fill (6760, 6876, 6761 and 6644), but these were all very similar, except that 6761, part of the upper filling of the north-west quadrant, contained small fragments of cremated bone. The fill was a clayey silt with some very fine sand and very occasional small angular flints, very similar to the Thanet Sands into which the grave was dug, and almost certainly represents the soil dug from the grave.

The cremated bone in fill 6761 was present in very small quantities, and appeared highest towards the

Plate 4.18 Grave 6645 detail of upright unguent bottle and adjacent objects as first revealed

Plate 4.19 Grave 6645 detail of Terra Rubra plate and adjacent metal objects against the east side of the grave, as first revealed

Plate 4.20 Grave 6645 detail of cremation, iron plate on edge (with iron lock plate in background above ceramic vessel) in west part of grave, as first revealed

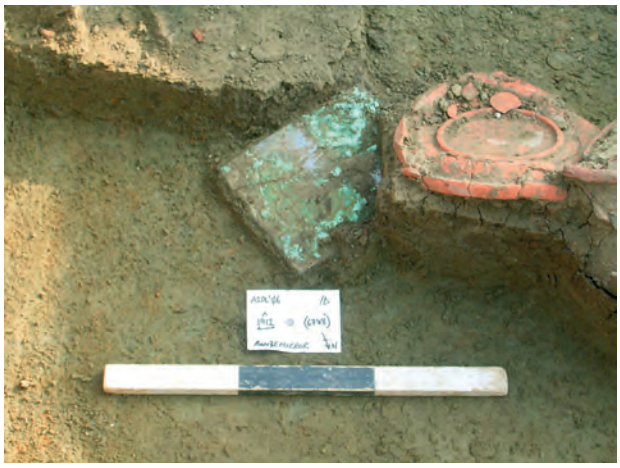


Plate 4.21 Grave 6645 detail of mirror and angled Terra Rubra plate in middle of grave, during excavationvessel) in west part of grave, as first revealed

very northern edge of the grave, and lower down further south. It could therefore represent animal burrowing, although the undisturbed condition of the larger grave goods suggests that disturbance to the grave, rather than its upper backfill, was limited. Alternatively the cremated bone could represent material incorporated during backfilling from a pyre nearby, and which was tipped into the grave from the north, also explaining the cremated bone recorded as deposits 6098 and 6099 before the grave proper had been recognised (see Fig. 4.22).

Catalogue of pottery from grave 6645 *by Valery Rigby*

A small group of five vessels was deposited complete, comprising two imported platters and two local example along with a butt beaker copy (Fig. 3.35). The latter were probably acquired from workshops which supplied burials 6619 or 6635. The stamp of 1573 is both worn and affected by soil conditions suggesting that had been used, but the other impression is sufficiently crisp and clear to suggest that it was new at the time of burial.

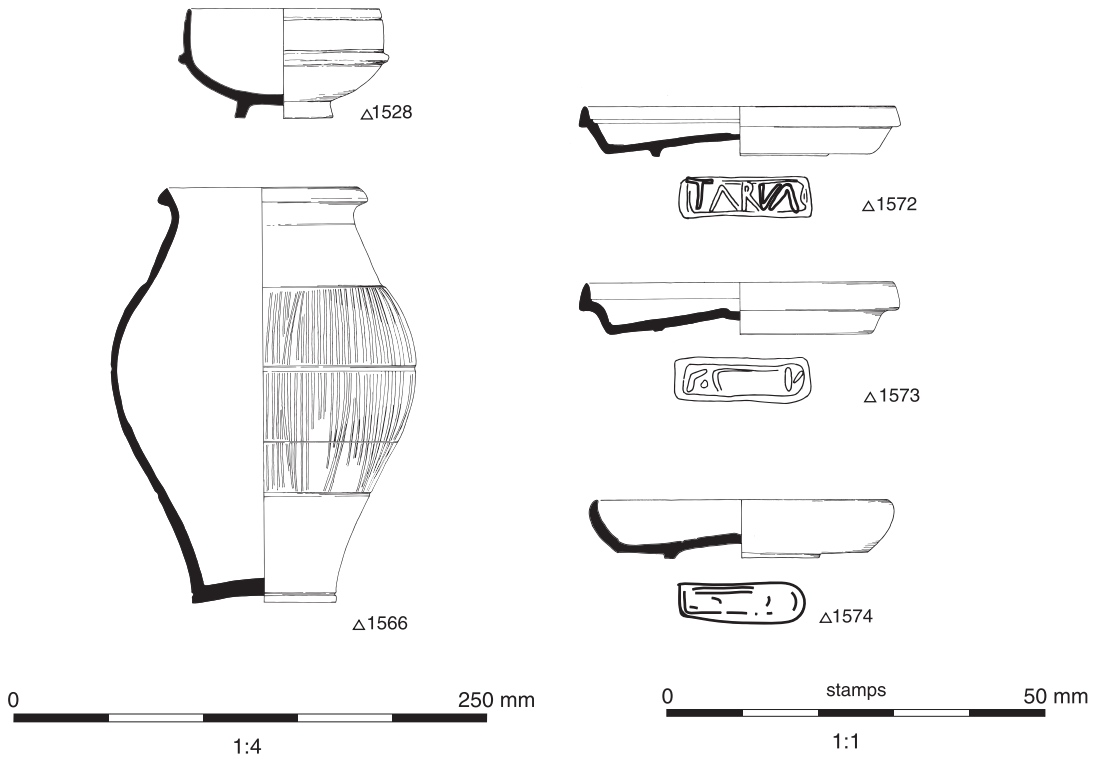


Fig. 4.35 Pottery from grave 6645

Gallo-Belgic imports

1572	FORM	Small foot-ring platter *Cam* 8/7
	FABRIC	Terra Rubra 1C (GAB TR 1C). Fine red powdery matrix; darker slip; severely flaked and laminated, no finish survives.
	CONDITION	Fragmented and laminated; restorable to complete rim circuit.
	CONDITION AT BURIAL	Complete
	POTTER	Tarva [G-B database P360 Die 01A01]
	READING	TARVA [G-B database V1090]. Distribution of TARVA/TARVAC/TARVAS: Thérouanne, Pas de Calais on a TR platter in Grave 8 with the die of Carevir (see above 667); Mont-Berny; Rheims (Deru 42).
	SOURCE	Marne-Vesle potteries, Rheims the likely kiln site
	DATE	AD 25–50
1573	FORM	Small platter *Cam* 8
	FABRIC	Terra Rubra 1C (GAB TR 1C). Fine red matrix with red argillaceous inclusions; darker slip; traces of polished finish.
	CONDITION	Complete and standing.
	CONDITION AT BURIAL	Complete
	POTTER	Unknown [G-B database P188 Die 02B01]
	READING	Unreadable bordered [G-B database V1089]
	SOURCE	Possibly Marne-Vesle potteries
	DATE	AD 25–60

Local products—copies of Gallo-Belgic imports

1528	FORM	Flanged cup copying *Cam* 58. Good copy but lacks internal lip groove.
	FABRIC	Sandy mixed-tempered sandwich. Grey core; oxidised under surface; smoky brown finish overall; traces of a burnished finish inside and out.
	CONDITION	Two-thirds standing
	CONDITION AT BURIAL	Complete
	SOURCE	north Kent Marshes
	DATE	AD 45–8
1574	FORM	Small platter copying *Cam* 16
	FABRIC	Sandy mixed-tempered sandwich ware. Under-fired so that surfaces abraded and little or no finish survives and severely fragmented condition. Decoration – a pair of burnished circles around the stamp.
	CONDITION	Severely fragmented, complete base circuit
	CONDITION AT BURIAL	Complete
	POTTER	Unknown
	READING	Stamp worn and fragmented so cannot be identified. The impression does not match any of the recognised dies. The form and fabric suggest it is from the same workshop as the *Cam* 16 copies in Burial 6636.
	SOURCE	Workshop 3, north Kent Marshes
	DATE	AD 45–85
1566	FORM	Grooved butt beaker copy *Cam* 119. Grooves define and divide the decorative zone.
	FABRIC	Sandy mixed-tempered sandwich. Grey core; oxidised surfaces; smoky brown finish from rim to lower groove; burnished finish. Decoration – vertical combing using a broad toothed comb.
	CONDITION	Fragmented, complete profile, rim and base circuits restorable
	CONDITION AT BURIAL	Complete
	SOURCE	north Kent Marshes, probably the same workshop as platters in grave 6636.
	DATE	AD 40–80

Catalogue of small finds from grave 6645 *by Ian R Scott*

The finds from grave 6643 were located mainly across the middle of the pit and to the south. On the eastern side of the grave and towards the south-east corner there was a concentration of finds that provides convincing but not unambiguous evidence for a box or casket (Cat. no. 18; Figs 4.36–7). The position and size of the box is indicated by lines of small tacks and by the presence of box fittings (see below). The box appears to have contained a ceramic dish (sf 1573), stood on its edge against the east side.

On the west side of the grave, and occupying the middle of this side, was the cremation. Extending across the centre of the grave from the western edge to the middle of the grave pit, and associated with the cremation, was a small number of metal finds, possibly forming part of the metal furniture of a further box (Cat. no. 19; Fig. 4.38). These included tacks and nails (sfs 1906 (x 2), 1917(x 4) and 1919)

and indeterminate small iron plate fragments (sf 1920), but more significantly a narrow rectangular iron plate or label (sf 1533) found partway up the grave fill, and part of an iron lock plate (sf 1581). There are possibly just too few fittings to make a convincing case for a complete box, and given the sparse number of fittings, it is alternatively possible that any box furniture was deposited with the cremated remains, rather than as part of a box containing the cremation.

Near the centre of the grave, and overlying a small nail fragment (sf 1919) was a rectangular copper-alloy mirror (sf 1912; Cat. no. 20; Fig. 4.38). If there had been a long box across the grave then it is probable that the mirror was in one corner of the box, but if not then the mirror will have been deposited as a loose find.

To the south of the concentration of cremated remains and possible box, the small eroded fragments of two of copper-alloy bow brooches (sf 1900; Cat. no. 21; Fig. 4.38) were recovered.

Catalogue

Found in NNW quadrant of burial pit:

17 **Nails** or **tacks**. Four stem fragments from small nails or tacks. sf 1904 (x 3) & sf 1905.

Casket in south-east quadrant of burial pit:

18 **Casket fittings** (Figs 4.36–7). A number of fittings from a probable box were recovered from the south-east corner of the grave pit. The position and size of the box was revealed by the distribution of small iron nails or tacks and a number of other box fittings including a decorative copper plate with evidence for iron on its back (sf 1576), two copper-alloy drop handles (sf 2041 and sf 2045), five copper-alloy rings (sfs 1579, 2012, 2020, 2047, 2048) four of which have evidence for attached split pins, and a copper-alloy hasp (sf 1580).

The position and size of the box are indicated by lines of small tacks and nails at the base of the box. The west and south edges are quite clear, as is the east side which was close to the edge of the grave pit. On the north side there was an east-west line of nails just north of the ceramic dish, with a few scattered nails further to the north. It seems most likely that the scattered nails represent collapse as the box rotted, and that the clear line of nails marks the edge of the box. The box would have measured between 210mm and 220mm square, and perhaps *c* 200mm square internally. There is a further line of nails inside the box which appears to mark where a divider was fixed. This seems to have divided the box into two unequal compartments. The line of the divider runs north-south and lies *c* 150mm from the west edge, and *c* 65mm from the east edge of the box. The ceramic dish appears to fit neatly within the narrow section created by the dividing partition. The minimum height of the box is determined by the presence of the dish and by the position of the hasp (sf 1580) associated with the box. Presuming that the box or casket had a lid, it must have been at least tall enough for the lid to clear the dish.

The copper-alloy hasp on the east side of the box was located near the top edge of the dish suggesting that the lid of the box was just a little higher than the dish. The hasp could have been attached to the lid by its split pin. There is evidence that the arms of the split pin passed through a small mounting plate formed from thin copper-alloy sheet. The clenching of the arms of the split pin on the hasp indicate that the wood through which it passed was *c* 8mm thick. A copper-alloy drop handle (sf 2041) was found just below the hasp. This was presumably attached to the east side of the box. The handle was secured by split pins which passed through small circular mounting plates. The clenching of the surviving split pin indicates that the box side must have been about 10mm thick. The evidence of a scrap of thin leather attached to the arms of the surviving split pin suggest that there had been a thin leather covering sandwiched between the mounting plate and the wood of the box. Fragments of a second much less well preserved drop handle (sf 2045) were found on the west side of the box. The handle fragments were adjacent to the bottom edge of the box. The handle had presumably slipped from its original position higher up the side of the box. Immediately adjacent to the second drop handle was a rectangular copper-alloy plate (sf 1576) with repousé borders and at least one composite lead filled copper-alloy stud (sf 3001). This panel was found standing in a vertical position aligned on the line of nails marking the west side of the box. The plate was attached to timber which seems to be about 10mm thick and may be a possible lock plate (see below). Resting against the timber and plate on the inside of the presumed box was a small tubular glass unguent vessel (sf 1575).

The other fittings associated with the box include five copper-alloy rings (sfs 1579, 2012, 2047, 2048 and 2020/2021) in four cases with associated with split pins. Four of the rings (sfs 1579, 2012, 2047 and 2048) appear to have been positioned near the corners of the box. The fifth ring (sfs 2020/2021), which is significantly smaller and was found with a small circular mounting plate attached, was found inside the box by the dividing partition. It may very well have served a different purpose from the other four rings. It may have been positioned on top of the box originally.

Decorative copper-alloy plate (sf 1576). This was probably attached to the west face of the casket. The plate is decorated on three sides at least with repousé mouldings. The copper-alloy plate is still attached to the mineralised remains of part of the wooden box, and sandwiched between the wood and the copper-alloy are traces of iron and of leather. Near the centre of the plate was a composite lead filled copper-alloy stud (sf 3001) now detached. There appears to be evidence that at least one other stud or nail was attached to the plate.

The radiographs indicate that the iron at the back of the copper-alloy plate comprised parallel strips and/or thin bars running both horizontally and vertically. These may represent part of the mechanism of a small light lock, and there is slight evidence on the X-ray for a possible spindle or pivot. If there was a lock on the west side of the box then the hasp (sf 1580, see below) on the east side would appear to be superfluous. Plate – copper-alloy; strips and bars behind plate – iron. Plate – sf 1576: L: 90mm; H: 71mm. Composite stud – sf 3001: D: 18mm.

Fig. 4.36 Photographs of copper alloy fittings of casket and of the glass unguent bottle

Tacks with round slightly concave flat heads. Two were found, one (sf 1913) near the south-west corner of the casket, while a second example (sf 2043) was found at the corner of plate sf 1576 on the west face of the box. It is probable that these tacks secured the copper-alloy plate to the box. Both tacks had quite short stems, and it is tempting to interpret them as furniture tacks to secure a covering for the box. Cu alloy. sf 1913 – D of head: *c* 10mm; L of stem: 10mm; sf 2043 – D of head: 10mm; L of stem extant: 8mm.

Iron plate. An approximately rectangular iron plate with two nail holes. One longer edge of the plate is straight, but the other long edge and the short edges are irregular. The plate may have been associated with the casket, but its precise location is not known. It is possible also that the plate was closely associated with the possible copper-alloy lock plate (sf 1576). L: 42mm; W: 33mm.

Composite lead filled copper-alloy studs (sfs 2034 and 2035). The remains of 2 composite studs were recovered in addition to the stud (sf 3001) attached to plate sf 1576 above. One stud (sf 2035) was found on the west face of the box approximately midway between the copper-alloy lock plate (sf 1576) and the north-west corner; the second (sf 2034) stud was found on the north side closer to the north-east corner. In both cases only the lead filling of the studs survives. Lead. sf 2034: D: 16mm; sf 2035: D: 16/17mm.

Hasp (sf 1580), with a split pin at the top and evidence for a staple at the narrow lower end. 2 x fragments. The top end of the hasp was bent; it is unclear whether the bending was deliberate. It is possible that the hasp had been bent to fit it to the box and that it was not an original part of the box furniture. The split pin was attached to a loop at the top end of the hasp. The arms of split pin are bent in such a way as to suggest that they had been attached to piece of wood that was *c* 8mm thick. Attached to the split pin is a fragment of thin sheet which was probably part of thin circular mounting plate. Cu alloy. sf 1580: L: 94mm; W: 19mm. Context 6652.

Drop handles (sf 2041 and sf 2045) Fragments of two drop handles were found. The more complete example (sf 2041) included an almost complete handle. A small copper-alloy fragment (sf 3003) was associated, which was probably a fragment from the second split pin for the handle, Also found with sf 2041 was a possible fragment of thin leather which was still attached to the arms of the split pin that secured the handle. This suggests that the box to which the handle was attached may have had a leather covering, perhaps coloured. The arms of the split pin were bent in such a way as to show that the handle was attached to a piece of wood *c* 10mm thick.

The less well-preserved drop handle (sf 2045, 2042) comprises three eroded fragments: a very thin eroded fragment of the handle loop (sf 2045) and two S-shaped fragments (sf 2042 & 2045) which had formed the end hooks of the handle. There was no associated evidence for mounting plates or split spike loops. Cu alloy. sf 2041 – handle loop L extant: 55mm; mounting plate D extant: *c* 19mm; sf 2045 – handle loop L extant: 46mm.

Rings. Four plain copper-alloy rings of diamond cross-section (sf 1579, 2012, 2047, 2048) all of similar size were found. A fifth small ring and mounting plate (sfs 2020 & 2021) was also recovered. sf 1579 was a complete ring found with an attached copper-alloy split pin and was located adjacent to the top edge of ceramic plate sf 1573 at the north-east corner of the presumed casket. The arms of the split pin

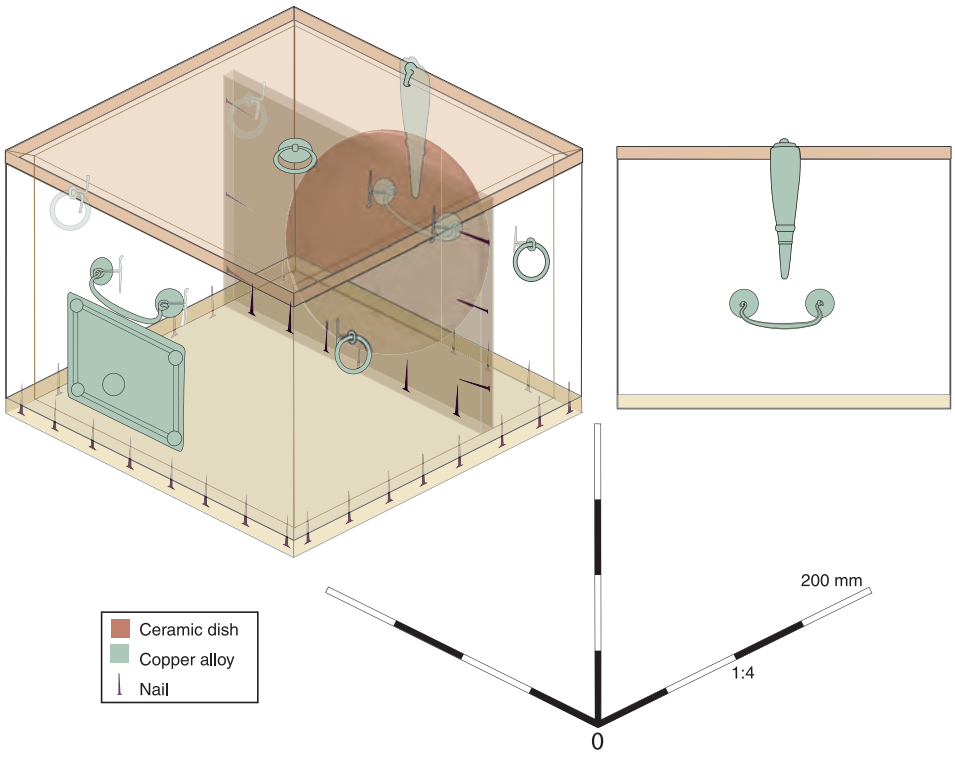


Fig. 4.37 Isometric reconstruction of casket and its contents in grave 6645

were bent open and suggest that the ring might have been attached to object that was no more than 3mm thick. The second ring (sf 2012) which is heavily encrusted, but is clearly visible on X-ray, was located at the south-east corner of the casket. sf 2047 comprised a fragmentary ring with a fragment of a probable loop of a split pin and was found at the south-west corner of the casket and a little above its base. Ring sf 2048 was a complete ring but found without another split spike loop. It was found at the north-west corner of the box not far from the mirror sf 1912. All four rings were between 25mm and 30mm in diameter.

Ring sf 2021 is fragmentary and only *c* 22mm in diameter. Attached to part of this small ring was the loop of a split spike loop and a small circular mounting plate (sf 2020) *c* 20mm in diameter. Not enough survived of the arms of the split pin to provide evidence for the attachment of the ring. The ring and attached mounting plate were found within the box. There was no evidence for plates associated with the larger rings, and it seems likely that the smaller ring served a quite different purpose from the larger rings.

The larger rings seem to have been positioned at the corners of the casket, while the smaller ring was found within box and may have been originally positioned on the lid. Cu alloy. sf 1579 – D: 27mm; sf 2012 – D: *c* 30mm; sf 2047 – D: 25mm; sf 2048 – D: 27mm; Sfs 2020 & 2021: D of ring: 22mm; Context 6760.

Small nails or tacks: *c* 21 nails or tacks recovered (sfs 2015, 2017 (x 2), 2019, 2024, 2026-7, 2029–31, 2033, 2036–7, 2039–40, 2058 (x 3), 3002 (x 3)) and *c* 16 small nail or tack stems (sfs 1578 (x 5), 2013 (x 2), 2014, 2022–3, 2028, 2038, 2044 (x 2), 2056 (x 2). Only ten of the tacks were complete: sf 2015 – L; 25mm; sf 2019 – L: 20mm; sf 2024 – L: 20mm; sf 2026 – L: 22mm; sf 2027 – L: 25mm; sf 2031 – L: 18mm; sf 2039 – L: 20mm; sf 2058 – L: 20mm; sf 3002 – L: 18mm & 21mm.

Most of the nails can be assigned to a side of the box (Table 4.3): most are at the bottom of the box and mark the positions of the sides of the box and a divider within the box.

Iron strip or plate fragments: (sf 1577, 1907–8, 2011, 2016, 2060, 2049–55). These are all very small and fragmentary. Some undiagnostic iron fragments (sfs 1907–8, 1910) were found inside the casket. Other fragments seem to related to the sides of the casket (Table 4.4): one group from the west face of the casket (sfs 2049-2055) would appear to be fragments from a single iron plate of irregular outline. Also from the west side was an iron strip sf 1577.

Table 4.3: Quantification of nails in relation of sides of casket in grave 6645

Position	*Nails (sf nos)*	*No of nail fragments*
W side	2040, 3002	4
N side	1915, 2026-2028	4
E side	2029, 2031, 2033, 2036-2039	7
S side	1911, 2056	4
Divider	2013-2015, 2017, 2019, 2022-2024	10
Adjacent to NW corner	3002	3
Unlocated	2030, 2044, 2058	8

Copper-alloy strip or plate fragments: (sf 1914, 2060) Two small fragments of copper-alloy strip were found, one sf 1914 was found south of the casket, more or less on the line of the west side of the casket. The tiny strip sf 2060 (L: 13mm; W: 2.5mm) was found on the east side of the casket.

Found on west side and across centre of grave:

19 Possible box fittings (Fig. 4.38). There is a small number of possible box fittings spread across the centre of the grave which might indicate that there was a box which contained the cremated remains. These fittings comprise an incomplete iron lock plate (sf 1581), a narrow rectangular plate or label (sf 1533) and a small number of nails (sfs 1917 & 1919) and fragments of possible iron strip (sf 1906) and plate (sf 1920), which may have formed bindings for the box. The lock plate (sf 1581) may have been fixed in the centre of the north side of the box, and the iron strip or label on the south side of the box. The limited number of nails and the lack of hinge fittings makes interpretation of the remains difficult. The box, if it was present in the grave, could have measured 800mm long and stretched from the west side of the grave as far as the casket (Cat. no. 20 below) against the east side of the grave. It could have been 300mm wide. Its height is unknown.

If the two boxes were close together at this point then some of the nails and pieces of iron plate (sf 1577, sfs 2049–54) and copper strip (sf 1914) (Cat. no. 20) found at west edge of the small casket could have formed part of the larger box rather than part of the casket.

Probable ***lock plate*** (sf 1581), broken at one end and slightly encrusted. There are nail holes at the two surviving corners with an extant nail with flat circular head at one corner. The large hole in the plate, which may have been the keyhole is irregular because of corrosion. There is preserved wood graining on one face (see Mineral preserved wood report below). Iron. L extant: 55mm; W: 45mm. Context 6876, sf 1581

Rectangular plate or ***label*** (sf 1533). Narrow plate formed from thin iron sheet with repousé border, and with a nail at each end. In 3 pieces. Again there is evidence of preserved wood in the corrosion (see Mineral preserved wood report). Iron. L: 80mm; W: 23mm. Context 6739, sf 1533

Plate fragments (sf 1920), undiagnostic. Iron. Not measured.

Strip fragments and nails (sf 1906). Two nails. Iron. There is mineral preserved wood in the corrosion (see Mineral preserved wood report). Not measured.

Nails (sf 1917 (x 4) & sf 1919). Five small nails some with mineral preserved wood. Not measured.

Table 4.4: Quantification of strip and plate fragments in relation of sides of casket in grave 6645

Position	*Strip and plate fragments (sf nos)*	*No of fragments*
W side	1577, 2049-2055	11
N side		
E side	2060	1
S side	2011	1
Divider	2016	1

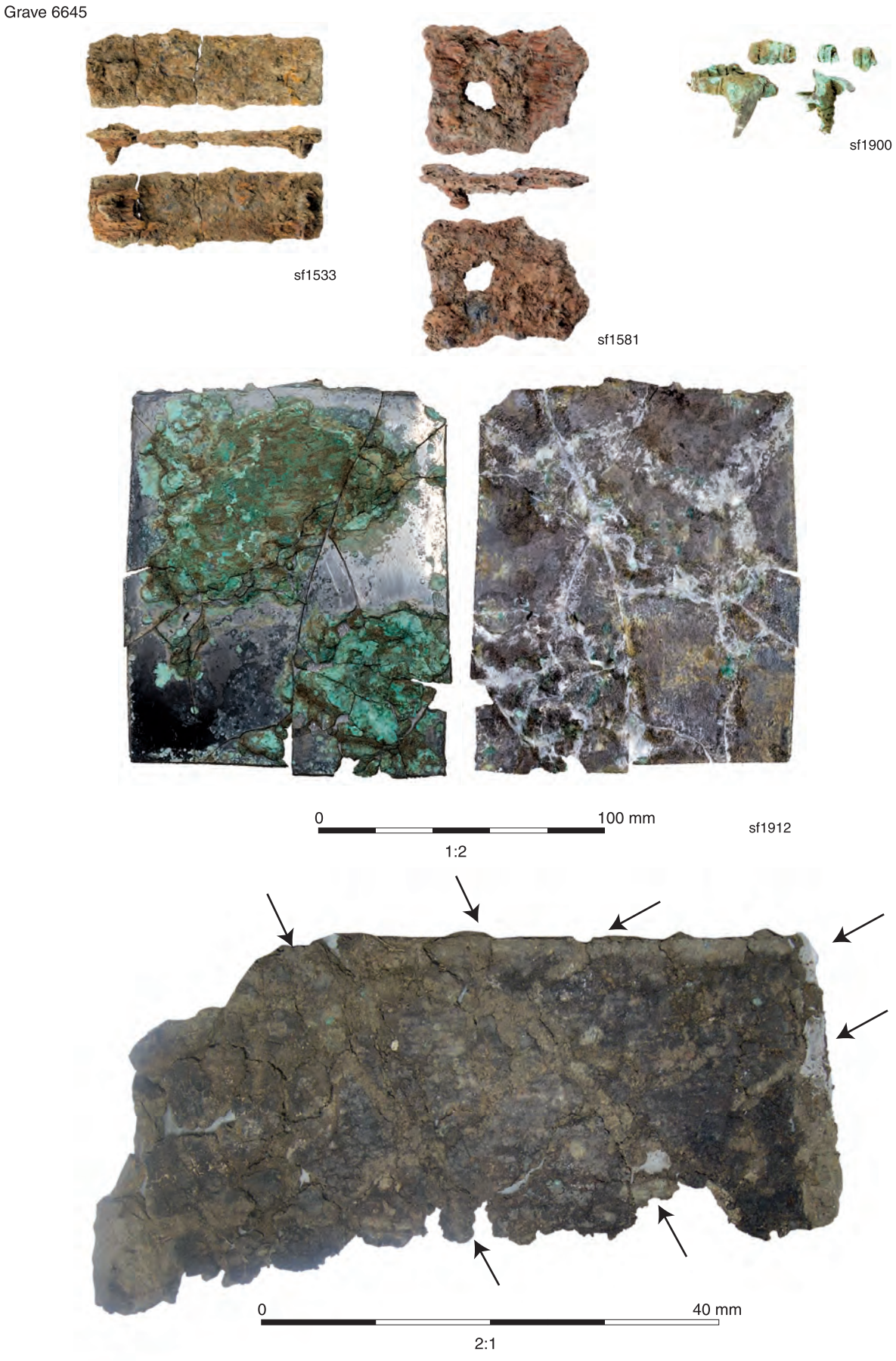


Fig. 4.38 Photographs of brooch sf 1900, mirror sf 1912 (and detail of leather backing) and other iron fittings

20 **Rectangular mirror** (sf 1912, context 6788; Fig. 4.38) Copper-alloy with tinned or silvered face. The edges appear to have been quite crudely cut, presumably because the mirror would have been mounted in a framed backing. Part of the leather backing survived in the upper right hand corner (see Fig. 4.38). The mirror was cracked along its length and broken in two. Each fragment has been broken and suffered corrosion. The pieces of the narrower section have corroded and expanded more than those of the wider portion and as a result is slightly longer as reconstructed. L: 132/137mm; W: 110/112mm; Th: *c* 1.5mm.

21 **Brooches with sprung pins**. (sf 1900, context 6760; Fig. 4.38) Small fragments from two very eroded copper-alloy brooches with sprung pins. One fragment has wings and part of eroded bow with a complete small spring of eight coils. The second fragment has wings and an eroded bow, with only fragments of the spring. Neither brooch is identifiable to form, but clearly the pieces represent two separate brooches. Some wood was preserved in the corrosion on these objects (see Mineral preserved wood report below). Cu alloy. Not measured.

22 **Tubular unguent vessel** (Fig. 4.36), flared sheared rim, slim conical body with slightly flattened base (Isings 1957, Type 8). Very pale blue green glass. Ht: 93mm; D: *c* 30mm. Context 6758, sf 1575

The form of the flask or unguent vessel is consistent with a mid 1st century AD date for the burial. Vessels of this type are frequently found in cremation burials as for example at Stanway, in the Warrior's burial (BF64: Crummy *et al.* 2007, fig 83, BF 64. 17–18) and in the Mirror burial (CF115) (Cool 2007, 344; for a fuller discussion of this vessel form and its dating see Cool and Price 1995, 159–60; Price and Cottam 1998, 169–71).

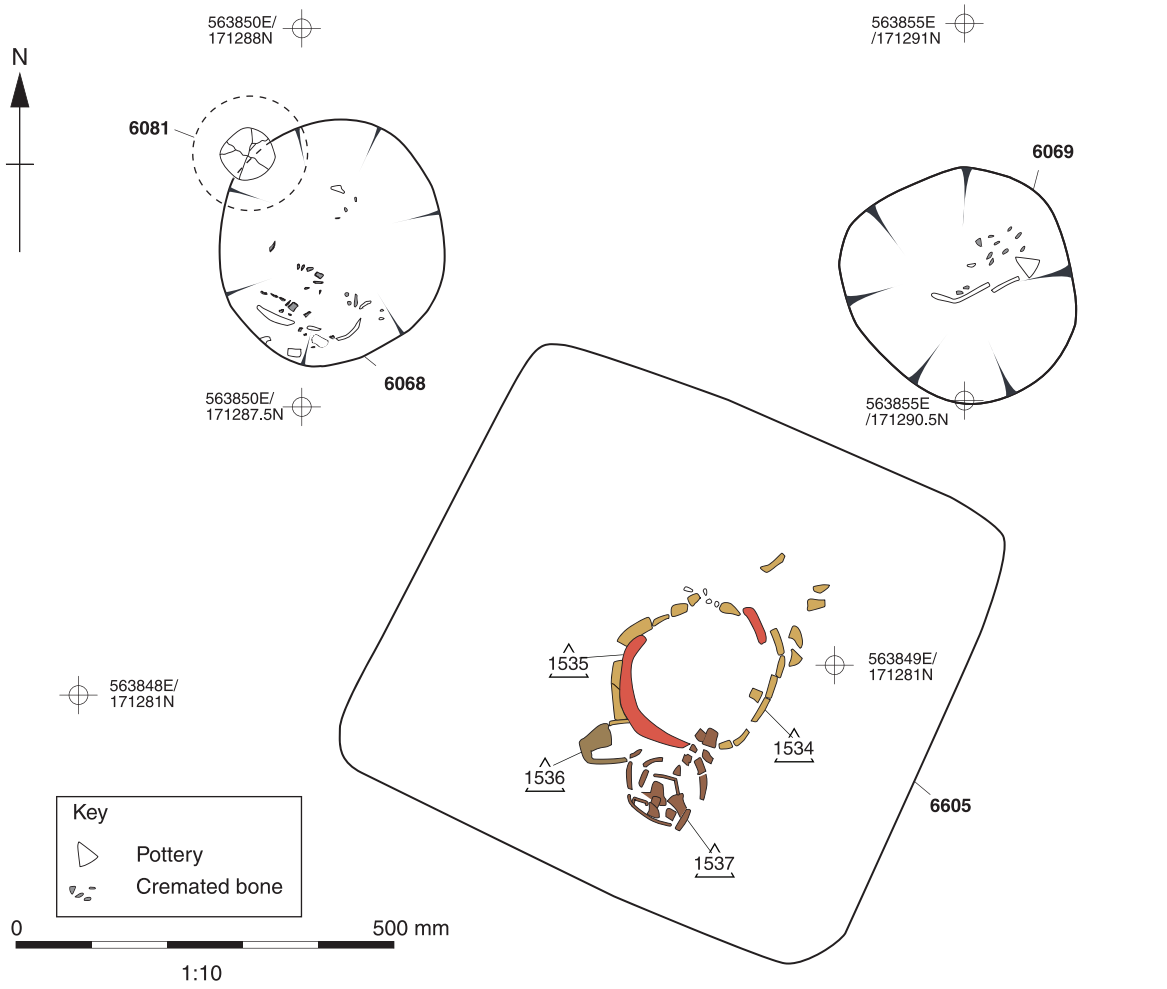
Mineralised wood and other organic remains from grave 6634 *by Dana Goodburn-Brown*

Table 4.5 presents the results of SEM analysis of wood and some other samples from grave 6634. Wood types suggested and some of their associated features are:

Sweet Chestnut (*Castanea sp.*): ring porous, uniseriate rays, simple perforation plates

Table 4.5: Results of SEM analysis of wood and some other samples from graves 6645

Object No.	*Type of object*	*SEM identification *refers to epiluminated examination by Lisa Gray*	*Technological information/notes *diagnostic features observed*	*Comments*
Grave No: 6645				
	Large box or series of containers		*Not sure if one larger box or various boxes*	
Sf 1533	Rectangular iron label with 2 nails possibly from box (see also sf 1581 & sf 1906)	Willow, poplar, alder, hazel, or sweet chestnut	Tangential view Uniseriate rays	
Sf 1581	Iron lock plate possibly from box (see also sfs 1533 and sf 1906)	Beech or oak	Not clear	Beech is more likely choice for boxes in the Roman period
Sf 1906	Nails, from possible box (see sf 1533 & sf 1581)	Beech or oak	But very decayed	" "
Sf 1900	Cu alloy brooch fragments	Beech or oak	Marked rays / radial face	" "
Sf 1578	Nail or tack			
	Inside box			
Sf 2057	Rectangular object of degraded material (possibly similar to pallette found in grave 6635)		Siltstone or mudstone	Survives as a sample
	Box containing glass bottle			
Sample within lifted soil block		yew	cupressed ray pits + faint spiral thickening, tangential face – biological foreign bodies	Possible lid to large box. Found adjacent to split pin near top of ceramic dish. Yew is more usually associated with buckets.
Sf 1576	Cu alloy plate with organic remains associated with small complete unguent bottle ['Bottle box']. Probable structure of box.	yew	Paired rays, ray pits, cupressed ray pits	
Sf 1576	Cu alloy plate with organic remains associated with small complete unguent bottle. Possible lining of box	leather	Smooth with cracking and a few pores	



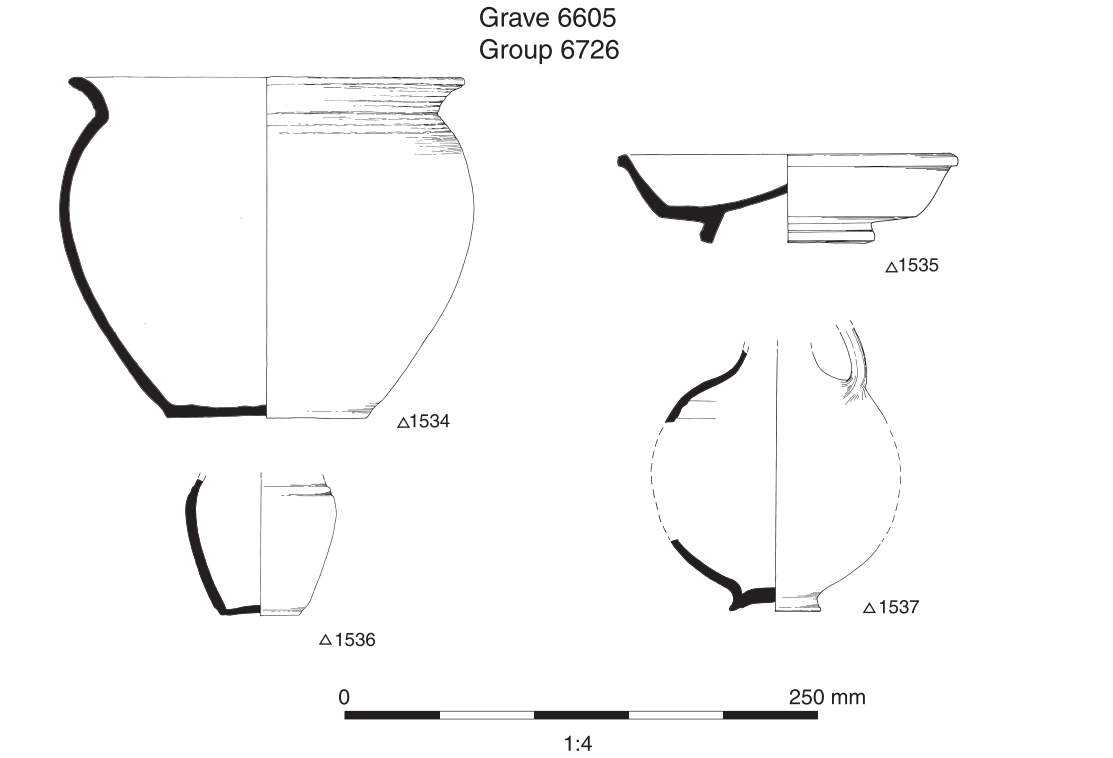


Fig. 4.39 Plans of cremations 6088, 6089 and 6605 plus pottery from 6605

Hazel (*Corylu* sp.): predominantly uniseriate rays and occasional aggregate rays (a group of short multiseriate rays separated by just wood fibres), scalariform perforation plates with 4–7 bars.

Oak (*Quercus* sp.): ring porous, has both both very wide and uniseriate rays, simple perforation plates.

Beech (*Fagus* sp.): diffuse porous, rays are 5–10 cells wide, simple perforation plates.

Willow (*Salix* sp.) and Poplar (*Populus* sp.)—uniseriate rays (homogenous ones indicate Poplar), simple perforation plates.

Yew (*Taxus sp*): conifer with no resin canals, but spiral thickening in the tracheids. Paired rays, ray pits, cupressed ray pits

Other early Roman cremation burials in enclosure 6299

Two cremations accompanied by single vessels were also of mid 1st century AD date (Figs 4.22 and 4.39). Cremation 6068 lay 1m west of the south-west corner of grave 6635, and consisted of a small area of fragments of cremated bone, charcoal and potsherds (sf 602) approximately 0.3m in diameter and only a maximum of 0.06m deep. The base of a second vessel (sf 601, context 6081) was found on the north-west edge of the area of cremated bone. Some 150g of bone was recovered, some of it apparently enclosed within pottery vessel sf 602, and the fragments suggested that this was the remains of an adult. The pottery can be dated to the mid 1st century AD.

Another small area of pottery, charcoal and fragments of cremated bone, cremation 6069, lay 4m north-east of grave 6635. Again the area was roughly 0.3m in diameter and a maximum of 0.07m deep. Twelve sherds belonging to a single reduced-ware jar were recovered (sf 603), again from a vessel of probable mid 1st century date, but only 12g of cremated bone was recovered. The site records state that the cremated remains were enclosed by the pot.

South of the two large square grave pits was a third, smaller square pit 6605. This was just under 0.7m across, with vertical sides and a flat bottom, and survived just under 0.2m deep. It was cut into Thanet Sands, and was oriented ESE-WNW. The cremation was contained within a jar (sf 1534) placed upright in the centre of the pit, and the jar was sealed by a samian dish (sf 1535) that fitted into the everted rim like a lid. The fill of the pit (6646) was clearly the soil excavated from the pit used to back fill it. There were two phases of offering in this pit, as two accessory vessels, beaker sf 1536 and flagon sf 1537, had been added against the south side of the cremation urn after the first 0.1–0.12m of fill had been deposited around the cremation urn (Plate 4.22). The tops of both vessels had been truncated by ploughing. The cremated bone weighed over 1kg, and so represented the recovery of almost all of the bone from the cremated

Plate 4.22 Grave 6605 during excavation, showing the Samian bowl inside the top of jar 1534, and the two smaller vessels laid against it overlying some depth of backfill

individual, who was female and probably an older adult (see human bone report below).

As discussed above, there were also two very small features (6098, 6099) immediately north of grave 6635 (see Fig. 4.22) that may have represented cremation burials, but the very limited quantities of bone and pottery suggests instead that these were part of the backfill of grave 6635, possibly including a little material from the area of the pyre.

Catalogue of pottery from other cremation graves
by Edward Biddulph

Grave 6068

SF601, jar, cinerary urn, Thameside sandy grey ware (R73.3). Context 6081. Not illustrated.
SF602, jar, cinerary urn, coarse grog-tempered ware (B2). Context 6078. Not illustrated.

Grave 6069

SF603, jar, cinerary urn, Thameside sandy orange ware (R74.1). Context 6093. Not illustrated.
Grave/feature 6098
SF604, jar, cinerary urn, coarse grog-tempered ware (B2). Context 6103. Not illustrated.
Grave/feature 6099
SF605, accessory vessel of uncertain form, Thameside sandy grey ware (R73.3). Context 6105. Not illustrated.

Grave 6605

SF1534, bowl, cinerary urn (Monaghan 1987 type 4D), Thameside sandy grey ware (R73.3). Context 6653
SF1535, dish, Drag. 18/31, Central Gaulish samian ware (R43). Context 6654 (for details see samian report by J M Mills in pottery report below)
SF1536, 'jar-beaker', Thameside sandy grey ware (R73.3). Context 6655
SF1537, flagon, North Kent fine orange ware (R17.1). Context 6656

Roman inhumation burials in enclosure 6299

In addition to the cremations, there were also three inhumations in enclosure 6299, all in graves oriented roughly north-south (see Fig. 4.22). Grave 6668 lay 2.3m east of grave 6605, and was 1.55m long and *c* 0.4m wide, though slightly bulbous at the north end (Fig. 4.40). The grave survived 0.21m deep, and the fill was very similar to the natural Thanet Sands through which it had been dug. Very little of the bone survived, but traces of the skull, of ribs, of the lower right arm, the pelvis and of one upper leg were visible during excavation, though only teeth survived lifting. The decaying bones had left a soil stain allowing a little more of the body position to be determined. The body had been laid with the head to the south, and was tilted towards the east with the legs slightly flexed. The size of the individual suggests a child or adolescent. There were no grave goods, and this grave is undated.

Some 1.8m to the west of grave 6645 was another inhumation grave 6693, the body identifiable only as a rather amorphous stain left by the decayed bones (Fig. 4.40). This grave was more heavily truncated both by ploughing and by the machining of the area, and only survived 0.08m deep. Like 6668, the grave was backfilled with the Thanet Sands into which it was cut, making the edges difficult to distinguish; in this case the northern limits of the grave were uncertain. The grave appears to have been around 1.4m long and *c* 0.35m wide. The soil stain suggested that the body had lain with the head to the south, like 6668, and a large stain probably indicating the pelvis suggests that this individual was no larger than that in grave 6668, and so was probably not an adult. Along the north-west side of the grave, and below the pelvis, were three highly fragmented pottery vessels of the late 1st century (Fig. 4.40).

The northernmost of the inhumation graves, in line with 6645 and 6635 and just over 2m north of

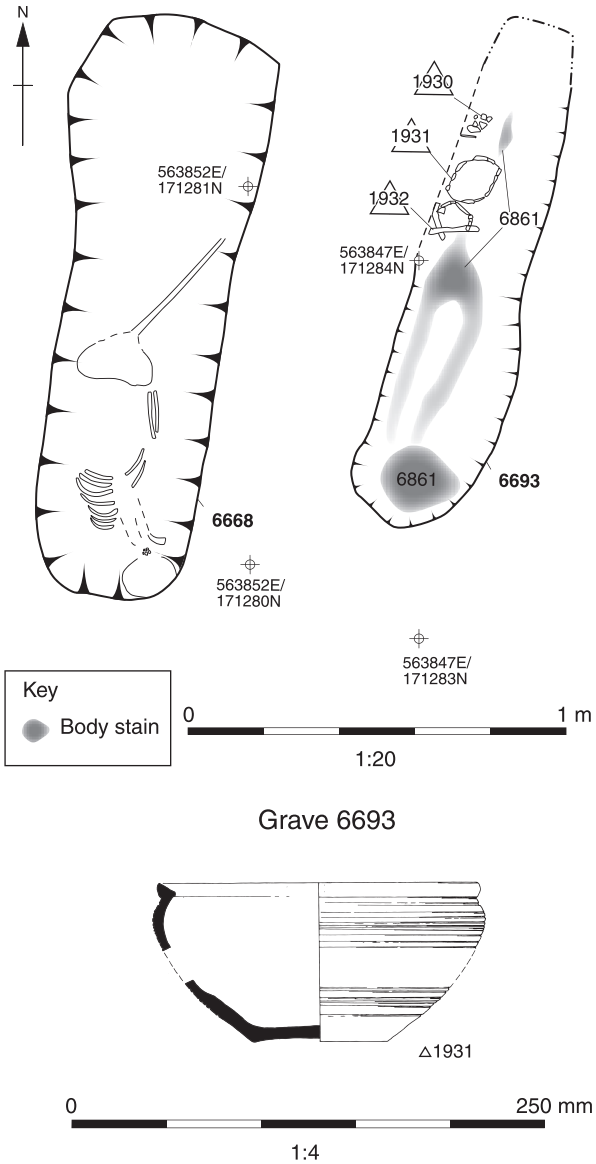


Fig. 4.40 Plans of inhumations 6668 and 6693 plus pottery from 6693

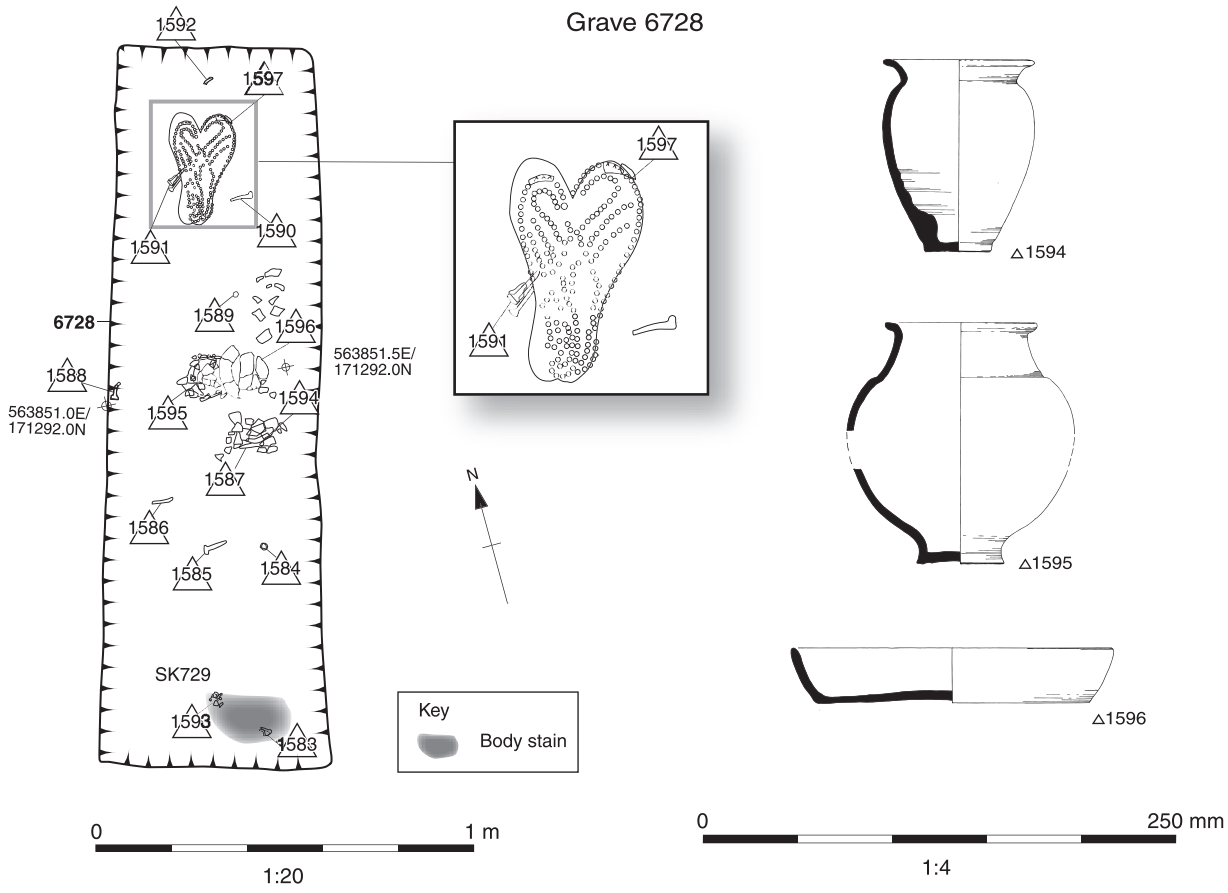


Fig. 4.41 Plan of inhumation 6728 and pottery from the grave

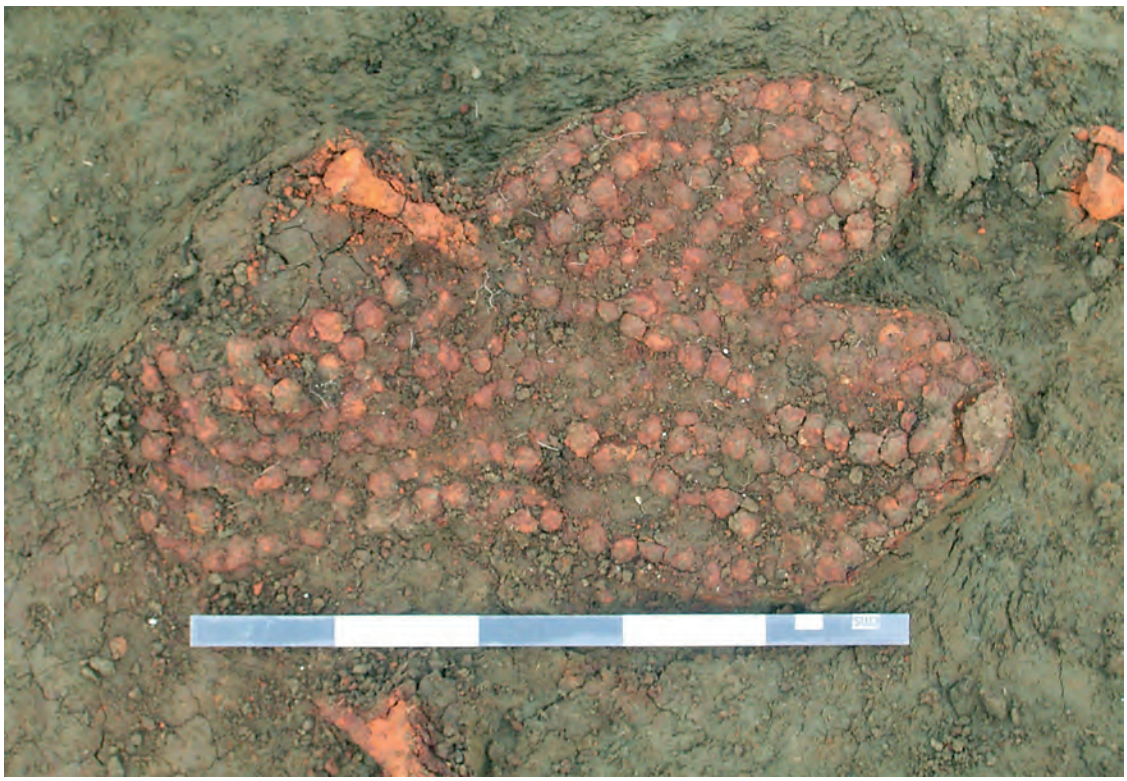


Plate 4.23 Detail of hobnailed boots within grave 6728

the latter, was 6728, a rectangular grave for an inhumation burial laid with head to the south in a coffin secured by iron nails (Fig. 4.41). This grave was 1.92m long and 0.5–0.6m wide, but only survived 0.09m deep cut into the Thanet Sands. The fill was a mixture of the soil dug from the grave with occasional chalk flecks, suggesting some material brought from a deeper excavation nearby. The grave outline was clear, with very sharp corners. The bone had almost completely decayed; all that survived were a few teeth preserved by a coin placed in the mouth. On the basis of these the skeleton has been given a tentative age of 16–20 years. The coin, dated to *c* AD 250, places this burial nearly 200 years later than the high status graves. Three pottery vessels, a dish or platter, also consistent with a later 3rd century date, lay along the east side in the middle of the grave, and a pair of patterned hobnailed boots had been placed upside down at the foot of the grave (Plate 4.23). All three pottery vessels had been damaged by machining, but could be reconstructed (Fig. 4.41). From the position of the nails the pots and the shoes must all have been placed within the coffin.

Catalogue of pottery from inhumation graves *by Edward Biddulph*

Grave 6693

SF1930, accessory vessel of uncertain form, possibly a beaker, Verulamium-region white ware (R15). Context 6720. Not illustrated.
SF1931, bowl (Monaghan 1987, type 4E1), North Kent shelly ware (R69). Context 6721.
SF1932, carinated beaker, North Kent fine grey ware (R16). Context 6722. Not illustrated.

Grave 6728

SF1594, 'jar-beaker' (Monaghan 1987, type 3J3), fine Thameside grey ware (R73). Context 6730.
SF1595, globular funnel-necked beaker (Monaghan 1987, type 2C7), North Kent fine orange ware (R17.1). Context 6730.
SF1596, plain-rimmed dish (Monaghan 1987, type 5E2), fine Thameside grey ware (R73). Context 6730.

THE EARLY ROMAN ENCLOSURES IN SITE D

The chalk plateau reaches its highest point at the east end of Site C, and Site D occupies a gentle slope leading down eastwards towards the dry valley at Tollgate Junction. The site is therefore slightly protected from the wind by the higher ground to the west. Following limited activity in the middle Iron Age, Site D was chosen as the location for a large trapezoidal enclosure of early Roman date (Fig. 4.42). Activity appears to have continued into the middle Roman period. East of the enclosure were possible smaller fields or paddocks. Although only the northern edge of the enclosure lay within the scheme (see Fig. 4.2), several pits, a working hollow and a possible building defined by beam slots and large central post-pits, were found, while a deep shaft lay outside the main enclosure to the north.

The main enclosure

The southern part of the rectilinear enclosure was initially investigated as part of the recent HS1 works (Askew 2006, figs 15–20; see also Fig. 4.2). Here the enclosure was approached from the south and east by metalled roads, and was constructed in the 1st century AD, undergoing a number of developments before going out of use no later than the 3rd century AD. Occupation evidence in the south-east of the overall enclosure included a number of pits, ovens and two timber-posted buildings. Burial evidence included at least two neonate burials.

The development of the enclosure to the north appeared to fall into three main phases, all during the 1st century AD. The earliest element appeared to be east-west ditch 6940, forming the north-eastern corner of a large enclosure extending into the HS1 area (Fig. 4.2). Subsequently several ditches on a NNE alignment (6727, 6957 and 6958) extended north of the main enclosure for 30m, or in the case of 6958, for twice that distance (Figs. 4.2 and 4.42). This was followed by the digging of ditch 6941, which enclosed a further area between ditch 6940 and the north ends of ditches 6727 and 6957, both of whose termini it cut.

East-west ditch 6940 had a 'V'-shaped profile with a narrow, flat base (Fig. 4.43). On average the ditch was *c* 2m in width and 0.8–1.2m deep. The number of fills varied from two to eight, depending mainly on truncation by later features. The ditch cut a small section of north-south ditch (6809), adjacent to an earlier tree throw hole. The relationship of ditch 6809 to the overall enclosure is uncertain, but it appears to be in line with a ditch found in an evaluation trench to the south (Fig. 4.2, HS1 trench 1456), which is parallel to the eastern enclosure ditch, so may have been an earlier internal division, or even indicate that the enclosure was originally smaller, and was then extended eastwards. At its eastern end ditch 6940 was cut by a further north-south ditch (6959), which formed the eastern arm of the enclosure. This contained two fills that produced a fragment of tile, lava quern and structural fired clay as well as animal bone.

The spatial positioning of ditches 6809 and 6959 indicates that although stratigraphically above and below the main ditch they were broadly contemporary with it and the differences may have been the result of recutting.

The majority of the ditch interventions within 6940 produced small finds assemblages, including early Roman pottery, structural fired clay, residual flint and animal bone including cattle. A soil sample taken from the ditch produced charred wheat grains, possible barley and oat/brome grass. However, cut 6353, close to the edge of the excavation, contained 350 sherds of pottery from three fills, weighing 3195g overall, and dating to AD 50–70.

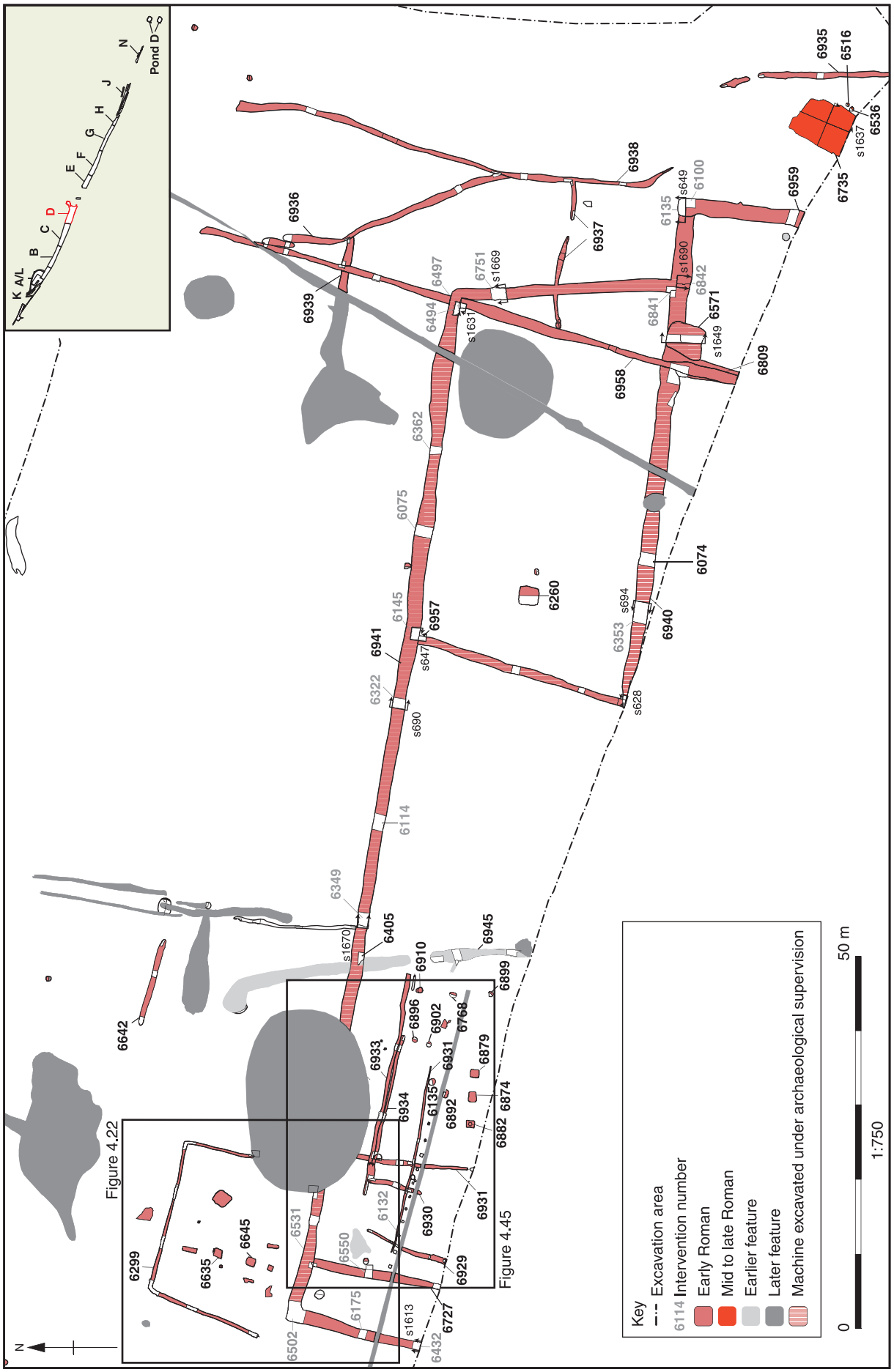


Fig. 4.42 Plan of site D showing hand-excavated and machine-excavated features

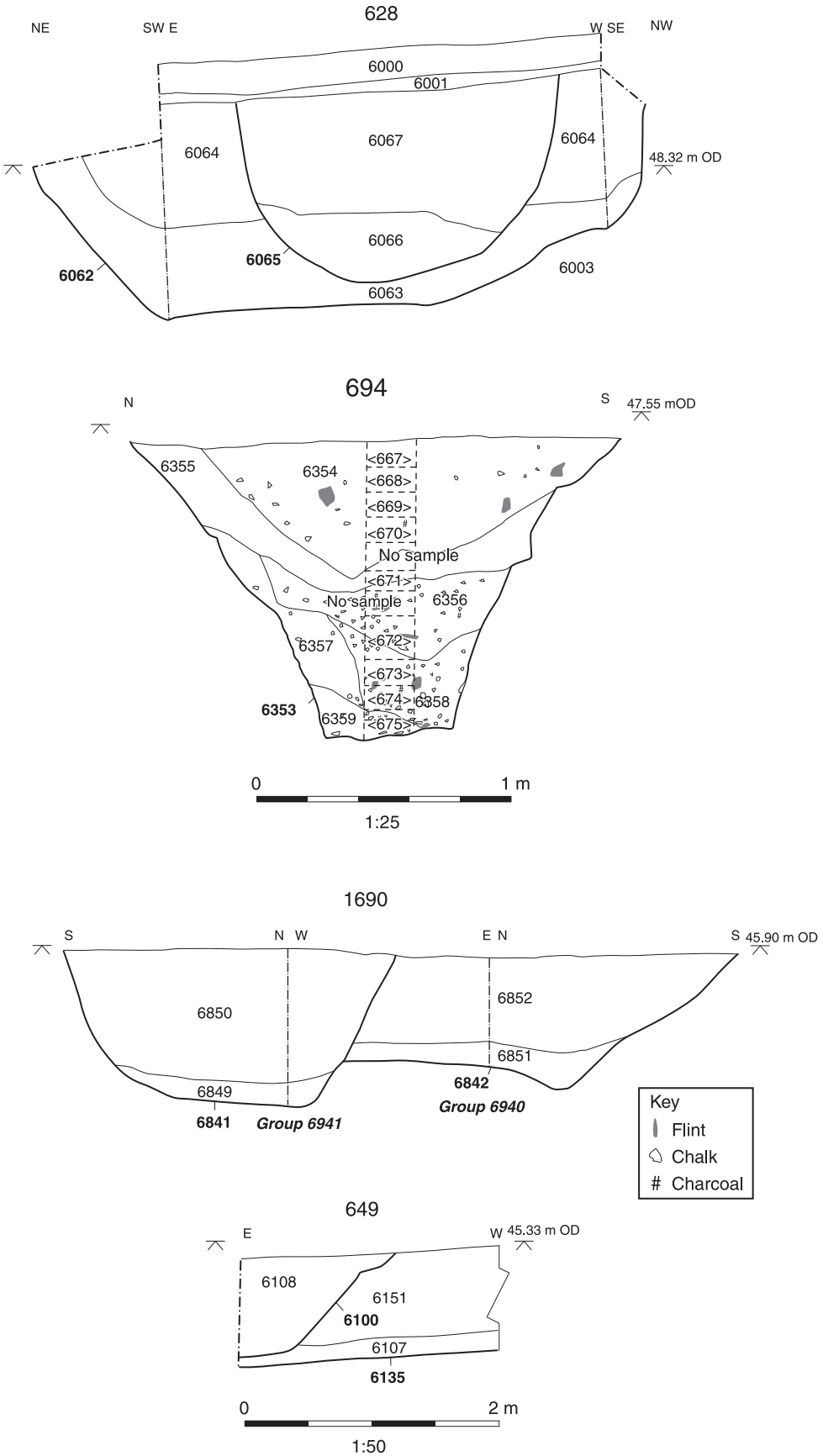


Fig. 4.43 Sections through ditch 6940

The intervention also produced a large assemblage of animal bone including pig, cattle and sheep/goat and over 300g of oyster and mussel shell. This intervention was due south of high status grave 6260, and possibly represents a feasting or other ritual deposit relating to the grave itself (see pottery report, this vol.).

The two ditches (6957 and 6958) projecting NNE from ditch 6940 were in line with internal divisions of the enclosure, and the southern extent of 6957 was revealed in the HS1 excavations (see Fig. 4.2). The ditches were 0.98–1.3m and 0.6–1.27m wide and 0.62–0.75m and 0.3–0.7m deep respectively. Both ditches produced single sherds of Roman pottery that were not closely datable, as well as residual flint. In addition 6958 contained Roman tile fragments, while 6957 produced structural fired clay, animal bone and oyster shell.

At the west end of the site, ditch 6727 ended below later ditch 6941, and around 4m south of the early Roman cemetery containing high status graves 6635 and 6645. The ditch was *c* 1m wide and up to 0.77m deep, and produced only residual flint and cattle bone. These three ditches appear to have formed fields or enclosures open on the north side, although they may have been respecting pre-existing features such as the cemetery.

Both ditch 6940 and these three ditches were cut by rectilinear ditch 6941, which extended the enclosure north by more than 30m, and provided a northern ditched boundary to the areas previously open on the north, cutting across the termini of ditches 6957 and 6727. At the east end ditch 6941 turned south where it crossed ditch 6958, but ran slightly east of due south to end within ditch 6940. This suggests that the earlier ditch was still in use as a boundary even though it had clearly silted up to some degree. At the western end the ditch turned SSW parallel to ditch 6727, some 6.9m beyond it.

Ditch 6941 had a similar profile to 6940, probably reflecting the function of both as outer boundaries.

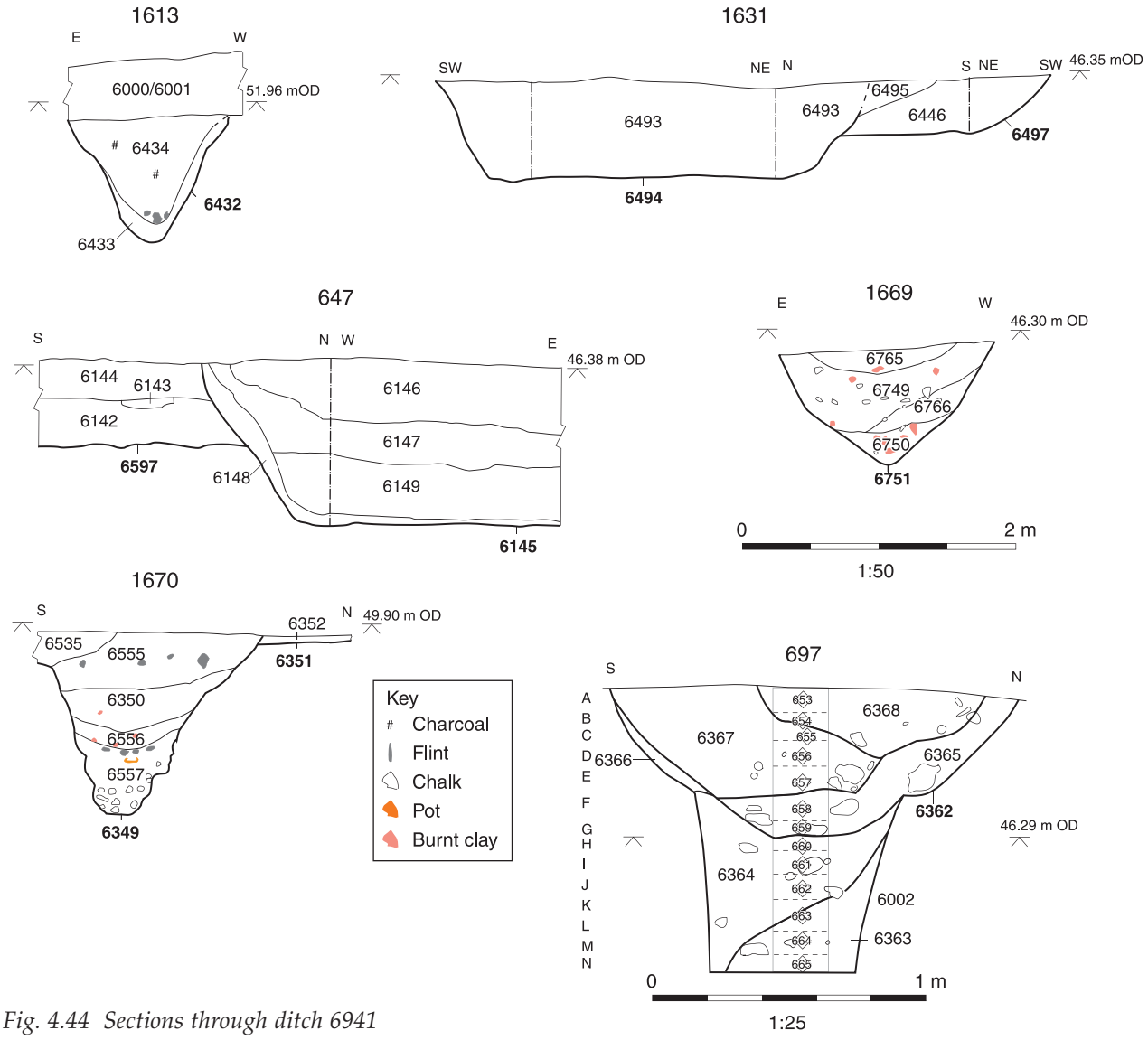


Fig. 4.44 Sections through ditch 6941

The later ditch measured *c* 1.5–2m wide and 0.7–1.2m deep and the fill sequence throughout the ditch varied widely from a single fill to nine separate deposits, although most interventions contained no more than five fills (Fig. 4.44). A rich dump of cultural material occurred in the fills of cut 6349, which was located midway (some 50m) between high status graves 6260 and 6635/6645 (Figs 4.42 and 4.44). Overall, 703 sherds of pottery weighing just under 12kg were recovered from five fills, though central fill 6350 contained 477 (7378g) of the sherds, and layer 6556 the next largest assemblage. The pottery assemblage included at least 15 cordoned bowls (see Biddulph, this vol.) and numerous sherds of a highly decorated samian vessel (Dr 29). The pottery consistently indicated a later 1st century AD date, probably between AD 60–80.

The deposit also included a substantial assemblage of animal bone including equid, pig, cattle and sheep/goat (some displaying chop or cut marks representing butchery), as well as bird and rodent. These last are possibly the result of more natural deposition processes. Other finds included 1942g of fired clay, a burnt chalk loomweight (see Shaffrey this vol.), a cut sheep metatarsal, 17 iron nails, a length of twisted copper-alloy wire and iron fragments, brick and tile and possibly intrusive glass. Marine molluscan evidence included 422g of oyster shell and 14g of mussel shell. Analysis of charred plant remains yielded indeterminate emmer/spelt and other wheat, a single barley grain and a number of wild plants.

Adjacent to the deposit in 6349 14 nails including one with a non-ferrous head, two fragments of iron collar, strip or plate, four pieces of iron wire, two of which were hooked, an Y-shaped object and other fragments of metal were recovered from cut 6114. A single lead object was identified as an offcut. The significance of this deposit is unclear, although it is possible that all the objects derived from one or two objects placed in the ditch.

As a result of the discovery of the deposit in cut 6349 the remaining unexcavated segments of ditches 6940 and 6941 were removed by machine excavation under archaeological supervision (Fig. 4.42), but no other concentrations of finds were revealed. The remaining hand- and machine-excavated cuts produced only 23 sherds of pottery weighing 172g. Other finds included structural fired clay, tile fragments and metalwork. Environmental evidence included cattle and sheep bones, three oyster shells and a few indeterminate remains of oat/bromegrass.

In addition to this a well-preserved copper-alloy crossbow brooch was found in cut 6405, some 30m east of the cemetery enclosure (see metals report, this vol.). The latter was dated to the early 3rd century and was therefore much later than the pottery assemblage from this ditch. This brooch is broadly contemporary with the latest of the graves within the cemetery enclosure (see above), and may indicate continuing structured deposition in the ditch in the vicinity of the cemetery. However, the brooch may have been a coincidental loss.

Internal features

A small number of discrete features were located within the enclosure ditches described above. This included a possible building in the west of the enclosure, immediately east of ditch 6727 (Fig. 4.45), and a deep shaft (6571) that cut ditch 6940 (Fig. 4.46).

The western complex

The possible structure in the western part of the enclosure was represented by a line of three square pits. These measured 1.12 x 0.9m to 1.37 x 1.05m in plan and were all *c* 0.4m deep. Although of similar dimensions to the burial pits further north-west, no funerary deposits were found within them. Instead they were probably postholes; pit 6882 had a stepped profile with the main pit surviving 0.15m deep and a central socket measuring *c* 0.4m in diameter and 0.22m deep. This stepped construction was not seen in pits 6874 or 6879, but a probable post-pipe (layer 6889) was seen in 6879, and a possible example was recorded in 6874. The central pit (6874) produced Roman pottery dated AD 43–160 and animal bone but also yielded intrusive modern glass.

Large postholes/post pits such as these are commonly found in Roman aisled buildings. A variant on the aisled building that is local to Kent has recently been identified with rows of three or four posts at one end. These are particularly notable at Westhawk Farm (Booth *et al.* 2008) and Thurnham (Lawrence 2006), and it is possible that this row of pits represents one end of another such building extending south into the unexcavated central part of the enclosure.

The possible structure was set within a smaller rectilinear complex comprising gullies 6929, 6933, 6934 and 6935 (35m x min 14.5m) which mirrored the western end of the main enclosure. Relationships were difficult to discern in this area and it is likely that many of the features associated with this complex were contemporary. However, one of the gullies appeared to be earlier and may not have been directly related to the structure. North-south aligned gully 6931 was truncated to the north by quarry pit 6954 and gullies 6933 and 6934, and petered out before reaching the southern edge of the site, although a probable continuation was seen in section. This feature was aligned similarly to the group of Iron Age ditches to the east and may have originally been related to earlier land division in this area.

The remaining gullies or slots formed a more coherent pattern, with gully 6929 forming a western end and gullies 6933 and 6934 acting as a northern boundary. The area was truncated to the east, therefore it is unclear if the enclosure was sealed here,

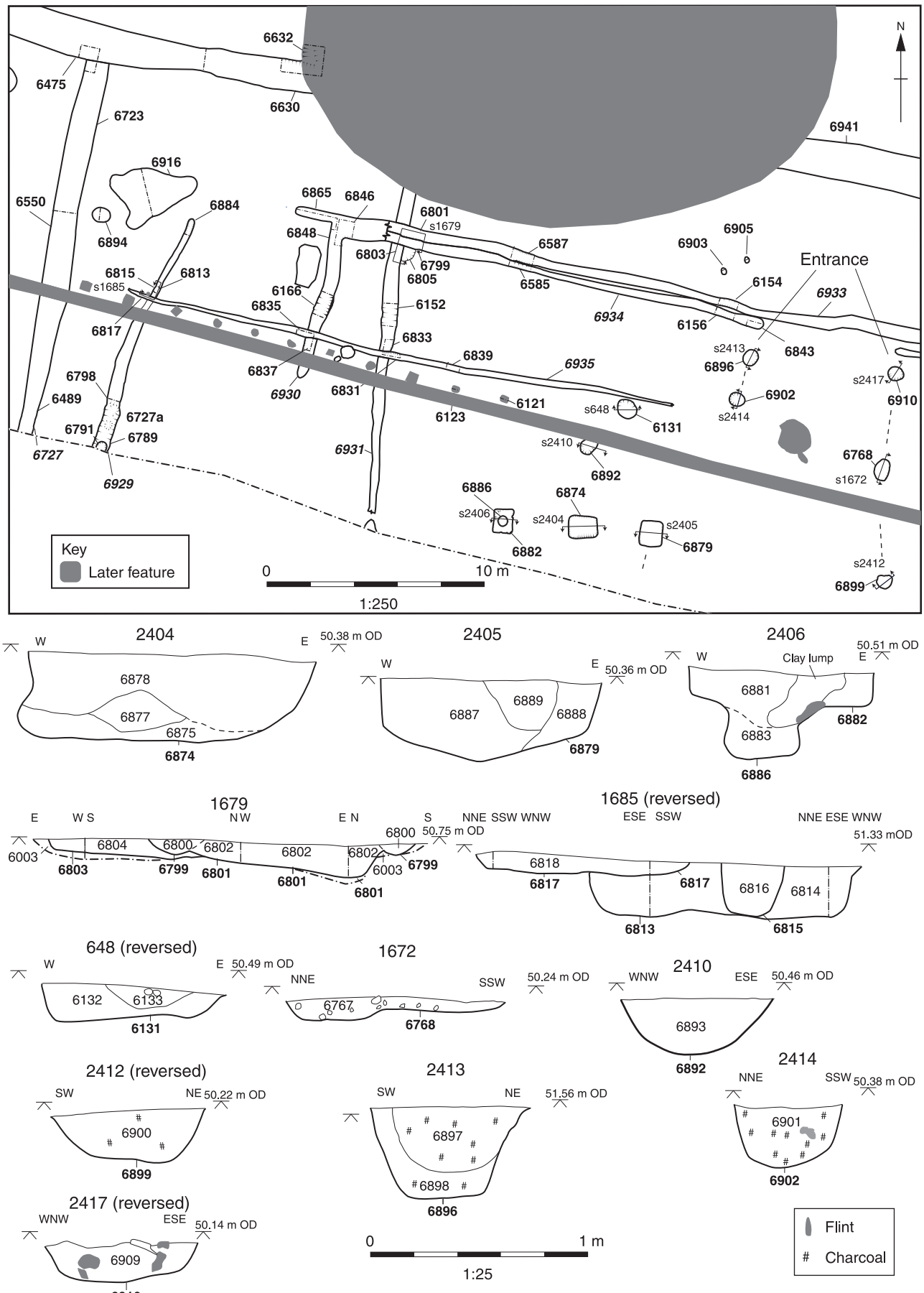


Fig. 4.45 Plan of western part of interior of enclosure and sections of features

however it is possible that the eastern end was formed by extant Iron Age ditch 6945.

Gully 6929 contained concentrations of charcoal, possibly indicating the former positions of posts within the feature, perhaps suggesting it originally formed a palisade or wall which had either used posts with charred ends or had burnt down. This produced only animal bone and residual flint.

A possible entrance into this internal enclosure was indicated by a 6m wide gap at the eastern end of gully 6934. A kink in the line of 6933 midway across this gap, which was not investigated, could indicate that at some stage this gully also had a terminus here. This is reinforced by the presence of two rows of pits or postholes extending southwards from either side of the gap. To the west this included features 6896 and 6902, spaced at 1.3m apart and to the east pits 6910, 6768 and 6899 formed an approximately north-south line 3.5–4m apart. Pit 6910 may alternatively have been earlier prehistoric (see Chapter 2), but as the dating is based only on struck flint, this is not certain. These pits or postholes could have marked boundaries lining an access into this enclosure, perhaps giving access to the post-building that lay to the west. The only finds produced by these features were animal bone and worked flint, however, a sample taken from 6896 produced a single wheat grain as well as hazelnut shell and wild plant remains.

The latest feature within the complex appeared to be east-west gully 6932 which certainly cut 6929 and possibly 6930 and 6931. This extended from just west of 6929 for 25.5m before petering out, and may have formed an internal division within the complex. No dating evidence was found within the gully.

A number of other pits and postholes were located within the enclosed area, although most did not produce dating material. The exception was pit 6131, immediately south of gully 6932, which contained nine sherds of Roman pottery as well as animal bone and flint.

Pit 6571

The eastern end of the main enclosure was mainly devoid of features, however a deep, sub-square pit was found cutting ditch 6940 (Fig. 4.46). The pit was dug into the southern side of ditch 6940 before the ditch had fully silted up. As a result the upper two pit fills also spread into the ditch confusing the dimensions of the pit itself. The upper extent of the feature therefore appeared to be 4.71m x 4m, but was more likely to have been *c* 2.8m x 4m. At a depth of 1.16m the pit stepped in to the south creating a central shaft measuring 1.58m x 1.34m in plan; this shaft bottomed at a depth of 2m.

The pit contained eight fills, all of which contained cultural material, with the exception of the lowest fill, 6572, and all appeared to be deliberate deposits. Fills 6574 and 6575 were the richest, containing 316g and 283g of pottery respectively, in addition to animal bone and structural fired clay. Only pig could be identified within the bone assemblage in fill 6575, however the larger assemblage from 6574 contained all the standard domesticates. Fill 6575 also produced an iron 'Nauheim derivative' brooch dating to the 1st century AD. The four upper fills yielded pottery in smaller quantities, with a total of 790g overall. Fired clay came from two of these fills and a possible Hod Hill copper-alloy brooch from fill 6576. Overall the pottery dated the feature to AD 70–100, although much of the assemblage comprised types only used up until AD 70, therefore the deposition was likely to have been towards the start of this date range.

Many of the pottery vessels were similar to those found in the rich deposit in ditch 6941 and in burial pit 6645. It is therefore possible that this pit may have been related to the nearby funerary activity.

External features (Fig. 4.42)

Ditches

A 12m length of ditch (6642), 0.7m wide and 0.14m deep, was located *c* 26m north of the main enclosure and 16m north-east of the corner of enclosure 6299. This produced a sherd of Roman pottery, and perhaps marked a plot north of the main enclosure similar to those to the north-east (see below).

A series of similarly shallow gullies or ditches was excavated east of the main rectilinear enclosure. The earliest of these appeared to be east-west gully 6939 which was cut by ditch 6958 and gully 6936. The gully is approximately in line with 6642, perhaps indicating a boundary along this line that was only marked by drainage gullies in part. The exact nature of the gully is however confused by the fact that it is on the same alignment as a ramp leading into medieval quarry pit 6628. It is possible that the quarry pit was also Roman, and that the slumping of its fill led to the accumulation of medieval finds and fills in its top. It is, however, also possible that the medieval ramp diggers identified and took advantage of the soft soil within earlier gully 6939.

Gully 6936 began 8.7m north of the point where it cut 6939, extending southwards to this point before veering off to the south east for a further 23.5m, where it was cut by 6938, either terminating or converging with this feature. Gully 6938 was *c* 57.5m long in total, and was somewhat sinuous, although running roughly north-south. Together these features formed a Y-shaped enclosure, open to the north, possibly used for stock management. The gullies were 0.9m wide and 0.3–0.4m deep, both producing small assemblages of early Roman pottery. The pottery from gully 6938 (5 sherds weighing 159g) was dated AD 10–60 and four sherds of samian ware from 6936 to AD 50–65 suggesting these gullies were active in the mid 1st century AD. As such this complex may have been broadly contemporary with ditch 6940, with an entrance between them 4–5m wide.

Gully 6937 ran parallel to 6939, 26.5m to the south, between ditches 6958 and 6938. This feature was segmented, measuring 20m in total with a 2.3m gap towards the eastern end. The gully was 0.6m wide and 0.3m deep and produced no finds. The relationships between gully 6937 and features 6958 and 6938 were uncertain but it is likely that the gully was contemporary.

Another north-south aligned ditch or gully (6935) was located in the south eastern corner of the site, visible for *c* 18.5m before continuing beyond the southern edge of excavation. To the north of this feature a further 4m long segment of gully may have been a continuation. The similar dimensions of 6935 and 6938 may indicate a contemporary system of enclosures or fields. Gully 6935 contained four sherds of Roman pottery, a substantial amount of horse bone, fired clay, an iron nail and a piece of slag as well as residual flint.

Early–middle Roman Structure 6735

Ditch 6935 may have functioned as an enclosure ditch for possible structure 6735, 2.6m to the west (Figs 4.42 and 4.47). This comprised a shallow, irregular, rectilinear cut aligned NNE-SSW containing a posited floor surface. Overall the structure measured 7.7m long (although the southern end was truncated by the site edge) and 6m wide, surviving to a depth of 0.3m. The cut contained three fills; a lower clayey fill overlain by a flint floor surface and an upper

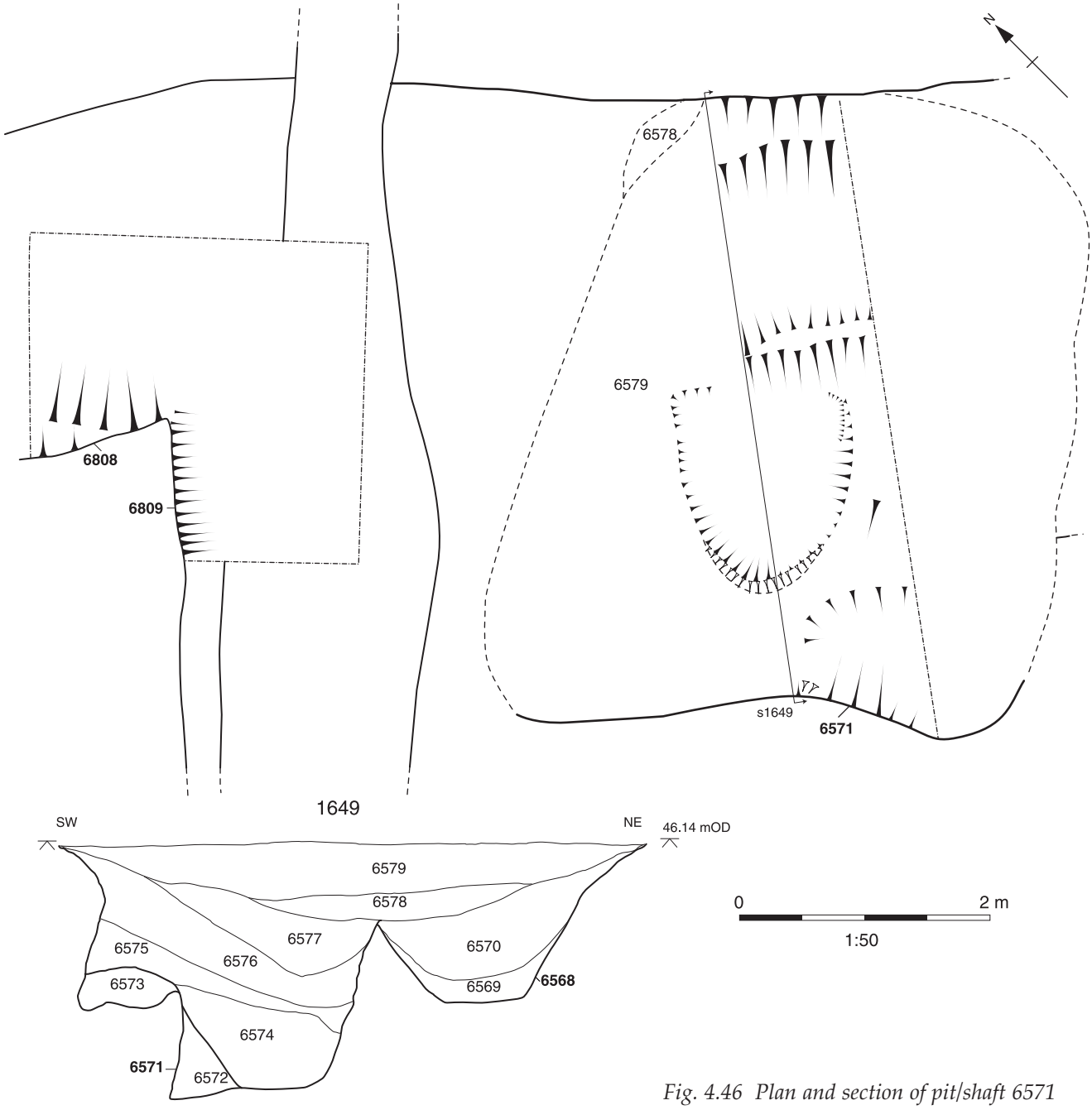


Fig. 4.46 Plan and section of pit/shaft 6571

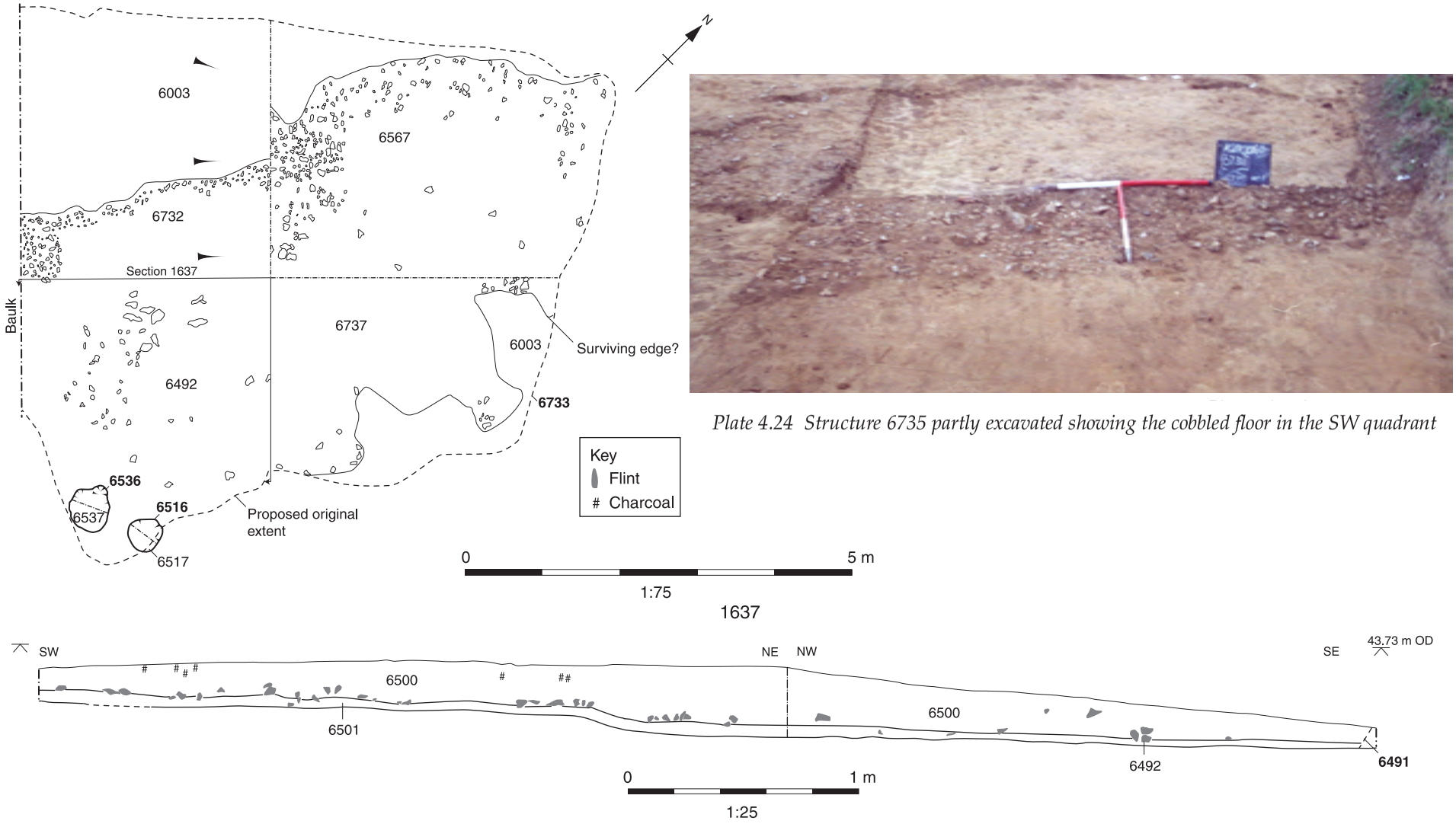


Plate 4.24 *Structure 6735 partly excavated showing the cobbled floor in the SW quadrant*

Fig. 4.47 Plan, section and photograph of structure 6735

occupation fill. A pair of postholes (6516 and 6536) were also found near the south-east corner of the structure. Their function is unclear but they may have supported a superstructure.

The only finds from the lower layer came from the south-east quadrant (fill 6501) and included Roman pottery, animal bone including horse, and a single nail. The pottery from this context (252 sherds weighing 1269g) mainly fell within the date range of AD 50–130, although one sherd appeared to date to AD 160–250. The large assemblage of pottery from such a small context is notable. However, this does not appear to have been a special deposit and it may be that the structure was used to dump midden material, possibly used as hardcore. The flint layer was clearly deliberately placed and seemed to form a floor layer (Plate 4.24); no evidence of burning was found as seen in some of the similar medieval structures on the scheme. The floor layer also produced small assemblages of Roman pottery and tile including two sherds of samian ware; overall this seemed to suggest a date of AD 120–160. The upper layer contained 93 sherds (353g) of pottery dated AD 50–130 in addition to more horse bone from the south-east quadrant. The only other environmental evidence included some charred tuber or root.

The postholes measured 0.55 x 0.25 x 0.05m (6516) and 0.48 x 0.33 x 0.15m (6536) and were 0.3m apart. Feature 6516 produced the remains of a comminuted pottery vessel (72 sherds of pottery weighing 64g) and a further three sherds came from 6536. The latter also yielded an environmental assemblage which included abundant charred grain, mostly comprising indeterminate wheat and possible spelt.

The purpose of this structure is unknown. The presence of a substantial deposit of horse bones in both the structure and adjacent ditch might suggest a connection with horses, perhaps a stable abandoned when the animal or animals died, although this is extremely tentative. Taken as a whole the pottery suggests a mid 2nd century AD date. A very similar structure was identified at the southern edge of this enclosure during the HS1 excavations. This feature, 1089, measured 4m square, had a lower surface of flint pebbles/cobbles. This also dated to around AD 100–160 and was interpreted as a granary (Askew 2004, 32). The abundant CPR in one of the postholes might also support such an interpretation for structure 6735, but the abundance of pottery both below and above the floor perhaps argues otherwise.

ROMAN SETTLEMENT IN OTHER SITES

Continuing settlement in Sites B and C

Activity continued on Site B into the early Roman period, and possibly later (Fig. 4.48). It comprised elements of a rectilinear field system, a trackway, a series of pits (some distinctively rectangular) and occasional isolated features. Although the late Iron Age and early Roman periods are difficult to distinguish on ceramic grounds, these features generally cut through the Iron Age complexes discussed in Chapter 3.

Trackway and associated features

An element of continuity from the Iron Age settlement was provided by the trackway in the middle of the former Iron Age settlement (Fig. 4.49). As outlined in Chapter 3, trackway 7980 was cut by a series of middle and late Iron Age ditches close to the southern limit of the site, suggesting it had gone out of use, at least in part, by the end of the Iron Age. The Iron Age ditches that cut the trackway included ditches 7975 and 8103–5 some 11m apart, which turned north-north eastwards parallel to one another, establishing a new north-north-east alignment for the trackway. These ditches, and in particular 8103–5, may have been continuations of the ditches running north-west from the enclosure excavated during the HS1 works.

Ditches 8103–5 were recut as ditch 8102, the finds from which included 71 sherds of early Roman pottery weighing 410g, animal bone, ceramic building material, oyster shell and an iron nail. Ditch 8102 appeared to terminate *c* 15m from the southern edge of the site opposite the end of ditch 7975 (Fig. 4.49).

The end of ditch 8102 was cut by ditch 7996, which continued NNE right across the excavated area, as did ditch 7984 from adjacent to the end of ditch 7975. These two ditches converged slightly at the south end to just under 4m apart, and then continued NNE parallel to one another. The ditches were up to 1.8m wide and up to 0.45m deep on the south, and both produced very early Roman pottery as well as animal bone including horse and cattle and residual flintwork. Together these ditches delineated a trackway.

The orientation of this trackway was probably determined by the orientation of surviving late Iron Age ditches to the east. Ditch 7993, which lay only 34m east of the trackway, was added to the late Iron Age enclosure on its west side, enlarging it, and this too followed the same alignment. The lower ditch fills contained late Iron Age pottery, but its uppermost fill at the north end produced a small deposit of Roman pottery (15 sherds, 241g), which mostly indicated a date of AD 43–70. The ditch was clearly still open all along its length into the Roman period, as later shallow ditch 7995 ran into its top where they intersected, and the fills were indistinguishable.

At the north end of late Iron Age enclosure 7992 the straight length of ditch that was parallel to 7993 was also recut, as ditch 8101. The fills of this ditch do not contain any Roman finds, but it too may have remained open into the early Roman period, though it was cut by later Roman ditch 7995.

As mentioned above this posited trackway or droveway with its funnelled entrance was probably

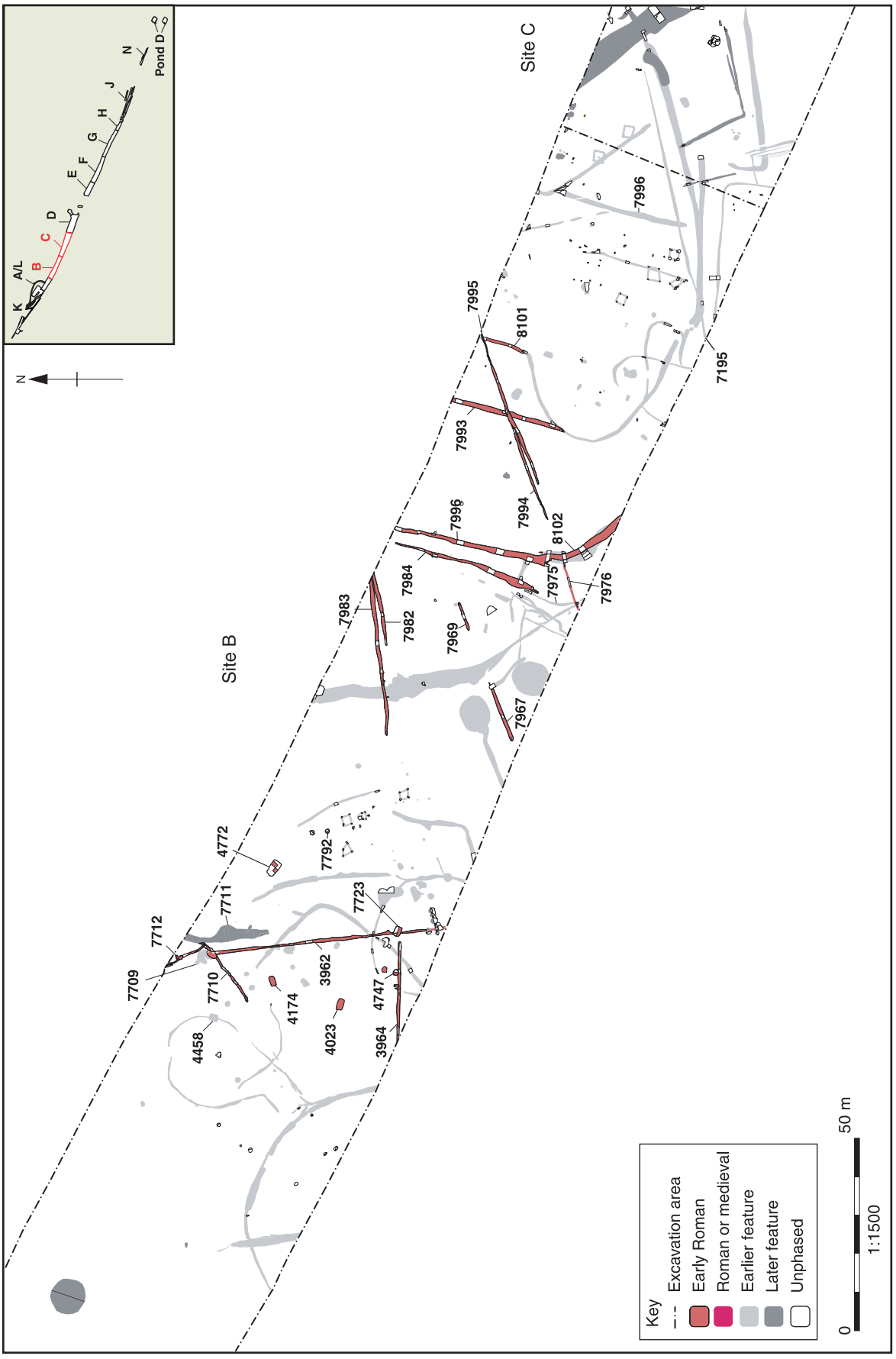


Fig. 4.48 Plan of Roman features in Sites B and C

related to the enclosure investigated directly to the south by the HS1 excavations, pottery from which suggested that it continued in use into the 2nd century AD (Askew 2006). This enclosure was constructed in the late Iron Age and continued into the Roman period without a break, and a holloway or ditched trackway was a prominent feature on the west side throughout its life (Askew 2006, figs 11 and 12; see also Fig. 4.1). The enclosure contained a cremation and the burial of an articulated horse skeleton in addition to evidence for crop processing and domestic activity, and the ditched trackway also suggests that stock management may have been one of its functions.

Early Roman ditches and pits at the west end of Area B (Fig. 4.59)

Ditch 7710 began on the south-west midway between the ditches of the late Iron Age enclosures (see Chapter 3), and ran north-eastwards, disappearing where cut by post-medieval ditch 7711. This ditch did not reappear beyond 7711, so probably ended below it, although as it was curving north-

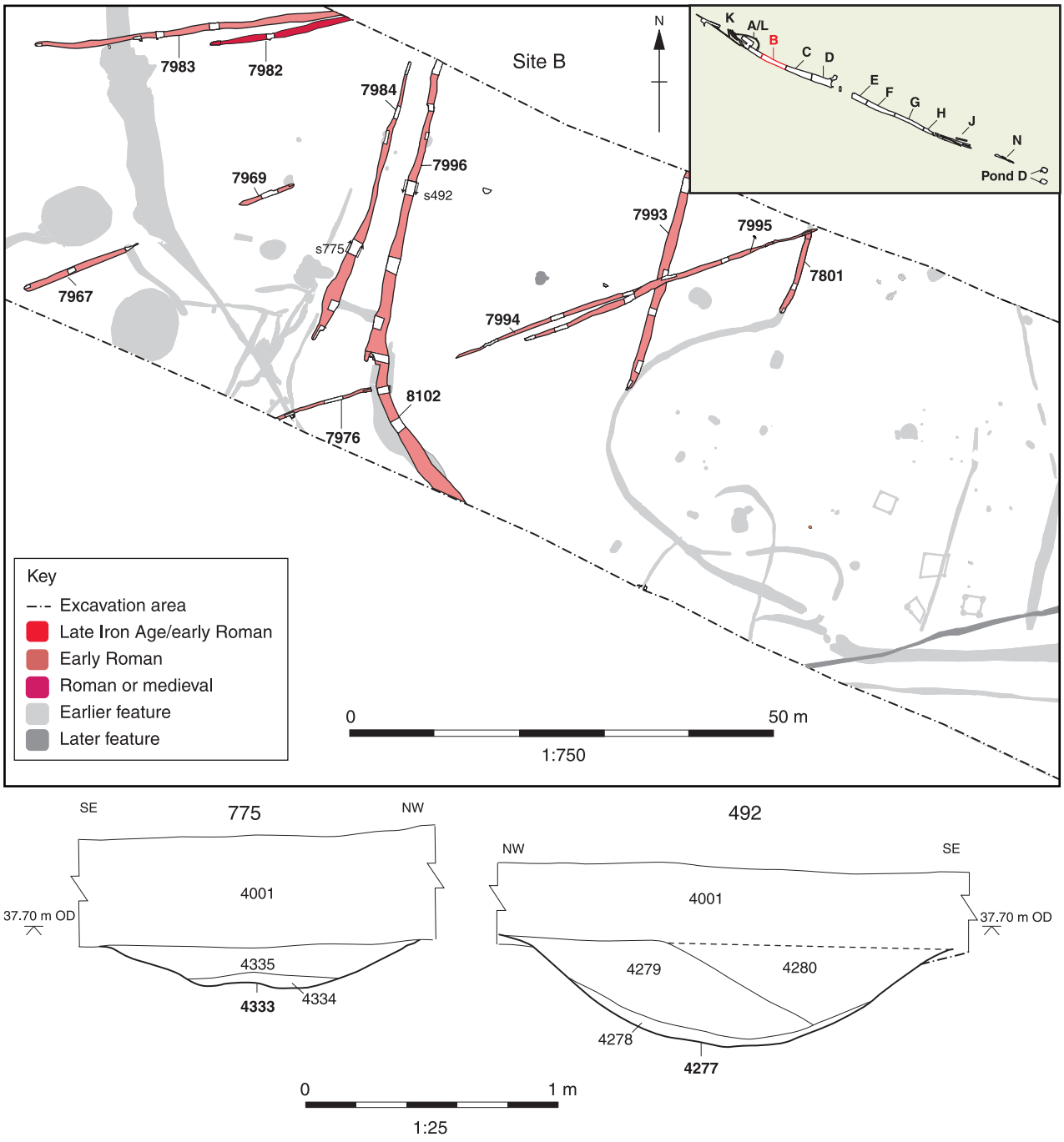


Fig. 4.49 Plan and sections of trackway and features to the east in Area B

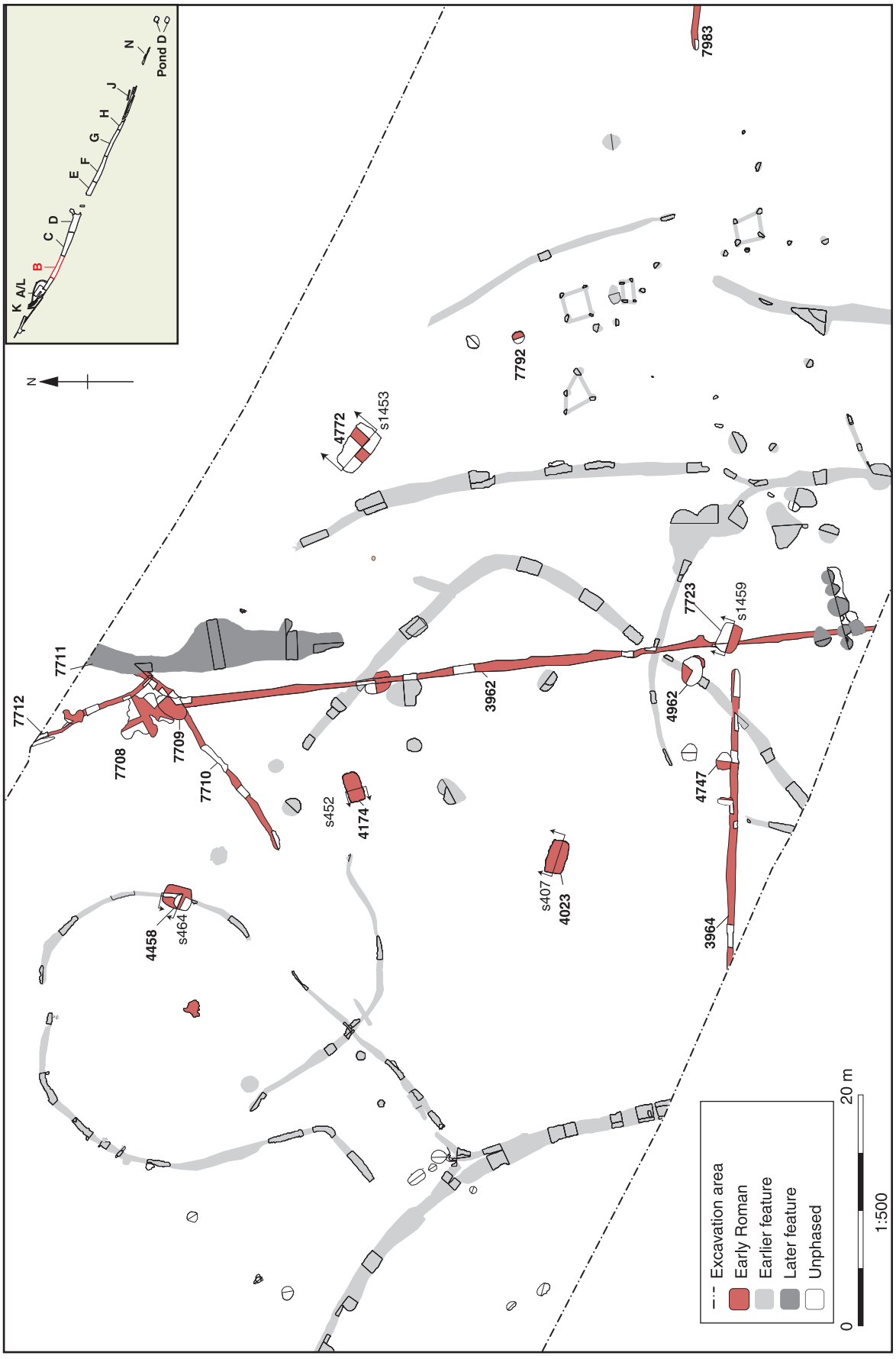


Fig. 4.50 Plan of ditches and pits at the west end of Area B

wards at this point it may have continued (masked by the later ditch) beyond the edge of the excavation. Ditch 7710 was cut by the terminus of ditch 7712, which ran NNW almost at right-angles, possibly forming an L-shaped corner. Both ditches were sinuous in plan, and were approximately 0.7m wide and 0.2–0.25m deep.

An oval pit (7709) cut ditch 7710 close to the intersection of the two ditches, and also removed any relationship between 7710 and irregular feature 7708 in the corner formed by ditches 7710 and 7712. The single fill of this pit contained a small assemblage of Roman pottery. Feature 7708, which contained an Iron Age potin coin, is interpreted as a tree-throw hole of late Iron Age date (see Chapter 3). It was cut by ditch 7712. Pit 7709 also cut the terminal of ditch 3962, which ran from the south and ended within ditch 7710.

The fill of 7710 yielded early Roman pottery in addition to animal bone, ceramic building material, fired clay and a nail. One of the more unusual finds was a small, black tubular glass bead (sf 407) which may have been contemporary with the ditch. In contrast ditch 7712 produced only residual flint, and pit 7709 only fired clay.

Ditch 7710 may first have been dug in the very late Iron Age, respecting the tree in 7708, as it began midway between the late Iron Age enclosures at its south-west end, and was on much the same alignment. Ditch 7712 was presumably dug next, and 3962, which disregards this alignment, and is much straighter, later still. This last ditch was part of a more extensive field system across Areas B and C including ditch 3964 (see below). There may have been an entrance some 3m wide between ditches 7712 and 3962 once the tree throw had been filled in, but if so, this was subsequently partly blocked by pit 7709.

Some 40m to the south, and cut by ditch 3964, was an early Roman circular pit 4747. The pit was 1.5m in diameter and 0.55m deep, and the lower fill produced 314g of early Roman pottery as well as pig, cattle and sheep/goat bone, fired clay and brick or tile. This appears to have been a refuse pit, although no other settlement evidence was found in the vicinity within the excavation area.

The field system

This phase of activity consisted in the main of a series of ditches aligned ENE-WSW (see Figs 4.1 and 4.48). These cut Roman and Iron Age features in each case, but provided little firm dating evidence of their own. Unlike the features previously described, however, they do not generally respect the orientation of late Iron Age or very early Roman features, and so are likely as a whole to have been later.

Ditches 3962 and 3964 are interpreted as the westernmost component of this system (Fig. 4.57). The ditches were 0.5–0.65m wide and 0.2–0.3m deep and neither produced much dating evidence although both cut late Iron Age ditches (3963 and 4779). Animal bone was recovered from ditch 3962 and brick and came from ditch 3964. Ditch 3964 also cut early Roman pit 4747 (see above). Ditch 3962 was cut by Roman pits 7709 and 7723, the former at its northern terminal, the latter at the point where the alignment of ditch 3964 intersected with 3962.

On a similar alignment to ditch 3964, though nearly 60m further east, was ditch 7983 (Figs 4.49–50). Ditch 7983 ran westwards from the northern boundary of the site for 40m, cutting across Iron Age trackway 7980. A second ditch (7982), some 2–3m to the south of 7983, ran almost parallel to it for *c* 19m, suggesting that, despite their slightly different alignments, they represent two successive phases of the same boundary. The ditches produced only animal bone and comminuted burnt clay fragments. Ditch 7983 cut a series of postholes along its southern edge (3509, 3747 and 4872), possibly indicating that the ditch was preceded by a fenceline.

The excavators believed that the western terminal of 7983 was genuine, rather than due to truncation further west. Nevertheless the ground was sloping down to the west, and the bottom of the dip lay between 7983 and 3962, so it remains probable that there was originally a continuation, which was later removed by ploughing. The projected lines of ditches 3964 and 7983 would have met at ditch 3962, strengthening their interpretation as parts of one field system.

Short lengths of ditch 7967 and 7969 were excavated to the south of 7982/7983 and may also have belonged to this system. Ditches 7994 and 7995 ran on a slightly more south-westerly alignment *c* 47m to the south-east (Fig. 4.48). Again the ditches appeared to represent two separate phases of the same boundary, with 7995 cutting 7994 to its north. The only artefacts from the ditches were residual flints.

Gully 7976, which was in line on the other side of ditch 8102, could conceivably have been a continuation of this alignment, but may have been an earlier Iron Age boundary as it contained just a single sherd of Iron Age pottery.

The field system appears to have continued to the south where the HS1 excavations identified a field boundary (270) on exactly the same alignment to the east of an early Roman enclosure (see Fig. 4.1). Overall it seems that the field system may have centred upon this enclosure.

Large rectangular pits

A number of large rectangular or oval pits were located in the vicinity of ditches 3962 and 3964 (see Figs 4.50–1). The earliest of these (4458) contained only Iron Age finds, so is described in Chapter 3. It is therefore probable that this type of pit is not confined to the Roman period. In contrast, pit 4023 contained Roman pottery, while pit 7723 cut the southern end of early Roman ditch 3962. Pit 4174

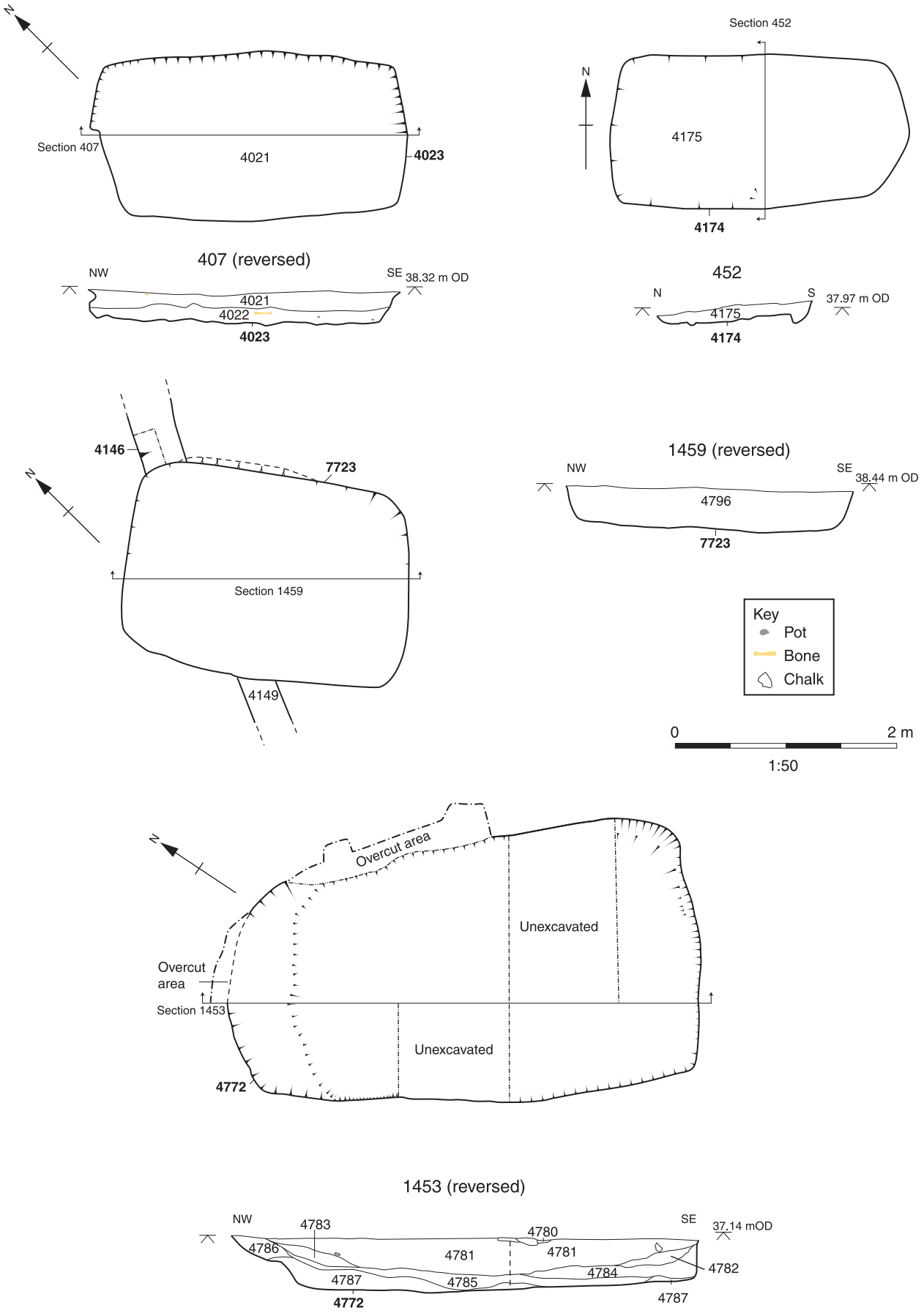


Fig. 4.51 Plans and sections of large pits 4023, 4174, 4772, 7709 and 7723

produced only two scraps of undiagnostic prehistoric pottery, so could also be Iron Age, but is undated, so is described with the others here. The pits were located 16–21m apart, either side of, or cutting ditch 3962 (Fig. 4.50). They were of a similar size and shape, and were much shallower than the circular pits in the area.

The finds from pit 4023 constitute a mixed assemblage suggestive of domestic activity. A total of 265g of very early Roman pottery was recovered, although earlier sherds accompanied this. Pit 4023 also produced structural fired clay, an iron strip, slag, and a small fragment of possible quern stone as well as residual flint artefacts. Environmental evidence comprised animal bone including sheep, cattle, pig, dog and bird as well as oyster shell and a few charred grains including wheat. Pit 7723 produced residual Iron Age pottery, pig, sheep and cattle bones, structural fired clay and a charred wheat grain. The purpose of these pits is unclear, although similar rectangular pits were excavated on the HS1 excavation to the south.

A larger rectangular feature (4772) lay east of ditch 3962 (Fig. 4.50). This feature was far larger in plan (4.25 x 2.42m) and deeper (0.46m) than the others described above, and may have represented a sunken-featured building (Fig. 4.51). It had straight steep sides and a flat base and contained a sequence of nine fills (4780–8) alternating between layers of sterile redeposited natural and culturally rich layers. The pottery from fills 4781 and 4785 was consistently very Late Iron Age–early Roman in date, suggesting that the feature was infilled relatively quickly. The feature also contained a typical domestic animal bone assemblage of pig, cattle and sheep from four fills, as well as structural fired clay from layer 4785. There were no postholes within the feature, as is common in Saxon sunken-featured buildings, nor were any found around it, although the latter could have been removed by later ploughing.

Such structures are now known in some numbers in Kent, notably at Monkton in Thanet, where 23 Roman sunken-featured structures were excavated by the Canterbury Archaeological Trust (Bennett *et al.* 2008, 107–50). None of the Monkton examples were as early as structure 4772, however, the earliest being late 1st century AD. The Monkton structures were predominantly rectangular, and the smaller examples (SFS 2, 5, 7 and 8) were similar in size and shape to feature 4772. As surviving, these were generally from 0.3–0.5m deep, like 4772 on the A2. Although some of the larger examples had three postholes along the central long axis, others had no trace of internal or external supports. Most had evidence of an entrance, consisting either of steps or a ramp, and it is possible that the shallower step at the north-west end of 4772 performed the same function. This, however, extended across the full width of the structure, which is unusual.

Where no internal evidence was found, these were predominantly interpreted as storage areas, most with the bases acting as floors rather than possessing raised floors. Some of the structures, however, had hearths, tanks or other features suggesting functions such as metalworking and malting, so features of this type may have been used for a variety of agricultural or industrial purposes.

Some 14m to the south-east of 4772 was a small pit (7792). The pit was sub-square, *c* 1m across and 0.55m deep with very steep sides, and contained two fills. The lower fill (7810) contained two cattle mandibles and a metacarpal, while the upper fill (7793) produced 376g of late Iron Age or early Roman pottery as well as pig, cattle and sheep/goat bone, a significant amount of residual worked flint and a copper-alloy brooch. The latter is a Langton Down type brooch dating to the early–mid 1st century AD, allowing a very late Iron Age or early Roman date.

Boundaries and other features in Sites A and L

As outlined in Chapter 3, it is likely that the main boundary ditches on Sites L and A remained in use throughout the Iron Age and into the Roman period. These boundaries comprised ditch group 13161 in Site L and a sequence of intercutting ditches on Site A that culminated in ditch 3075 (Fig. 4.52). An additional series of smaller ditches or gullies were identified as Roman, including several examples at right angles to the main boundary, suggesting a field system. Later in the period the southern end of ditch 13161 became the focus for a Roman cemetery.

Early Roman

The main boundary

As discussed previously, it is probable that ditch group 13161 and the sequence of ditches on Site A functioned as a single boundary. The features were both aligned NW-SE, although a gap of 70m existed between the two. It is almost certain that both were in use in the early Roman period, although the evidence for this period is less clear in ditch 13161. Most of the Roman activity in and around ditch 13161 was of the late Roman period, and consisted largely of burials. The upper fills of the ditch were also Roman, although the exact dating of these is uncertain (see below).

By the end of the Iron Age ditch 13161 had partly silted up, but remained a substantial feature (around 3m wide and up to 0.8m deep) throughout its length. There may have been a localised recut in the central part of the ditch (between hand-excavated slots 12543, 12782 and 12783) during the early Roman period (see Chapter 3, Figs 3.20–2). This putative recut was not recognised in cuts 12781 and 12988 so appears to have been localised, although its termini were not identified. Finds from this length included 105g of diagnostically early Roman pottery, as

well as later material from possible recut 12969 (within cut 12783). Early Roman pottery was also found in the southern end of the ditch (cut 12680). It is therefore probable that the ditch remained a significant feature in the early Roman period and beyond.

The sequence of ditches in Site A, the earliest of which had probably been cut in the Iron Age (ditches 3335, 3336, and 3334), continued with ditch 3333, which cut ditches 3334 and 3335 on either side. This was a very regular ditch, 1m wide with straight sides and a flat bottom, up to 0.4m deep (Fig. 4.53).

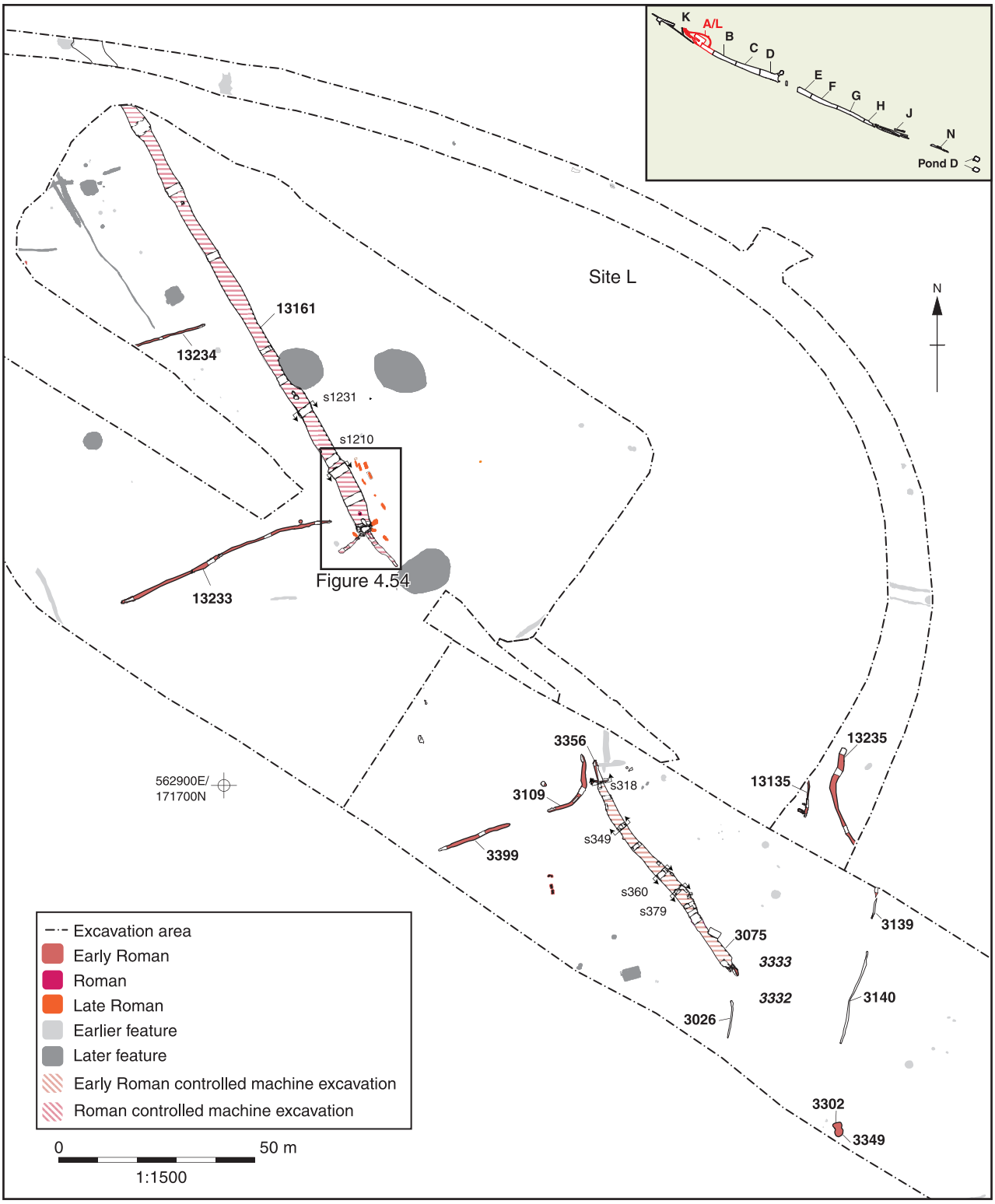


Fig. 4.52 Plan of Roman features in Sites L and A

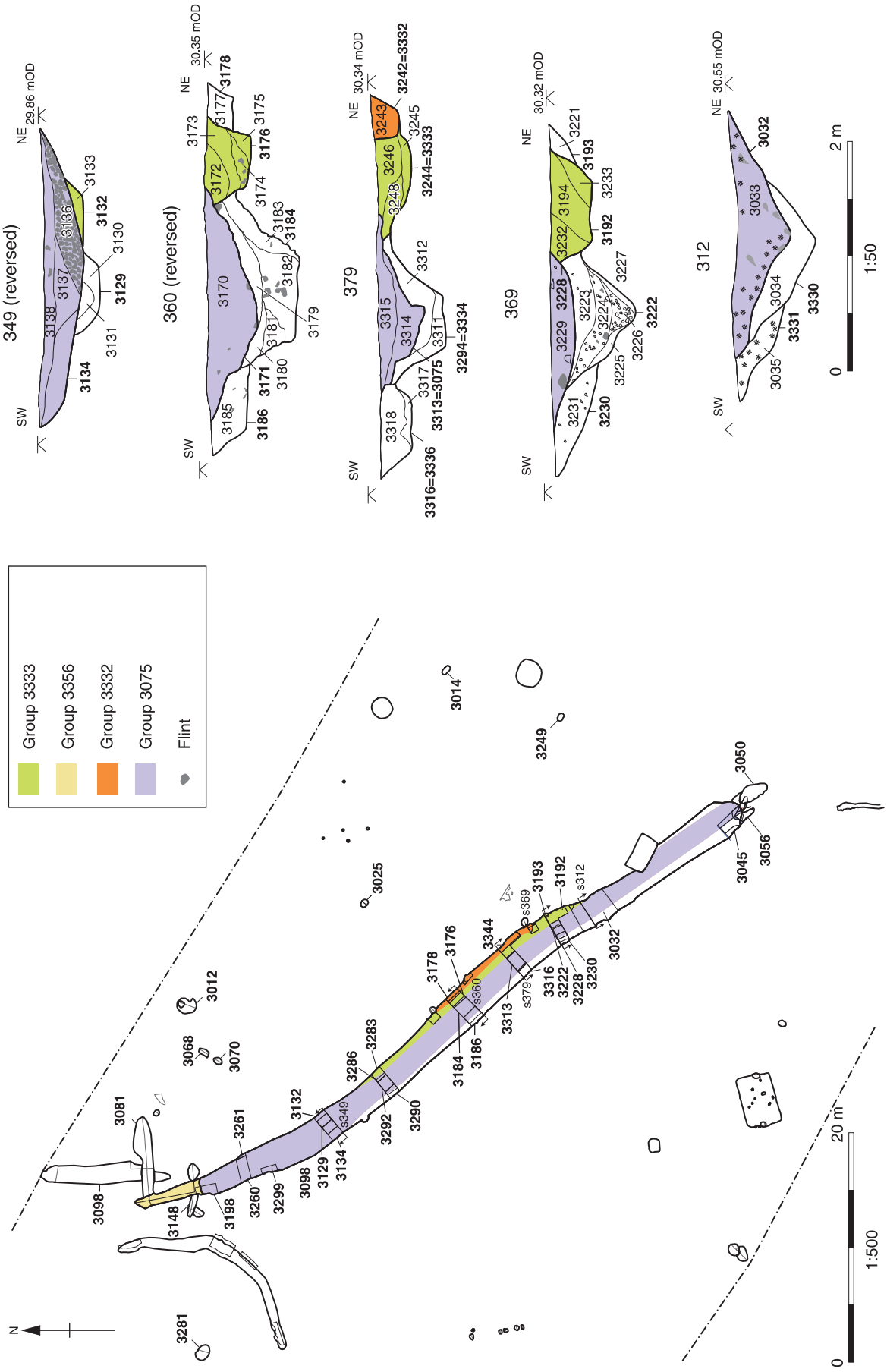


Fig. 4.53 Plan and sections of boundary ditch in Site A showing probable Roman phases

The ditch was at least 37.5m long, and the uneven silting suggests that it had a bank/upcast along its north-east edge. The only cultural material from ditch 3333 was a residual sherd of prehistoric pottery. The ditch appeared to terminate before the overall northern limit of the complex, but may have been contemporary with ditch 3356, which extended north-west beyond the other ditches of this complex, and contained Roman pottery dated AD 50-80 (55 g) as well as cattle bone and residual flint. Notably ditch 3356 also produced human remains including multiple bones from a single hand, fragments of pelvis and a femoral head (see Gibson *et al.* this vol.), interpreted as the remains of a truncated inhumation burial. The individual was identified as adult but could not be sexed. The fill containing the remains (3058) also contained pottery dated AD 50–200 (14g). The practice of interment of the dead in ditch termini in the Roman period is mirrored in the southern end of ditch 13161 to the north-west (see below).

The final phase of this complex comprised more substantial ditch 3075 and smaller feature 3332, both of which cut ditch 3333. Ditch 3075 was *c* 59m long and up to 2.7m wide, although not as deep as Iron Age ditch group 3334. The feature contained from one to four fills with minor indications of a bank to the north-east. In general the fills indicated that the ditch silted up gradually but may have been used for refuse deposition on occasion. Ditch 3075 contained the most finds of any ditch in the sequence, with sherds of Roman pottery from cuts 3292 and 3260. Pottery from the latter included fragments of samian dated to AD 50–75/80. This cut also produced a substantial deposit of horse bone, one cattle bone and a folded iron strip. Animal bones (including cattle and pig) were also recovered from interventions 3171 and 3032.

Feature 3332, in contrast, was a short ditch only 7.4m long adjacent to the middle part of ditch 3075, but with no proven stratigraphic relationship to it. The feature contained a single sterile fill that appeared to be slumped bank upcast. This may have functioned in combination with ditch 3075.

The field system

A series of smaller ditches ran at right angles to the two main boundary ditches on Sites A and L (Fig. 4.52). Ditches 13234 and 13233 terminated 5m and 8.5m from ditch 13161 respectively, possibly indicating the presence of a bank to the south-west of the larger feature (see above). Ditch 13234 extended southwest for 19m and beyond the limit of excavation in this area. It was not picked up in the main corridor to the south, therefore could not have been above 45m long. Ditch 13233 extended south-west for 57m before disappearing into an area of colluvium. The ditch was recut halfway along (12615) for a distance of 8m.

To the south-east two segments of ditch (3399 and 3109) along the same alignment ran at right angles to ditch 3075, though the north end of 3109 curved northwards to run parallel with this ditch. These two ditches measured 19m and 20m in length respectively, and may originally have been a single entity, the central part later being truncated away.

A further series of small ditches (3026, 3140, 3139, 13235, 13135) was excavated to the south-east of ditch 3075 on an approximately north-south alignment. Most of these ditches were of similar dimensions, *c* 0.3–0.7m wide and 0.1–0.3m deep, with the exception of 13235 which was wider (1.65m) and deeper (0.7m) with a more complex series of fills (up to five). Only ditches 13234 and 13233 produced dating evidence, and this consisted of just single sherds of Roman pottery, that from 13233 dated between AD 70–270. Animal bone came from ditches 13233 (including roe deer), 3109 (cattle), 3026 and 3139 (unidentified) and 13235 (including cattle and sheep/goat). Other finds included a fragment of ironworking slag from 3109, a possible quern fragment from 3139 and structural fired clay from 13235.

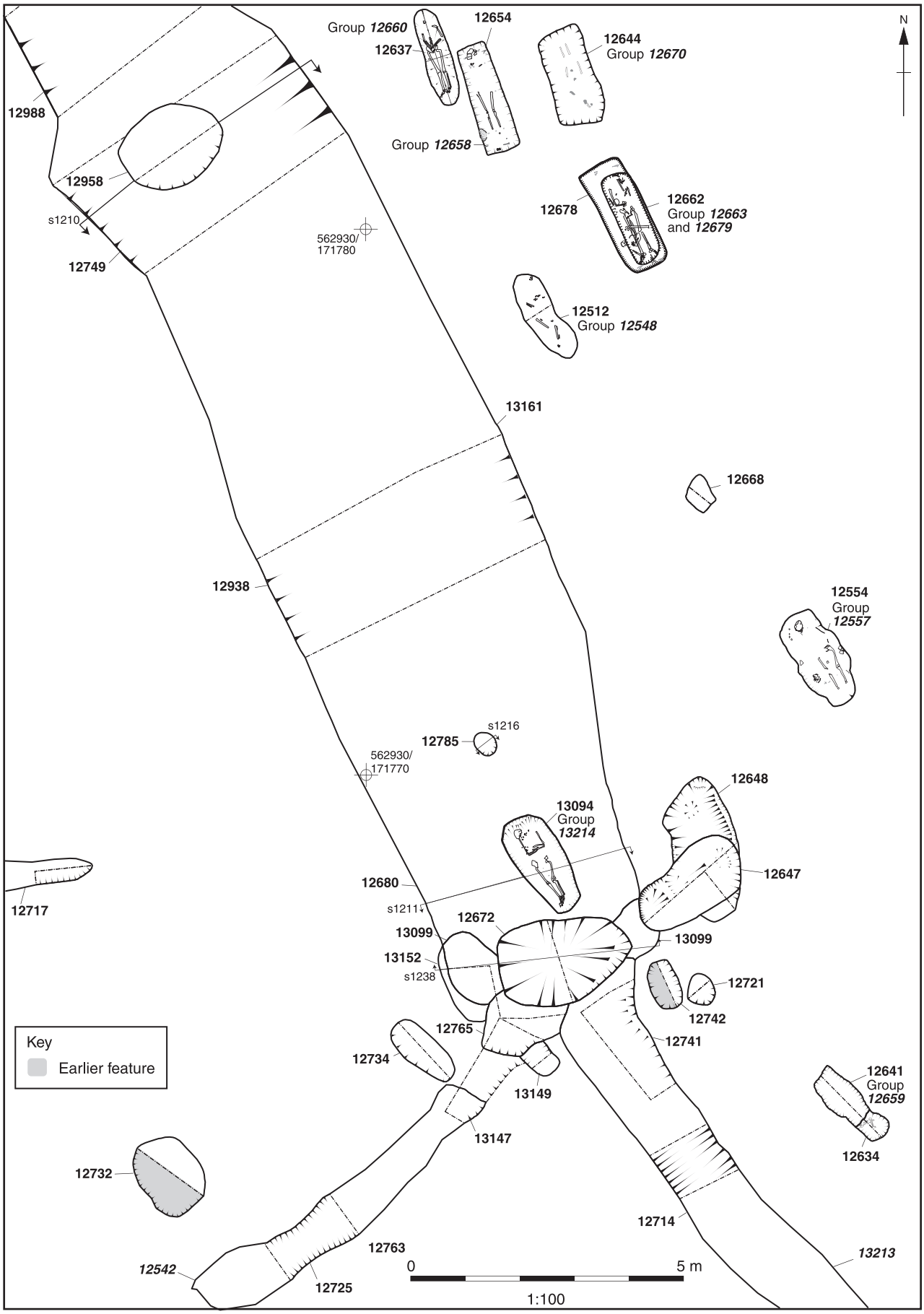
These ditches formed two separate groups, but both were probably parts of one system. Those running downslope at right angles to 13161 enclosed rectilinear parcels of land, but the angle of slope suggests that they were more likely used as pasture than cultivated. The line of ditch 3109, whose northern end formed a funnel 4–6m wide with ditch 3075, possibly indicates animal droving. The ditches to the east of 3075 may have formed an enclosure in their own right, with a further possible funnelled entrance created by ditches 13135 and 13235.

Middle to late Roman

Ditch 13161 (Fig. 4.54)

As outlined above, the upper sequence for ditch 13161 is difficult to decipher or date accurately, though the ditch clearly remained open into the late Roman period throughout its length. For the majority of the length of the ditch, the upper fills consisted of a mixture of gradual silting events and anthropogenic deposits. Chalky inclusions indicative of bank upcast were rare in the upper fills but where noted were predominantly found to originate on the south-west side of the ditch. The southern end of ditch 13161 was significantly different in nature due to heavy re-use in the later Roman period.

The upper fills either side of the recut produced few finds but included a small amount of structural fired clay, residual worked flint and prehistoric pottery, animal bone including horse, cattle, pig, sheep and sheep/goat as well as more likely natural occurrences of rodent and bird. An articulated horse leg was recovered from fill 12971 in cut 12970. In cut 13081 two broadly contemporary fills (13069 and 13079) were very rich in charcoal, and were probably related deliberate dumps.


N
Group 12660
12654
12637
12644
Group 12670
12988
Group 12658
12958
12678
12662
Group 12663
and 12679
s1210
562930/
171780
12749
12512
Group 12548
13161
12668
12938
12554
Group
12557
s1216
12785
562930/
171770
12648
13094
Group
13214
12647
12717
12680
s1211
12672
13099
13099
13152
s1238
12721
12742
12765
12741
12734
13149
12641
Group
12659
13147
12634
12732
12714
12763
12542
12725
13213
0
5 m
1:100
Key
Earlier feature

The fills of the possible recut were more numerous and contained more finds, and many were simply the result of natural silting, although deposit 12845 was somewhat more unusual. This survived as a very fine, soft, silty deposit, and was tentatively interpreted as a possible collapsed structure such as a wooden object that had slowly rotted away. A few of the deposits also appeared to be deliberate dumps of clayey material. The lower fills of the recut comprised residual prehistoric pottery and the occasional animal bone, while the uppermost seven fills contained most finds, even though they appeared to derive from natural collapses and silting. These included 205g of Roman pottery, the earliest sherd dated AD 10–70 and the latest AD 240–410. Other finds included structural fired clay, crumbs of iron, residual flint and prehistoric pottery and a substantial deposit of animal bone. This included horse, dog, cattle, pig, sheep/goat, ass and fish; amongst this were fragments of human bone, presumably related to the burials found further south in the ditch.

In the southern part of the ditch the sequence was somewhat different, as a result of a series of later features truncating the southern terminus. These included a number of gullies and pits that appear to have been broadly contemporary with a succession of burials within and alongside the ditch. Gully 13099 cut the southern end of ditch 13161, and was recorded as following the outline of the terminus, re-emphasising the limit of the silted ditch, although the stratigraphy was complicated in this area and it is possible that this interpretation is incorrect (Fig. 4.54). The gully was certainly 0.66m wide and 0.56m deep containing six fills, which produced a copper-alloy finger ring, two hobnails and a nail, fired clay, slag, animal bone including pig, cattle, sheep/goat and fox and an oyster shell. Finds such as the metalwork may indicate that these deposits were also associated with funerary activity or may have derived from cremation pit 12672 which cut the feature (Fig. 4.55).

Gully 13099 was also cut by pit 12647, which was initially recorded as a grave due to its shape and to bones later identified as animal. The pit was an extended oval measuring 2.2m long, 1m wide and 0.23m deep, and produced 13 sherds of early–mid Roman pottery as well as 48 sherds of briquetage, more commonly associated with Iron Age features on this scheme. Other finds included crumbs of iron, residual flint, animal bone including horse, cattle and sheep/goat as well as oyster shell.

Two further gullies were located at the southern terminus of ditch 13161. Gully 13213, which cut pit 13147, continued along the same orientation as the main boundary ditch for a further 12m. Gully 12542 was not directly related to the main ditch but began *c* 1m from pit 13147 and extended 6m south-west. Together these features formed an L-shape, although no features were present within it.

The inhumation cemetery on Site L

With the exception of grave 13214 and one (or possibly two) cremation deposits, the late Roman cemetery was located on the eastern side of ditch 13161 (Fig. 4.54–5; Table 4.6).

Grave group 13214 was the only Roman inhumation cut into ditch 13161. The grave was cut into a sequence of silting fills, one of which (13088) produced early-mid Roman pottery (Fig. 4.55). The interred individual (skeleton 12778) was a probable adult male of *c* 30–40 years old placed in a regular rectangular cut (13094) and laid out supine and extended (Fig. 4.56; Plate 4.26). A number of nails were found in the base of the cut (sfs 1396–8 and 1400–1), and these are likely to represent the remains of a wooden coffin. Three fills were found within the grave. The main fill (12769) directly above the skeleton produced an unusual handmade jug (sf 1386), dated by the fabric to AD 270–410 (Fig. 4.56; Plate 4.25). This was confirmed by radiocarbon dating of the skeleton which returned a date of cal AD 230–390 (NZA 30147). The only other find from the grave comprised the remains of a blackbird from fill 12769, possibly representing the symbolic inclusion of the bird as a grave good. The remaining fills

Table 4.6: Cemetery on Site L

Group	*Skeleton*	*Cut*	*Length*	*Width*	*Depth*	*Sex/age*	*Orientation*
12548	12525	12512	1.81	0.59	0.07	? 40+	NW-SE
12557	12556	12554	1.91	0.88	0.17	Female 40+	NW-SE
12659	12633	12634		0.44	0.12	Female? Adult	NW-SE
12660	12638	12637	1.80	0.50	0.10	Male? 40+	NNW-SSE
12670	12645	12644	1.78	0.80	0.35	?25-35	NNW-SSE
12658	12656	12654	2.05	0.65	0.20	Male? Adult	NNW-SSE
12663	12643/12676a	12662	1.75	0.55	0.32	Male? 30-40	NNW-SSE
12663	12671	12662	1.75	0.55	0.32	Male? 45+	NNW-SSE
12679	12676b	12678	2.13	0.82	0.26	Infant	NW-SE

Fig. 4.54 (facing page) Plan of southern end of ditch 13161 and adjacent burials

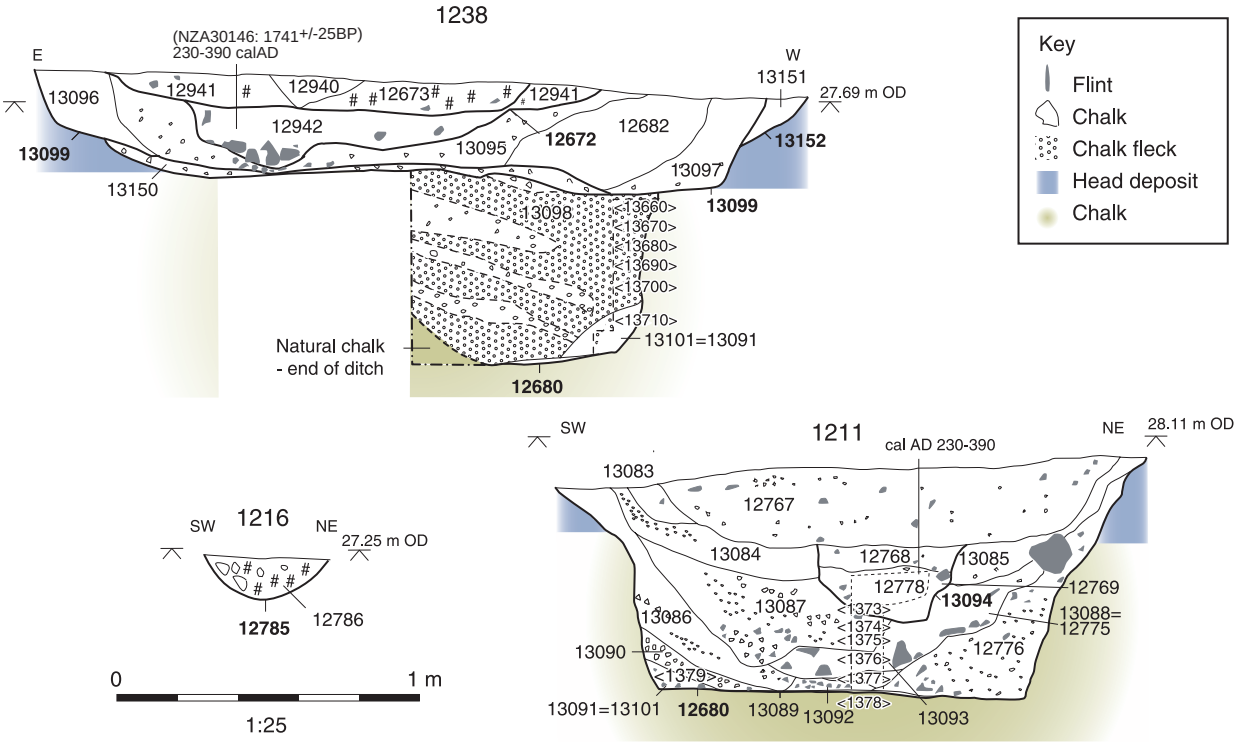


Fig. 4.55 Sections of ditch 13161 cut by grave 13094, pit or gully 13099 and pit 12672

were bereft of finds and were overlain by a final sterile silt (12767).

A large oval pit (12672) containing four fills rich in finds cut gully 13099 and the top of ditch 13161 just to the south of grave 13094 (Figs 4.54–5). The initial silting fill (12942) contained early–mid Roman pottery as well as an unusual collection of fish, snake and rodent bones, vetch and charcoal. This was overlain by deposits 12673 and 12941, the first of which contained much charcoal with cremated bone from at least two individuals and ash, and was probably a dump of pyre debris. This also contained 143 hobnails, fired clay, residual flint and a substantial amount of animal bone including pig and cattle. The fill was sampled for environmental remains and produced an interesting assemblage including unidentified tuber/nut fragments, one possible immature acorn and one rootlet of onion couch grass. The charcoal included ash, yew and cherry. Pyre material from 12673 was sent for radiocarbon dating and yielded a date of cal AD 320–440 (NZA 30146; 92% confidence). Deposit 12941 also produced pottery dated AD 50–200, a hobnail, fired clay and flint. The soil sample yielded indeterminate cereal, yew seeds and abundant charcoal, and it is likely that 12941 was also related to cremation. The final fill of the pit (12940) produced two hobnails, charcoal and vole, other rodent and lizard bones. Overall the pit contained an unusual variety of environmental evidence and consistently produced hobnails; it is likely that all the deposits derived from or were contaminated by cremation debris.

A small charcoal-filled pit (12785) was also excavated *c* 1.2m north of grave 13214 (Fig. 4.54), the fill of which produced burnt stone, lava quern and a single hobnail. The material within the pit and its proximity to funerary features may indicate this was also related to the Roman cremations.

Similarly, the upper fill of cut 12749 (12681) in the main ditch produced human bone in addition to two nails and 18 hobnails, possible tegula, fired clay, a polished pebble and animal bone including dog, horse, cattle and sheep/goat. This may indicate the fill contained the remains of a funerary deposit. This fill was, however, directly above an Iron Age or Roman infant burial (12750), and the human bone may have derived from this context.

A total of seven further inhumation graves containing nine individuals was located to the east of ditch 13161 (Fig. 4.54). Details of the skeletons are provided in Table 4.6. Most of the individuals were adult, possibly all of them, and the majority of those that could be sexed were male. Many of the graves were placed in a group adjacent to the middle Iron Age inhumations in ditch 13161, but two (12557 and 12659) were located nearer the terminal of the ditch. It may be significant that these graves contained the remains of the only possible identified females.

Grave 12659 was located adjacent to gully 13213, south of ditch 13161, and was heavily truncated. The northern half of the grave was disturbed by a later cut, which was filled with re-deposited natural and disturbed elements from the burial. The undisturbed southern end contained the articulated legs and feet of a possible female (Fig. 4.54). There were

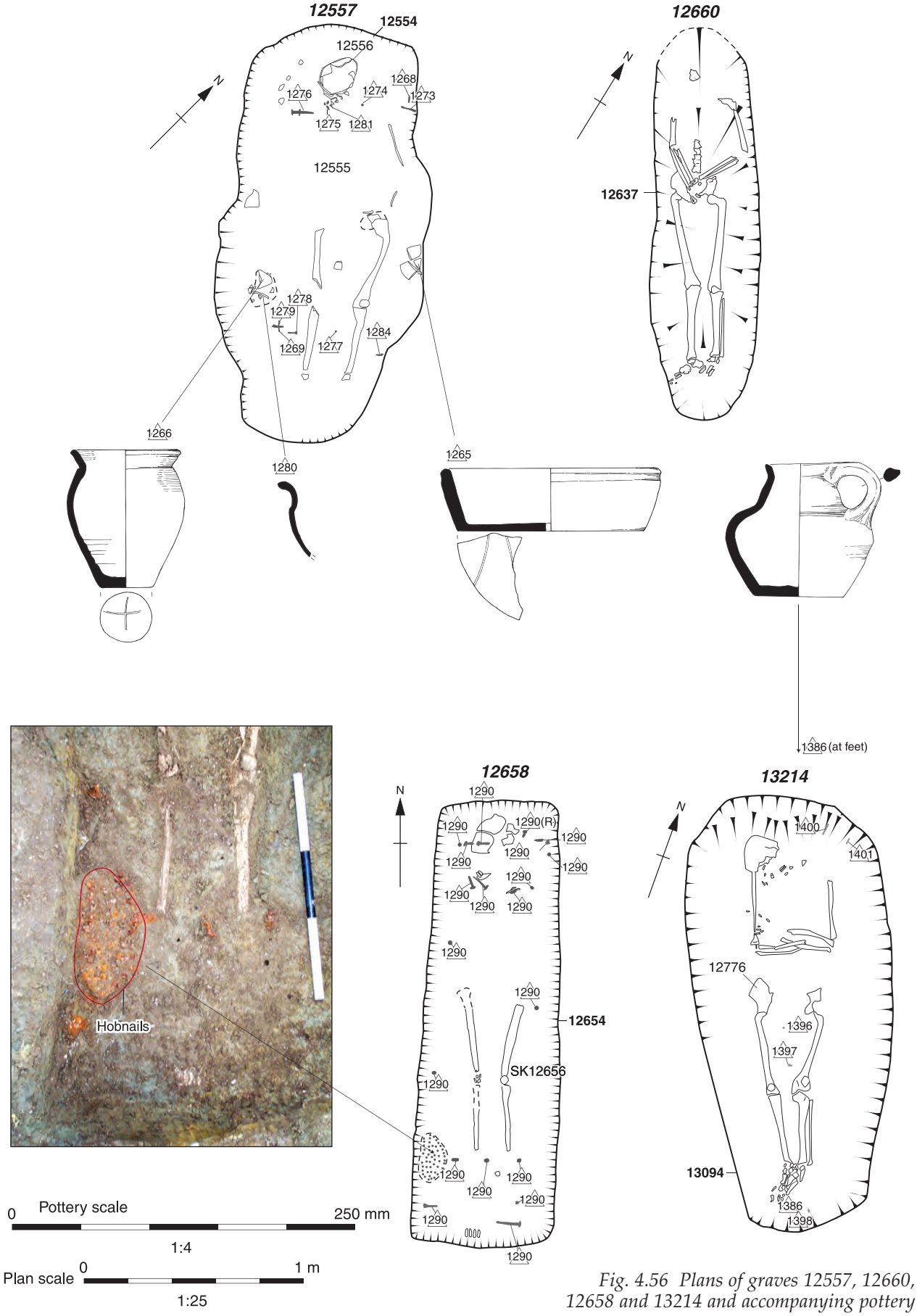


Fig. 4.56 Plans of graves 12557, 12660, 12658 and 13214 and accompanying pottery

no grave goods. Grave 12557, in contrast, contained three pottery vessels (Fig. 4.56). An everted-rim bowl (sf 1280) dated AD 50–70 and a poppy-head beaker (sf 1266) dated AD 130–170 were placed next to the right leg and a black burnished groove-rimmed dish (AD 130–300) close to the left thigh. A minimum of six nails was also recovered, presumably deriving from a coffin. The grave also produced residual worked flint.

The remaining graves were clustered in a group adjacent to the middle Iron Age burials in ditch 13161 (12986) and pit 12742 (12744) just to the south (see Chapter 3). The group comprised four well-defined single inhumations and a multiple burial

Plate 4.25 Whole pot exposed at foot of grave 13094 in ditch 13161

Plate 4.26 Skeleton in grave 13094 cut into terminal of ditch 13161

(12679/12663) containing the remains of three individuals. The majority of the group were adult, over the age of 30, with the exception of infant 12676 found in the multiple grave. Sexing was possible or probable in four of the adults and all were found to be male or ?male. The graves themselves varied in size and most were heavily truncated. As a result the bones surviving in 12670 and 12658 were fragmentary (Fig. 4.54), though those in 12660 were more complete (Fig. 4.56).

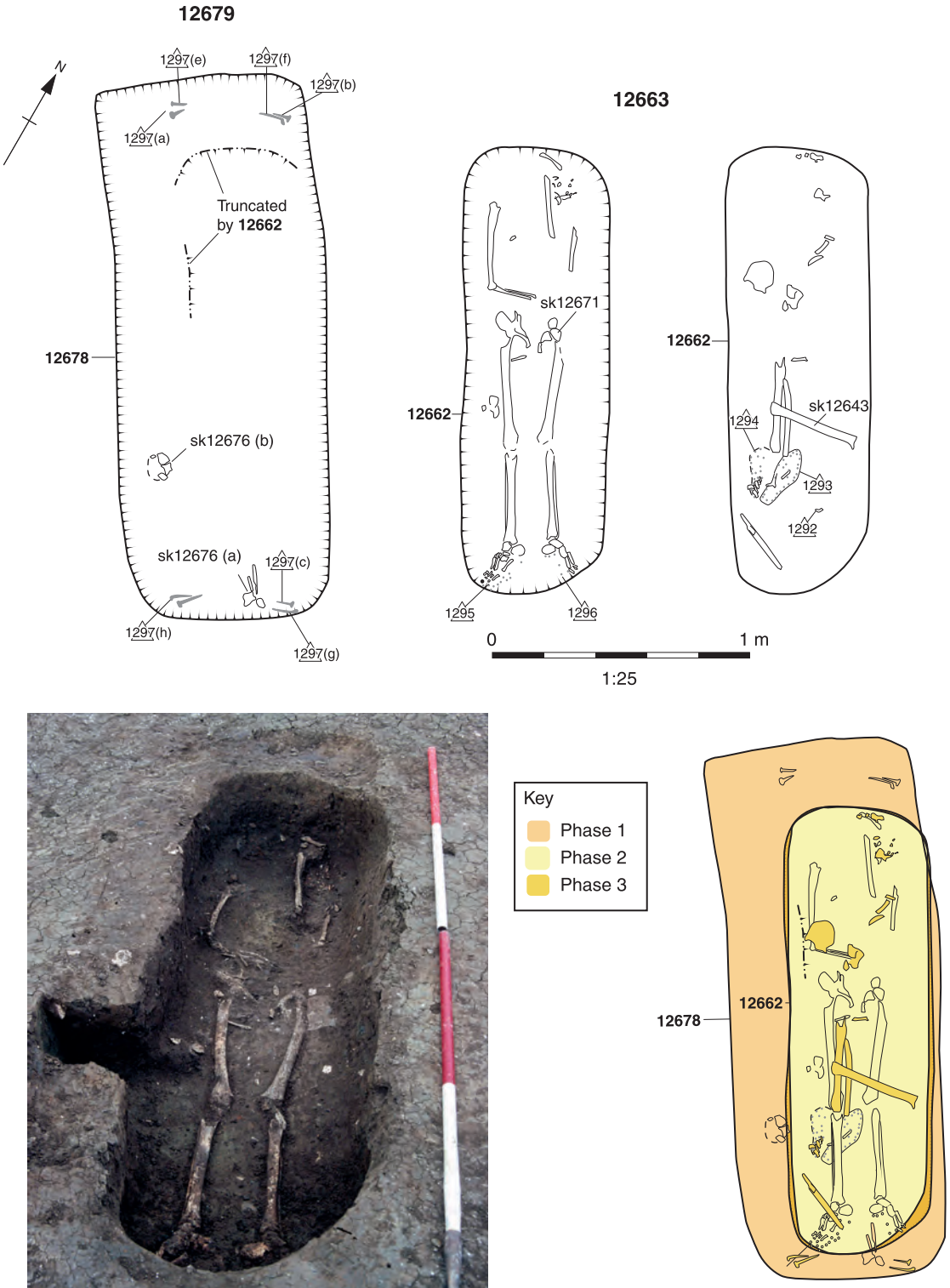


Fig. 4.57 Plans and photograph of multiple grave 12679/12663

The multiple grave 12679 and 12663, although containing the remains of three individuals, probably only consisted of two phases of burial. Initially a grave measuring 2.1 by 0.82m (12678) was dug and a coffin of similar dimensions was placed inside, fastened using two nails at each corner (Fig. 4.57). This was heavily truncated by a later, smaller grave cut (12662), measuring 1.75 by 0.5m. On excavation the body of an infant, 1–2 years old (12676b) was found in the southern end of the first grave (12678), in addition to a small number of adult bones (12676a). These were originally collected as a single individual therefore retaining the same number. Notably, whilst the adult bones were within the bounds of the coffin, the infant appears to have been placed outside the coffin, unless the remains had significantly shifted post-deposition.

Grave 12663 contained the remains of an adult male (12671), wearing a pair of hobnailed shoes, who appeared to have fitted snugly into the smaller cut (Fig. 4.57). The nail recovered from this grave probably originated in burial 12679 below. Skeleton 12671 was covered with a layer of backfill above which were found the disarticulated remains of an adult male (12643). On examination it was concluded that this individual was the same as 12676a and was originally buried in cut 12678. This burial was disturbed during the cutting of grave 12662 and redeposited in the upper fill of the grave following the burial of individual 12671. This theory is reinforced by radiocarbon dates of the two skeletons. The individual in the smaller grave (12671) was dated cal AD 320–406 (NZA 32403; 72.8% prob) whilst body 12643 was dated cal AD 238–350 (NZA 32402; 93.6% prob). It remains unclear whether the infant was buried at the same time as skeleton 12676/12643 or whether it was placed in the grave at a later date.

What is particularly remarkable about the redeposition of skeleton 12676a/12643 is that although it was disarticulated, several of the left foot bones were found still within the hobnailed shoe on excavation. This implies that the shoe was still intact when the second burial was inserted into the grave, although the body had undergone considerable decomposition. The shoes had been placed at the foot end of the grave with the toes pointing towards the head end. The length of time taken for a treated leather shoe to decompose is variable and not possible to estimate accurately, but this suggests a relatively short period of time between the two burials, possibly within the space of a generation. The placing of one body exactly within the cut of an existing burial suggests that the original grave was marked in some way, although no form of gravestone or posthole remains. This was possibly simply the mounded spoil left after backfilling the grave over the coffin. It is also probable that all three of the individuals were part of a family group, although this is not proven. Notably the radiocarbon dating of skeleton 12671 highlighted unusual carbon isotope levels within the bone. As a result independent nitrogen and carbon isotope analysis was undertaken, indicating that the individual may have been an immigrant (see Pollard and Ditchfield below).

The graves all produced cultural material in addition to the human bone. Other than those graves with accompanying pottery vessels, the only dating evidence came from the multiple grave, from early–mid Roman pottery in cut 12662, which was presumably residual or curated. Nails were present in three of the four single graves, thought to represent coffins. In the case of grave 12660 only one nail survived, possibly as a result of poor preservation, although this may indicate the presence of a sparsely fastened coffin or one fastened using organic material. Grave 12548 contained four nails distributed around the grave whilst grave 12658 produced 22 nails. These were located on two different levels, seven at the top of the grave and the remaining 15 at the base, suggesting the coffin had a nailed lid and was heavily fastened elsewhere.

Hobnails, representing the remains of shoes, were recovered from graves 12658 and 12663 (see above). In the former the hobnails numbered 64 and were recovered as a single group, next to the right foot, possibly a single shoe or more likely two placed one on top of the other (Fig. 4.56). It was not possible to ascertain in what direction the shoes were facing, however the group was located outside the coffin and the shoes were arguably added to the grave for the journey to the underworld. In grave 12663 the 204 hobnails represented two separate pairs of shoes. The first were being worn by skeleton 12671, the second were found accompanying skeleton 12643 as described above.

Other finds included fired clay from graves 12658, 12670 and 12679, animal bone including cattle from grave 12658, fox and sheep/goat from grave 12663, ceramic building material and oyster shell from 12658 and iron crumbs from 12670. In addition residual flint was recovered from all of the graves, illustrating its ubiquitous nature on the site, and intrusive modern glass came from grave 12660. Soil sampling of the grave contents produced a single wheat grain from grave 12548 and an unidentified cereal grain and charcoal from 12660.

Catalogue of Roman pottery from inhumation graves 12557 and 12314

Grave 12557

SF1265, groove-rimmed dish (Monaghan 1987, type 5F3), black-burnished ware 2 (R14). Context 12555.

SF1266, poppyhead beaker or 'jar-beaker' (Monaghan 1987, type 2A4), Thameside sandy grey ware (R73.3). Context 12555.

SF1280, bowl (Monaghan 1987, type 4D4), Thameside sandy grey ware (R73.3). Context 12555.

Grave 13214

SF1386, flagon (Monaghan 1987, type 1E0), Late Roman grog-tempered ware (LR1). Context 12769.

Sunken-featured building 3349

A possible sunken building (3349) was identified on the southern edge of Site A (Fig. 4.52). This feature was 3.6m long and 2.23m wide at its widest point, measuring up to 0.6m deep (Fig. 4.58). The feature was somewhat irregular and figure of eight-shaped in plan, which may reflect the underlying geology. The possible structure had gently sloping sides and a flat base and contained a sequence of three finds-rich fills.

The only dating evidence came from the uppermost fill and comprised a single sherd of pottery weighing 14g and dated AD 300–410. All three fills produced structural fired clay totalling *c* 6kg. Other finds included tile from middle fill 3304/3351, an iron reaping hook and ring and a fragment of lava quern from the lower fill (3305/3352) and a possible nail from upper fill 3303/3350. In addition all three fills contained animal bone including pig, sheep/goat, cattle, bird including domestic fowl of similar size to a modern Bantam, and cod. Marine shell was

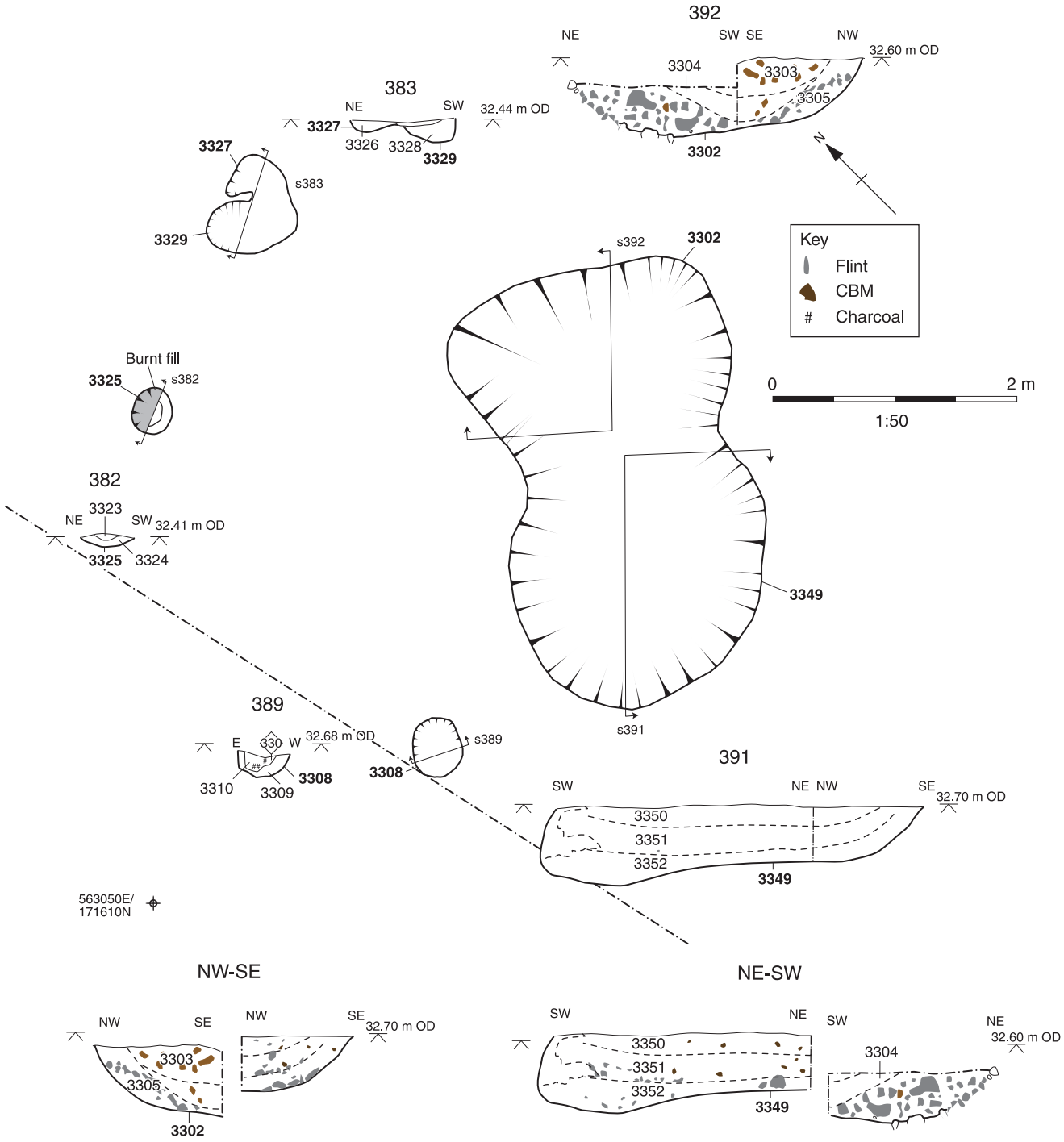


Fig. 4.58 Plan and sections of pit or sunken-featured building 3349

also ubiquitous in all three fills, with over 1kg present overall including oyster, cockle, mussel and periwinkle. A soil sample from the upper fill of the feature produced abundant cereal including barley and wheat, as well as stinking chamomile and charcoal.

There were no postholes within feature 3349, but four postholes lay to the west and south (3308, 3325, 3327 and 3329). All but posthole 3308 contained significant quantities of fired clay, and the fill of 3325 was notably burnt. Posthole 3308, in contrast, contained large flints, possibly used as packing. All contained small amounts of animal bone, while crumbs of iron came from 3329. Plant remains included several barley grains from 3329 and other cereal or grass from 3327. The postholes were not part of a coherent pattern but were very shallow, and other similar features may have been truncated away.

Feature 3349 and the associated postholes have been tentatively phased late Roman on the basis of the single potsherd from the upper fill. The shape of this feature is similar to the rectangular pits in Site B, although less regular, possibly due to the local geological conditions. Sunken-featured buildings are not unknown in the Roman period in Kent as discussed above and this may represent a further example. A number of the excavated examples from Monkton (Bennett *et al.* 2008) were irregular in shape like 3349, presumably in relation to function. Again this feature may have been used for a number of agricultural functions or perhaps most likely storage.

However, the dating is sparse and the possibility that this feature could be another Saxon or even medieval building cannot be discounted, particularly given the proximity of Saxon SFB 3370 and medieval structure 13238.

ROMAN FINDS ASSEMBLAGE

Roman pottery *by Edward Biddulph, with contributions from Valery Rigby, J M Mills and Roger Tomlin*

A total of 3680 Roman-period sherds weighing 44,060g was recovered from six sites along the widening scheme (Table 4.7). The pottery was recorded using the methodology devised for the recording of Roman assemblages from HS1 Section 1 (Booth 2006a), ensuring that the pottery from a number of related sites in the region was comparable. In the HS1 Section 1 report pottery of late Iron Age and early Roman date was considered together. This was partly because sites with both middle and late Iron Age pottery were absent, and late Iron Age to early Roman sites did not exhibit a long sequence of activity. On the A2, in contrast, the settlement on Sites B and C appeared to demonstrate a progression from the middle to late Iron Age, with only a small clearly early Roman component. It was therefore decided that only assemblages containing clearly Romanised fabrics and forms, or other finds of clearly Roman date, would be included with the Roman pottery. Assemblages of late Iron Age character that lacked such material have been recorded and written up with the early and middle Iron Age pottery (see Brown Chapter 3 this vol.).

The assemblage was sorted within context-groups into 'sherd-families' or collections of sherds sharing certain characteristics, such as fragments from the same vessel or groups of undiagnostic body sherds belonging to the same fabric. Each sherd-family was quantified by sherd count and weight (in grammes), minimum number of vessels based on rim count (MV), and estimated vessel equivalence (EVE), which records the surviving percentage of a complete rim. Fabrics were identified using the fabric series devised by the Canterbury Archaeological Trust (CAT nd), although to allow analysis on a more general level, and particularly to facilitate wider inter-site comparisons, each record was also assigned a general ware category. Forms were matched primarily with descriptions in the Southwark typology (Marsh and Tyers 1978; Davies *et al.* 1994, 6–8), although in practice Monaghan's corpus of North Kent and Upchurch ware types (1987) proved to be more useful for identification and dating. In addition, certain standard corpora were used, in particular Hawkes and Hull's *Camulodunum* series (1947), Pollard's corpus of Roman pottery in Kent (1988), and samian typologies (cf. Webster 1996). Context-groups were given spot-dates based on the diagnostic material. Two categories of information, devised for the HS1 Pepperhill cemetery assemblage, were also employed here (Biddulph 2006a). *Interpretative types* are a series of codes that assist the classification of funerary vessels—even those lacking rims—into functional types. Only vessels attributed to graves were assigned these codes. *Completeness* comprised codes that described the extent of preservation of individual vessels. Again, the category was used only for funerary pottery.

The pottery falls into two categories: pottery from the cemeteries and from settlement-related features. Illustrations and catalogues of the former appear earlier in this chapter, and this material will be described first, together with the reports on the imported and specialist wares.

Pottery from the cemeteries

Ten graves, six from Site D and two from Site L, contained pottery deposited as grave goods. In total, 56 vessels were assigned to graves (Tables 4.8 and 4.9). Open eating-related forms (bowls, dishes and platters) were best represented, but drinking equipment (beakers, cups and flagons) was also important. Jars were deposited mainly as cinerary urns. Wares of early Roman tradition dominated the assemblage, although they were recovered from just three graves. These graves also contained all the fine wares. Other graves contained a range of coarse wares.

Table 4.7: Quantification of Roman pottery

Fabric code	*Description*	*Sherds*	*Weight (g)*	*MV*	*EVE*
A Amphorae					
B19.1	Italian Dressel 1/2-4 amphora	1	450		
R56	South Gaulish Pelichet 47 amphorae	1	83		
R98	Unidentified amphorae	1	47		
B Black-burnished wares					
R14	Black-burnished ware, category 2	9	150	1	0.27
C Shelly wares					
R69	South Essex/North Kent shelly ware	478	6217	26	5.19
E Late Iron Age/early Roman ('Belgic') wares					
B1	Fine grog-tempered ware	92	1347	8	1.22
B2	Coarse grog-tempered ware	239	768		
B3	Grog-tempered fabric with sparse flint	2	22		
B5	Grog-tempered fabric with sand	106	394	2	0.42
B5.1	Grog and shell tempered fabric	4	59	1	5.99
B8	Fine sand-tempered ware	467	5999	22	16.73
B9	Coarse sand-tempered ware	83	1155	9	0.82
B9.1	Glauconitic Medway Valley ware	13	224		
LIAB1	Flint-tempered fabric	23	118	1	9.99
R154	Fine red-surfaced grog-tempered wares	263	5054	3	2.14
F Fine wares					
B12	Terra rubra fabric 1(A)	3	11		
B14	Terra rubra fabric 1(C)	25	830	3	2.54
B15	Terra rubra fabric 2	7	304	1	0.81
B16	Terra rubra fabric 3	2	148	1	1
BER12	Terra nigra	51	1961	5	4.56
LR10	Oxfordshire red colour-coated ware	3	129		
LR11	Nene Valley colour coated ware	1	6		
M Mortaria					
LR24	Oxfordshire red colour-coated ware mortaria	1	14	1	5.0
O Oxidised					
R17.1	North Kent fine orange ware	152	480	2	0.88
R17.2	North Kent fine red ware	1	58	1	0.27
R17.3	North Kent fine buff ware	3	24	2	0.12
R68	Patch Grove grog-tempered ware	27	1010	1	0.15
R74.1	Thameside sandy orange ware	131	2044	8	1.49
R74.2	Thameside sandy red ware	13	193	1	5.0
R74.3	Thameside sandy buff ware	11	127	4	0.47
R8.1	Miscellaneous fine orange wares	5	12		
Q White-slipped wares					
R18.1	North Kent fine white-slipped oxidised ware	203	1559	4	0.63
R Reduced wares					
R100	Miscellaneous sandy grey wares	20	93	1	0.67
R101	Miscellaneous fine grey wares	5	3		
R102	Flint and sand-tempered fabric	2	41	1	0.10
R111	Unidentified fabric	1	1		
R16	North Kent fine grey ware	246	1736	23	4.34
R73	Fine Thameside grey ware	26	331	2	1.13
R73.3	Thameside sandy grey ware	705	5969	47	7.16
LR1	Late Roman grog-tempered ware	1	352	1	1

Table 4.7: Quantification of Roman pottery (continued)

Fabric code	*Description*	*Sherds*	*Weight (g)*	*MV*	*EVE*
S Samian wares					
R42	South Gaulish samian ware	42	1241	6	2.71
R43	Central Gaulish samian ware	6	346	1	0.72
R43.1	Central Gaulish samian ware (micaceous fabric)	4	52		
W White wares					
B17	North Gaulish (sandy) white ware	62	621	1	1
BER11	North Gaulish (pipeclay) white ware	106	1423	1	1
R15	Verulamium-region white ware	28	712	1	0.15
R89	South-east England/North-west Gaulish white ware	5	142	1	1
TOTALS		3680	44060	193	60.99

Table 4.8: Summary of funerary assemblage. Quantification by vessel count. Interpretative types (IT): AJ jar (accessory vessel), AU unidentified (accessory vessel), DB beaker, DC cup, DJ jar-shaped beaker, LF liquid-server (flagons and flasks), OB bowl, OD dish, OP platter, UB bowl (urn), UJ jar (urn).

Ware group	*Interpretative type*												
	AJ	*AU*	*DB*	*DC*	*DJ*	*LF*	*OB*	*OD*	*OP*	*UB*	*UJ*	*Total*	*%*
B Black-burnished								1				1	2%
C Shelly							1					1	2%
E LIA/early Roman-type			2	2		2	1		15		2	24	43%
F Fine			1	2					7			10	18%
O Oxidised	1		1			1					1	4	7%
R Reduced		1	2		2	1	1	1		1	1	10	18%
S Samian				1			1	1				3	5%
W White			2			1						3	5%
Total	1	1	8	5	2	5	4	3	22	1	4	56	-
%	2%	2%	14%	9%	4%	9%	7%	5%	39%	2%	7%	-	-

Pottery places the well-dated graves into five chronological groups. Graves 6068 and 6098 date to the late Iron Age or mid 1st century AD. Graves 6260, 6635, 6645, and 6693 more certainly belong to the mid 1st century, although 6693 could be a little later. Three graves (6728, 6605 and 12554) date to the second half of the 2nd century. While 6605 and 12554 date no later than AD 170, a coin from grave 6728 dated to the later 3rd century AD, showing that the pottery was not deposited until after this date. The latest grave that contained pottery was 13094 from Site L, which was dated in the late 3rd or 4th century. Finally, graves 6069 and 6081 contained pottery that was too fragmentary to date any closer than AD 43–410.

Summary of the pottery

Site D

Graves 6068 and 6098 were among the earliest Roman-period graves (though the function of 6098 remains uncertain; see above). Each contained a coarse grog-tempered jar, which served as the urn and dated to the mid 1st century AD. The largest pottery group in Site D was deposited in high status grave 6260. The 18 vessels included ten continental imports. These arrived mainly from Marne-Vesle Valley, although vessels from northern and southern Gaul were also represented. Most of the cups and platters were stamped with the name or mark of the potter. The vessels produced locally in north Kent included versions of continental platter form *Cam* 16. These were stamped Bent(i)o or Benio and appear to represent the output of a workshop of a continental potter or potters that was set up in the north Kent marshes after the conquest (see Rigby, this vol.). The five vessels here probably represent batches made to order for the burial. A handled jar, a so-called honeypot, was inscribed with a personal name or, more likely, a record of contents (see Tomlin, this vol.). The vessel was made in a local flint and sand fabric, but the continental form also suggests migrant potters. A samian cup, stamped by Regenus, was made in *c* AD 30–45, but the group as a whole was buried 10 or 20 years after the conquest.

Table 4.9: Funerary vessels by grave

Grave	*SF No.*	*Context*	*Fabric*	*IT*	*Form*
6068	602	6078	B2	UJ	
6069	603	6093	R74.1	UJ	
6081	601	6082	R73.3	UJ	
6098	604	6103	B2	UJ	
6099	605	6105	R73.3	AU	
6190	658	6235	B8	OB	Cam 215
	659	6211	BER12	DC	Cam 58L
	660	6213	B8	OP	Cam 16
	661	6215	B8	OP	Cam 16
	662	6217	B14	OP	Cam 8/7
	663	6233	R154	LF	Cam 167
	667	6209	B15	OP	Cam 8/7
	670	6229	BER12	OP	Cam 8
	671	6225	B8	OP	Cam 16
	672	6219	B8	OP	Cam 16
	675	6223	R42	DC	Drag 27g
	676	6236	BER12	DC	Cam 58
	677	6221	BER12	OP	Cam 8
	680	6251	B17	DB	Cam 113
	682	6227	R74.1	AJ	Cam 175
	691	6240	BER12	OP	Cam 2
	692	6257	B8	OP	Cam 16
	1940	6165	B16	DB	Cam 112
6605	1534	6653	R73.3	UB	Monaghan 4D
	1535	6654	R43	OD	Drag 18/31
	1536	6655	R73.3	DJ	
	1537	6656	R17.1	LF	
6636	1538	6638	BER11	LF	Cam 161
	1539	6659	R154	LF	Cam 161
	1540	6660	B8	DB	Cam 119
	1541	6650	R42	OB	Drag 29
	1552	6696	B8	OP	Cam 16
	1553	6697	B8	OP	Cam 8/7
	1555	6699	B5	OP	Cam 13/23
	1556	6700	B8	OP	Cam 16
	1557	6701	B8	OP	Cam 16
	1558	6702	B8	OP	Cam 16
	1559	6703	B8	OP	Cam 16
	1569	6740	B8	DC	Cam 56
	1571	6743	B8	OP	Cam 16
	1598	6770	B8	OP	Cam 8/7
6643	1528	6775	B8	DC	Cam 58
	1566	6723	B8	DB	Cam 119
	1572	6752	B14	OP	Cam 8/7
	1573	6754	B14	OP	Cam 8
	1574	6757	B8	OP	Cam 16
6693	1930	6720	R15	DB	
	1931	6721	R69	OB	Monaghan 4E1
	1932	6722	R16	DB	
6728	1594	6730	R73	DJ	Monaghan 3J3
	1595	6730	R17.1	DB	Monaghan 2C7
	1596	6730	R73	OD	Monaghan 5E2
12554	1265	12555	R14	OD	Monaghan 5F3
	1266	12555	R73.3	DB	Monaghan 2A4
	1280	12555	R73.3	OB	Monaghan 4D4
13094	1386	12769	LR1	LF	Monaghan 1E0

The group of ceramic vessels in high status grave 6635 included a similar range of forms to that in grave 6260, but there were some differences. The group was smaller in terms of vessel numbers, and imported vessels were limited to a South Gaulish samian bowl and a North Gaulish pipeclay flagon. The decorated samian bowl—a type that rarely appears in burials, and then only in high status graves—was stamped probably between AD 30 and 45 by Firmo I. As in grave 6260, the group included locally-made versions of Gallo-Belgic platters, although the stamps suggest that the vessels belonged to a total of three North Kent workshops separate from the workshop responsible for the imitations in grave 6260. The vessels date the burial group to AD 50–65, rendering the samian bowl a residual import or, as is perhaps more likely since the bowl appeared to be worn internally through use, a curated item. One of the flagons (sf 1538) has a graffito, probably a personal name, scratched after firing (see Fig. 4.61). High status grave 6645 contained a smaller group of Gallo-Belgic pottery and locally-made versions. The local vessels probably belong to one or more of the workshops identified in graves 6260 and 6635. Consequently, an identical date range for deposition is suggested.

Inhumation grave 6693 was dated to the second half of the 1st century or the early 2nd century by a North Kent carinated beaker, a shelly-ware jar, and a vessel in Verulamium-region white ware of uncertain form, probably a beaker. A Central Gaulish samian dish (Drag. 18/31), which had been placed upright on top of the cinerary vessel and used as a lid, dated grave 6605 to the mid 2nd century, although the bowl that served as the urn is a late 1st century type and so appears to be anachronistic. A beaker-sized cooking jar and fine oxidised flagon were also present. Grave 6728 was one of the latest in Site D; pottery recovered from the feature—a grey ware beaker-sized cooking-jar, a funnel-necked beaker and a plain-rimmed dish—gave it a late 2nd- or early 3rd-century date. Graves 6069 and 6081 each contained an urn, but no ancillary vessels. Neither of the jars that functioned as urns could be dated closely within the Roman period.

Site L

Two graves in Site L contained pottery. The cinerary vessel, an everted-rim bowl, in grave 12554 dated to the second half of the 1st century and was earlier than the date of burial, as suggested by the mid-2nd century ancillary poppy-head beaker and black-burnished groove-rimmed dish. An x-graffito was cut after firing on external base of the beaker. The solitary ceramic vessel from inhumation grave 13094 was a handmade jug with no immediate parallel. A late Roman date, given to the vessel on the ground of fabric (grog-tempered ware), is confirmed by a radiocarbon determination of the skeleton (12778): cal AD 230–390 (NZA 30147; at 98% confidence).

Funerary pottery: Vessel placement and treatment

None of the vessels from the graves was burnt, suggesting that the pottery was not placed on the pyre before being deposited in the grave. If pottery did accompany the deceased on the pyre, then it was discarded or buried elsewhere. The absence of pyre goods in cremation graves is a little surprising. Twenty-five burnt vessels were recovered from graves at Pepperhill cemetery, giving a ratio of one burnt vessel in every 15 accessory vessels (Biddulph 2006a). On that basis, three or four pots in total might be expected within the Site D and Site L graves.

Deliberately-damaged pots are regularly recorded in Roman-period graves in the region. At Pepperhill cemetery, 38 vessels, representing 10% of the accessory vessel assemblage, were found to have been mutilated before being deposited in the grave (Biddulph 2006a). Closed forms, particularly flagons, were usually perforated through the base or body, while other forms, especially dishes and platters, but also including beakers and flagons, were chipped along the rim. This association between vessel class and type of damage can be seen at other cemeteries, for example Ospringe, near Faversham (Whiting *et al.* 1931, 66) and Great Dunmow, Essex (Going 1988, 23). The graves from the A2 excavations contained eight vessels that appear to have been deliberately damaged, equating to 16% of the accessory vessel assemblage. (The vessels are unlikely to have represented accidental breakage before burial, for example in the home; they were new at the time of burial, in some case specially made for the funeral.) All eight examples had fragments missing from the rim. As expected, the vessels were open forms. Five were platters in Gallo-Belgic and local fabrics, another was a samian dish (Drag. 18/31); a bowl (*Cam* 215) in a local fabric and a wide-mouthed cup (Drag. 27) in South Gaulish samian ware were also represented. Reasons for damage like this are not easily determined. The description usually applied to this form of evidence—killed vessels—carries a suggestion that grave goods used by the living had to be damaged and made unusable in order to pass into the realm of the dead. If so, then the practice was inconsistently applied; in any case, the damage recorded on the five vessels from Site D was not sufficiently extensive to render them useless in everyday life. Alternatively, the removed fragment was retained by a mourner (cf. Going 1988, 22). It is notable that imported finewares were preferred here and also well-represented at Pepperhill; the detached pieces doubtless made attractive keepsakes. Again, though, few people would have taken part in the practice.

The positioning of pottery is likely to have been significant in terms of vessel function within the grave, in some cases enhancing the mundane role of vessels or changing it altogether. The treatment of pottery seen in the Site D burials, in terms of placement, fits within the range identified at Pepperhill cemetery (Biddulph 2006a). The varied practices are not easily accommodated in a single interpretation, and it is probable that the different placements encompass both mundane and ritual meanings. The remarkable location of the pottery in grave 6260 indicated that small vessels like the platters were placed on a table against the side of the grave cut, with flagons, the larger forms, located on the floor around or underneath the table. This is discussed more fully elsewhere in this volume, but it is useful to note here that the platters were all upright and open; that is, none was stacked or covered by other objects. If the vessels contained food or offerings, then these were neatly presented and ready to be consumed. A terra rubra miniature butt-beaker (sf 1940) was an exception. This was found within a metal cauldron or wine-mixing vessel, possibly for use as a wine scoop. The vessels in grave 6635 were upright and largely unencumbered, although two platters within one corner of the grave were partially obscured by a bronze patera that was placed on top. The decorated samian bowl (sf 1541) rested on the rim of the patera. In grave 6645, a platter (sf 1573) was found on its side, leaning against the grave wall, while another (sf 1572) was also found on edge resting against an upright beaker (sf 1566) that had subsequently collapsed sideways. Neither could have contained offerings, reminding us that vessels did not necessarily hold food and drink in the grave. Instead, they could have been symbolic of the offering or deposited in commemoration of funerary feasting. The samian dish (sf 1535) in grave 6605 was used as a lid to the urn (sf 1534), but it was also upright and could have contained offerings.

Lipid residue analysis (see Heron and Spiteri below) detected a mixture of fat and oil and birch bark tar (betulin) on the internal surfaces of one or two locally-produced flagons (sf 663 and 1539) and a locally-made cup (sf 1528). The substance may have been used as a sealant, though betulin is also known for its insect repelling, antimycotic, antibacterial and disinfectant properties. At Springhead, storage jar vessels were coated with betulin, albeit on the outside, and the substance was also used as a glue (Seagar Smith *et al.* 2011). While the coating in the funerary vessel does not necessarily imply that the vessels contained beverages on deposition, it does suggest that the treatment of the vessels in this manner was part of a well-established practice within the region.

Potter's stamps on imports and local wares *by Valery Rigby*

Three contemporary high status burial groups found west of Tollgate, burials 6260, 6635 and 6645, include two potter's stamps on South Gaulish samian, six on imported Gallo-Belgic platters and cups typical of the Claudio-Neronian period along with 13 on platters from local workshops. One samian cup and all six G-B imports are associated

with five local stamped products in burial 6260, providing some insight into the choice and acquisition of grave goods. The group is of particular significance because two different dies had been used on the local platters and both are literate names widely recorded on TN exported from the Marne/Vesle potteries. Furthermore, the dies were almost certainly prepared by Gallo-Belgic die-cutters because their die-styles match those of the recorded imports while the platter form closely imitates an imported prototype. The implication is that either the potters moved their workshop to southern Britain or established a branch workshop. Alternatively, British potters may have trained in Gaul where they acquired the dies. Stamped imports and local products also occur together in Burial 6645, unfortunately, only one stamp on a TR platter is legible.

Dies used to stamp seven platters in burial 6635 are non-literate 'Marks' and appear to be from different workshops to those in Burial 6260. Burials 6635 and 6645 also include locally made platter and cups which were not stamped but appear to be from the same source area.

The Gallo-Belgic imports

Where appropriate the fabrics are cross-referenced with *The National Roman Fabric Reference Collection* (Tomber and Dore 1998, 10–24), where they are illustrated in thin-section and described in detail using a binocular microscope. The individual descriptions in the catalogue are limited to the superficial characteristics which have been affected by the soil conditions. The classification of the vessel types is based on that published in *Camulodunum* (Hawkes & Hull 1947). The stamps are arranged alphabetically by potter name followed by the Mark and then the unreadable impression.

Fabrics

Terra Rubra 1C	(GAB TR 1C)
Terra Rubra 2	(GAB TR 2)
Terra Rubra 3	(GAB TR 3)
Terra Nigra	(GAB TN 1)

Forms

The assemblages are limited to common forms and fabrics. None is Late Augustan; the small TR platters Cam 8/7 and Cam 8 are the earliest pieces, in forms introduced around AD 20/25. Three of four decipherable dies on TR platters are paralleled at Colchester and could have been imported before AD 40. In contrast, only one of four dies on TN is recorded there, which may indicate import after AD 46 when some degree of stability had been imposed in the region. The TN cups Cam 58 in burial 6260 are the latest imports; the form was not produced before AD 40. While the TR in burials 6260 and 6645 could be pre-Claudian the TN vessels in burial 6260 are Claudio-Neronian imports. Burial 6260 includes the only platter definitely produced by a Trier kiln to be identified in Britain.

Large foot-ring platter Cam 2
The form was only made in TN in quantity in the Marne/Vesle and Trier potteries, and probably also at Cologne. Most are unstamped, for example, five were found in the KHL cemetery and none had been stamped. Such platters are comparatively rare in burials although the basic distribution is more or less defined by the line of the Fosse and then cuts south-east to the south coast, excluding Somerset and Dorset. Date of manufacture 10 BC–AD 60. [Fig. 4.6 Burial 6260, sf 691].

Small foot-ring platter Cam 8
Templates were used by potters to produce the characteristic shape, quarter-round moulding and standardised size. The form was made in TR 1C, TR 2 and TN in the Marne/Vesle and Trier potteries and was normally stamped by the potter. It was the most common imported platter form in Britain from AD 25 to AD 70 and this is reflected in contemporary cremation burials in southern Britain. In TR the form is scarcer but is recorded as far north as North Ferriby, on the north bank of the Humber, from there the distribution more or less follows the line of the Fosse to the Bagendon area. The distribution of TN is wider extending beyond the line of the Fosse to include Dorchester and Exeter and is part of a group of dies which suggest new supply arrangements after the dislocations caused in AD 60/1, probably with a military connection; one of these dies occurs in burial 6260. Despite this apparent Nero-Flavian connection with the army in the South-West, the form is absent from northern Britain, notably York, and Scotland implying that supplies had dried up by AD 75. [Fig. 4.6 Burial 6260, sfs 670 & 677; Fig. 4.35 Burial 6645, sf 1573]

Small foot-ring platter Cam 8/7
Technically and typologically similar to Cam 8 but the lower half-round moulding is replaced by a straight off-set facet. It is a variant typically associated with a limited number of specialist TR potters who were probably all located in the Marne/Vesle potteries between AD 25 and 50. Generally this variant is much less common than standard Cam 8 platters in TR so that its selection for three of the four TR platters at this site is unusual. Although less common, the distribution in Britain is similar to that of Cam 8 in TR fabrics. [Fig. 4.6 Burial 6260, sfs 662 & 667; Fig. 4.35 Burial 6645, sf 1572]

Hemispherical flanged cup Cam 58
Considered to be imitating the samian cup Drag 24/5, there is usually an internal off-set at the lip and less commonly an external lip groove. Diameter sizes varied from 80 to 160mm diameter and depth of bowl from 35 to 60mm, the largest version having over three times the capacity of the smallest. Chiefly made in TN, it was not imported before AD 45. Absent from the KHL cemetery, a pair were found in the Stanway 'Warrior' burial, BF64, where the dies are considered to date AD 50–60 (Crummy *et al*, 2007). The distribution, which extends into the South-West beyond the line of the Fosse, particularly into Devon and Wales, suggests a military connection. The overall date of manufacture is AD 45–75 since the form is absent from Flavian forts in northern Britain and Scotland. [Fig. 4.6 Burial 6260, sfs 674/6 & 675]

Ovoid beaker Cam 112Cb, a miniature version
The form was typically made in TR3 which varied in fired colour from dark red to pale pink with a smoked exterior finish varying from black on red to cloudy grey on pink.

Sizes vary and were probably standardised to specific volumes. It is the most common TR3 beaker in Britain with a distribution bounded by the line of the Fosse. Miniatures are rare and this is the only example recorded in a grave in Britain. [Fig. 4.6 Burial 6260, sf 1940]

The Stamps

The stamps are included in the *Gallo-Belgic Database* (Rigby and Timby 2007). They are cross-referenced here by vessel catalogue number [V], potter number [P] and five letter and digit die code so that full details including full bibliographical references for all sites are available on-line.

Binio/Benio III [G-B database P50 Die 01A01]
677, Burial 6260 [*G-B database V1075*], Fig. 4.59
BI/\/Io
Central stamp; one double incised circle around stamp. Form – Cam 8. Fabric – Terra Nigra (GAB TN 1). White matrix; abraded patchy blue-grey surfaces; no finish survives.

The die is also recorded on small TN platters at Fishbourne, West Sussex and Topsham, Devon, but not at Colchester, which may be significant given its pivotal place in the marketing of G-B and other imports from the Late Augustan period onwards. The distribution in Britain suggests a military connection with a date of import after the dislocation caused by the Icenian revolt in AD60/1. Trier could be the source. Date of manufacture AD 45–75. Any definite connection between the names spelled Binio (*P50*), Benio (*P4*) and Bento (*P5*) has yet to be established although all three concentrated on Cam 8 platters in TN (see below and Gallo-Belgic Database for discussion).

Carevir [G-B database P70 Die 01A01]
667, Burial 6260 [*G-B database V1079*], Fig 4.59
CARIIVIR bordered.
Central stamp. Form – Cam 8/7. Fabric – Terra Rubra 2 (GAB TR 2). Fine dense red matrix; no finish survives.
Only one die has been identified and most British finds look to be part of the same batch. The limited form range and wide distribution suggests a potter who worked for a

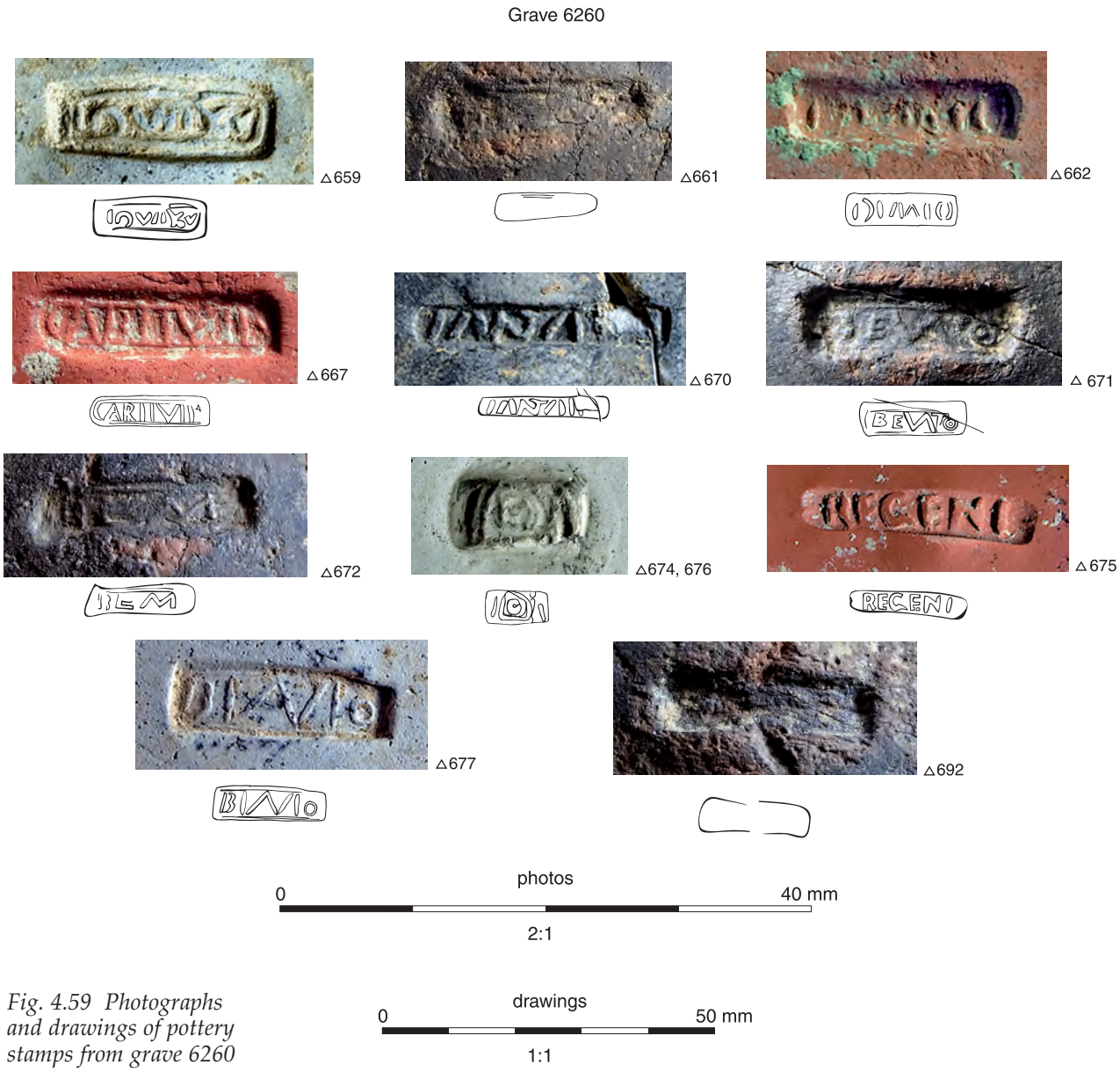


Fig. 4.59 Photographs and drawings of pottery stamps from grave 6260

short time at one location and concentrated on this small platter form in TR1C. Four platters have been found at Colchester, two in Sheepen I assemblages and two in Sheepen II. In the Snailwell burial, Cambs, the example is associated with a varied range of Gaulish fine wares, two Baetican amphorae and a copy of a carinated cup Cam 56 in 'Imitation TN' which must post-date the introduction of kiln-firing techniques *c* AD 45 (Lethbridge 1953. *G-B Database V144*).
The die is recorded widely in Gaul and Lower Germany at Annelles, Ardennes; Noyelles-Godault and Thérouanne, Pas de Calais; Rheims and St Martin-Longueau, Marne; Hunnerberg; Nijmegen; Luxembourg museum. Rheims, one of the Marne-Vesle potteries, is the likely kiln site, with a date of manufacture AD 25–50. Possibly imported before AD 40.

Dimio [G-B database P117 Die 01A01]
662, Burial 6260 [*G-B database V1077*], Fig. 4.59
I)I/\/\I( ) reads DIMIO.
Central stamp. Form – Cam 8/7. Fabric – Terra Rubra 1C (GAB TR 1C). Fine dense red matrix; traces of a darker red slip; no finish survives.
At least two dies with the name Dimio have been identified. Die 01A01 seems to be confined to small platters Cam 8/7 in TR and has a limited distribution – Colchester (4); Noyelles-Godault cemetery, Pas de Calais; Hunnerberg. At Colchester, there are two examples in Sheepen I and the die also occurs twice in Pit 252 with a large assemblage of Claudio-Neronian samian, G-B imports and local wares considered as debris from the Boudiccan destruction (Rigby in Niblett 1985). Rheims, one of the Marne-Vesle potteries, is the likely kiln site, with a date of manufacture AD 25–50. Possibly imported before AD 40.

Iantasio [G-B database P362 Die 01A01]
670, Burial 6260 [*G-B database V1074*], Fig. 4.59
I/\ /\/T /\[....] read as IANT A[SIO].
Central stamp. Form – Cam 8. Fabric – Terra Nigra (GAB TN 1). White powdery matrix with sparse fine dark grey inclusions; patchy blue-grey surfaces; abraded with traces of polished finish.

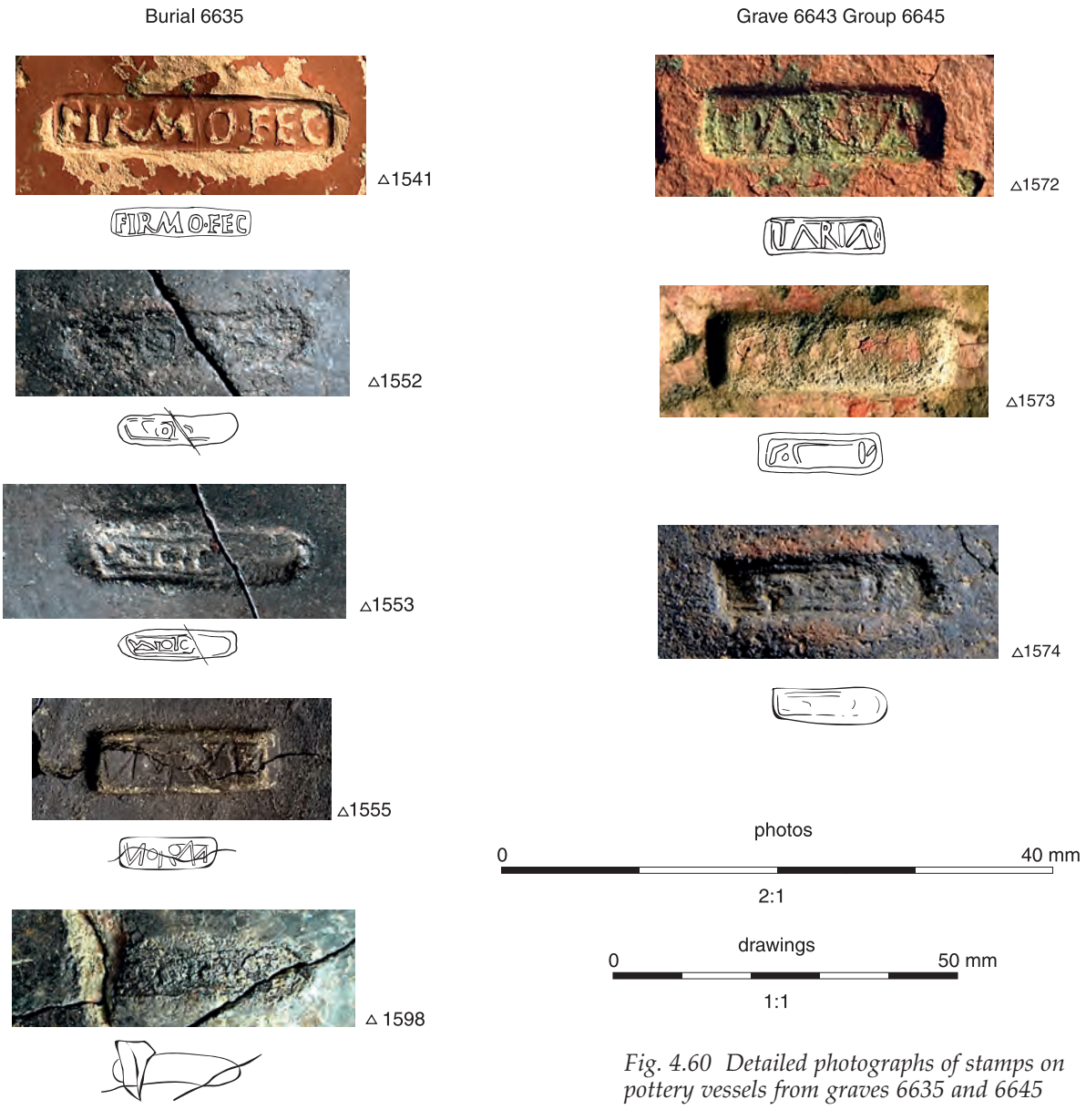


Fig. 4.60 Detailed photographs of stamps on pottery vessels from graves 6635 and 6645

The potter certainly worked at the Kapellenstrasse kilns in Trier where at least 16 stamped wasters have been found, all large foot-ring platters in typical 'Trier TN' (VR records). The A2 Tollgate platter is the only record of the die beyond the kiln site, the only example on a small platter form and the only vessel in Britain with a definite die connection to a Trier kiln. There is a name connection between a second Trier potter working at the same kiln site and the *oppidum* at Silchester, where although the name is the same the die is considerably smaller (*G-B Database P133, V963-4*). The Trier TN kilns post-date the Gallic revolt of AD 21 in which the Treveri were significant participants. Date of manufacture AD 50–75.

Tarva [G-B database P360 Die 01A01]
1572, Burial 6645 [*G-B database V1090*], Fig. 4.60
TARVA
Central stamp. Form – Cam 8/7. Fabric – Terra Rubra 1C (GAB TR 1C). Fine red powdery matrix; darker slip; severely flaked and laminated, no finish survives.
The name is recorded at Colchester but the stamp has not been located and the die remains unclassified. At Thérouanne, Pas de Calais, it occurs in a grave on a TR platter with the same Carevir die as in Grave 6260; it is also found at Vendeuil-Caply, Oise, Mont-Berny on TN; Rheims, Marne and Luxembourg museum on TR and TN. The likely source is at Rheims, with a date of manufacture AD 25–50. Possibly imported before AD 40.

Ux [G-B database P42 Die 01A01]
659, Burial 6260 [*G-B database V1078*]. Fig.4.59
IOV/ \Y.V read as VXAVOI = UX AVO(T)I(S) A retrograde reading; the X tends to register as Y with a stop.
Central stamp. Form – Cam 58L, with internal lip off-set but no external groove. Blanched Terra Nigra (GAB TN 1). Blue-white matrix with sparse fine dark grey inclusions; pale blue-grey surfaces, streaked; traces of polished finish.
Vx appears to be an abbreviation, name unknown, possibly even to be read as a number 15. The stamp is typically on TN cups Cam 56 and Cam 58 and more rarely small platters.
The potter has the widest recorded distribution for one die in Britain although it has not been previously identified south of the Thames – Colchester, with three in the Sheepen I assemblage and four in Sheepen II, notably in the main pit groups Pit 601 and 252 associated with the clear-up after Boudicca (Niblett 1985); Fingeringhoe, Essex, considered to be the port for Colchester; Old Winteringham, Humberside, on the site of a pre-Flavian fort; Leicester, 'Jewry Wall'; Chichester, 'Chapel St'; Silchester; Bavay settlement and Baralle Cemetery, Nord; Nijmegen. The kiln may be part of the Marne-Vesle potteries, possibly Courmelois. Date of manufacture AD 50–75.

Mark II0II [G-B database ZP II0II P363 01A01]
674, Burial 6260 [*G-B database V1076*], Fig. 4.59
I[o]I A pattern mark with an unusual sub-round central motif between bars.
Central stamp; one incised circle around the stamp. Form – Cam 58S, with an external lip groove but no internal offset. Fabric – Terra Nigra (GAB TN 1). White fine matrix with sparse fine dark grey inclusions; patchy blue-grey surfaces; abraded with traces of polished finish.
The die has not been identified elsewhere but this could be due to incidental effects resulting in poor, worn and fragmented impressions. It is import quality TN, possibly from Trier and the date of manufacture is AD 50–75. The die-style relates the cup to the Eccles kiln, where typologically exact copies of imported forms, Cam 8, Cam 14 and Cam 16 were manufactured in good quality ITN (Imitation TN) that just fails as 'import' quality. They occurred in a dump of waste (Detsicas 1977). To date, no examples of Cam 58 have been identified there. Eccles ITN has been identified in London (*G-B Database P153, V1021, V1054-5*).

Unreadable stamp [G-B database P188 Die 02B01]
1573, Burial 6645 [*G-B database V1089*], Fig. 4.60
Unreadable impression. Bordered die.
Central stamp. Form – Cam 8. Fabric – Terra Rubra 1C (GAB TR 1C). Fine red matrix with red argillaceous inclusions; darker slip; traces of polished finish
The potter cannot be identified. The source is likely to be the Marne/Vesle potteries and the date of manufacture between AD 25 and 60. Found with a second similar TR platter no 1572, stamped Tarva (see above).

The local products

There are fifteen platters and two cups in burials 6260, 6635 and 6645. Superficial examination suggests two more or less, related fabric groups called respectively 'Sandy Mixed Sandwich Ware' (Fabric B8) and 'Micaceous Glossy Ware' (fabrics B5 and B8), both of which could be fired in a temporary clamp or surface fire. The clay matrices of the latter conform to the descriptions of Upchurch Fine Reduced Ware (UPC FR) in *The National Roman Fabric Reference Collection*, so the source or sources should lie in the North Kent Marshes if not Upchurch itself (Tomber & Dore 1998, 168).

There are two cup and three different platter forms and of these twelve platters had been stamped using five different dies. Study of the die/form/fabric association suggests that they were made by at least four different hands, ie potters, possibly in different workshops, therefore the stamps are discussed by individual and hypothetical 'Workshop'.

The name stamps are included in the *Gallo-Belgic Database* and are cross-referenced here by vessel catalogue number [V], potter number [P] and five letter and digit die code. All have also been entered into my *Coarse Ware Database* and are cross-referenced accordingly.

Workshop 1

Workshop 1 groups two names used to stamp the same forms in the same fabrics and which belonged to one or two potters with definite links to known Gallo-Belgic potters. In the Gallo-Belgic Database the five stamps have been included with their TN names and classified alongside the known imports but are coded separately since they are clearly not G-B imports and their name and die-style association raise significant issues about the training and origins of potters working in southern Britain in the early Roman period.

Workshop 1 Fabrics

Sandy Mixed Sandwich Wares
A sandy textured micaceous coarse ware with much visible red and black argillaceous and white quartz and flint inclusions. The firing in a bonfire or clamp produced a 'sandwich' effect with grey core and red-brown margins. Final stage firing conditions required sooty smoke to produce the dark brownish-black burnished surfaces. Individual firing temperatures varied and the softer fired vessels have been severely affected by the soil conditions.

Workshop 1 Forms

Cam 16 copies
Exact copies of imported prototypes, the quality of the detail and the literate dies suggest an immigrant potter. Since the prototype was not imported until *c* AD 45 the copies will be Claudian at the earliest.

Die 1. **Benio I – G-B database P4 Die 02C01**
1. 672, Burial 6260 [*G-B database V1081*], Figs 4.6 and 4.59
BE/\/IO bordered. Sprawled /\/ and small I.
Central stamp; one rouletted wreath bordered by burnished circles around the stamp. Form – Cam16 copy. Fabric – grey core; red-brown; dark brown: burnished finish.
2. 660, Burial 6260 [*G-B database V1082*], Fig. 4.6
Partly legible – BE/\/IO bordered. Probably the same die as 672.
Central stamp; pair of burnished circles around the stamp. Form and fabric as 672.
3. 661, Burial 6260 [*G-B database V1083*], Figs 4.6 and 4.59
Partly legible – BE/\/IO bordered. Probably the same die as 672.
Central stamp; pair of burnished circles around the stamp. Form and fabric as 672.

Die 02C01 of Benio I is unique to burial 6260 despite its name and die-style connection with the known TN potter who worked in the Tiberio-Claudian period. He concentrated exclusively on Cam 8 platters in TN using dies produced by two different die-cutters, die-styles A and B. Die 02B01, on an import quality TN platter Cam 8, was found in the King Harry Lane Cemetery, St Albans (*G-B Database V5*). The A2 Tollgate die is bordered and the letters B, E and /\/ are notably characteristic of die-style B so that although it has been coded separately it is probable that Die 02C01 was cut by the same hand as Die 02B01. Since the TN prototype was not imported into Britain before the Roman occupation and is the platter form associated with Roman army in the period after AD 60/1 as it occupied Brigantian territory and southern Scotland, the likely date of manufacture is AD 50–85.
For further discussion, see below, Die 2 and above Burial 6190, no 677. Binio/Benio III, G-B database P50 Die 01A01.

Die 2. Bent(i)o / Benio II G-B database P5 Die 03D01
1. 671, Burial 6260 [*G-B database V1080*], Figs 4.6 and 4.59
BE\/\TO bordered. Central spot in the O.
Central stamp; pair of burnished circles around the stamp. Form – Cam16 copy. Fabric – grey core; red-brown; dark brown: burnished finish.
2. 692, Burial 6260 [*G-B database V1080*], Figs 4.6 and 4.59
BE\/\TO bordered. Central spot in the O.
Central stamp; pair of burnished circles around the stamp. Form and fabric as 671.
Die 03D01 of Bent(i)o/ Benio II, P5, is unique to burial 6260. It is bordered and the letters B, E, \/\ and dotted O are so notably characteristic of die-style A it was almost certainly cut by the die-cutter who produced Die 03A01, but it has been separately coded. Bent(i)o/ Benio II at least worked alongside Benio I in the Marne/Vesle potteries, specialised in Cam 8 TN platters and was an important exporter to the same markets. It remains to be determined whether the name differences represent the output of one or two contemporary potters. The likely date of manufacture is AD 50–85.
Dies 02C01 and 03D01 were not moulded directly from recorded impressions on TN imports. It is possible that import dies were copied, however, cutting such small die-faces to produce acceptable names required particular literate and craft skills not obviously available at the time the Britain. Although it became quite common for potters working in Britain to stamp foot-ring platters in the post-conquest period, few dies are even remotely literate. One potter, working at Colchester used an 'import quality die' to stamp typologically exact copies of Cam 8 and Cam 16 platters but in typical local sand-tempered, kiln-fired wares (*G-B Database, V1057, Roma, P359, Die 01A01*). In contrast, at least one potter working at Eccles, Kent, did try to make exact copies of Cam 8, Cam 14 and Cam 16 platters in TN but stamped them with an illiterate die, so far not paralleled in Gallia Belgica. He traded to London (Detsicas 1975; *G-B Database P153, V1021, V1054-5*).
There seems little doubt that immigrant potters followed the Roman army to Britain. The basic technology using silt- and sand-tempered fabrics fired in kilns with a separate combustion chamber was introduced at this time to manufacture the range of functional forms necessary for the new cooking and eating styles of the 'foreigners'.
The origins of these two named potters at the A2 Tollgate, and their precise connection with potteries in the Marne/Vesle region of Gallia Belgica, remain open to question. Their dies and platter forms support the premise that the potter, or potters, had trained in Gallia Belgica and subsequently moved to Britain to exploit an expanding market. But if there is a direct link why are both the vessel form and the fabric different to the output of the actual workshops in Gallia Belgica?
Recent research adds a fragmentary name stamp on a coarse ware platter found at Red Cliff, North Ferriby, North Humberside. All that survives of the name is a well cut dotted O which should also belong to Bent(i)o/ Benio II, P5, die-style A (CW Database V652). The fabrication technique is similar to that at A2 Tollgate and is not local to the area, which suggests that the Workshop I had trading connections along the east coast (Hull & East Riding Museum, KINCM 1966.109.53.7).

Workshop 2

The die connection demonstrates that two different platter forms were made at the same workshop and stamped with the same die. The stamps have been entered into my *Coarse Ware database* and are cross-referenced here by potter number [C] and a five digit and letter die-code. Given the similarities in typological detail and fabrication techniques of the Cam 16 platters, Workshops 1 and 2 were probably located at the same site which may lie in the Upchurch Marshes near the Benio/Bento workshop.

Workshop 2 Fabrics

Sandy Mixed Sandwich Wares – Indistinguishable from Workshop 1.
Micaceous Glossy Wares – A similar fabric the Sandy Mixed Sandwich Wares but finer in texture and with a more glossy surface finish. The fine sandy matrix is dark grey/black and brown with black argillaceous inclusions; patchy brown/black surfaces; abraded soapy texture, with traces of a highly polished interior finish and less glossy burnished exterior base.

Workshop 2 Forms

Cam 16 copies
Exact copies of imported prototypes in Sandy Mixed Sandwich Wares as Workshop 1, however the dies definitely separate them. Date of manufacture AD 50–85.

Cam 8/7 copy
A fairly close copy of Cam 8/7 platters in Micaceous Glossy Wares, the typological detail includes the offset cornice at the rim/base junction, however, the relief is shallow when compared to the likely prototypes. There are two in burial 6635, but they are not an identical pair and such differences imply that the potter did not have the templates needed for standardised products. Although the Mark cannot be traced amongst import quality TN both stamps are surrounded by a bordered rouletted wreath typical of the imports.

Die 1. Potter ZM \/\IoIo..oI [*CW Corpus Potter C35 Die 01A01*]
1. 1553, Burial 6635 [XPH11], Figs 4.24 and 4.60
A broken impression giving an incomplete reading. Reading:- \/\IoIoI…I Bordered.
Central stamp encircled by a bordered rouletted wreath. Form – Cam 8/7 copy. Fabric – Micaceous Glossy Ware; dark grey/black and brown fine sandy matrix; patchy brown/black abraded surfaces with traces of a highly polished interior finish and less glossy burnished exterior base.
2. 1598, Burial 6635 [XPH12], Figs 4.24 and 4.60
A broken and worn impression. Reading:- [\/\]IoIoI..I Bordered.
Form and fabric as 1553 but they are not an identical pair. The die was also used on at least one copy of Cam 16, and probably all four (see below). Date of manufacture AD 50-80.
3. 1552, Burial 6635 [XPH 7], Figs 4.24 and 4.60
A worn impression. Reading:- \/\IoIo…
Central stamp encircled by a pair of burnished circles. Form – Cam 16 copy. Fabric – Sandy Mixed Sandwich Ware. Typical fabric but sufficiently hard fired for the glossy finish to survive inside with a less glossy burnished surface outside.
4-5. 1558-1559, Burial 6635 [XP9-10]], Figs 4.24 and 4.60
A fragmented and abraded impression. Reading:- \/\Io….. Form, fabric and details as 1552. Severely abraded surfaces so that no surface finish survives.
Die ZM \/\IoIo..oI is without parallel beyond burial 6635, but there is a stamp from a similar die on a flat-based platter or dish found at Folkestone during excavations on the site of the High Speed 1 1988 (Site F25A). Differences in the fabrication techniques of the Cam 8/7and Cam 16 copies may indicate that they were made by different potters although since all five are stamped with the same die they were probably made by one potter specifically for the burial ceremony but in two batches. In the absence of any close parallels for the die only the typological details of the Cam 16 platters suggest a potter trained in Gaul and a possible connection with Workshop I.

Workshop 3

Although the impressions are completely illegible the dimensions of the die are different to those used in Workshops 1 and 2 and so they are presumed to belong to a different potter. Here too the quality of the copies suggests an immigrant despite the use of traditional LIA clay mixing and firing techniques.

Workshop 3 Fabric

Sandy Mixed Sandwich Wares – Indistinguishable from Workshop 1 and 2.

Workshop 3 Forms

Cam 16 copies.
Typologically, they are very similar to Workshops 1 and 2. Date of manufacture AD 50–85.

Die 1. Illegible die, Potter unknown [*CW Corpus Potter C36 Die 01A01*]
Form and fabric suggest it is from the same source as the Cam 16 copies in burial 6635.
1. 1574, Burial 6645 [XP 6], Figs 4.35 and 4.60
Illegible impression. Potter unknown.
Central stamp encircled by a pair of burnished circles. Form – Cam 16 copy. Fabric – typical Sandy Mixed Sandwich Ware; severely abraded so that no surface finish survives.
2. 1556, Burial 6635 [XPH8], Fig. 4.24
Illegible impression; possibly the same die as 1574 so assigned to Workshop 3. Potter unknown.
Central stamp encircled by a pair of burnished circles. Form – Cam 16 copy. Fabric – typical Sandy Mixed Sandwich Ware; severely abraded so that no surface finish survives.

Workshop 4

The platter form has no obvious imported prototype, which sets this 'workshop' apart from the others represented at this site.

Workshop 4 Fabrics

Micaceous Glossy Ware

Workshop 4 Forms

Cordoned foot-ring platter.
The small platter has a thin, flared wall with a raised cordon encircling the interior and a flat base with a slight scarcely functional foot-ring. There is no obvious imported prototype although the shape is similar to the TN platter Cam 14 which has an offset groove around the interior.

Die 1. Potter ZM I/IoI\o\/ [*CW Corpus Potter C34 Die 01A01*]
1555 Burial 6635 [XP 13], Figs 4.24 and 4.60
Reading:- I/IoI\o\/I bordered.

Central stamp encircled by a single burnished circle around the stamp with a triple circle beyond. Form – Cordoned foot-ring platter. Fabric – Micaceous Glossy Ware; dark brown/black surfaces with a highly polished interior finish and less glossy burnished exterior base.
The die is unparalleled. The simple motifs are much the same as those making up the die used in Workshop 2 but the proportions and overall style are markedly different implying another die-cutter. The vessel-type is unlikely to have been manufactured before AD 50 and could still have been produced into the 2nd century AD.

Cam 56 copy
A reasonable copy of the shape and proportions of the imported prototype but lacks the customary interior lip groove while the off-set cornice at the base is copied as a mere shallow channel. The fabric suggests the same source as the cordoned foot-ring platter. There is no stamp so that its assignment to Workshop 4 is based entirely on the fabric and burial association.

Discussion

Imports provided the functionally specialised vessels for consuming food and drink according to Gallo-Roman manners; they were notably colourful and standardised in shape and size in marked contrast to what was available locally at the time. Trade in such decorative table wares from Italy, Spain and Gaul was underway in the 1st century BC along with many other goods. Allowing for interruptions due to invasion, political strife and tribal revolts the trade continued to expand and the use of imported ceramics and metalwork spread throughout much of southern Britain particularly as grave goods in cremation burials. The two richest graves, burial 6260 with 18 vessels and burial 6635 with 14, provide interesting comparisons in terms of functional range and sources of the ceramics. Ignoring the fabrics and using the forms alone, burial 6635 could be located more or less anywhere in southern Britain, northern Gaul and the Lower Rhineland in the Claudio-Neronian period. Such is not the case for burial 6260 where the single late Iron Age carinated bowl ties the grave to southern Britain. Once the fabrics are taken into consideration both clearly belong in southern Britain, as does burial 6645.

Burial 6260 at Tollgate is the richest in imported ceramics yet found in the South-East (Kent, Surrey, East Sussex and areas recently re-assigned to Greater London). The overall Gallo-Belgic stamp list for the region is currently just 29 stamps with Canterbury contributing 15. A specific study of imports in cremation burials and cemeteries appeared to produce rather sparse results identifying ten vessels at eight sites, all rather peripheral and leaving the Weald predictably bare (Rigby in Parfitt 1995, fig 71–2, 168–90). Seven sites had been discovered accidentally, chiefly in the 19th century during clay extraction in north Kent between Dartford and Faversham, and at Dover, so that the few surviving details are entirely due to the interest of local antiquarian collectors and museum archives. In all there are four TN Cam 56 cups, one large TN platter Cam 5, and five small platters Cam 8, a matching pair in TR 2 from the East Hall cemetery, Murston, and three single finds in TN (*G-B database V148, V149, V150, V151, V464, V783, V986*). The most recently excavated cremations and inhumations in the Mill Hill cemetery, Deal, have been fully recorded and Burial G2 is a cremation with two imports, a small TN cup Cam 56 (*V858*) and a large TN platter Cam 5 (*V146*), with a single handmade bowl in grog-tempered ware (Parfitt 1985, fig. 62). In addition to the A2 Tollgate there is a tenth site, at some distance from previous find-spots, at Brisley farm, Ashford. Excavations for the High Speed 1 uncovered a warrior inhumation in a square ditched enclosure which included a TN platter Cam 8 stamped by Canicos (*V1067*), one of the major suppliers to Britain in the Tiberio-Claudian period (Booth 2006a). The context is unique; no other warrior inhumation has included cups or platters in TR or TN amongst the grave goods. None of the dies identified at Tollgate occur in these burials although the names Benio and Bento occur as related dies on TN platters at Canterbury, Faversham and Rainham.

The coarse ware stamp list for the South-East is even shorter with single finds at Allington (cremation), Canterbury (settlement), St Dunstan's Cemetery (cremation), Highstead, (settlement), Upchurch (?cremation) and the kiln sites at Eccles and Keston. The finds at Keston, formerly Kent, include evidence for the production of stamped and rouletted vessels in the form of 13 fired clay 'wheels'. Most significantly there are two fired clay dies, the only examples found so far in Britain, but they had not been used to impress any of the six stamped platters assumed to have been made there (Philp 1991, fig 44–5). The 13 stamped platters found in these three graves at the A2 Tollgate support the idea that 'sampling errors' have distorted the evidence. If production was concentrated into a short period of no more than one or two seasons then finds will be recovered from very limited contexts.

The imports and the so-called 'local products' in the A2 Tollgate cemetery provide an interesting insight into the availability and acquisition of pots in the early Roman period for a particular occasion. The six imports in burial 6260 were made in six different workshops located on different river systems and with two different tribal 'capitals', Rheims and Trier, as their trading centres. The likely trade route was overland and river via Trier to the thriving markets of the Rhineland and then onwards to the Thames estuary. Presumably the aim was to assemble a full cargo for export, regardless of the specific sources and resulting in mixed loads arriving at markets in Britain and retail traders

handling the final purchase. The stamps on the local platters in burial 6260 indicate that they were ordered as a matching set directly from the manufacturers and were almost certainly acquired from a single workshop. There is a similar pattern to burial 6635 where five are stamped with the same die supporting the idea of a special order while the remaining two are from different workshops and so provided separately.

The dipinto and graffito *by Roger Tomlin*

The painted inscription (dipinto) on jar (sf 682) from grave 6260

This dipinto, on the shoulder of handled jar sf 682 (grave 6260), was probably inscribed by means of a reed pen in black, carbon-based ink (Fig. 4.61). It consists of small neat capitals 10mm high, written by

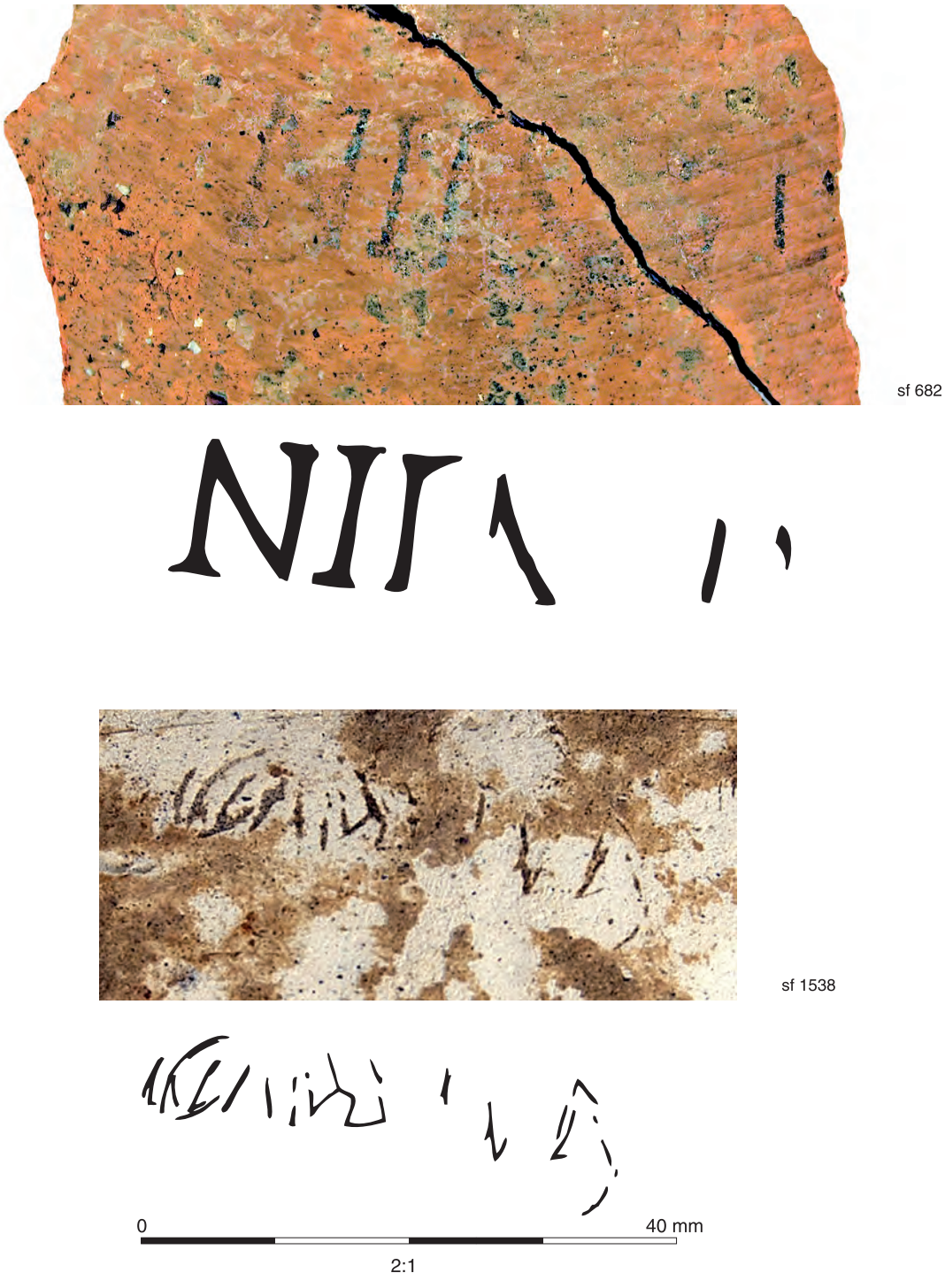


Fig. 4.61 Dipinto (painted inscription) from sf 682 in grave 6260 and graffito from sf 1538 in grave 6635

a practised hand. It is thus unlike most ownership inscriptions, which are scratched after firing in irregular capitals, or less often (but more skilfully) in cursive letters. Unfortunately there are few parallels for such inked inscriptions on storage jars rather than amphorae, which commonly carry a note of origin and contents. Whether this dipinto is an owner's name or a note of contents is hard to say, but perhaps the former, since there is no sign of numerals (as in most amphora annotations), and no recognisable commodity (for example MEL, 'honey').

The lettering is badly worn and incomplete. The letters were probably written (and intended to be read) the same way up as the jar itself. The first is certainly N. The vertical stroke which follows is likely to be I, but II (for E) cannot be excluded. There is apparently a lower serif extending to the right of the first vertical stroke after N, but this is quite acceptable for I; and the letter-sequence excludes L. That the two strokes are II (ie E), however, is possible, but the rightward extension at the top of the second stroke suggests otherwise. Instead, this suggests a rather vertical S, or even a narrow T, if the extension begins to the left. The letter is followed by a broad diagonal stroke appropriate to A, M, N or V. In the infra-red photograph there is just the hint of an initial vertical stroke appropriate to A rather than N, although M would be possible; but there is no sign of a second diagonal, for V or M. After this, where the sherds conjoin, there is space for one or two letters now lost entirely. Then comes another vertical stroke, and at the very edge of the sherd, the upper-left corner of another letter.

After initial N, therefore, the ambiguities accumulate, and none of the various combinations can be resolved into a common name or commodity. It is one of those deliberate but fragmentary inscriptions which will only become legible with the help of another example.

Graffito on flagon (sf 1583) from grave 6635

The graffito is not broken by the edge of the sherd, so in this sense it is apparently complete (Fig. 4.61); but the surface is uniformly abraded, taking with it much of each letter, which has thus been reduced to its deepest incision and has lost its distinctive character. This type of wear suggests that the graffito was made before firing (ie the potter's signature, or perhaps a place-name, but by its appearance not a date), but the profile of the incisions is quite consistent with their having been made after firing (ie the owner's name). The letters are cursive, not capitals, and suggest a practised hand.

The graffito is a single word of about 10 letters, presumably a personal name. It ends in a short vertical stroke, so the last letter is probably I; it is certainly not S, or any letter appropriate to a nominative ending. Thus the name was in the genitive case, and masculine: '(the work) of …' or '(the property) of …'

The first letter shows the remains of a bold curve, and might be C; less likely, E, G, L or V. The last three letters look most like RSI. The intervening strokes are even more difficult to read. Overall, the traces cannot be fitted to a well-attested name.

Lipid analysis of flagons, cups and beakers from Iron Age/Roman cremation graves *by Carl Heron and Cynthianne Spiteri*

The ceramic samples submitted for lipid analysis were retrieved from one late Iron Age and three early Roman cremation graves (Table 4.10). The prurpose was to determine the contents of the ceramic vessels and hence attempt to establish vessel use; to determine whether there is an association between vessel type and contents; and to determine whether local imitations of continental vessels were used for similar purposes.

The report presented here is a brief summary and interpretation of the results, while the full report including a detailed methodology can be found in the digital archive.

Results

Table 4 (see digital archive report) shows the GC-MS data obtained for all the samples and Table 4.11 here provides a brief interpretation. Most of the

Table 4.10: The context and location of the samples for lipid analysis [Code: LIA: Late Iron Age]

Context	SF	Grave Group	Period	Vessel Type	Form	Fabric	Vessel Part			Soil
							Base	Body	Rim	
4351	411	4298	LIA	Jar	-	Grog	•	•	-	No
6227	682	6260	AD43-70	Flagon	Cam 175	R74.1	-	•	•	No
6233	633	6260	AD43-70	Flagon	Cam 167	R154	•	•	-	Yes
6223	675	6260	AD43-70	Cup	Drag 27	R42	-	•	•	Yes
6211	659	6260	AD43-70	Cup	Cam 58	BER12	-	•	•	Yes
6165	1940	6260	AD43-70	Beaker	Cam 112	B16	•	-	-	Yes
6659	1539	6635	AD43-55	Flagon	Cam 161	R154	•	•	•	Yes
6638	1538	6635	AD43-55	Flagon	Cam 161	BER11	•	•	•	Yes
6660	1540	6635	AD43-55	Beaker	Cam 119	B8	•	•	-	Yes
6723	1566	6645	AD43-55	Beaker	Cam 119	B8	•	•	•	No
6775	1528	6645	AD43-55	Cup	Cam 58	B8	-	•	•	Yes

Table 4.11: Lipid analysis data interpretation

SF	*Code*	*Sherd/Soil*	*Interpretation*
411	411IB	Body	Low levels of methylated fatty acids with odd- and even-carbon number alkanes.
682	682IR	Rim	Low levels of methylated fatty acids with odd- and even-carbon number alkanes.
682	682IB	Body	Low levels of methylated fatty acids with odd- and even-carbon number alkanes.
682	682IA	Base	Low levels of methylated fatty acids with odd- and even-carbon number alkanes. Trace of cholesterol.
633	633IB	Body	Significant lipid fraction comprising free fatty acids and acyl lipids. Triterpenoids consistent with birch bark tar. Suggests that tar mixed with a fat or oil to seal vessel and/or to flavour contents. GC-C-IRMS analysis suggests that the lipid is ruminant adipose fat.
633	633IA	Base	Significant lipid fraction comprising free fatty acids and acyl lipids. Triterpenoids consistent with birch bark tar. Suggests that tar mixed with a fat or oil to seal vessel and/or to flavour contents
675	675IR	Rim	Low levels of methylated fatty acids with odd-carbon number alkanes.
675	675EB	Body	Low levels of methylated fatty acids.
659	659IR	Rim	Low levels of methylated fatty acids with odd- and even-carbon number alkanes. Possible alkenes present.
659	659EB	Body	Low levels of methylated fatty acids with odd- and even-carbon number alkanes. Possible alkenes present.
1940	1940IB	Body	Complex distribution, in low abundance, of fatty acids, odd- and even-carbon number alkanes, triterpenoids, sterols and other components.
1940	1940IS	Soil	Complex distribution of fatty acids, odd- and even-carbon number alkanes, triterpenoids, sterols and other components.
1539	1539IR	Rim	Low levels of methylated fatty acids. Triterpenoids consistent with birch bark tar.
1539	1539IB	Body	Low levels of methylated fatty acids. Triterpenoids consistent with birch bark tar.
1538	1538IR	Rim	Odd- and even-carbon number alkanes
1538	1538IB	Body	No constituents detected.
1538	1538IA	Base	Odd- and even-carbon number alkanes together with other constituents
1538	1538IS	Soil	Odd- and even-carbon number alkanes. Trace of cholesterol.
1540	1540IA	Base	Low levels of methylated fatty acids with odd- and even-carbon number alkanes.
1540	1540S	Soil	No constituents detected.
1566	1566IR	Rim	Low levels of methylated fatty acids.
1566	1566IA	Base	Low levels of methylated fatty acids.
1528	1528R	Rim	Free fatty acids and acyl lipids, Traces of odd- and even-carbon number alkanes. Trace of lupa-2,20(29)-diene-28-ol, a thermal degradation marker of triterpenoid in birch bark and betulin. Suggests that tar mixed with a fat or oil to seal vessel and/or to flavour contents

extracts contained saturated fatty acids, namely $C_{14:0}$, $C_{16:0}$ and $C_{18:0}$, with four samples also showing unsaturated $C_{18:1}$ fatty acids. These fatty acids are commonly found in archaeological residues. $C_{18:1}$ is generally depleted compared with modern sources of fat or oil due to oxidation. Low levels of odd- and even-chain alkanes were also detected in nearly all the samples. The most likely source of these compounds is bacterial and this hints at infiltration of soil microorganisms into the sherds. Sterols were observed mainly in soil samples; their presence in sample 1940IB is attributed to contamination from the surrounding soil. The sterols detected originate from plant residues in the soil. Sample 682IA contained cholesterol, an animal sterol, in low abundance. The exterior ceramic surfaces of samples 675EB and 659EB both exhibit very low abundances of saturated fatty acids also observed in the interior surfaces.

Mono-, di- and triacylglycerols are present in 6331A and 6331B, however the precise carbon number distribution has not been determined. The preponderance of free fatty acids and acyl lipids suggests that a fat or oil has been used in this vessel. In addition, a series of triterpenoids eluting after 26 minutes is also seen in these two sherd extracts. These triterpenoids are characteristic of birch bark tar (Aveling & Heron 1998; Regert *et al.* 1998; Dudd & Evershed 1999). This may have been used as a sealant, perhaps mixed with a fat or oil, to make the vessel waterproof. Sherds taken from the body and the base display a similar profile. Vessel 1539 also shares these characteristics. Two samples (interior rim and base) were taken from this vessel and they both show a similar profile of triterpenoids consistent with birch bark tar. Taken together these results suggest that the birch bark tar-fat/oil was applied over the entire interior surface of these two vessels. One of the cups (SF1528) in a local fine sand-tempered reduced fabric also has a fat/oil mixed with birch bark tar. The triterpenoid fraction is not as pronounced although markers of birch bar tar, betulin and lupa-2,20(29)-diene-28-ol, are present together with free fatty acids and acyl lipids.

Sample 633IA was submitted for single-compound carbon isotope analysis to seek to determine the biological source of the fat. Although the levels of fatty acids present in the sample were low,

corrected $\partial^{13}C$ values for $C_{16:0}$ were -27 to -28‰ and values for $C_{18:0}$ were -29 to -30‰. This corresponds closely to values obtained on fatty acids from authentic ruminant adipose tissues (Evershed 2008; Dudd and Evershed 1998).

Discussion

The two flagons (vessels sf 633 and sf 1539) and one cup (sf 1528) with birch bark tar/fat or oil residues all belong to vessels made in local fabrics (R154 and B8). Generalisation is difficult given the size of the sample. However, the lining of these vessels may have been necessary in order to reduce the porosity of the ceramic. Nevertheless, the other local and imported vessels present no evidence of linings or sealants and these are expected to have come into contact with liquids. An alternative explanation for these residues in the flagons and a single cup is whether some other cultural tradition is represented. For example, were the flagons and cups in this fabric used for a specific purpose such as flavouring a particular kind of drink? The other flagons include fabric BER11—a fine white ware (sf 1538). This is imported and it does not have any evidence of birch bark tar or fat/oil. The low levels of lipid suggest some infiltration of soil lipid into the sherd. Vessel sf 682 is in fabric R74.1 (sandy oxidised ware) and is a flagon without a residue of birch bark tar and oil/fat although it is a local ware. Once more the low level and nature of the lipid suggests some infiltration of soil lipid into the sherd. Two of the flagons have the same form of Camulodunum 161—one R154 and the BER11 fabric—the locally-made one has birch bark tar and oil/fat but the imported vessel does not.

The lipids extracted from the soil demonstrate a complex mixture of components. However, none of the triterpenoids associated with birch bark were detected in the soil extracts and none of the triterpenoids consistent with birch bark tar were detected in the soil. Furthermore, no acyl lipids are present in the soil lipid fraction. This differentiates the residues in sf 633, sf 1539 and sf 1528 from the lipids present in the soil. In all other cases, the very low levels of free fatty acids and alkanes found in the sherd and soil extracts suggests migration of lipid, possibly from microorganisms, into the sherds.

The production and use of birch bark tar has been known since the Palaeolithic (Grünberg 2002) with many studies conducted on Mesolithic (eg Aveling and Heron 1998) and Neolithic finds (eg Urem-Kotsou *et al*. 2002). Few examples have been identified from Roman sites although Charters *et al*. (1993) identified a repair on an Ecton ware jar found at West Cotton (Northamptonshire) using birch bark tar. Dudd and Evershed (1999) identified an unusual birch bark tar-fat mixture in a small enamelled vessel from Catterick (Yorkshire) and in the adhesive used to repair the Ecton ware jar. Using single-compound carbon isotope analysis, they identified ruminant fat as the source of the lipid in the enamelled vessel and non-ruminant fat in the West Cotton sample. The triterpenoid esters identified by Dudd and Evershed may have formed from the heating of birch bark tar and fat. These compounds have not been detected in the samples reported on here. Further work is required to detect these components in lower abundance. Nevertheless, a find of birch bark tar combined with a fat is known in Roman Britain.

Conclusions

Lipid analysis of pottery has been successful in determining the presence of a wide range of fats, oils, resins and waxes in diverse archaeological contexts. The types of ceramic containers most usually studied are cooking and storage (especially transport) vessels. Very few investigations of pottery from funerary contexts have been attempted. Furthermore, no systematic studies of Roman flagons, beakers and cups have been undertaken so there is very little to compare the data presented here more widely. The potential contents of at least some of these vessels (eg liquids such as wine and beer) are problematic because they do not comprise a significant lipid fraction and convincing methodologies for recognition of the potential biomarkers of beverages of this nature are still under development.

Two flagons and one cup suggests the same product; a mixture of birch bark tar and a fat or oil perhaps used to line and seal the interior permeable vessel wall. Other possibilities, such as adding flavour to the beverages used in them should also be considered. The remainder of the sherds do not give any indication of contents. The low levels of undiagnostic lipid (free fatty acids and alkanes) suggest that lipid has migrated from the soil into the sherds. This seems more pronounced when the vessel has not taken up a significant lipid fraction during use.

The samian *by J M Mills*

There is a small but significant group of samian, including three vessels recovered from burials, two of which date to the decade immediately before the conquest (Table 4.12). The entire collection comprises sherds from some 16 vessels (49 sherds, weighing 1636g) the majority of which are pre-Flavian or very early Flavian in date.

Vessel forms are all from the Dragendorff series and here prefixed by 'Dr' or 'form'. Decorative motifs identified by 'O.', followed by a number, refer to figure types in Oswald 1936–37. The potters' names given below are those of the standard publications on decorated ware, here specifically following nomenclature (note the use of lower-case Roman numerals) given in Hartley and Dickinson 2008 and subsequent volumes.

Site A

Site A yielded two sherds (22g), one from a South Gaulish form 15/17 or 18 platter (3270) of probable

Table 4.12: Summary of samian (numbers of sherds, vessels and weight) by production centre (fabric) and site

Site	*South Gaulish*		*First Century Lezoux*		*Central Gaulish*	
	No Sherds (No Vessels)	*Wt (g)*	*No Sherds (No Vessels)*	*Wt (g)*	*No Sherds (No Vessels)*	*Wt (g)*
A	1 (1)	11			1 (1)	11
D	37 (10)	1218	4 (1)	52	5 (2)	335
L	1 (1)	9				
Totals	39 (12)	1238g	4 (1)	52g	6 (3)	346g

mid-1st century date and a footring sherd from a Central Gaulish bowl (3346) of Hadrianic to mid-2nd century date.

Site D

Site D produced the majority of the samian. In addition to three vessels from graves 6260, 6605 and 6635, which are discussed separately below, sherds from another 10 vessels were recovered. Apart from the substantial part of a stamped form 29 (see SF1921 etc below) and four sherds from the base of a 27g cup from the same context (6350) in a micaceous 1st-century Lezoux fabric, both of which date from *c* AD 50–70/75, the other vessels are represented only by small sherds. Rim sherds from another form 27 cup (6450), a form 15/17 (6350), and a form 18 platter (6350), and a decorated body sherd from a form 29 bowl (6577) all date to the Neronian or very early Flavian period. There were also two South Gaulish (6556, 6576), and two Central Gaulish (6731) body sherds which could not be closely dated.

The decorated samian

Besides the complete form 29 from burial 6635 (sf 1541; see below, Fig. 4.63), almost half of another form 29 (sf 1921, 1926, 1928; Fig. 4.62) was recovered from context 6350, fill of ditch 6349, and a single sherd from a third bowl was recovered from context 6577, a fill of pit 6571.

1. sf 1921, 1926 + 1928 (6350). Form Dr 29, South Gaul. Fig. 4.62. Profile, approximately half of the vessel survives.
   A significant part of this bowl was recovered. The base is stamped MAC·RI·M. This is die 2a of the potter Macer i of La Graufesenque. The decoration finds many parallels within a group of bowls from moulds made by the T-1 mould-maker(s) and is likely to belong to the T-1 group. The winding scroll in the upper zone contains a cabled medallion and 14-petalled rosette which can also be seen on a bowl stamped by Albus i (Dannell *et al.* 2003, Albus i D1, 36). The lower zone comprises alternating panels separated by a vertical row of tassel leaves (Knorr 1919, taf 13, 22); this leaf, used in a similar way, is on a bowl from London stamped by Bassus ii- Coelus (Dannell *et al.* 2003, taf E5, 0175). The panels alternate between large corded medallions which have an inner plain circle and contain either a stag which is similar to, but larger than, O.1734, or two dogs, one above the other (Hermet 1934, pl.26, 33) and a saltire. Each medallion has a rosette in the field. The stag O.1734 is on a bowl stamped by Melus i (Knorr 1919, 56B), but no exact parallel has been found for this larger version. The saltire has a trifid leaf in the upper quadrant which is on a bowl stamped by Bassus ii-Coelus (Dannell *et al.* 2003, taf H1, 0149), while the trifid leaf in the lower quadrant is much more commonly used, and appears in the same position within a saltire on bowls stamped by Cabucatus (ibid. 1281), G. Sal Aptus (ibid. 1296), and Niger (ibid. 2019). The date range for this vessel is *c* AD50–70/75.

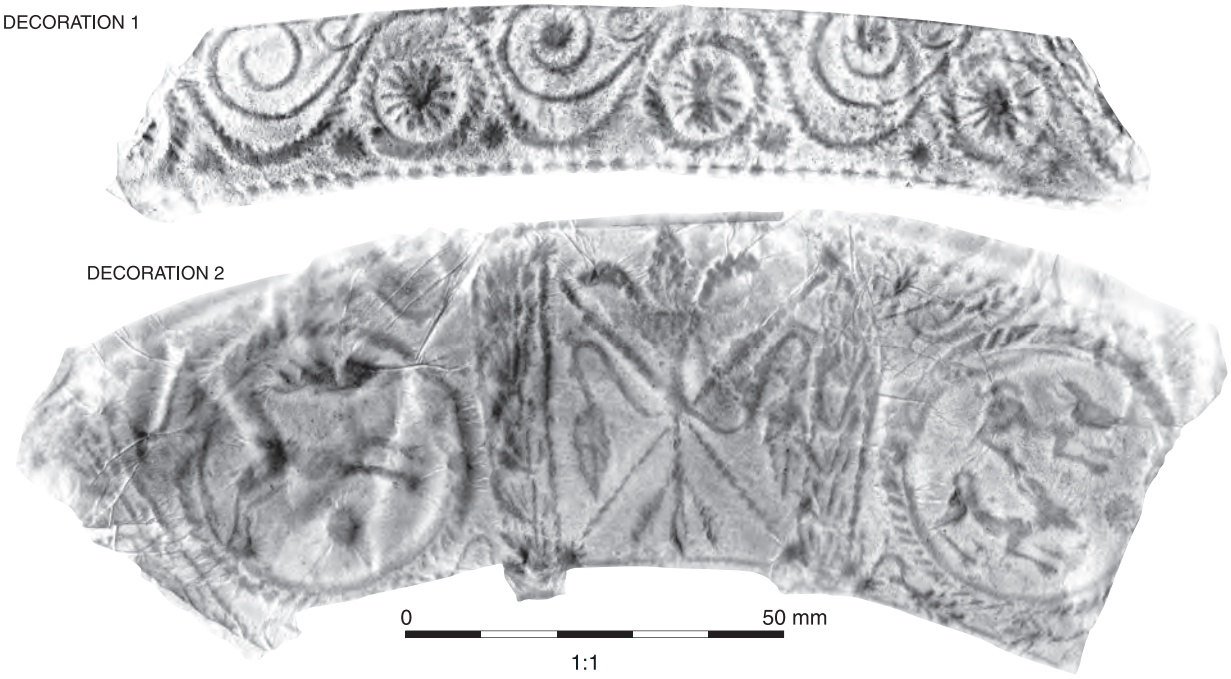
2. Context 6577, pit 6571. Form Dr 29, SG. Body sherd. A body sherd from the upper decorated zone with a winding scroll with grape-like buds, a central rosette, and small rings with a large central dot. This style of scroll occurs on bowls in the range *c* AD 50–65.

The samian vessels from graves

The samian vessels recovered from burials complement those from the most recent excavations at Pepperhill (Bird 2006). They comprise a complete Dr 29 (grave 6635) and two near-complete plain vessels, a 27g cup (grave 6260) and a form 18/31 dish (grave 6605), and one vessel was found in each of three of the cremation burials. The decorated bowl and the cup are stamped and are both Tibero-Claudian in date. The near complete 18/31 which was found placed over the cremation vessel as a lid, is of a Hadrianic or early Antonine date. Although plain wares are often found accompanying burials it is unusual to find decorated ware in graves. The presence of this bowl, and the sheer quantity of items, both local and imported, in the grave suggests the deceased were very important individuals.

Each vessel will be considered and described separately below.

1. sf 1541 (grave 6635). Form Dr 29, South Gaul. Fig. 4.63. Complete when deposited, although now in several sherds.
   An early decorated bowl, hemispherical in profile, with an internal stamp reading FIRMO·FEC. The stamp, die 7a of Firmo i of La Graufesenque, is common on bowls with similar decoration from the Fosse Cirratus deposit at La Graufesenque. It is possible that there was a slight crack between the M and the O in the die used for this stamp. This crack can also be seen on an example from the Fosse Cirratus (Dannell *et al.* 2003, Firmo i, G12, 3277).
   The decoration on this bowl does not have an exact



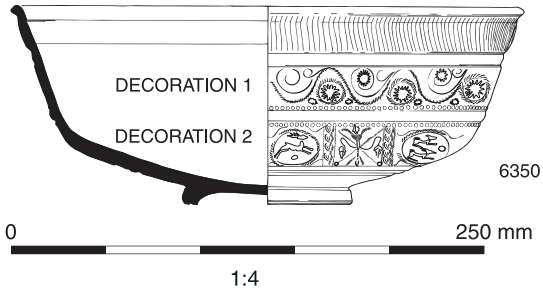


Fig. 4.62 Rubbing of decoration from samian vessel sf 1921/1926/1928 and drawing

parallel, although the upper zone with a simple scroll of asymmetrical leaves and 10-petalled rosettes between rows of large beads is on a bowl with the same stamp from the Fosse Cirratus (ibid., Firmo i, G26, 3263); the same leaf scroll with different motifs in place of the rosettes occurs on many of the bowls in that deposit. The lower zone decoration appears to be unique. The general style and several of the poinçons are characteristic of bowls stamped by Firmo i although the extremely elongated leaf motif appears to be new. The repeating design is set on a central, horizontal bead row (ibid., E5, 3260; E9, 3262; E10, 3296; E11, 3299) and is comprised of a double, plain festoon (set like a reverse C) with rosette terminals from which spring curving leaves; the elongated leaves with a small central bud emerge from a rosette placed centrally within the festoon. The double festoon, rosette and paired curving leaves occur together in the lower zone of another bowl from the Fosse Cirratus (ibid., Firmo i, A9, 3282). A date in the range *c* AD 30–45 is probable for the manufacture of this bowl. The footring is worn through use, but not excessively so.

2. sf 675 (grave 6260). Form Dr 27g, South Gaul. See Fig. 4.6. Near complete.
A form 27g cup with a flat rim; high, grooved, foot ring, and an internal stamp of Regenus of La Graufesenque which reads REGENI. Regenus was well represented in the material from the Fosse Cirratus. A date range *c* AD 25–55 is given for him in the Vechten corpus (Polak 2000, 306), although a range similar to that given for the decorated bowl (SF1541) is more likely for this cup. A small V-shaped sherd (*c* 10% of the whole) is missing from the rim. This may have been broken off in order to 'dedicate' the vessel for burial. Conversely, the cup might have been broken and as such was no longer suitable for

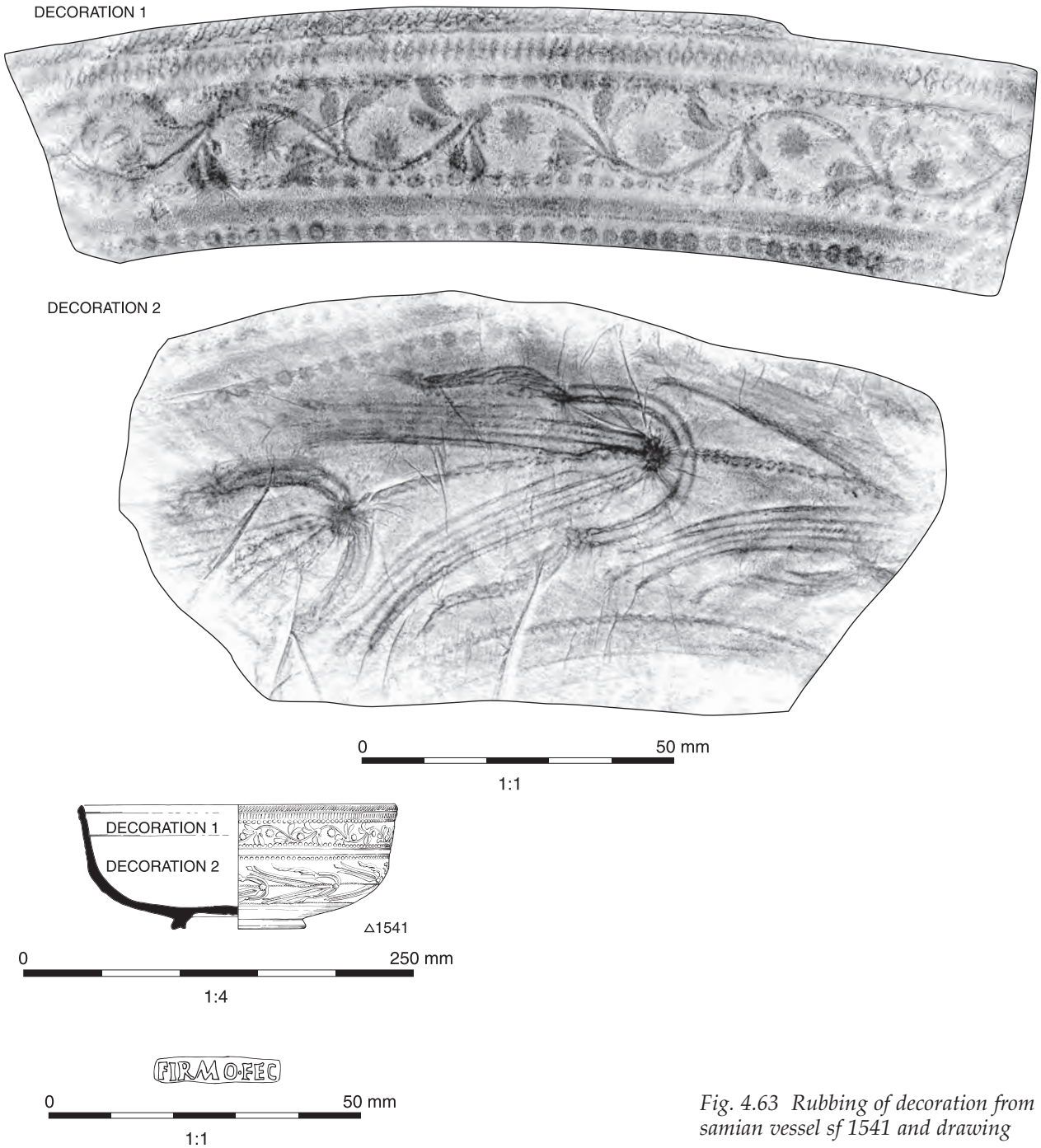


Fig. 4.63 Rubbing of decoration from samian vessel sf 1541 and drawing

use, but was deemed sufficiently complete to be deposited as part of the burial rite. Some wear of the footring was noted, but the vessel had probably not seen prolonged use.

3. sf 1535 (grave 6605). Form Dr 18/31, Central Gaul. See Fig. 4.39. Near complete.
A form 18/31 dish with a large rim sherd missing, and possibly with a small chip lost from the rim in antiquity. The pot was found standing on the cremation vessel, perhaps as a lid. Having been upright in the grave ground water collected within it causing the slip to be lost to such a degree that it is now not possible to see most of the potter's stamp or to read the small portion which remains. The slip on the rim and on patches of the exterior is also missing. The slip that does remain on the footring suggests that the dish had not been heavily used prior to deposition. Without the stamp it is not possible to date this vessel more closely than Hadrianic-early Antonine (certainly not later than *c* AD 160). Small chips from vessel rims such as those recorded at Springhead (Seagar Smith *et al.* 2011) may have been done deliberately to dedicate vessels for deposition within graves. This vessel, however, has a large portion of the rim missing (*c* 30%), which would seen to make such token breakage unnecessary

Clearly the majority of the datable samian recovered from Site D is pre-Flavian or very early Flavian in date. The earliest vessels are the two stamped vessels, which are Tibero-Claudian in date; the other slightly later vessels derive from domestic rubbish. The single 2nd-century vessel from a burial is almost the only 2nd-century samian from the excavations with the exception of two very worn sherds from a single bowl.

Site L

A single body sherd in a pre- or early Flavian South Gaulish fabric was recovered (12681)

Non-funerary assemblage composition by site

Site D

The majority of Roman-period pottery, accounting for 93% of the entire assemblage by EVE, was found in Site D. The bulk of the pottery was deposited as grave goods, but almost 40% of the Site D assemblage was recovered from features associated with enclosures and rural settlement—ditches, pits and the like. The non-funerary assemblage (Table 4.13) belonged to context-groups dated almost exclusively to the early Roman period.

Table 4.13: Roman pottery from Site D, excluding funerary pottery

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
B1	70	1196	5	1.01
B12	1	3		
B19.1	1	450		
B2	7	198		
B5.1	4	59	1	0.06
B8	29	200	1	0.38
B9	82	1127	9	0.82
B9.1	10	198		
BER12	15	49	0	0.35
LIAB1	7	27		
R100	19	92	1	0.67
R111	1	1		
R15	13	277	1	0.16
R154	76	247	1	0.29
R16	231	1647	23	4.34
R17.1	17	62	1	0.3
R17.2	1	58	1	0.27
R17.3	3	24	2	0.13
R18.1	136	1267	2	0.3
R42	34	551	4	0.82
R43	2	8		
R43.1	4	52		
R56	1	83		
R68	27	1010	1	0.16
R69	368	5354	20	4.38
R73.3	529	4264	41	6.03
R74.1	63	421	6	0.45
R74.2	9	78		
R74.3	1	13	1	0.06
R8.1	1	8		
R89	5	142	1	1
R98	1	47		
TOTAL	1768	19213	122	21.98

A range of fabrics was identified, but the assemblage was dominated by three: North Kent fine grey ware (R16), North Kent/South Essex shelly ware (R69) and Thameside sandy grey ware (R73.3). Fabric R16 took a 20% share of the non-funerary pottery by EVE and was available as tablewares, including cordoned bowls, carinated beakers, and platters. At least 15 cordoned bowls were recorded from context 6350; the form is not usually so prolific and suggests that examples were deliberately collected for deposition (Table 4.13; Fig. 4.64). Kitchen wares and storage vessels were provided by shelly ware (R69) and Thameside grey ware (R73.3). The former, which accounted for 20% of the assemblage, was recorded as bead-rimmed jars and lid-seated jars. One lid-seated jar had a potter's mark made before firing of a type more commonly associated with vessels produced in central and south Essex (Jones 1972), and it is certain that this vessel arrived from that region. Thameside grey ware contributed 27% in the form of bead-rimmed, necked, and lid-seated jars, lids, and jar-like necked or cordoned bowls; platters and a butt-beaker were also present.

Other fabrics took much smaller shares. Grog-tempered ware, sand-tempered ware, probably locally-made, and glauconitic pottery from the Medway Valley, all available largely as lids and bead-rimmed jars, were among the fabrics of late Iron Age tradition deposited. The table wares seen in North Kent fine grey ware were supplemented from the same source by fine oxidised ware platters and cordoned bowls and a white-slipped oxidised ware flagon and another cordoned bowl. Other local fabrics included sandy Thameside oxidised wares. Apart from the probable Essex shelly ware jar, other regionally-traded wares included Patch Grove grog-tempered ware jars from west Kent and white-ware flagons attributed to Verulamium and Kentish or northern French workshops. A globular jar in a sandy reduced fabric resembles a type recorded at Colchester and Chelmsford (Going 1987, type G8) and may be another Essex product. Continental imports were seen in small quantity. Body sherds attest to the presence of amphorae from Italy and southern Gaul. Samian was mainly from south Gaul; Drag. 15/17 platters, Drag. 27 cups, and a near-complete Drag. 29 decorated bowl were recorded. The site admitted a few sherds of Central Gaulish samian, which arrived after AD 120, but earlier 1st-century products, distinguishable by their micaceous fabric, were present in greater quantity.

Over 70% of the assemblage by EVE was recovered from three well-dated deposits (6354, 6350 and

6556) from the enclosure complex. The groups together give a good account of the chronology of supply to Site D. A fill (6354) from the earliest phase of enclosure (6940) contained a carinated beaker, a butt-beaker, and grog-tempered bead-rimmed jars (not illustrated), all relatively well-preserved. Groups 6350 and 6556 belonged to the same enclosure ditch (6941), which was stratigraphically later. There were some obvious similarities in composition—Thameside sandy grey ware and shelly ware were important categories in both groups, for example—but there were also a number of differences. Group 6350 contained a relatively high proportion of North Kent fineware beakers and cordoned bowls. It is notable, too, that a near-complete South Gaulish decorated bowl was recovered from 6350. That said, platters and flagons made similar contributions to both groups. The differences suggest that, while broadly contemporaneous, the groups derived from two pools of material, which were constructed perhaps only few years apart.

In terms of chronology, the group from 6354 includes a North Kentish carinated beaker, and can be dated AD 50–70. Deposit 6350 included everted-rim 'cooking-pot' jars in Thameside oxidised ware (Fig. 4.64, no. 19 and Fig. 4.65, no. 20) that were reminiscent of the earliest traded Dorset black-burnished ware products, which if true places deposition in the first quarter of the 2nd century AD. However, the correspondence is likely to be coincidental; an everted-rim jar from Cooling (Pollard 1988, type 6) dated to the 1st century AD provides a better parallel. In any case, the remainder of the group comfortably fits an AD 70–100 date range, with samian forms—the Drag. 29 bowl and Drag. 15/17 platters—only produced up until AD 85. Group 6556 contains similar material, a North Kent white-slipped oxidised ware 'Hofheim'-type flagon, a North Kent fine grey ware platter and a grey ware flagon, and both suggest that the pottery was deposited between AD 50 and 80. A red-surfaced grog-tempered ware butt-beaker and a fine grey ware carinated beaker, however, may indicate that the pottery was deposited before AD 70. Other context-groups were smaller, but none in any case need date earlier than AD 50. Overall, a late Neronian or early Flavian date for the two larger groups, indeed for much of the Site D assemblage, seems appropriate. Pottery collected from the southern part of the enclosure, exposed during the High Speed 1 excavations west of Wrotham Road, shares this dating (Every 2006). Context groups were generally smaller than those from the northern part of the enclosure and the paucity of well-dated material often resulted in wider date ranges. However, the dating of most groups overlapped between AD 70 and 80. Unlike the northern part, the southern part of the enclosure remained open to some extent, admitting material during the 2nd and 3rd centuries. The latest-dated pottery belongs to the late Roman period.

Catalogue of illustrated pottery from Site D enclosure ditch

Context 6350, fill of ditch 6349, group 6941, Site D. AD 70–80 (Figs 4.64–5)

1 Ring-necked flagon. Verulamium-region white ware R15.
2 Ring-necked flagon. South-east England/North-west Gaulish white ware R89.
3 Bead-rimmed jar. South Essex/North Kent shelly ware R69.
4 Bead-rimmed jar, slight ledge to rim. South Essex/North Kent shelly ware R69.
5 Bead-rimmed jar with rilled body. South Essex/North Kent shelly ware R69.
6 High-shouldered bead-rimmed jar or bowl with short neck. Thameside sandy grey ware R73.3.
7 Bead-rimmed jar with slight ledge to rim and rilled body. Thameside sandy grey ware R73.3.
8 Bead-rimmed jar with slight ledge to rim and rilled body. South Essex/North Kent shelly ware R69.
9 Bead-rimmed jar with rilled body. Thameside sandy buff ware R74.3.
10 Bead-rimmed jar, sooted externally on shoulder. South Essex/North Kent shelly ware R69.
11 Ledge-rimmed jar (Monaghan 1987, type 3L2). South Essex/North Kent shelly ware R69.
12 Ledge-rimmed jar with rilled body. Sooted externally on shoulder. South Essex/North Kent shelly ware R69.
13 Ledge-rimmed jar (Monaghan 1987, type 3L2). South Essex/North Kent shelly ware R69.
14 Ledge-rimmed jar with graffito inscribed before firing (Going 1987, type G5.1). South Essex/North Kent shelly ware R69. Undoubtedly a south Essex product.
15 Ledge-rimmed jar (Monaghan 1987, type 3L2). South Essex/North Kent shelly ware R69.
16 Necked jar with grooved shoulder or neck. Thameside sandy grey ware R73.3.
17 Necked jar with grooved shoulder or neck. Thameside sandy grey ware R73.3.
18 Necked jar with grooved shoulder or neck. Thameside sandy grey ware R73.3.
19 Everted-rim jar. Reminiscent of later Roman cooking-pot-type jars (eg Monaghan 1987, type 3J1), but probably 1st century (cf. Pollard 1988, types 6 and 52). Thameside sandy orange ware R74.1.
20 Everted-rim jar, as no. 19, except has burnished surfaces. Thameside sandy orange ware R74.1.
21 Storage jar. Thameside sandy grey ware R73.3.
22 Handmade butt-beaker or barrel-shaped jar (cf. Cam 117). Thameside sandy grey ware R73.3.
23 Globular beaker. North Kent fine grey ware R16.
24 Globular beaker. North Kent fine grey ware R16.
25 Carinated beaker (Monaghan 1987, type 2G1). North Kent fine grey ware R16.
26 Carinated beaker (Monaghan 1987, type 2G1). North Kent fine grey ware R16.
27 S-profile bowl. Thameside sandy orange ware R74.1.
28 High-shouldered necked bowl (Monaghan 1987, type 4C4). Thameside sandy grey ware R73.3.
29 Cordoned bowl (Monaghan 1987, type 4J1). White-painted dots on the neck cordon and white paint on the shoulder. North Kent fine red ware R17.2.
30 Cordoned bowl (Monaghan 1987, type 4J1). North Kent fine grey ware R16.
31 Cordoned bowl (Monaghan 1987, type 4J1). North

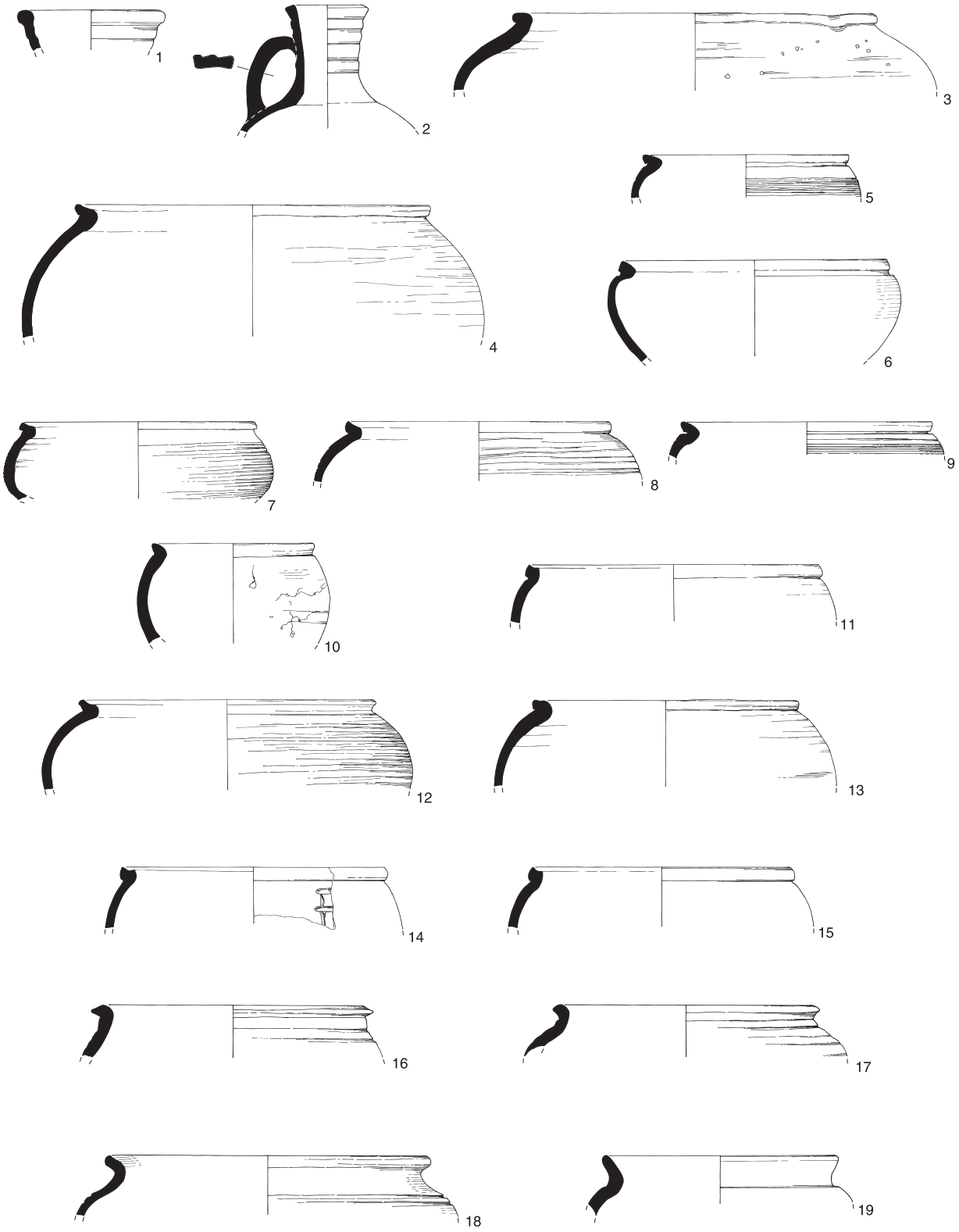


Fig. 4.64 Pottery from Site D enclosure ditch 6941, fill 6350 Nos 1–19

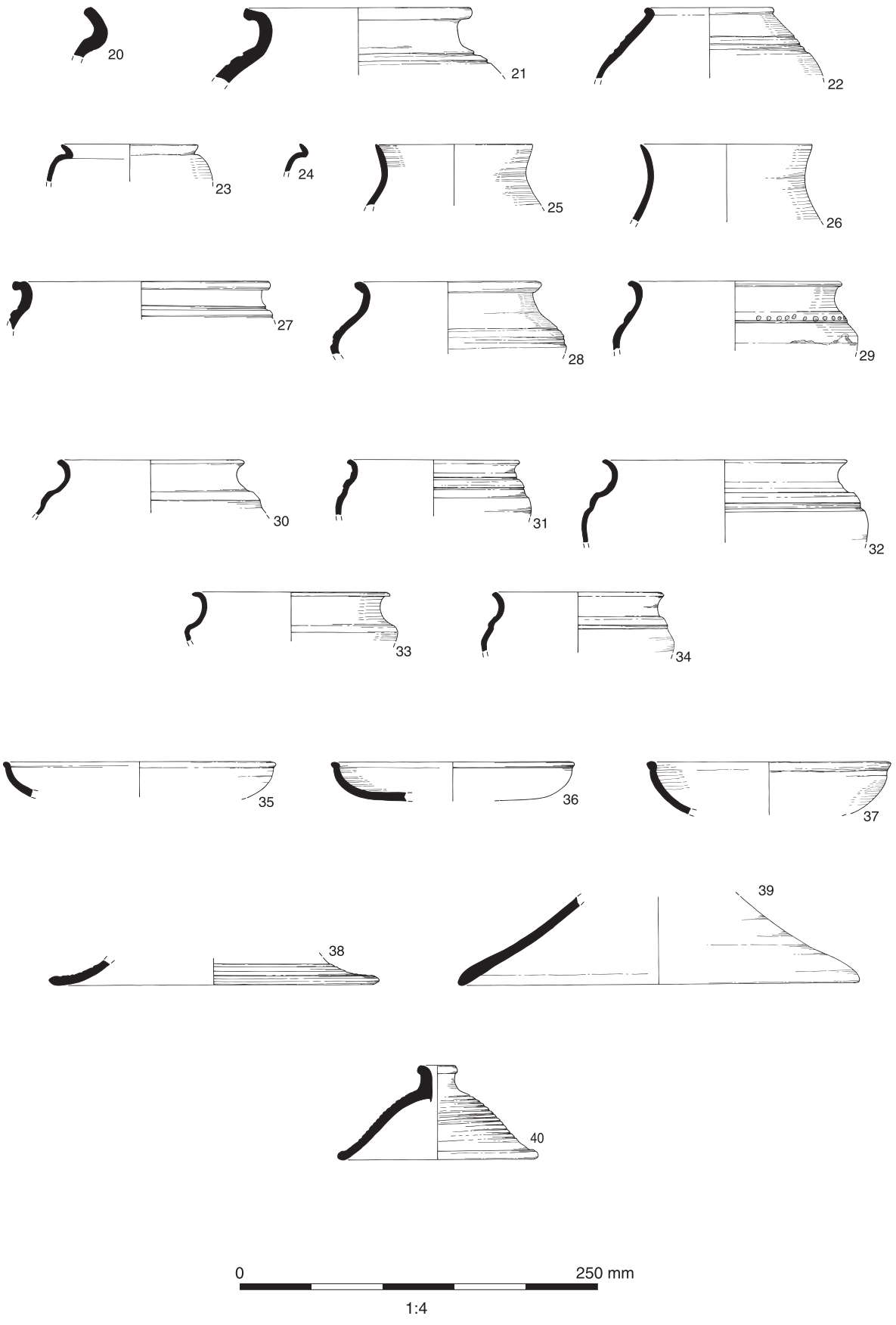


Fig. 4.65 Pottery from Site D enclosure ditch 6941, fill 6350 Nos 20–40

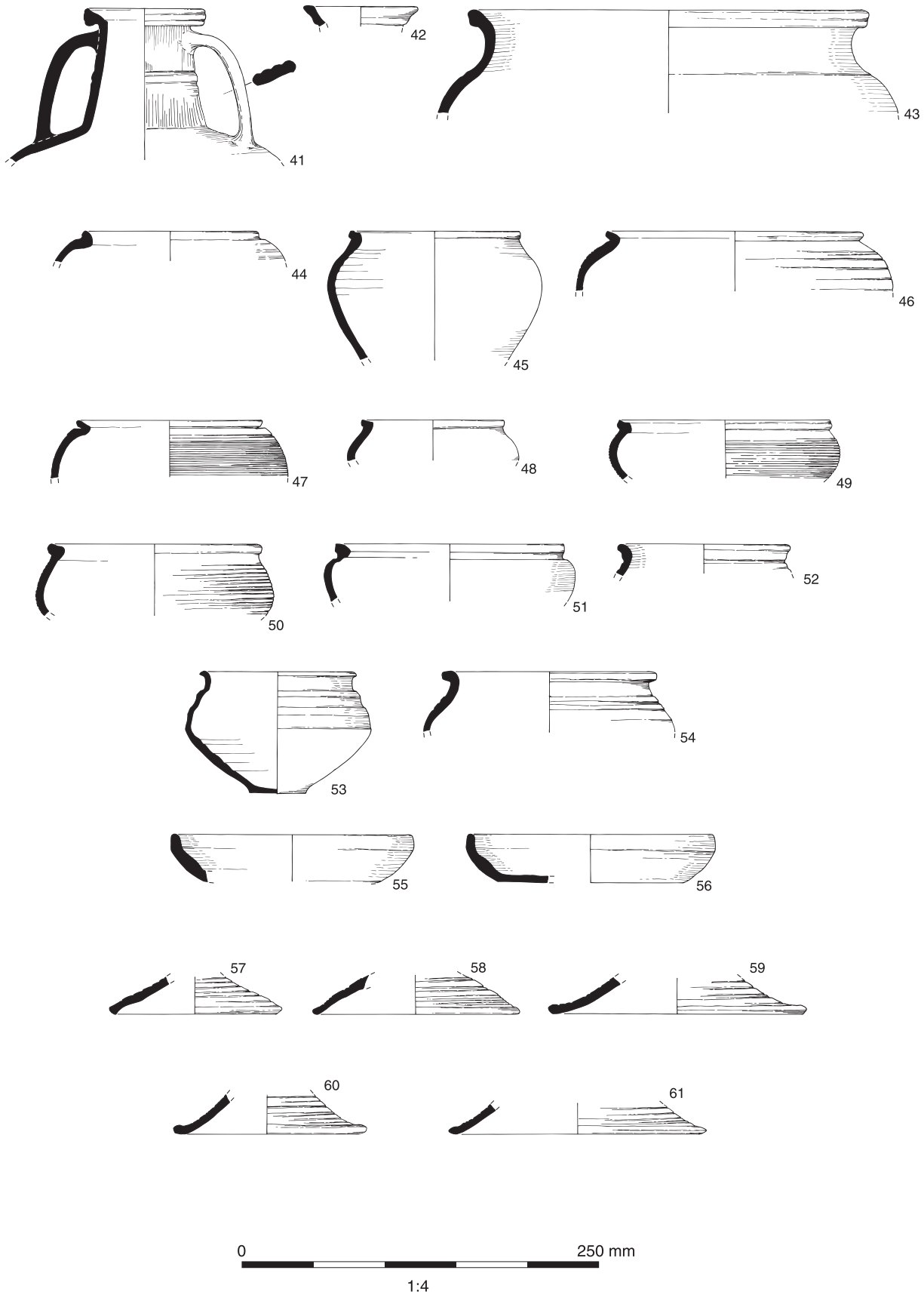


Fig. 4.66 Pottery from Site D enclosure ditch 6941, fill 6556 Nos 41–61

Kent fine grey ware R16.
32 Cordoned bowl (Monaghan 1987, type 4J1). North Kent fine grey ware R16.
33 Cordoned bowl (Monaghan 1987, type 4J1). North Kent fine grey ware R16.
34 Cordoned bowl (Monaghan 1987, type 4J1). North Kent fine grey ware R16.
35 Bead-rimmed platter (Monaghan 1987, type 7A). North Kent fine buff ware R17.3.
26 Bead-rimmed platter (Monaghan 1987, type 7A). North Kent fine grey ware R16.
37 Bead-rimmed platter (Monaghan 1987, type 7A). North Kent fine buff ware R17.3.
38 Lid. Thameside sandy orange ware R74.1.
39 Lid. Thameside sandy grey ware R73.3.
40 Lid. Thameside sandy grey ware R73.3.

Context 6556, fill of ditch 6349, group 6941, Site D. AD 50-70/80. (Fig. 4.66)

41 Large flagon with cordoned neck, Cam 161 imitation (Pollard 1988, type 35). Thameside sandy grey ware R73.3.
42 'Hofheim'-type flagon. North Kent fine white-43 slipped oxidised ware R18.1.
43 Storage jar. Patch Grove grog-tempered ware R68; surface is greyer than usual.
44 Bead-rimmed jar. Thameside sandy grey ware R73.3
45 Ledge-rimmed jar (Monaghan 1987, type 3L2). North Kent/South Essex shelly ware R69.
46 Bead-rimmed jar with rilled shoulder. North Kent/South Essex shelly ware R69.
47 Bead-rimmed jar with rilled shoulder. Coarse sand-tempered ware B9.
48 Bead-rimmed jar with slight ledge to rim. Coarse sand-tempered ware B9.
49 Ledge-rimmed jar with rilled shoulder (Monaghan 1987, type 3L2). North Kent/South Essex shelly ware R69; fabric includes sand.
50 Ledge-rimmed jar with rilled shoulder (Monaghan 1987, type 3L2). North Kent/South Essex shelly ware R69; fabric includes sand.
51 High-shouldered bead-rimmed jar or bowl with short neck. Thameside sandy grey ware R73.3.
52 Necked jar with grooved shoulder or neck. Thameside sandy grey ware R73.3.
53 Cordoned bowl (Monaghan 1987, type 4J1). North Kent fine grey ware R16.
54 Cordoned bowl (Monaghan 1987, type 4F1). Thameside sandy grey ware R73.3.
55 Carinated platter. Thameside sandy grey ware R73.3.
56 Carinated platter. North Kent fine grey ware R16.
57 Lid. Coarse sand-tempered ware B9.
58 Lid. Coarse sand-tempered ware B9.
59 Lid. Thameside sandy orange ware R74.1
60 Lid. Coarse sand-tempered ware B9.
61 Lid. Coarse sand-tempered ware B9.

Site L

One per cent of the entire Roman-period assemblage by EVE was recovered from non-funerary context-groups in Site L (Table 4.14). Individual context groups were usually small and few forms were identified. This made dating difficult, the result being that many of the groups were assigned broad date ranges. However, on the basis of the fabrics present, particularly the fabrics of late Iron Age tradition, which were found together with post-conquest wares, it is likely that some pottery was deposited between AD 43 and 70/80. Other wares, such as the North Kent fine wares and Verulamium-region white ware, may have arrived during the later part of this range, although deposition could have occurred well into the 2nd century (the white ware was in any case residual in a late Roman context). Black-burnished ware dated from the mid 2nd century, and a plain-rimmed dish in a flint and sand fabric also attests to mid-Roman deposition. Oxford red colour-coated ware was deposited during the late 3rd or 4th century.

Table 4.14: Roman pottery from Site L, excluding funerary pottery

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
B1	1	7		
B8	4	44		
B9.1	3	26		
LIAB1	16	91	1	0.01
LR10	3	129		
R102	2	41	1	0.10
R14	2	14		
R15	1	37		
R16	1	2		
R17.1	2	7		
R18.1	13	150		
R42	1	9		
R69	25	115	2	0.10
R73.3	19	71	1	0.13
R74.1	1	1		
R8.1	2	2		
Total	96	746	5	0.34

Site A

Less than 1% by EVE of the whole assemblage was recovered from Site A (Table 4.15). Small numbers of sherds were recorded in fabrics spanning the Roman period. Grog-tempered ware, South Gaulish samian ware, and North Kent white-slipped

Table 4.15: Roman pottery from Site A

Fabric	*Sherds*	*Weight (g)*	*MV*	*EVE*
B1	1	13		
LR11	1	6		
LR24	1	14	1	0.05
R100	1	1		
R16	1	38		
R18.1	16	69	1	0.1
R42	2	11		
R43	1	11		
R73.3	5	44		
R8.1	2	2		
Total	31	209	2	0.15

oxidised sherds belonging to a 'Hofheim'-type flagon can be dated to the later 1st century; found together, none of this material is likely to date before *c* AD 50. Mid Roman (AD 120–250) pottery was represented by Central Gaulish samian ware and Nene Valley colour-coated ware; North Kent fine grey ware was also recovered from a context belonging to this period. An Oxfordshire red colour-coated mortarium was deposited in the late Roman period (AD 250–410). Sandy grey and oxidised wares were available throughout the Roman period.

Site B and C west

Pottery from Site B accounted for 3% by EVE of the entire assemblage (Table 4.16). All context groups contained pottery that dated with certainty after AD 43. Given that the currency of some late Iron forms and fabrics extended beyond the conquest period, particularly grog-tempered and shelly wares, it is possible that some groups exclusively containing pottery of late Iron Age tradition, may also have dated to the early Roman period, but in the absence of post-conquest wares these are reported upon in Chapter 3.

Examining the Roman-period pottery none of the context-groups needs date after AD 70. Locally-made fabrics Thameside sandy oxidised and grey wares were available as jars, usually bead-rimmed types. A shelly ware lid-seated jar was also present. More jars were recorded in late Iron Age fabrics; two vessels in grog and sandy fabrics were barrel-shaped and seemingly of middle Iron Age tradition. These were recovered from a mid-1st century deposit (fills of pit 4747) and may be residual, although it is possible that the basic shape persisted a short way into the Roman period. Fine pottery was limited to a North Kent white slipped oxidised ware platter. A small amount of white ware pottery arrived from the Verulamium region; continental wares were absent altogether.

Table 4.16: Roman pottery from Site B. Quantification by EVE (= present but no rims recorded)*

Fabric	*II Jar*	*III Beaker*	*V Platter*	*EVE*	*% EVE*
B1	0.21			0.21	12%
B2				*	
B3				*	
B5	0.05			0.05	3%
B8	0.05	0.06		0.11	6%
R101				*	
R15				*	
R154				*	
R18.1			0.23	0.23	14%
R69	0.48			0.48	28%
R73				*	
R73.3	0.11			0.11	6%
R74.1	0.05			0.05	3%
R74.2	0.05			0.05	3%
R74.3	0.41			0.41	24%
Total	1.41	0.06	0.23	1.7	-
% total	83%	4%	14%	-	-

The quantity of Roman-period pottery recorded here is much less than that recovered from the enclosed settlement less than 100m to the south of Site B at Northumberland Bottom site (ARC WNB 98) along the HS1. While activity at Site B ceased soon after AD 43, pottery, such as South and Central Gaulish samian and black-burnished ware 2, indicated that occupation at Northumberland Bottom continued through the 1st century and well into the 2nd (Every 2006). However, we need to be cautious in our comparison. While Site B context-groups that exclusively contained pottery of late Iron Age tradition were confined to the late Iron Age, those from Northumberland Bottom were dated after AD 43. Indeed, some 52% of Roman-period context-groups lacked pottery of certain post-conquest date. Potentially, then, groups dated to two separate phases—and the activities that led to the pottery's deposition—could be contemporaneous. That is not to downplay the differences between the two sites. The chronology of Northumberland Bottom undoubtedly extended further than that of Site B, and the absence of samian and amphorae at Site B, in comparison with their presence at Northumberland Bottom, might reveal something of a difference in pottery use and the status of the inhabitants.

Site C east

The small amount of Roman pottery from Site C east (13 sherds; 52g) comprised wares was consistent with the early Roman period, although North Kent fine grey ware and Thameside sandy oxidised ware, having longer date ranges, may have been deposited after this time. No forms were identified.

Pond D North

Roman pottery was confined to two sherds of terra nigra, which formed part of the footing of a platter. The fragments were recovered from late Iron Age context 19019 (ditch group 19346) and provide evidence for limited importation into the area of Gallo-Belgic finewares before the conquest.

Discussion

Composition of the funerary assemblage

Burials 6260, 6635 and 6645 show remarkable similarity with other, contemporaneous, high status funerary assemblages from south-eastern Britain, most notably from Folly Lane, Verulamium and Stanway, Colchester. At Folly Lane, a ceremonial site north-east of the Roman town, large quantities of pottery were deposited in a ritual shaft and funerary chamber between AD 50 and 60. Like the A2 burials, the assemblage was dominated by platters, which were largely locally-produced versions of Gallo-Belgic prototypes. Imported white-ware flagons and butt-beakers were also present, but Folly Lane

contained a greater quantity and range of samian vessels—Drag. 15/17 and Drag. 18 platters among them—and fragments from Dressel 2–4 amphorae (Rigby 1999, 185-93; Williams 1999, 193). A more obvious difference was that the Folly Lane assemblage was highly fragmented and burnt, having been deliberately smashed, placed on the pyre and burnt, before finally being deposited in the shaft and chamber (Niblett 1999, 63). The pottery recovered from three chambers within Stanway's mid-1st century funerary enclosures had also been smashed deliberately, though for the most part had not been burnt (Crummy *et al.* 2007, 123–6; 137–40; 154–6). As with the A2 assemblage, the pottery from Stanway's chambers consisted largely of platters, both imported and locally-produced, accompanied by smaller proportions of cups, flagons and beakers; Dressel 2–4 amphorae, absent in the A2 burials, were also present. Given their contexts outside formal graves, the Folly Lane and Stanway chamber assemblages appear to relate to a different element of the funerary rite than those from the A2. It could be argued that if the stages of a funeral carried different meanings, and that the most appropriate pottery was selected to best fit those meanings, then we might expect to see differences in composition of the respective assemblages. This appeared to be the case at Pepperhill cemetery, where the profile of pyre goods differed from that of the grave goods, having a stronger emphasis on drinking equipment (Biddulph 2006a). The similarity between the A2, Folly Lane and Stanway chamber assemblages in terms of functions represented might instead suggest that the significance of funerary stages was not sufficiently critical to result in noticeable differences in the pottery. All stages were concerned with feasting or consumption of sorts, but the difference was a matter of who was doing the consuming, for example the mourners or the deceased.

It is worth placing these assemblages against other groups, from both high- and low-status graves. Correspondence analysis is a useful multivariate, statistical tool with which to compare the assemblages based on their attributes, in this case vessel type. The scattergram, the end-product of analysis, provides a visual means of comparison. Sites that are similar in terms of their assemblage composition will broadly occupy the same space on the plot, while the point at which the axes intersect represents the average across the combined assemblage, so that types that are further away from it can be considered to be rarer or otherwise more unusual than those closer to it (cf. Shennan 1997, 308–41). Eleven assemblages were selected for analysis (Table 4.17). The list is far from exhaustive in terms of available data, but it still represents a reasonably coherent dataset, comprising sites that are close to the A2 burials in terms of status, chronology or location. Figure 4.67 shows the relative positions of these assemblages.

The most immediate observation is that the assemblages have divided into three main groupings. As already discussed, the Folly Lane, Stanway and A2 (high status) assemblages were typologically very similar, and this is reflected in their positioning in the top left quadrant of the plot, focused around platters, the defining form of all of them. Graves dating to the mid 1st century from the urban cemetery at Pepperhill (right of the vertical axis) contained a relatively large proportion of drinking vessels—beakers and liquid-servers (flagons and flasks)—and were poor in terms of platters, although the bowls and jars also associated with the assemblage may have served as eating vessels (cf. Cool 2006, 53–4). To some extent these graves pre-dated the expansion of the North Kent pottery industry and so the paucity of platters may simply have been a matter of what was available. However, the assemblage from Pepperhill graves dating to the late 1st to early 2nd century shows the same propensity towards drinking vessels, suggesting that the composition reflected deliberate choice or that platters remained relatively scarce throughout this time. Whatever governed that selection, it also appeared to determine the assemblage profile of the low-status graves from the A2 and the mainly early-Roman graves at Springhead, which join Pepperhill around flagons, beakers, jars and bowls. It

Table 4.17: Pottery assemblages used in correspondence analysis (Ca)

Site	*Description*	*Ca code*	*Reference*
A2 Widening Scheme	Low-status graves 6605, 6693, 6728, 12554, 13094	A2(low)	-
A2 Widening Scheme	High-status graves 6190, 6636, 6643	A2(high)	-
Bartlow Hills, Cambridgeshire	1st and 2nd century burial mounds	Bartlow	VCH Essex 1963, 39-43
Folly Lane, Verulamium	Ritual shaft and funerary chamber	FollyLa	Rigby 1999, 185-93
Pepper Hill (HS1), Springhead	Late 1st-early 2nd-century graves	PH(L1E2)	Biddulph 2006
Pepper Hill (HS1), Springhead	Mid-1st century graves	PH(M1)	Biddulph 2006
Pleshey, Essex	1st century vaulted burial group	Pleshey	VCH Essex 1963, 166
Springhead, HS1 and Garden Centre sites	Smaller cemeteries around the town	Springhd	Seagar Smith *et al.* 2011; Philp and Chenery 1997, 8-12
Stansted	High-status graves 25 and 26	Stansted	Havis and Brooks 2004, 216-31
Stanway, Colchester	Mid 1st-century graves in enclosures 3, 4 and 5	StanGrav	Crummy *et al.* 2007, 170-267
Stanway, Colchester	Funerary chambers BF6, BF24, CF42 within enclosures 3, 4 and 5	StanCham	Crummy *et al.* 2007, 104-156

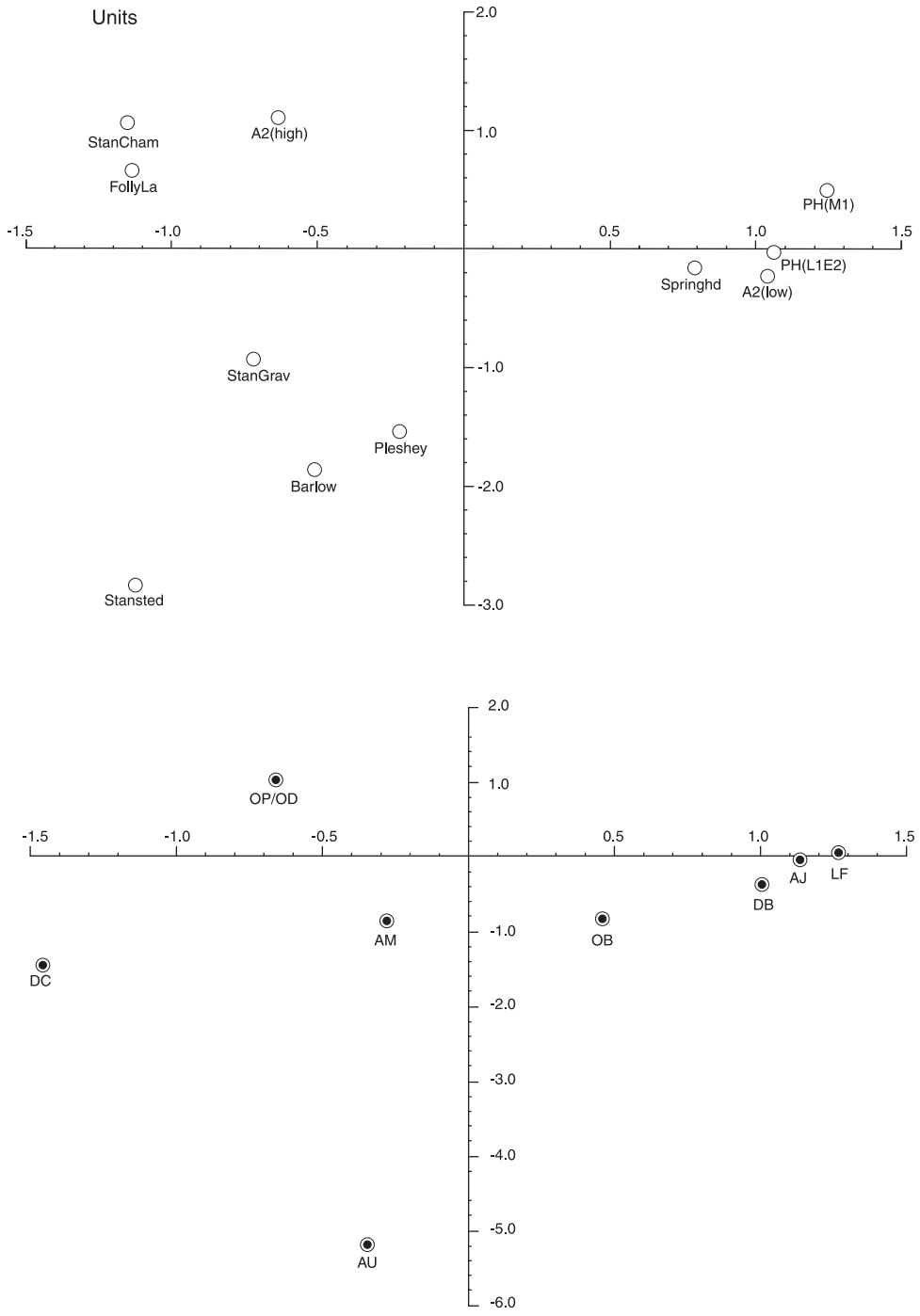


Fig. 4.67 a and b: Ca scattergram showing relationship between sites and vessel types

is worth adding that the jars and bowls present in this group, though forming a relatively minor element of its assemblages, may be regarded a link to the traditions seen in the high status burials of Site B (4298 and 4312). These contained pedestal jars and robust bowls and conform to the 'Aylesford' or 'Belgic' traditions seen in many late Iron Age cemeteries in south-eastern Britain, for example at Allington, near Maidstone (Thompson 1978) and North Shoebury in south Essex (Thompson 1995). Overall, then, the composition of the burial assemblages at Pepperhill, Springhead and the A2 points to a coherent regional identity, and reveals a difference between high- and low-status graves, the latter being more strongly associated with drinking. Three more assemblages from Essex—from the graves within enclosures 3–5 at Stanway, a 1st-century grave from Pleshey that contained five vessels, a group of late-1st and 2nd-century barrows from Bartlow, Ashdon (actually within the historic county of Essex) that produced 21

vessels, and two early to mid 2nd-century graves (25 and 26) from Stansted that between them contained 18 vessels—make an interesting comparison. Despite some chronological differences, all three sites formed a loose grouping in the bottom left quadrant of the scattergram (Fig. 4.67). While they contained forms that can be regarded to some extent as standard in funerary contexts (for example beakers and platters), the assemblages were strongly associated with cups; in comparison, cups formed only a minor component of the north Kent assemblages. That cups were over-represented in Essex is a phenomenon observed by Steven Willis (2005, section 8.3). In terms of funerary use, the form was strongly associated with elite burials, pointing not only to a regional tradition, but also one where the cup was a relatively high status item, perhaps being associated with wine, rather than, say, ale, which was served in beakers (Biddulph 2005, 36). The separation of Essex graves from the A2 and Folly Lane (Fig. 4.67) preserves that regional bias.

One aspect that links the high status burials of the A2 (specifically grave 6635), Stansted (grave 26), and Stanway (the Doctor's burial) is the provision of decorated samian bowls. Grave 6635 contained a Drag. 29 bowl, a Drag. 37 was recorded at Stansted (Havis and Brooks 2004, 216–31), while a Drag. 29 was recorded in the Doctor's burial (Crummy *et al.* 2007, 213). Interestingly, the Drag. 37 was anachronistic within its 2nd-century grave, dating to *c* AD 65–70; it was therefore made within a few years of both Drag. 29s. Decorated bowls are very rare in graves, even within elite burials, suggesting that the selection of vessels was culturally restricted across the social spectrum. (Brougham cemetery in Cumbria, which contained relatively large numbers of decorated bowls, was highly exceptional (Dickinson *et al.* 2004, 345–8).) The inclusion of decorated bowls in the A2 and Stanway graves may have been an expression of the strong links between the buried individual and families (or potters) on the continent. Alternatively, the design of the decoration itself allowed the bowls to be selected for the grave. The dog motif seen the Stanway bowl may have been associated with healing deities (Crummy 2007, 445), making the bowl an appropriate item to be deposited alongside the doctor, identified from the deceased's medical implements. It is possible that the foliate element recorded on the bowl from grave 6635 was chosen for its wreath-like appearance; Joanna Bird (2006) suggests that the barbotine leaf decoration around the rim of the Drag. 36 dish, a vessel commonly deposited in Roman-period graves, including at the Pepperhill cemetery, recalls the wreath that might be placed on the head of the deceased. The bowl in Stansted's grave 25 is less well explained, but it has been argued that the objects in burials 25 and 26 at Stansted, which included a copper-alloy jug and patera, would have been familiar to the 'conquest generation', the people living up to around 30 years after the invasion of AD 43 in south-east Britain (Biddulph 2005, 40).

Gallic potters and the origins of the North Kent pottery industry

Three factors suggest that the locally-made, Gallo-Belgic-type pottery recorded in graves 6260, 6635 and 6645 were manufactured to order specifically for funerary deposition. First, as Valery Rigby (this vol.) notes, the pottery was little used or pristine when deposited. Second, the named potters (or potters otherwise identified by stamps) are represented by multiple vessels, which are likely to have been acquired at the same time before the products could be sent to market and distributed. The fabrics and the kiln technology used may offer a third factor. The sandy fabrics were far removed from the very fine terra nigra and terra rubra wares in which the forms retrieved from the burials were usually made. They were undoubtedly coarser, though occasionally burnished, and their relative softness suggests that the vessels were fired in a bonfire or clamp kiln, rather than a permanent—and better controlled—kiln structure. Given the close correspondence between the vessels and their Gallo-Belgic prototypes in terms of shape, the use of sub-standard fabrics and firing technology certainly seems unusual. A plausible explanation is that the fabrics and firing are the products of temporary workshops set up in the north Kent marshes by specially-commissioned Gallo-Belgic potters. Form could be accurately reproduced in such conditions—the potters' tools and templates were easily transported or manufactured on site—but the clay and kiln structures required more preparation than could be allowed by the organisers of the funerals. The solution was to create rapidly-prepared, rough-and-ready fabrics fired in a basic way that may not have been suitable for everyday-use vessels, but were perfectly serviceable for funerary deposition.

The pottery provides support for the idea that funerary ceramics, especially for high status burials, were provided as a package conforming to custom and possibly as specified in the wills of the deceased. Such an arrangement could well apply to the provision of pottery to other burials. For example, a relatively well-furnished grave from Nuns' Walk, Winchester, dated to the late 1st or early 2nd century, contained three dishes or platters that were identical in form and fabric and probably made as a set and to order (Collis 1978, 152). If the pottery was ordered for the funerals, then it follows that the vessels did not represent the personal possessions of the deceased, nor were they the offerings of individual mourners, kin or tribal representatives. However, some of the other vessels, such as the the handled jar, whose painted inscription may record its contents (sf 682; see Tomlin, this vol.), and the flagon from grave 6635 (sf 1538)—which has an inscription that may represent a personal name (Tomlin, this vol,; cf. Biddulph 2006b, 358)—could have been both of these (Rigby 1999, 192).

In any case, stamps on the locally-produced pottery from grave 6260 suggests that a potter, or potters, called Bentio or Benio arrived from Gallia-Belgica to make pottery in the north Kent marshes (workshop 1). Benio specialised in relatively deep platters (*Cam* 16) with short footrings and a central kick in a fine sandy reduced ware (eg sf 671). He may have been the same Benio recorded on a *Cam* 8 platter in terra nigra at King Harry Lane, Verulamium; if so, his British repertoire was different from his Gallo-Belgic output. The platters were expertly modelled; the vessels were exact copies of *Cam* 16 platters produced in terra nigra, and these indicate that Benio learned from Gallo-Belgic potters or was otherwise sufficiently embedded within the milieu of the Gallo-Belgic pottery industry to be very familiar with the form and its production. More *Cam* 16s (eg sf 1552) were made by a potter identified by Valery Rigby as Potter Mark 1, recorded in grave 6635. His products (workshop 2) were made in a similar sandy reduced fabric used by Benio and it is highly likely that the potters used the same clay source. Like Benio's products, the quality of Mark 1's platters was comparable to Gallo-Belgic prototypes, again pointing to an immigrant potter. Another platter form, *Cam* 8/7 (eg sf 1553), also had the Mark 1 stamp, but the comparison with its prototype is not so close, suggesting that the potter lacked templates. Other potters set up workshops in the north Kent marshes to produce similar continental-style vessels. The output of workshop 3 was the *Cam* 16 in a sandy reduced ware. They were un-stamped and, though well-executed, the forms were noticeably different from Benio's platters, having a shallower wall and a flatter and thicker base (eg sf 1557). A product of workshop 4, a *Cam* 56 cup (sf 1569), lacked aspects of the rim seen on its prototype, while a platter (sf 1555), probably made at the same workshop, had no obvious continental parallel. The origins of the potters from workshop 3 and 4 are not so clear, but the reduced accuracy of the potters' output suggests that, unlike Benio, they had not learnt their skills from Gallo-Belgic potters, and had instead studied and copied the Gallo-Belgic pottery they saw around them. The workshop 4 potter may even have been British. His connections with Gallo-Belgic potters are likely to have been weaker than those of the workshop 3 potter, and his imitations were the poorer. These suggested origins would have resulted in modifications or mutations in the design of the prototypes.

The products of workshop 1 were exclusive to grave 6260. Grave 6635 contained the vessels of workshops 2, 3 and 4. Grave 6643 contained a good, but not exact copy of *Cam* 58, and another *Cam* 16, both being attributed to workshop 3. The conclusion from this is that workshops 2, 3 and 4 operated at the same time, whereas workshop 1 was either earlier or later than them, but not contemporaneous.

The presence of Gallo-Belgic potters in north Kent reveals something about the origins or connections of the individuals buried in graves 6260, 6635 and 6645. The buried elite may themselves have been Gallic, maintaining a centre in Gallia-Belgica. By making the pots, the potters were fulfilling their tribal obligations or were more generally part of the continental retinue arriving to mourn the deaths of their leaders. However, we do not need to replace British rulers with Gallic ones to explain the pottery; it is enough to acknowledge that links either side of the channel led to imitation and emulation of Gallic tradition (cf. Creighton 2006; Trow *et al.* 2009, 70). If the arrival of Bent(i)o/Benio and others was a consequence of those connections, the potters being requested at the behest of the mourners or as specified in the wills of the deceased, then this points to a strong network based on social and tribal affiliations between the ruling families of Springhead and possibly the Marne/Vesle region, from where the potters may have come. The links between north Kent and north-west Gaul seem to have been particularly long-lasting; a close parallel for the layout and architecture of Northfleet's villa estate, first set out at the end of the 1st century AD, is found at Warfusée, near Amiens and the Marne/Vesle area (Andrews *et al.* 2011).

We cannot immediately connect workshops 1 to 4 to the North Kent pottery industry, typified by fine grey (R16), oxidised (R17) and white-slipped wares (R18), but Benio and others introduced good Gallo-Belgic-type vessels in the region—and, perhaps more importantly, the skills required to make them—and increased the likelihood that the vessels would be imitated by other potters. The influence of Gallo-Belgic ceramic tradition in the region's later 1st century products is undeniable (Monaghan 1987, 217). We can see the link in the carinated beaker (Monaghan 2G), a standard of the industry. This was available in fabric R16 and clearly copied the eggshell terra nigra biconical beaker, *Cam* 120 (Greene 1979, fig. 52). Its presence in Site D ditch deposit 6354 (group 9640), accompanied by grog-tempered and shelly-ware bead-rimmed jars, suggests that it was deposited before AD 70. The form's occurrence in Pepperhill cemetery also supports a Neronian or early Flavian date for the start of manufacture (Biddulph 2006a). The dating overlaps with the chronology of the form's prototype (Greene 1979, 120) and, more crucially, is potentially contemporary with the output of workshops 1 to 4 recorded in the Site D burials. However, the beaker is more likely to be later than those products, though by no more than 10 to 15 years. If the potters responsible for the carinated beaker did not arrive from Gallia-Belgica, then they used their pottery skills and knowledge of the Gallo-Belgic style—acquired from ceramic imports, but also from continental potters in the region—to produce good imitations of the prototype (Monaghan 1987, 217). It is reasonable to suggest, even, that the drive to better imitate the fine, burnished, eggshell fabric (with its characteristic grey core and brown margins (Greene 1979, 120)) led to the development of the fine grey ware (R16) that in part defines the North

Kent industry. The skills and technology required to produce good quality fine ware in a consistent way made the industry's products look that much more like terra nigra and, with the addition of the oxidised fabric (R17), terra rubra. But by this time, the expanding industry was influenced by other styles. Monaghan's 7A platter, with its bead-rim, curved wall and short pedestal base, takes its inspiration from the samian platter, Drag. 18. The form's appearance at Pepperhill cemetery in graves dated after AD 70 suggests that it was introduced a little later than the carinated beaker, and this chronology is supported by the platter's occurrence along the A2 route. However, the form was made in grey and oxidised wares and, with its sunken base and almost incipient footring, owed part of its design to terra rubra and terra nigra.

Pattern of deposition in Site D

Almost 85% of the non-funerary pottery in Site D by EVE was found within the ditches of the enclosures that dominated the site. It is clear from group 6350 that pottery was deposited in significant quantity, and in total over 100 individual vessels were recorded. However, this figure masks a variable pattern, as the distribution of pottery around the enclosures was uneven. Pottery was collected from nine segments along ditches 6940, 6941 and 6727, but only two segments—6349 (ditch 6941) and 6353 (ditch 6940)—contained pottery identifiable to form. Small quantities of pottery were also recovered from the southern part of the enclosures, uncovered during excavation of the HS1 site. Each excavated ditch segment contained pottery totalling on average 0.7 EVE, compared to 2 EVE from the northern part of the enclosure complex. Deposition was therefore concentrated on specific parts of the complex, suggesting that the complex as whole was not necessarily regarded as a special area for deposition. But even the two areas selected to take large amounts of pottery (cuts 6349 and 6353) do not seem particularly significant in terms of their location in relation to, say, the Site D burial enclosure (it is worth noting that two ditch segments, 6502 and 6630, that were located opposite the open side of the burial enclosure contained little pottery), and it is likely be that the specific place of deposition was incidental. What the deposit represents—the termination of a significant communal event—was a far more important factor.

Some understanding of this event may be gained from pottery composition. Differences between assemblages from deposits 6350 and 6556 have already been noted, but taking a broader view, the groups, along with the other pottery from the enclosure, represent a far more homogeneous collection. Division of the assemblages from the enclosure (Site D and the HS1 site), Site D pits and the contemporaneous Site D graves into three functional categories—storage or cooking (jars and lids), eating vessels (bowls, dishes and platters) and drinking equipment (flagons, beakers and cups)—reveals obvious differences between the funerary and enclosures groups. Fewer vessels were recovered from the southern part of the enclosure compared with the northern part, but both areas contained an almost identical functional range, both assemblages being dominated by storage or cooking vessels, which took a share of over 50% by EVE (Fig. 4.68). Eating and drinking vessels each contributed between 20% and 25% to the assemblage. In contrast, pottery from the pits had a low proportion of jars, but high proportion of beakers. It should be acknowledged, however, that there were few pit groups in Site D, each containing relatively little material; this and the absence of eating vessels point to a somewhat unrepresentative assemblage. The pottery from graves 6260, 6635, 6645 and 6692 included no jars (apart from urns), but was dominated by eating vessels, with drinking forms also well represented.

In his analysis of late Iron Age and earliest Roman assemblages from Essex and Hertfordshire, Martin Pitts (2005, 151–4) detected differences between groups from pits and linear features. The former had an emphasis on consumption, with eating and drinking equipment being well-represented. Assemblages from linear features included higher proportions of jars. Apart from interpreting pit groups as the remains of feasting and generally highlighting the social importance of eating and drinking in late Iron Age society, Pitts argued that the functional similarities between pit and funerary assemblages (both being weighted towards consumption) gave them identical meaning. Pit groups represented a more mundane version of the ostentatious deposition of feasting remains in graves (Pitts 2005, 157). This pattern can be seen to a large extent in Site D. In addition, comparison with the general pattern of pottery supply to Springhead during the early Roman period (Fig. 4.68; Seagar Smith *et al.* 2011) suggests that the proportions of forms seen in the Site D enclosures conform to the average, expected, regional profile. The conclusion would appear to be, therefore, that that groups 6350, 6556 and 6354 did not principally represent special deposits containing the remains of commemorative feasting. This view is given added weight by the proportion of fine and specialist ware from Site D. Paul Booth's survey of pottery assem-

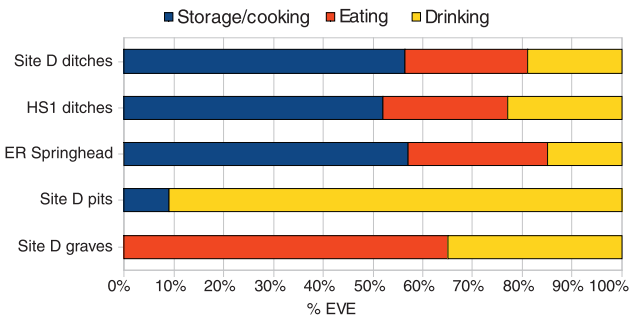


Fig. 4.68 Comparison of function composition at Site D, Northumberland Bottom (HS1) and early Roman Springhead

blages from Upper Thames region sites (Booth 2004) indicated that the proportion of fine and specialist wares (comprising samian, amphorae, mortaria, white wares, fine wares, and white-slipped wares) could be used as a measure of status. First and 2nd-century assemblages containing 5% or over by sherd count fine and specialist wares belonged to relatively high status sites—villas, larger settlements, urban centres and the like (ibid., 49–50). To what extent this figure is valid for sites in south-eastern Britain requires more analysis than is offered here. However, it is notable that the figure obtained for Site D (4%) is below that for the early Roman assemblage at Springhead (5%; Seagar Smith *et al.* 2011), and Northfleet villa (10%), but above Northumberland Bottom (3%; Every 2006, table 4). This ranking, which has Site D, a relatively basic rural site, placed below a town and villa, fits the perceived site hierarchy reasonably well.

We must be cautious in our interpretations. Hilary Cool (2006, 53–4) reminds us that jars (and certain types of bowls) were used for communal dining before the Roman conquest. Analysis at cemetery sites indicates that the use of the jar went beyond cooking on the hearth and was integrated into dining and funerary practices, suggesting that the perception of the jar as a dining vessel persisted after the conquest. At Pepperhill cemetery (Biddulph 2006a), jars and jar-like bowls (for example robust, high-shouldered varieties) formed the third largest group of ancillary vessels behind flagons and beakers, giving the group a significant place (as a gift or offering) in the grave. A study of Roman-period funerary assemblages from Essex distinguished two broad traditions that determined ancillary vessel choice: one characterised by large bowls, beakers and jars that closely resembled assemblages from late Iron Age cemeteries, and another, containing dishes, platters, beakers, cups, and flagons, that better reflected formal continental dining practices (Biddulph 2005). It can be argued, therefore, that groups 6350, 6556 and 6354 represent a communal event, possibly feasting in commemoration of the dead, which incorporated traditions of everyday dining characteristic of the late Iron Age. Philip Crummy (Crummy *et al.* 2007, 432) offers a similar account of the pottery from Stanway's mortuary enclosure ditches, which have a strong emphasis on jars and wide bowls, compared with the fine tableware profile of the graves the ditches enclose. The grave goods from the A2, Site D, comprising imported or locally-made tablewares, offer a formal style of dining, but access to this was restricted and the wider population had yet to catch up. In the third quarter of the 1st century, the individual table settings were not quite a regular part of ceramic supply; evidence of pottery supply to Springhead and Pepperhill cemetery suggests that North Kent fine ware platters and beakers were not deposited in quantity until after AD 70 (Biddulph 2006a; Seagar Smith *et al.* 2011). This interpretation better fits a very large assemblage of near-complete vessels (including a decorated samian bowl) and an unusually numerous proportion of cordoned fine ware bowls.

Fired clay and ceramic building material *by Dan Stansbie*

Fired clay

A total of 1057 fragments of fired clay, weighing 9363g, was recovered from Roman contexts on Sites L, A, B and D along the road scheme. The condition of the fired clay assemblage is poor, and consists entirely of structural material, probably from broken up oven walls and covers.

Ceramic building material

All of the material was rapidly scanned and assigned to one of five fabrics on the basis of macroscopic examination (details in digital archive report). Of these, fabric A is by far the most common, accounting for over 90% of the assemblage by weight. Objects were assigned to a type where identifiable, for example tile or brick and object thickness (mm) was recorded. Unidentifiable fragments were counted and weighed and recorded as UNID. A breakdown of the quantities by date according to site is given in Table 4.18.

Discussion

The amount of tile from the site is very small. This is probably a reflection of the predominantly early date of the activity with the Roman period. On Site D, where the largest Roman enclosure was found, only the northern periphery of the site was examined, and only the end of one possible building was found within this. A similarly peripheral part of the enclosure was revealed in the HS1 excavations, and again the quantity of tile was limited. The limited quantity of tile does not, therefore, necessarily provide an accurate reflection of the volume of Roman ceramic building material on this site.

Table 4.18: Quantification of Roman CBM by Area

Area	Spot Date Data	LIA-ER	ER	ER-MR	LR	RO	Grand Total
A	Sum of Count				1		1
	Sum of Weight(g)				227		227
B	Sum of Count		2			2	4
	Sum of Weight(g)		15			45	60
D	Sum of Count		5	1		6	12
	Sum of Weight(g)		173	134		223	530
L	Sum of Count	3				2	5
	Sum of Weight(g)	687				1	688
Total Sum of Count		3	7	1	1	10	22
Total Sum of Weight(g)		687	188	134	227	269	1505

Table 4.19: Coins in site and context number sequence

SF	Context	Site	Date	Denomination	Obverse	Reverse	Reference	Wear	Comment
201	2061	A2 PC06	190-191	as	bearded head, r, probably Commodus	Minerva advancing r looking l	RIC III, Commodus 592?	W/W	eroded, particularly at edges
1593	6730	A2 PC06	260-296	antoninianus	]ANUS PF AUG	FELIC[ITAS AUG		W/SW	extensive edge damage. ?Regular. From burial
926	9043	A2 PC06	3-4C?	fragment				C/C	largely eroded, pierced
-	4000	A2 PC06	3-4C	'AE3'	head r?	figure standing?		EW/EW	surfaces eroded. Metal-detector find
'379'	E63490 N71473	A2 BC03	69-79?	as	head r, ?Vespasian	worn flat		VW/EW	obverse legend illegible
'413'	E63441 N71495	A2 BC03	138-161	as	ANTONINUS [AUG PIUS] PP T[RP COS…..	figure standing left		VW/VW	
'379'	E63489 N71472	A2 BC03	161-180?	as	]NTON[?Marcus Aurelius	standing figure?		VW/EW	
'86'	E64040 N71367	A2 BC03	1-2C	sestertius	head r	standing figure		EW/EW	corroded

Despite this it is interesting that some fragments of tile were recovered from the northern boundary ditches of the Site D enclosure, since these were apparently being infilled during the last quarter of the 1st century AD, and probably before AD 80. The presence of Roman tile in early Roman features on Site B is also surprising. The incorporation of Roman tile in these contexts possibly implies that there may have been an early building with a tiled roof on Site D, and that leftover material from its construction was finding its way into the enclosure ditches, and onto the lower-status adjacent settlement. Tile is also found in other structures such as corndriers, but if the tile was used in the construction of a corndrier, this would also be a very early example of such a structure in Britain. Alternatively, this material may have been derived from contemporary activity at Springhead nearby (Andrews *et al.* 2011), or have been acquired from passing traffic along Watling Street.

Roman coins *by Paul Booth*

Four Roman coins were recovered during fieldwalking/metal detecting prior to the excavation, and a further four were recovered during the excavation phase of the project (Table 4.19). One of the latter was another unstratified metal-detector find and one came from burial 6730 in the Site D cemetery group. This was a later 3rd century piece, probably included as a grave good, but insufficient of the obverse legend survived to allow close identification.

The other two coins from excavated contexts were an issue (fairly certainly) of Commodus, and an unidentifiable late Roman fragment. The pre-excavation fieldwalking/metaldetecting collection coins were all in poor condition and all of 1st-2nd century date. Two of these (labelled 379), asses perhaps of Vespasian and Marcus Aurelius, were found in close proximity.

The significance of such low levels of coin loss is difficult to assess, but suggests minimal use of coinage within occupation areas. This is characteristic of such rural settlement areas when occupation is confined to the early Roman period. The excavation of the southern end of the Site D settlement during the HS1 works showed a similarly small number of Roman coins (Askew 2006). More certainly, the absence of late Roman coinage indicates a lack of settlement features of this period. It contrasts with areas even of low-level activity, such as that encountered at the Hazells Road diversion (HRD99) in the HS1 Section 1 work immediately south of the west end of the present project area, where twenty eight 4th century coins were recovered (Booth 2006b).

Metalwork from contexts other than high status graves *by Ian R Scott*

The following report deals with metal finds other than those from the high status burials 6260, 6635 and 6645, which are described earlier in this chapter. Overall the metalwork assemblage comprises 2347 fragments, but more than half (n = 1296) of these are small unidentified pieces many of which were recovered through the sieving of soil samples. These small fragments are not considered in detail, although any concentrations of such fragments in any context are noted. The remaining fragments number 1051 and represent some 831 objects.

The material from each excavation Area is treated separately in the following report. The Areas producing the most metalwork are L (n = 516), which produced the overwhelming bulk

of the material, C (n = 131), D (n = 87), B (n = 39) and A (n = 18). Tables providing complete listings of all fragments can be found in the digital archive report.

Distribution of metalwork by site

Site L

Site L was dominated by a large boundary ditch 13161 aligned NW-SE, which dates from the middle Iron Age to the late Roman period. On the east side of the south-east terminus of the large ditch was a small later Roman cemetery. There is little evidence for Roman domestic occupation.

The metalwork assemblage from Area L is the largest in numerical terms (n = 516), but the number of objects is deceptive, because the largest part of the assemblage is made up of hobnails (n = 437), which derive largely from graves 12654 (n = 64) and 12662 (n = 204), pit 12672 (n = 145) and ditch 12680 (n = 20).

The majority of the identifiable finds (n = 317), comprising mainly hobnails and nails, come from graves. This is 61.3% of all identifiable objects. A further 145 hobnails were from pit 12672, and 20 hobnails and a decorated copper-alloy ring (Fig. 4.69 sf. 1299, cat. no. 1) came from 12680, the terminal of ditch 13161. Together with the hobnails and other objects from the graves these finds comprise 93.4% of all identified objects.

The heavy decorated ring from ditch 12680 (Fig. 4.69, cat. no. 1) is the only personal item apart from the hobnails. Amongst the hobnails from pit 12672 are a number of very well-preserved examples, which appear to be unworn and unused (cat. no. 2).

Evidence for nailed shoes was found in two graves. In grave 12662 there were two skeletons, the earlier skeleton (12671) had two nailed shoes (sfs 1295 and 1296) associated with it. The nail pattern was not preserved, but the number of hobnails, 50+ and 23+ for sfs 1295 and 1296 respectively, plus another 20 loose hobnails, suggests that these were heavily nailed shoes. The shoes were at the foot of the grave and the nails were found around the skeleton's feet suggesting the shoes had been on the feet of the corpse (Fig. 4.67). The upper skeleton 12643 also had two shoes (sfs 1293 & 1294). The shape of the soles of the shoes was quite well-preserved, and showed the nailing around the edge and the patterning on the sole of the shoes quite well. The large number of nails recovered, 71 and 40+ respectively, suggests that these shoes may have been more heavily nailed than the recorded pattern would suggest. The shoes appear to have been placed in the grave or coffin by the knees of the deceased and clearly were not worn by the corpse (see Fig. 4.57).

The third pair of shoes (sfs 1291) was found with skeleton 12656 in grave 12654 (see Fig. 4.56). One shoe appears to have been on its side and the pattern has not survived, but the nailed sole of the second shoe was laid flat beneath the first. The nailing pattern was well-preserved, although the heel was missing. The preserved pattern shows a heavily nailed sole with nails in converging lines. The position of the shoes, away from the feet of the skeleton up against the side of the grave, suggests that they had been placed in the grave and were not worn by the corpse. The pattern is comparable to a shoe from Billingsgate Buildings, London (Rhodes, 1980, 112, fig 59: 591). The latter example is unstratified, but most of the shoes from the site date from the late 1st to mid to late 2nd century.

The composition of the assemblage reflects the nature of the archaeological deposits. There are no domestic, transport or household items of Roman date. Aside from the hobnails the largest category of finds was nails (n = 60) most of which are from grave fills (n = 51) and are mostly if not exclusively coffin nails.

The metal finds are limited in the range of types, reflecting the fact that many are derived from graves and associated ditches. The limited range of metal types suggests that there was no domestic occupation or craft activity of Roman date in the close vicinity.

Catalogue

1 **Heavy decorated ring** (Fig. 4.69) with four grooves around circumference defining three simple parallel bands. One portion of the band is plain with the grooves stopping at its edge. There is wear on the inside of the that suggests that the ring may have been used as a link or function for strapping or roping. Highly polished. Date uncertain, possibly RB. Cu alloy. D: 23x24mm. Area L context 12682, ditch 12680, sf 1299.

2 **Hobnails**, 25 hobnails including s number of very well-preserved, unworn and apparently unused hobnails. FE Area L context 12673, pit 12672

Area A

Area A is similar in many respects to Area L. There is a boundary ditch on the same alignment as the ditch in Area L and a scatter of pits and linear features. The boundary was probably dug in the late Iron Age, although the only dated material recovered was Roman in date. Other features that contained metal finds of possible Roman date included a deep square pit 3337 and a large sub-rectangular pit (3349). In total there are only 18 metal finds from Site A.

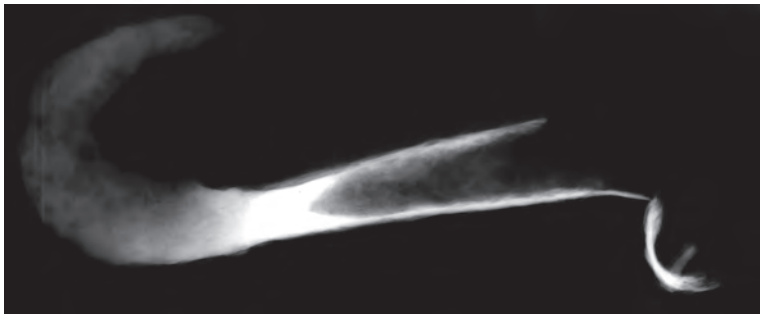
The deep square pit 3337 produced a two-piece Colchester brooch (cat. no. 3), a possible small knife blade, a small fragment of iron plate, two nails and some 20 small fragments or crumbs of iron. Pottery from this feature was however Saxo-Norman, so the brooch is clearly residual. The sub-rectangular pit 3349 contained a reaping hook (cat. no. 4), a plain iron ring and a nail stem fragment. Unfortunately there is no independent dating evidence, and reaping hooks such as this are used from the Iron Age to the post-medieval periods.

1

sf 1299

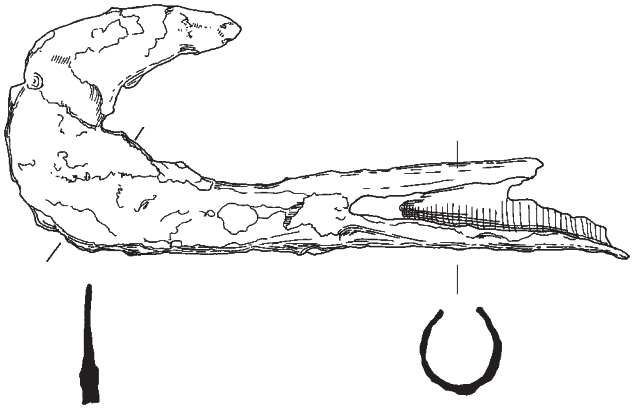
3

sf 311



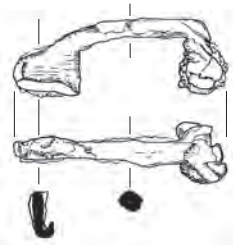
0 100 mm

1:2



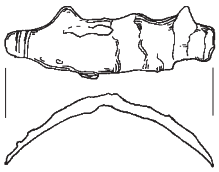
4

sf 312



7

sf 1934



8

sf 1436

10

sf 1937

9

sf 1933

Catalogue

3 **Two-piece Colchester brooch** (Fig. 4.69). A small brooch, with plain wings and a simple line down the back. The spring and pin are missing, otherwise well-preserved. L: 37mm; W: 18mm. Area A, context 3338, pit 3337, sf 311. Dated to the mid 1st century AD.
4 **Socketed reaping hook** (Fig. 4.69). The socket is open and damaged at the mouth end, as if the handle and blade had been wrenched apart. Fe. L: 185mm; W: 67mm. Area A, context 3352, pit 3349, sf 312.

Area B

Area B crossed an Iron Age and early Roman settlement, comprising a series of ditched enclosures either side of a metalled trackway. This clearly continued south and was also excavated on the line of the HS1 (ARC WNB 97 Area C: URS 2001a/b, 13–5, figs 3a & 10). The finds from the HS1 site include a one-piece Colchester Brooch, a simple iron sprung brooch, an early to mid 1st-century 'Aucissa' brooch (Askew 2006, 27, 29, fig. 13 <14>, <22> & <23>), and a stud and part of a lock mechanism (not illustrated).

There are only 39 metal finds from Area B. The absence of more than a small number of nails (n = 9) is worthy of mention; sites with Roman occupation usually produce good numbers of nails as in the case of Sites C, D and L.

Other than a Langton Down brooch, which could be late Iron Age or early Roman, and is reported upon in Chapter 3, the only other personal item was a single hobnail (context 4533). Three clamps or dogs were found, one in ditch fill 3467 of the trackway ditch 8101, and two in rectangular pit 4023. An iron collar and a small copper-alloy nail were also recovered from fill 4594 of pit 4591, together with a fragment of probably Roman brick. The pit contained only middle Iron Age pottery, but the metal finds are likely to be intrusive and of later, probably Roman date.

Area C

This included the edge of the Iron Age and early Roman settlement to the west in Site B. Personal items include two brooches and part of a snake's head bracelet (cat. no. 6). Both brooches are types that date to the 1st century AD, and the simple one piece brooch is catalogued in the late Iron Age (see Chapter 3). The Hod Hill brooch (cat. no. 5), however, is certainly post-conquest. Other personal items include two hobnails (contexts 5947 and 7441).

Catalogue (not illustrated)

5 **Hod Hill brooch** fragment, comprising part of eroded bow. Cu alloy. L: 28mm. Area C, context 5114, layer, sf 1384
6 Possible **Snake's head bracelet** terminal. Cu alloy. L: 13mm. context 5114, layer, sf 1384

Area D

Area D explored part of Roman settlement comprising a sequence of rectilinear enclosures. Part of the same settlement was explored during work on the HS1 (ARC WNB 98 Area C: URS 2001a/b, 15–7, figs 3b, 15 & 16). The HS1 work revealed some limited evidence for domestic occupation, including pits, and an oven but also burials. The finds from the HS1 work include a couple of two-piece Colchester B brooches of 1st-century date (Askew, 2006, 32–3, fig. 17 <24> & <25>).

The recent fieldwork revealed part of a complex of large enclosures, with a small enclosure containing a small cemetery attached to its north-west corner. The largest and most complex high status burial, grave 6260, lay on its own within the north-east part of the large enclosure complex. Within the smaller attached cemetery enclosure there were two further high status Roman burials (6635 and 6645). All of these, and the finds from them, are reported upon separately above. The remaining burials, and the finds from the enclosures, are dealt with here, and are quite limited.

One of the inhumation burials (Grave 6728) had the preserved pattern of two nailed shoes (see Fig. 4.41). The shoes overlapped, and were placed at the narrower end of the grave suggesting that they were by the feet even if not worn by the corpse. The pattern was well-preserved, with the outer nailed margins and patterning on the sole clearly showing. The pattern is comparable, although not precisely similar to the pattern on a mid to late 2nd-century shoe from Carlisle (Padley, 1991, 231, fig. 210: 887).

In addition to the preserved hobnails in grave 6728, this site produce 87 metal finds, which include 57 nails. There are no tools and items relating to transport or trade. There are four personal items, all brooches (cat. nos 7–10). Three of the brooches (cat. nos 7–9) are types dated to the 1st century AD, but the fourth brooch (cat. no. 10) is an early Crossbow brooch dating to the early 3rd century AD.

Structural items comprise two iron collars (context 6115). The range of types of metal find is very limited and provides little evidence for domestic occupation of any date.

Catalogue

7 **Simple one piece brooch** (Fig. 4.69), the so-called 'Nauheim derivative', with internal chord, and plain bow and catch plate. Fe. L: 55mm. Area D, context 6574, pit 6571, sf 1934. Dated to the mid-late 1st C AD.
8 Possible **Hod Hill brooch** with curved moulded bow, with some surviving traces of moulded decoration. Very eroded. Cu alloy. L: 28mm. Area D, context 6576, pit 6571, sf 1436. Dated to the 1st C AD.
9 **Two-piece Colchester brooch** (Fig. 4.69), with spring with external chord. Cu alloy. L: 39mm; W: 19mm. Area D, context 6000, topsoil, sf 1933. Dated to the mid 1st C AD.

Fig. 4.69 (facing page) Roman metalwork from settlement features

Table 4.20: Summary of Roman brooches from A2 and HS1 excavations

Brooch type	*Date*	*Settlement*		
		(Sites A B C) [1]	*Site D (Tollgate) settlement* [2]	*Total*
Langton Down	early 1st century AD	1 (0)	-	1 (0) = 1
'Aucissa'	early to mid 1st century AD	0 (1)	-	0 (1) = 1
1-piece Colchester	early to mid 1st century AD	0 (1)	-	0 (1) = 1
2-piece Colchester	mid 1st century AD	1 (0)	1 (2)	2 (2) = 4
Simple one-piece sprung ('Nauheim derivative')	mid to late 1st century AD	1 (1)	1 (0)	2 (1) = 3
Hod Hill	mid to late 1st century AD	1 (0)	1 (0)	2 (0) = 2
Early Crossbow	3rd century AD	-	1 (0)	1 (0) = 1
Total		4 + (3) = 7	4 + (2) = 6	8 (5) = 16

Note 1: Includes 3 brooches from HS1 excavations ARC WNB 98 (Askew 2006, 50 & fig 13: <14>, <22> & <23>)
Note 2: Includes 2 brooches from HS1 excavations ARC WND 98 (Askew 2006, 50 & fig 18: <24> & <25>)

10 **Early Crossbow brooch** (Fig. 4.69), complete, with hinged iron pin. Cu alloy. L: 52mm; W: 28mm. Area D, context 6406, ditch 6405, sf 1937. Early 3rd C AD.

Discussion

With the exception of the assemblages from the high status graves, there are only a few items of intrinsic interest, and these, the linch pin and the gouge, are both Iron Age (see Chapter 3).

The brooches from Sites A, B and C should all be considered together as deriving from the one Iron Age and early Roman settlement, but even so only comprise one Langton Down type (early 1st century AD), a simple sprung brooch (the so-called 'Nauheim derivative') (mid to late 1st century AD), one Hod Hill type (mid to late 1st century) and one two-piece Colchester type (mid 1st century AD) (Table 4.20). The last three, all common types, are also represented by individual examples on Site D.

This is still a very small group, but once the brooches from the high status graves have been added it can be compared with the assemblages from other contemporary sites in the area and the region as a whole. The brooches are all 1st-century types with the exception of the early Crossbow brooch, which dates to the early 3rd century AD. Nonetheless the evidence of the brooches suggests that the settlement centred on Sites A, B and C was first occupied slightly earlier in date than the settlement centred on Site D.

Iron slag and related high temperature debris
by Lynne Keys

A tiny assemblage of Roman material was examined for this report, and most of the slag was undiagnostic, ie could not be assigned to either smelting or smithing, either because of its morphology or because it had been broken up during deposition, re-deposition or excavation. Other types of debris in the assemblage may be the result of a variety of high temperature activities—including domestic fires—and cannot be taken on their own to indicate iron-working was taking place. These include fired clay, vitrified hearth lining, cinder and fuel ash slag, all of which may be produced by domestic fires.

Worked stone objects *by Ruth Shaffrey*

A total of five early Roman contexts produced worked stone. Lava quern fragments were recovered from two ditch fills on Site D (6392) and Site L (12785), each context is classified as a single record due to the fragmentary nature of the lava. A possible quern fragment from pit 4023 layer 4021 in Site B is made of a purple ferruginous conglomerate (puddingstone) which may be from the Woolwich beds of the nearby Swanscombe outlier (Dewey *et al.* 1924) although an actual source has not been pinpointed. It was used elsewhere in the region for querns and was recorded in large numbers at Springhead Roman town (Shaffrey 2011a).

A large fragment of Millstone Grit was recovered from the final fill of pit 4962 (4968) on Site B (sf 454). This looks as if it belongs to a rotary quern, although no edges survive and the surfaces are encrusted so it is not possible to examine wear patterns. Pit 4962 cut a late Iron Age ditch and a pit, but itself contained no pottery sherds in clearly Romanised forms or fabrics, indicating a date of deposit during the 1st century AD, either late Iron Age or early Roman, but probably before AD 70. This may make it the earliest known finding of Millstone Grit in Kent. A recent survey uncovered no querns of this lithology from pre-Roman contexts (Roe 2008); the majority date to the late 1st/early 2nd century AD onwards.

A single flat circular perforated disc was recovered from the early Roman enclosure ditch on Site D (fill 6350, sf 1532, Fig. 4.70). Comparable discs recovered from mid–late Iron Age pits at Balksbury were identified as spindle whorls, however, their central perforations are too wide at

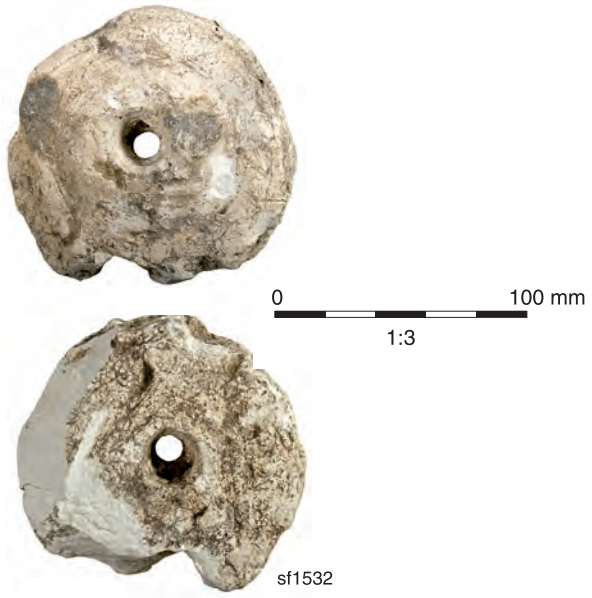


Fig. 4.70 Stone roughout for loomweight sf 1532

16 and 28mm diameter, and the measurements provided indicate they would have been excessively heavy to have functioned thus (Buckley 1995, 48–9). Their circular shape is reminiscent of clay loomweights, which were in use from the 5th century AD. Although Walton Rogers makes no mention of stone loom weights in her comprehensive guide to cloth manufacture (2007, 30), the disc falls well within the most common weight range of 150 to 550g (ibid., 31) and seems most likely to have been a loomweight.

Worked bone *by Ian R Scott*

The quantity of Roman worked bone is extremely limited. There are two bone dice from grave 6260, which have already been dealt with as part of the grave group. The only other bone object was a sheep metacarpal (90mm length) cut at one end. This came from pit 6349 on Site D, which contained material of early Roman date.

ROMAN OSTEOLOGICAL AND ENVIRONMENTAL EVIDENCE

Human remains *by Mark Gibson, Ceridwen Boston, Sharon Clough and Nicholas Marquez-Grant*

Human remains dating to the Roman period were recovered from three areas on the A2 road scheme. On Site D a single early Roman high status cremation (6260) accompanied by a wide range of exotic metalwork and pottery grave goods was found within the large Roman enclosure, and an attached burial enclosure contained a further six early Roman cremation deposits (two of these also being high status), plus two early Roman and one late Roman inhumations. An isolated and unaccompanied cremation was also found to the north.

Table 4.21: Summary of cremated human bone assemblage

Cremation burial	*MNI*	*Age*	*Sex*
6079	1	Adult?	?
6095	1	Unknown	?
6260	1	Adolescent/Adult	?
6635	1	Adult?	?
6645	1	Adult	?F
6725	1	Older adult?	?F

On Site L a further seven inhumations were found alongside a major boundary ditch, and one late Roman inhumation was cut into the top of the ditch. A very late Roman cremation deposit with teeth from at least two individuals was also cut into the ditch fill. Disarticulated human bone was retrieved from two upper fills of a Roman ditch on Site L.

The above remains were osteologically analysed and the results presented below. Radiocarbon dating was undertaken on eight burials (see Radiocarbon dating report below for full details).

Cremation burials

Roman cremated remains in Site D

Six Roman cremation burials were recovered from Site D (Table 4.21). Five of these (6079, 6095, 6635, 6645 and 6725) were located within sub-rectangular ditch (6299), which enclosed both early Roman cremation and inhumation burials and one late Roman inhumation. The sixth and largest cremation burial (6260) lay to the south- east in a separate enclosure, and was the largest and most elaborate of the group.

Cremation burials 6635, 6645 and 6260 were clearly of much higher status than the four other cremations, being placed within distinct square pits, and accompanied by a range of pottery, bone and metallic grave goods (see description above). Burial 6260 was clearly the largest and richest of the group containing by far the most impressive grave goods and being in a pit several times the size of the other two.

Due to the way that the cremated bone of grave groups 6635, 6645 and 6260 was excavated and sampled in the field and partly block lifted and excavated in the lab (see methodology alongside burial descriptions above) they are herein referred to by their group numbers.

Weight and skeletal part representation

The deposits ranged in weight from 12g to 1069g (Table 4.22), and only one of these contexts (6725) can be seen to represent the total skeletal remains of the individual. Deposit 6095 was very small and

Table 4.22: Summary of weights for each of the human cremated bone deposits

	Context number							Total
	6010	*6079*	*6095*	*6260*	*6635*	*6645*	*6725*	
Skull	1.2 0.3%	0.6 0.4%	0	7.7 2.1%	31.7 18.2%	54.4 8.9%	55.3 5.2%	149.7 5.4%
Axial	0	0	0	0.3 0.08%	8.9 5.11%	5.2 0.85%	16 1.5%	30.4 1.1%
Upper limbs	0.7 0.17%	0	0	17.3 4.8%	0.4 0.2%	2.9 0.5%	8 0.8%	28.6 1.1%
Lower limbs	0.1 0.02%	4.7 3.1%	0	0.6 0.2%	6.7 3.8%	21.3 3.5%	90.8 8.5%	124.1 4.5%
Long bone (unidentified)	33.1 8.2%	39.6 26.2%	0.7 5.9%	144.9 40.2%	23.9 13.7%	128.1 20.9%	231.2 21.6%	568.4 21.6%
Unidentified	367.6 91.3%	106 70.2%	11.3 93.3%	189.8 52.6%	102.5 58.9%	401.9 65.5%	667.7 62.5	1479.2 66.4%
TOTAL (g)	402.7	150.9	12	360.6	174.1	613.8	1069	2783.1

may only represent redeposited cremated remains or a very small 'token' burial. The bone of the more simple cremation burial 6725 was very well preserved, being contained within an urn with a samian dish placed on the top as a lid.

Unidentified and long bone shaft fragments were by far the most common, but apart from that there was no pattern in the frequency of the skeletal part representation. In general, skull bones are under represented. In 6260, only a few vault fragments and a mandibular fragment were recovered. Even in deposits 6645 and 6725, where most bones of the cranial vault were represented along with the petrous portion of the temporal bone and some mandible/maxilla fragments, the weight of the skull bones was low. Skull bones should make up 18.2% of a cremation (McKinley 2000b) making the expected weight of skull fragments in 6645 111.7g and in 6725 194.6g.

Vertebrae and ribs were also poorly represented. Most remains were vertebral pedicles and bodies and shafts of ribs. A sternal fragment was identified in cremation 6725. All the major long bones in the skeleton were clearly identified. Most epiphyses were missing but one radial head (6635) was present. Hand bones were identified in a number of deposits. Two metacarpal shafts were identified in 6725. Portions of proximal and intermediate hand phalanges (shaft and head portions) were also found in deposits 6645 and 6725. Amongst the foot bones, metatarsal shafts were present in 6635, 6645 and 6725, and a partial cuboid in 6635. The shoulder was very poorly represented with only one body portion of the scapula identified (6725). The body of the ilium which included an anterior iliac spine fragment and a portion of ilium which included the apex of the sciatic notch, were present, but unfortunately, too incomplete to provide a sex estimation.

Minimum number of individuals, sex and age determination

None of the deposits included the remains of more than one individual. The assemblage comprised two probable adults (6079 and 6635), based on the adult dimensions of the skull and long bones fragments. Unfortunately, no epiphyseal fusion lines and no third molars were available to confirm the adult age (>18 years) of those individuals. Deposit 6645 contained a fully formed root of a third molar indicating that it was adult at its time of death. The individual in burial 6260 was an older adolescent or adult, based on the general bone size and the fusion of the pelvis fragments observed during its excavation. Unfortunately, the bone had fragmented considerably during excavation and processing and could not be identified in the final analysis. Only deposit 6095 could not be aged. The individual from 6725 was, however, likely to be an older adult as slight marginal osteophytes were observed on a vertebral body fragment.

Sex was identified in two burials (6645 and 6725), both being probable females. In burial 6725, this was based upon the sharp orbital margin, and in 6645 on the non-prominent supra-orbital ridge and small mastoid process observed by the on-site osteologist during excavation.

Palaeopathology

Slight marginal osteophytes were found on a vertebral body fragment of deposit 6725, suggesting slight degenerative joint changes to the vertebra.

Fragmentation

Three of the four of the cremation burials (6260, 6635, 6645 and 6725) were at least partially block lifted and excavated in spits in the laboratory. Measurements of bone fragments were taken before and after this excavation. Burials 6260, 6635 and 6645 underwent considerable additional fragmentation during the excavation and washing processing (maximum fragment size was reduced from 101mm to 46mm in burial 6260, for example), however very little additional fragmentation occurred in urned cremation burial 6725. The larger fragment size of this deposit was largely due to the samian dish 'lid' that had been placed over the mouth of the cinerary urn, which protected the cremated bone from the weight of the deposit above. The relatively clean nature of the bone required little post-excavation washing and hence, experienced less fragmentation.

Table 4.23: Percentage of bone fragments larger than 10mm, between 10–5mm and smaller than 5mm

	Context number						
	6010	*6079*	*6095*	*6260*	*6635*	*6645*	*6725*
>10mm	30.7g 7.6 %	138g 9.1 %	2.3g 19.1 %	169.1g 46.9 %	83.5g 48 %	155.9g 25.4 %	440.3g 41.2 %
10–5mm	107.6g 26.7 %	87.8g 58.2 %	3.8g 31.7 %	150.4g 41.7 %	57.8g 33.2 %	296.1g 48.2 %	351.3g 32.9 %
<5mm	264.4g 65.7 %	49.3g 32.7 %	5.9g 49.2 %	41.1g 11.4 %	32.8g 18.8 %	161.8g 26.4 %	277.4g 25.9 %
TOTAL (g)	402.7	150.9	12	360.6	174.1	613.8	1069

Following processing, there was no pattern in the frequency of fragment sizes within this group. In three cremation deposits the largest proportion of bone fragments was greater that 10mm, whilst the remaining four cremations are split equally between the 10–5mm and < 5mm categories (Table 4.23).

Bone fragments from all contexts displayed the typical transverse and longitudinal checking and splitting seen in the cremation of 'green' bone (Reverte 1986; Ubelaker 1989). In deposit 6725, bone fragments displayed a degree of warping, another indicator that the bone was fleshed when burnt (ibid.).

Colour

In most deposits, the cremated bone was predominantly white, with hues of blue- grey amounting to less than 1% of the total deposit. In deposit 6095, it was much higher comprising 30%, however, in both cases there was no pattern to the skeletal distribution of the grey bone. There were no fragments of darker colour. Thus, it would appear that oxidisation of the bone had been largely achieved.

The exception to this pattern was burial 6635, in which calcined bone comprised only 30% of the deposit, 25% being blue-grey bone, 20% black and 25% unburned bone. There was a definite distribution pattern of the burning across the skeleton, much of the unburned bone was trabecular bone of the vertebrae and feet, whilst white bone was from the upper and lower limbs. Blue-grey and black bone was spread throughout the skeleton. The cranial fragments exhibited varying levels of oxidation. The extent of oxidation on a single fragment also varied considerably. For example, fragments of trabecular bone of the sacrum and a lower lumbar vertebra had small patches of white cortical bone, whilst the rest was unburned, or with small areas of grey or black bone.

Discussion

Bone weights in the Roman cremation deposits on Site D were low, with the exception of the largest deposit 6725 (weighing 1069g), which lay just within the lower weight range (1000g) observed in modern cremated skeletons (McKinley 2000a, 269). Predictably, individuals of smaller and more gracile build, or those older individuals with osteoporosis will have a lower bone weight and possibly poorer bone survival (McKinley 2000b, 404). Some destruction of bone may be attributed to the acidic soil substrate, but mechanical truncation was not a significant factor in the richer burials, being limited to minor bioturbation from worms and roots. Deposits 6079 and 6095 were, however, truncated. It would appear, therefore, that the low weight of the undisturbed cremation burials reflected retrieval of only a token of bone from the funeral pyre for burial, probably because collection of the remains of the entire skeleton was not deemed significant to the mourners.

The six deposits fell into three different categories: two urned burials (6079 and 6725), three unurned burials (6260, 6635 and (6645) and one redeposited pyre debris or cremation-related deposit (6095). The three high status cremation burials (6260, 6635 and 6645) constituted unurned burials possibly contained within an organic container (such as a leather or textile bag or pouch, or a wooden box), based on the high concentration of human bone within discrete areas of the backfill (McKinley 1997).

Overall, early Roman cremation appeared very thorough, with the high proportion of calcined bone indicating sustained pyre temperatures of at least 700ºC (Holden *et al.* 1995). The only exception to this was deposit 6635 where cremation had been less successful at fully oxidising the remains. Bone colour indicated that the individual had been laid supine on the pyre, possibly with the feet and possibly part of the head over the edges of the pyre. The large amount of surviving partly burnt trabecular bone of vertebral bodies suggested that the cremation was not sustained to burn away the larger mass of soft tissue overlying the torso. Fuel, oxygen and time are required to complete cremation, and may be influenced by the availability and cost of fuel, the weather conditions at the time, pyre construction, and the competence of those tending the pyre.

At nearby Pepperhill cemetery, it was noted that the proportion of burials containing 'coloured bone' was lower than the Cumbrian assemblage of Brougham (associated with a military fort), but higher than the London Western cemetery (Biddulph 2006a; McKinley 2004). It was suggested that availability of fuel probably played a significant role in the differences observed between these assemblages, not least because the expense of conveying timber to London probably substantially

increased the cost of cremation. In rural Kent in the early Roman period, this factor was probably less significant. The association with efficient cremation and affluence has been made elsewhere, and was consistent with other indicators of high status seen in the Site D burials.

Roman cremated remains in Site L

A small deposit of cremated human bone was recovered from fill 12673 of a large pit (12672) that cut the fills of the terminus of a major boundary ditch (13161) on Site L (see Figs 4.54 and 4.55). The ditch also contained three inhumation burials, one of which (13214) cut through all but the latest ditch fill. The ditch formed the western limit of a Roman burial ground of nine inhumations, most of them lying parallel to the ditch.

The cremated bone was fairly evenly distributed throughout pit fill 12673, which was dark brown-black in colour, probably due to the charcoal it contained. Small iron nails (possibly hobnails), burnt flint, unburnt and burnt animal bone were also recovered from the deposit. The human bone deposit included small bones and possibly contained the remains of more than one individual. These features are consistent with McKinley's (1997) interpretation of a small dump of redeposited pyre debris.

Radiocarbon dating undertaken on the bone from 12673 confirmed a late Roman date, cal AD 329–435 (NZA 30146; 91.6% confidence), probably a little later than inhumation burial 13214 (skeleton 12778), which was dated cal AD 230–390 (NZA 30147; 95% confidence). The late Roman period is characterised by inhumation burial, either in small rural 'family' burial grounds, or in large managed cemeteries associated with towns (Taylor 2001), and cremation in this period is relatively rare. Examples are known from Boscombe Down, Wilts (Wessex Archaeology pers. comm.), Lankhills, Winchester, Hants (Booth *et al.* 2010), whilst at Pepperhill eight out of 211 cremation deposits dated to the mid to late Roman period (Biddulph 2006a), as did one unurned cremation with redeposited pyre debris at Beechbrook Wood, Westwell, Kent (McKinley 2006).

Weight and skeletal part representation

Pit fill 12673 contained 752g of cremated human bone. Due to the small fragment size, 91% could not be identified. Skull and tooth root fragments were more frequently identified (3.3%), then the upper limbs (1.7%) and lower limbs and axial skeleton (0.4%). Forty-five tooth roots, a number of finger phalanges, and a tiny sesamoid bone were also recovered. There was a noticeable dearth of large bone fragments of long bones and vertebrae. This was not the expected proportion of bone elements of a single skeleton. The presence of very small bones strengthens the interpretation that deposit 12673 was redeposited pyre debris, whilst the large number of tooth roots makes it probable that more than one individual was represented. All identified fragments were adult.

Colour

The cremated bone from fill 12673 varied in colour with more than 60% white, but fragments of brown, black and grey were also observed, indicating incomplete cremation.

Fragmentation

The largest fragment size of cremated bone was 42mm x 20mm, and the average size was 12 x 12mm. The majority of fragments (83.2%) were in the >10mm fraction, followed by 16.8% in the 10–4mm fraction.

The high degree of fragmentation and the presence of so many small bones, such as phalanges and sesamoids, are consistent with an interpretation of pyre debris- that the smaller fragments had been overlooked when collecting bone from the burnt out pyre.

Animal bone and pyre goods

A total of 88g of unburned animal bone was recovered from the deposit, including a cremated bird bone fragment. Cremated animal bone is frequently found in Roman cremation deposits, and represents remnants of graveside feasting and/or offerings placed upon the pyre. Historical sources most commonly associated domestic fowl (chicken) and pig (Lindsay 1998) with Roman funerary rituals, and this is also attested archaeologically at St Stephens, St Albans, the Eastern cemetery, London (McKinley 2000c, 73), and nearby Pepperhill (Biddulph 2006a). At Pepperhill cemetery, burnt animal bone was recovered from 22.4% of cremation burials, of which a fifth included bird bone (ibid.).

Pottery and hobnails were also present within deposit 12673, but it is uncertain if these had undergone firing, and hence, constituted grave or pyre goods. Food and drink for the deceased's journey to the underworld were frequently placed on the funerary pyre and in the grave (Toynbee 1971), whilst hobnails placed on the pyre are not infrequently found within burnt bone deposits in the early and later Roman periods (Philpott 1991).

Inhumation burials

Inhumation burial in Site A

Unburnt human bone was recovered from a soil sample (324) taken from fill 3058 of late Iron Age–early Roman ditch 3057. The bone was very fragmented, but cortical bone was fairly well preserved. Elements represented were the first metacarpal, four phalanges (proximal, intermediate and distal) and a left hamate of a hand, fragments of pelvis (including the acetabulum) and a femoral head. Many small fragments were trabecular bone, possibly of the pelvis. General proportions and complete epiphyseal fusion of the hand phalanges

and metacarpal indicated an adult individual. Due to the absence of sexually diagnostic features, sex could not be estimated.

The presence of multiple small hand bones, and the acetabulum and femoral head, suggested that these bones were part of an articulated individual placed within the terminus of the ditch. Incompleteness may be due to partial excavation of the feature or previous truncation of the rest of the skeleton. Ditch termini are often a favoured location for special deposits in the prehistoric and Roman periods, including the burial of humans or animals. This rite was also observed on Site L (see below).

Inhumation burials in Site D

The three Roman inhumation burials from the cemetery on Site D lay within the same enclosure (6299) that contained the early Roman high status cremation burials 6635 and 6645, and three more modest cremation burials (6079, 6095 and 6725) of similar date (see Fig. 4.22). The three inhumation graves were orientated north-south, the dimensions of which indicated the burials of two adults and a child (6668).

Bone preservation was so poor that the skeletal remains survived only as a sand shadow in grave 6693, and the bone in grave 6668 crumbled on lifting (see Fig. 4.40), whilst the surviving skeleton 6729 in grave 6728 comprised only very degraded skull and tooth fragments (see Fig. 4.41). Although surviving bone 'crumbs' were visible near the pelvis and lower limbs during excavation, these did not survive excavation. The surviving bone was sufficient to suggest that the individual had been laid out supine and extended within the grave, with the head to the south.

A coin dated AD 260–296 had been placed in the mouth, and three ceramic vessels dating to the 3rd–4th centuries had been placed centrally within the grave. Two groups of hobnails were discovered at the foot end of the grave, indicating that the deceased had either worn or been provided with hobnailed boots for the journey to the afterlife—a practice found regularly in late Roman burials. For example, Philpott (1991, 168) calculated that 9.2% of his sample of over 3,000 Roman burials included hobnails, and suggested that the practice was more common in rural contexts.

Placing a coin in the mouth of the deceased is another well recognised burial practice found widely throughout the Roman Empire, believed to be payment to the ferryman Charon to convey the deceased across the River Styx to the underworld (Toynbee 1971, 44). Although found regularly, coins are not particularly common grave goods in Roman burials, and are less common in Kent and the south-east, when compared to central southern England (Philpott 1991, 210).

One of the two destroyed inhumations had been accompanied by ceramic grave goods. This group is interesting in indicating the longevity of burial within the enclosure. Grave goods from the cremation burials indicated a 1st- mid 2nd century date, whilst those from inhumation graves 6668 and 6693 suggested a 2nd century date, making these inhumation graves slightly later. In contrast, numismatic and ceramic dating from grave 6728 indicated much later burial, somewhere in the later third century AD.

Preservation and completeness

The preservation of the bone was very poor (Grade 5+; McKinley 2004). All the bone in graves 6668 and 6693 was totally destroyed, leaving only sand shadows. In grave 6728, a sand shadow of the skull was visible and four tooth crowns survived, including numerous small fragments of tooth enamel (skeleton 6729). This survival was largely due to the presence of a copper-alloy coin placed in the mouth.

Bone destruction may be the result of many factors, such as low soil pH, temperature, oxygen and water content, bacteria and fungi (Boddington *et al.* 1987). The acidic brick earth environment of the site was clearly detrimental to bone preservation. Nearby Pepperhill cemetery lies on similar geology, and here too bone preservation was extremely poor, with bone recovered from only 23% of the graves (Biddulph 2006a).

Age and Sex

Due to the poor condition and incompleteness of the skeletons very little data could be extracted from the surviving remains. Miles' (1962) dental attrition method was implemented on the teeth of skeleton 6729, indicating an age of 16–20 years, although it must be said that dental attrition is one of the least reliable ageing methods, as rates of tooth wear may be influenced by coarseness of the diet, food processing techniques and enamel thickness (Cox and Mays 2000, 87). Under-ageing using dental attrition has been recognised in the late Roman urban populations of Poundbury, Dorset (Farwell and Molleson 1993, 182) and Lankhills, Hants (Booth *et al.* 2010). Thus, the age estimation of skeleton 6729 should be treated with some circumspection.

Sex could not be estimated in skeleton 6729 due to the absence of sexually diagnostic features.

Dental disease

The lower right first and second molars and the lower left first and second premolars survived in skeleton 6729. Caries was absent from all the teeth, but slight calculus was present on the mesial and lingual surfaces of both molars.

Inhumation burials in Site L: mid–late Roman grave group

Nine skeletons were recovered from seven graves that comprised a small inhumation burial ground adjacent to ditch 13161 (see Figs 4.52 and 4.54). Only a few of the burials have been dated; ceramic grave goods from grave 12556 indicate a 2nd century

Roman date, and two successive internments within a single grave (12678 and 12662) were radiocarbon-dated to the late 3rd or 4th century AD. The supine, extended body position of the skeletons, and the interment within discrete sub-rectangular graves, are consistent with normative Roman burial practices, as was the use of coffins and the inclusion of hobnails (Taylor 2001; Philpott 1991).

The graves clearly post-date the digging of the ditch, and appear to have been aligned parallel to it. They were generally shallow and had been excavated into brickearth that overlay chalk bedrock.

Five graves contained iron nails, indicating that the burials had been coffined (12525, 12556, 12638, 12643 and 12656), whilst two more burials (12606 and 12676b) had been too disturbed to ascertain if coffins had originally been present.

Grave goods were largely restricted to hobnailed boots, identified within the graves of male or possible male burials 12643, 12656 and 12671. In the first two, the boots had been placed alongside the legs, whilst 12671 had been buried wearing his boots.

Preservation and completeness

The preservation of the bone for eight of the skeletons was poor. The cortical surface of the bone was eroded, the long bones often lacked epiphyses and very small amounts of spongy bone survived. Tooth enamel was flaky and the roots eroded. The bone was often fragmented and had lost its trabecular interior. Skeleton 12638 was in fair condition, not all the bone surface was eroded, although fragmentation was still considerable in the long bones.

Such erosion or chemical leaching of the bone surface may be due to many factors in the burial environment, such as soil pH, temperature, oxygen and water content. The graves had been cut into acidic brick-earth, which overlay alkaline chalk. The latter was visible in the base of a number of graves but bone preservation within these graves did not appear significantly better. In general, however, bone preservation in Site L was much better than the Site D inhumations (both coffined) that were buried within brick-earth alone. It was markedly less well preserved than the middle Iron Age and late Roman ditch burials in the adjacent ditch 13161, however. This difference may be due to several factors, including differences in the soil characteristics of the ditch fills compared to the grave fills, and to the deleterious effects of the micro-environment of the coffin on bone survival. At Pepperhill cemetery it was noted that there was significantly poorer preservation of coffined to uncoffined Roman burials, and ascribed this difference to the destructive effects of acidic tannins on the bone released during decay of the oak coffins (Biddulph 2006a).

Poor preservation adversely affected skeletal completeness, which predominantly comprised the long bones and skull. Less than 50% of the entire skeleton survived in all instances, with an average of 30% (Table 4.24). The low levels of preservation and completeness limited the osteological potential of the assemblage, in terms of ageing, sexing and the identification of pathology. Few bones were complete enough to take measurements and observe for non-metrical traits.

Table 4.24: Details of skeletons analysed in Site L

OA Skeleton number	*Preservation of bone*	*Completeness of skeleton*	*Age*	*Age category*	*Sex*	*C14 date*	*Observation*	*Skeletal element*	*Sampling method*
Roman grave group (N = 9) Site L Mid-Roman grave group									
SK12525	Poor	15%	40+	Mature adult	?		Coffin burial	Tibia	cut fragment
SK12556	Poor	30%	40+	Mature adult	Female		Coffin burial with 2nd C. ceramics	Tibia	cut fragment
SK12606	Poor	10%	Adult	Adult	?Female			Femur	cut fragment
SK12638	Fair	50%	40+	Mature adult	Male		Coffin burial	Femur	cut fragment
SK12643/12676a	Poor	50%	30-40	Prime adult	?Male		Coffin burial with boots (hobnails) alongside legs	Tibia	cut fragment
SK12645	Poor	20%	25-35	Prime adult	?			Tibia	cut fragment
SK12656	Poor	20%	Adult	Adult	?Male		Coffin burial with boots (hobnails) alongside legs	Femur	cut fragment
SK12671	Poor	50%	45+	Older adult	?Male		Buried wearing boots (hobnails)	Tibia	cut fragment
SK12676b	Poor	10%	1-2 yrs	Infant	?			NOT ANALYSED	
Roman ditch burials (N = 2)									
SK12750	Fair	40%		Neonate				Femur	cut fragment
SK12778	Fair	60%				1741±25		A = Tibia B = Rib	cut fragment fragment

Palaeodemography

Eight skeletons were adult (over 18 years) and one was an infant (1–2 years). There were four males or probable males and two females or probable females, whilst the sex of two adults could not be identified (Table 4.24).

Poor preservation limited the diagnosis of age and sex. For these nine individuals, one or two indicators were used and in two instances the age could not be determined more accurately than adult (12606 and 12645). As there were no other well preserved landmarks, ageing largely was based on Miles' (1962) dental attrition method. The limitations of this method have been discussed above. Four adult skeletons were aged to greater than 40 years, one to 25–35 years and another to 30–40 years. Only one subadult (12676b), a 1–2 year old infant, was found disarticulated in the backfill of a grave containing two adults who had been interred on separate occasions.

The lack of reliable landmarks introduced uncertainty in the diagnosis of sex. Of the eight adults, three probable males, one definite male, one probable female, one definite female were identified. Although there appeared to be more males than females, it is possible that the two unsexed adults were female, thereby redressing the apparent sexual imbalance.

Metrics

There was only one skeleton with sufficient preservation for long bone length to be measured. The femur was used to determine that the 40+ year old male skeleton 12638 was 1.64m (5'4").

Non-metrics

There was insufficient quantity of bones preserved to do prevalence of non-metric traits. However, it was noted that two skeletons had double facet on the calcaneus and one had single facet (of the three observable). Further, skeleton 12671 had an anterior distal facet notch bilaterally on the calcaneus.

Dentition

A total of 56 adult teeth were recovered. The majority were loose, not contained in the socket of the mandible. The poor preservation of the enamel meant that conditions such as dental enamel hypoplasia were unobservable. Caries were observed in two cases, skeletons 12556 and 12643. Skeleton 12556 also had an abscess at the apex of the root for the upper left second premolar and a double rooted left maxillary canine.

Pathology

Two skeletons had observable pathology despite the highly eroded surface of the bone. Skeleton 12525 had osteomyelitis on the lower midshaft right tibia. The surface of the bone displayed extensive periosteal reactive bone on the surface with two drainage sinuses, internally the bone was also reactive and porous. Osteomyelitis is an inflammation of bone and bone marrow caused by pus-producing bacteria. Infection spreads to the marrow space, with the pus often finding escape through sinus drainage holes. The condition can be either acute or chronic. An episode of acute osteomyelitis can often be fatal.

The lower spine (fourth and fifth lumbar vertebrae) of skeleton 12638 displayed evidence for growth of bony spicules or spurs called osteophytes. These result from minute damage around the perimeter of the joint surface. This is known as spondylosis deformans which is a common finding in skeletal populations. In this instance, the fourth lumbar vertebrae on the left inferior articulating process had osteophytes and flattening of the surface area. The fifth lumbar vertebrae had osteophytic growth on the left superior facet with flattening to the surface area. The right superior and inferior articulating facets were flattened and enlarged with a small amount of osteophytic growth. There was no osteophytic growth to the vertebral bodies. Skeleton 12638 also had evidence for osteoarthritis. The right trapezius displayed erosion of the joint surface on the articulating facet for the first metacarpal, which may have been eburnation, but due to bone surface erosion by taphonomic factors it was not possible to determine precisely. There was also no proximal first metatarsal joint surface to examine to confirm diagnosis. Eburnation is just one of several characteristics of osteoarthiritis, two or more are required for complete diagnosis. It is therefore only possible to observe that this may have been osteoarthritis.

Inhumation burials in Site L: Roman burials in boundary ditch 13161

The grave of extended supine inhumation (skeleton 12778 in grave group 13214) had been dug into the secondary fills of the terminus of ditch (13161), which formed the western limit to the inhumation burial group discussed above. The ditch also contained middle Iron Age inhumation burial 12986 (see Chapter 3), Iron Age or Roman neonate 12750 and a spread of late Roman redepositied pyre debris (12673), which filled a pit overlying the grave (see cremations above). Radiocarbon dating of skeleton 12778 indicated a late Roman date (cal AD 230–390; NZA 30147). The skeleton was orientated broadly north-south along the long axis of the ditch, and had been laid out supine and extended within the grave, in a manner consistent with normative burial practices of this period (Taylor 2001; Philpott 1991). Isolated burials placed within or cut into boundary ditches are a well recognised phenomenon in southern England in this period (Esmonde Cleary 2001), although numbers from Kent appear small (Mays and Anderson 1995, 376). This burial however was clearly part of the group just east of the ditch.

The ditch also contained supine neonate 12750, which lay within a shallow pit cut into secondary ditch fills. The burial was located close to middle

Iron Age skeleton 12986, but higher up in the ditch sequence. Bone from this burial was not submitted for radiocarbon dating, however. Burial of unaccompanied neonates in non-grave contexts within or beyond settlements was common throughout the Iron Age and Roman periods. For example, 12 contexts within the nearby settlement of Roman Springhead contained foetal or neonate bones (Boyle and Early 1998).

Preservation and completeness

Bone preservation of the skeletons was fair. Cortical bone was eroded in places, fragmentation was moderate and the bone was fairly robust. Preservation of trabecular bone was fair. Compared to the grave group, the ditch skeletons were much better preserved, possibly reflecting differences in chemical composition of the fills, and the micro-environment within the coffins of the latter group. Completeness was 40% for infant 12750 and 60% for skeleton 12778 (Table 4.24).

Age and Sex

Skeleton 12750 was a term foetus or neonate aged up to one month old, and skeleton 12778 was a probable male aged 30–40 years.

Metrics

Stature estimated from the tibia of possible male skeleton 12778 was 1.62m (5'3"), markedly lower than the national mean male height of 1.69m calculated by Roberts and Cox (2003, 396).

Dentition

Skeleton 12778 had a large caries to the lower right first premolar, while the neonate had 18 unerupted deciduous teeth but the enamel was not sufficiently developed to assess for dental enamel hypoplasia.

Pathology

Skeleton 12778 had an area of necrotic bone on the right calcaneus superior anterior margin. The surface was porous and uneven extending into the cuboid articular surface. There was no evidence for pathology on the surrounding bones. The aetiology was unknown.

Disarticulated human remains

Roman ditch deposit in Site L

Two fragments of human ulna shaft were contained within the top fill (12681) of 12680, the terminus of Roman ditch 13161. They measured 6cm and 4.4cm in length. Cortical bone condition was poor due to chemical leaching and root damage. The breaks to the bone were not fresh, and there was slight rounding of the margins of the breaks.

A further fragment of femur was contained within another of the uppermost Roman fills (12831) of ditch 13161. This fragment was the middle third of an unsided adult femur; the surface was highly abraded as were the broken ends.

It is likely that the disarticulated bone in fills 12681 and 12831 comprised bone disturbed from a nearby Roman grave, or was disturbed from an Iron Age burial within the ditch itself. It is also possible, but less likely, that it was deliberately included in the ditch fills, continuing a practice known in the Iron Age (Whimster 1981).

Discussion

Taphonomy

The osteological potential of the A2 skeletal assemblage was greatly reduced by poor preservation of the bone. In general, cremated bone survived better than unburnt bone, as is usually the case, but even in the former, loss of trabecular bone was observed, and would have contributed to the low weights of most deposits. On the acidic brickearth of Site D, unburnt skeletons were almost entirely destroyed, being recognised only from faint sand shadows in two of the graves. Fragments of skull and teeth of skeleton 6729 survived due to the presence of a copper-alloy coin placed in the mouth. This extent of bone destruction mirrors the Roman cemetery of Pepperhill (also on brick earth), where only 23% of graves had recoverable bone. Much of the surviving bone on that site was so destroyed that little demographic or pathological data could be obtained (Biddulph 2006a).

Elsewhere on the A2 scheme, bone preservation was slightly better. The Roman skeletons from Site L all showed marked leaching (particularly of trabecular bone) and were chalky and brittle, probably the consequence of chemical leaching in the acidic brick earth that overlay the chalk bedrock. Micro-environment within the coffin and grave also profoundly influence skeletal preservation, and it is possible that the coffined inhumations of the Site L grave group may well have been adversely affected by the micro-environment within the coffin. It is interesting to note that the four uncoffined skeletons recovered from the ditch and pit adjacent to the grave group on Site L showed markedly better bone preservation. Similarly, disarticulated bone recovered from Iron Age pit fills on Sites C and G were well preserved. In general, these findings are consistent with other Kentish burials, where the osteological potential has been severely limited by poor preservation, particularly in unburnt bone (eg Mays and Anderson's (1995) review of burials in Kent, and McKinley's (2006) Schemewide report on HS1 human remains).

Mechanical damage from ploughing was also responsible for the destruction and loss of bone from both cremation and inhumation burials, severely curtailing their archaeological and osteological potential. Similar mechanical destruction was noted in most graves discovered during construction of High Speed 1 (McKinley 2006), with

surviving grave depths commonly between 0.1–0.2m. At nearby Pepperhill cemetery, many more shallow graves may have been completely eradicated (Biddulph 2006a).

Wider context of the Roman burials

The most prominent discovery on the A2 road-scheme was the small group of elite burials on Site D, one of six Roman burial grounds associated with the shrine town of Springhead. A slightly later high status burial ground was the 1st to 2nd century AD walled cemetery immediately south-east of the town, which contained inhumation and cremation burials, a stone sarcophagus, two lead coffins, glass urns and sumptuous grave goods including gold jewellery and decorated leather shoes (Davies 2001). More humble burials are known from the Garden Centre, Southfleet and the large 1st to 4th century cemetery of Pepperhill (Biddulph 2006a). To this can also be added the small cemetery on Site L associated with a large boundary ditch, and another small rural group of inhumations to the north-east in the A2 Activity Park (Dawkes 2010), which appears likely to belong to the Roman period.

Continuity of burial was observed in the burial enclosure on Site D, and associations with the large boundary ditch on Site L. In the former, both inhumation and cremation burials of early Roman date were discovered along with a 3rd to 4th century AD inhumation. Spatially, these burials were not distant from the two high status late Iron Age burials on Site B (see Chapter 3). Like the slightly earlier high status walled cemetery outside Springhead (discovered in 1799), the high status Site D burials would have been clearly visible to pilgrims, traders and officials travelling down Watling Street towards Springhead, London and the Kentish ports. This location of burial beyond the town on a major thoroughfare is typical of Roman practices throughout the Empire (Toynbee 1971).

The relationship between the elite Site D burials with the less elaborate burials on Site L is not well understood, although it is possible that both represented contemporary family groups at different ends of the social spectrum. Small groups of more simple inhumation burials are known from Kent (eg Thurnham Villa; McKinley 2006), and this growing corpus (most obviously at Pepperhill, where inhumation outnumbered cremation burials) is challenging the long held view that cremation burial was the predominant rite in the south-east in this period.

Demography

All burials occurred either as singletons or in small groups. As a result, little meaningful demographic analysis could be undertaken. Poor skeletal preservation and truncation also limited sex and age estimation, the best data being obtained from the inhumations on Site L.

Sub-adults were under-represented, exceptions being a disarticulated child's manubrium on Site G, and the Site L burial complex where one Roman ditch burial was a neonate and a 1–2 year old infant had been included in an adult grave in the adjacent grave group. Under-representation of subadults is common to many time periods, and is thought to be due to taphonomy and ideology of the nature and importance of the young.

Isotope analysis of human skeletons from Site L
by A M Pollard and P Ditchfield

Samples of bone were taken from 12 human skeletons at Site L (eight of the nine individuals found in the mid-Roman grave group, and two of the Roman ditch burials, along with the two middle Iron Age burials associated with the same feature) for the measurement of stable carbon ($\partial^{13}C$) and nitrogen ($\partial^{15}N$) isotopes in the bone collagen (for full details see Pollard *et al.* 2011). Because of the poor state of preservation of most of the remains, it was only possible to sample ribs and tibia from two individuals (middle Iron Age skeleton 12744 and Roman skeleton 12778 from ditch 13161) to look for changes in diet over the last few years of life. Seven dental samples were taken from four of the same individuals (all from the mid-Roman group) for carbon ($\partial^{13}C$) and oxygen ($\partial^{18}O$) in the carbonate fraction of the dental enamel, and a subset of molars from three of these four individuals were analysed for $^{87}Sr/^{86}Sr$ in the enamel.

Bulk collagen analysis revealed that one individual (12671) had a stable isotope signal indicative of a diet with a significant C_4 contribution. Since it is possible that such values could also be derived from a diet high in marine protein (HMP), the carbon isotope ratio of the individual amino acids which make up the collagen were measured in an attempt to distinguish between a C_4 and an HMP diet (Corr *et al*. 2005; McCullagh 2007; Honch 2008). These carbon isotopes measurements for the individual single amino acids within the bone collagen were undertaken for skeleton 12671 and another individual chosen at random from the other skeletons excavated from the same site, and with a bulk collagen isotopic signal typical of a C_3 consumer as a control (12643), using HPLC-MS. Full details of the methods employed can be found in Pollard *et al.* 2011.

Results

Bone collagen

The results for bulk $\partial^{13}C$ and $\partial^{15}N$ in the bone collagen are presented in Table 4.25, given as the average of the triplicate measurements made on each sample. The $\partial^{13}C$ data obtained on the single amino acid measurements from skeletons 12671 (the suspected C_4 consumer) and 12643 (a typical C_3 consumer) are shown in Table 4.26.

Table 4.25: Bone Collagen Stable Isotope Data

OA No.	*%C*	*%N*	*C/N ratio*	*$\delta^{13}C$*	*$\delta^{15}N$*
SK12525	44.5	15.9	3.27	-19.7	9.3
SK12556	43.0	15.2	3.30	-19.9	8.7
SK12645	44.0	15.8	3.25	-19.8	9.1
SK12643	46.0	16.7	3.21	-19.9	8.8
SK12638	41.2	14.6	3.30	-19.7	8.1
SK12606	42.7	15.3	3.26	-20.4	9.8
SK12656	42.8	15.2	3.29	-19.8	12.0
SK12671	38.3	13.6	3.28	-15.2	11.2
SK12744A	37.6	13.5	3.26	-20.1	8.7
SK12744B	35.1	12.3	3.34	-19.5	10.2
SK12750	39.5	14.2	3.25	-19.1	9.7
SK12778A	38.9	14.3	3.18	-19.8	7.6
SK12778B	41.0	14.6	3.26	-20.1	8.5
SK12986	42.5	14.6	3.40	-19.8	10.0

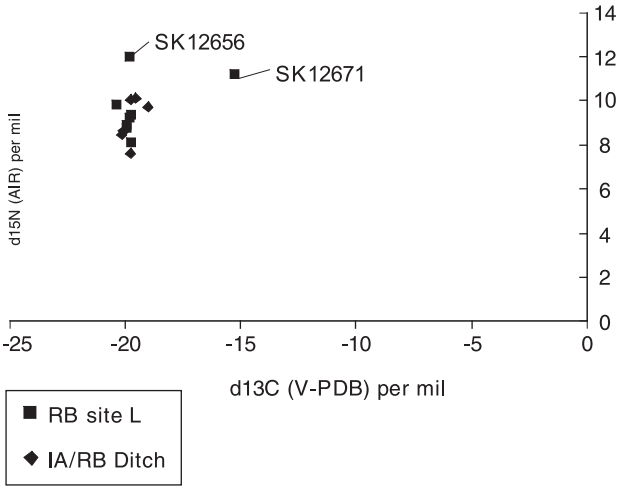


Fig. 4.71 Isotopic plot of bulk bone collagen data from the A2 burials

Table 4.26: $\delta^{13}C$ values (‰ PDB) for individual amino acids from bone collagen

	SK12671	*SK12643*
Aspartic acid	-20.5	-15.5
Hydroxyproline	-20.5	-15.6
Glutamic acid	-17.5	-12.1
Threonine/Serine	-9.7	-8.4
Glycine	-15.1	-10.1
Alanine	-28.4	-22.7
Proline	-24.5	-
Valine/Methionine	-27.4	-24.8
Leucine/isoleucine	-28.3	-23.9
Hydroxylysine	-22.3	-22.3
Tyrosine	-27.6	-20.9
Lysine	-28.4	-24.0
Phenylalanine	-22.2	-18.9
Arginine	-22.1	-17.8

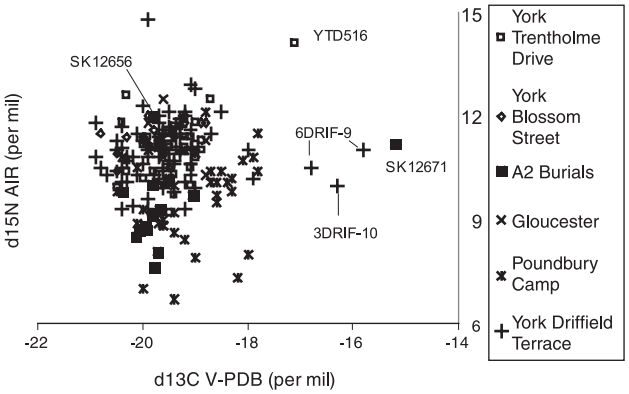


Fig. 4.72 Comparative bone and dentine bulk collagen data from Roman Britain

Table 4.27: Carbon and Oxygen Isotope Values from Dental Enamel Carbonate and $^{87}Sr/^{86}Sr$ values

Sample	*Tooth*	*Craig corrected $\delta^{13}C$ (V-PDB)*	*Craig corrected $\delta^{18}O_c$ (V-PDB)*	*$\delta^{18}O_c$ V-SMOW*	*$\delta^{18}Op$ V-SMOW*	*$\delta^{18}Ow$ V-SMOW*	*$^{87}Sr/^{86}Sr$*	*Sr ±2s internal*
SK12525	Molar (URM2)	-13.8	-3.0	27.8	19.1	-0.6	0.709701	20
SK12556M	Molar (URM2)	-12.7	-2.6	28.2	19.5	0.3	0.708934	17
SK12556P	Premolar	-13.8	-3.8	27.0	18.3	-2.3		
SK12656	Premolar	-12.3	-3.9	26.9	18.3	-2.5		
SK12671M	Molar (URM2)	-7.2	-4.6	26.1	17.5	-4.1	0.708826	18
SK12671P	Premolar	-7.0	-5.0	25.7	17.1	-5.1		
SK12671I	Incisor	-7.6	-4.4	26.4	17.8	-3.6		
PWD	Molar (LRM1)	-11.5	-5.4	25.4	16.7	-5.8		

Dental enamel

The results for $\partial^{13}C$ and $\partial^{18}O$ in the dental enamel carbonate (expressed as Craig-corrected values), and the Sr isotope ratios in the enamel, are presented in Table 4.27. The values from the Sr isotope determinations are also shown in Table 4.27.

Discussion

Bulk bone collagen $\partial^{13}C$ and $\partial^{15}N$ data

Figure 4.71 shows a plot of the bone collagen $\partial^{13}C$ and $\partial^{15}N$ data obtained, using the conventional presentation of $\partial^{15}N$ vs. $\partial^{13}C$, which allows us to map these data onto modern trophic level isotope diagrams (eg Pollard and Heron 2008, fig. 10.3). It is immediately apparent that most of the data points are closely clustered, with a single notable outlier, shown in Fig. 4.71 to be skeleton 12671, and one further possible outlier in 12656, who shows a higher $\partial^{15}N$ value. The averages for the data without these two points ($\partial^{13}C$ = -19.8 ‰, $\partial^{15}N$ = 9.0 ‰) are typical of a terrestrial diet based on C_3-photosynthetic system (which encompasses most terrestrial plants apart from mainly tropical and sub-tropical grasses). Possible outlier 12656 is very similar in $\partial^{13}C$, but has a relatively high $\partial^{15}N$ value might be taken to suggest a slightly higher marine component to the diet than the rest of the group.

There are only two individuals (12744, an adolescent Iron Age individual dating to the 4th or 3rd century BC, and 12778, an adult dating to the 3rd or 4th century AD) where it was possible to sample more than one skeletal element to detect changes in diet (and hence, possibly movement) through life. Comparison of the data on the tibia and ribs (rib–tib) of these two shows a positive shift in both isotopes (+0.6‰ for $\partial^{13}C$, +1.5‰ for $\partial^{15}N$) for the adolescent (12744), and a negative one in both isotopes (-0.3‰ and -0.9‰) for the later Roman adult (12778). In an adolescent of estimated age 12 to 13 years it is unlikely that there would be a systematic change in collagen chemistry between rib and tibia, even if the diet changed substantially, and we therefore attribute the difference observed to sampling variation. In 12778 it is possible that this represents a change in later life, but the difference is relatively small.

These bulk isotope data can be compared to other published bone collagen isotope data from Roman Britain, as shown in Figure 4.72, which includes Roman York (Trentholme Drive, late 2nd–4th C AD, and Blossom Street, 3rd–4th C AD (Müldner and Richards 2007); Driffield Terrace, early 2nd–late 3rd C AD (Müldner *et al*. 2011)), Roman Gloucester (1st–4th C; Chenery *et al*. 2010) and Poundbury Camp (4th C AD; Richards *et al*. 1998). The bulk of the A2 burials sit comfortably within the general envelope of the other data from Roman Britain, although their $\partial^{15}N$ values are on average a little lower than those from York and Gloucester and more like those from Poundbury Camp (which might be an indication of an urban/rural difference, although the late Roman burials at Poundbury may be related to the wealthy nearby town of Durnovaria, modern Dorchester). Possible outlier 12656 is now seen to sit firmly within the group for York and Gloucester. Skeleton 12671 remains an extreme outlier, although now three datapoints from the burials at Driffield Terrace, York (the 'Headless Romans': Müldner *et al*. 2011) lie in this same direction. Two come from the same individual who had been decapitated (6DRIF-9, collagen from the fibula and dentine from the 2nd premolar), and the third from the rib of 3DRIF-10.

Müldner *et al*. (2011) identify these two individuals as the first evidence for a mixed C_3 – C_4 diet in Roman Britain, on the basis of the high $\partial^{13}C$ values (-15.8‰, -16.3‰ and -16.8‰) but with no elevation of $\partial^{15}N$ (10‰, 10.5‰ and 11‰). They attribute the C_4 element of the diet to millet—either broomcorn millet *Panicum miliaceum* or foxtail millet *Setaria italica*, although there are no records of *Setaria italica* in Roman Britain, and occurrences of *Panicum miliaceum* are limited. It is unlikely that millet was grown in Roman Britain, and therefore the assumption is that these two individuals (and, by extension, skeleton 12671, with $\partial^{13}C$ = -15.2‰ and $\partial^{15}N$ = 11.2‰) were immigrants to England, from a region such as the Po Valley in northern Italy, south-west France or around the Black Sea, where the Classical authors say that millet was grown as animal fodder, or as 'famine food' (Müldner *et al*. 2011, 287). The fact that in 6DRIF-9 (an adult male) the isotopes in the dentine (early life signal) are more 'C_4' than the fibula (later life signal) is taken to indicate a movement in adult life away from a millet-consuming environment to the C_3-dominated ecology of York (ibid., 286).

Dental enamel data

The Craig corrected $\partial^{13}C$ and $\partial^{18}O$ values from the results obtained on the seven dental enamel carbonate samples are listed in Table 4.27. The three samples from the same individual (12671, discussed above as having a significant C_4 contribution to his diet) cluster well together, and are quite distinct from those of the other three individuals. The fact that they are more positive in $\partial^{13}C$ than the other values suggests a C_4 dietary carbohydrate component, since tooth enamel carbonate is thought to derive from the blood bicarbonate reservoir of carbon within the body, which in turn is thought to more directly reflect dietary carbohydrate composition rather than protein. This might suggest that the C_4 dietary component in 12671 derives from directly-consumed millet rather than protein from animals fed on millet.

The two samples from skeleton 12556 are close together but measurably different, possibly

suggesting some movement of the individual at an age between the formation of the molar and premolar. It is difficult to be certain when this would have taken place as the timing of mineralization for both of these teeth overlaps. However, an estimate of before eight years of age, by which time both teeth are likely to be fully mineralised, but after four years, when the mineralization of M2 is substantially completed, would seem the most likely.

Summary and conclusions

The isotopic analysis of what initially appeared to be an unremarkable group of Roman burials, close to an earlier group of later Iron Age burials, has thrown up a number of interesting and challenging results. For these burials, bulk collagen $\partial^{13}C$ and $\partial^{15}N$ have shown the presence of one individual (12671) who had a significant component of C_4-based protein in his diet—adding to the evidence for the presence of people with such diets in Roman Britain first presented by Müldner *et al*. (2011). The remainder of the data, with one exception (12656), formed a tight group of characteristically C_3-type diets, including the four individuals from the Iron Age to Roman ditch burials, two of whom are radiocarbon dated to between 400 and 200 cal BC and one to cal AD 240–380. This speaks of continuity, and would suggest that the Site L Romans, except 12656, are local.

Skeleton 12671 appears from bulk measurements to have a significant C_4 component to his diet. He has bulk collagen isotopic values very similar to a late Bronze Age population from Olma di Nogara, in northern Italy (16th–12th C BC), argued by Tafuri *et al*. (2009) to have diets consisting of meat derived from animals foddered on millet. In order to distinguish decisively between a C_4 and a marine-based explanation for the diet of 12671, we carried out $\partial^{13}C$ measurements on single amino acids from his bone collagen, along with that from another individual (12643) with a typical bulk signal of a C_3 diet. This approach does not convincingly resolve the issue of whether the unusual bulk values for collagen in 12671 can be unambiguously assigned to a diet containing a significant amount of C_4 protein. In none of the data produced here do the values approach those of a high marine protein consumer, but this discrimination is based primarily only on the bulk value for $\partial^{15}N$.

From dental enamel samples from four individuals (all from Site L), we have measured $\partial^{18}O$ and $\partial^{13}C$ in the carbonate fraction of the enamel, and also measured the Sr isotope ratio in a further sub-set of three individuals. From the $\partial^{13}C$ values in the carbonate we suggest that 12671 (perhaps additionally) consumed millet directly, rather than relying exclusively on acquiring the C_4 signal indirectly from millet-foddered animals. From the $\partial^{18}O$ values measured in the dental enamel carbonate we have calculated $\partial^{18}O_p$ values, which allow us to compare these data with the growing corpus of data on $\partial^{18}O_p$ values from Roman Britain. Somewhat surprisingly, when combined with the measured $^{87}Sr/^{86}Sr$, the data from 12671 plot in the middle of the 'box' predicted from Sr isotope values in the biosphere for lowland England and the proposed 'UK range' for local $\partial^{18}O_p$ values. In contrast, the two C_3 consumers (12525, 12556), who, from their bulk collagen isotopes, look identical to the previous Iron Age inhabitants of the site, appear to be non-local. This poses an interesting methodological paradox—can a person with a significant C_4 intake really be local to Kent? From a palaeobotanical perspective the answer could be yes (since millet was known, if not grown, in Roman Britain), but, in which case, why is there no similar evidence from any of the other adjacent burials? Conversely, could a non-local have the same $\partial^{18}O_p$ and $^{87}Sr/^{86}Sr$ values as someone from Kent? Clearly the answer to this is yes, and this indicates the dangers of using $\partial^{18}O_p$ and $^{87}Sr/^{86}Sr$ in isolation as indicators of localization. Moreover, the fact that the other two individuals would be identified as non-local on the basis of their $\partial^{18}O_p$ values counsels caution when applying the currently accepted limits of $\partial^{18}O_p = 17.7 \pm 0.9‰$ for the total UK range.

It remains highly likely that 12671 is one of the first individuals to be reported from Roman Britain having a significant input of dietary C_4 protein, which might most easily be explained by him travelling to Kent from an area of Europe, such as northern Italy, which has a tradition of growing millet from at least the later Bronze Age, and could give rise to $\partial^{18}O_p$ and $^{87}Sr/^{86}Sr$ similar to those from southern England.

Animal bone *by Andrew Bates, Jacqui Mulville and Adrienne Powell*

Animal bone from Roman deposits were excavated from Sites A and L, B, and D (Table 4.28 and 4.29),

Table 4.28: Hand collected bone from Roman deposits; figures in brackets are, or include, data from the CTRL excavations (Kitch forthcoming)

Species	*A and L*	*B*	*D*	*Total*
Cattle	11	33	40	84 (109)
Sheep/goat	13	46	44	103 (109)
Sheep		10	8	18 (4)
Goat				(1)
Pig	11	22	16	49 (41)
Horse		1	14	15
Equid sp	15	6	27	48 (20)
Red deer				(1)
Roe deer	1			1
Dog		1		1 (15)
Fox	1			1
Total	52	119	149	320
Principal stock animals				
Cattle		29.7	37.0	33.1 (37.3)
Sheep/goat		50.5	48.1	47.6 (45.3)
Pig		19.8	14.8	19.3 (17.4)

Table 4.29: Roman animal bone collected from soil samples; figures in brackets are, or include, data from the CTRL excavations (Kitch forthcoming)

Species	*A and L*	*B*	*D*	*Total*
Cattle	2		1	3 (4)
Sheep/goat	2	4	2	8 (6)
Sheep	1	1		2
Pig	1	1	1	3 (3)
Dog				(3)
Equid sp	1			1
Fox	2			2
Common shrew			4	4
House mouse			1	1
Wood/yellow necked mouse			2	2
Snake	1			1
Lizard	3		1	4
Total	13	6	12	31

Table 4.30: Anatomical elements located within pit 4143/4796

Element	*Cattle*	*Pig*	*Sheep*	*Sheep/goat*
Horn core	1			
Mandible	1		1	6
Skull – maxilla		1		
Skull - Zygomatic arch				1
Loose tooth	1	1	1	6
Pelvis	1	1		
Tibia	1	1		3
Lateral metapodial		1		
Metacarpal			2	
Metatarsal			1	
Astragalus	3			
Calcaneum	1			
1st phalanx	1			
Total	10	5	5	16

Table 4.31: NISP of species by element of animal bone recovered from pit 4747

Element	*Cattle*	*Pig*	*Sheep*	*Sheep/goat*
Lower molar	1			1
Scapula				1
Humerus		2		2
Radius				3
Ulna		1		
Pelvis				1
Femur		1		1
Tibia				1
1st phalanx			1	
Total	1	4	1	10

although the total number of animal bones identified to a species level per site is small. Only a small number of animal bones were collected from the 56 soil samples. As with the previous periods, the majority of the animal bones were deposited in small quantities per deposit. Although the total sample is small, as with the previous periods, there is a tendency towards larger mammals such as cattle to be found in ditches. Pig bones were mainly recovered from pits, and sheep/goat bones were found in both feature types. Although some of this material is phased as middle to late Roman, the majority of the bones date to the early Roman period. A full methodology and analysis can be found in the digital report.

Associated bone groups (ABGs)

Early Roman Pit 4795/4144, Site B

Pit 4795/4144, interpreted as an early Roman refuse pit, produced larger numbers of cattle and sheep/goat or sheep bones than other pit, all within its single fill, deposit 4143/4796. Elements of cattle, sheep or goat and pig were present in small numbers, predominantly from the heads and feet of these animals (Table 4.30). A minimum number of two cattle and one pig were calculated, whilst a minimum of three sheep or goats were estimated, taking into account the wear stages of the teeth as well as the diagnostic zones. A fourth individual is also represented by a loose mandibular third molar, clearly not from the other three individuals. For each species only a few bones from each individual was present.

Age determinations were made for the three mandibles with tooth rows and the loose mandibular third molar following Jones (2006), using the age ranges for the majority of records of the modern comparative specimens. This gave age ranges of three to five months, eight to twelve months, two and a half to four years and four and a half to six and a half years. Assuming that the lambs were born at the same time of year, it would appear that this is part of a deposit of bone that has accumulated over time.

Early Roman Pit 4747, Site B

Pit 4747 was an early Roman pit measuring 1.5m in diameter and 0.55m deep. The lower of its two fills contained marginally more sheep/goat bones than other features. The NISP by species and element is presented in Table 4.31, those of sheep/goat, sheep and pig including elements from both the fore- and hind-limbs. Generally, these bones were quite fragmented, with 60% of all the sheep/goat, sheep and pig bones combined having been burnt. It was also evident that the two sheep/goat humeri, one from the left side of the body and the other from the right, are likely to be from the same individual, being symmetrical in appearance and having identical measurements for the diameter of the

trochlea. A minimum of one pig and two sheep are present. Butchery marks on the right sheep humerus evidenced the dismemberment of the elbow joint.

Early Roman cremation 6260 in pit 6190, Site D

Pig remains were recovered from the very rich early Roman cremation burial 6260, evidently placed as part of the grave goods. The animal bones included the right side of the skull, including the mandible, from a male animal, and the top two vertebrae (the atlas and axis). In addition, the right hind limb, presumably of the same animal, including the pelvis, femur, tibia and tarsal bones, were placed adjacent to the skull. The bones from this animal are highly fragile, with over 75% of their surface eroded. The skull, although visible as one object in the excavation record, did not survive lifting in one piece. No butchery marks were visible upon the bone, but the two vertebra are represented by the right side only. It seems highly likely that the skull has been split down the middle, with these vertebrae attached to the head at the time of butchery. Two rib fragments suggest part of the flesh around the spare rib from the right side of the body had also been present at deposition. There are no other identifiable cervical vertebra, but the archive does show some highly degraded bone fragments in the expected position of these vertebra. These two elements suggest part of the flesh of the neck and shoulder area had also been present, attached to the skull, at the time of deposition. Similarly, images of the bones *in situ* show the foot bones being present, but they have not survived into the archaeozoological record. There was no evidence of burning on these bones. Mandibular tooth wear and epiphysial fusion suggested an animal between two and two and a half years old.

Early Roman cremation 6645 in pit 6643, Site D

In total, 40 unidentified bone fragments were excavated from cremation pit 6643 from deposits used to backfill the feature, of which 38 were calcined. A single pig maxillary third molar was located adjacent to a cremation 6739 and a cup, sf 1528. A single tooth cannot represent the placing of food offerings, and if it is deliberately placed as opposed to an incidental inclusion, must represent a symbolic token offering.

Early Roman cremation Pit 6635, Site D

Cremation pit 6635 produced only four bone fragments. An unidentified calcined bone fragment recovered from the fill of a shallow ceramic dish, 6743, is potentially associated with the cremation c 0.2m to the north. A burnt bone fragment from deposit 6658 may have similar depositional origins, being adjacent to the cremated remains. Two of the deposits used to backfill the pit contained bone, including an unidentified bird bone fragment and an unidentified calcined bone fragment.

Species represented

Cattle

The majority of mandibles from which an age of death could be estimated were recovered from Iron Age deposits (see Chapter 3). Of the biometric data from cattle, the astragalus length falls within a size range found on comparable Roman sites, where it has been suggested that there was an increase in the height of cattle during this period, potentially from the introduction of new stock (Dobney *et al.* 1996, 31; Maltby 1981, 187). Very few cattle bones had evidence of butchery upon them, although where they did occur they predominantly comprised knife marks.

Sheep and goat

Of the sheep/goat categories, where the division could be made, the majority of specimens proved to be sheep (Tables 4.28–9). Although goat was present at the site, it is considered to be a relatively minor species, with sheep being the most frequent occurring ovicaprid in each period. Most of the sheep/goat mandibles from which an age of death could be estimated were excavated from Iron Age deposits.

The occurrence of an additional foramen on the buccal side of the sheep mandible, in the area of the second pre-molar, is a congenital trait present in about a third of the late Iron Age sheep population, but only in an eighth of the Roman sheep. This may not necessarily be hereditary, but a high occurrence of a congenital trait may be the result of a limited gene pool in the stock in the Iron Age, a pattern apparently changed in the Roman period.

Pig

Data concerning Roman pig bones, beyond recording the presence of this species, was too scarce to be useful in analysis.

Equids

Within Roman features, equid bones and teeth were recovered predominantly from ditches, often in association with other animals. There is no evidence to suggest the carcass was not treated in a similar manner to cattle, and is likely to have been eaten. Age estimates were calculated from measurements taken from 17 teeth. Of these, the youngest was of an animal of four and a half to six and a half years, 11 of animals between five and 10 years, and five were of animals over 14 years of age. No unfused long bone shafts or epiphyses were excavated from these periods. There was, therefore, no direct evidence for horse breeding. Wither heights of horse were calculated from one specimen, within the size range of a pony.

Wild species

A loose tooth and a small fragment of the skull of a fox was recovered from grave 12662. The skull would appear to have been fragmented prior to its inclusion within the grave, and its occurrence may,

therefore, have potentially been incidental. Fox may well have been taken for its pelt, or killed as a pest.

Birds

A small number of bird bone fragments were recovered from deposits dating to the Roman period. No butchery marks were recorded on any bird bones. The two bantam bones were excavated from a single late Roman pit, and the species is likely to be a Roman introduction to the area, although domestic fowl from Iron Age are known (Harcourt 1979, 155). It is unlikely that the species list represents the full list of wild bird species hunted and consumed by the inhabitants of the area, but they do not appear to have made a large contribution to the diet.

Discussion

It has been shown that the proportions of the principal domestic animals are greatly affected by the feature type; in particular, taphonomic and depositional factors may over-represent cattle in ditches. Interventions into the middle Iron Age to early Roman enclosure ditches contribute significant numbers of cattle bone to the totals. It is thought that sheep flocks were increased in size in comparison to the cattle herds in the late Iron Age and the Roman periods, a trend visible across central England in the late Iron Age (Albarella 2007, 394) (see Chapter 3 for further discussion). An interpretation of adjacent middening activity, as suggested for ditch groups 5892 and 7992 in the descriptions of their associated ABGs, could also have been taking place adjacent to ditch group 6941 (Chapter 3; Table 3.21).

On balance, it seems quite likely that, in the later Iron Age and into the Roman period, sheep flocks were increased in size in comparison to the cattle herds; this trend may have begun in the middle Iron Age. It has been suggested that this is a trend visible across central England in the late Iron Age (Albarella 2007, 394).

Associated or Articulated Bone Groups (ABGs)

A number of pits produced significant quantities of animal bone from ABGs. Those from the site can be categorised into four types: complete or partial skeletons (sometimes associated with specific features types or other objects); the placement of skulls, partially articulated limbs (as described in Hill 1995, 57); and large deposits of bone from secondary deposition from a number of individuals. The location and discussion of these are considered by feature type below.

Shallow pits

Two early Roman pits had significant quantities of bone per deposit. Pit 4747 contained the burnt remains of at least one pig and two sheep. As such, this could be seen as the consumption of significant quantities of flesh. Pit 7485/4114 contained significant quantities of animal bone, but this may represent the secondary deposition of midden deposits.

Cremation pits

Animal bones within cremation burial 6645 would appear to represent a symbolic offering, with little or limited food value. Substantial offerings of pork, including the right half of a split skull with part of the shoulder, and the right hind limb, were evident in cremation pit 6190 (burial 6260).

Offerings of pork in graves has it origins in pre-Roman Britain and Europe (Philpott 1991, 205; Green 1992, 116–19). The division of body parts as significant in the sacrifice of sheep and cattle has been seen at the precinct of Great Chesterford Roman Temple, Essex, and at Ferry Fryston, West Yorkshire (Baxter 2011; Bates *et al.* 2007, 149–50). Irish tales have also referenced the use of joints of pork in burial, with the leg for a king, the haunch for a queen, and the boar's head for a charioteer (Powell 1958, 110–11).

Fish remains *by Rebecca Nicholson*

Two fragments of large cod (*Gadus morhua*) were recovered from contexts (3303) and (3351), a large sub-rectangular pit of late Roman or later date on Site A. Eel (*Anguilla anguilla*) and herring were identified in late Roman ditch fill (12942) in Site L. The migratory eel may be caught in river mouths and estuaries as well as in entirely freshwater rivers and lakes.

Charred plant remains *by Wendy Smith*

Only two samples of secure Roman date, both from Area D, were sufficiently rich to merit further analysis (see summary in Table 4.32; Full results in digital archive report). Early Roman pit 6571 (sample 1956) and early–middle Roman ditch 6349 (sample 1994) produced assemblages dominated by fairly poorly preserved indeterminate emmer/spelt (*Triticum dicoccum* Schübl./*spelta* L.) and highly fragmented indeterminate wheat (*Triticum* sp.) rachis nodes. In both cases a small proportion of glume bases were securely identified as spelt (*Triticum spelta* L.).

Discussion

Spelt was the only wheat identified with certainty from the samples analysed from Area D, and it is clear that spelt was cultivated on a large scale elsewhere in the area from the early Roman period (eg Thurnham Roman Villa, Smith and Davis 2006; Northfleet Roman Villa, Smith 2011). Roman samples from the HS1 sites of both Northumberland Bottom and Tollgate alongside the A2 scheme include both emmer and spelt wheat, but spelt is clearly more dominant. With such limited data from the A2 it remains uncertain whether spelt was the only wheat cultivated for Area D.

Detached embryos, and indeed detached sprouts, are also present in Roman samples at A2; however in these cases the embryos are often swollen and the sprouts clearly have developed rootlets and sprout (technically an acrospire), which is distinctive of

Table 4.32: Summary statistics for Roman period charred plant remains samples

Sample	1956	1994
Context	6575	6558
Context Description	pit 6571	ditch 6349
Site	D	D
Phase	Early Roman	Early–mid Roman
Sample Vol (L)	30	10
Flot Vol (ml)	<5 ml	60 ml
Proportion of Sample Sorted	100%	25%
Seeds per litre of sediment	4.1	225.2
TOTAL IDENTIFICATIONS (Flot only)	122	563
TOTAL SCORE		
Cereal Grain	26	146
Cereal Chaff	82	273
Detached embryo/ sprout	3	17
Pulses	1	1
Weed/ Wild	9	118
Unidentified/ Indeterminate	1	8
RELATIVE PROPORTION		
Cereal Grain	21.3%	25.9%
Cereal Chaff	**67.2%**	48.5%
Detached embryo/ sprout	2.5%	3.0%
Pulses	0.8%	0.2%
Weed/ Wild	7.4%	21.0%
Unidentified/ Indeterminate	0.8%	1.4%

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). All calculations for Roman samples are based only on the flot. No charred plant remains were observed in scanning of the heavy residue fractions.

germination. The remains are so limited, however, that it is not possible to claim malting activities were taking place with confidence, but elsewhere in the period this clearly was taking place in Kent (eg Northfleet Villa, Smith 2011; Springhead, Campbell 1998, Stevens 2011).

Wood charcoal *by Dana Challinor*

There were several samples of Roman date, but only two merited analysis in full, although some others provided comparative data (Table 4.33). The samples from a group of late Iron Age/early Roman graves (4299, 4213 and 6260, 6636) were particularly disappointing, producing either no flot or very little, comminuted charcoal which was unidentifiable (Smith, unpubl assessment report). Nonetheless, the negative evidence of these samples provides information on the nature of the deposition of the human remains; the bone must have been carefully picked out of the pyre debris prior to burial.

Of greater interest is pit 12672 from Site L, which contained pyre debris, radiocarbon dated to the mid to late Roman period. The presence of hob nails and cremated human bone from more than one individual indicates redeposited pyre debris. The charcoal assemblage was clearly dominated by ash wood, but there was also a significant quantity of cherry/blackthorn and yew, including a number of roundwood fragments. Only one fragment was confirmed as blackthorn, as the charcoal was very vitrified, which constrained attempts to distinguish between the *Prunus* species. It is uncertain what causes vitrification in charcoal; theories include high temperatures or moisture content, but recent research has not supported these (McParland *et al.* 2010). Vitrification does seem to be quite common in cremation assemblages.

The use of yew in a cremation is unusual, particularly when the quantity is more than a couple of fragments (being present in both samples of 12673). Yew has reasonable burning properties, but can be explosive (Gale and Cutler 2000). Roman cremations were usually fuelled by oak or ash, which would also have provided suitable timber support for the bier. At the nearby Roman cemetery at Pepperhill, all of the cremation-related deposits (whether *in situ* busta or redeposited pyre debris) were dominated by oak and/or ash (Challinor 2006b). In this respect, the assemblage from the A2 is quite appropriate, as is the blackthorn/cherry which was often used for kindling, chosen perhaps for its sweet smelling properties. The yew, however, is more likely to be from an artefact or to have been selected for ritual purposes. That the Romans associated yew trees with death and the underworld is attested by Ovid's description of yew trees lining the path to the river Styx (*Metam*. IV, 419–50). Yew charcoal has also been recovered from Roman cremation deposits at Springhead (Barnett *et al.* 2011, 113–8) and Westhampnett (Gale 1997).

It is interesting to note that the remaining Roman samples from Site L, from two pits (12972 and 12953) and a ditch (12780), did not have any ash wood, but were dominated by oak, hawthorn group and alder/hazel respectively. Given the apparent lack of diagnostic material in these features to suggest a specific activity, it is difficult to interpret the lack of taxonomic diversity which would be expected in domestic refuse (eg Challinor 2009b). The remaining domestic-type assemblages produced limited taxa, in which a single taxon was normally dominant. On Site D, oak was dominant in an early Roman stakehole (6929) and may represent the remains of the post. Some sapwood was identified, but most fragments exhibited less than a whole growth ring so maturity data was limited. A second sample of early Roman date, from ditch 6349, suggested a more mixed assemblage, with less oak and some hawthorn group identified, but the charcoal was small and sparse.

Pollen and phytoliths *by Adrian G. Parker*

The Roman samples examined from Site L came from the large boundary ditch 13161 ditch. Four samples were prepared from columns 1341, 1342

Table 4.33: Results of the charcoal analysis from Roman features

	Phase	*Early Roman*		*Mid-late Roman*			
	Feature type	Stakehole	ditch	Cremation		pit	pit
	Site	D	D	L		L	L
	Feature	6929	6349	12672		12972	12953
	Context	6792	6350	12673	12673	12973	12952
	Sample	1945	1993	1313	1299	1334	1333
	% identified			12.5		6.25	
Taxus baccata L.	Yew			22r	++		
Quercus sp.	oak	++++ s	++			218h	
Corylus avellana L.	Hazel						
Alnus/Corylus/Carpinus	Alder/hazel/ Hornbeam						
Prunus spinosa L.	Blackthorn			1			
Prunus cf *avium*	Wild cherry						
Prunus sp.	Cherry type			20r	+		
Maloideae	Hawthorn group		+				+++ r
Acer campestre L.	Field maple						
Fraxinus excelsior L.	Ash			79	++++		
Indeterminate diffuse						1	
Indeterminate				10		4	
Total		++++	+++	132	++++	223	++++

r= roundwood; h=heartwood; + = <5; ++ = 5-25; +++ = 25-100; ++++ = >100

and 1343 in ditch cut 12969 (see Chapter 3 Figs 3.20–2 section 1231). The ditch cut through sand and clay for the most part whilst the lower part was cut into chalk. The lower sediment in column 1343 comprised chalk fragments and chalk mixed with clay. For the main part the fill exposed in the column sections was relatively stone free with fine particles of chalk, silt and clay predominating. The uppermost column (1341) contained stones and coarse particles. Samples were taken from column 1341 at 40cm (context 12833), column 1342 at 20cm (context 12836) and column 1343 at 15cm (context 12838) and 35cm (context 12839). The pollen and phytolith preservation varied across these four samples. Both pollen and phytoliths were poorly preserved in the lower sample from column 1343 (context 12839) owing to oxidation combined with the higher alkalinity due to the chalk-rich nature of the material. High alkalinity can lead to silica dissolution and the etching or removal of phytoliths. The other three samples did provide sufficient counts to make a reasonable assessment of the local environmental conditions at the time of deposition.

Discussion

The sequence obtained from Site L all comes from the possible recut in the ditch, and spans the middle and upper fills of the ditch. As such, it is likely to date from the late lron Age and Roman periods. There is a noticeable near-absence of *Tilia* (supporting the post-Bronze Age date). Compared to the Bronze Age samples from Site G (see Chapter 2) there is a slight increase in tree and shrub pollen mainly from secondary woodland and scrub types including *Betula, Pinus, Hedera and Rubus* t. Grassland dominates the pollen and phytolith samples but it should be noted that preservation from Site L is poorer than on Site G. The pollen samples suggest evidence for disturbed ground in the local vicinity with *Plantago lanceolata* and Compositae Liguliflorae present.

Land snails *by E Stafford*

Site assemblages

Site L

At Site L 51 samples were initially assessed from a range of features dated to the late Iron Age to Roman periods. These include 45 incremental samples from four interventions in boundary ditch 13161, four bulk samples from Roman pits 12647 and 12672 that truncated ditch 13161, and two samples from fill 12976 of unphased ditch group 13238. No incremental sequences from Site L were analysed in detail due to the variable shell preservation and incomplete profile sampling. However, the results of the assessment are useful in providing a broad indication of prevailing environmental conditions during the period of occupation.

In the late Iron Age to Roman ditch group 13161 shell tended to be absent or very poorly preserved in the primary and tertiary fills, but was more abundant in the secondary fills. The assemblages

from the secondary fills were all very similar, dominated by a diverse range of shade-demanding species, and showed no clear variation in terms of species composition laterally or with depth. *Carychium tridentatum* appeared to be the most abundant species followed by *Discus rotundatus* and various zonitids. Clausiliidae, *Ena obscura*, *Helicigona lapicida, Acanthinula aculeata* were also present. Open country species were very sparse apart from occasional *Vallonia* sp. The diversity of the assemblages suggest a very enclosed environment, some form of woodland abundant leaf litter within or very close to the feature as it infilled. In certain respects the assemblages from the secondary fills may be biased, reflecting the micro-environment of the feature, however substantial refugia must have existed close by from which these molluscs could colonise. It is possible that these assemblages represent some form of established hedgerow growing within or adjacent to the ditch with a more open environment beyond, although if this was the case one would perhaps expect a slightly higher open country component. In this respect the paucity of shell from the lower and upper fills is unfortunate.

In contrast the samples from the Roman pit fills produced rather mixed assemblages of both open country and shade-demanding species. The shade-demanding component was similar to that described above and may represent a residual element from the previously more shaded environment. Most numerous, however was *P. elegans*., often abundant is areas of ground disturbance where it burrows into the loose soil and is often associated with woodland or scrub clearance. The open country components comprised *Vallonia* sp. and the obligatory xerophiles *Pupilla muscorum*, *Helicella itala*, *Truncatellina cylindrica* and *Vertigo pygmaea.* The presence of the open country species in numbers suggests the pits were backfilled with soil formed in a very dry open environment. *H. itala* in particular does not tolerate rank grassland, and *V. excentrica* often proliferates in grassland where the sward is kept short by grazing. *T. cylindrica* does not tolerate shade at all, usually occurring in very dry exposed grassland. Although rare in modern assemblages it is likely this species distribution was previously more widespread (Evans 1972, 140). The ecological requirements of *P. muscorum* are not always clear, although it is often abundant in areas of dry bare ground and may be present in intensively grazed grassland, or arable environments (ibid.).

The two samples from ditch group 13238 produced very sparse flots dominated by modern roots and the burrowing snail *C. acicula.*

Site A

A single profile of incremental mollusc samples was retrieved from late Iron Age/early Roman ditch Group 3075 on Site A. Group 3075 comprised a sequence of three inter-cutting ditches. The earliest 3331 dates to the late Iron Age, as does 3330. The latest, 3032 (Group 3075), dates to the early Roman period (see Fig. 4.53, section 312). Thirteen samples were initially assessed through the full profiles of these ditches. Six samples were selected for more detailed analysis, two from each ditch cut. The assemblages were broadly very similar in species composition. The molluscan data is presented in Table 4.34 and the histogram in Figure 4.73.

Shell was very abundant in the earliest ditch, 3331 at 918 and 629 individuals and stability is reflected in the relatively low values of the H'-HB index. The assemblages were overwhelmingly dominated by open country species at *c* 85%. *V. costata* and *V. excentrica* were most abundant, the latter slightly dominating. However the xerophiles *P. muscorum* and *T. cylindrica* were significant and *V. pygmaea* and *H. itala* were also present. Catholic species accounted for *c* 10%, mainly *Cochlicopa* sp. Shade-demanding species formed an insignificant component at *c* 5%. In ditch 3330 shell was very sparse in the lower part of fill 3034 at only 54 individuals, probably reflecting the unstable nature of the feature edges. The composition of the assemblage, however, was similar to ditch 3331. Shell was better preserved in the upper part of the fill with 418 individuals suggesting increased stability. Again the composition was similar to ditch 331 though with a slight increase in the proportion of *V. costata* that is probably related to the microenvironment of the ditch itself. Ditch 3032 also produced broadly similar results to ditch 3331 although a slightly high proportion of shade-demanding species (up to 14%) were noted in fill 3033.

The environmental signal here is clear from all three ditches. The environment was very open and dry, most likely short-turfed grazed grassland. The relatively high numbers of *P. muscorum* suggest patches of bare ground vegetation were present around the feature edges. During the earlier phases, that is ditches 3331 and 3330, it is possible the features themselves were being grazed by livestock. However, during the infilling of ditch 3032 slightly higher proportions of shade-demanding taxa may indicate long grass was allowed to grow in the feature.

Site D

Four interventions from the main rectilinear enclosure (see Fig. 4.42: ditch groups 6727, 6940 and 6941), dated to the early Roman period, were initially assessed from Site D. It appears this enclosure was constructed in a phased sequence, beginning with a southerly east-west ditch (Group 6940), followed by a series of north-south ditches (Group 6727) and finally a third phase of ditches, redefining or enlarging the outer perimeter of the enclosure (Group 6941). Details of the locations of the sail samples are shown on the sections in Figures 4.43 and 4.44.

Shell was variably preserved in the nine samples assessed from 6353 (Group 6940) but most

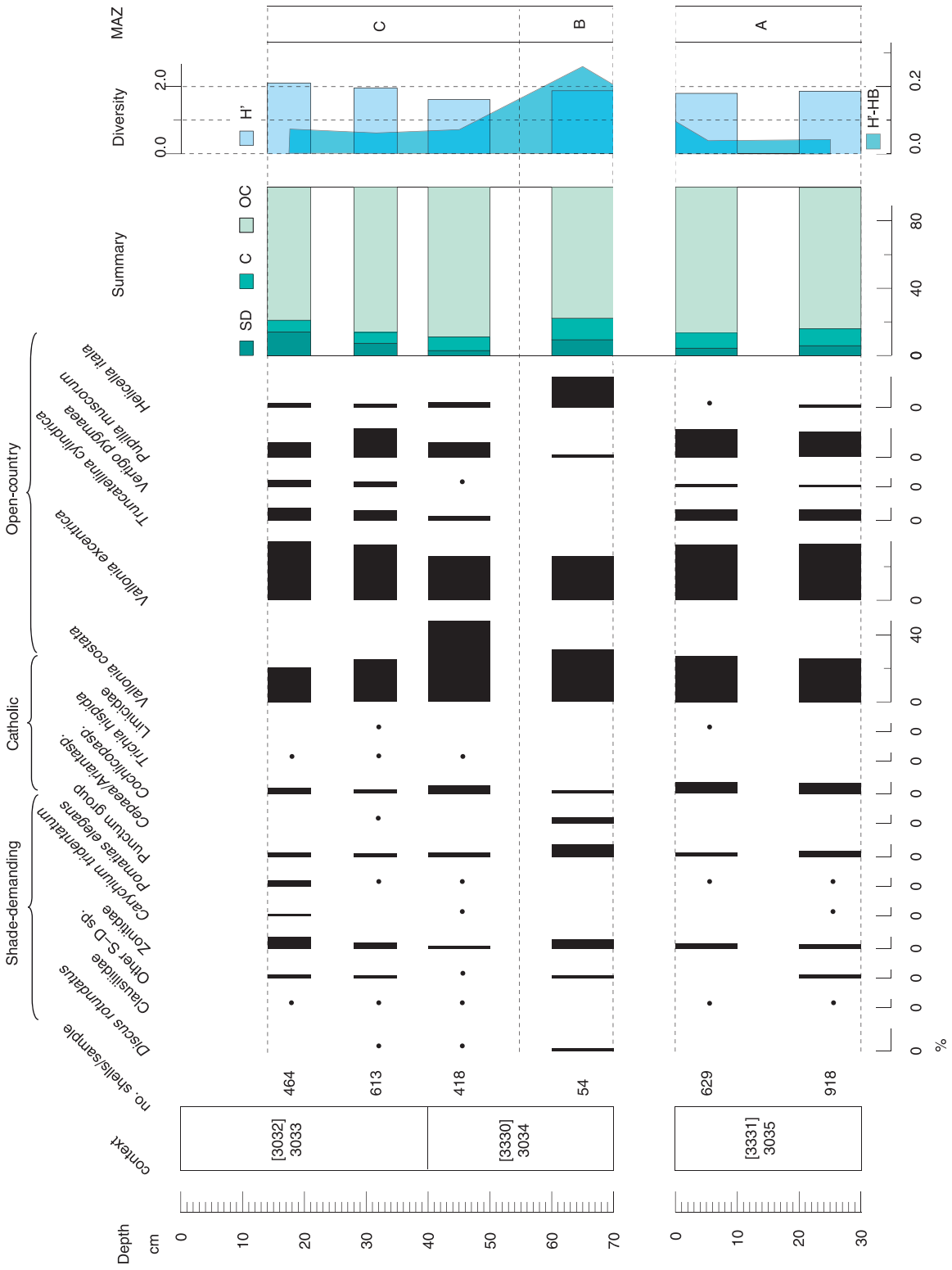


Fig. 4.73 Percentage molluscan diagram from ditch 3075, Site A

Table 4.34: Molluscan data from late Iron Age to early Roman ditch group 3075

Sample		307	309	312	314	315	317
Context		3033	3033	3034	3034	3035	3035
Depth		0.14-0.20	0.28-0.35	0.40-0.50	0.60-0.70	0.00-0.10	0.20-0.30
Sediment processed (kg)		2	2	2	2	2	2
Taxa	Habitat						
Pomatias elegans (Müller)	S-D	16	6	1		3	3
Carychium tridentatum (Risso)	S-D	5		1			2
Cochlicopa sp.	C	17	15	21	1	43	59
Truncatellina cylindrica (Ferussac)	O-C	35	36	11		42	60
Vertigo pygmaea (Draparnaud)	O-C	20	19	2		11	13
Pupilla muscorum (Linné)	O-C	36	51	37	1	105	62
Lauria cylindrica (da Costa)	S-D	8	4				9
Lauria cylindrica/Pupilla muscorum		7	58				87
Vallonia costata (Müller)	O-C	84	119	124	13	115	164
Vallonia excentrica (Sterki)	O-C	142	155	67	11	137	212
Vallonia sp.	O-C	32	81	118	7	127	171
Acanthinula aculeata (Müller)	S-D		3	1	1		
Punctum pygmaea (Draparnaud)	C	12	12	9	2	13	27
Discus rotundatus (Müller)	S-D		2	1	1		
Vitrina pellucida (Müller)	C				2		2
Vitrea sp.	S-D	13	11	1	1	15	16
Nesovitrea hammonis (Ström)	C			2		1	4
Aegopinella pura (Alder)	S-D		1	2		2	5
Aegopinella nitidula (Draparnaud)	S-D	17	9	3	2	2	3
Oxychilus cellarius (Müller)	S-D	2	1	1			
Clausilia bidentata (Ström)	S-D	2	3	1		5	4
Helicella itala (Linné)	O-C	13	15	13	10	6	15
Trichia hispida (Linné)	C	3	6	2			
Cepaea/Arianta sp.	C		4		2		
Limicidae	C		2			2	
% Shade-demanding		13.85	7.21	2.87	9.26	4.29	5.78
% Catholic		6.90	6.36	8.13	12.96	9.38	10.02
% Open-country		79.25	86.42	89.00	77.78	86.33	84.20
No. individuals/sample		464	613	418	54	629	918
No. individuals/kg		232	307	209	27	315	459
Shannon Wiener Index (H')		2.10	1.95	1.61	1.87	1.80	1.86
Brillouin Index (HB)		2.03	1.89	1.55	1.62	1.75	1.82
H'-HB Index		0.07	0.06	0.07	0.26	0.04	0.04

abundant in the secondary fills where there was some indication of environmental change. Open country taxa, *Vallonia* sp. helicids and the xerophiles *T. cylindrica*, *and P. muscorum* were present the lower and upper fills with more mixed assemblages in the secondary fills. The secondary fills contained numerous shade-demanding molluscs but the range appeared to be quite narrow, *D. rotundatus, C. tridentatum* and the zonitids. This suggests perhaps lush vegetation growing within the feature as it infilled such as tall grasses and herbs. The single bulk sample retrieved from ditch 6070 (Group 6727) produced a sparse assemblage of mixed ecology, which on its own is quite difficult to interpret.

In the 14 samples assessed from 6362 (6941), along the northern edge of the enclosure, shell was variably preserved but was more abundant in the middle and upper fills. The majority of the assemblages were dominated by shade-demanding taxa, although the uppermost fills were more mixed with greater numbers of open country species. Four samples retrieved from ditch 6405 (6941), also from the northern edge of the enclosure where it truncates the middle Iron Age ditch 6944, also produced assemblages dominated by shade-demanding species.

Ditch 6362 (6941), along the northern perimeter of the enclosure was chosen for full analysis on the basis of shell abundance, composition and detailed level of sampling (see Fig. 4.44 section 697). Seven samples were analysed. The molluscan data is presented in Table 4.35 and the histogram in Figure 4.74.

Three molluscan assemblage zones were identified in ditch 6362. In Zone A (0.64–1.05m), in the primary fill 6363, shell numbers were very low; only 24 individuals of mixed ecological preferences. The low shell abundance indicates unconducive condi-

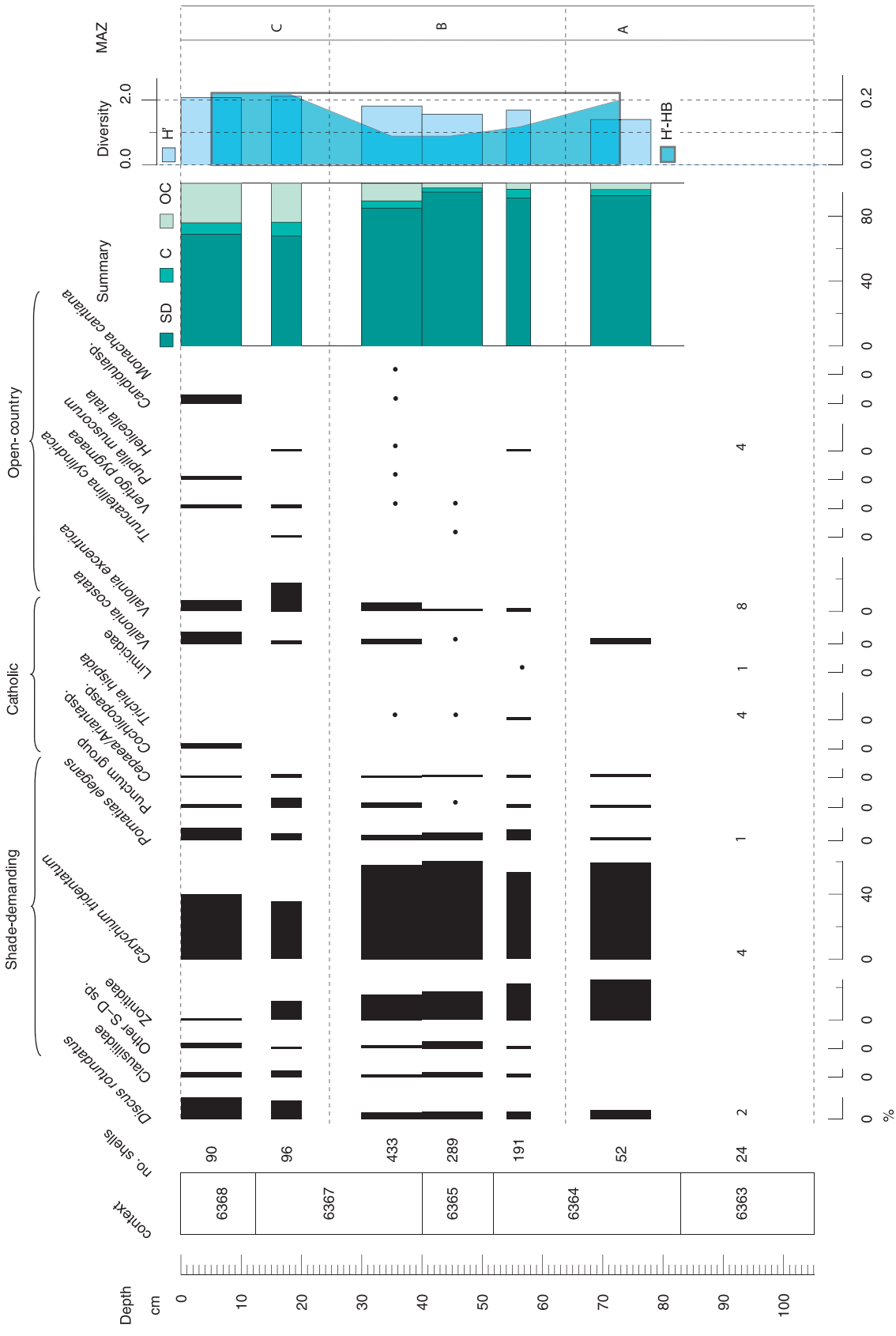


Fig. 4.74 Percentage molluscan diagram for cut 6362 in ditch 6941, Site D

Table 4.35: Molluscan data from early Roman ditch 6362

Sample		653	655	657	658	660	662	665
Context		6368	6367	6367	6365	6364	6364	6363
Depth (m)		0.00-0.10	0.15-0.20	0.30-0.40	0.40-0.50	0.54-0.58	0.68-0.78	0.88-0.98
Sediment processed (kg)		2	2.5	2.9	2	2.1	2	2.6
TAXA	Habitat preference							
Pomatias elegans (Müller)	S-D	7	4	14	14	13	1	1
Carychium tridentatum (Risso)	S-D	36	34	251	175	102	31	4
Cochlicopa sp.	C	3						
Truncatellina cylindrica (Ferussac)	O-C		1		1			
Vertigo pygmaea (Draparnaud)	O-C	2	2	2	1			
Pupilla muscorum (Linné)	O-C	2		3				
Lauria cylindrica (da Costa)	S-D				1			
Vallonia costata (Müller)	O-C	7	2	10	2		1	
Vallonia excentrica (Sterki)	O-C	6	17	19	4	4		8
Vallonia sp.	O-C			7			1	
Acanthinula aculeata (Müller)	S-D	3		8	11	3		
Ena obscura (Müller)	S-D		1					
Punctum pygmaea (Draparnaud)	C	2	5	5	2	2		
Discus rotundatus (Müller)	S-D	12	11	19	13	9	3	2
Vitrina pellucida (Müller)	C			2				
Vitrea sp.	S-D			11	3	2	1	
Nesovitrea hammonis (Ström)	C		1	6		2	1	
Aegopinella pura (Alder)	S-D		1	24		10		
Aegopinella nitidula (Draparnaud)	S-D		8	17	28	31	5	
Oxychilus cellarius (Müller)	S-D	1	2	16	19		7	
Cochlodina laminata (Montagu)	S-D			1				
Clausilia bidentata (Ström)	S-D	3	4	6	9	4		
Candidula sp.	O-C	5		1				
Helicella itala (Linné)	O-C		1	3		2		4
Trichia hispida (Linné)	C			2	1	3		4
Helicigona lapicida (Linné)	S-D				1			
Cepaea/Arianta sp.	C	1	2	4			1	
Cepaea sp.	C			1	4	3		
Monacha cantiana	C			1				
Limicidae	C					1		1
% Shade-demanding		68.89	67.71	84.95	94.81	91.10	92.31	
% Catholic		6.67	8.33	4.63	2.42	5.24	3.85	
% Open-country		24.44	23.96	10.40	2.77	3.14	3.80	
No. individuals/sample		90	96	433	289	191	52	24
No. individuals/kg		45	38.4	149	145	91	26	
Shannon Wiener Index (H')		2.07	2.11	1.81	1.56	1.69	1.40	
Brillouin Index (HB)		1.85	1.89	1.72	1.47	1.57	1.20	

tions and rapid sedimentation, probably as a result of the initial physical weathering of the feature edges and bank immediately after the feature was cut. Up-profile, in fill 6364, shell was a little more abundant, at 52 individuals, suggesting a slightly reduced rate of sedimentation as the feature edges began to stabilise, although values for H'-HB index were relatively high. The assemblage is dominated by shade-demanding species at 92%, mainly *C. tridentatum* and the zontids, but *D. rotundatus* is also present. Open-country species are represented by a couple of shells of *Vallonia* sp. It is likely at this level in the ditch the mollusc shell derives from contemporary topsoil eroding into the ditch. The environment prior to construction may have been scrubby as the assemblage is not particularly diverse. The shell counts, however, are admittedly low and it is possible woodland was present in the vicinity.

In Zone B (0.25–0.64m) shell numbers increase significantly as the feature edges becomes more stable and soil formation ensues. The assemblages continue to be dominated by shade-demanding species at *c* 90–95%. *C. tridentatum* is still the most abundant, along with the zonitids, but additional species include *C. bidentata, C. laminata, A. aculeata H. lapicida, E. obscura* and *D. rotundatus*. The diversity of the shade-demanding fauna suggests an environment of shady deciduous woodland with

much leaf litter. Although the snail faunas may to some extent be reflecting microenvironments prevailing within the ditch, substantial refugia must have persisted in the vicinity from which these snails could rapidly colonise. A slight increase in the open-country component (10%) is noted at the top of this zone. This is largely due to an increase in the proportions of *Vallonia* sp. This may indicate local disturbance in the vicinity of the feature and a slight opening up of the environment. Open country xerophiles maintain a very low level in this zone which may indication short-turfed grassland somewhere not far off.

Zone C (0.00–0.25m) is characterised by a significant reduction in shell abundance, suggesting instability. This is reflected in the higher values of the H'-HB index. Open-country elements increase to *c* 25%. The chief gains are made by the xerophiles; *V. excentrica*, and to a lesser extent *T. cylindrica*, *V. pygmaea and H. itala*. Shade-demanding taxa, however, continue to predominate (*c* 70%) in a similar manner to previously. It is possible the increasing open-country element in the upper part of this profile is a reflection of the shadowing ditch profile, or perhaps the closer proximity of a very open environment, probably of short turfed grazed grassland. The presence of *P. muscorum* in the upper sample suggests this may have been interspersed with patches bare of vegetation.

The results of the HS1 mollusc analysis (Stafford 2006) immediately to the south of the A2 excavations providing an interesting contrast to ditch 6363. Ten contexts were examined from features dated to the Roman period. The assemblages were all very similar, comprising predominantly of open country species. *Vallonia* sp. made up to about half the numbers, with *V. excentrica* outnumbering *V. costata* in the pit fills, and *vice versa* in the ditches. Other significant species include *P. muscorum*, *H. itala* with *V. pygmaea* and *T. cylindrica* in lesser quantities. Shade-loving species, including *A. nitidula* and, *D. rotundatus,* were present but more numerous in ditch contexts making up to one fifth of the assemblages. Catholic species tended to be an insignificant component although slightly more abundant in the ditches. The difference in the assemblages from ditches and pits may be a result of localised microenvironments within the features. The ditches are likely to have been more humid and may have contained taller vegetation. However, this component of the assemblages did not demonstrate the abundance diversity of the shade-demanding fauna from ditch 6363. The presence of the open country species in numbers in both pits and ditches, however, suggests the presence of established dry open-county in the vicinity, short-turfed grassland and perhaps some arable.

Discussion

Caveats regarding interpretation of the molluscan data have been discussed in the report on the Bronze Age land snails (see Chapter 2). Data for the late Iron Age to Roman period is derived from Site L, Site A, Site B and Site D. Very open conditions, were noted at a number of locations. On Site A the assemblages from ditch group 3075 indicate that the environment was very open and dry during the late Iron Age and early Roman period, most likely short-turfed grazed grassland with patches bare of vegetation. It is possible the late Iron Age features themselves were being grazed by livestock, although in the early Roman period this appears to have ceased. The assemblages from the late Iron Age curvilinear enclosure in the western part of Site B were also dominated by open country taxa, although shadier vegetation, such as long grass and herbs probably grew within the feature itself. On Site D the southern edge of the early Roman enclosure ditch and the HS1 pits and ditches to the south contained assemblages indicative of a predominantly open environment of established short-turfed grassland and perhaps some arable, although again shadier vegetation probably grew within the ditches.

Shadier environments, however, were indicated at three locations. On Site L the samples from the late Iron Age to Roman ditch group 13161 were dominated by a diverse range of shade-demanding species suggesting a very enclosed environment, some form of woodland with abundant leaf litter, within or very close to the feature as it infilled. Samples from the pit fills, however, suggest clearance and establishment of more open condition by the Roman period. In the central and eastern part of Site B assemblages from late Iron Age ditches were dominated by quite a diverse range of shade-demanding species, although open-country species, including xerophiles *T. cylindrica* and *V. excentrica,* made up an important component . This is similar to the results of the HS1 analysis immediately to the south (ARC WN98). The environment in this area of intense settlement was probably quite diverse, comprising shady areas around structures, areas of long grass and perhaps scrub as well as more open areas, probably heavily trampled grass or bare of vegetation, and this is reflected in the mollusc assemblages. On Site D an interesting variation is noted in the early Roman enclosure ditch. In contrast to the south, the northernmost interventions appeared to contain a much stronger shade-demanding component. The environment prior to construction of this latest phase of the enclosure may have been quite scrubby and it is possible woodland was present in the vicinity. The diversity of the shade-demanding fauna suggests an environment of shady deciduous woodland with much leaf litter. Although the snail faunas may to some extent be reflecting microenvironments prevailing within the ditch, substantial refugia (possibly to the north) must have persisted in the vicinity from which these snails could rapidly colonise.

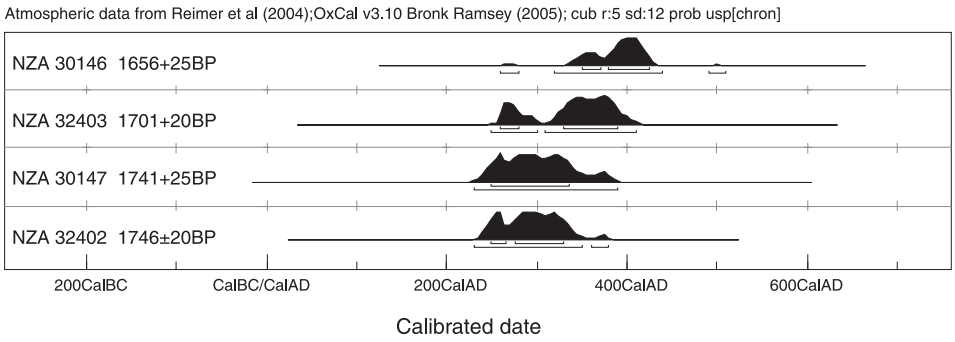


Fig. 4.75 Radiocarbon distributions for Roman features

Table 4.36: Roman radiocarbon dates

Laboratory number	*C14 Age BP*	*Error*	*Site*	*Context No.*	*Feature*	*Material*	*δ13C (‰)*	*Calendrical date cal. BC/AD (95.4% unless stated) Calibrated using OxCal 3.10*
NZA 32402	1746	20	L	12643	12679	Human bone	-19.8	AD 230-350 (93.9%) or AD 370-378 (1.6%)
NZA 32403	1701	20	L	12671	12679	Human bone	-14.9	AD 250-300 (22.6%) or AD 310-410 (72.8%)
NZA 30147	1741	25	L	12778	13214	Human bone	-20.0	AD 230-390
NZA 30146	1656	25	L	12673	12672	Cremated human bone	-17.9	AD 260-280 (2.4%) or AD 320-440 (91.8%) or AD 490-510 (1.3%)

Radiocarbon dating *by Rebecca Nicholson and Tim Allen*

The main objectives in submitting samples for radiocarbon dating were to refine the chronology of the human burials and to clarify the duration and use of the cemetery in Site L. The results are presented in Figure 4.75 and Table 4.36.

The cemetery in Site L

Three skeletons were found within the large boundary ditch in Site L, alongside which was a small cemetery of inhumation graves. The deposits underlying the skeletons in the ditch were not well-dated, and the occasional sherds of early Roman pottery that overlay them were suspected to be residual. Only one of the graves alongside the ditch contained grave goods and these have been typologically dated to the mid-2nd century AD. Bone from two of the three skeletons and from the cremation within the ditch were submitted for dating. The radiocarbon dates gave widely different dates, one in the middle Iron Age and the others in the late Roman period. Human skeleton 12986, which proved unexpectedly to date to the Iron Age, is reported upon in Chapter 3.

Grave 13214 (skeleton 12778) was cut into dumped deposits at the terminus of ditch 13161 in Site L. The whole pot accompanying this burial is of unusual form and was of uncertain date. A section of human tibia shaft dated to cal AD 230–390 (NZA 30147).

Human bone from two successive burials in a further grave alongside the ditch in Site L also gave late Roman dates. In grave 12679, skeleton 12643 gave a date of cal AD 230–350 (NZA 32402; 93.9% confidence) whilst skeleton 12671 gave a date of cal AD 250–300 or AD 310–410 (NZA 32403). Skeleton 12671 is stratigraphically below skeleton 12643. Both burials may therefore be dated between the mid-3rd and the mid-4th century AD.

At $\partial^{13}C$ -14.9‰, the value obtained during the dating of older adult male skeleton 12671 is enriched compared with what would be expected for human bone collagen. To verify this unusual result, an independent carbon and nitrogen isotope analysis was initially undertaken by Dr Nancy Beavan at Rafter; the $\partial^{13}C$ -15.6‰ supports the original result and together with a $\partial^{15}N$ of 10.57‰ suggested a diet either extremely enriched in fish or (more probably) a C_4 diet. Further isotopic analysis was undertaken and is discussed separately (see Pollard this chapter).

Cremated human bone from deposit 12673 within ditch 13161, Site L

This cremation deposit was in a pit (12672) cutting the end of ditch 13161, and cut into deposits sealing inhumation 12788 (see Fig. 4.55, section 1238). A

fragment of cremated bone dated to cal AD 320–440 (NZA 30146; 91.8% confidence).

DISCUSSION *by Tim Allen*

At the start of the Roman period, the focus of settlement along the line of the A2 scheme was in Sites B/C, with large linear boundaries to the west in Sites L and A. The middle Iron Age origins and associations of the long boundary ditch 13161 in Site L, and the deep ditch 4615 (HS1 ditch 332), have already been discussed in Chapter 3, as has the addition of a further boundary ditch in Site A in the late Iron Age. In the Roman period less substantial ditches were added at right angles on the south-west side to create a group of fields or paddocks running down the side of the Downs Road dry valley. The area north-east of these boundary ditches was not similarly sub-divided, suggesting a difference of landuse either side. Given the relatively steep slope of the side of the dry valley to the south-west, it is perhaps more likely that the ditched enclosures were for animals rather than for crops.

The alignment of the ditches running off the major land boundaries changed from NE-SW to approximately N-S towards the east end, running along the contour rather than downslope. Between the boundary in Site A and the occupation in Site B there were no major boundaries, and one or two short lengths of ditch appear to mark a subdivision on the plateau, but this was not an extensive system, as it was not continued across Site L or the access road.

Although the dating of the fields in Sites L and A is not very secure, it is likely that they were contemporary with the early Roman occupation evident on Site B. The scale of activity on Site B was considerably less than in the late Iron Age, and it appears that the focus of this settlement had shifted to the enclosure south of Site B on the HS1 (Askew 2006, figs 11–14). Activity at this enclosure continued into the mid- 2nd century AD, probably ending at much the same time as the occupation on Site B.

The middle and late Iron Age settlement in Sites B and C appears to have developed either side of a metalled trackway (Chapter 3). The first phase of the HS1 Iron Age and early Roman enclosure south of Site B, and which ran along its west side, was a holloway that was very probably a continuation of this. The holloway had a sinuous course even within the HS1 excavation area, but followed the same overall alignment as the metalled trackway (Askew 2006, fig.12). The early Roman ditched trackway that superseded the metalled trackway in Site B marked a departure from this alignment, turning NNE. To the north, none of the A2 Activity Park excavations lay across its projected line, and this trackway may have run straight until it joined Watling Street. Alternatively it is possible that the ditches interpreted as forming the north-west corner of an enclosure in the A2 Activity Park (Dawkes 2010), which were cut by Roman inhumations and provisionally dated to the middle Iron Age, in fact mark a continuation of the trackway of the early Roman period.

As stated in the description, most of the features of early Roman date in Site B were large rectangular or oval pits, the largest of which (4772) was tentatively suggested to have been a sunken-featured building. A substantial proportion of the features within the HS1 enclosure to the south were also pits of similar size and shape. Here ovens or hearths and a varied assemblage of pottery suggested domestic activity, though the charred plant remains and a horse burial may also indicate agricultural functions. The small quantity of amphora sherds and other imported pottery is typical of low status rural settlements of the early Roman period. A cremation burial and a pit containing disarticulated, unburnt human bone show that, as in the preceding Iron Age settlement in Sites B/C, burial was also carried out within the settlement area.

This settlement thus appears to be a low-status rural establishment that includes a field system, evidence for crop processing and animal husbandry. Similar settlements are reasonably common locally, as at the Dartford Football Club (Simmonds *et al*. 2011) and Hillside, Gravesend (Philp and Chenery 1997).

In the early Roman period, the area between the Downs Road and Tollgate dry valleys therefore included both this settlement, focussed on the curvilinear enclosure south of Site B, and the new, rectilinear enclosure on Site D (Tollgate Junction). Although the excavations on both the A2 and HS1 uncovered elements of the same enclosure, the central area remains uninvestigated. Superficially this has suggested notable differences between the north and south of the enclosure in terms of status. The HS1 excavation recorded a single phase enclosure interpreted as a farmstead (Askew 2006) with no indication of particular status, whereas the current excavations found several phases of enclosure associated with a number of remarkably high status burials.

Using the cropmark evidence, and the limited examination of the central area by trial trenching and Watching Brief, the overall layout of the rectilinear enclosure has been reconstructed (see Fig. 4.2). At its maximum extent the site probably consisted of two large enclosures, one on the east, the other on the west, with an additional smaller enclosure to the north-east and a thin corridor running around the west and south. It is likely that the principal buildings were located in the larger, western enclosure, which was located on higher ground. It is possible that the three large post pits in the north-west of the enclosure represented the remains of a large aisled building, in a variant form with three large posts along the short axis at either end, like those found at Keston (Philp *et al.* 1991). Five such structures, all around 7m wide, have so far been identified in Kent, including one close by at Thurnham villa, and have been seen as a distinct local variant (Booth *et al.* 2008, 376–8 and table 10.2).

Where such post-built structures have been discovered previously these have usually been interpreted as agricultural, possibly as barns, although the west building at Keston had painted walls, and so was interpreted as the main domestic building of the later 2nd century (Philp 1991, 298). The finds assemblage for the Tollgate enclosure also indicates a domestic setting, as outlined above.

Overall the pottery dating suggests that both phases of the enclosure may have been constructed within a relatively short time span (*c* 30 years) between AD 50 and AD 80. This enclosure thus covered an area of well over 1.6ha. by the Flavian period. Although the dimensions of only a very few early Roman enclosures in Kent are known, this is substantially larger than most other rural enclosures of the period across southern Britain as a whole. As a comparison in Kent, even the developed 2nd century villa enclosure at Thurnham was only of comparable length (160m); it was at least 70m wide, but its full extent is unknown (Millett 2007, 154, fig. 5.12). The area enclosed by the villa enclosure wall at Minster-in-Thanet (118 x 71m) is only 0.8ha. or half the size (Perkins and Parfitt 2004). The size of the enclosure is in itself indicative of the status of the site, and is appropriate to what the high status graves show was a very important family in the mid-1st century AD.

Although the excavations showed that some intrusive material had made its way into ditch 6941, one notable find within the second phase ditches was Roman tile. That this had reached the site by AD 70–80 indicates access to an early tile kiln. It is highly improbable that this material had arrived second-hand from earlier buildings at this date, and may indicate that a building with a tiled roof also existed in the unexcavated part of the site, in effect an early villa building. Tiles were also used in the construction of corndriers, but given the rarity of tiles overall in the 1st century AD, this is much less likely. A small villa building is perhaps not unlikely in association with a family that could afford burials of such quality.

The exterior corridor to the west and south probably functioned as an access corridor. The HS1 excavations showed that two roads flanked by ditches led into this area in the south-east corner from both the south and east. It is likely that smaller entrances into the different enclosures were located off this corridor. The activity found in the vicinity of this entrance was largely agricultural and it may be that the large eastern enclosure was used for such purposes. This would then have corresponded to the outer villa enclosure in more formal villa layouts such as those at Thurnham and Northfleet (Andrews *et al.* 2011). The large amount of charred plant remains recovered in the HS1 excavations and the smaller amounts from the current site certainly support the presence of agricultural activity. It is possible that the sunken-featured buildings or working hollows in this area were also related to this activity.

The burial enclosures on the north-west and north-east were therefore located as far as possible from the main entrance. It is possible that the north western burial enclosure was originally approached between the inner and outer ditches of the corridor if 6941 was indeed a later addition. The complete lack of other features in the north east enclosure may indicate that this was a garden area.

Although only 400m apart, the enclosures at Tollgate and that south of Site B on the HS1 may not have been intervisible, as they both lay on ground sloping downwards from the slight crest at the east end of Site C. Smoke rising from either would, however, certainly have been clear to the inhabitants of the neighbouring settlement. In the absence of a field system or trackway that clearly linked the two, it is possible to envisage several possible relationships between the two settlements. The status of the Site D enclosure was clearly greater than that of the HS1 enclosure, and this limits the possibilities. The settlements might have been unconnected, in which case the Site D enclosure should probably be viewed as a new farmstead carved out of, and probably imposed upon, the local settlement pattern just after the Roman conquest. Alternatively, the Site D enclosure might represent a relocation of the settlement on Sites B/C, but leaving some part of the population, and some agricultural functions, within the old settlement.

The sequence of high status burials, those of the late Iron Age on Site B, and those of the early Roman period in Site D, is probably the key to deciphering this. The late Iron Age burials, which are dated to the very late 1st century BC and the early 1st century AD, indicate a family of consequence associated with the Site B/C settlement only a generation before the Roman conquest. The presence of further high status burials on Site D dating to the mid-1st century AD, and including objects that may well have arrived in Britain before the conquest, makes it most likely that the same family is represented in both sets of burials, responding to the construction of Watling Street and to the changed political realities. The imposition of a new dynasty by the Romans, demonstrated by the shift in settlement focus to a new-style farmstead and by burials aping Roman ways, remains however a possible alternative if the local aristocracy were among those who had resisted Claudius.

The high status early Roman graves

The largest grave, 6260, is of a size and richness that places it in the same broad category as the 'Welwyn-type' burials of the late Iron Age, and clearly follows in this tradition, despite the absence of amphorae. Throughout the late Iron Age amphorae are absent from high status burials in Kent, and this local tradition clearly continued into the early Roman period. Graves 6260 and 6635 are the richest yet found south of the Thames and east of Hampshire, not only in pottery, as Val Rigby has remarked above,

but also in metal vessels and other finds. In a review of metal vessels from late Iron Age and Claudio-Neronian burials in the south-east of Britain, Brookes listed only 38 vessels (Brookes 2004, 219). This site has added another five. The third grave, although containing only five ceramic vessels and no metal ones, was still a rich grave for this period, with two imported ceramic vessels amongst the five, a tin-bronze mirror, glass unguent bottle and a decorated casket. As a group these stand out amongst Claudio-Neronian graves anywhere in Britain, and are only matched and exceeded by a few others, such as those at Alton, Hampshire (Millett 1987), and most notably by those at Stanway near Colchester (Crummy *et al.* 2007). The group found here presumably belong to members of a single family or kinship group, a group of particular high status in the generation immediately succeeding the Roman conquest. A number of the objects in the graves may, however, have arrived before the conquest, suggesting that this group may already have been important in the late Iron Age.

The shape, size and location of the graves were clearly intended to make a statement about the status and affiliations of the individuals concerned. All three were roughly square, and shared a similar orientation; grave 6260 was 2.2–2.4m across, while graves 6635 and 6645 were only 1–1.1m and 1.1–1.2m across respectively. Circular high status burials include the earliest late Iron Age example at Baldock, the grave at Dorton in Buckinghamshire (Brookes 2004, 269) and the Aylesford-Swarling series in Kent itself, to which the two burials on Site B also belong. Other than the examples at Baldock and Dorton, however, square or rectangular graves are mostly used for the highest status burials throughout late Iron Age and early Roman Britain, as at Welwyn, King Harry Lane and Folly Lane, St Albans and at Lexden and Stanway, Colchester. Crummy (2007, 427) has suggested that the main reason for this was the covering of the graves with nailed wooden covers, but the switch from circular late Iron Age graves on Site B to square early Roman graves on Site D is as likely to be one of the desire of this family or kinship group to participate in a wider network of Romanised aristocratic behaviour.

A similar differentiation in grave size was evident at Stanway, where the Doctor's and the Warrior's burial were in grave pits of similar size to grave 6260, but the Inkwell burial was in a pit 1.5m square, and the Brooches burial in a pit just 1m square. At Stanway the difference between the grave sizes was broadly matched by the number and variety of grave-goods, although Crummy did question whether numbers of objects necessarily equated to higher status (Crummy 2007, 428), At the A2, however, while there were more bronze and ceramic vessels in the largest grave 6260 (18 and 3) than in grave 6635 (14 and 2), the difference in the size of the graves was not commensurate; the area covered by grave 6260 was four times as large, and the objects in grave 6635 were balanced one on top of another. In addition, grave 6260 occupied a focal position within the enclosure dug around it, and remained in splendid isolation, whereas grave 6635 and grave 6645 were in close proximity, and were later surrounded by other, less wealthy graves. It seems therefore that grave size was an indicator of status independent of the actual contents of the grave.

Within Kent a similar, though less pronounced, pattern is evident at the Claudio-Neronian cemetery recently excavated at Coldswood Road, Manston (Dinwiddy and Schuster 2009, 92–6). Here seven graves were excavated, three possibly including casket burials, but none as rich as those at Site D. Two of the graves were rectangular, the rest circular, but none was more than 0.85m across. The rectangular graves were two of the three with the best grave goods, and the smallest graves were those with the least grave goods (ibid., 95).

The arrangement of objects within the graves at the A2 shares common traits that reinforce the suggestion of shared cultural aspirations between the aristocracy of southern Britain. In all three graves the cremation is on the west side, either centrally or (for grave 6260) occupying the south-west part of the grave. This is also the location of the cremated bone in all of the Stanway high status burials (Crummy 2007), suggesting a shared ritual and underlying beliefs. The organisation of the grave goods is, however, apparently not subject to similar restrictions; while the pottery dishes and bronze vessels in 6260 and 6635 occupy the south-east quadrant, the flagons in grave 6635 are on the north-west, not the south-east. The cosmetic box in grave 6635 lay on the south-west, while the casket, unguent flask and mirror in grave 6645 lay on the south-east. The folding board in grave 6635 was apparently not for gaming, so cannot be compared with the gaming board in grave 6260. Its position was not, however, the same as that of the second probable board in grave 6260 either.

Given the variety of objects deposited, it is perhaps unwise to pursue patterning in the arrangement of objects too far. In all three graves, however, the north-east quadrant appears to have been left empty, or at least to have held only entirely organic objects no trace of which has survived. Although the placement of objects in grave 6645 as found encroached slightly upon this quadrant of the grave, the beaker and the platter on edge have slumped since burial, and were originally further west and south. Only the mirror may occupy its original position in the grave. A similar arrangement is therefore likely for grave 6645 as for the others. Given the size of the graves and their depth, placement of the objects from outside would have been very difficult, and the north-east quadrant may simply have been the place from which the objects were arranged in the grave. Alternatively, or perhaps additionally, this corner may have contained cloths or rugs. This does not, however, seem to have been the case at Stanway, where only the Inkwell burial appears to have left

the north-east quadrant empty. In the Brooches burial it was the north-west corner that was empty, while only small areas of the floor of the Doctor's and Warrior's burials were unused.

Some details of the burial process have been established. The chalk floor of grave 6190 (burial 6260) was covered with grass or straw before the grave goods were added. Most of the ceramic vessels were buried upright and uncovered, but the bronze wine-mixing bowl, which contained a small beaker, was covered and protected by textile. From the disposition of the grave-goods in graves 6635 and 6260, it is almost certain that they were not protected by a wooden cover, as was suggested in the Doctor's grave at Stanway (Crummy 2007, fig. 107). The folding board in grave 6635 extended right into the south-west corner of the grave, while one of the two flagons lay very close to the north-west corner, making it is unlikely that any supporting vertical could have been placed there. The same is true of the flagon at the south-east corner of grave 6260. A number of nails were found partway up the fill of this latter grave, but (apart from those belonging to the table) these did not extend right across the southern half of the grave, and did not appear to form any regular pattern. As the northern half of the grave was not excavated with similar care, it is not known what pattern might have been made by any nails here, but on balance the nails are interpreted as material incorporated into the backfill, along with part of a copper-alloy hinge. There was no evidence that any of the vessels had lids, although these might have been organic; all of the vessels standing upright, with the exception of those partly underlying the table in grave 6260, were filled with soil indistinguishable from that of the backfill of the graves. The bronze wine-mixing bowl was full of soil, which presumably entered once the cloth covering had rotted, and the fill included copper-alloy roundels, presumably fallen from the table above into the open vessel.

The survival of the careful placement of the grave goods indicates that the backfilling was carried out with great care. In the case of grave 6260, the area underneath the table on which the 13 pottery vessels sat must have been infilled almost to the top, or the pots would have fallen into the void below, and the decoration of the table would not have remained *in situ*. The stacked vessels in grave 6635, and the edging of the folding board, would similarly not have survived *in situ* unless the space beneath the board, and the spaces between the pots, had been carefully filled in. This suggests that the placing of the grave goods, and of the cremation, must have followed a specific order. For grave 6260, it would probably still have been possible for the mourners to see almost all of the contents of the grave before the main backfilling began, as the grave goods surround the legs of the table. In grave 6635, however, some of the lowest pottery vessels were almost entirely obscured by those above, and the folding board completely hid the bronze ewer and the brooch, and we must envisage the placing and covering of some objects with spoil before others were deposited.

A similar process is evident in much smaller grave 6605. Here the central cremation urn was placed in the centre of the grave, but it was not until the surrounding grave was half-filled with spoil that two further accessory vessels were added.

The pottery deposited in the graves has already been discussed at some length by Biddulph earlier in this chapter. As is usual, the vessel types selected were those associated with consumption, not food preparation, and as in many late Iron Age graves, the vessels selected include examples of various colours (Brookes 2004, 211, 215). The selected vessels did not, however, represent place settings, or a balanced dining set. There was only limited evidence for the deliberate breakage or 'killing' of vessels, and equally little for pottery vessels burnt on the pyre, most objects being whole when placed in the grave. The bronze vessels comprise two patera and ewer 'sets' and a handled bowl, possibly for wine-mixing. In the Roman world the patera and ewer sets were usually used for ritual washing and for pouring libations, rather than for serving drink (Fitzpatrick 1997, 208), but a mead residue was found in the Hochdorf cauldron (Brookes 2004, 220), and the handled bowl from grave 6260 can plausibly be interpreted as a wine-mixing bowl.

Chairs, couches, tables, trays and stools have all been posited in high status late Iron Age and early Roman graves on the basis of the discovery of iron, copper-alloy and even ivory fittings (Brookes 2004, 221; Lethbridge 1952), but grave 6260 is the first where furniture has been able to be reconstructed from the surviving *in situ* remains. The table from this grave has been discussed at length in the grave catalogue above, concluding that it may well have had multiple functions, and ended its life as a display table.

The close similarities between the arrangement of the vessels on and beneath the table in burial 6260 to the side table depicted on the wall of the tomb of Victorius Priscus in Pompeii shows the extent of knowledge of Roman customs among this family (Fig 4.76). Nevertheless, this burial betrays its native origin in the presence of beakers, a particularly Romano-British pottery form. Gaming boards are present in late Iron Age graves, for instance at Welwyn Garden City and Standfordbury A, although the majority date to the early Roman period, as at Stanway, Verulamium and Alton (Brookes 2004, 261). Regional customs may be indicated by the inclusion of fish vertebrae in the cosmetic box in grave 6635, as fish bones were also found within female grave 8237 at Coldswood Road (Dinwiddy and Schuster 2009, 155–7).

The casket from grave 6645 is matched by examples from a large number of other high status burials (Brookes 2004, 222). The box at Mount Bures contained a glass bottle, and the box from Dorton a mirror and the cremated remains, like the larger box in grave 6645 (ibid.). Rectangular larger boxes like

Fig. 4.76: Tomb of Vestorius Priscus © *Jackie and Bob Dunn, www.pompeiiinpictures.com, Su concessione del Ministero per i Beni e le Attività Culturali - Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei*

the box suggested in grave 6645 are not unknown elsewhere in Kent in the Claudio-Neronian period; a rectangular box 0.6 by 0.2m, marked by *in situ* corner brackets, contained the cremated remains in grave 8199 at Coldswood Road (Dinwiddy and Schuster 2009, 152–3 and fig. 2.34). Three graves at this site were interpreted as containing boxes or caskets, but none of these contained a complete set of metal fittings (ibid., 153–5). The fittings in this cemetery were mostly of iron, and it is therefore possible that they had simply rusted away, or that in two cases the boxes had been burnt on the pyre, and only some items collected. If not, they support the inference made in grave 6645 that the boxes accompanying the dead were not new, and may already have been repaired and broken when chosen to go into the grave.

From the cremated remains it was suggested that burial 6260 was that of a man, and burials 6635 and 6645 were those of women. Although the determination of sex was not certain, this fits with the 'female' objects found in graves 6635 and 6645, the first containing the cosmetic box and ligula, the second a mirror and glass unguent bottle. The largest grave was that of a man. While Boudicca and Cartimandua demonstrate that women could occupy positions of power in Iron Age and early Roman Britain, men occupied most positions of status and power in Roman society, and the furnishings of burial 6260 reflect this.

In her survey of items buried with the dead in high status graves, Brookes (2004) suggested that cosmetic boxes, palettes and ligulae and glass unguent bottles might have been connected with the preparation of the body for burial, and were perhaps buried because of the pollution brought about by this. She also suggested (ibid., 244) that mirrors may have been buried because they held the reflection of the dead person, a superstition that persisted in the turning of mirrors to the wall after the death of the owner. Much depends upon whether both of the individuals buried in graves 6635 and 6645 can be

assumed to have had similar sets of cosmetic equipment, from which these rather different items were selected for burial, or whether these were rare and prized items particular to these individuals. If the former were true, the selection of cosmetic box and ligula in one, and of unguent bottle and mirror in another, might imply that the individuals were prepared rather differently for burial, and that the man in burial 6260 was not so carefully prepared. This seems rather unlikely. Instead of a role in the preparation of the deceased for burial, the close personal connection of the toiletry items in particular with the body and appearance of the deceased, may have made their reuse by someone else inappropriate or potentially polluting. All of these objects were, however, rarities in early Roman Britain, and given the different types of object deposited in these three graves, these objects probably represent some of the most prized possessions of these particular individuals in life.

None of the graves showed any evidence of *in situ* burning, so the bodies must have been cremated elsewhere. No trace of any pyre sites was however found within the excavated area of Site D. These are usually shallow features, and it is likely that these have simply been removed by later ploughing. The absence of other features within the north-western enclosure that contained burial 6260 may indicate that this was also the area where pyres were situated, although other purposes, such as a garden, are probably more likely.

The focal position occupied by grave 6260 along the central axis of the surrounding enclosure, and the size of the enclosure that surrounded it (50m x 25m), are reminiscent of the enclosures surrounding the burial chambers at Stanway (Crummy 2007, fig. 8) and at Folly Lane, St Albans (Niblett 1999), although enclosing only half the area of those at Stanway, and much less of that at Folly Lane. At these other sites, however, the focal positions are occupied by burial chambers with broken remains, and the broadly comparable cremation burials with intact grave goods are peripheral. No burial chambers were found at the A2, and Crummy has suggested that this rite, which is currently restricted to Colchester and St Albans, was specific to particular high status individuals amongst the Catuvellauni (Crummy 2007, 456).

More unusual is the location of this large grave directly attached to a settlement. The enclosures at Stanway form a funerary complex at some distance from contemporary settlement, and that at Folly Lane is across the river from the oppidum at Verulamium. This is similar to the situation of most of the late Iron Age high status burials. The early Roman burials here share this proximity to settlement with the late Iron Age burials in Site B, suggesting continuity of a local attitude to the relationship between life and death.

The other two high status burials, which occupy focal positions within the small ditched cemetery, recall the arrangements at King Harry Lane, and a number of other high status late Iron Age burials, which are also accompanied by small numbers of other, more modestly-furnished graves (Fitzpatrick 1997, 228 and 234). The association of these two high status graves with much more modest graves of similar date, in contrast to the splendid isolation of grave 6260, is perhaps the strongest indication of status differentiation between them.

Such groups of graves have been variously interpreted as family groups or lineages, though Millett has challenged this (Millett 1993; Fitzpatrick1997, 234). At Site D the difference between the two focal graves and the rest is particularly marked, and if the other 1st century burials were those of family members, there seems (in death at least) to have been a great divide in social status between them. The group at Coldswood Road, Manston, have considerably less variability within a contemporary group, and seem a much more likely family group. The poorly furnished graves at Site D may instead have been those of dependent servants. The HS1 excavation showed that neonate burials were also found in the south-east of the overall rectilinear enclosure, close to the agricultural activity. At least one of these (1190) was dated AD70–130, suggesting they were only a little later than the high status burials to the north. This may suggest further social differentiation between the owners and farm workers, though infant burials are common around the fringes of Romano-British enclosures.

Small ditched cemetery enclosures like that surrounding the cemetery on Site D are a common accompaniment to rural settlements in Kent as elsewhere. The early Roman cremation cemetery at Coldswood Road described above was bounded by a rectangular enclosure 24m by 12m, and a square enclosure 15m across surrounded a cemetery of mixed cremations and inhumations of 2nd–4th century date at Cottington Road, Cliffs End (Dinwiddy and Schuster 2009, 96–104).

The concentration of pottery in particular locations within the northern enclosure ditches has plausibly been linked to funeral feasts, or to commemorative feasts held in honour of the dead (see Biddulph above). The very uneven distribution of pottery within the Site D enclosure ditches was paralleled by the results from the HS1 excavations of the southern part of this site, where a deposit of pottery and associated metalwork from ditch 1049 accounted for over half of the pottery recovered by weight and nearly half by sherd count. Like the two large pottery deposits in Site D, this deposit was also in close proximity to two neonate burials (1038 and 1190) and other potential graves in the south-east corner of the enclosure, potentially reinforcing the suggestion that these large deposits were related to funerary feasting activity, as seen at the Pepperhill cemetery (Biddulph 2006a). Fitzpatrick (1997, 280) describes the funeral meals eaten at the graveside on the day of burial (silicernium), after the prescribed nine days of mourning (cena novendialis), and subsequently on the anniversaries of the

birthdays of the deceased and at the festivals of the Parentalia and Lemuria, when relatives visited the graves. It appears that this community had adopted at least some of these Romanised customs.

A change in the status of the site

It is noticeable that none of the later graves in the Site D cemetery was of similar quality to the early group, suggesting either a significant change in the fortunes of this family by the end of the 1st century AD, or a decision to bury their dead elsewhere. The appearance of high status burials in Site B coincides with the start of the late Iron Age ritual site at Springhead, and it seems likely that the growth of this temple site was closely linked to the family living just 2km to the south-east. The appearance of a walled funerary enclosure on the south-east side of Springhead might seem a possible candidate for the transfer of burials from Site D, but the dating evidence suggests that this was not built until the very end of the 2nd century or the early 3rd century (Davies 2001). It is possible that another cemetery remains to be discovered in the unexcavated part of the site, the ancestral family cemetery being left to be used by dependants and lesser family members. If not, then as the site remained in use into the 3rd century AD, it may be that this family owned more than one estate, and moved to live in another of these, leaving this site under the control of a bailiff.

The disuse of the south-eastern access demonstrated by the agricultural activity taking place across the line of the roads in the 2nd/early 3rd centuries suggests a significant change in the character and status of the site. This appears to fit with the absence of recutting of the northern enclosure ditches in the 2nd century AD, and of any significant quantity of finds, as well as the marked change in status of the burials made in the north-west cemetery. The abandonment of the site by the later 3rd century could be related to the similar fortunes of Springhead (Millett 2007, 160; Andrews *et al.* 2011), which may in turn relate to a wider abandonment of many settlements in Kent during the 3rd century AD. It appears likely, however, that the most significant change on this site occurred much earlier, when the early high status enclosure changed character.

Later Roman developments elsewhere along the scheme

The ditched trackway in Site B was probably cut across by the series of east-west gullies interpreted as a later Roman field system. The clearest of these ditches was the north-south ditch west of the trackway, with two ditches approximately at right angles west and east. To the south, the ditch running ENE from the HS1 enclosure is on a broadly similar alignment, and could mark a further element of this system. The alignment of the north-south ditch is very close to that of the middle Iron Age ditch 4615, and probably indicates that this boundary was still active, forming the baseline from which the Roman fields were laid out after the enclosure and ditched trackway had gone out of use (by the mid-2nd century AD). This ditch, and a pair of parallel ditches seen in the access road, were not picked up in the A2 Activity Park close by (Dawkes 2010, fig. 2), but it is not clear whether they had ended, or had simply not been exposed in the western cycleway. It is possible that one of the ditches that terminated just within the main A2 Activity Park excavation was a continuation of one of these Roman ditches, but there was no evidence of Roman field ditches extending further north or east. The surviving ditches of this system in Site B were, however shallow, and it is possible that all trace has been removed by ploughing further upslope. If so, this field system may well have been used by the settlement on Site D, which continued to function into the 3rd century before being abandoned. The alignment of the east-west gullies of this system is, however, also very similar to that of the medieval plots in Site C, and the possibility must also be considered that these contained residual Roman pottery, and were in fact later.

Field systems are a common feature of Romano-British settlements in Kent, as elsewhere. Recently excavated local examples of varying dates include the fields, trackways, enclosures and fields at Hillside (Philp and Chenery 1997), enclosures or fields south of the Site D/Tollgate HS1 enclosure, field boundaries at Hazells Farm (Askew 2006), a field system at Dartford Football Club (Simmonds *et al.* 2011, 250–53) and another, this time associated with an enclosure, at the A2/A282 interchange (ibid., 72–5). Champion (2007, 120) has argued that large-scale reorganisation of the landscape was a widespread phenomenon in the early Roman period, although these local examples do not support the idea of very extensive land-division, rather of more piecemeal development at different times within the Roman period.

The later Roman burials

The pottery obtained from burial 12557 suggests that by the mid-2nd century AD inhumation burials were being placed alongside the terminal of ditch 13161 in Site L. Although a later date is possible, the presence of a vessel manufactured between AD 50 and 70 suggests that this had already been curated for several generations by the mid-2nd century, so it is probable that the grave is not much later than this. The presence of both middle Iron Age and Roman burials in and adjacent to the ditch in Site L indicates a long-lived association between this boundary and burials. The human hand bones found in the adjacent terminal of the Site A boundary ditch, which probably belong to the early Roman period, only strengthen this association between boundaries, and in particular their termini, and burials. It is quite common to find small groups

of burials in and around such boundary ditches in the Roman period, presumably relating to established ideas about liminal areas in both the Iron Age and Roman periods (see Whimster 1981; Pearce 1999; 2011).

A mixture of cremation and inhumation burials was found at the neighbouring Pepperhill Lane cemetery from the very start of the Roman period, and it is clear that in Kent the clear divide between these two burial rites was not always so apparent (Biddulph 2006a). A similar mixture of cremations and inhumations was found at the Cottington Road cemetery, Cliffs End in Thanet, though here the inhumations were generally mid-2nd century or later (Dinwiddy and Schuster 2009, 98–104). In the Site D cemetery the only dated inhumation is 3rd century, so a mixed-rite use cannot be demonstrated. The other burials did not contain dateable finds assemblages, but radiocarbon dating of three inhumed individuals has given a date range of cal. AD 230–406, whilst cremated remains within ditch 13161 were dated to AD 320–443. Overall this suggests that the cemetery was in use for a significant period of time, possibly continuing into the sub-Roman period. Cremation burial is relatively rare in the late Roman period, but occurs as a significant minority rite in the larger cemeteries, as for instance at Lankhills (Booth *et al.* 2010), and need not indicate foreign rites from beyond the boundaries of the Empire adopted at the very end of the Roman period.

The pattern of Roman burials in the local area is diverse. By the 2nd century AD there is a large communal burial ground at Pepperhill south of Springhead, the continuing use of the small ditched cemetery at Site D, further burials in the south-east corner of this same Tollgate enclosure, and also at least one inhumation burial adjacent to the large boundary ditch 13161 in Site L. In addition, there are a couple of cremations at the north edge of the A2 Activity Park, close to the line of Watling Street. A group of Roman inhumation graves, also in the A2 Activity Park, has been found less than 400m north-east of the burials in Site L, and only 650m from the cemetery in Site D, but at present these are not more closely dated. Despite the mixed-rite cemeteries described above, the general trend, even in Kent, is for cremations to be replaced by inhumations from the mid-2nd century onwards, and so it is likely that this group of inhumations is also later 2nd century or later.

The cemetery at Pepperhill also produced both middle Iron Age and Roman burials, however the main period of use of the cemetery was AD 43–130, declining into the 2nd century and probably abandoned by the 4th century (Biddulph 2006a, v). The group of burials at Site L therefore largely belongs after the abandonment of the Pepperhill cemetery, and could be seen as the return to rural burial after a period of focus on urban, or semi-urban, burial close to the shrines at Springhead. The continuing use of several rural locations within a few km of Springhead, however, indicates that this was not entirely the case, and may instead suggest that the Pepperhill cemetery was serving a different community, perhaps visitors to the temples and those serving them, rather than predominantly the local surrounding population. Whatever the date of the A2 Activity Park inhumations, a picture is emerging of a landscape peppered with small rural cemeteries, perhaps indicating a society of independent small kinship groups, rather than larger kinship groupings.

No later Roman settlement was found adjacent to the Site L cemetery. The closest Roman activity was located on the Hazell's Road diversion on the HS1, some 200m to the south. It was suggested that this, which comprised a metalled trackway, field system and corn dryer, began life before the 3rd century AD, though the main period of use of the corndrier was in the 4th century (Askew 2006, 36–7). It has been suggested that burial grounds adjacent to ditches were more often placed beyond the settlement boundary (Pearce 1999, 154) which in this case would support the idea that the associated settlement was located to the south.

The disappearance of Roman settlement along the line of the scheme by the later 3rd century may be part of a wider reorganisation in Kent, and is probably related to the centralisation of agriculture into large villa estates, such as those at Northfleet and Cobham, both of which continued to flourish in the 4th century AD.

Chapter 5:
The Saxon, medieval and later evidence

by Tim Allen, Kelly Powell and Alan Hardy

Early Saxon activity on the line of the scheme was confined to a single sunken-featured building (SFB) on Site A (Figs 5.1–2), and a waterhole on Pond D North (Fig. 5.3). Apart from a couple of stray finds, the next phase of activity dates to the 11th–12th centuries AD, when evidence of settlement is found at several locations along the scheme: Sites L and A, Site C and in Pond D South (Figs 5.1 and 5.7). Although possibly beginning in the late Saxon period, most of the evidence belongs in the Norman period. The scattered settlements of this period all share common characteristics, including the use of sunken-featured buildings. Only a part of each of these settlements lies within the scheme, making it difficult to generalise about their overall chronology, but that on Sites L and A is probably linked to an area of buildings and other features alongside Downs Road just to the south (Fig. 5.1), and the settlement on Site C also continues south into the line of the HS1, where a curvilinear medieval enclosure was excavated (Fig. 5.7).

On present evidence these sites have very different histories. Occupation on Sites L and A (and on the adjacent Downs Road site) does not continue beyond the 12th century, and in Pond D South there are only a few features of 13th century date. In contrast, the settlement on Site C continues, and perhaps expands, in the 13th century. A holloway running through the medieval settlement in Site C continued in use long after the settlement was abandoned in the later 14th century, and was only filled in well into the post-medieval period. Deneholes, which pepper the plateau between Downs Road and Tollgate Junction, are clustered alongside the holloway (Fig. 5.7); they also continue east of Tollgate dry valley, but become far less common. Some of those on sites L and C appear to be of medieval date, though more are probably post-medieval.

An isolated multiple animal burial was found towards the eastern end of the scheme, south of Singleton in Site H (see Fig. 5.25). This consisted of the burial of a dog, a sow and a litter of foetal piglets, and most of a horse, and was dated to the late 15th or 16th century. The unusual combination of animals may indicate a ritual, and perhaps non-Christian, aspect to this burial.

SAXON ACTIVITY

Only two features along the route of the A2 widening scheme were confidently identified as Saxon. The first was a sunken-featured building on Site A (Fig. 5.1), at the western end of the scheme, dated by its finds assemblage. The second was a large pit or waterhole on Pond D North at the eastern end of the route, charcoal from which was radiocarbon dated and returned an unexpected Saxon date.

Sunken-featured building 3370 in Site A

Structure 3370 was located close to the southern edge of excavation in Site A (Plate 5.1). This feature was a well-defined rectangular sunken-featured building (SFB) orientated WSW-ENE, measuring 4.7m long, 3m wide and 0.55m deep (Fig. 5.2). The building had vertical sides and a flat base, with a large posthole located in the centre of each of the shorter sides (3353 and 3355), typical of many Saxon sunken-featured buildings. The postholes protruded from the line of the sides at both ends (Plate 5.2); this is a feature also found on other examples in Kent, for instance at Springhead (Andrews *et al.* 2011), and more widely, for instance at Stanton Harcourt in Oxfordshire (Lambrick and Allen 2004, figure 5.1 and 217–8). There Lambrick suggested that the effect was due to truncation, and that the sunken area would have splayed higher up. In the A2 example, however, the sides are near-vertical, so this is less likely to have occurred.

The postholes were oval, measuring 0.7 x 0.4m and 0.6 x 0.45m in plan and 0.9m and 1.1m deep respectively. The difference in depth of the postholes may have been due to increased truncation towards the south-west side of the structure, although the disparity in depth may have been a deliberate construction feature. The depth of these postholes is unusual, especially in an area of chalk bedrock, reaching the depth postulated as a maximum for the posts of such structures in a recent study (see Tipper 2004, 70). This is especially notable in an area of chalk bedrock. Both postholes contained a post pipe, up to 0.2m in diameter, and packing fill; a secondary fill may have been present in 3353. Charcoal was present in postpipe 3380, within posthole 3353,

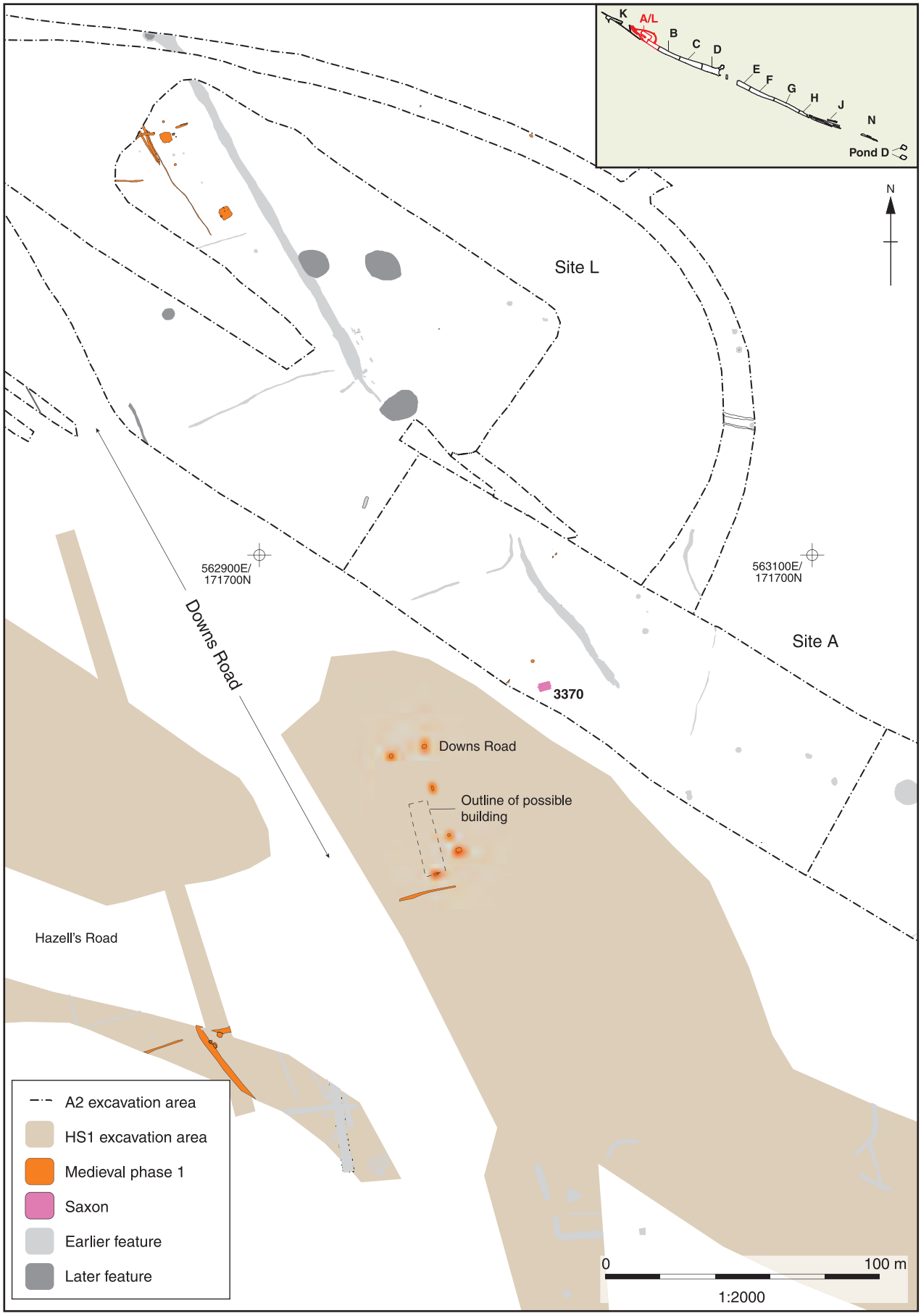


Fig. 5.1 Plan showing relationship between Sites L and A and medieval activity on the HS1 alongside Downs Road

however it was mainly small and could not be identified to species.

The hollow itself contained a series of 11 fills, which were not compacted, nor were they concentrated at the base of the feature. Only 20 fragmented sherds of early–mid Saxon pottery weighing 84g were found, distributed between five of the fills. These are thought to belong to only two handmade vessels of fairly local manufacture (see Cotter this vol.). These sherds occurred throughout most of the fill sequence suggesting these were backfill deposits lying above only two potential occupation or construction deposits (3376 and 3377). Of these two, only layer 3376 produced any finds: fragments of fired clay, animal bone and oyster shell.

The overlying backfill layers also produced a mixture of residual late prehistoric and Roman pottery, including samian ware, structural fired clay, animal bone and oyster shell. Upper fill 3346 produced a fragment of tile and a tapering iron object of unknown function (see Scott this vol.). Fired clay was also recovered from postpipe 3380 suggesting this material may have represented the remains of the superstructure.

Animal bone came from most of the fills, but was mainly fragmentary. The identifiable animals included sheep/goat and goat, pig, cattle, horse and bird. Unidentified bone also came from posthole 3353 and domestic fowl of similar size to a modern Bantam from stakehole 3361. An extensive

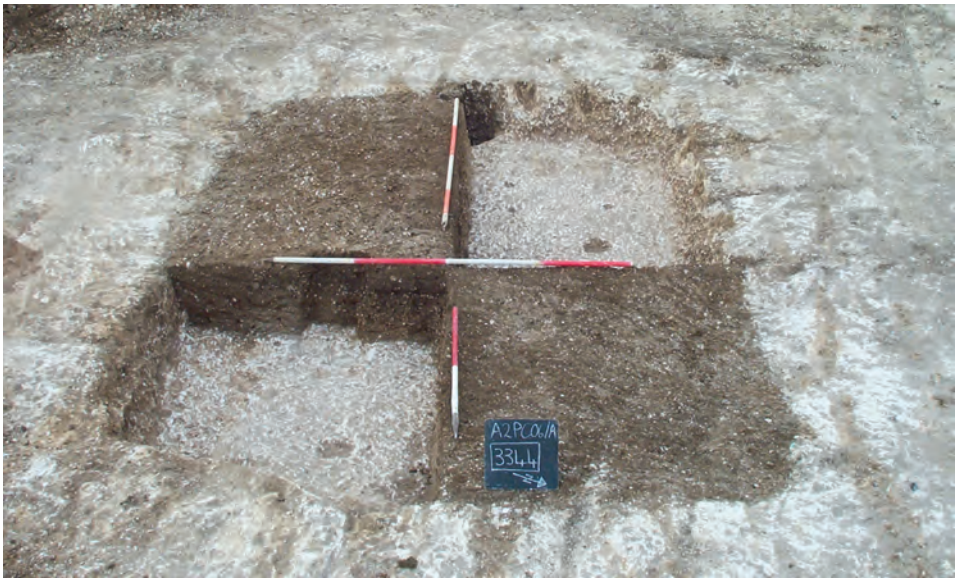


Plate 5.1 Site A sunken-featured Saxon building part-excavated, looking south-west

Plate 5.2 Detail of posthole at the south-west end of the sunken-featured building in section

environmental sampling programme revealed only modern charred grain and small amounts of charcoal. The nature of the backfills, the artefactual evidence and the unweathered vertical sides of the structure suggest that the feature was backfilled quite rapidly.

An additional series of nine stakeholes was cut into the base of the structure internally, and two externally at the western end. The internal stakeholes did not appear to form a coherent pattern as a whole, but may have formed divisions within the structure. The external examples are likely to have been reinforcements for the main post at the western end of the building. None of the stakeholes exceeded 0.1m deep and all contained single fills identical to basal fill 3376 suggesting they were pulled out on abandonment. These features are most commonly found in SFBs cut into hard chalk.

Pit 19267 in Pond D North

A very large pit or waterhole/well shaft (19267) was excavated towards the eastern end of Pond D North, south of the main late Iron Age enclosure complex (Fig. 5.3). The feature was 6 x 5m in plan and at least 3m deep. Although not fully excavated the natural appeared to be curving inwards at the depth reached indicating the excavated limit was close to the base of the feature (Plate 5.3). The pit had gradual sloping sides leading down into a deeper central shaft with three fills; a redeposited

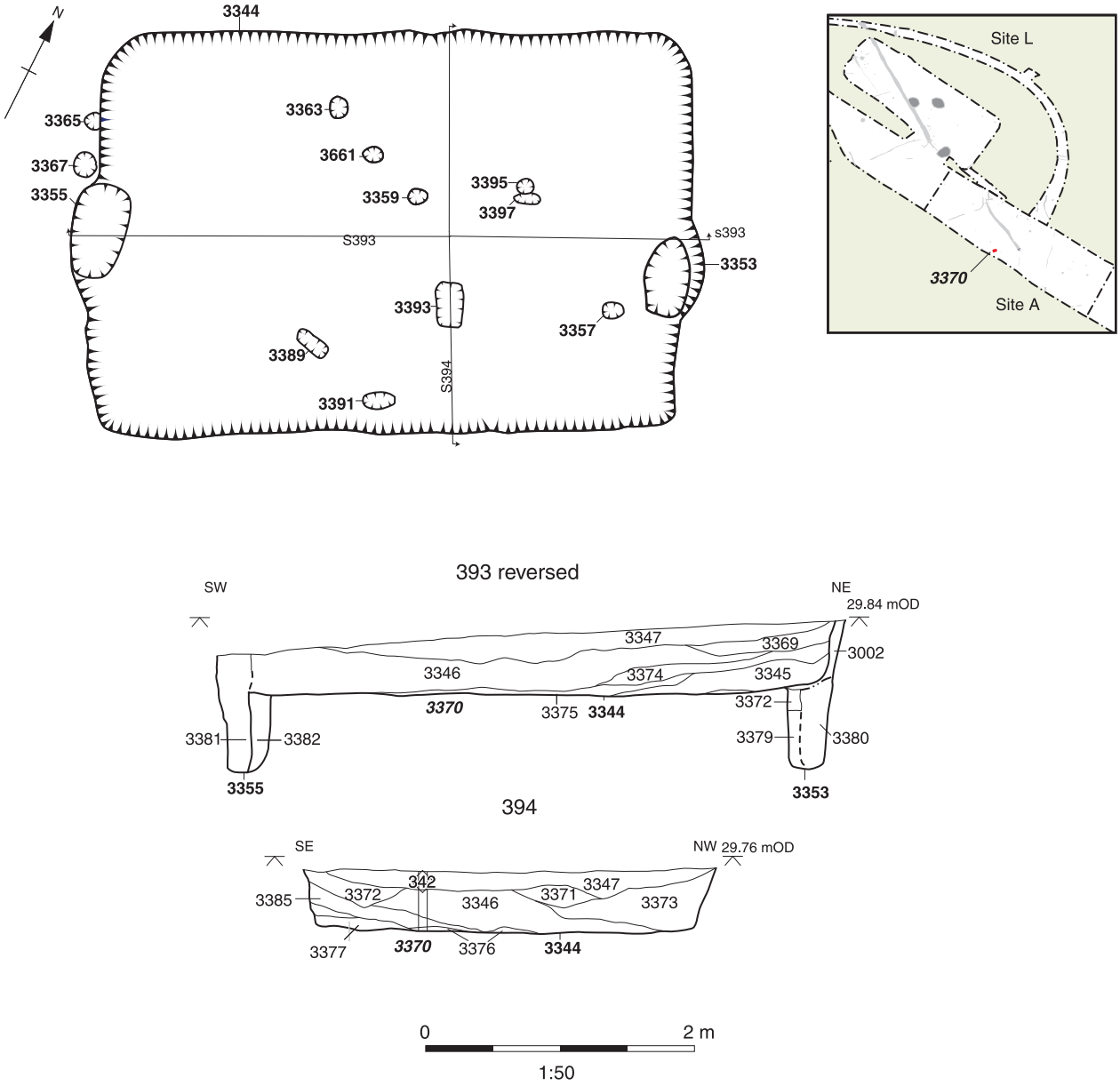


Fig. 5.2 Plan and sections of sunken-featured Saxon building in Site A

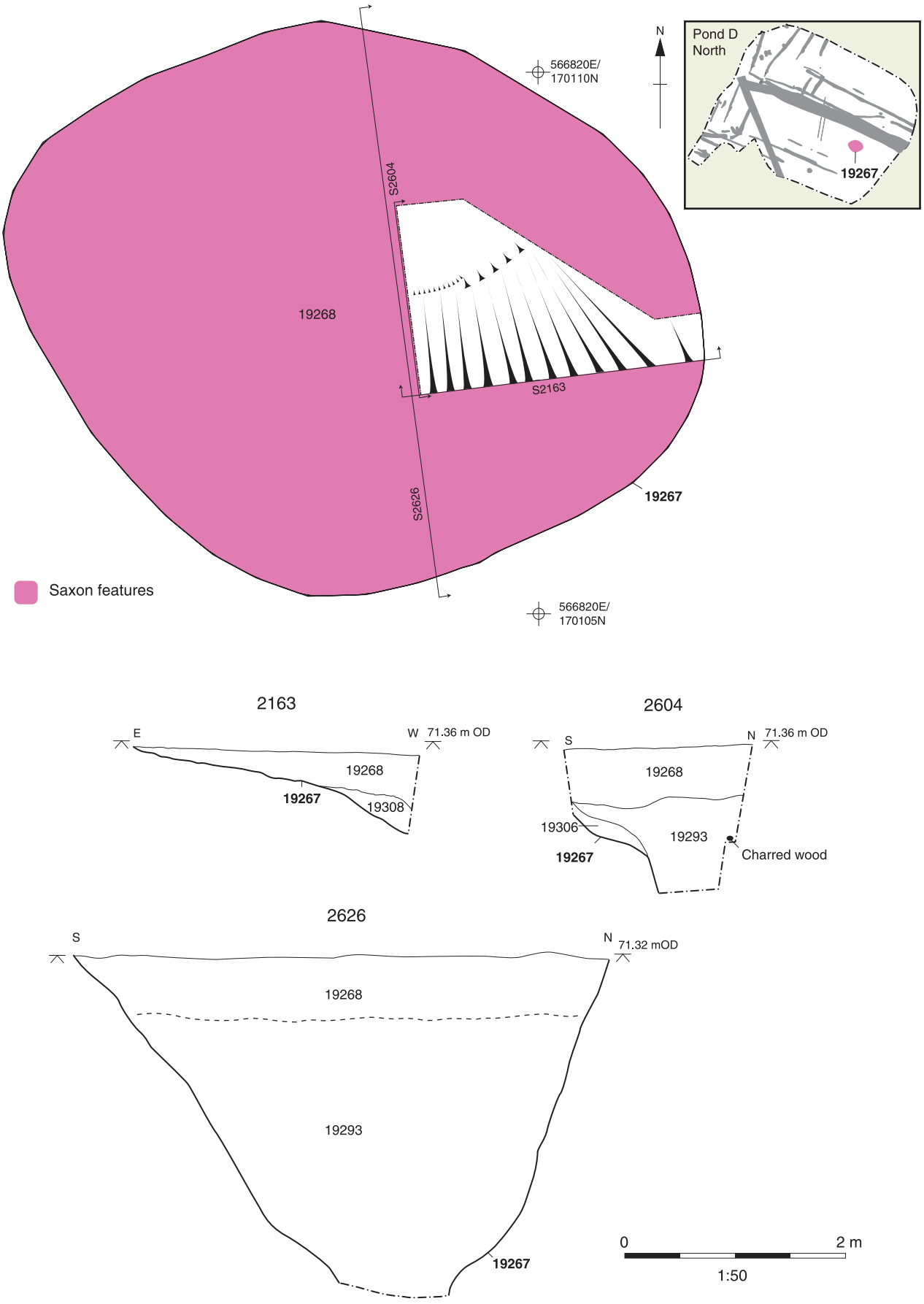


Fig. 5.3 Plan and section of waterhole 19267 in Pond D North

Plate 5.3 Section of waterhole in Pond D North after machine excavation

natural at the edges resulting from side collapse (19306), a main fill (19293) and an upper fill (19268).

Standing water was not found at the depth to which this feature was excavated, however there were fragments of preserved waterlogged wood in the centre of the pit suggesting the feature was a waterhole or well. The only other finds were 12 sherds of pottery weighing 36g and 37 worked flints recovered from both main fills.

The flint assemblage appeared to be a coherent group in relatively fresh condition and some of the pottery was identified as late Iron Age, so it was originally thought that the feature was Iron Age in date, but incorporating residual late Bronze Age material from the vicinity. In order to clarify the dating a sample of charcoal from a flat wooden lath found at a depth of 0.82m at one side of the centre of the pit was submitted for radiocarbon dating and returned an unexpected date of cal AD 406–534 (NZA 32549). The dating was repeated and produced a further date of cal AD 431–554 (NZA 33018).

It is unclear why this feature was located, apparently isolated, so far from the only other Saxon activity on the scheme. It must be considered that other Saxon activity may have existed beyond the excavated area of Pond D North. The exact function of the pit is unknown. Its morphology, depth and the presence of waterlogged wood seem to suggest that this was a waterhole or well shaft. However, there is a possibility that 19267 was some form of quarry or extraction pit.

Discussion

Both Saxon features on the A2 widening scheme appear to have been isolated and no features of this date were discovered in the adjacent HS1 excavations at Northumberland Bottom or Tollgate. Whilst it is possible that further Saxon activity existed beyond the excavated area of Pond D North, the SFB in Site A was immediately adjacent to the excavated HS1 area where no associated Saxon activity was discovered.

Settlement evidence in the county is generally limited, with most knowledge of the material culture of Saxon Kent deriving from cemeteries, which are abundant (Riddler 2004). However, a scattered group of 11 similar structures dating from the 5th to 7th centuries AD was investigated near the Northfleet Roman villa and in Springhead as part of the HS1 excavations (Andrews *et al.* 2011). These were generally smaller than the current example, lacking the internal stakeholes, and richer in finds. However, some similarities are apparent; one of the structures at Springhead also appeared to be completely isolated from contemporary features, an example from the Northfleet Roman villa had a group of six stakeholes in one corner, and an SFB from Site 6 was comparable in size.

These structures, scattered over a number of kilometres, clearly represent low density occupation, possibly migration across the landscape of a semi-nomadic society. The pattern is repeated further afield as evidenced by a group of five SFBs of similar date excavated at Manston Road, Ramsgate (Williams 2007, 207). Overall Saxon occupation in Kent at this time is characteristically lacking in permanence, with no trappings of land ownership such as enclosures and divisions (ibid.). The SFB from the A2 seems to fit satisfactorily into this interpretation. Saxon settlement in Kent, and more widely in southern Britain, is often found close to abandoned Roman sites and transport networks. Whilst there are no immediately adjacent Roman settlement sites, the relative proximity of this structure to Watling Street may have been important.

The feature on Pond D North fits less easily into the recognised settlement pattern, though its location next to Watling Street may explain the presence of a waterhole at this point. The likelihood of further Saxon occupation beyond the current excavation is strengthened by the discovery of a probable Saxon cemetery somewhere within Claylane Wood, a few hundred metres north-west of Pond D North, in 1825 (Kent SMR record KE1533; Ashbee 2007, 424-8).

MEDIEVAL SETTLEMENT

Settlement in Sites L and A

At the west end of the scheme two distinct groups of medieval features were discovered (Fig. 5.4). The larger concentration was located on the western edge of Site L and included sunken-featured building 12583 (hereafter SFB), in addition to a series of small gullies or ditches, slots, pits and postholes. A second possible SFB (12787) was uncovered in this area but was not fully investigated. This occupation clearly continued beyond the edges of the excavation to the west and north-west. The smaller group was located c 200m to the south-east in Site A and comprised a deep pit and a number of smaller pits. These latter features were very close to the medieval settlement discovered east of Downs Road in the HS1 excavations (Fig. 5.1; Askew 2006), and may have been part of it. The small pottery assemblages recovered from both groups dated from the later 11th century, as did the settlement on the HS1 adjacent. Overall the finds and environmental assemblages suggest that occupation in this area was relatively short lived.

Structure 12583

Structure 12583 was located on the easternmost edge of the medieval area of activity on Site L (Fig. 5.5). The SFB was sub-square in plan, measuring 4.05m x 4m, and was 0.48m deep. It was orientated NW-SE, in keeping with the majority of the other features in this area. The structure was divided into quadrants for excavation, and the north-west quadrant was dug out before the full complexity of the deposits was realised, hence the absence of floor layers in this part of the plan (Plate 5.4).

The floor of the excavated structure was the natural subsoil. On the south-east side this was overlain by a layer of flint nodules (13211), probably laid deliberately to make the floor firmer. Towards the centre of the floor, partly overlying the flints and partly cut into the natural clay adjacent, was an oval

Plate 5.4 Sunken-featured building 12583 in Site L part-excavated looking south-east

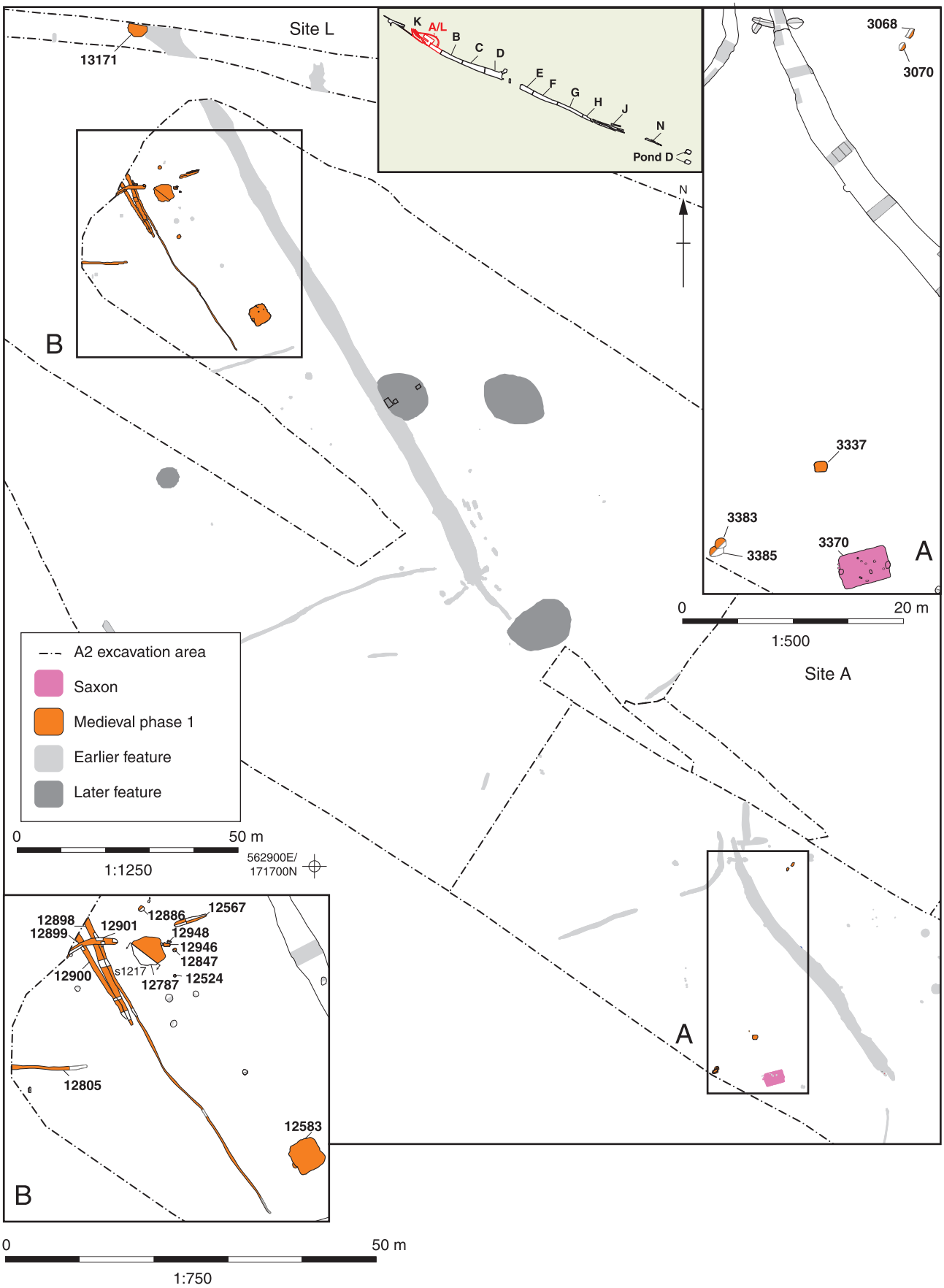


Fig. 5.4 Plan of medieval settlement in Sites L and A, with insets at larger scale

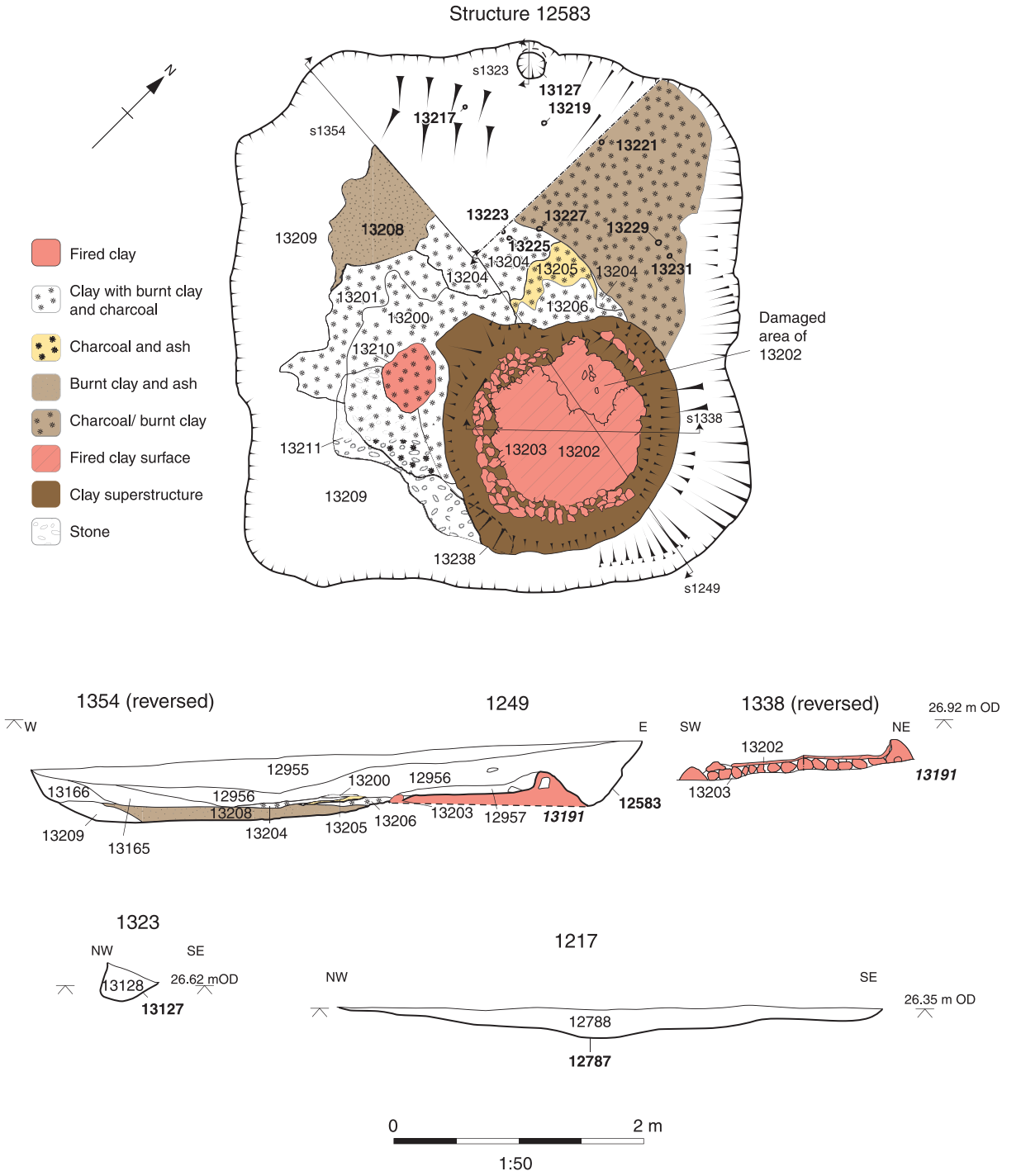


Fig. 5.5 Plan and section of sunken-featured medieval building 12583

hollow (13212) 0.50 x 0.43m and only 40mm deep, filled with sandy clay burnt to a dark red (Fig. 5.5, layer 13210). This was possibly a hearth. Environmental processing of layer 13210 produced a few indeterminate charred grains, weed seeds and charcoal. The hearth was apparently overlain by a thin layer of clay (13209) that covered the floor on the south and the west, but did not extend across the entire floor. This was interpreted as due to collapse and trample of the natural clay sides caused by entering the structure from the south west, but also included charcoal and fired clay from burning inside, presumably upon hearth 13210.

A large oven (13238) was constructed in the eastern quadrant of the building, and a series of stakeholes (13217–13231) and a posthole (13127) were located to the north of this (Fig. 5.5). These were all cut either into layer 13209 or into the natural floor of the SFB. The oven and its rakeout layers covered most of the floor.

Plate 5.5 Detail of oven 13191 half excavated within sunken-featured building 12583

The oven overlay some of the rammed flints of layer 13211, and was described as being cut through layer 13209, although there is no record of such a cut in section, and the oven appears to have been built up, not cut into the base of the hollow. The nature of layer 13209 also makes the relationship between hearth 13210 and oven 13238 less clear. The hearth was not overlain by the larger oven, in fact it sat alongside it, making it possible that both features were in use contemporarily (Fig. 5.5; see also below).

The base and some 0.18m of the sides of the oven survived. It was built of sandy clay (13191), and was 1.9m in diameter. The sides were up to 0.22m thick. Above the base was a layer of flints (13203), some of which were also bedded into the oven walls (Plate 5.5). The flint layer was overlain by a slightly sandy clay floor (13202) that heating had cracked and had turned orange, brick red and grey. The oven itself was filled by collapsed superstructure (12957), whilst the remainder of the building contained a sequence of rake out deposits and floor/trample layers (13199, 13201, 13204–8). The remaining deposits (eg 13200, which sealed hearth 13210) represented either localised patching of the floor or more likely the collapse of the oven superstructure after abandonment.

The stakeholes curved in a line around the northern corner of the structure, with a further closely spaced group in the centre. Posthole (13127) was located halfway along the north-western edge, and was inclined towards the centre. It is possible that the stakeholes and posthole belonged to temporary frames set up within the interior, but they are unlikely to have been structural, as most of the stakeholes were overlain by rakeout layers while the oven was still in use. Overall there is no conclusive evidence that the structure was fully covered, although the presence of these *in situ* rake-out deposits implies a degree of protection from the elements. Possibly some form of mass-walling was used (see also below).

The dating evidence from this structure comprised a small assemblage of mid 11th-century pottery from surface 13209, oven fill 12957, rake-out 13199 and abandonment deposits 12956 and 12582. There was also some potentially later pottery (probable 12th century) within 13204, one of the later rake-out layers, and from late floor repair or post-abandonment layer 13200, perhaps indicating use over a couple of generations.

Other than the medieval pottery discussed above, finds were few, and mainly comprised structural fired clay, presumably deriving from the oven structure, possibly from the wattle and daub superstructure. A single iron nail was recovered from floor layer 13208, and oyster shell and indeterminate animal, bird and fish bone from layers 13205 and 13199. There were 12 flint flakes, some or all of which may have been accidentally struck from the oven base, and scattered sherds of Roman pottery. The backfill and abandonment layers also produced a sherd of 17th-century pottery, sheep/goat bone, oyster and cockle shell, and a fragment of tile.

Samples for charred plant remains were taken from most of the stratified contexts, and remains were recovered from layers 13201, 13204, 13205, 13206, 13207, 13208, 13200 12957, 13199 and posthole 13218. In all cases these included cereal grains.

Usually these were a mixture of free-threshing wheat and barley but occasionally oat or oat/brome grass was noted. Cereal grains were particularly prevalent in posthole 13218, deposit 13199 and several of the trample-floor layers. Other possible crops/foodstuffs include small amounts of common vetch and hazel nutshell fragments (see Smith this vol.). Charcoal was recovered from a number of samples, most notably contexts 13207, 13199 and 13204 and may have represented the fuel source for the oven. Most frequently this included wild cherry as well as the hawthorn group in addition to smaller samples of larger trees such as oak, birch/hazel, beech and field maple.

Sunken-featured buildings, some containing an oven, were also found in Site C and in Pond D South to the east (see below). An example of similar size at Chestfield near Whitstable, dated *c* 1250–1300, was interpreted as a low status dwelling (see Allen 2004, 131), but almost the entire floor area of the Site L structure was covered by the oven, hearth and the rakeout from them. It is therefore unlikely that this was a dwelling. A specialised function, perhaps a kitchen or bakery, is possible; the environmental evidence could be interpreted as indicating that this was a crop-processing oven, similar to those discovered on the HS1 excavations to the south (Askew 2006). This might be supported by the lack of obvious domestic features in the vicinity of the structure, although its location, close to the limit of excavation may mean that such evidence was simply not picked up during this investigation. The function of these structures is considered further in the discussion at the end of this chapter.

Possible structure 12787 and associated features

Structure 12583 appears to have been broadly contemporary with many of the archaeological features to the west of it. These included a feature of almost identical dimensions in plan, although the excavated part was only 0.16m deep (Figs 5.4–5: 12787). The possibility that this was another such building was not recognised during the excavation, and it was only partially investigated, leaving its interpretation in doubt. The excavated portion of the feature did not, however, contain an oven or evidence of substantial burning, although it produced 16 sherds of mid 11th-century pottery as well as oyster shell.

A series of smaller features surrounding 12787 may have been associated. This included a slot 12567, located to the north-east and oriented WSW-ENE. This feature was 4.5m long, 0.64m wide and 0.43m deep and contained mid 11th-century pottery, fragments of fired clay and ceramic building material as well as animal and fish bone including pig, sheep and cod. In addition the slot produced nearly 4kg of marine shell including oyster, mussel, whelk, cockle, periwinkle and carpet shells.

A group of three small shallow pits (12946, 12847 and 12948) was located immediately to the east of 12787. All three contained mid 11th-century pottery and oyster shell, while pit 12847 also produced whelk and unidentified animal bone. The interpretation of this complex is uncertain, although the quantity of marine shell may indicate a domestic function. The building excavated at Chestfield also had pits and a slot or gully nearby, and an adjacent midden (Allen 2004, 131).

Ditches

A series of ditches appeared to be contemporary with structure 12583 and possible structure 12787. These were approximately aligned NW-SE or east-west and the majority were in a single group 3–6m to the south west (Fig. 5.4). The ditches ranged from a minimum of 7m to 47m long but all continued beyond the limit of excavation. All were narrow, ranging from 0.3–0.9m wide, and varied from 0.2 to 0.5m deep. Although the main group of ditches intercut, the dating evidence suggests they were all within the same phase, and were probably recuts of the same boundary. Mid 11th-century pottery was recovered from ditches 12805, 12898 and 12899, the latter two features being the earliest and latest in the intercutting sequence. Along with residual Roman sherds, fragments of 17th-century and 19th-century pot came from ditches 12899 and 12901. These are considered to be intrusive, but the presence of post-medieval tile in 12899 may support a late date for this feature.

The ditches also produced marine shell, most commonly oyster but including cockle, mussel, whelk and carpet, with fish bones present in 12805. Most produced animal bone including cattle from 12805, pig from 12898, sheep/goat and hare/rabbit from 12899. Fragments of structural fired clay came from 12898, 12899 and 12805, medieval and tile from 12899 and iron fragments from 12805 and 12898.

Whatever their original function, the ditches appear to have been used as receptacles for domestic debris. With the exception of 12805, which only appears at the south-western edge of the site, their location adjacent to the possible structures, and the domestic rubbish within them, may indicate they were constructed as enclosure ditches related to these features.

Pits and postholes

Pit 13171 was located in the access corridor to the north-west, cutting Iron Age/Roman ditch 13161 (see Fig. 5.4). The pit was 4.18m in diameter and was excavated to a depth of 1.2m; it contained iron nails and several fragments of iron strip or plate from the upper fill, a residual worked flint and a long-cross silver penny (sf 1402) dated to the mid 14th century (Edward III) from the penultimate fill and structural fired clay from the fill below. The presence of the penny suggests a medieval date for this feature although the possibility that this is residual should not be ruled out.

The remaining smaller pits and postholes in the vicinity of these features appear to be earlier or are undated and unremarkable.

Pits and postholes in Site A

The second group of features, located in Site A, comprised a deep square pit (3337) and two smaller pits close to the southern limit of the site, and a potentially contemporary pair of pits *c* 40m to the north.

Pit 3337 measured 1.26m x 1.15m and was 1.45m deep (Fig. 5.6). It contained a varied artefactual assemblage that included 1706g of mid 11th-century pottery alongside residual prehistoric and Roman sherds. Other finds included a square iron plate, an iron knife and nails, iron slag, a quartz hone and chalk spindle whorl, a worked bone point, structural fired clay and tile. One of the most unusual finds was a 1st century AD Colchester two-piece copper-alloy brooch, possibly indicating that the pit may have cut through an earlier feature.

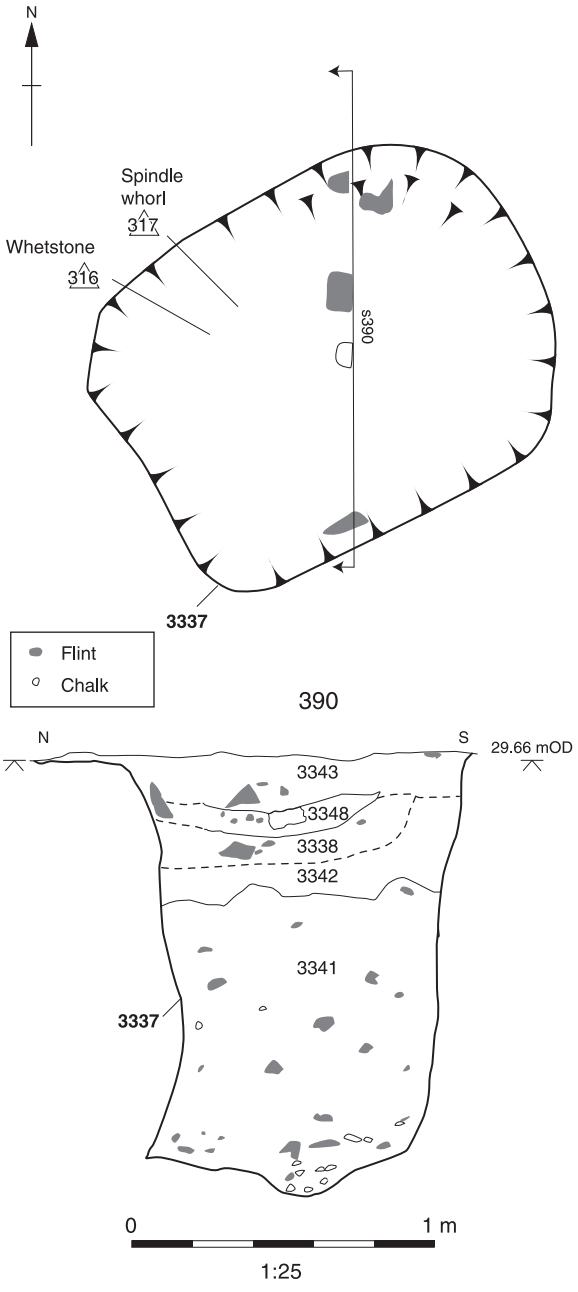


Fig. 5.6 Plan and section of deep pit 3337

Large quantities of animal bone were recovered from the pit including cattle, sheep-goat, pig, horse, toad, frog, red deer, bird, rodent and fish (cod, herring, whiting and shark/ray). The feature also yielded cockle, oyster and mussel shell, charred cereal including wheat as well as charred remains of celtic/horse bean and stinking chamomile. This appears to have been a deep refuse pit filled with domestic rubbish.

Shallow intercutting pits 3385 and 3383, both 1.1–1.2m across, lay to the south-west of pit 3337, and also produced mid 11th-century pottery, in addition to structural fired clay, cattle and sheep/goat bone. These features were all located close to the previously excavated medieval features east of Downs Road (Askew 2006), and may have been part of the same settlement.

A sherd of 11th-century pottery also came from oval pit 3068 towards the northern edge of Site A (Fig. 5.4). Pit 3068 was very similar to pit 3070 adjacent, which contained no finds but may perhaps have been of similar date.

Settlement in Site C

The central part of Site C contained a concentration of medieval activity, which continued north and south of the road corridor (Figs 5.7–8; Plate 5.6). Unlike Sites L, A and Pond D South the medieval activity on Site C fell into two separate phases. These were distinguished on the basis of stratigraphy, pottery dating and spatial analysis, in one case reinforced by radiocarbon dating. The first phase was similar in date to that on Sites L, A and Pond D South. This was mainly identified through the presence of pottery dated approximately to the latter half of the 11th century, and was supported by a radiocarbon date in the 11th or early 12th century cal AD (cal AD 990–1160; NZA 32798). Activity of the first phase comprised a series of narrow ditches, probably representing field or other enclosure boundaries, a possible structure and a small number of pits.

The second phase of activity on Site C was significantly more extensive than the first and possibly much longer-lived. Pottery analysis suggests that the main period of occupation was between *c* 1200–1350 and more specifically perhaps *c* 1250–1325 (see Cotter this vol.). The second phase included a series of ditched enclosures, some containing sunken-featured buildings similar to those found in Sites L and Pond D South, a number of possible beam slot and posthole buildings, and a variety of pits (Fig. 5.8). A substantial trackway (5306) with a cobbled surface ran through the site on a NW-SE alignment, and was

apparently respected by a number of the enclosure ditches. It therefore seems likely that this trackway originated in the medieval period, although it clearly continued in use into the post-medieval period, its backfill being 17th–19th century. This trackway continued into the area of the HS1 excavations, where it ran south parallel to the eastern boundary of the medieval enclosure and some 40m east of it.

Phase 1 c AD 1050–?1150

The ditches belonging to the earlier phase were located in two main groups. The first on the western edge of the settlement, predominantly west of trackway 5306, were aligned roughly north-south and ENE-WSW, possibly forming two or three sub-rectangular enclosures. The second group was located towards the eastern edge of the settlement and aligned NNE-SSW and east-west. These also appear to have been enclosure boundaries forming smaller rectangular units, although most of the activity within these enclosures appeared to date to Phase 2.

The earliest ditch in the western sequence may have been curvilinear ditch 7428, located at the north end of the main boundary ditch group 7429/7394. Ditch 7428 measured *c* 18m in length, was 1.2m wide and 0.7m deep, and was heavily truncated at its northern end by trackway 5306. The feature was investigated at either end and found to have been recut once. The recut contained a single sherd of medieval pottery (12th–mid 13th century), an iron nail and oyster shell, as well as animal bone

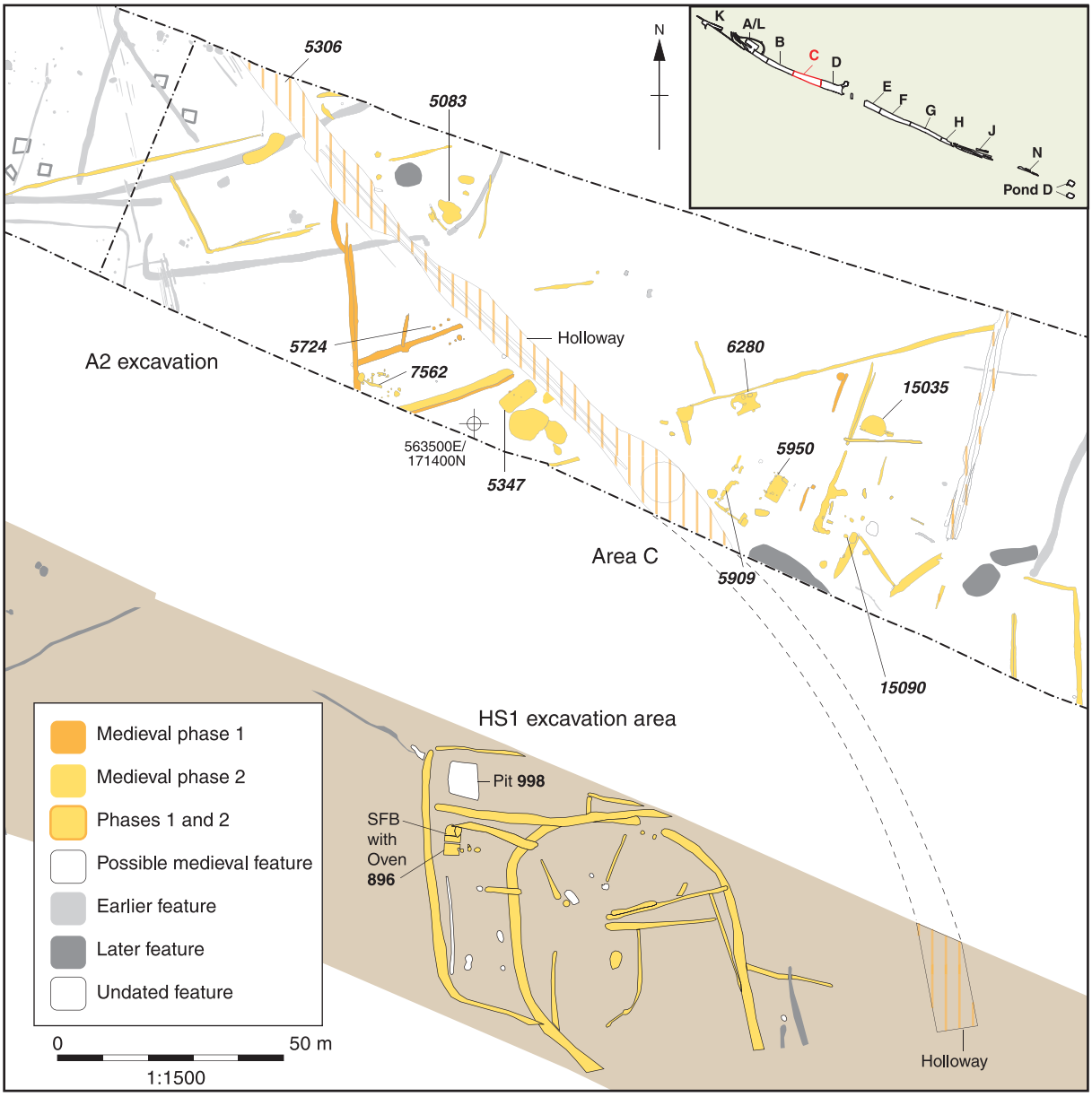


Fig. 5.7 Overall plan of the settlement on Site C, including phasing, and its relationship to the HS1 excavations

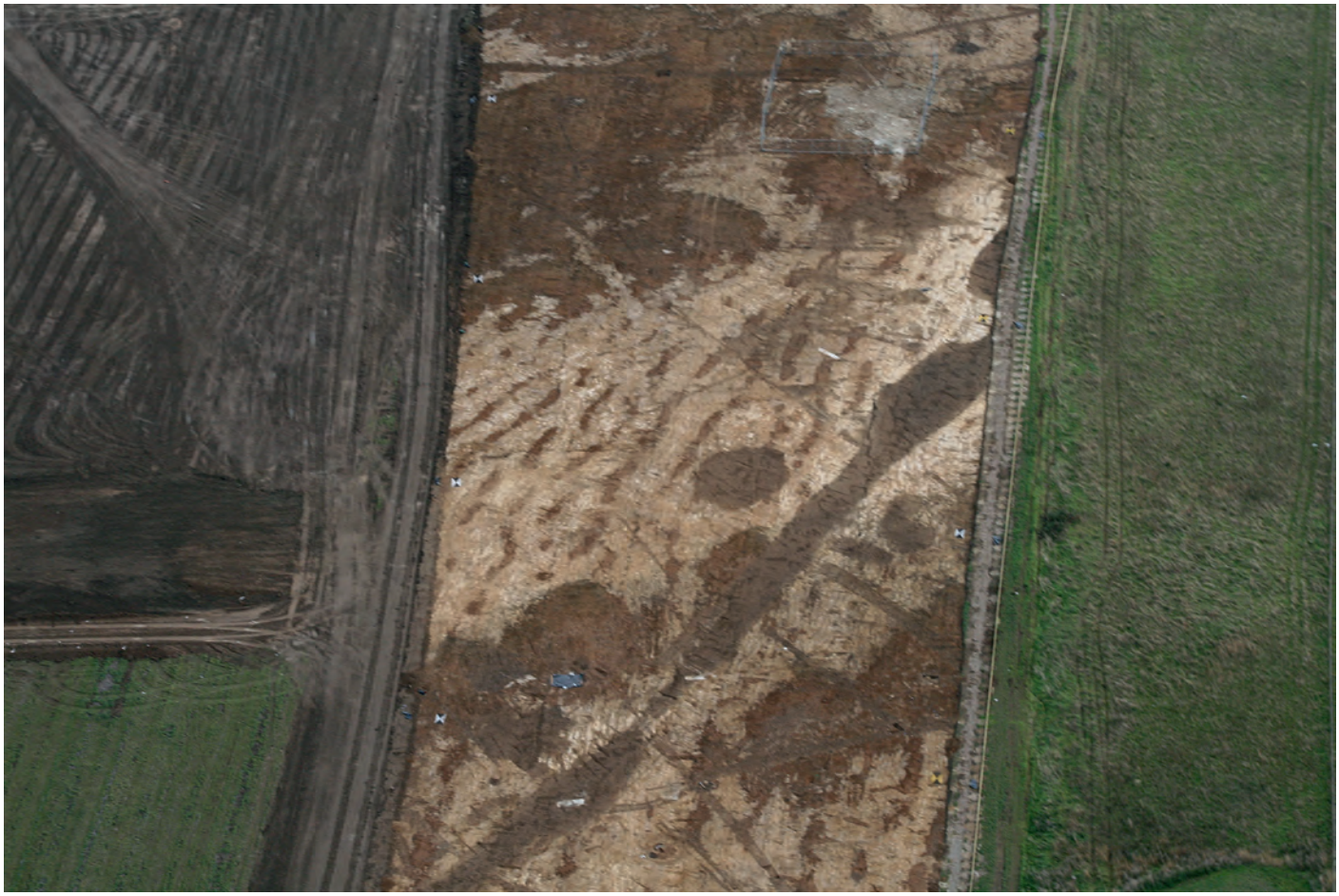


Plate 5.6 Aerial photograph of Site C medieval settlement stripped before excavation

including dog, cattle and sheep/goat. It cut Iron Age ditch 5910.

Ditch 7428 was cut by ditches 7429 and 7394 at its southern end which in turn extended southwards. The earlier ditch (7429) was traced for *c* 33m and continued beyond the edge of excavation. The ditch was *c* 1m wide and 0.4m deep. This contained mid 11th-century pottery in addition to animal bone including cattle, structural fired clay, a nail and a hobnail and possible Roman tile. Recut 7394 was similar in form, although shallower than 7429 and ran for *c* 30m. This produced a similar range of finds comprising pottery, fired clay (including a possible hearth base), nails and animal bone.

This north-south boundary cut ditch 7393, which extended 25m ENE from this point terminating just before reaching trackway 5306. The ditch was 0.9m wide and 0.4m deep and contained pottery dated to the mid 11th–12th centuries. Other finds included 364g of structural fired clay, an iron bar fragment and a nail, animal bone including pig, cattle and sheep/goat and oyster shell, most of which came from the ditch terminus. A sample taken from fill 5772 also yielded an assemblage rich in pulses (garden pea, vetch) and some free-threshing wheat (see also Smith this chapter). Approximately midway along the length of the ditch it was cut by another short ditch segment (15066), which also contained structural fired clay, oyster and mussel shells and animal bone.

Close to the ditch terminus two lines of postholes (collectively called 5274) were found, one on either side of ditch 7393 (Fig. 5.9). The two rows, which were 4m apart, each comprised three postholes, but were of different lengths, 3.5m on the south, 4.4m on the north, and the posts did not form matching pairs, the southern row only starting opposite the middle posthole of the northern row. The two rows were not exactly parallel to one another, or to ditch 7393. The postholes of the northern row were very well defined, deep postholes with post-pipes, whose upper fills were dark and showed signs of *in situ* burning on the north side. The uppermost surviving fill of ditch 7393 opposite to these postholes was a very similar soil deposit, again with clear evidence of burning, suggesting that the same event had burnt the structure that these posts supported and the surface of the ditch adjacent. Only one of the postholes of the southern row (5259), which lay directly opposite the middle post of the northern row, was similarly substantial, and this also shared the dark upper fill and *in situ* burning. The other two were shallow features, with irregular profiles and single mid grey-brown silty fills.

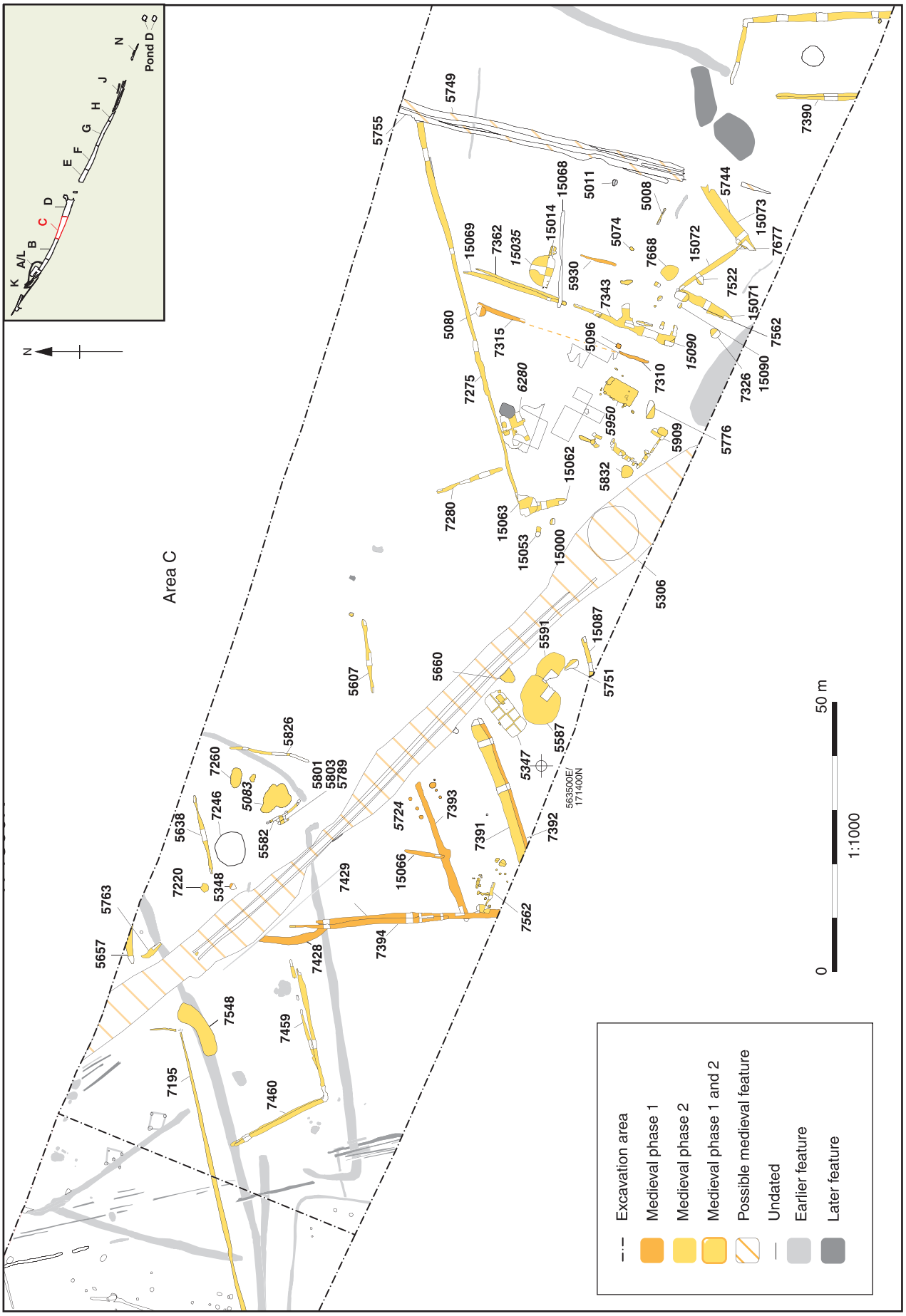


Fig. 5.8 Detailed plan of the settlement on Site C

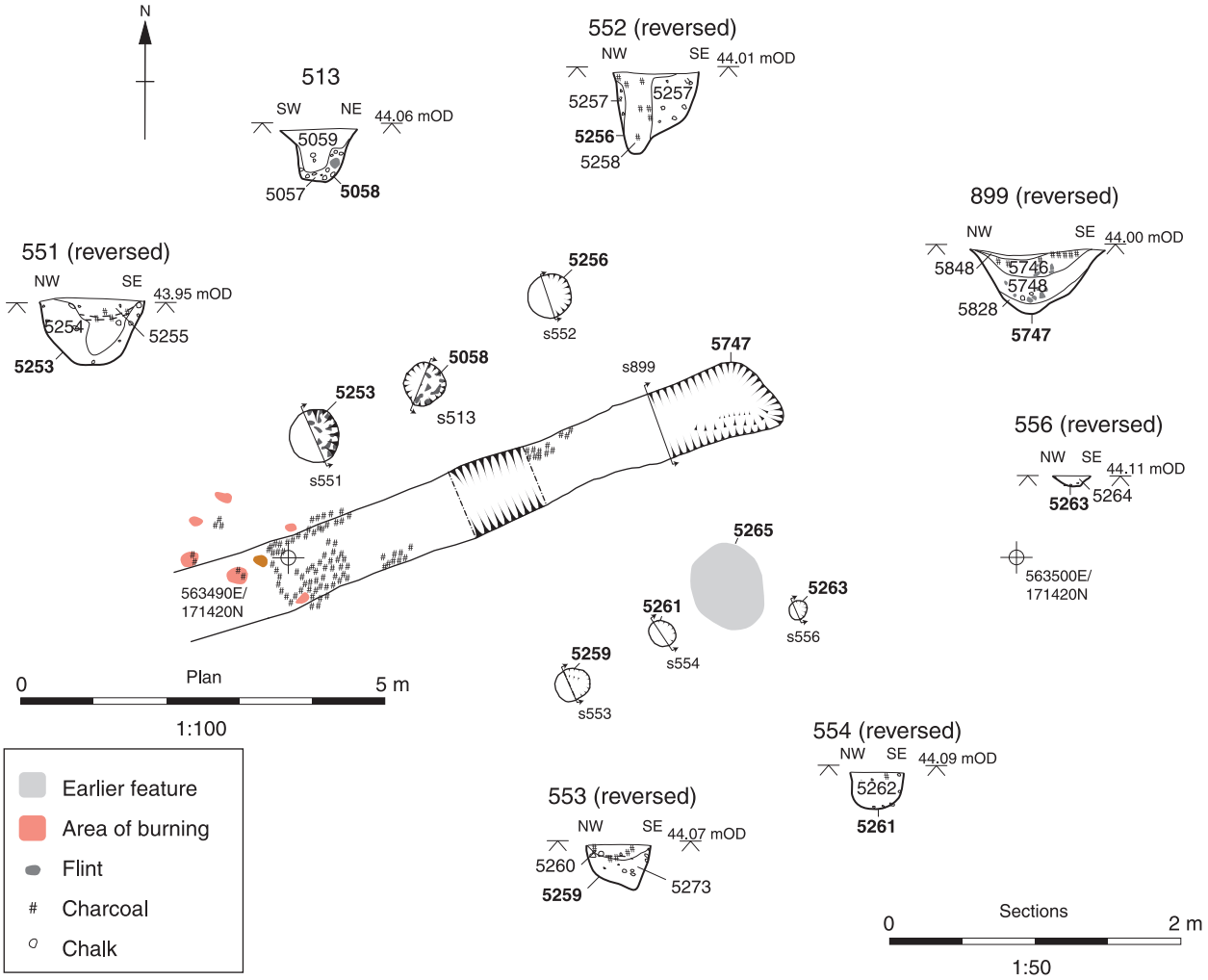


Fig. 5.9 Plan and sections of structure 5724

The finds and environmental evidence from the possible structure itself were quite mixed. An Iron Age pit 5265 lay between postholes 5261 and 5263, and the 15 sherds of pottery recovered from postholes 5259 and 5261 were also Iron Age. However, charred oat grain from posthole 5058 was submitted for radiocarbon dating and returned a date of cal AD 990–1160 (NZA 32798), indicating a date contemporary with ditch 7393. Other finds from the postholes were fired clay (5058), indeterminate animal bone (5058, 5259, 5261) and herring bone (5261).

The northern posthole row produced rich assemblages of charred plant remains, all three post-pipes yielding large amounts of indeterminate wild/cultivated oat, and slightly less wheat grain in addition to some large-seeded vetch. Posthole 5256 also produced garden pea. Although the southern row was equally intensively sampled the only substantial deposit was of oak and hazel/birch charcoal from posthole 5259.

It seems likely, therefore, that all of the postholes are medieval. The northern row and posthole 5259 may have been parts of a single structure, but the less substantial posts to the east of 5259 were not connected. Perhaps the most likely interpretation is that this was an open structure, with the northern row of posts supporting a wind-break. The evidence of destruction by burning and the charred plant remains suggest an agricultural purpose, although the recovery of slag from ditch 7393 may indicate the structure had an industrial purpose, perhaps as a temporary smithing forge.

A sequence of parallel ditches was identified *c* 12m south of ditch 7393, the later stages of which (7392 cut by 7931) appeared to belong to Phase 2 (see below). However, an earlier ditch (5845; 1.02m wide and 0.24m deep; not shown on plan) was found in the westernmost intervention, which may have been contemporary with 7393. This produced no finds, although cut 5849 of ditch 7391 produced three sherds of mid 11th century pottery where it cut 5845. The exact length of this feature is unclear.

As outlined above all of these features stopped short of the western side of holloway 5306, perhaps suggesting that this was already in use at this time. A number of earlier ditches (5328, 5198, 5314) were identified beneath 5306, but their function was unclear as a result of extensive truncation by 5306. None of these features contained any finds. If they

were medieval, they may indicate an earlier ditched roadway, or may represent a boundary, later followed by the holloway.

The second group of features belonging to Phase 1 were located further east. This comprised a series of parallel and perpendicular ditches and gullies, aligned NNE-SSW, possibly forming enclosures.

Heavily truncated NNE-SSW gullies or ditches 7310 and 7315 (Fig. 5.8) were in perfect alignment and may have originally been a single feature, obscured by an area of cultivated soil (5947) and truncated by stripping of this soil. The features were 0.6–0.9m wide and 0.15–0.22m deep but neither produced any dateable finds. The features were phased on the basis of the truncation of gully 7315 by pit 5080, which contained mid 11th-century pottery. The pit was *c* 1.8m diameter and 0.45m deep, containing four fills indicative of deliberate dumping which also produced herring, unidentified animal bone and fired clay. A further small pit (5096) containing 12th-century pottery, oyster shell, animal bone and a fragment of copper-alloy lay immediately east of 7310.

A short segment of parallel gully (5930) *c* 13.5m to the east may have been associated with boundary 7310, defining a small enclosure. Ditch 15069 recut as 7362 lay between these gullies on the same alignment, and it is possible that these ditches also belong within this phase. No finds were recovered from either feature. These ditches were cut by ditch 15068, which extended east for 17m, possibly dividing the enclosed area. The ditch produced two small sherds of mid 11th-century pottery.

Overall interpretation of this phase is problematic due to the scarcity of evidence, however it appears that the ditches formed roughly rectangular enclosures. It is possible that these were agricultural land divisions, as there were no archaeological traces of activities within these enclosures. The relationship of this activity to that from the former Northumberland Bottom army camp (Askew 2006) excavated as part of the HS1 works is unclear, as although this also fell into two phases both appear to correspond to Phase 2 in Site C.

Phase 2 c AD 1175–1350

Overall Phase 2 activity comprised a series of sunken-featured structures and a lesser number of posthole and beam slot structures, in addition to pits and further enclosure ditches and gullies (see Fig. 5.8). This activity appears to be more heavily concentrated east of the holloway, and many of the buildings appear to fit into the existing Phase 1 enclosures described above. This may indicate that the ditches continued in use during the second phase of activity. The settlement as a whole is contemporary with the activity uncovered in the HS1 excavations near the former Northumberland Bottom army camp to the south (Askew 2006), and the two are almost certainly parts of the same settlement.

Enclosures and associated features

Many of the enclosures established within Phase 1 appear to have still been in use or re-used during Phase 2, although a number of further enclosures appear to have been constructed. Some of these clearly relate to the structures discussed above and activity was again divided by the holloway. Overall a further series of rectangular enclosures can be identified.

Beginning 5m west of the trackway, ditch 7195 ran WSW for at least 72.5m, continuing beyond the southern edge of the site. The ditch was 0.8m wide and only 0.25m deep and cut a series of Iron Age ditches (7192, 7193 and 7196) along the same line. Finds from 7195 included Roman and medieval or post-medieval tile and brick and a post-medieval horseshoe nail. There was also some animal bone. At the terminus adjacent to the holloway a short length of ditch ran north at right angles, ending less than 3m short of the holloway. This ditch appears to have marked the northern limit of medieval activity on this side of the holloway.

East of the holloway, and around 100m further along it to the south, another medieval ditch on a very similar alignment (7275) formed the northern limit of the major area of medieval activity. This ran ENE for over 70m before terminating just within the northern limit of excavation, at a junction with north-south ditch 5755. At its western terminus a short length of ditch (15062) ran south at right angles, and ended after 7m, just 5m from the holloway. The similar character of these boundaries may indicate that they were contemporary major land divisions.

West of the holloway an L-shaped enclosure ditch (7459/7460) was constructed *c* 5m south-east of 7195. Ditch 7459 extended south-east for *c* 19m before turning sharply north-east for a further 24m. The ditch was 0.24–0.46m wide and up to 0.2m deep, containing residual Iron Age pottery and mid-13th century pottery and marine shell. Ditch 7459 was re-cut by ditch 7460, which also contained residual Iron Age pottery and a late Iron Age brooch (sf 522; see Chapter 3), along with medieval pottery (although this dated to the mid-11th century), marine shell and pig bone.

The pits within the enclosure appear to be Iron Age, but in the north-east corner, just south of the terminus of ditch 7195, a wide shallow curvilinear feature (7548), was *c* 10m long, 3.5m wide but only *c* 0.3m deep, cut Iron Age ditch 7192 and produced 13th-century pottery. It is possible that there was originally an entrance here from the enclosure onto the holloway, and that this shallow broad feature could have been created by animals waiting at the gate. Similar hollows are often found at field entrances today.

East of the holloway a series of ENE-WSW aligned ditches seem to have divided up the area. The most substantial of these was ditch 7275 described above. This ditch contained no cultural

material at all, although its proximity to and alignment with structure 6280 may indicate contemporaneity. Shallow feature 15063 at its western end produced pottery dated late 12th to mid 13th century, a nail, a buckle frame and a fragment of padlock. This feature cut ditch 15062, which contained pottery dated AD 1270–1350 as well as nails, a post-medieval horseshoe and mussel shell.

Similar evidence came from pit 15053, west of this group, which seemed to be paired with pit 15000. Pit 15053 contained the largely complete but crushed remains of two large ceramic vessels of late 13th or 14th century date (cooking pot sf 588 and drinking jug sf 592). These appear to have been placed complete side by side in the pit.

A series of small lengths of ditch *c* 13–14m long and under 1m wide were excavated north of and parallel to ditch 7275 at intervals of 15–30m, possibly forming land divisions. These included ditch 5638, discussed as part of the complex with feature 5083, as well as ditch 5607 and possibly ditch 5657. Ditch 5607 had no finds; ditch 5657 contained 13th–14th century medieval pottery. Too little of ditch 5657 lay within the excavation to be sure of its character and function. Ditch 7280 was located 0.7m north of 7275 and was at right angles to it. The ditch was 16.75m long, 1m wide and 0.3m deep, and contained medieval pottery and animal bone. Ditch or gully 5763 ran parallel to the holloway south of ditch 5657 and also contained medieval pot, oyster shell and sheep/goat bone.

These features were the only contemporary features north of 7275 with the exception of the complex surrounding feature 5083 and it appears that 7275 was the main northern boundary of the settlement at this time. Three small shallow irregular features lay east of 5607, and it is likely that these were tree-throw holes.

At its eastern end ditch 7275 terminated within ditch 5755, one of a pair of ditches crossing the site on an alignment just west of north-south. These ditches were at most only 1m apart, and both ditches had at least one recut identified in three of the four excavated interventions across them, but no relationship between the two features was established. Towards the south side of the site they ran into an area that was heavily disturbed by deneholes. These deneholes were discovered by machine during stripping, and as they contained voids they were misidentified as bomb craters, resulting in emergency excavation without archaeological supervision, during which the relationship between these ditches and the medieval settlement was lost. One of the ditches, however, appears to have continued south beyond the disturbed area, but petered out before the southern edge of the excavation.

These ditches contained only scraps of later prehistoric pottery, iron, fired clay and animal bone fragments, and their only certain stratigraphic relationship was that they cut Bronze Age palisade slot 5740. They clearly represent a significant and long-lived boundary, and the fact that ditch 7275 terminated within 5755, and that no difference could be seen between their fills, suggests that they were medieval. They appear to represent the eastern limits of the medieval occupation across most of the site, like ditches 7394 and 7329 on the west.

At the south-eastern corner of the site there was a well-defined, apparently rectangular enclosure (7390). The enclosure was at least 26m long, continuing beyond the edge of the site. It was 12m wide and was bounded by ditches 1.2m wide and 0.95m deep. There was a gap at the north end of the west side, presumably for an entrance. The ditches produced pottery dated AD 1270–1350, fired clay, an iron nail and possible knife tang, an abraded medieval tile, animal bone and marine shell. The function of this enclosure is unknown but it may have been used for animal management.

Sunken-featured buildings

Overall a total of four or potentially five sunken-featured buildings were excavated across Site C, two of which (15035 and 6280) may have been constructed quite early in the sequence on the basis of pottery dating. Structure 5347 lay west of the holloway, the other three in the area of dense Phase 2 activity to its east.

Structure 15035

Structure 15035 was located in the angle formed by ditches 7362 and 15068 (Fig. 5.10). The structure consisted of a sub-rectangular cut some 0.3m deep. It was orientated approximately east-west and measured 5.5 x 4m, although due to truncation only approximate edges were recorded on the north-west and north-east. The structure appeared to be of a single phase, and was associated with a series of postholes. The postholes were located one at either end, roughly aligned south of centre, with three more forming a short row in the south-west corner. The fills of these postholes were overlain by layer 7582, the lower backfill layer within the building, except for posthole 7575, whose fill was indistinguishable from 7582. It is therefore likely that they were contemporary with the building. They are too dispersed to have held posts that constituted a superstructure in themselves, but perhaps reinforced a wall at weak points such as the sharp west corner or on the east where the structure cut into the soft fills of an earlier oven.

The base of the sunken area was the natural, which in this area was a clayey silt overlying the chalk. On the north-east side this was overlain by a similar soil (15027) that incorporated fragments of chalk, a concentration of small flint nodules in one area, fragments of charcoal and occasionally of fired clay. This may have been brought in to surface the base of the area, or may simply be the result of mixing in the top of the underlying natural. On the south side layer 15027 was covered by a layer of charcoal (7602) overlying and surrounding an area

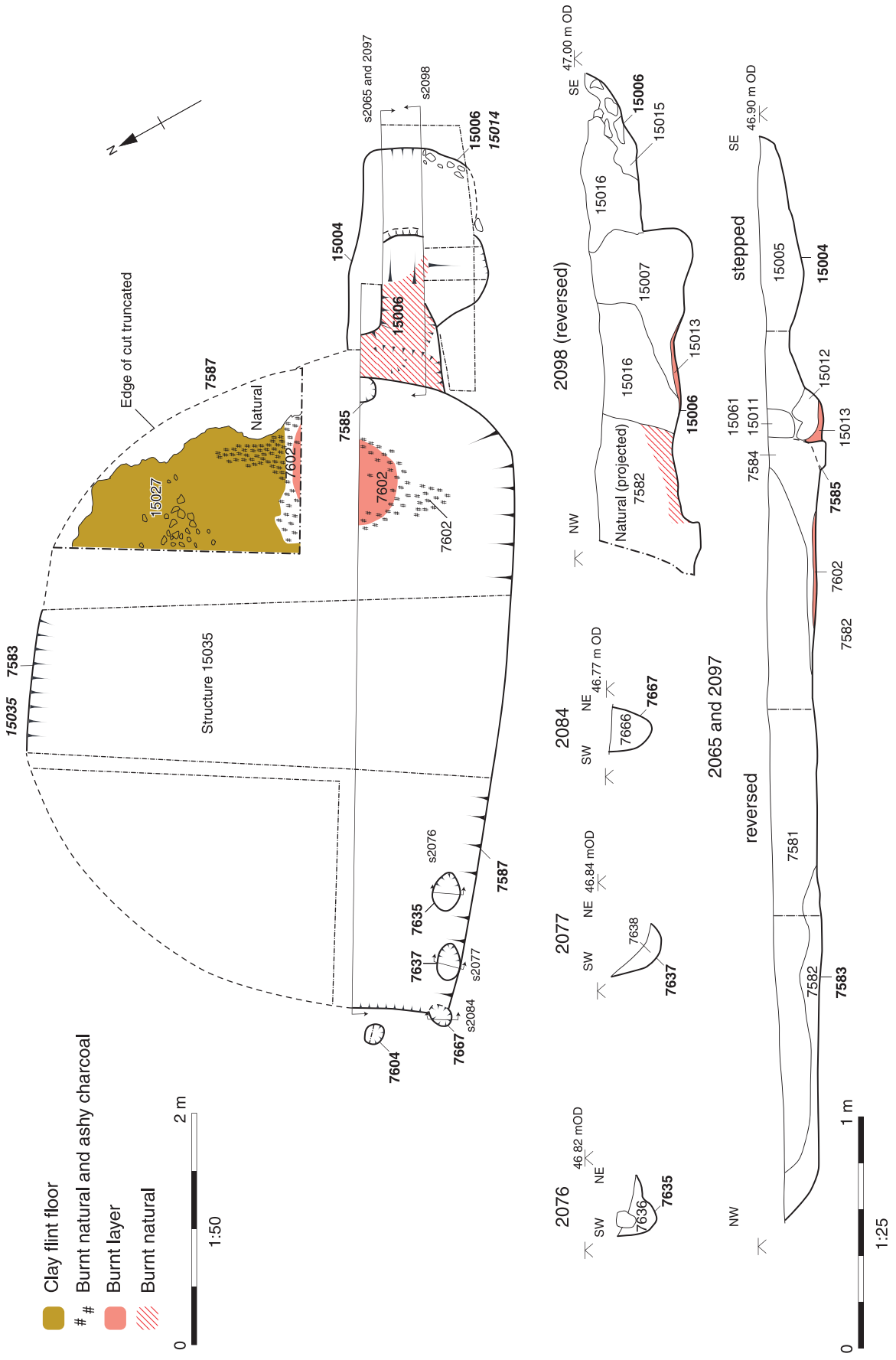


Fig. 5.10 Plan and sections of sunken-featured building 15035

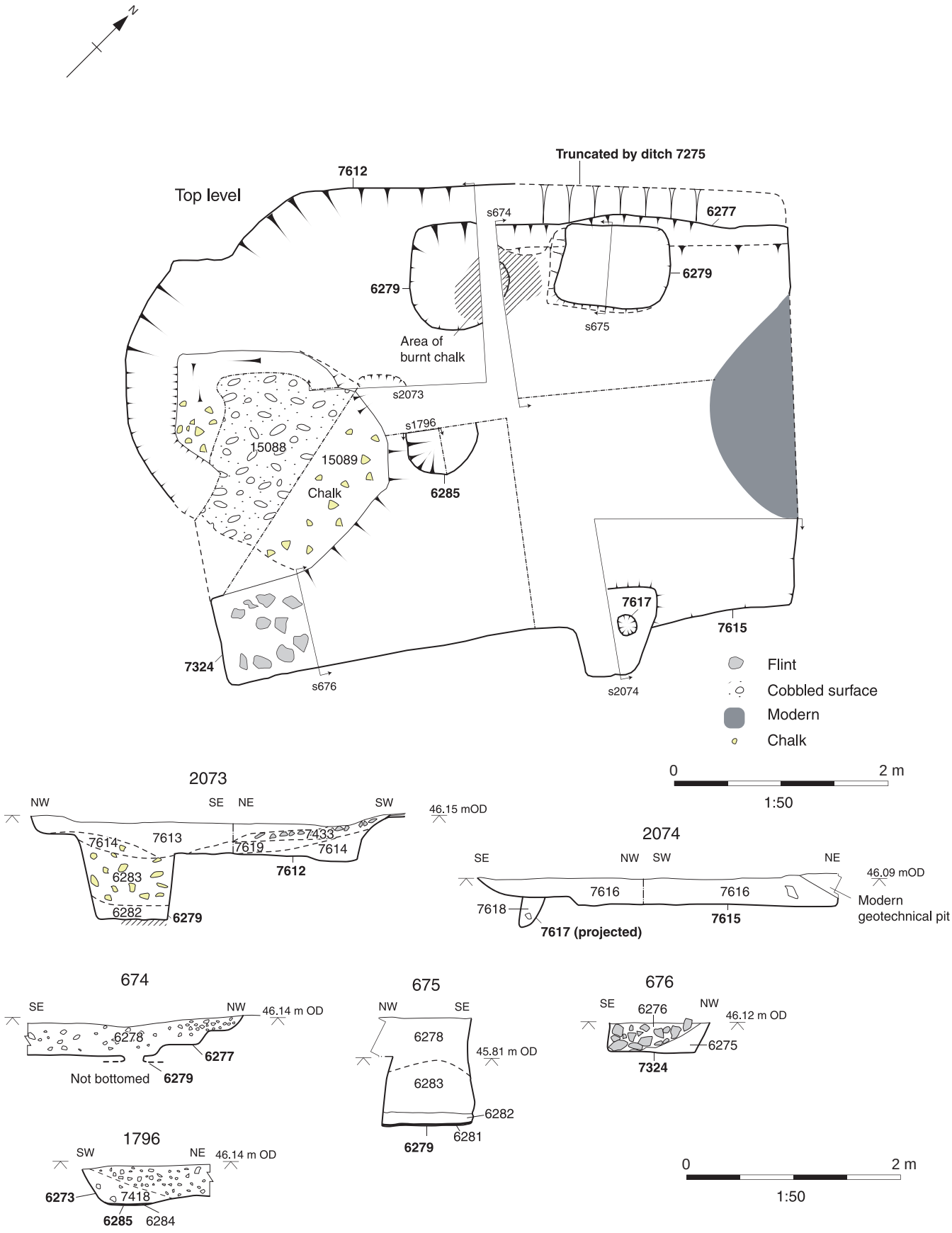


Fig. 5.11 Plan and sections of sunken-featured building 6280

of the floor that was reddened by heat. This occupied the centre of this end of the structure, and may have been a hearth. A large feature halfway along the north side proved to be a glacial clay-filled solution hole.

East of the sunken-featured building, and probably cut by it, was an oven (Fig. 5.10). This was sub-rectangular, measuring *c* 2 x 1m and was 0.39m deep. The oven appeared to be hourglass-shaped, the western chamber being deeper than the eastern one. Burning was evident within the western chamber only, where the natural along the southern edge was burnt, and a mottled dark ashy fill (15013) filled the base and extended up the sides. This burning ended abruptly at the edge of the SFB 15035. The east end of the eastern chamber was lined with unmortared (and unburnt) flints, and the southern edge with a firm yellow-brown silty clay (15016). The deeper part of the western chamber was filled with a very chalky deposit (15012), which raised the base to a similar level to that of the eastern chamber, and may then have been used again, as it was overlain by a small heat-affected layer (15011). As already described, a firm silty clay (15016) was found along the south edge of the structure, where it formed a band nearly 0.25m high, and this was interpreted as part of the oven walling. The inner edge of this layer was curving inwards at the top, perhaps suggesting that the oven was domed, similar to those from West of Downs Road (Askew 2006, 39). Layer 15016 occurred both east and west of the post-abandonment fill (15007) that filled the centre of the deeper oven chamber.

A linear slot or gully (15004) was recorded running through the top of the oven in an east-west direction, overlying or cutting the fills just described (Fig. 5.10). The feature may have represented a phase of activity between the use of the oven and the digging of the SFB. Alternatively it might have been a shallow beam slot inserted into the top of the oven to brace the post in posthole 7585, due to the subsidence caused by the former oven.

As can be seen, the interpretation of the oven, and indeed its relationship to SFB 15035, is not certain. The burnt area of floor within the SFB, and the charcoal layer 7602 that overlay it, lay towards the east end close to the junction with the oven flue (see Fig. 5.10), and it has been suggested that they represent 'rake-out' from contemporary use of the oven. The absence of similar material across the half metre between the two, however, perhaps makes this less likely. It is possible that the oven went out of use during the life of the building, which was then furnished with additional posts, and that as part of these alterations the floor was dug out slightly in this immediate area. The association of ovens with these SFBs is common across the scheme and elsewhere in Kent, but although ovens in structure 2158 in Pond D south and a platform in structure 6280 (see below) projected slightly beyond the outline of the building, a largely external oven such as might have occurred here has not yet been paralleled. Some of these buildings (see 5950, for instance) did not contain ovens, and 7602 may simply have been an internal hearth.

Cultural material was only found in the backfill deposits (7581 and 7582). Unidentified animal bone and oyster shell came from the lower deposit, 7582, while an assemblage of late 12th-century pottery weighing 230g came from 7581. This suggests use of the building during the 12th century. Other artefacts included a tiny copper 'T' shaped fitting of unknown purpose (sf 587) and an iron nail. Animal bone included sheep/goat and the marine shell assemblage comprised mussel, oyster and cockle. No recognisable charred plant remains were recovered from the structure.

As with a number of the other structures in this area, finds from 15035 were scarce, possibly indicating a non-domestic function, but the lack of environmental evidence does not assist interpretation. Alternatively, the structure may simply have been kept clean. The quantity of finds within backfill layer 7581 may perhaps support the idea of middening within this enclosure, midden material being used to level the area once the structure had gone out of use. The feature was located within an extensive area of possible garden soil and may have been re-used as a plot and fertilised with this material.

Structure 6280

Sunken-featured building 6280 was located 18m west of structure 15035 (Figs 5.8 and 5.11), immediately adjacent to boundary ditch 7275. The structure was sub-rectangular, orientated NE-SW and was 6m long, 4m wide, and 0.3m deep. The north-west end was largely destroyed by a recent feature, although the north and east corners survived.

All sides of the building were straight except the south-west end, which bowed out around a central sub-circular raised area left as a platform when the sunken building was excavated (Plate 5.7). This was capped with a layer of flint in a sand and clay matrix (15089), which acted as bedding for a surface of small cobbles, 30–50mm across (15088). On the south side this cobbling ended, leaving a patch of undug chalk, and here the limits of the building between the bowed side and the south corner are conjectured.

It is unclear whether this cobbling was an original feature of the building or a later addition. There were occasional flecks of charcoal in the backfilling overlying this cobbling, but no surviving evidence of repeated heating of the flints, nor was this evident on the surface below or on the underlying natural chalk. The form of this raised area bears some similarity to the oven bases found in the SFBs in Sites L and Pond D south, but if it was an oven it had either hardly ever been used, or had been removed during the life of the building. Alternatively the platform may have had a different function. A small depression (6285) *c* 0.7m in diameter and only 0.05m deep was found in the

Plate 5.7 Sunken-featured building 6280 from the south-west, showing the chalk platform with cobbling, the oven pit 6279 and hollow 6285

Plate 5.8 Sunken-featured building 6280 looking south-west, and showing chalk arch over the sunken oven and the entry step

natural chalk floor immediately east of the raised area and was filled with a fine sooty charcoal layer 6284. This may have represented a rake-out hollow from occasional use, but could as easily have derived from oven 6279 (see below).

A pit probably functioning as an oven had been dug into the chalk base along the north-west side of the building. At the bottom the oven was 2.3m long and generally 0.65–0.8m wide. At the top, an arch of natural chalk some 0.45m wide and 0.12m deep had been left in place, creating two separate chambers in the chalk floor (Plate 5.8). Below the arch, and extending into the slightly hollowed base of the south-west chamber, the chalk floor was discol-

oured a patchy grey and red by burning, and to the north of this the floor of the rectangular chamber was overlain by a fine ash/soot (6281). This structure is therefore interpreted as an oven or kiln, the north-east chamber being the stokehole, the south-west chamber the oven proper.

A step along the south-east side that extended beyond the line of the side probably represents the entrance. Only half of this was exposed, and this was cut by a posthole (7617), possibly a door posthole or part of a superstructure, though there were no others.

No certain contemporary floor deposits were found in the building. Against the north and east sides of the raised platform was a compact layer of clayey silt with occasional small stones, called variously 6275, 7418 and 7614, that overlay ashy deposit 6285 and a slight hollow west of this. This could have been a deliberate patching of the floor around the platform, although alternatively it might simply represent initial silting after the building went out of use. Thin layers of silt in the bottom of the oven (6282) and adjacent to the raised platform (7619) also suggest a brief period of abandonment, before chalk rubble was dumped to fill in the oven.

Despite the hand-excavation of a considerable portion of structure 6280, finds were rare. Pottery was recovered from three of the deliberate backfill layers and was dated late 12th century to early 13th century. Fragments of fired clay plate were recovered from fill 7433. These were burnt on one side and were presumably from oven plates. Very sparse faunal remains were recovered from the backfills of the structure (single sheep/goat bone) and the oven or kiln (two cattle bones).

Samples were taken from backfill deposit 6278, hollow fill 6284 and from two fills from the second oven, (6281 and 6282). All produced charred grain in small quantities, most identified as barley although wheat was also found in the oven and oat/brome grass from the backfill. In addition all samples except that from backfill produced small amounts of vetch/vetchling. Charcoal was present in small quantities in all the samples except that from 6281.

Much of the interior was taken up by the platform and the oven, but there is sufficient room remaining for this structure to have been a dwelling. The lack of finds or occupation fills, however, makes this less likely, unless it was completely emptied on abandonment. The character of the burning within the oven, unlike the extensive reddening found in and around other ovens, perhaps suggests a different process was at work, possibly using embers heated elsewhere to produce a low heat. If so, this would not have provided the same warmth as the hearths in many of the other sunken-floored structures, perhaps arguing against a domestic function. The environmental evidence is also sparse but similar to that from the structures found elsewhere on this site. The predominance of barley may indicate that this was a malting house, but the assemblages are too small to draw any firm conclusions.

Structure 5347 and associated features

The largest of the later sunken-featured buildings (5347) was located to the west of holloway 5306, close to the southern limit of the excavated area (Figs 5.8 and 5.12). SFB 5347 was rectangular and

Plate 5.9 Sunken-featured building 5347 largely excavated, looking north-west

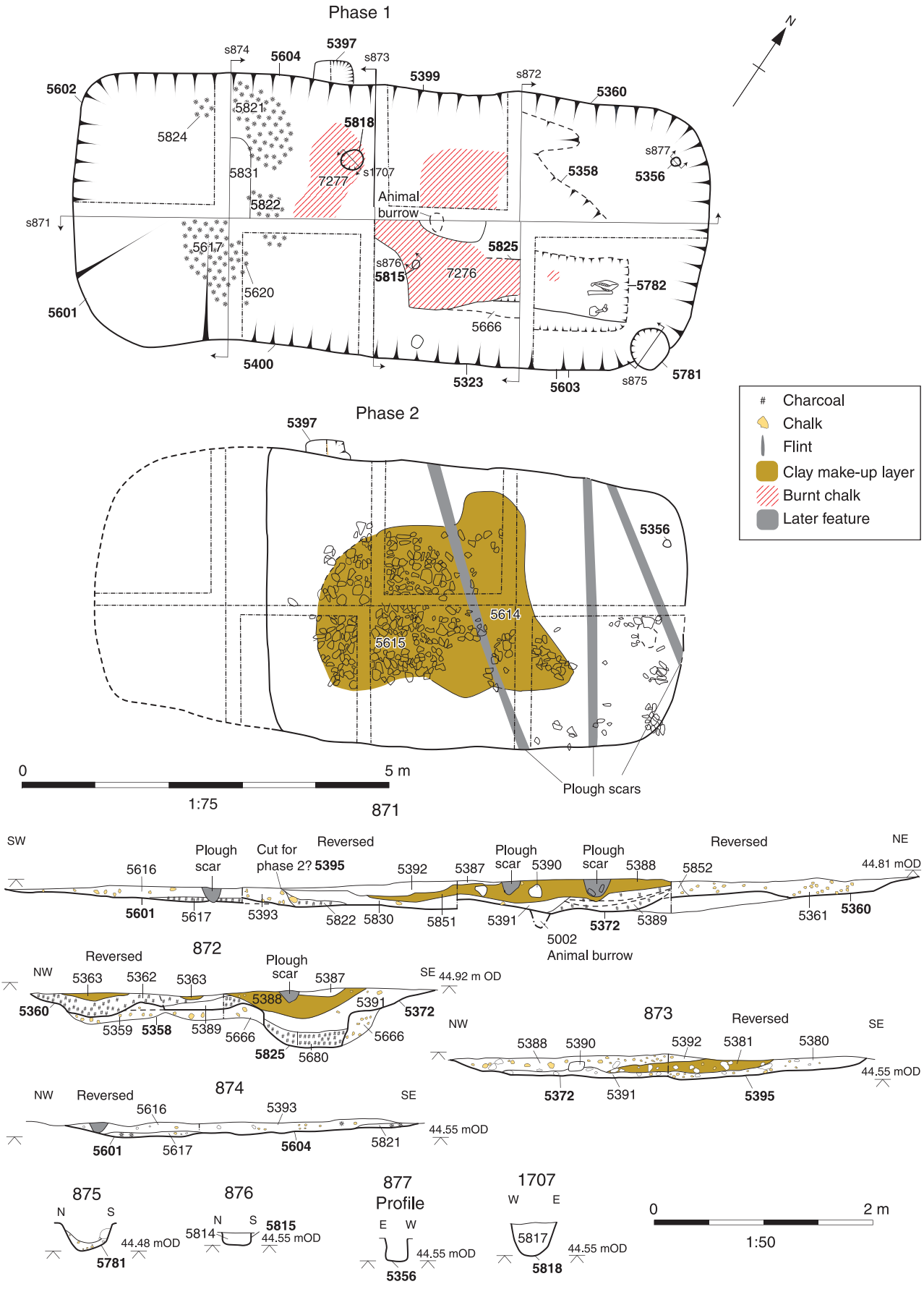


Fig. 5.12 Plans and sections of sunken-featured building 5347

was orientated SW-NE, measuring 8.3m long, 3.8m wide and generally up to 0.28m deep.

The building was recorded as having had two main phases of use, the earlier surviving only at the south-west end, where not truncated by a later (and smaller) recut of the SFB. The width of the building was very similar in both phases, and there was no significant change in depth between the two. A cut was recorded in the fills (cut 5395) 2.5m before the south-west end of the earlier phase, with a total length of only 5.8m. There was no evidence that the bottom of the structure was lowered by this recutting, indeed some fills appear to have survived below the cut (see below). It is therefore uncertain whether features cut into the base of the structure, or evident as burnt patches on its surface, belonged to the first or second phase. The dating of the earliest activity throughout appears to be similar, however, and so all of these features are treated as belonging to the first phase (see Fig. 5.12).

At the south-west end the earliest activity comprised one or two spots of burning on the natural chalk, overlain by a charcoal-rich deposit (Plate 5.9). This survived as several separate thin spreads (5617, 5821, 5822 and 5824). There was insufficient reddening of the chalk to suggest a hearth here, but the spreads, which continued north-east beneath the second phase cut, probably derived from a larger area of burning on the chalk (7277).

Towards the north-east end, a tree-throw hole 5358 was cut by the SFB. This feature was cut by a rectangular feature 5782 aligned SW-NE with the long axis of the SFB. During the excavation a compacted clayey sand (5666) found on the south-east edge of 5782 was interpreted as a deliberate packing within it, but it seems most likely that it was another fill within the tree-throw, although it is also possible that the fill was dug out when the SFB was first constructed, and was deliberately refilled with compacted material to create the profile of pit 5782.

Rectangular pit 5782 had near vertical sides and a flattish base on three sides, measuring *c* 2m long, 0.8m wide and 0.4m deep (Plate 5.10). There was no clearly defined south-west end, instead the base shelved upwards in a westerly direction to the general floor level. The chalk floor and sides of this 'channel' (5825) were burnt, the burning (7276) ending on the south-west half. The burning spread south-eastwards, giving the impression that originally the structure might have indeed been rectangular, but 3m long. There was also a separate sub-rectangular area of burning on the chalk some 0.3m to the north-west. Although in part disturbed by animal-burrowing, the gap between this area of burning and the main channel probably indicates a separate hearth.

Pit 5782 was probably the rakeout-pit for one or more hearths or ovens in the centre of the building, the slope and the extensive burning on the south-west caused by repeated raking back of hearth material into the pit. The presence of a rectangular pit and area of burning may indicate that this was an oven rather than simply a hearth, but if so no trace of any superstructure has survived.

Similarly charcoal-rich deposits (5389/5362) overlay the burnt chalk and the surrounding floor of the SFB on the north-west side (Fig. 5.12; Plate 5.10). These perhaps reinforce the suggestion of two

Plate 5.10 Sunken-featured building 5347 largely excavated, looking south-west with pit 5782 in the foreground

separate operations, a hearth or oven with a rakeout-pit and a separate hearth to the north-west whose rakeout was simply piled around it.

The burning activity at the south-west end of the structure was overlain by layer 5616, which contained occupation debris including pottery dated to AD 1270–1350 as well as an iron nail and a late medieval/post-medieval horseshoe. A number of contexts produced indeterminate animal bone and the charcoal rich spread yielded charred plant remains including garden pea, other vetch and many cereal fragments. This soil probably accumulated through a combination of deliberate dumping of midden material and natural silting.

Further north, pit 5782 was filled with an artefact-rich dark grey silt with much charcoal (5769), which contained pottery dated to AD 1270–1350, an iron nail, a large quantity of animal bone including a horse skull, pig and goose and marine shell including oyster, cockle and mussel. This layer was probably the same as 5391/5830 /5650, a very similar deposit that covered the whole of the phase 2 cut, sealing the burnt chalk and the charcoal-rich spreads.

The difference between layer 5391=5380 filling the phase 2 cut and layer 5393=5381 filling the first phase cut was largely one of colour, and it is possible that they were in fact one deposit. The dating of the finds from both is very similar, and the darker colour of 5391 may be the result of mixing in of charcoal from the much thicker spreads in the north-east part of the SFB. The supposed phase 2 'cut' may therefore be partly illusory, confined only to the latest floor within it (see below). The finds within 5391 suggest deliberate infilling, possibly with middened material.

Postholes 5781, 5356, 5815 and 5818 were all associated with a secondary phase of activity within the first phase of use. Posthole 5781 was significantly larger than the others measuring 0.45m in diameter and 0.25m deep, compared to the *c* 0.1m diameter and similar depth of 5815 and 5356. The postholes did not form a regular shape, nor did they occupy similar positions within the SFB, and it is unlikely that they were dug with a single purpose.

The finds from the north-east part of the structure (with the exception of feature 5782 discussed above), produced an assemblage of 203g of pottery generally dated to the 13th to mid 14th centuries. Other finds included a fragment of lava quern and structural fired clay. Faunal evidence included sheep/goat, and fish including cod.

The structure was extensively sampled and most contexts produced charred plant remains. Overall the remains were of the same character throughout, although the quantities differed widely. Few plant remains were recovered from the earlier deposits, although where found these comprised cereals including free-threshing wheat and pulses including vetch/vetchling. Pit 5782 produced more abundant plant remains, especially from fill 5770, which included barley, possible rye and wheat. A large quantity of vetch/garden pea and some beans were also accompanied by weeds such as dock and stinking chamomile. The upper occupation layer was the richest, producing an identical range of plant remains but in much larger quantities. In particular a vast amount of pulses included common vetch, garden pea and a lesser amount of celtic beans. Grain was present as a secondary component and included wheat, barley and oat/

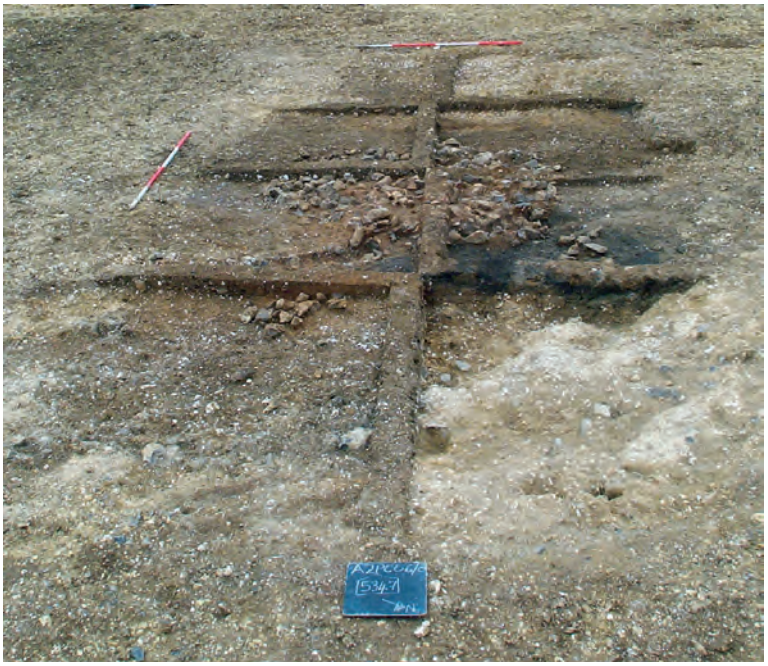


Plate 5.11 Sunken-featured building 5347 part-excavated looking south-west

Plate 5.12 Sunken-featured building 5347 part-excavated looking north-west

brome grass. Weeds seeds were again dominated by dock and stinking chamomile.

Layer 5391=5380 was sealed by a (reddish) orange silty clay with a little charcoal, variously numbered 5614/5388/5363/5851/5831, which covered much of the area of the supposed 'phase 2' cut (Plates 5.11–12). This is interpreted as a make-up deposit for flint nodules forming a cobbled surface. The cobbles were well-preserved on the south-west, covering an area *c* 3.5 x 2m in plan, but were patchy or absent at the north-east end. The cobbling survived best where the SFB was deepest, and may have been largely destroyed by ploughing at this shallower end.

The cobbles showed no sign of wear, and there was no evidence of significant burning upon them, so their purpose is unclear. The layer above (5387=5392) was very similar in character to the filling of the first phase structure, and may either have been an occupation deposit or, more likely, another layer of dumping of occupation material in the abandoned hollow. Artefacts were again sparse from this phase of activity but included pottery of a similar date to the previous phases, although 19th-century pottery was recovered from the final abandonment layer.

Overall the most significant evidence from the structure appears to be the presence of burnt areas of natural chalk coupled with the vast amount of charred plant remains, dominated by vetch/garden peas. On the basis of evidence from similar structures on the scheme and wider area, it is likely that 'pit' 5782 functioned as an oven or similar. While this could be interpreted as an agricultural/horticultural processing area the mix of debris, which included pottery, animal bone, marine shell and lava quern (albeit in small quantities), may suggest that this building had a more domestic function. It may have been a kitchen, perhaps for a dwelling outside the excavated area.

Building 5347 appears to have been enclosed by holloway 5306, ditches 7391 (recut as 7392) and 15087 (see Fig. 5.8). All the ditches produced medieval pottery, the sherd from 15087 matched the date of the pottery from structure 5347 (AD 1270–1350) and slightly earlier pottery came from 7392 (late 12th-mid 13th century). The assemblage from recut 7391 was earlier and considered to be residual (see above). Ditch 7392 produced animal bone and cockleshell. Ditch 7391 also produced a sherd of intrusive 19th-century pottery, structural fired clay, brick, animal bone including sheep/goat, oyster and mussel shell. A single iron nail and structural fired clay also came from ditch 15072, all of which is indicative of domestic and building activity.

A group of pits (5587, 5591, 5751 and 5660) of assorted sizes was excavated to the south east of structure 5347, within the area enclosed area. Pit 5591 was a large oval up to 4m across, which had a shallow, bowl profile, not more than 0.8m deep as excavated. The four fills included pottery dated AD 1270–1350. Pit 5751 was an oval pit 2.5 x 1.5m across and 0.5m deep, and also contained a sherd of pottery of similar date, and fragments of structural fired clay. Feature 5660 may have been a pit or tree throw hole, cut by trackway 5306. Overall the presence of these pits seems to reinforce the interpretation of a domestic complex in the vicinity.

Feature 5587 was considerably larger (around 7m across), had vertical sides and was not bottomed at 1.2m deep, although the edges were stepping in at this point. The fills suggest that 5587 might have been a quarry, and contained pottery dated AD 1270–1350, along with animal bone including bird and pig.

The edge of 5587 lies less than half a metre from the edge of structure 5347, so it is very unlikely that they were contemporary. It is possible that 5587 was an earlier medieval quarry that had been backfilled shortly before 5347 was dug, although it is perhaps unlikely that a building would have been constructed so close to a recently filled quarry, and alternatively the feature may have been later, incorporating residual material from the adjacent occupation in its backfill.

Structure 5950 and associated features

Structure 5950 was located *c* 13m south-east of structure 6280, within an area of medieval soil 7221=5947, interpreted as a cultivation horizon (Figs 5.8 and 5.13). Little pottery came from 7221, but 773g of types dating to the later 13th century came from 5947. Although recorded on site as

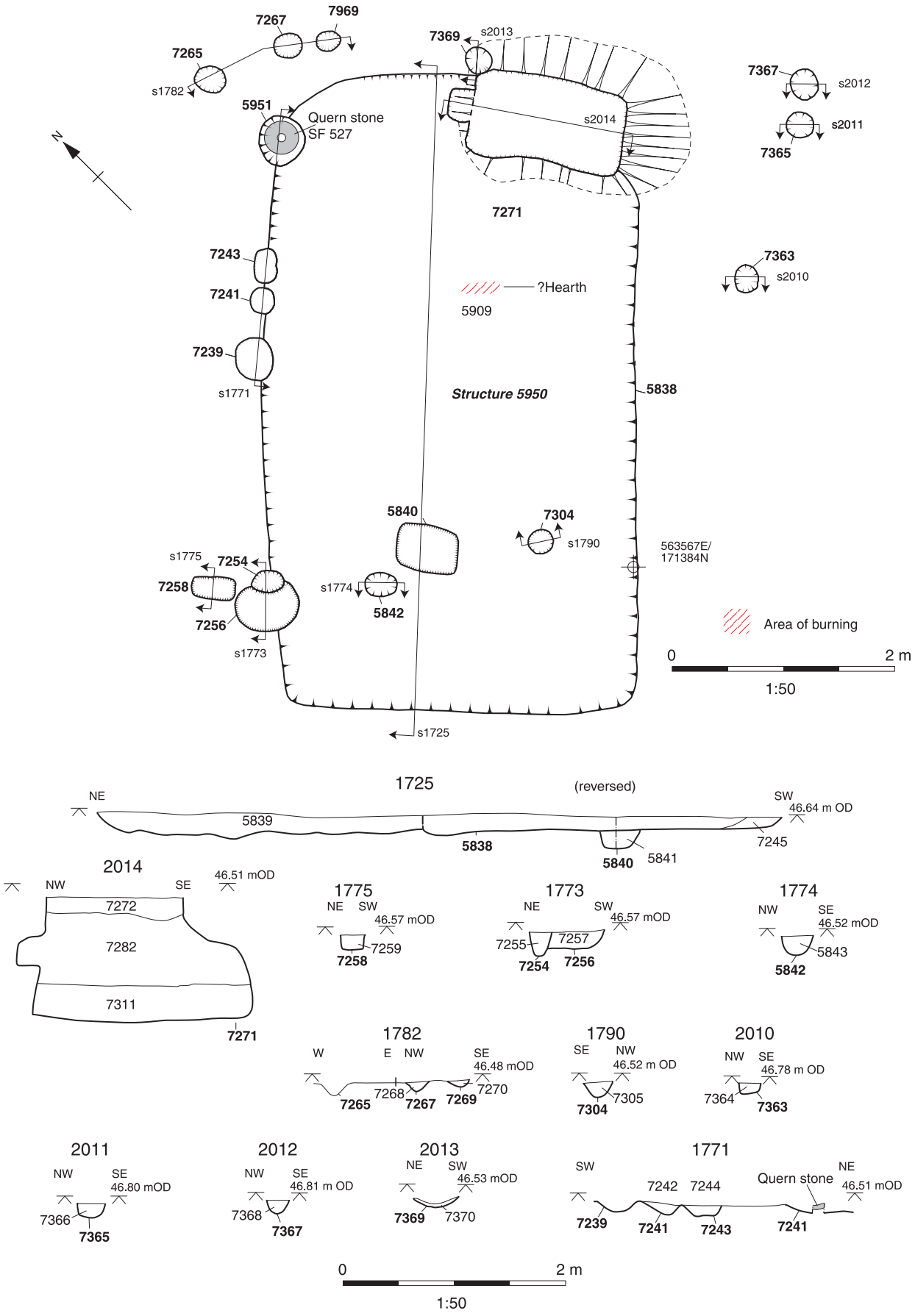


Fig. 5.13 Plan and sections of sunken-featured building 5950

cutting the cultivation soil, it is more likely that the cultivation occurred after the building had gone out of use (see 7290 below). Like most of the other sunken-featured buildings 5950 was rectangular. It was orientated NNE-SSW and measured 5.7m long, 3.3m wide and 0.15m deep. This appeared to be a single phase structure, and included a number of postholes and a pit.

The structure had a very flat, slightly sloping floor that was heavily scored by parallel grooves with ragged edges (Plate 5.13). These are interpreted as the scars of later cultivation. Other than the postholes and the pit, the only evidence of internal activity was a very small patch of burnt chalk just north of centre. There were no surviving floor layers. A total of 270g of pottery dated AD 1270–1350 came from the uppermost (5839) of two layers, which also produced animal bone, oyster shell and a residual flint flake. The lower fill (7245) contained six iron nails, copper-alloy binding and a fragment of tile.

The only feature that showed in the surface of the lower deposit was sub-rectangular pit 7271 just inside the north-eastern corner of the building (Fig. 5.13). This pit was 1.1m deep, and was undercut all the way round, but particularly on the east side, measuring nearly 2m by 1.3m at the base. The base was flat, and there was a small square niche cut into the western end, probably a foothold for access.

A total of 523g of pottery of similar date to that from the backfill of the hollow was recovered from the lower fills of pit 7271. This feature also notably produced a large assemblage of domestic fowl, in addition to sheep/goat, pig and bird bone, mussel shell and oyster. A single iron nail came from the upper fill. Given the similar date of the finds from both the pit and the hollow, they are interpreted as contemporary; the depth and undercut nature of the pit makes it likely that the backfill had subsequently settled into it, making it appear to be later. There was a charcoal-rich lens in the basal fill of pit 7271, but no evidence of *in situ* burning. This lens produced abundant charred cereal grain (barley, free-threshing wheat, oat/brome grass and possible rye) and pulses (vetch/garden pea), similar to the charred plant remains from the other sunken-featured buildings. Floor fill 5839 also produced a single barley grain.

A total of six postholes were located along the western edge of building 5950 (Fig. 5.13). These were of varying dimensions and forms, from 0.25 to 0.58m in diameter and 0.1 to 0.22m deep. The two largest postholes were located at either end of the structure. The most northerly posthole 5951 contained a complete (but fractured) upper rotary quern of shelly Upper Jurassic limestone (sf 527) apparently re-used here as a post pad. The quern is particularly significant as it is the size of a hand operated rotary quern but has features associated with mechanically operated millstones. It is probable that this object was pre-conquest in date and originated in a horizontal-wheeled mill (see Shaffrey, this vol.).

An additional two groups of three postholes were located around the northernmost corners in varying formations and two postholes and a probable square pit were placed within the main structure towards the southern end. The position of the postholes does not suggest that they formed a complete superstructure, but those on the west (and perhaps those on the north) may have provided additional support for a mass-wall. The group on the south could have formed an internal partition of sorts.

More domestic material came from this structure than many of the others of this type, particularly from pit 7271, and it is possible that this structure

Plate 5.13 Shallow building 5950 part-excavated showing plough scars and broken quernstone used as a post-pad

Plate 5.14 General view of building 5909 during excavation looking south-east

served a slightly different function. The structure appeared to be located on the eastern side of a posthole and beam slot structure (5909, see below), possible forming part of a larger domestic complex.

Posthole and post-in-trench or beam-slot structures

Structure 5909

Structure 5909 was located immediately south-west of structure 5950, north of the holloway, and was similarly aligned to 5950 (Figs 5.8 and 5.14). The structure was defined by a series of short slots and postholes enclosing the southern and western sides of a rectangular area, with other short slots at the north-west and south-east corners, again at right angles, pointing towards a large posthole at the north-east corner. These features enclosed an area *c* 8 x 7m (Plate 5.14). In addition, the eastern side of this possible building was aligned with the postholes on the western side of structure 5950 (see above), possibly indicating that the building extended further north, and that 5909 and 5950 were parts of a structural whole. Opposite to 5950 further slots (7328 and 7330) and a pit (7332) may mark the limits of this extension on the north-west side.

Overall the exact form of the structure is unclear. The short slots had no evidence of posts along their length, and are probably to be interpreted as beam-slots, although these were wide for their length and generally rather short. A number of the supposed beam slots also had irregular bases (eg 5861 section 1710), although this may be a result of degradation of the natural chalk.

Hardly any of the postholes contained post-pipes, but these features were too small to have been useful as pits, and the posts may have been removed on abandonment of the structure. The presence of these below-ground features on only two sides is structurally difficult to explain; it is perhaps possible that the building was open on two sides. Otherwise these areas must have employed walls that did not require sub-surface foundations. One alternative hypothesis is that the below-ground features were external to the building proper, which was constructed on sill-beams at ground level, and which have left no trace. If so, however, the building must have been significantly smaller than the outline of the slots and postholes, to allow for features on the inner side like 5871 and 3893.

The beam slots were typically 1–2m long, 0.5m wide and 0.15m deep with flat bases. Some intercut one another or were 'stepped' (see 5879 and 5922 section 1717), suggesting that the structure had been repaired or modified (see suggested phasing Fig. 5.15).

Stratigraphic analysis has identified three possible phases within structure 5909. Phase 1

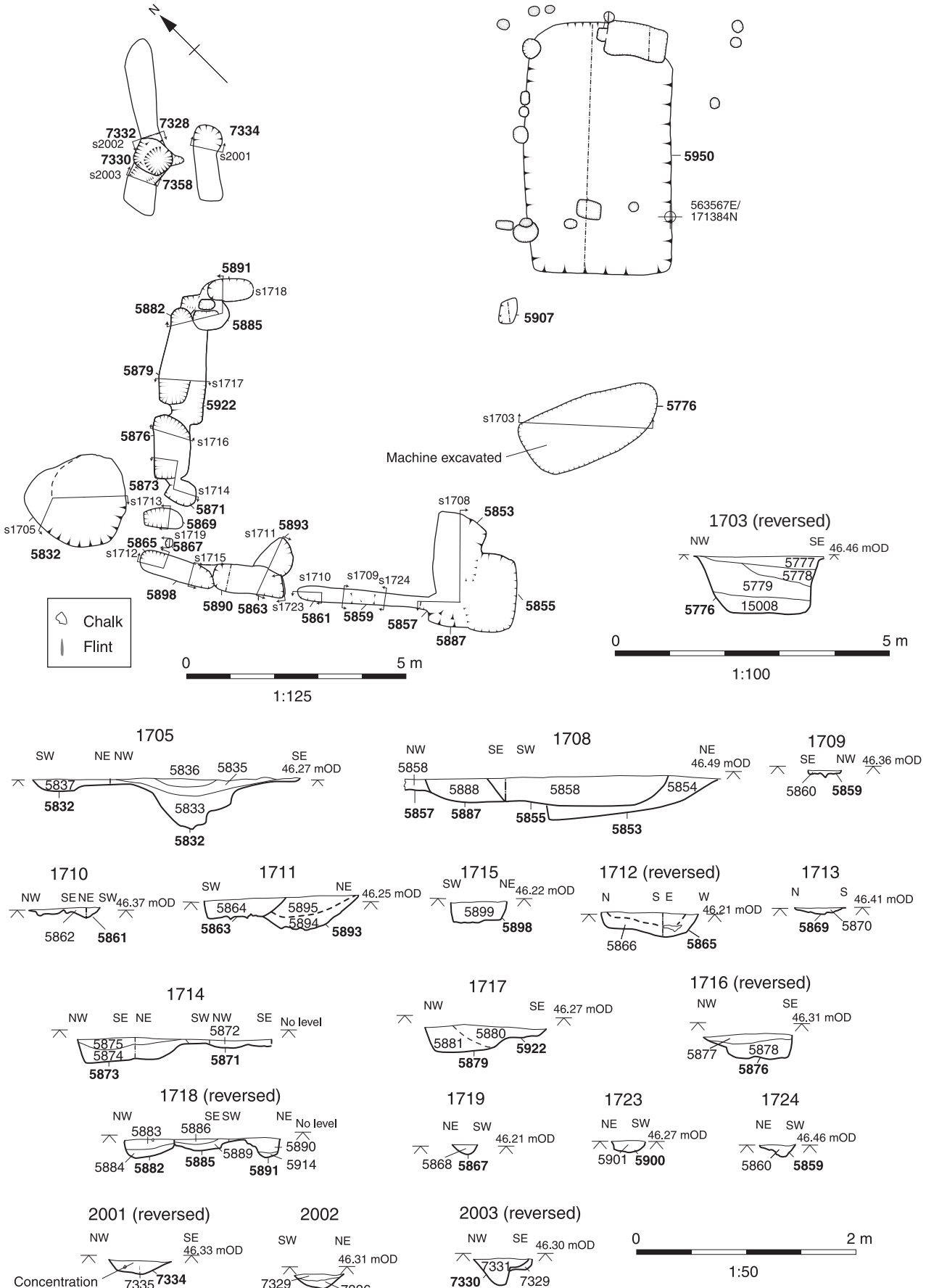
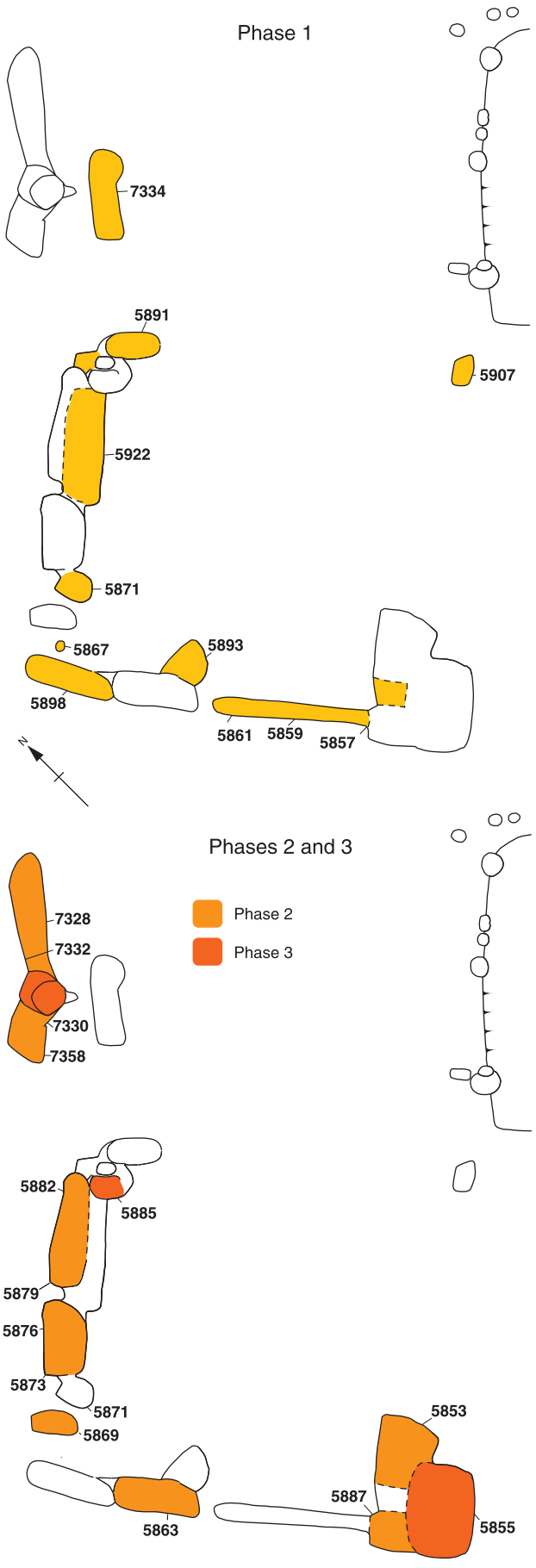


Fig. 5.14 Plan and sections of structures 5909, together with structure 5950



appears to have included the longest beam slots, and comprised beam slots 5992, posthole 5871 and posthole 5867 on the western side, slot 5865/5898, 5893 and slot 5861/5859/5857 on the south. At the south-east corner, between phase 2 pits 5887 and 5853, was a narrowing of the soilmark, which is interpreted as another phase 1 shallow feature. Pits or postholes 5891 and 5907 on the north and east sides presumably also belong to phase 1 (Fig. 5.15).

In the second phase the west side of the structure was shifted slightly, 5882/5879 and 5873/5876 replacing 5922, and another slot 5863 was added to the south side. The south-east corner was marked by two rectangular pits or postholes 5887 and 5853. Generally this phase was characterised by shorter and wider beam-slots. It is possible that elements of the phase 1 structure were retained, for instance along the south and at the north-west and north-east corners.

A final stage of activity was represented by pits 5885 and 5855, located at the north-west and south-east corners respectively, and probably representing additional supports or other repairs. It is uncertain how the possible northern extension related to this posited phasing, but feature 7334 was in line with the proposed phase 1 slots, and 7328 and 7358 further west may have belonged with the second phase, whose slots lay on the outer side of those of phase 1. An additional pit (7332) appears to have cut gullies 7328 and 7330, and could perhaps belong with phase 3.

In total 315g of pottery was recovered from features throughout the complex, including beam-slots, postholes and pits. The assemblage included sherds that could potentially date from the 12th century through to the late 13th or 14th century. At first sight this appears to reinforce the view that the building had a long sequence of structural renewal, but dividing the pottery into the proposed phases did not provide a clear chronological sequence. Reconsideration of established pottery dating (see Cotter this vol.) may indicate that all of the material could date from the latter part of this date range. As such, the structure need not have been particularly long-lived. Pottery from pit 5855 was dated to the mid 13th century, perhaps suggesting that the end date for occupation lay in the later 13th rather than in the 14th century.

Other finds were scarce. Animal bone was recovered from four features but was not identifiable to species, while two contexts produced oyster and mussel shell. A single iron nail was found in beam-slot 5879. Pit 5855 produced roe deer bone and oyster shell while pit 5885 contained marine shell including oyster, whelk and mussel, as well as an iron nail. To the north late 12th-century pottery came from slot 7330 and oyster shell from pit 7332.

Two larger pits lay just west and east of structure 5909 (see Fig. 5.14). Pit 5832 to the west was 2m in diameter and 0.45m deep, and contained five fills

Fig. 5.15 (left) Phased plan of building 5909

including a charcoal-rich layer. Domestic waste was recovered from the pit including 13th to mid 14th-century pottery, animal bone including sheep, and frequent marine shell including oyster, mussel and cockle. A single environmental sample yielded abundant free-threshing type wheat, indeterminate vetch/garden pea, a walnut shell fragment and birch/hazel charcoal.

Pit 5776 to the east measured 3.1m long, 1m wide and 1.3m deep, and had an alternating sequence of sterile and rich fills that contained large quantities of pottery (286 sherds weighing 3.05kg) dated AD 1270–1350. This included complete profiles of two very unusual vessels, a tall jug with a small perforation through the rim and a bunghole cistern. The former was remarkable for its size (*c* 372mm tall) and unusual perforation, possibly suggesting a specialised function, although it showed no sign of use (see Cotter this vol.). The bunghole cistern is likely to have been used for brewing or storing ale. The burial of these unusual pots in pit 5776 may be some form of ritual deposit, although the animal bone assemblage from the pit was typical of the settlement, and so a more pragmatic explanation is equally possible. Other finds that indicate more varied activities in this area include a possible iron drill bit and a fragment of lava quern.

Overall the artefactual and ecofactual evidence points towards a domestic function for this complex. The presence of the bunghole cistern may indicate that 5950 functioned as a malting house or brewery, however the environmental evidence suggests a much more general use. The presence of the cistern may, however, indicate the presence of a brewery or malting house nearby, possibly even structure 6280, which contained a large assemblage of barley.

Structure 15090 and associated features

A further possible building (15090) may have lain *c* 15m east of 5909 and 9m east of 5950 (Figs 5.8 and 5.16). The area was defined by ditch 7343 on the western side, from which a pair of short projections 15034 and 15010/7692 ran roughly at right angles for 3–3.5m in an easterly direction. Just inside ditch 7343 was slot 15020, while to the south there was a posthole or pit 7520 in line with 15034, and beyond this a line of four pits or postholes (7548, 7550, 7688 and 7697) roughly parallel to the slot. This group of features enclosed an area some 8.5m by 8m. An additional reason for suggesting that there might have been a building here was that the enclosed area contained a pot sunk into the ground (sf 586 in feature 15032; Plate 5.15) and a patch of burnt natural 15029, possibly a hearth. The vessel was a tripod pitcher dated to AD 1175-1250 (see Cotter this vol.) buried upright and presumably whole except for the feet and handle, which may have been missing at the time of burial. The pitcher is a rare, if not unique, example for Kent, the type mostly occurring in Wessex, and may have been significant to its owners. It was likely to have been used for serving drinks at the table, possibly on special occasions, and its burial may be ritual or indicate a hiding place for something precious (ibid.). Such a vessel is more likely to have been placed within a structure to avoid destruction of the pitcher. To the north, gully 5074 parallel to 7343 could possibly have enclosed an extension to this building.

Rectangular pit 15018 was located 3m south-west of 15032. This was unusually deep for its size, measuring 1.3 x 0.6m in plan but 1.1m deep, with a

Plate 5.15 Pot sf 586 set into pit 15032 in the ground within putative building 15090

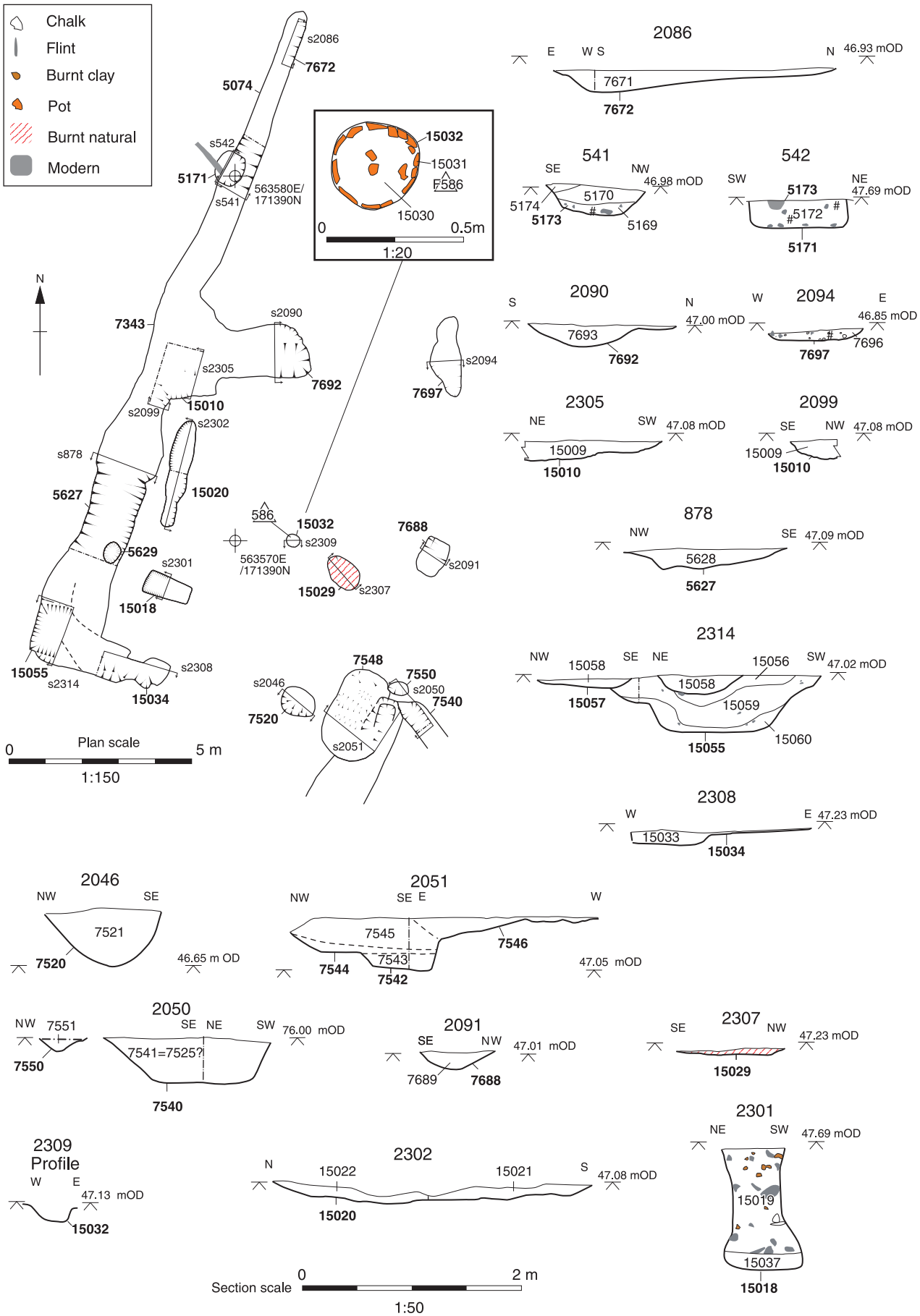

Chalk
Flint
Burnt clay
Pot
Burnt natural
Modern
N
s2086
7672
5074
s542
5171
s541
563580E/
171390N
15032
15031
F586
15030
0
0.5m
1:20
7343
s2090
7692
s2305
15010
s2099
s2302
s878
5627
15020
586
15032
s2309
563570E
/171390N
15029
s2307
7688
s2091
s2094
7697
5629
s2301
15018
15055
s2314
s2308
15034
7548
7550
s2050
7540
s2046
7520
s2051
0
Plan scale
5 m
1:150
2086
E
W S
N
46.93 mOD
7671
7672
541
SE
NW
46.98 mOD
5174
5170
5173
5169
542
SW
NE
5173
47.69 mOD
5172
5171
2090
S
N
47.00 mOD
7693
7692
2094
W
E
46.85 mOD
7696
7697
2305
NE
SW
47.08 mOD
15009
15010
2099
SE
NW
47.08 mOD
15009
15010
878
NW
SE
47.09 mOD
5628
5627
2314
NW
15058
SE
NE
15056
SW
47.02 mOD
15058
15057
15059
15055
15060
2308
W
E
47.23 mOD
15033
15034
2046
NW
SE
7521
7520
46.65 m OD
2051
NW
SE
E
W
7545
7546
7543
7544
7542
47.05 mOD
2050
NW
7551
SE
NE
SW
76.00 mOD
7541=7525?
7550
7540
2091
SE
NW
47.01 mOD
7689
7688
2307
SE
NW
47.23 mOD
15029
2309
Profile
W
E
47.13 mOD
15032
2302
N
15022
15021
S
47.08 mOD
15020
2301
NE
SW
47.69 mOD
15019
15037
15018
0
Section scale
2 m
1:50

Plate 5.16 Pit 15080 half-sectioned showing undercut base and reddened fill

bulbous undercut base (Fig. 5.16 section 2301 and Plate 5.16). There were two fills, and these included numerous large flint blocks suitable for construction purposes in a matrix of fired clay and heat-affected soil that could conceivably have come from the demolition of a hearth or oven.

The structural elements of this putative building are very slight. Recognition as a possible building was based largely on the shape of the soilmark of linear feature 7343, particularly the easterly projections, which bore some resemblance to the slots of structure 5909. Feature 7343 was 19m long and very shallow throughout (up to 0.24m) but became generally broader towards the southern end, where it reached 1.55m wide. At the south end it appears probable that 7343 was of two phases, the earlier of which (along with pit 15055) could perhaps have related to the putative building, while the later was more likely an enclosing ditch or gully. If all of 7343 and its associated features lay outside the building, then the structural elements on the west side are limited to slot 15020.

Dating evidence from 7343 was mixed, giving a date range of mid 11th to 14th century AD, but pit 15055 at the south end contained eight sherds of late 12th century pottery. Other finds from the ditch included an iron buckle, marine shell including oyster, whelk, mussel and cockle and sheep/goat bone. Pit 15055 also contained oyster and mussel shell and a single iron nail.

Overall the pottery from the entire group was similar in date to that of pot sf 586 (late 12th to 13th centuries), and was recovered from all elements of the structure with the exception of slot 15020. Other artefacts and ecofacts comprised animal bone including sheep/goat and pig, and marine shell including oyster, mussel and whelk. Pit 15018 also produced structural fired clay and eggshell. Samples were taken from the fill of pot sf 586 and from the main fill in feature 15018. These yielded a small number of charred barley grains from 15018 and only very small fragments of charcoal from the pot.

Assuming that the evidence does indicate a building, the presence of the serving pitcher and the

Fig. 5.16 (left) Plan and sections of putative structure 15090

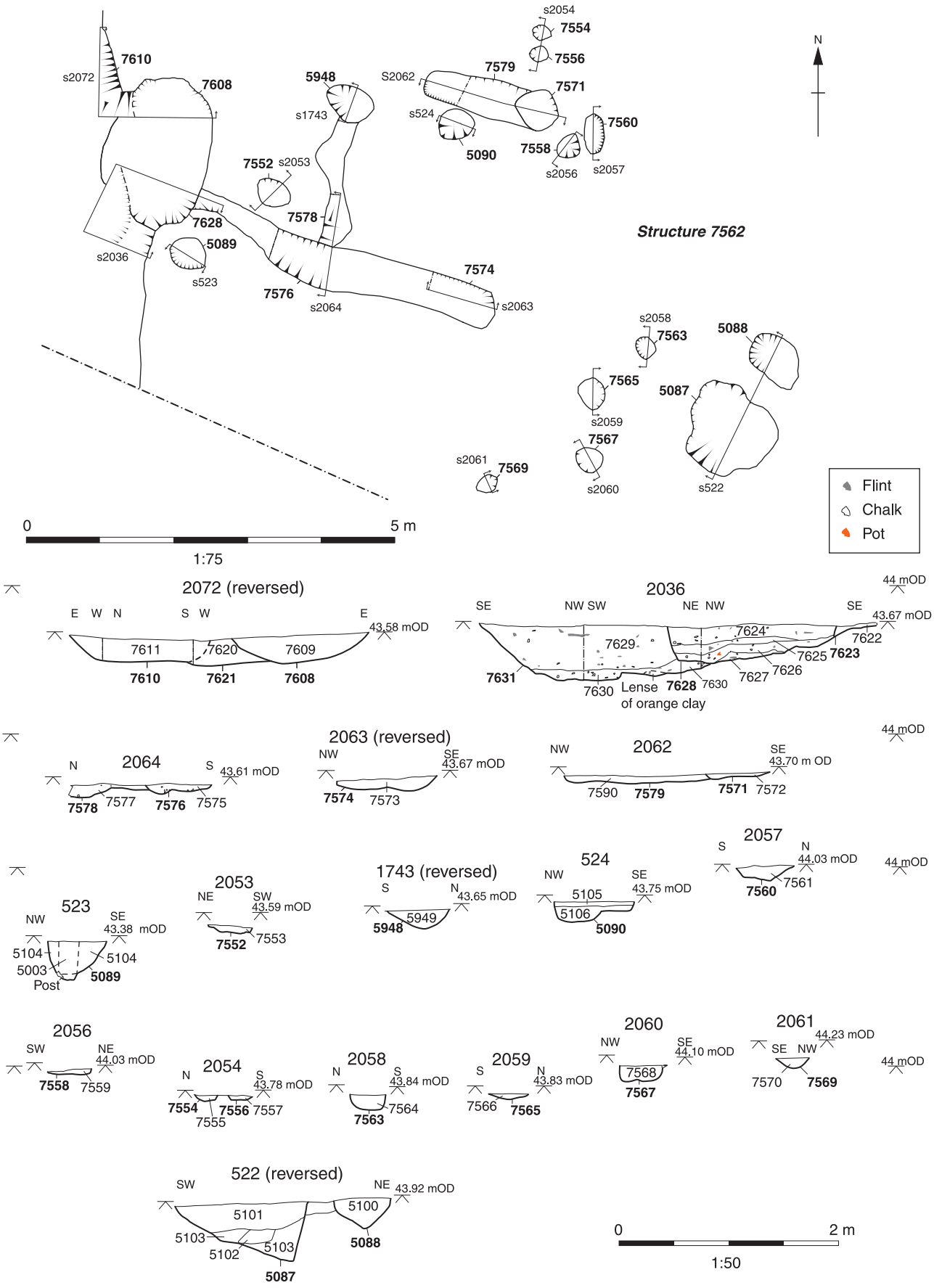


Fig. 5.17 Plan and sections of putative structure 7562

quantity of pottery and apparent food debris suggests that it had a domestic function. The function of pit 15018 is difficult to establish, but deep narrow and undercut pits are also present in SFB 5950 and just outside structure 5909, perhaps indicating a common purpose.

As with putative building 5909, the lack of matching structural elements on opposite sides, indeed their absence around parts of the structure, might be taken to indicate that the building was constructed on sill-beams at ground level, and that (apart from 15020) these features, particularly 7343, were surrounding ditches or fences. In this case, however, the position of burnt natural 15029, unless interpreted as a hearth against the wall, leaves little room for the wall of the building between it and the features to the east. The later phase of ditch 7343, corresponding ditches 15069/7362 to the west and ditch 15068 which ran at right angles to these may have enclosed the structure.

Several other pits were also located in the vicinity of possible building 15090 (see Fig. 5.8). Pit 7668 to the east was large, with a diameter of 2.75m and a depth of 0.4m, but contained only sheep bone. Pit 7326 was located *c* 5.5m south of 15090 and was circular in plan, measuring 1.65m in diameter and 0.3m deep. This feature produced late 12th-century pottery as well as sheep bones and oyster. Smaller pit 5074 to the north-east of the structure contained only unidentified animal bone fragments, lumps of iron and struck flint. It is possible that this is an earlier feature, but lies in an area of apparently exclusively medieval activity.

Structure 7562

A further possible structure or structures of post-in-trench or beam-slot and posthole construction was located west of holloway 5306 (Figs 5.8 and 5.17). This lay within the enclosure formed by phase 1 ditches 7393, 7391 and 7429.

A possible rectangular structure comprised parallel gullies or beam-slots 7574 and 7579, possibly also incorporating slot 7578 at right angles. Adjacent to these, and in some cases cutting the slots, were a group of pits or postholes, which may have been associated. At a minimum the slots suggest a building 5m by 6m on a WNW-ESE orientation, but this may have been a larger structure also incorporating some of the pits or postholes.

Slots 7574 and 7579 were both around 1m wide, shallow and with fairly flat bases. The western half of 7574 was of variable width and curved slightly, whereas the east half was straighter and of more uniform width. The east part (7574) was of similar length to 7579, perhaps indicating that at one stage the structure consisted of slots of similar length. Slot 7576 cut 7578, which was narrower and less regular than 7574, but was aligned approximately at right angles to the parallel slots, and it remains possible that this originally formed a third side to this structure. There was no trace of anything enclosing the fourth side.

If this was a small structure, it might perhaps have been a cart or wagon-shed, the roof supported on beam-slots on the south and north, and the west side closed by more roughly constructed walling.

A series of small pits or postholes were also found in this area. Where relationships between these and the putative slots occurred, the pits or postholes were always later, perhaps indicating that they were not associated with the beam-slot building. Three rough lines are evident, one running north-east from 5089 to 5948, a second alongside slot 7579 from 5948 to 7558 or 7560, and the third running just west of north-south from 7563 to 7567. Only 5089, which was by far the most substantial, had trace of a post-pipe, but a number of others (see Fig. 5.17) survived 0.25m deep or more, and some of these had U-profiles suitable for postholes. It is possible that the line alongside slot 7579 represent a replacement, and that the line starting at 7563, which is in line with slot 7574, was a fence or annex at right angles. Alternatively they may all have formed a fenced enclosure of sub-circular shape. Two large pits (7608 and 5087) were located immediately west and east of the possible structures, and were probably associated.

The group produced few finds, although small assemblages came from pits 7608 and 5087. The pottery from the former dated to the 12th century to early 13th century whilst that from 5087 was mid 13th century in date. Pit 7608 may have incorporated sherds from the Phase 1 ditch it cut on the west. Other finds included structural fired clay from both pits, an iron nail and a spike, animal and fish bone and oyster shell from pit 5087.

The group was extensively sampled for environmental remains. A number of samples from postholes yielded minor amounts of charcoal but more substantial assemblages came from pit 5087 and posthole 7563. These both included frequent charred wheat and barley grains. Pit 5087 also produced vetch/garden pea and vetch/vetchling while posthole 7563 yielded oak charcoal. Overall the environmental assemblage was very similar in nature to other structures of this period in the vicinity.

Other notable features/potential structures

Burnt hollow 5083 and associated features

A large burnt area (5083) was located towards the northern edge of the site, *c* 8.5m north-east of holloway 5306 (Figs 5.8 and 5.18). The burning covered an area *c* 6m x 4.5m, and was 0.24m deep, comprising a single thin spread of *in situ* burnt soil above two layers of heat-affected natural (Plate 5.17). The feature contained 135 pottery sherds, weighing 814g, most dating to AD 1270–1350 and it was initially thought that this might have represented a bonfire kiln. There is, however, no indication that these vessels were being manufactured here (see Cotter, this vol.). Some of the sherds were covered in soot, presumably from use as cooking

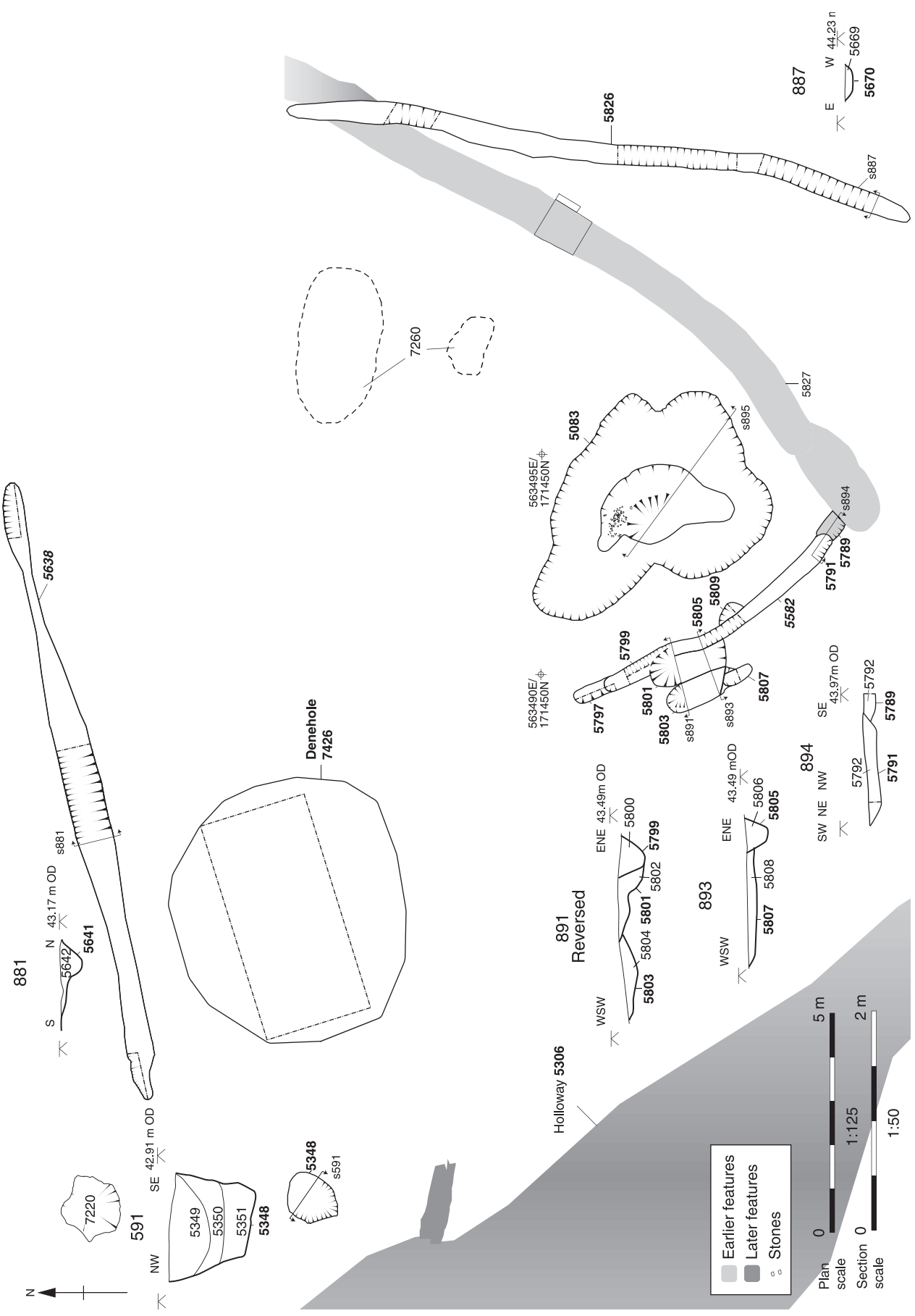


Fig. 5.18 Plan and sections of burning in hollow 5083 and associated features

Plate 5.17 Burnt hearth or bonfire site 5083 within the Site C medieval settlement

vessels, and it seems more likely that this feature represents the remains of an external hearth.

Other finds from 5083 included a single iron nail and fragments of lava quern. Charred plant remains included abundant cereal grains, including wheat, possible barley and some oat/brome grass. It is therefore possible that this area was used for crop-processing.

About 4m north of 5083 there was a diffuse spread of charcoal-rich material in hollow 7260, covering an area of 3 x 2m. This contained 391g of pottery dated late 12th century and AD 1270–1350, similar to the pottery from 5083. A fragment of late medieval copper-alloy buckle, a post-medieval horseshoe, a medieval tile fragment, sheep/goat bone and oyster shell were also recovered. It is possible that this was material dumped from use of 5083.

West of 7260 was a denehole/quarry pit (7246) measuring 4.9m in diameter and 2.4m deep, and further west again a pit (5348), containing medieval pottery, animal bone, oyster shell and an iron nail. The denehole/quarry pit did not produce any finds, and it is possible that it pre-dated the medieval activity, although it was respected by gully 5638, one of the boundaries surrounding this area.

Hollow 5083, spread 7260 and the other features described above appeared to be enclosed by a complex of gullies: 5638 to the north, perpendicular to the holloway, 5826 to the east, and 5582 to the west. Gullies 5638 and 5826 were 14–15m long, 0.4–0.8m wide and up to 0.4m deep. 5638 may have been the earlier of the two, as it contained late 12th to 13th-century pottery whilst gully 5826 yielded pottery dated AD 1270–1350. The former also produced animal bone and oyster shell. Gully 5582 was smaller (7.5 x 0.3 x 0.22m) and more closely associated with feature 5083. This contained no finds but cut a set of shallow medieval pits (5801, 5803 and 5789) two of which contained mid 13th–late 14th-century glazed pottery including 123g of a single pot from pit 5803.

Cultivation Layer in hollow 7290

A substantial spread of cultivated soil (7221=5947) within a large, shallow and irregular hollow 7290 was located across the heart of the medieval settlement, predominantly east of the holloway and south of ditch 7275. This soil also filled a number of narrow parallel lines in the natural chalk within the hollow. The lines in the chalk were less than 1m apart, but did not run for long distances, and were somewhat irregular in plan and in depth. As such, they are most likely to relate to spade cultivation.

The layer was recorded as being cut by structure 5950 (see above), but overlay postholes associated with its west edge, and also obscured the south edge of SFB 6280. The soil contained a large quantity of pottery, all dating to AD 1250–1300, animal bone including cattle, an iron hobnail and nail, structural fired clay and fragments of possible post-medieval tile.

The pottery is later than that recovered from SFB 6280, but is contemporary with that found in fresh condition in features within SFB 5950 (see above). It remains possible that there was a brief phase of garden cultivation in the mid–late 13th century, but it is more likely that the relationship with structure 5950 was misinterpreted due to the settling of the cultivation soil into the deeper

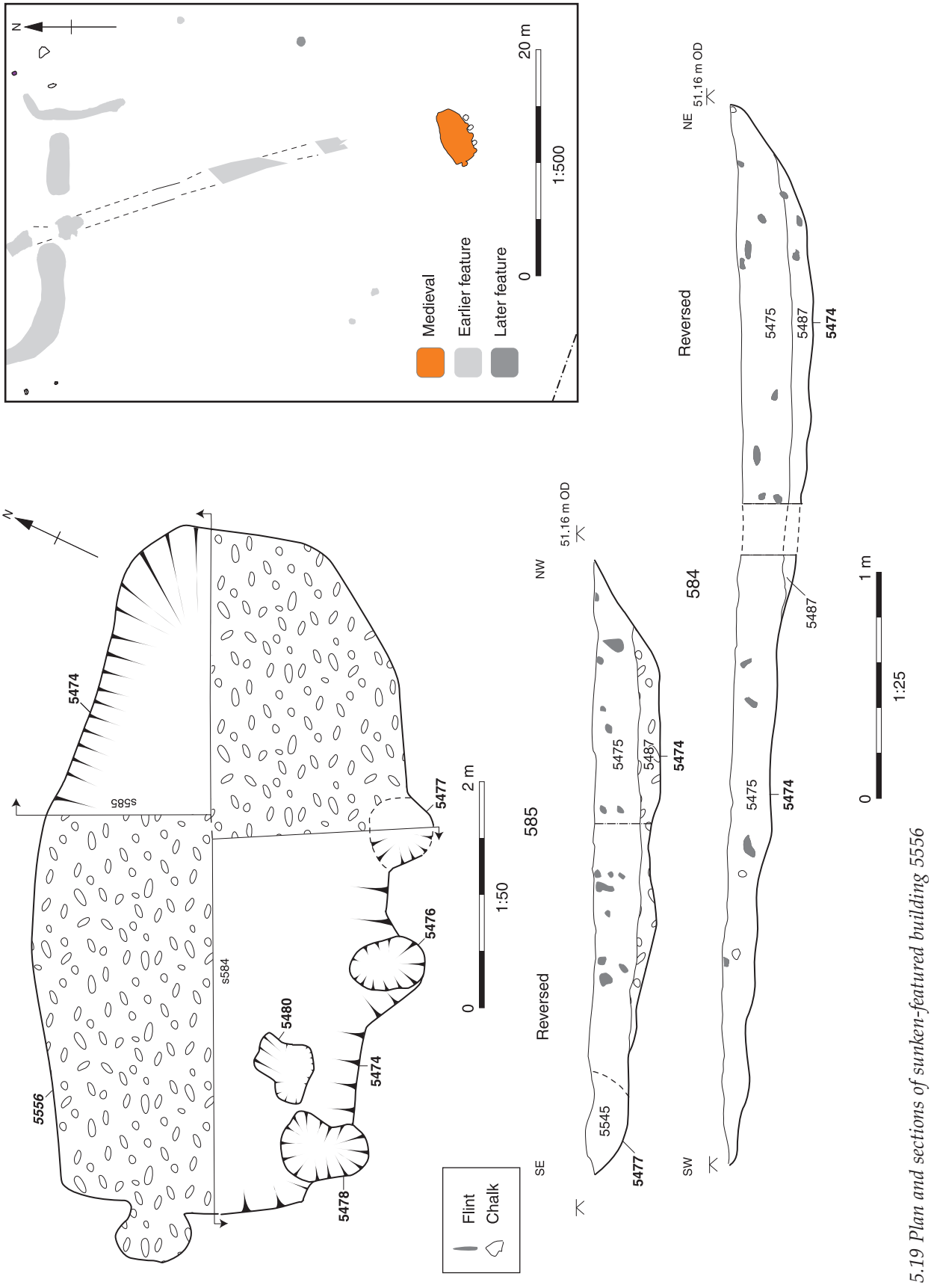


Fig. 5.19 Plan and sections of sunken-featured building 5556

hollow of the structure, and that the cultivation occurred later, incorporating residual finds (see also below).

A further possible building?

One further possible sunken-floored structure (5556) was found at the very east end of Site C, some 110m east of the main settlement (Fig. 5.19). There were no dateable artefacts from this structure, but it is discussed here due to its broad similarity to the medieval structures described above.

Structure 5556 was sub-rectangular, 4.8m long and almost 2.5m wide in the middle, narrowing slightly to 2m wide towards the ends, and then angling in more steeply (especially on the south) to 1.7m on the west and 1.2m on the east. The sides were gently sloping and the base slightly dished, deepest towards the north-east end, where it reached 0.32m. Along the western part of the south side, and projecting from the west end, were a number of probable postholes (5476, 5477, 5478 and 5480). The posthole at the west end was not excavated or numbered. The relationship of these postholes to the structure was slightly ambiguous, but it is most likely that they were contemporary, and that the posts were removed before the structure was infilled.

Settlement in Pond D South

The archaeology on Pond D South, unlike many of the other sites on the scheme, formed a coherent whole, rather than a palimpsest of activity (Fig. 5.20). On the basis of pottery evidence most, or all, of the archaeological remains were dated to the medieval period, more specifically the period from the mid 11th to early 13th centuries.

The activity primarily comprised a series of ditches forming rectangular plots or enclosures orientated NNE-SSW and WNW-ESE. Most were part of a single complex in the south-west corner, although a further enclosure was uncovered extending beyond the northern edge of excavation. This enclosure system did not continue north of the A2 in Pond D North; as the enclosures were at right angles to the current road they are likely to have been aligned on, and been confined to the south of, medieval Watling Street. No continuation of this

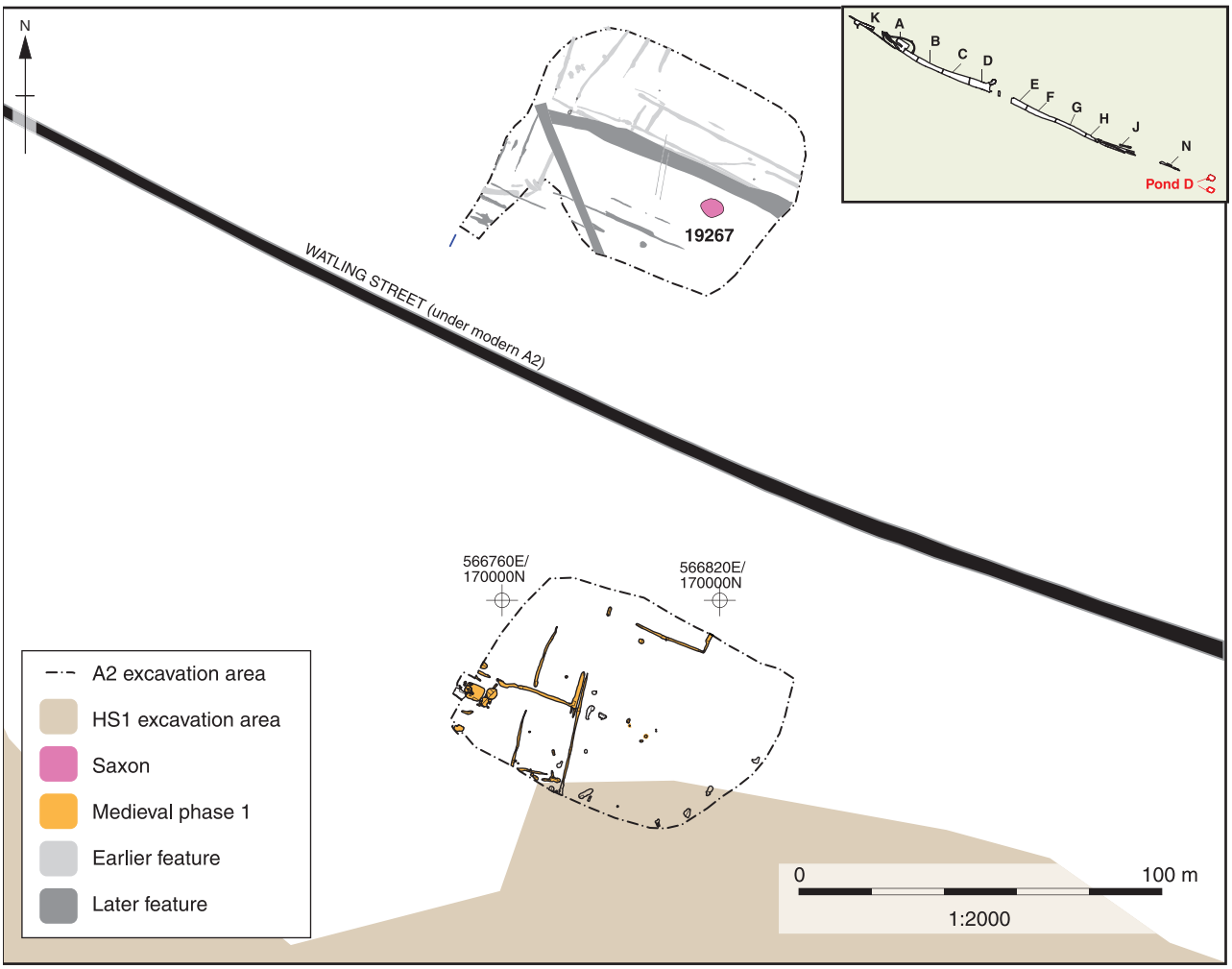


Fig. 5.20 Plan showing Pond D South and Pond D North

system was found during the HS1 works immediately to the south, perhaps due to truncation upslope, or possibly because stripping was not to a sufficient depth. As in Site L a sunken-featured building containing an oven was found in the south-west corner of Pond D South in association with a number of pits and smaller features. The enclosures produced little cultural material, which was mainly confined to the area around structure 2158.

Enclosures and associated features

The main enclosure complex was located in the south-west of the site, surrounding structure 2158, and continued south and west of the excavation area (Fig. 5.21). The eastern boundary was ditch 2403, which at 0.9m wide and 0.34m deep was the largest of the ditches in this area. This ditch appeared to peter out after 34m, but its end corresponded to the terminus of parallel ditch 2404 adjacent, so this may have been a genuine end. Ditch 2403 contained two worn sherds of shelly ware dating to the later 11th or 12th centuries and burnt stones. Some 17m further north another short length of ditch (2232) was found on a very similar alignment, and almost in line with 2403. This is likely to represent a continuation of this boundary. Only 2.2m of the ditch including its northern terminus was recorded, as it ran into a low-lying area to the south and disappeared in an area of colluvium/waterlain silt within a natural depression that may have acted as a pond in the medieval period (Plate 5.18).

Immediately west of 2403, at the point where the ditch petered out, a wider ditch (2404) ran parallel for 10m before turning at right angles and extending WNW for a further 22m. The ditch was 0.8–1.1m wide but only 0.2m deep with a flat bottom and steep sides. Like ditch 2403, 2404 contained pottery dated later 11th or 12th century, as well as animal bone. At the point at which the ditch turned westwards two small gullies (2227 and 2229) continued the line SSW for 2.25m and 1.5m respectively. These appear to be cut by 2404 and may have been earlier phases of the boundary. To the west, a small posthole (2062) was located adjacent to the terminus of ditch 2404 and 3m

Plate 5.18 Building 2158 as first exposed in Pond D South, showing the oven or hearth 2060 projecting at the west end, and looking north-east downslope to the possible 'pond'

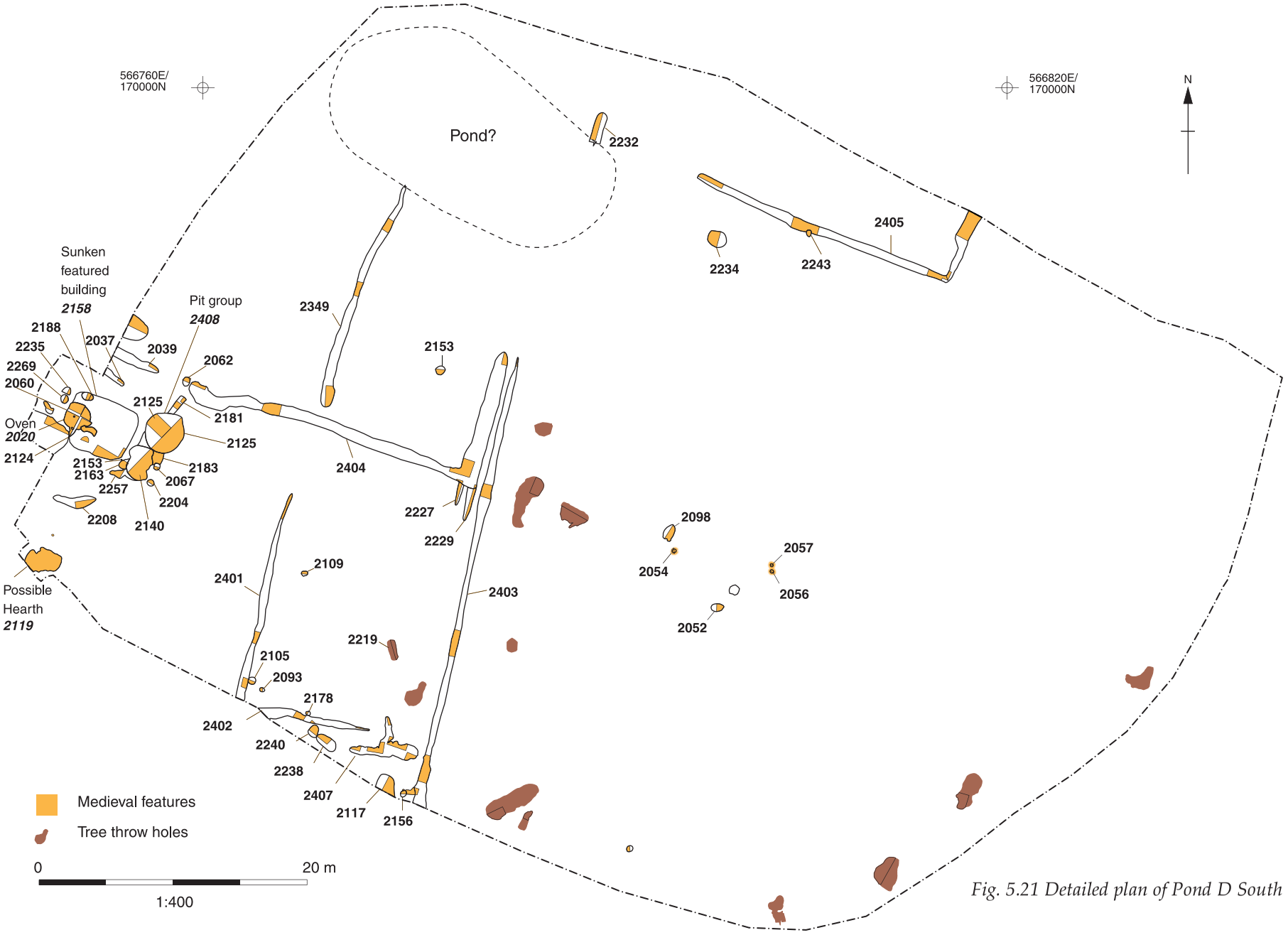


Fig. 5.21 Detailed plan of Pond D South

further west another narrower (*c* 0.6m) ditch (2039) continued the line of 2404 into the western edge of the site. The gap provided an entrance into the enclosure to the south that contained structure 2158.

Subdivisions of the enclosed areas were formed by ditches 2401 and 2349, which ran parallel with ditch 2403, *c* 13–14m to the west. There was a gap of 5.5m between the northern terminus of ditch 2401, which continued south into the edge of excavation. This was presumably the access into the enclosure between 2401 and 2403. Ditch 2349 began only 0.7m north of 2404 on the same alignment, and extended NNE for 17.5m before it was lost in the area of colluvium. The ditches were 0.5–0.6m wide and 0.15–0.26m deep. A single iron nail came from ditch 2401.

A narrow ditch or gully 2402, ran eastwards for 9m at right angles to ditch 2401 from the southern edge of the site. Ditch 2404 was 0.7m wide and 0.2m deep and contained lava quern fragments and animal bone. It is likely to have been a sub-division of the enclosed area between 2401 and 2403, as it extended most of the way between them, stopping 4m short of 2403. The projected junction between 2401 and 2404 lay just outside the limits of the excavation, so no relationship was established between them. Ditch 2403 continued beyond 2404, suggesting that further enclosures existed to the south.

A number of discrete features were located within these rectangular enclosures. In particular the enclosure defined by ditches 2401, 2402, 2403 and 2404 housed a series of postholes close to the southern and eastern boundaries. These measured *c* 0.2–0.4m in diameter and ranged in depth from only 0.05m (2105) to around 0.35m (2178). Although postholes 2105 and 2178 appeared to relate to ditches 2401 and 2402 respectively, no stratigraphic relationships could be established and the purpose of the postholes is unknown. Only posthole 2178 produced finds in the form of mid 11th-century pottery and residual flint.

Feature 2407 occupied the entrance gap between ditches 2402 and 2403. This comprised a 'T' shaped gully or slot, 5m long, 1.2–3m wide and *c* 0.2m deep with a fairly irregular base. This may have been an anthropogenic feature affected by root action or a series of interconnected tree throw holes. A small assemblage of mid 11th- century pottery came from the feature, in addition to residual worked flint. A further group of features was located south of ditch 2402 on the southern edge of the site, none producing any finds.

At the northern extent of the site another L shaped enclosure ditch (2405) may have been part of a further complex, however the ditch extended beyond the northern edge of the site and its full extent was unknown. Ditch 2405 was aligned WNW for 20m before turning SSE for at least 5.5m. The ditch had a rounded concave profile and was *c* 0.6m wide and 0.2m deep. A single small sherd of mid 11th-century pottery and marine shells (oysters, mussel and cockle) were recovered from within.

Discrete features

A number of features were found on Pond D South outside the enclosures. These include a group of pits, postholes and tree throw holes east of ditch 2403. None of the man-made features produced any finds, but given the absence of features of any other date on the site it is likely that they were medieval.

Structure 2158 and associated features

Sunken-featured building 2158 was located within the main complex of enclosures (Figs 5.21–2). Overall the structure was sub-rectangular, measuring *c* 5 x 4m in plan and was orientated ENE-WSW. The structure survived to a maximum depth of 0.48m, and had a thin occupation layer over the central and western parts of the floor, after which it was filled in deliberately with thick layers including some occupation material. At the west end, and projecting slightly from the main hollow, was a large and well-preserved hearth 2060, similar to that found in the sunken-featured building in Site L (see Plate 5.18). This example, however, was reconstructed twice, suggesting a long life (Fig. 5.23).

The oven structure projected slightly beyond the main line of the west end of the hollow (Fig. 5.22). The hollow appeared to have been dug with steep sides and a flattish base that cut into the chalk on the south side, and exposed a patch of gravel at the bottom. The oven was clearly an original part of the design, as the natural was left slightly higher where the north side of the hearth surround was to be constructed. Following the excavation, sand and redeposited natural clayey silt was used on the east to create a surround for the hearth some 0.45m wide and 0.2m high from the general floor level (Plate 5.19; Fig. 5.22, 2348). This surround continued on the south and north, but was interrupted on the south-east by a channel that may represent a narrow flue or rake-out channel (2319). On the west side, where the hearth lay against the natural side of the hollow, there was no clay surround, instead larger flints formed a surround 0.2–0.25m wide. Overall the hearth was sub-circular and *c* 2m in diameter. The feature was excavated in quadrants, revealing three main phases of use (Fig. 5.23; Plate 5.20).

Within the clay surround a layer of large flints was laid down (2333) followed by a layer of smaller flints (2325) to level this off, and a skim of clean clay added to create a surface (2324). On the west the flint surround was only constructed after layer 2324 had been laid, and this was continued around the south-west as a clay surround (2316) overlain by a flint wall (2310). On the south the floor of the hollow was not as deep, so it was not necessary to construct such a substantial clay surround. The bottom of the hollow outside the hearth had accumulated a layer of eroded natural (2318) before it was partly overlain by clay

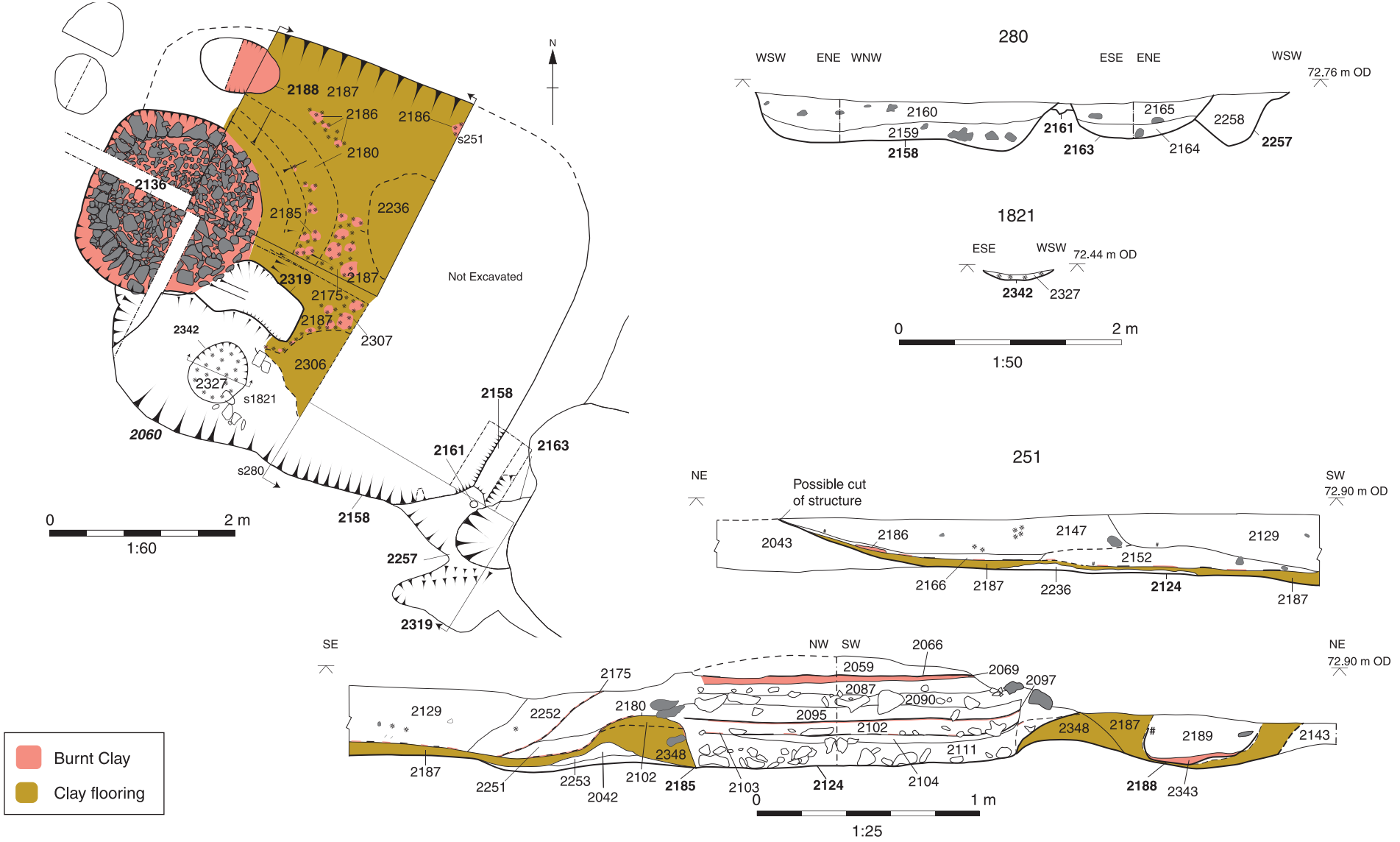


Fig. 5.22 Detailed plan of sunken-featured building 2158 and oven 2060

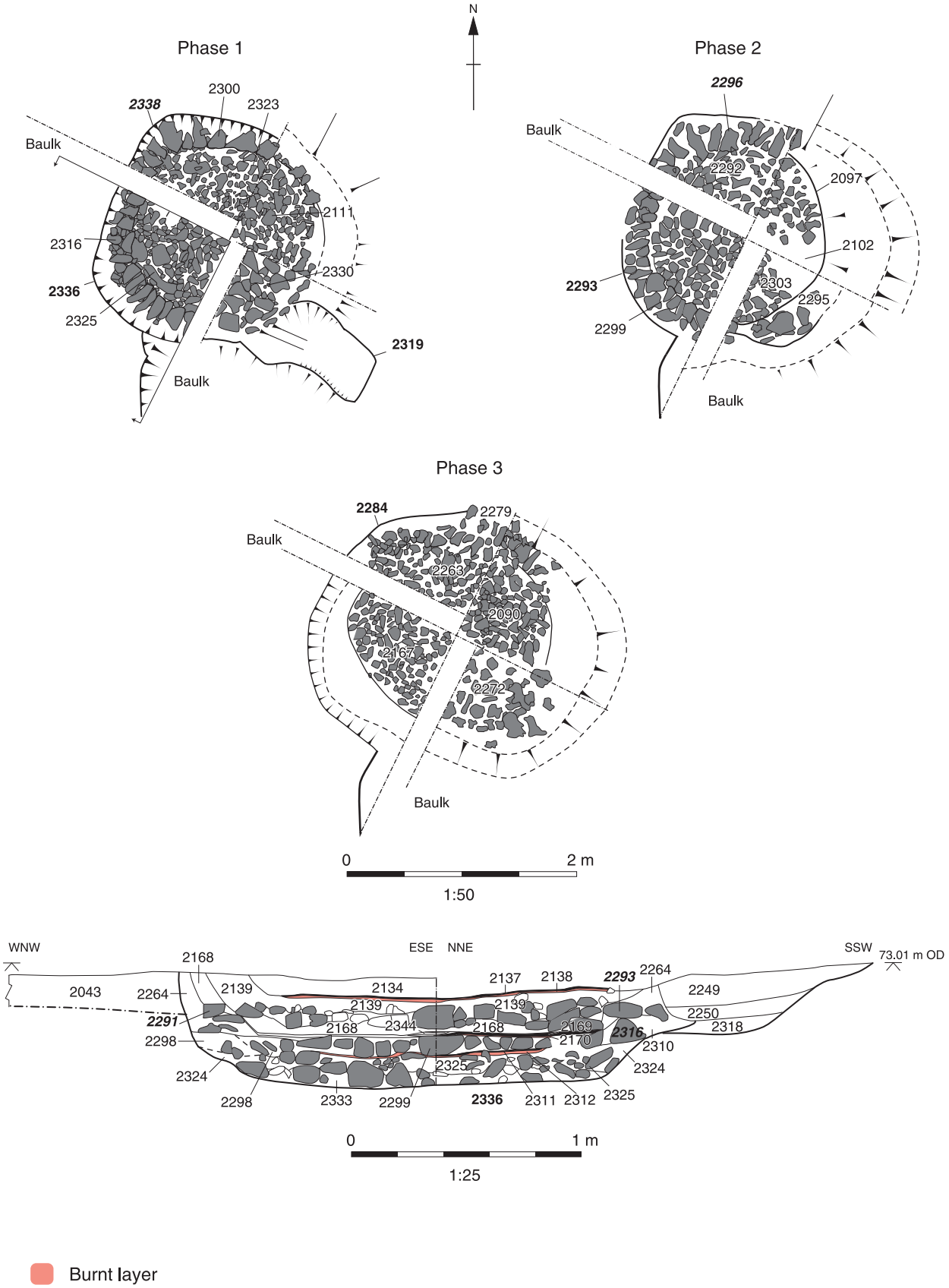


Fig. 5.23 Detailed phase plans and section of oven 2060

Plate 5.19 Section of the west half of building 2158 looking south, showing oven 2060, its clay surround and the floor layers to the west

Plate 5.20 View of 2060 at the west end of building 2158 looking west, and showing probable smaller oven 2188 in section.

layer 2310. Firing of this phase of the hearth was represented by reddening of the clay surface (2309) and a thin layer of ash/soot (2308). Channel (2319) on the south-east was interpreted on site as a flue, but there were no traces of burning on its sides, and its fill (2320) was a dark silty clay without charcoal or other burnt material, so this seems unlikely.

A deposit of clayey silt 2187, much like the natural but more clayey, abutted the hearth surround on the east, and covered most of the base of the hollow to a depth of 10–50mm. It is probable that this was a deliberately laid floor, perhaps to seal the exposed gravel. East of the hearth it was overlain by a very thin dark

occupation layer including charcoal, numbered 2066=2175.

North of the hearth, deposit 2187 filled the hollow right to the top. Within this deposit was oval feature 2188 measuring 0.7 x 0.5 x 0.4m, whose base and lower sides were fired red, and these were covered by a thin layer of blackish-brown silty clay with much charcoal (2343). Above this 2188 was filled with a homogeneous clayey silt very similar to the surrounding natural, such that the cut was not visible at the top. The section (Fig. 5.22; see also Plate 5.20) shows that the north side was beginning to curve back in where still different from 2187, and the bowl-profile may indicate that this was a small oven created by infilling this end of the hollow with clayey material, rather than a later cut. Unfortunately the full significance of this feature was not recognised on site, and the north-west end was not excavated.

The second phase of the hearth was similar to the first, comprising further layers of flint (2299) and clay (2298) to create a clean surface, followed by the addition of more superstructure (2293 and 2264). Phase 2 saw two separate burning events represented by oxidised clay 2170 and ash layer 2169 and subsequently clay 2345 and ash 2344. Another layer of clay (2168) was added following the latter burning event but was not fired.

Phase 3 followed the same formula with a third floor of flint (2167) and a clay surface (2139) then the addition of more superstructure. Like Phase 2 there appear to have been two separate firing events during Phase 3 of the oven. The first was represented by oxidised clay 2138 and ash layer 2137, the second by fired clay layer 2134, although no corresponding ashy deposit was found. This is likely to be the result of bad preservation below the thin layer of ploughsoil.

A complex series of fills was excavated immediately outside the oven structure but within the cut of 2158, including deposits of burnt material, possibly representing rake out from the oven. A smaller area of *in situ* burning (layer 2327) was also found in a slight hollow on the natural clayey silt floor just south-east of hearth 2060. Two groups of flint nodules were found on its east side, but it is unclear what function they may have served.

Finds from the overall structure were scarce, comprising 30 sherds of medieval pottery weighing 706g in addition to fired clay, presumably related to the oven structure. However, the pottery had an interesting sequence of dates. Sherds recovered from the clay bank of the phase 1 oven were dated mid 11th century, those from deposit 2289, possibly associated with phase 2 of the oven, were 12th century, and late 12th to early 13th-century pottery came from overlaying occupation layer 2266. Pottery was also recovered from the fills of the hollow itself and was found to date to the late 11th to 12th century. Overall this seems to indicate that the structure was in use over a long period of time with definite recognisable phases, reinforcing the stratigraphy.

Extensive sampling of the oven and associated features revealed some environmental information, although many of the samples were sterile. A single sample from phase 1 of the oven generated blackberry, goosefoot and nightshade seeds, although some of these appeared to be modern. Similar seeds were recovered from oxidised clay in phase 2, however this phase also produced charred wheat, barley and wild/cultivated oat as well as other unidentified charred grain. Some vetch/pulses were recovered from layer 2170 but not in the numbers seen in the structures on Site C. Phase 2 also produced a plum/bullace/greengage stone. Overall, similar results were found from phase 3 samples, which produced charred grain including wheat and possible spelt, blackberry, goosefoot and nettle seeds as well as plum/damson/bullace stones. Charred grains of cereal including wheat and one vetch/pulse seed came from layers associated with, but outside of, oven 2060.

The exact purpose of this structure is unknown, although it was clearly dominated by oven 2060 and probably built to house this feature. The scarcity of finds (including animal bone) suggests that the structure was not domestic in nature and was more likely to be agricultural.

A series of features surrounded the building and may have been associated with it (Fig. 5.24). The structure was located just within an apparent entranceway formed by a gap between ditches 2039 and 2404 (see below) and this overall enclosure may have been constructed to house the structure. A series of smaller gullies (2037, 2181, 2208) were also placed *c* 1–3m from the structure, two of which (2037, 2181) appear to have defined the limit of the building and may have been wall slots, the construction material later robbed out. Notably a patch of flint walling appeared to have partially overlain gully 2181.

A number of postholes and pits were located in the vicinity of structure 2158, and it is possible that these features functioned as a whole to support a superstructure or roof for the structure as most are aligned with it. However, their disparity and lack of coherence may suggest they were separate structural elements of unknown function. Posthole 2067 cut pit 2140 within complex 2408 (see below) indicating that if this was a superstructure it was added at a later date.

Intercutting pit group 2408 was located immediately east of structure 2158, broadly aligned with the structure. The group comprised five pits of varying size which cut possible wall gully 2181. Unlike most of the features on Pond D South these pits produced substantial assemblages of cultural material and it is possible that the lack of debris in structure 2158 may be the result of dumping into this area. Some of the pits contained pottery dating to the mid 11th century (2125 and 2140), 11th–12th centuries (2257) and late 12th to early 13th centuries (2125), similar to the adjacent structure. Pottery from 2125 included two substantially complete jar/cooking

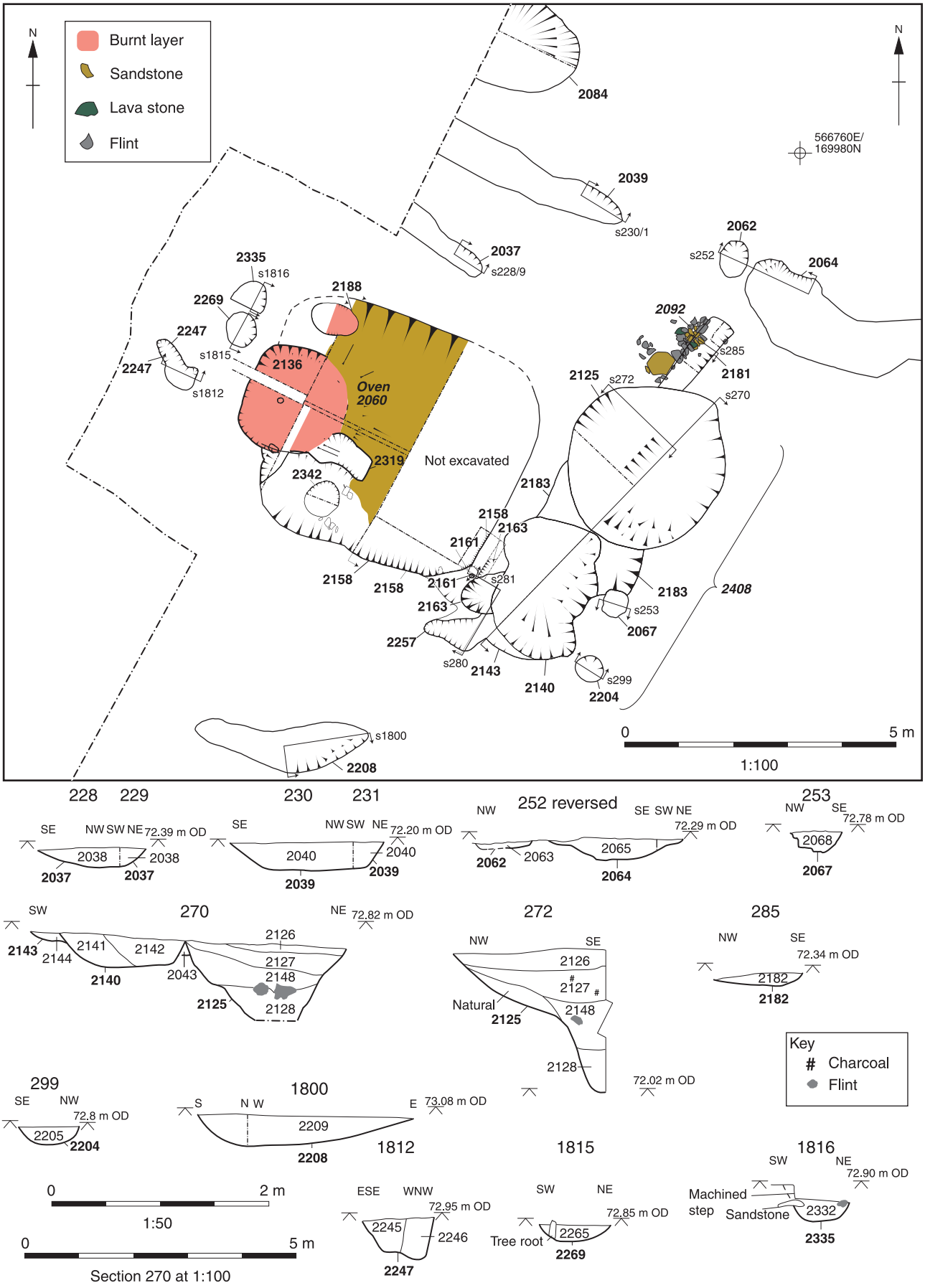


Fig. 5.24 Plan of sunken-featured building 2158 and surrounding features

pot profiles, some sherds of which refitted pieces recovered from the occupation fill of structure 2158 (2266). One of the vessels is thought to have had a capacity of several gallons and was probably used for communal food preparation (see Cotter this vol.). Other finds included structural fired clay from pit 2257, and large blocks of flint (possibly relating to the oven construction) an iron nail, slag, lava quern fragments as well as a large piece of heavily rolled Roman roof tile (tegula) from pit 2125. Soil samples taken from the group yielded charred cereal grain from pit 2125 but no other remains.

In the far south-west corner of the excavation, south of gully 2208, a spread of flints and stone (2119) and an adjacent dark soil layer were investigated (Fig. 5.21). Pit 2119 was a shallow irregular feature (2.7 x 7.85 x 0.2m), with a lower fill (2096) rich in charcoal, and an upper fill (2058) consisting mainly of burnt stone slabs and burnt flint cobbles with further charcoal, including several 11th-century pottery sherds. It is possible that these features represented another truncated oven structure (see also charcoal report, Challinor this vol.), although there was little coherent evidence of this and the spreads may be the result of demolition of such a structure.

A late medieval burial in Site H

A single late medieval feature (Group 11153) was excavated on Site H. This comprised a large east-west orientated rectangular pit (11137), 4 x 1.6 x 0.64m, containing the complete or partial remains of several articulated animals in its upper fills. The feature had vertical sides and a flat base and the corners were observed to be very sharp; a series of small angled holes in the base were interpreted as pick marks.

The pit contained a basal fill and secondary fill which may have been the result of natural accumulation, suggesting the pit was open for some time prior to the main deposition. Above these fills the complete carcasses of a pig with at least seven foetal piglets and an adult male dog were overlain by a dismembered horse.

The positions of the limbs of the dog and pig skeletons suggested that they may have had their legs tied together before insertion in the pit. In addition the neck of the dog had been broken and the head was recovered in the grave at an abnormal angle to the body. A single cut-mark was found on one of the sow's vertebrae but otherwise there were no signs of butchery. One of the pig bones was submitted for radiocarbon dating and returned a date of cal AD 1437–1514 (NZA 30149; 86.9% confidence) for the burial.

The probable mare had clearly been dismembered with the head, neck and all of the limbs removed, although no butchery marks were found. The animal appears to have been used for riding and possibly for traction during its lifetime and may also have had its head broken prior to burial. Besides the animal skeletons other finds comprised 18 sherds of late 12th-century pottery, a possible

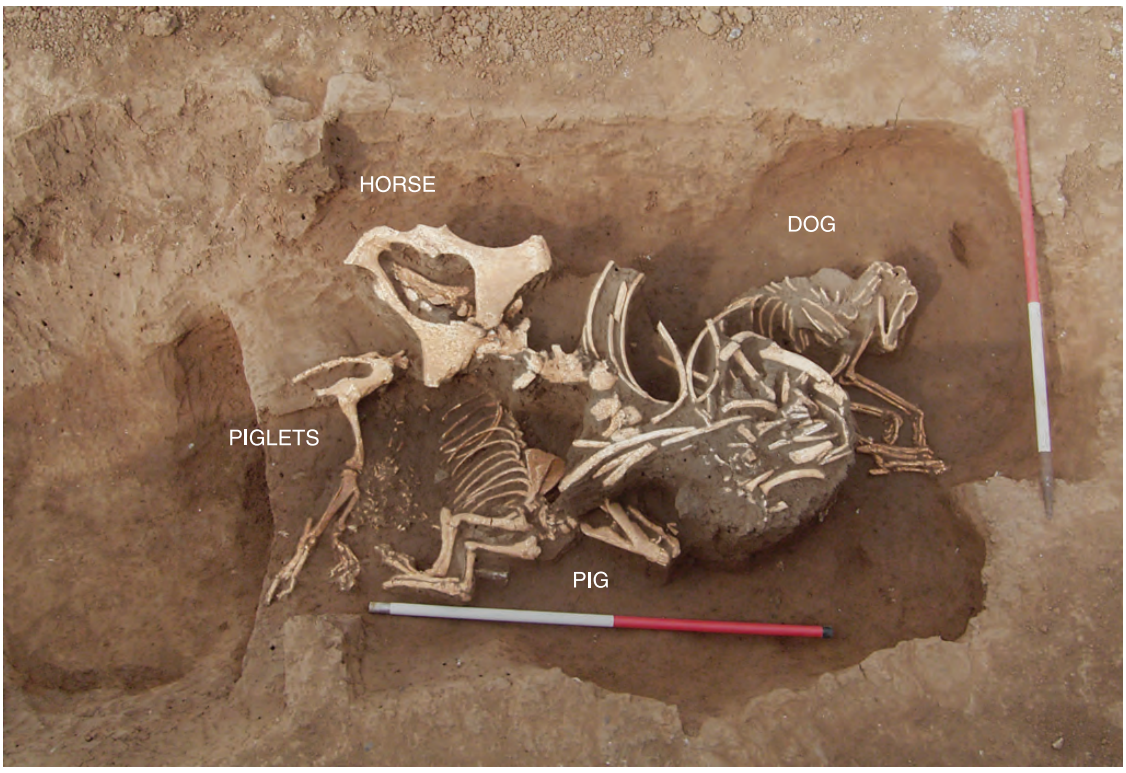


Fig. 5.25 Plan showing location of multiple animal burial 11153 in Site H

rake tine, horseshoe nails and fired clay fragments.

This is a very unusual and significant deposit, which is likely to represent ritual activity; the likelihood of the animals dying at the same time is small and this is clearly not a feasting deposit given the presence of dog. Considering the nature of the burial and the time period in question it is possible that this feature is connected to witchcraft. The hanging of animals as the familiars of witches is documented up to the early modern period (see Bates *et al.* this vol. and also Evans 1906), although archaeological evidence for such practises is rare (see Mullin *et al.* 2011 for a possible post-medieval example from Sussex). Notably the pit appears to have been completely isolated from the nearest contemporary settlement.

A carefully laid-out pig burial, believed to date to the post-medieval period, was recently discovered at Chestfield (Allen 2004), and may have been buried for similar reasons to the animals here.

Medieval activity on other sites

Medieval activity on other sites within the scheme was scarce, comprising a few isolated features and scattered pottery. The most substantial features were parallel ditches 7182 and 7183 located at the western end of Site G. The ditches were orientated NNE-SSW *c* 7.6–8.2m apart and extended across the whole area for a distance of 71m before disappearing beyond the edge of excavation to the north and south. The ditches were picked up as cropmarks for a further 80m to the north. The ditches have been dated to the medieval period on the basis of the presence of a small amount of mid 13th-century pottery and may represent a trackway, or ditches either side of a hedge boundary along the edge of the plateau above the Tollgate dry valley.

POST-MEDIEVAL ACTIVITY

'Deneholes' on sites L, B, C, D and E

A series of large features excavated across the A2 scheme were identified as probable quarries or 'deneholes' (Fig. 5.26–7). Such features were commonly used in the medieval and post-medieval periods for extracting chalk for 'marling'—the process of spreading chalk on agricultural land to improve the soil. Similar large pits can also be dug for other materials such as the sandy clays of the Thanet Sands, or for brickearth.

The term 'denehole' can refer more specifically to quarries comprising vertical shafts leading into open chambers (www.kurg.org.uk), common in Kent and Essex around the banks of the lower Thames. These were generally constructed in the medieval period up to the 14th century, though recently excavations in the Darent Valley have also produced examples of Roman date (Simmonds *et al.* 2011, 76–8). This class of feature was not identified for certain on the A2 scheme.

Instead a second type of quarry, of a type sometimes described as a 'chalk well' or marl pit was present. Most common was a simple circular or oval feature, open at the top and abruptly narrowing to a central shaft, either stepped or sloping more gradually. These open features are more common to the post-medieval period, and generally date from the 17th century onwards. Again, however, recent excavations to the west have also produced examples of this type possibly dating to the Roman period (Simmonds *et al.* 2011, 76–8), and there is a long tradition of ritual shafts of Roman date in Kent (eg Ogilvie 1982; Philp *et al.* 1999) that also resemble these. Two examples on this scheme may possibly have been Iron Age (see Chapter 3: 3400 and 7966).

It is clear that such features can be of varying dates. Other than some of the ritual shafts, these features do not usually generate large quantities of finds, and are often backfilled with surrounding soil that incorporates material from earlier activity in the vicinity. (The ensuing problems of dating are evident in the descriptions of features 3400, 7966, 6519, 5587, 7215 and 7246). For this reason, and due to the constraints of the excavation programme, attempting to clarify the date of these features was not a high priority. Figures 5.26 and 5.27 present the spread of these features along the line of the scheme, and for the purposes of the report they are assumed to be post-medieval unless previously described and discussed above. Descriptions of these features can be found in the digital archive report.

Scattered post-medieval features

A variety of other post-medieval features, comprising trackways and other boundaries, small and large pits, were found scattered along the line of the scheme. These are indicated on Figures 5.26 and 5.27. None of these however formed a settlement or a coherent area of activity, and so will not be described further.

World War II incendiary devices

During the characterisation phase of works on Site D, a series of corroded metallic devices were discovered scattered across the extreme eastern end of the site. These were quickly identified as incendiary bombs and BACTEC were called onto site to remove them. The devices were found to be an early type of incendiary bomb without the added dispersal charge in their base. As such, they proved to be perfectly harmless and it was decided to record their location with a G.P.S. in order to determine if anything could be learned from this scatter.

Research has identified the devices as B1 type bombs (1–1.3kg) used up to the middle of 1942, until they were gradually replaced with the duel incendiary/explosive B2 series. The spread of bombs was arranged in a teardrop shape in plan

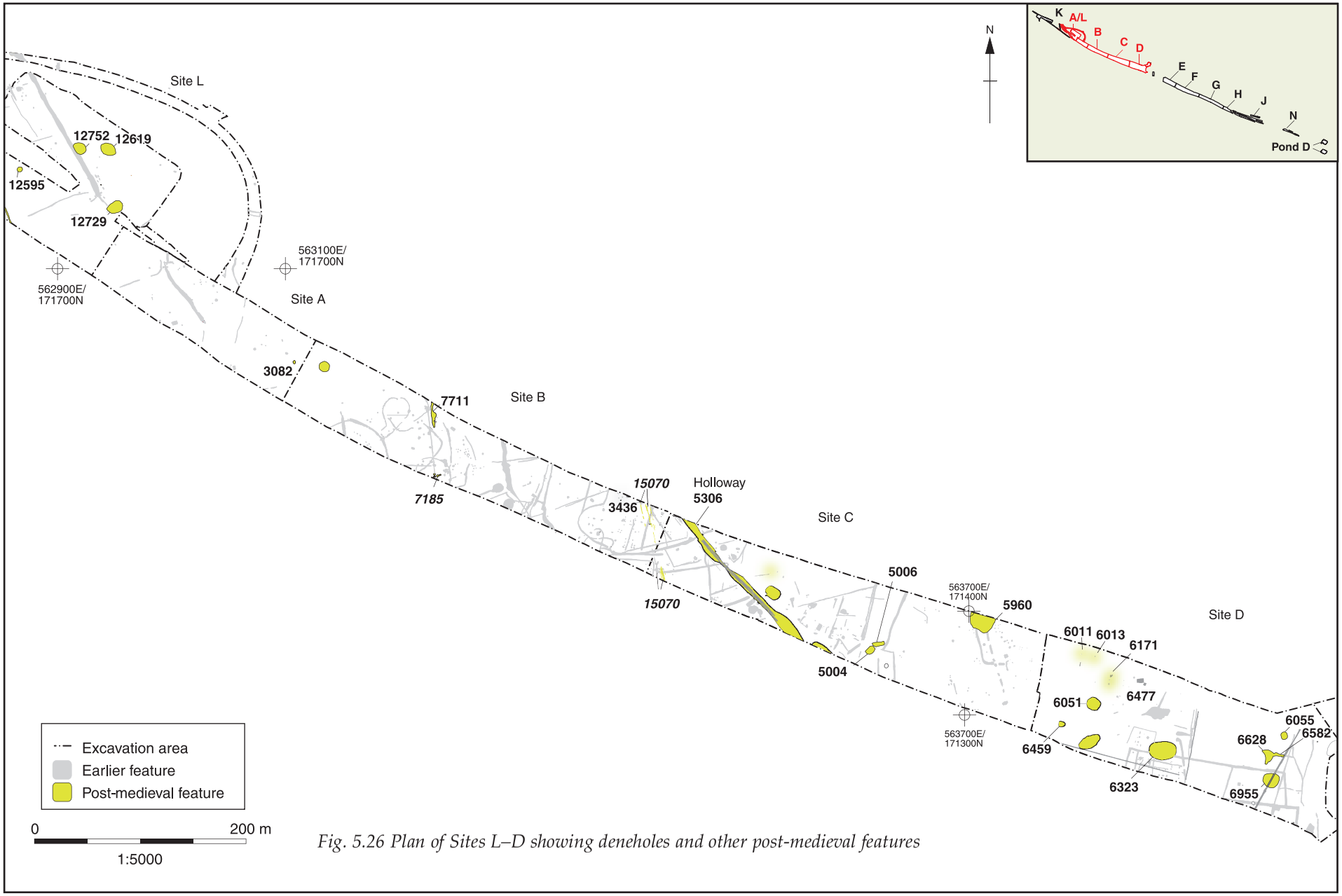


Fig. 5.26 Plan of Sites L–D showing deneholes and other post-medieval features

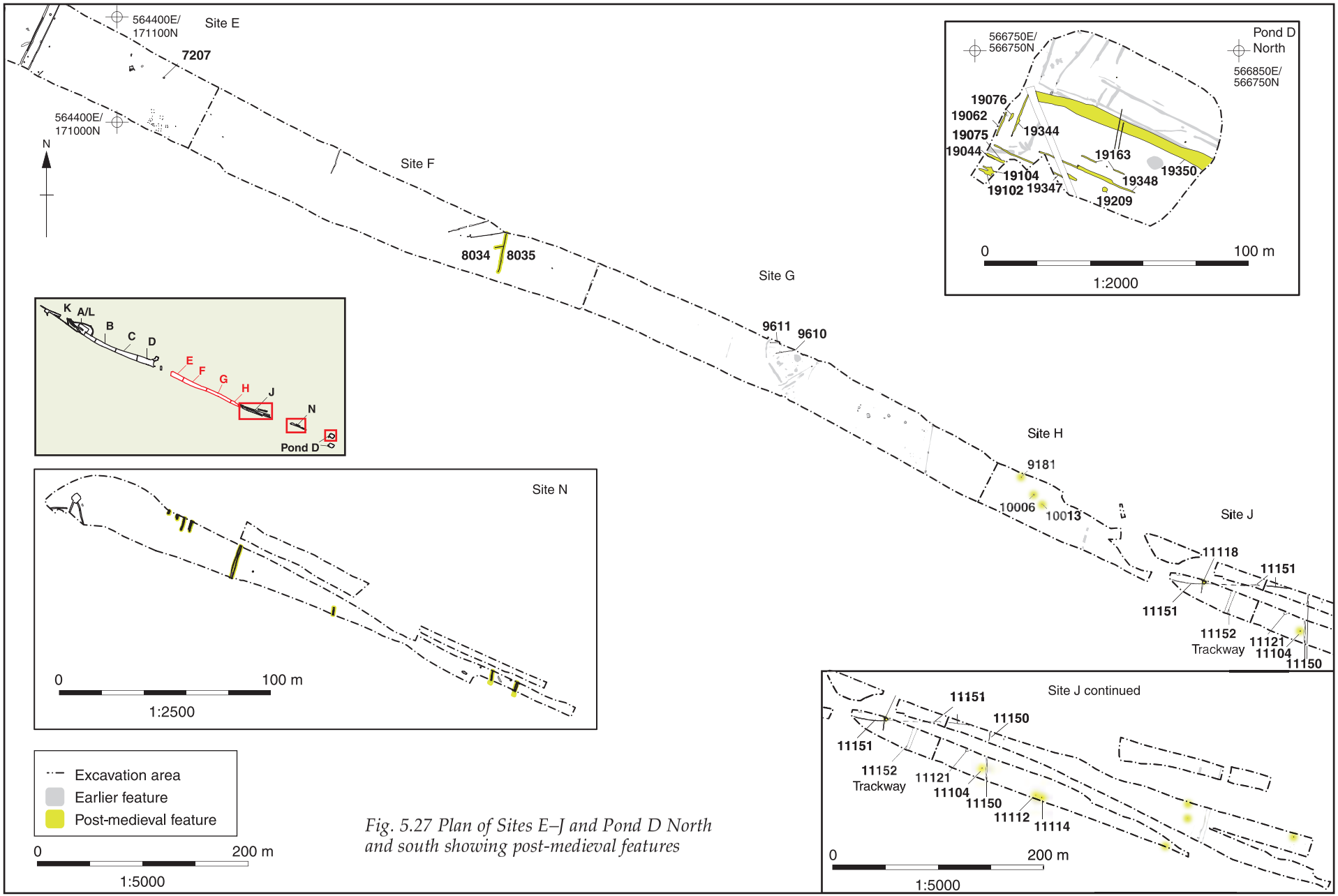


Fig. 5.27 Plan of Sites E–J and Pond D North and south showing post-medieval features

Plate 5.21 World War 2 German incendiary devices found on Site D.

measuring a minimum of 70m long and 35m to 80m wide. The volume of bombs and the scatter pattern suggest that a single bomb basket was dropped. These could contain from 72 to 100 or more bombs with actual planeloads upwards of 1000 or more devices split into several dispersal baskets.

It is not clear if this raid represented a failed attempt to bomb Gravesend or if the target was the army camp at Northumberland Bottom. The close proximity of the latter suggests that it or an ancillary building or AA gun emplacement may have been the target.

SAXON, MEDIEVAL AND LATER FINDS EVIDENCE

Post-Roman pottery *by John Cotter*

This report deals with the four largest site assemblages of post-Roman pottery (Sites L, A, C and 'Pond D South'). A total of 2066 sherds of pottery weighing 19.94kg and with a total EVEs of 10.61 were recovered. Nine other small sites produced an additional total of 104 sherds of pottery (1.215kg, 0.45 EVEs). The latter includes some medieval pottery but is mostly modern and, apart from one or two post-medieval fabrics mentioned below, details of these remain in the site archive. The four main sites include a very small pottery assemblage from a Saxon sunken-featured building (Site A 3370) but mostly comprise pottery of the 11th to the 14th centuries. There seems to have been a gap in occupation between *c* 1350–1600 with no pottery types definitely datable to this period identified. Thereafter a scatter of post-medieval types and a modest assemblage of modern (19th–20th century) wares were recovered.

The average sherd weight is 9.7g which is fairly low for a medieval assemblage (*c* 15–25g would be considered fairly good) and suggests a fairly high degree of redeposition. However, the soft friable nature of the predominant medieval shelly ware fabrics here has certainly contributed to the elevated sherd count and respective lowering of average sherd weight. Site L has the lowest average sherd weight (7.2g) while Pond D South has a quite a good average weight of 21g per sherd. Visual inspection of the pottery reinforces the impression that the bulk of the assemblage is in a very fragmentary condition comprising fairly small worn sherds mostly from secondary contexts. Most of the sherds, however, have probably been abraded by post-deposition factors rather than worn from lifetime use. Most are coated with a limey groundwater deposit derived from the surrounding chalky soil, or sometimes with a cessy brownish deposit. These deposits have sometimes dissolved the original surfaces of the pottery. Despite this general picture there are individual contexts where the state of preservation is remarkably good and several complete or substantially complete medieval vessel profiles have been reconstructed—although no entirely whole pots were found. Although some of the more complete reconstructable vessels comprise just a few large fresh sherds, as one would expect, there are three instances (all Site C) where complete vessel profiles have been reconstructed from a surprisingly high number of sherds—over 50 in one case and over 100 in two other cases (see illustration catalogue). These vessels had evidently been deposited (or deliberately buried) complete—or very nearly so—and subsequently crushed by the weight of the surrounding soil and subsequent plough disturbance. Despite the high number of sherds in these few instances these vessels almost certainly represent primary deposits. Local medieval wares by virtue of their numerical superiority, and perhaps their relative robustness, have survived better than the much smaller numbers of fragile glazed fineware jugs imported from the London area, Surrey and Essex. Apart from a small unglazed London-type ware drinking jug these all occur as small sherds and have not been illustrated.

All the pottery has been examined, spot-dated and fully catalogued (details in archive). For each context and fabric the total pottery sherd count and

weight were recorded, along with vessel form and rim EVEs (estimated vessel equivalent based on circumference length) if present, and a broad classification by rim type. Comments on any other attributes worthy of note (eg decoration, fabric, traces of use, etc) were also recorded. EVEs, however, were not recorded for modern or late post-medieval (LPM) wares. Fabric codes employed here are those of the Kent fabric type series housed at Canterbury Archaeological Trust and which the author helped to develop over several years of employment there. Saxon fabrics are fully described in the Canterbury Marlowe Car Park report (Macpherson-Grant 1995). Medieval and post-medieval Kent fabrics are fully described in a recent report on pottery from Dover (Cotter 2006), which has descriptions of many of the main fabrics occurring on A2. Other medieval fabrics are covered in the St Gregory's Priory, Canterbury, report (Cotter 2001). Fabric descriptions for the A2 pottery given below are therefore rather general except for local variants worthy of comment or where the fabric has not been adequately described before. More detailed fabric and typological descriptions (form, manufacture, etc) have also been provided for some of the illustrated pottery particularly for the more unusual and intrinsically interesting vessels (see Illustration catalogue).

Fabric totals (Table 5.1)

EMS1A: Saxon coarse sandy ware, c *AD 450–650*

Handmade. Probably locally-produced. Possibly a single vessel, from the Saxon hut on Site A.

EMS4: Saxon organic-tempered ware, c *AD 450–800*

Handmade. Probably locally-produced. Possibly a single vessel, from the Saxon hut on Site A.

LS10: Ipswich-Thetford ware, c 850–1100

Wheelthrown grey sandy ware produced at Ipswich, Suffolk (identified by Paul Blinkhorn). Thetford-type ware is fairly rare in Kent. The assemblage here comprises body and base sherds from at least three jars, including one with vertical thumbed strips. It also includes a probable tubular spout sherd from a spouted pitcher (Vince and Jenner 1991, 89–91).

EM13: London Early Medieval Sandy ware (London code EMS), c *1000–1150*

A fine-medium sandy ware, oxidised or reduced. The fabric is flecked with small white rounded inclusions of calcareous algae rather than shell. Exact source unknown but thought to originate from the Thames Valley (Vince and Jenner 1991, 56–9). Within Kent the fabric is similar to, and could be easily confused with, early medieval Canterbury sandy ware (Fabric EM1) although the latter lacks algae flecks. The handmade forms are also similar but the Canterbury fabric however is not normally found this far north-west and the River Medway seems to mark its westerly limit. The occurrence of the London fabric on the A2 sites appears to be the first time it has been recognised from Kent (new code EM13). Only jars with very simple large diameter rims and a sagging base sherd have been recognised. Some of the rims here show evidence of turntable-finishing.

EM35: North-west Kent shelly ware, c *1050–1225*

The second commonest fabric (by sherd count) from the A2 (or the commonest by EVEs). Mostly oxidised orange-brown but can be reduced. Fairly soft to hard with a soapy texture, easily scratched with the fingernail and quite friable. Moderate to

Table 5.1: Post-Roman pottery totals from A2 Sites A, C, L and Pond D South

Fabric	*Name*	*Date*	*Sherds*	*Weight*	*EVEs*
EMS1A	A-Sax coarse sandy	*c* 450-650	17	57	0.11
EMS4	A-Sax organic-temp	*c* 450-800	3	27	0
LS10	Ipswich-Thetford	*c* 850-1100	44	255	0
EM13	London EMS sandy	*c* 1000-1150	16	182	0.16
EM35	NW Kent shelly	*c* 1050-1225	587	6475	3.73
EM36	NW Kent shelly-sandy	*c* 1100-1350	777	6283	2.89
EM22	NW Kent shelly/gritty	*c* 1125-1250	1	10	0
M5	London-type	*c* 1140-1375	92	615	0.59
M38B	NW Kent sandy	*c* 1175-1400	358	4682	2.55
M11	Scarborough	*c* 1200-1350	3	64	0
M7	Kingston	*c* 1240-1400	11	200	0
M6	Mill Green	*c* 1270-1350	74	433	0.09
M6A	Mill Green coarseware	*c* 1270-1350	11	107	0.35
PM1	Post-med redwares	*c* 1550-1800	10	52	0
LPM100	Misc. modern	*c* 1775-1900	61	352	0
LPM29	Late Normandy stoneware	*c* 1875-1940	1	146	0.14
TOTAL			2066	19940	10.61

abundant coarse to very coarse shell inclusions up to 10mm. across, mostly white clam-like bivalve shells but occasionally gastropod. Relatively sand-free but the matrix can contain abundant very fine to fine quartz sand with occasional coarse grains present. This is the same fabric as London Early Medieval Shelly ware (London code EMSH) which is presumed to have been made from fossil-rich outcrops of the Tertiary Woolwich Beds in north-west Kent (Vince and Jenner 1991, 63–8). Sherds of this first occur in early to mid 11th-century deposits in London and are most common *c* 1075–1150 but it was never the major coarseware there. Wheel-thrown vessels with squared rims continued to be produced in north-west Kent probably into the early 13th century but these late types do not occur in London and there seems to be no equivalent there code for this later shelly ware type—although there is a code for South Essex Shelly ware (SEMS *c* 1100–1300) which presumably displaced the Kentish fabric. Kent Fabric EM35 (London EMSH) is also the same as the commonest shelly ware fabric identified at the nearby Pepperhill Lane site, Northfleet (Blinkhorn 2001, 23, Fabric 1 'Shelly limestone ware') but there mistakenly equated to the London code SHEL (Vince 1985, 37–8 where it is only briefly mentioned). The London code SHEL seems to have been used in the past for a variety of unsourced late Saxon to medieval shelly wares (Lyn Blackmore pers. comm.) and has now largely been replaced by the codes published in Vince and Jenner (1991) in which SHEL does not appear.

Around 8 miles south-west of the A2 sites, Fabric EM35 is probably to be equated with the sequence of 'shell-gritted wares' from Eynsford Castle, particularly with the 'W-X' types dated from the late 11th century to the late 1130s (Rigold and Fleming 1973, 106) and possibly with the later shelly types there, which include cooking pots with squared rims. EM35 is virtually the same as EM2 the 'early medieval shelly ware' code used for a range of very similar fabrics elsewhere in south and east Kent. EM2 often refers to a fabric with contemporary marine shell inclusions although the difference between EM2 and EM35 has never been properly defined and may not be easily distinguishable in the hand specimen particularly if the shell has dissolved. Both codes should perhaps be regarded as generic or catch-all codes for geographically different but similar shelly ware fabrics of which there were many localised variants in early medieval Kent (Cotter 2002).

EM35 vessels are handmade but some jar rims and shoulders have clearly been wheel- or turntable-finished. A variety of simple everted, thickened, flat-topped or beaded rims occur. Flattening of the rim top can sometimes create an external or an internal bevel—the latter being a common feature of jars/cooking pots in east Kent during the period *c* 1075–1125 (EM1 early medieval Canterbury sandy ware) but also fairly common on Norman jars in the London area (Vince and Jenner 1991 EMSH fig. 2.45.105, EMS fig. 2.33.48–9). Jars/cooking pots, as usual, are the commonest vessel form (81.5% of EM35 by EVEs) many clearly sooted externally from use. These often have wide rim diameters (*c* 200–300mm is common, occasionally to 350mm Fig. 5.28, no. 7). Lightly thumbed rims occur on a few vessels—jars and particularly bowls—and, perhaps distinctively, with the thumbing mostly along the inside edge of the rim. No other type of decoration is present. Reinforcing thumbed vertical strips occur on one or two of the largest (and probably latest) jars. Bases are invariably sagging. The more developed overhanging or down-turned jar rims (as on Fig. 5.28, no. 7) tend to occur on the later vessels with hybrid EM35/EM36 characteristics including a higher sand content. Wide shallow bowls comprise 14.5% (by EVEs) of the vessel assemblage, which makes them fairly common in this fabric. Some show external sooting from use. There is one definite example of a jug with a pouring lip (4% of forms)—a fairly surprising occurrence given the porosity of this fabric (Fig. 5.29, no. 13).

EM36: North-west Kent shelly-sandy ware, c *1100–1350.*

A medium-coarse sandy grey or grey-brown ware with moderate inclusions of coarse shell temper. Locally this fabric probably developed out of the purely shelly EM35 fabric with the increasing addition of coarser quartz sand—the distinction between the two is not always clear. It tends to be better fired and harder than EM35 and more often wheelthrown with a range of more developed down-turned and squared or flanged rims. In terms of sherd count it is the commonest ware from the A2 excavations (777 sherds) but slightly less common than EM35 in terms of weight and EVEs. The A2 vessels seem to date from the 12th century onwards and perhaps mainly from *c* 1150 onwards. Their association here in reasonable quantity with glazed Mill Green ware jugs datable *c* 1270–1350, and other high medieval finewares, suggests the fabric may have continued in production perhaps as late as *c* 1350 when the shell content grew increasingly sparser and the fabric becomes indistinguishable from the grey sandy ware M38B (and M38A, see below). This is surprisingly late for a shelly-sandy ware but the same picture seems to be repeated on other nearby sites including Shorne, near Gravesend, where developed EM36 and Mill Green jugs are again associated (Cotter 2003). This may also have been the case with at least one other similar regional shelly-sandy ware industry—the Ashford Potter's Corner industry in south central Kent—which may also have continued into the early 14th century (Cotter 2006, 168–70). Samples of EM36 from several sites in north Kent vary in composition and in dating emphasis suggesting the likelihood of several production sites. The fabric has been recognised as a regional import at Dover in contexts of *c* 1150–1225 and also from a mid-13th-century context (Cotter 2006, 177–8).

EM36 is possibly related to Early Medieval Sand and Shell-tempered ware (EMSS) at London which may have been made within ten miles of the city, perhaps in the same area as EM35 (London EMSH)? However, the London forms are earlier in character than the A2 material and the fabric ceased to be used there before the end of the 12th century (Vince and Jenner 1991, 59–63). London EMSS flourished in London *c* 1075–1150 around the same time as the purely shelly EMSH fabric but was much commoner there than the latter which suggests that both fabrics had a slightly different source and that the shelly-sandy ware there was not a chronological development from the purely shelly ware fabric—which seems to be the case in the A2 area of north-west Kent. The relationship between the two shelly-sandy traditions (EMSS and EM36) therefore may not be very close. EM36 is almost certainly the same as Fabric 2, Early Medieval Sand and Shell ware, at nearby Northfleet (Blinkhorn 2001, 23) and equivalent to the 13th-century 'sandy-shelly' fabric at Dartford (Mynard 1973, 188-9). The rim typology, and other associations, suggest that the EM36 assemblage from the A2 is mainly of 13th and probably early 14th-century date. Similarly dated assemblages of shelly-sandy ware (probably equivalent to EM36) are known from Eynsford Castle (Rigold 1971; Rigold and Fleming 1973), and also from a moated site at Leigh, near Tonbridge, where the assemblage is thought to date to *c* 1270–1320 (Parfitt 1976).

Forms other than jars/cooking pots in this fabric are very rare in this assemblage suggesting it was mainly a cooking pot fabric with tableware forms such as jugs reserved for the finer shell-free grey ware fabric M38B. Jars/cooking pots comprise 78% of the assemblage here. Probably no more than 29 vessels are represented by the rim assemblage. Rim diameters between 150–300mm. have been recorded but most fall between 200–300mm. Simple everted and slightly thickened rims occur, but with less frequency than on EM35 jars. The example illustrated here is probably an early example and also the only example with a thumbed rim—thumbed internally in the style of EM35 jars (Fig. 5.29, no. 14). Squared slightly downturned rims are common (similar to Fig. 5.28, no. 7) and are occasionally very squared, almost flanged, on the latest examples (Fig. 5.29, no. 15). One example of the latter has spaced pricking on the flat top of the rim (not illustrated). Thumbed strips occur on a few vessels. The closest local published parallels for jars/cooking pots with developed rims such as these are found amongst the shelly-sandy 'SS' wares from Eynsford Castle which date to the 13th and early 14th centuries (Rigold and Fleming 1973, fig. 14, fig. 15.10–15). The only bowl rim identified in this ware (2.8% of forms) is wheelthrown with a developed horizontal flanged rim with incised or combed line decoration on the top (Fig. 5.29, no. 16). A similar bowl from Northfleet has combed horizontal bands on the body (Blinkhorn 2001, fig. 10.NP4).

There is only one jug—or rather tripod pitcher—in this fabric (Fig. 5.29, no. 17) although the high EVEs count resulting from its good rim preservation undoubtedly exaggerates the statistical frequency of this form (19% of forms). This unique vessel probably dates to the late 12th century or the first half of the 13th century. It is basically a wide globular jug with three applied feet thus placing it within the tripod pitcher tradition (see illustration catalogue for construction details). There are traces of a handle but there is no evidence of a spout—whether one existed or not. The body is decorated, jug fashion, with a band of combed horizontal decoration on the neck/shoulder junction and several combed vertical bands joined to this and extending down the body. The tripod pitcher tradition is not native to Kent but has it heartland in Wessex including Oxfordshire and Berkshire, where glazed and decorated tripod pitchers were produced between *c* 1075–1250, and at Southampton even as late as *c* 1270–1300 (Brown 2002, fig. 10.57). The form is often associated with a narrow strap-handle inlaid with a braided or twisted coil of clay. Examples of the form, with or without braided handles, occur in 12th-century London-type ware but are rare outliers of this tradition (Pearce *et al.* 1985, fig. 21.43–4, fig. 23–3). The only definite examples (with tripod feet) known from Kent are rare imports from Wessex, which occur on the coast at Dover (Cotter 2006, 185–8). Scattered around north-west Kent, however, are a number of find-spots of braided pitcher-type handles in local grey wares including an example from Eynsford Castle in a 13th-century local grey ware fabric (Rigold 1971, 158, fig.19.A26, fabric STb *c* 1200–1250, possibly EM36 with sparse shell or M38B). There is also an example from Chalk near Gravesend (Warhurst 1954, fig. 3.39) and the author has seen other examples from Fawkham Manor and Ightham Mote. These finds, and especially the remarkable vessel here, testify that medieval Kentish potters were aware of the tripod pitcher tradition or fashion and sought to emulate it although it never caught on in a big way. Presumably the vessel, despite its relatively coarse fabric, would have been used at the table and highly valued by its owners. The manner of it burial—complete in the ground, possibly with its rim flush with the groundsurface—is curious and hints possibly at superstitious custom.

EM22: North-west Kent fine sandy ware with sparse shell and grits, c *1125–1250*

There is single body sherd of this from Site A (3341). Oxidised orange-brown with a grey core, Fairly soft. Possibly wheel/turntable-finished. The fabric here resembles a hybrid of EM35 shelly ware and EM13 sandy ware with abundant very fine sand, sparse shell and sparse flint (including red flint). Possibly some fine calcareous fossil algae inclusions and fine mica. The source is unknown but possibly in the Medway area.

M5: Fine London-type ware (high medieval fabric), c *1140–1375*

Jugs in a fine sandy oxidised or brownish fabric with all over white slip or white slip decoration under a clear or green glaze (Pearce *et al.* 1985). The kilns producing London ware in the late 13th or 14th century have recently been discovered at Woolwich (Cotter 2008). It is the commonest glazed medieval fineware found in Kent. The highly fragmentary assemblage from the A2 (curiously all from Site C) appears to comprise mainly 13th-century forms and types of decoration including four sherds from at least three jugs with Rouen-style decoration (*c* 1190–1250) employing red and white slip strips and pellets. A small number of sherds with white lattice slip decoration may come from 12th-century early rounded jugs. Out of the assemblage of 92 sherds recovered 54 sherds come from a single crushed small drinking jug (Fig. 5.29, no. 18). Drinking jugs are a relatively late form in this fabric and were particularly common in the mid 14th century (Pearce *et al.* 1985, 41). The example here—the only example of this form identified—was associated with sherds of Mill Green ware and probably dates to the same period *c* 1270–1350.

M38B: North-west Kent fine grey sandy ware, c *1175–1400*

The third commonest medieval ware from these sites. All but one sherd comes from Site C. This is a grey sandy ware closely related to the EM36 shelly-sandy ware described above. It is usually less sandy, however, and contains only rare to sparse inclusions of shell/chalk, or none at all. A coarser sandier variant of this fabric (M38A) occurs on some sites in north Kent but does not seem to occur on the A2 sites. Although fabric M38B (and certainly M38A) probably start in the 12th century, the typology and associations here indicate a mainly 13th to 14th-century dating. There are strong typological and decorative parallels with material from Leigh, near Tonbridge, dated to *c* 1270–1320 (Parfitt 1976) and with 'Phase D' wares at Eynsford Castle dated to *c* 1312 (Rigold 1971; Rigold and Fleming 1973). Both the latter sites produced a mixture of developed EM36-type shelly-sandy wares and related M38-type grey sandy wares. M38B is the same as Fabric 3 Reduced Sandy ware at nearby Northfleet (Blinkhorn 2001, 24). The exact source, or more likely sources, of the fabric are unknown but Maidstone may have been one of them. The ware is related to Limpsfield (east Surrey) grey wares but nowhere near as coarse.

The assemblage here comprises a high proportion of wheelthrown jugs and single examples of other forms. It is notable that no jars/cooking pots in this fabric were identified and this suggests a local scenario where the finer M38B grey ware fabric was mainly used for jugs while the related coarser shelly-sandy grey ware EM36 fabric was mainly used for jars/cooking pots. Jugs comprise 94% (by EVEs) of the assemblage. A single cistern comprises 3% of the assemblage and a single bowl also comprises 3%. There is also a single example of a curfew but this has no rim (and hence no EVEs). Most jugs here have a collared rim with a pouring lip and often decorative features typical of north-west Kent grey wares (Fig. 5.30, nos 19–23). These include external 'rilling' or fine horizontal grooving on the body (formerly known as 'Dartford rilled ware') which, although more typical of M38B jugs, can occur on EM36 jars and bowls too (Mynard 1973, fig. 3.PP26–7; Parfitt 1976, fig. 6). Horizontal bands of combed decoration are also common and sometimes bands of combed wavy decoration and occasionally applied vertical strip decoration. Jug handles typically bear stabbed and knife-slashed decoration often in a 'herringbone' arrangement—similar to Limpsfield-type jugs. Jugs also have sagging bases which are either plain or have groups of thumbed impressions. The combined horizontal and wavy combed band decoration on Fig. 5.30, no. 23 is typical of jugs in this area of Kent and is paralleled at several sites including Eynsford Castle (Rigold 1971, fig. 22.37, from a context of *c* 1312), Leigh (Parfitt 1976, fig. 9.73) and also from unpublished assemblages at Shorne and from Offham quarry near Wrotham. This style also occurs more widely on contemporary jugs in southern England, as, for example, at Rye in East Sussex (Barton 1979, fig. 6.1 and 4, fig. 7.). The fine external rilling on the collared rim of Fig. 5.30, no. 22 and other A2 jugs is also paralleled on the jug from Eynsford Castle just mentioned. The complete (reconstructed) jug profile Fig. 5.30, no. 19 is remarkable both for its large size (*c* 372mm tall) and is unusual in having a very small pre-firing perforation through the rim. It is difficult to guess what function such a small perforation could have had since it is almost certainly too small to allow a cord to be passed through for securing a cover. Ventilation might be a possibility—or a row of (now missing) perforations might have served as some sort of strainer? Its unusual size and adaption possibly mark it out as a vessel with a specialised function but unfortunately it shows no sign of use (see also illustration catalogue).

Also unique in this assemblage and from the same context as the unusual jug just mentioned, is a complete bunghole cistern profile (Fig. 5.30. no. 24). These are a type of jar, or occasionally a large jug, with a bunghole or spiggot-hole near the base. They are generally thought to have been used for brewing and storing ale (McCarthy and Brooks 1988, 112–3). This example has a lid-seated rim and has vertical thumbed strips around the body. The applied bunghole has an unusually narrow bore (9mm.) probably designed to hold a wooden plug rather than a tap. It may once have had a handle. The context is dated to *c* 1270–1350, partly on the basis that cisterns are generally a late medieval form and partly on the basis of fabric and other associations. In England there is little convincing evidence for ceramic cisterns until the 13th or 14th centuries and

most seem to date from the 15th and 16th centuries with survival in some parts of northern England into the 19th century when home brewing finally faded out. Early cisterns, as this, tend to have relatively small undeveloped bungholes. A complete 13th- or early 14th-century cistern from Churchill (Oxon) is a good example of this and is fairly similar in form to the example here (Mellor 1994, fig. 43.1). In Kent there are no medieval cisterns as complete as the A2 example known to the author but the bungholes of late 13th- or early 14th-century grey ware cisterns from Eynsford Castle and Leigh testify that the form was in existence locally by this date and that the A2 example should be similarly dated (Rigold 1971, fig. 22.67; Parfitt 1976, fig. 9.90).

A single bowl rim in this fabric was identified (Fig. 5.30, no. 25). This is in a hard dark grey fabric and comes from a context dated *c* 1250–1300 by association with Kingston-type ware. Another unique form in this fabric is a fragment from the dome of a curfew or firecover (Fig. 5.30, no. 26). This has the stub of a strap handle and a perforation to allow ventilation. The top bears decoration consisting of incised ?radial lines on the flat part and groups of stabbed marks around the handle. A grey ware curfew dated to *c* 1270–1320 with similar incised radial decoration on the dome is known from Leigh (Parfitt 1976, fig. 8.55). A 13th-century EM36 grey ware curfew from Aylesford, near Rochester, is also decorated with incised radial or 'foliate' patterns and slashes (Philp 2006, fig. 8.12). Medieval curfews were usually used in conjunction with a centrally-placed hearth.

M6: Mill Green ware, c 1250–1400 (mainly c *1270–1350)*

Produced at Mill Green, near Ingatestone, central Essex. Slipped and slip-decorated jugs in a fine oxidised orange or orange-brown fabric under a clear or green glaze (Pearce *et al.* 1982). Several fragmentary vessels represented some with slip-painted decoration and some showing typical graffito combed decoration cut through the white slip. This ware is well known from sites in London and is closely datable. It thus provides a useful dating tool for other less well-dated wares in north-west Kent. Although the ware has a slightly wider date-range in Essex its peak in Kent is likely to be the same as that in London *c* 1270–1350. It is fairly common in north Kent but rare elsewhere in the county. As small sherds it can sometimes be difficult to distinguish from the finest examples of London-type ware. As with the other high medieval glazed finewares from the A2 all the Mill Green ware sherds come only from Site C. Aside from jugs there is also a sherd from a pipkin (small handled cooking pot) in the fineware fabric (ibid., fig. 18.55–6). This is in the form of a body sherd with an attached handle stub of oval section with an upper furrow and a large pair of thumbed keying impressions under the handle. The sherd has specks of clear glaze and is heavily sooted externally beneath the handle (Site C context 5007). Mill Green pipkins have not previously been found in Kent (see also M6A below).

M6A: Mill Green coarseware, c *1250–1400 (mainly* c *1270–1350)*

A coarser variant of the Mill Green fabric used for cooking vessels (Pearce *et al.* 1982, 289–92; see fig. 17.48 for close parallel). This has moderate rounded quartz to 1mm across, rarely to 3mm. The example here (Fig. 5.30, no. 27) also has abundant fine white mica. The sole example from the A2 is a thin-walled jar/cooking pot with heavy external sooting and characteristic internal splashes of dull green glaze which may have covered the floor area. This appears to be the first example of Mill Green coarseware vessel reported from a Kent site.

M7: Kingston-type ware, c *1240–1400*

A sandy white ware produced at Kingston upon Thames, Surrey, and possibly other locations in Surrey/Hampshire. Usually traded in the form of green glazed jugs (Pearce and Vince 1988). The small very fragmentary collection here comes entirely from Site C and represents a minimum of six vessels. These include body sherds and a rod handle from four jugs including a highly decorated jug neck with red and green applied vertical strips under a clear glaze. There is also a small body sherd from an unusual narrow-necked ?bottle or costrel with horizontal groove decoration under green glaze (5336). The most unusual item though is an unusually thick-walled (15mm) unglazed curved body sherd which may come from something like a crucible, although it shows no signs of use (5854) (ibid., fig. 101.396–400).

M11: Scarborough ware, c *1200–1350*

A fine sandy pink-buff ware with a rich green glaze. Produced at Scarborough on the Yorkshire coast. Widely traded along the eastern and southern coasts of England, sometimes in the form of elaborately decorated 'knight jugs'. Usually regarded as a more up-market or 'luxury' ceramic import. The pinker Phase I fabric has been dated to *c* 1135–1225 but the classic knight jugs were not widely traded until *c* 1200 (Farmer 1979). At many port sites, however, Phase I Scarborough ware continues to turn up in late 13th-century contexts. The paler, yellower, Phase II fabric is dated *c* 1225–1350. In practice though it can be difficult to separate the two fabric variants. The small fragmentary collection here comes entirely from Site C and represents a minimum of three jugs. These include (residual in 5307) a thick sagging basal sherd with a trace of a thumbed impression on the basal angle. The exterior is covered with a golden brown glaze with large patches of copper green glaze coming from the rim scar of a green-glazed jug stacked upon it in the kiln. A probable Scarborough II fabric jug body sherd has vertical green and red strip decoration

against a brown background (7261). Scarborough jugs are known from several coastal findspots in Kent. A particularly fine Scarborough knight jug has been published from nearby Dartford (Mynard 1973, fig. 4.PP28, Pl.1).

PM1: Post-medieval red earthenwares, c *1550–1800*

Produced all over Kent and beyond. Glazed utilitarian wares. Here mostly from the 17th–18th centuries.

LPM100: Miscellaneous modern wares, c *1775–1900+*

Mass-produced Staffordshire-type whitewares ('Willow Pattern'), modern English stonewares.

LPM29: Late Normandy stoneware, c *1875–1940*

A single storage jar rim was identified (Fig. 5.30, no. 28). Although this fabric is relatively common in Kent in the form of imported large flowerpot-shaped margarine jars (with the word "Margarine" sometimes stamped on the rim), this example seems worth singling out from the other late post-medieval wares on account of its unusual form which may be earlier than the margarine jars (1869+). It may therefore be a butter jar. The hard purplish-brown stoneware fabric identifies it as a product of the Bessin group of potteries on the Cotentin Peninsula in Lower Normandy (Burns 1991). The heavily beaded rim form and fabric are very similar to an example from Colchester, Essex, which probably dates to the late 18th or early 19th century (Cotter 2000, 264).

Other fabrics

Three of the nine other very small site assemblages from the A2, otherwise excluded from this report, produced small single sherds of three additional fairly common post-medieval fabrics as follows:

PM5: Frechen stoneware (Germany), *c* 1525–1750. 1 sherd, 2g (Site D 6189).

PM19: Metropolitan slipware (Harlow, Essex), *c* 1615–1750. 1 sherd, 9g (Site B 3774).

PM46: Staffordshire/Midlands sandy cream-buff stoneware, *c* 1700–1775. 1 sherd, 1g (Site H 11119).

Overview of site assemblages

Although some individual features can be phased on the basis of their fills and dated by the pottery within them, the depth of most of the post-Roman deposits on the A2 sites was too shallow to warrant a sub-division of the post-Roman (effectively medieval) phase that could be applied to all the sites with any very meaningful results. Consequently this was not attempted. It is clear, however, that there are significant differences between the ceramic assemblages from some sites and these are mainly chronological rather than functional differences. Each of the sites will be reviewed starting from the most westerly (Site L).

Site L

Most of the Site L assemblage probably dates within *c* 1050–1150 and is dominated by North-west Kent shelly ware (EM35) (Table 5.2). The site is adjacent to Site A and has a very similar assemblage of around the same size and date. Site L has a slightly higher proportion of the shelly-sandy fabric EM36 suggesting perhaps slightly more activity after *c* 1100. Features on Site L include a small sunken-featured medieval building with an oven (SFB 13238). Pottery from this building mostly dates to *c* 1050–1150 and includes the three small worn sherds of Thetford-type ware which may already be residual here. It also includes an early-looking shelly-sandy EM36 jar with a thumbed rim (Fig. 5.29, no. 14), which may date to *c* 1100–1150, and one of the several shelly EM35 bowls from this site. Pit 12787 may have been another SFB but was only partly excavated. This also produced one of the EM35 bowls (12788). Other than these the pottery mostly came from pit and hollows. It is noteworthy that, despite the relatively small size of the assemblage this site produced the highest proportion of bowls than any other of the A2 sites. These are all wide shallow shelly ware EM35 bowls and comprise 31% (by EVEs) of all forms on the site—the rest being jars. In reality there are probably no more than four individual bowls all of very similar appearance and all with thumbed rims in the diameter range of 280–340mm. Some of the jars are have thumbed rims too and, overall, Site L has easily the highest proportion of vessels with thumbed rims than any other site—in fact only Site Pond D South, way to the east, has a single bowl (also EM35) that also has a thumbed rim. It is quite possible that the Site L bowls were made by a single pottery workshop and were probably all in contemporary use. The presence of wide bowls on medieval and later rural sites has often been taken as evidence for dairying practices, eg for milk skimming (Brown 1997, 92–3), but it has also been suggested that ceramic bowls may have been used as grain-measures, or 'cantels', and this was argued in the case of the rural settlement at West Cotton, Northamptonshire, where there was a high correlation between shallow ceramic bowls and bakehouses (Blinkhorn 1998–99, 44–5). This interpretation may be more relevant to the sunken-featured oven house on Site L which might have functioned as a bakehouse or even a brewhouse. However, the very low number of bowls on the other two A2 sites which also had sunken-featured medieval buildings (two on Site C and two on Pond D South,) leaves this open to question. There probably was a functional reason for the much higher proportion of bowls on Site L but exactly what it was we cannot say. A few of the bowls show slight external sooting and are thus unlikely to have been used exclusively as grain measures.

Due south of Site L an assemblage of 98 post-Roman sherds was recovered from a medieval

Table 5.2: Post-Roman pottery totals from Site L

Fabric	*Name*	*Date*	*Sherds*	*Weight*	*EVEs*
LS10	Ipswich-Thetford	*c* 850-1100	3	15	0
EM13	London EMS sandy	*c* 1000-1150	2	7	0
EM35	NW Kent shelly	*c* 1050-1225	174	1136	0.75
EM36	NW Kent shelly-sandy	*c* 1100-1350	5	190	0.22
PM1	Post-med redwares	*c* 1550-1800	3	16	0
LPM100	Misc. modern	*c* 1775-1900	5	9	0
TOTAL			192	1373	0.97

Table 5.3: Post-Roman pottery totals from Site A

Fabric	*Name*	*Date*	*Sherds*	*Weight*	*EVEs*
EMS1A	A-Sax coarse sandy	*c* 450-650	17	57	0.11
EMS4	A-Sax organic-temp	*c* 450-800	3	27	0
LS10	Ipswich-Thetford	*c* 850-1100	41	240	0
EM13	London EMS sandy	*c* 1000-1150	14	175	0.16
EM35	NW Kent shelly	*c* 1050-1225	138	1442	0.7
EM36	NW Kent shelly-sandy	*c* 1100-1350	1	1	0
EM22	NW Kent shelly/gritty	*c* 1125-1250	1	10	0
TOTAL			215	1952	0.97

settlement on the HS1 scheme at the Hazels Road Diversion (ARC HRD 99; Mepham 2006). The range of local shelly and shelly-sandy wares was the same as on Site L but the dating focus there is placed in the early 13th century. Some M38B grey ware was present and one sherd was identified as coming from an early medieval Canterbury sandy ware spouted pitcher (EM1, *c* 1075–1225). However, this could conceivably be a London area product (see EM13 above). One of two ovens there was archaeomagnetically dated *c* 1200–1250. The Site L assemblage has more in common with another nearby HS1 farmstead site at Downs Road (south of Site A). The small assemblage of EM35 shelly ware from that site suggested a dating emphasis in the late 11th or 12th century and the site was probably a low status one like Site L.

Site A

Adjacent to Site L and with a similar quantity of pottery also mainly dating within the period *c* 1050–1150 but also with a very small pottery assemblage from a Saxon sunken hut—the earliest post-Roman pottery found on the A2 scheme (Table 5.3). The latter (SFB 3370) produced 20 sherds (84g) of pottery dating the hut within the 5th–7th centuries. All of this could come from just two handmade vessels probably of fairly local manufacture. The coarse sandy ware (EMS1A) vessel (not illustrated) is a small globular jar in a dark grey-brown fabric with a plain everted rim (diam. *c* 140mm) and has a thick sooty deposit inside. The organic-tempered (EMS4) vessel is represented by three body sherds in a reduced fabric with moderate coarse-very coarse organic voids and sparse coarse flint. It also has internal sooting. A single residual sherd of organic-tempered EMS4 was also found on the nearby HS1 site at Northumberland Bottom, south of Site C (Mepham 2006).

The rest of the pottery from Site A came from just two pits datable *c* 1050–1150. Most of this was from Pit 3337 which had several jar rims and one wide bowl profile in shelly EM35, one or more jars in London sandy EM13 and at least two vessels in Ipswich-Thetford ware including a small flat-bottomed jar with internal sooting and a fragmentary short ?tubular spout from a spouted pitcher —the only fairly certain example of this form from the excavations. Body sherds from a fairly large jar with vertical thumbed strips in high relief may well come from the same spouted pitcher (other sherds were found unstratified). Site A, in fact, produced 41 of the 44 sherds of Ipswich-Thetford ware from the excavations although these may represent as few as four vessels. The other three sherds were from adjacent Site L. Similarly all but two of the sixteen sherds of London sandy EM13 came from Site A and the remainder also from Site L. The single shell and grit-tempered EM22 sherd from the scheme also came from the larger pit here. Pit 3385 produced a much smaller assemblage of EM35 and EM13. The single very small sherd of post- *c* 1100 EM36 from the was from the top of an isolated pit.

In terms of dating Site A is most similar to adjacent Site L and also to Site Pond D South around 4km further east. It compares well in terms of

dating to the much smaller HS1 assemblage from Downs Road due south of Site A but the imported Thetford-type vessels, including a spouted pitcher (for serving liquids), as well as the wider range of wares on Site A hint at trade contacts and somewhat higher status—although the comparison may be unfair due to the smaller sample from Downs Road available for comparison. The Thetford-type spouted pitcher on Site A finds a contemporary functional parallel in a Canterbury-type spouted pitcher spout sherd from the HS1 Hazels Road Diversion site (see above) but the assemblage from there, also small, is more mixed in date.

Site C

Site C produced the highest concentration of post-Roman features from the A2 scheme and the largest assemblage of post-Roman pottery (Table 5.4). The 1536 sherds of pottery here comprise 74% of all post-Roman pottery recovered from the scheme. Average sherd weight, however, is only 9g and this is reflected in the crushed condition of much of the pottery. The dating emphasis on Site C is also considerably later than on the other three sites. There was some activity on the site in the 12th century, probably in the second half of the century, but the pottery suggests the main period of occupation was between *c* 1200–1350 and mainly, perhaps, between *c* 1250–1325 when glazed fineware jugs were imported from London, Surrey, Essex and even Yorkshire. It is therefore primarily a site of high medieval (13th–14th century) occupation whereas the other three are primarily sites of early medieval (11th–12th century) occupation. Occupation on Site C seem to have finished by *c* 1350. Thereafter only a handful of local 17th–18th century glazed redware sherds are found across the site, perhaps representing casual loss or manuring, also an unusual late Normandy stoneware jar (Fig. 5.30, no. 28) dating perhaps to *c* 1800, and a slightly larger collection of Victorian wares.

Apart from the much greater quantity of pottery on Site C, compared to the other sites, it is the much wider range of fabrics or wares that is most striking. This is undoubtedly due to the site's later dating rather than differences in status or function. A much wider range of pottery types and vessel forms was generally available in north-west Kent by the 13th–14th centuries and there is little point in trying to make status comparisons with the more limited range of types and forms found on 11th–12th century rural sites in the area—a time when status was seldom expressed through the medium of pottery. The chronological contrasts in the Site C assemblage, compared to the others, are however quite striking and should be pointed out. All the medieval glazed wares from the A2 scheme (191 sherds) come from Site C alone. These are mainly glazed and decorated fineware jugs from the London area (perhaps Woolwich specifically) and from Mill Green in Essex with a smaller number of jugs from Surrey and even from as far afield as Scarborough on the Yorkshire coast. No imported continental wares of medieval date have been recognised. None of these fragile glazed wares has survived very well. Also—whichever way one compares the data—virtually all the jugs (local or otherwise) from the A2 sites come from Site C. Only the Pond D South site has two quite early jugs (EM35 and M38B). The latter, however, are probably over-represented by EVEs data (24% of all A2 jugs compared to 76% from Site C). A rough minimum count of jugs from Site C puts their number at around thirty (94% of all jugs by minimum count). As well as jars and bowls, which are represented on all the sites, Site C adds three new vessel forms to the A2 repertoire, a cistern, a curfew (firecover) and a pipkin (small handled cooking pot). There might also be a crucible or certainly a sherd of some unusually thick-walled non-standard form in Kingston-type ware (see M7). Despite the wider range of vessel forms available to Site C inhabitants the site produced only two, quite late, bowls—considerably less than on the earlier Site L (see above). Although the difference between worn sherds of the early medieval shelly ware EM35 and

Table 5.4: Post-Roman pottery totals from Site C

Fabric	*Name*	*Date*	*Sherds*	*Weight*	*EVEs*
EM35	NW Kent shelly	*c* 1050-1225	161	1533	0.86
EM36	NW Kent shelly-sandy	*c* 1100-1350	771	6092	2.67
M5	London-type	*c* 1140-1375	92	615	0.59
M38B	NW Kent sandy	*c* 1175-1400	357	4498	1.8
M11	Scarborough	*c* 1200-1350	3	64	0
M7	Kingston	*c* 1240-1400	11	200	0
M6	Mill Green	*c* 1270-1350	74	433	0.09
M6A	Mill Green coarseware	*c* 1270-1350	11	107	0.35
PM1	Post-med redwares	*c* 1550-1800	7	36	0
LPM100	Misc. modern	c 1775-1900	48	301	0
LPM29	Late Normandy stoneware	c 1875-1940	1	146	0.14
TOTAL			1536	14025	6.5

the somewhat later shelly-sandy ware EM36 can sometimes be subjective, it is striking, however, to note the fact that all but half a dozen of the 777 sherds of shelly-sandy EM36 came from Site C, and the association of EM36 in quantity here with high medieval glazed finewares of *c* 1250–1350 has helped refine the dating of this fabric which until very recently was thought to demise *c* 1250 but now seem likely to have continued as a major local coarseware for a full century after this. The evidence from Site C also suggests it mainly dates after *c* 1150 rather than *c* 1100 as previously estimated.

The site consists of ditches forming a number of sub-rectangular enclosures, within which were a group of sunken-featured buildings, some containing large hearths and deep oblong pits, also a rectangular arrangement of possible post-slots, and a variety of other pits, postholes and burnt areas. The dating and possible function of some of these features will briefly be considered below.

A burnt area with a scatter of pottery across it (5652) was tentatively interpreted as a bonfire kiln. This is highly unlikely, however, to have been for pottery manufacture: The lower fill (5653) produced over a hundred crushed somewhat under-fired body and base sherds from two or more shelly-sandy EM36 jars/cooking pots, some with thumbed strips and a few possibly sooted from use. These could be of late 12th- to 13th-century date (or later?) but there is nothing here to suggest pottery manufacture. The upper fill (5007) produced pottery of *c* 1270–1350 including the only Mill Green ware pipkin from the site—the latter heavily sooted from use as a cooking vessel. Parts of at least two Mill Green jugs were also found and a comb-decorated jug sherd in M38B grey ware. Sherds from EM36 jars/cooking pots were also present. It might be suggested that the EM36 sherds from 5653 were mainly from a single buried pot (see below for others) and that perhaps some of the later glazed sherds fell into the void caused by its collapse? An adjacent scoop (7260) was though to be related to the burnt area. The fill of this (7621) could relate to fill 5007 as it also produced sherds from at least three Mill Green jugs and a sherd from a Scarborough ware jug plus EM36 jar sherds, but no evidence of burning.

All four definite sunken-featured buildings (SFBs 5347, 6280, 15035 and 5950) produced 13th-century pottery including sherds from M38B grey ware jugs, M6 Mill Green ware jugs *c* 1270–1350 and a M6A Mill Green coarseware cooking pot *c* 1270–1350. Most of the pottery, however, was more broadly-dated EM36 shelly-sandy ware jars/cooking pots. Two contexts within SFB 5347 produced large fresh joining sherds from the only Mill Green coarseware cooking pot from the A2 (Fig. 5.30, no. 27) dating these contexts to *c* 1270–1350. The dating from SFB 6280 is more possibly earlier as it only produced shelly-sandy EM36 including a jar rim perhaps of late 12th- or early 13th-century date. SFB 15035 produced no Mill Green ware but it did produce a small sherd from a London-type ware jug with a white slip lattice decoration, possibly of late 12th- or early 13th-century date, but also sherds from two M38B grey ware jugs with combed and incised decoration most probably of 13th-century date. SFB 5950 produced a sherd of Mill Green ware (*c* 1270–1350) and also the complete upper part of an M38B grey ware jug (Fig. 5.30, no. 21) and the only M38B curfew sherd from the whole A2 excavation (Fig. 5.30, no. 26). Curfews (firecovers) suggest a centrally-placed hearth and a concern with fire prevention which would have been appropriate in a thatched building such as this. We cannot be sure if these all these pots were used in these buildings as they come from backfills but some probably were. However, they shed little light on the possible functions of these unusual structures.

Contexts forming the slot structure 5909 produced small sherds mostly of EM36 shelly-sandy ware (probably *c* 1150–1350) but also a couple of small sherds of London-type ware including (from 5856) a sherd from a London-type jug with Rouen-style decoration *c* 1190–1250. Context 5854 produced a sherd from a possible ?crucible in Kingston-type ware. If definitely Kingston it should date after *c* 1240 although ?Surrey whiteware crucibles are fairly common in Canterbury *c* 1175–1225. A 13th-century dating for the slot structure thus seems likely. Adjacent to sunken-featured building SFB 5950 and slot structure 5909 was pit 5776. The fills of this produced profiles of two unusual M38B grey ware vessels including a tall jug profile (Fig. 5.30, no. 19) and a bunghole cistern (Fig. 5.30, no. 24) which are dated on typological grounds to *c* 1270–1350 (see M38B description). Other sherds in these contexts included decorated M38B jug sherds, EM36 jars and a rod handle from a Kingston-type ware jug of *c* 1240–1400. The association of the complete cistern profile (probably for brewing ale) next to one of the sunken-featured buildings may suggest that brewing was one of their possible functions, although only this one cistern was identified from the whole of the A2 scheme. The tall jug profile with perforated rim is highly unusual too and might also have had a specialised function—perhaps also connected with brewing?

A buried soil (5947) overlay and surrounded SFB 5950 and slot structure 5909. This produced abundant pottery of *c* 1250–1300, mostly shelly-sandy EM35 jars, decorated M38B grey ware jugs and a rare bowl rim, also body sherds from two Kingston-type ware jugs (one in the 'highly decorated' style with red and green vertical strips, the other probably from a 13th-century 'metal copy' jug). Sherds from two London-type ware jugs were also present including a typical flaring London jug rim with internal bevel and allover white slip. Ditch 7343 bounded another enclosure that may have contained another building. Pottery from the six contexts within this appears to be of mid 13th-century date and included a sherd from another

London-type jug with Rouen-style decoration *c* 1190–1250 (7693) and an M38B grey ware jug with combed decoration (15058, Fig. 5.30, no. 22).

Pit 15032 was apparently dug for the sole purpose of burying a complete pot—a unique tripod pitcher in shelly-sandy EM36 (Fig. 5.29, no. 17). No other pottery types were found with it. On fabric and typological grounds this vessel probably dates to *c* 1175–1250. It seems from the location of the pit that it may originally have been within a wooden building. It was situated close to ditch 7343 (see above) and to pit 15018 the fills of which produced the crushed lower part of a large shelly ware EM35 jar/cooking pot with thumbed strips (15037), probably of late 12th- or early 13th-century date, and a few sherds of EM36. A nearby scoop (7546) produced broadly 13th-century pot including comb-decorated M38B jug sherds. To the author's knowledge this is the only definite example of a tripod pitcher in a Kentish fabric and the form suggests influences from Wessex where this tradition originated (see EM36 discussion and illustration catalogue). Although the vessel was found crushed into over 150 pieces the form could be reconstructed. It was found upright and it seems likely that it was buried whole although the tripod feet (probably solid clay stubs or rods) were probably already missing at burial leaving three gaping holes in the otherwise complete base (perhaps deliberately detached?). The handle may have been missing too. The pot appears to have caved-in in antiquity as much of the rim was found within its fill but subsequent plough damage seems to have reduced it to about half its height. The fill was sampled for environmental evidence but apart from a few charred grains of barley produced nothing remarkable. Given the rarity of this vessel form in Kent it must have been quite a special pot to its owners. It was probably used for serving drinks at the table, perhaps (given its size) to large groups of people and perhaps on special occasions. At any rate it was buried upright—originally perhaps with its rim flush with the ground surface. The rim is cupped internally and it could easily have seated a lid. There are many documented instances of buried pots in medieval houses but there is little definite evidence for what their purpose or purposes may have been (Moorhouse 1986). In this instance it is suggested that the pot might have been buried for ritual/superstitious purposes (see discussion above).

It is possible that a few other very crushed but reconstructable vessel profiles found on Site C, including the tall jug M38B.1 (Fig. 5.30, no. 19) and the cistern M38B.5 (Fig. 5.30, no. 24) and the small London-type drinking jug (Fig. 5.29, no. 18, see below), might also have been deliberately buried complete and for some purpose other than general rubbish disposal. These, however, were found as pairs of vessels rather than in individual pits as the tripod pitcher above. Pit 15053 was an isolated shallow sub-rectangular pit adjacent to the holloway crossing the site. Within this were found two largely complete but crushed vessels apparently placed side-by-side against the northern side of the pit and roughly in the centre. These had evidently been buried complete and crushed *in situ*. The two vessels comprise a profile from a small unglazed London-type ware drinking jug of late 13th- or 14th-century date (Fig. 5.29, no. 18) and over seventy sherds from a single shelly-sandy EM36 cooking pot profile with thumbed strips and evidence of external sooting. Two other small stray sherds in the pit comprised a jug sherd in Kingston-type ware, and a jug sherd in Mill Green ware giving additional confirmation of a date of *c* 1270–1350 for the pit.

West of Site C, on the late 11th–12th century farmstead site at HS1 Downs Road, evidence of another possible buried pot was uncovered. Pit 740 there produced sherds from a single early medieval EM35 shelly ware jar/cooking pot profile which appears to have been placed in the pit deliberately, perhaps, as suggested, as a receptacle of some kind (Mepham 2006). If this was the case then the practice or tradition of deliberately burying whole pots in the ground could have gone on for two centuries or more in this corner or north-west Kent, from perhaps the late 11th century to the late 13th or early 14th century.

Sixty five metres south of Site C lies the HS1 site of Northumberland Bottom (ARC WNB 98). In its central zone, directly south of Site C, a concentration of medieval ditches and enclosures was found that is almost certainly a continuation of the Site C settlement. An assemblage of 511 sherds (6kg.) of post-Roman pottery was excavated here (but this total seems to include the smaller assemblages from the Hazels Road Diversion and Downs Road subsites; Mepham 2006). The bulk of this collection comprises the early medieval local coarsewares shelly EM35 (287 sherds) and shelly-sandy EM36 (113 sherds) suggesting a mainly 11th- to 12th-century occupation across the whole excavated strip. Phase 2 of the Northumberland Bottom enclosures, however, included 32 sherds of M38B greyware (*c* 1175–1400, mainly jugs, also one jar) and the site also produced a single sherd from a London-type ware jug possibly with Rouen-style decoration and therefore of early 13th-century date. This relatively small assemblage of later wares suggested that the focus of activity there lay in the early 13th century although the latest contexts seemed to contain much residual earlier material. However, an archaeomagnetic date of *c* 1295–1325 was obtained from the oven of Building 896 there although this is still consistent with the presence of M38B jug sherds. In the light of the re-dating of the shelly-sandy coarseware EM36 based on evidence from the A2 (see above), some of the EM36 assemblage may well now date later than *c* 1250 (the previously accepted end-date) bringing it in line with the later dating of the M38B grey ware jugs. The dating evidence from this site, however, is not really the issue here and is not really in need of

major revision. What is strikingly different here is that despite the proximity of Site C and the Northumberland Bottom site—considered to be more-or-less the same settlement—Site C has a dating emphasis of *c* 1250–1325 and is rich in glazed fineware jugs, while these are virtually absent from Northumberland Bottom (only two glazed sherds) where a dating emphasis in the early 13th-century was suggested despite the late date obtained from the oven there (Mepham 2006). This striking difference may be due in part to the much smaller assemblage recovered from the HS1 site but that is probably not the main reason. It is either a chronological difference or a difference between the nature and function of these sites or perhaps a combination of the two.

Pond D South

The site lies 3.5km. east of Site C. It contains a series of ditches forming rectilinear enclosures, one of which contained a sunken-featured medieval building (2060) with a large stone-based hearth in one corner and a smaller burnt area alongside. Adjacent to this building was a group of large pits, the latest of which was 2125.

As on Sites L and A the assemblage here is dominated by shelly EM35 although several vessels here occur in a slightly sandier version of the fabric and have more developed forms approaching those of shelly-sandy EM36 (Table 5.5). These and the presence of an associated M38B grey ware jug suggest a mainly later dating emphasis on this site, perhaps within *c* 1175–1225, although some undiagnostic body sherds could be of 11th-century date. Like Site L this site also produced a two bowls—a relatively high number for such a small assemblage (5.5% by EVEs of the site assemblage). It also produced two fairly early jugs (41.5%). All other forms identified were jars/cooking pots. A few Victorian sherds were also found.

Sunken-featured building SFB 2060 produced only shelly EM35. Amongst this context 2266 produced base sherds from a large jar/cooking pot which join with the illustrated vessel profile in pit context 2128 (see below) and which probably dates to *c* 1175–1225. Context 2289 produced slightly sandy body sherds of EM35 probably of 12th-century date.

Pit 2125 contained two fills. Of these, context 2126 produced a big-beaded bowl rim which may be of 12th-century date rather than earlier. Context 2128 produced the only piece of M38B grey ware from the site—a jug rim with a pouring lip probably dating to *c* 1175–1225 (Fig. 5.30, no. 20). It also produced two substantially complete EM35 jar/cooking pot profiles: Fig. 5.28, no. 4 and the exceptionally large Fig. 5.28, no. 7, which joins a context in SFB 2060. These have a slightly sandy fabric and more developed rims and like the M38B jug probably also date to *c* 1175–1225. A cooking pot the size of no. 7, which must have had a capacity of several gallons, was probably used for communal food preparation.

Elsewhere on the site other pit contexts produced another bowl with a more developed thumbed rim (Fig. 5.29, no. 12) and a rare EM35 jug (Fig. 5.29, no. 13). The bowl is probably 12th century and the jug could date from *c* 1075–1200 although there is little evidence for jugs in Kent before the 12th century.

Conclusions

The pottery allows the main period of occupation on each site to be approximately dated and their chronological relationship to each other to be established. Starting with the earliest, Site A has two distinct phases of occupation with a gap of some centuries between them. It is the only site from the A2 scheme to have produced a Saxon sunken hut which probably dates to the 5th–7th century. The pottery from this may comprise just two locally produced vessels. The main phase of occupation on this site was during the early medieval period *c* 1050–1150 when the local shelly ware EM35 was overwhelmingly the major pottery type in use. Occupation on Site L is similarly dated *c* 1050–1150 and these two adjoining sites are the only ones on the scheme to have produced the regional imports Ipswich-Thetford ware and London Early Medieval Sandy ware. These might have been acquired from the nearby Thames Estuary ports of Gravesend or Dartford, or redistributed by road from London.

The Pond D South site, at least 3.5km to the east of the other sites, is chronologically next in sequence. This is also dominated by shelly EM35 but the more developed appearance of vessel forms there and the presence of two jugs suggests the main period of occupation there should be dated *c* 1175–1225, although there was probably some earlier occupation.

Site C has the largest and latest pottery assemblage from the scheme. Although there is some later

Table 5.5: Post-Roman pottery totals from Site Pond D South

Fabric	*Name*	*Date*	*Sherds*	*Weight*	*EVEs*
EM35	NW Kent shelly	*c* 1050-1225	114	2364	1.42
M38B	NW Kent sandy	*c* 1175-1400	1	184	0.75
LPM100	Misc. modern	*c* 1775-1900	8	42	0
TOTAL			123	2590	2.17

12th century material, this dates mainly within *c* 1200–1350, but probably reaches a peak within the years *c* 1250–1325. The assemblage is dominated by local shelly-sandy ware EM36 but has a relatively high proportion of jugs—many in imported regional glazed wares; in fact Site C was the only A2 site to produced medieval glazed wares. The main glazed wares here—London-type ware (perhaps mostly from Woolwich) and Mill Green ware from central Essex—could also have been acquired from the nearby Thames Estuary ports of Gravesend or Dartford, or redistributed by road from London and bought at local markets. The Mill Green imports include two cooking vessels not previously recognised from north-west Kent and perhaps brought directly across the Thames from Essex rather than via London where Mill Green coarsewares are quite rare. The few Scarborough ware jugs present were also probably acquired at coastal markets (Dartford has some fine examples; Mynard 1973). The few Kingston-type ware jugs may have been carried down the Thames and onwards through London to the estuary ports or, perhaps less likely, were traded overland from Surrey.

Most coarseware pottery—mainly jars/cooking pots and some bowls in shelly EM35 and shelly-sandy EM36—would have been acquired from fairly local sources in north-west Kent but we do not know exactly where these were made as surprisingly few medieval kiln sites have been found in the county. Shelly EM35 is probably the same as London Early Medieval Shelly ware (EMSH) which was commonest there *c* 1075–1150 but the fabric was never very common there, although it continued in production in north-west Kent as late as *c* 1225. The equation of shelly-sandy EM36 with the London shelly-sandy fabric EMSS, also commonest there *c* 1075–1150, now seems much less likely. EMSS was much commoner there during this period than shelly EMSH. The Kent shelly-sandy fabric EM36, however, seems to date only from *c* 1100 onwards in north-west Kent—and mainly after *c* 1150—and is clearly a later development than the purely shelly fabric EM35. Although a north-west Kent source has also been postulated for London EMSS (Vince and Jenner 1991) it now seems unlikely that EMSS and EM36 can be exactly the same thing although they might have been made from the same extensive Woolwich Beds deposits which stretch from Surrey in the west to north-west Kent in the east. The frequent association of EM36 on A2 Site C with closely datable regional glazed wares, particularly Mill Green ware and London-type ware, has allowed the dating of this local coarseware to be refined. It may be present from as early as *c* 1100 but mainly seems to date between *c* 1150–1350 thus adding a century to its previous estimated lifespan. This re-dating will have wider implications for the dating of other sites in north-west Kent and for sites elsewhere in the county where it is occasionally present.

The exact source of north-west Kent fine grey sandy ware (M38B) is equally vague. Interestingly the A2 assemblage has shown that this mainly high medieval fabric was used almost exclusively for jugs while the shelly-sandy fabric EM36 provided nearly all the jars/cooking pots used during the same period. Whether this pattern is repeated on most other high medieval sites in the area is not known but it seems also to be the case on the nearby HS1 sites (Mepham 2006) and on a rural site at Shorne near Gravesend (Cotter 2003). The unique EM36 tripod pitcher (a type of jug) from Site C, however, is an exception to this rule—the latter may have been locally made but shows influences from Wessex where the tripod pitcher tradition has its home.

The main function of pottery used on these sites was for cooking or storage. Many jars are sooted from use as cooking vessels. A few bowls are sooted too, and a small number of jugs, which were perhaps used to warm drinks. The relatively high number of early medieval bowls on Site L might be linked with dairying practices in the sunken-floored building there, or perhaps they might have been used as grain measures (see Site L account). The small assemblage from Pond D South also included two early medieval bowls associated with a sunken-floored building. Site C, on the other hand, had four sunken-floored medieval buildings and a much larger assemblage than the other sites but only produced two bowls of high medieval date. Site C, however, did produce a rare medieval cistern profile—a form associated with brewing —from a pit adjacent to sunken-floored building 5950. An unusually tall jug (with perforated rim) from the same pit might also have been connected with brewing and some of the buildings there had fairly high concentrations of barley which again suggests brewing as one of their possible functions. Besides these instances the pottery sheds little direct light on the function of these unusual buildings.

The relative abundance of glazed fineware jugs on Site C is undoubtedly due to the fact that the peak of occupation here occurred at a later date than the other sites and during a period when glazed jugs and local grey ware jugs were widely available —in the 13th and 14th centuries. Jugs were mainly used for serving liquids and fineware jugs such as these were probably used at the table. Site C therefore seems to have had a moderate degree of prosperity although continental imports are lacking here. The assemblages from the other sites are quite a bit earlier than Site C—at a time when glazed wares and jugs were not widely available. Sites L and A with their small amounts of Thetford ware (including a spouted pitcher from Site A), and London sandy EM13, might indicate a slightly better standard of living than the inhabitants of the Pond D South site where only local wares were available. For their finer tablewares and glazed jugs the inhabitants of these sites seem always to have looked westwards to London or northwards to Essex and the North Sea rather than eastwards to the rest of Kent.

Site C produced at least three groups of whole pots which appear to have been deliberately buried—including the unique EM36 tripod pitcher (Fig. 5.29, no. 17). It seems possible that these might have been buried for superstitious/ritual purposes. A similar pot burial was noted on the nearby HS1 site at Downs Road (Mepham 2006). This unusual tradition seems to have endured in this part of north-west Kent for at least two centuries. Occupation on Site C seems to have ended *c* 1350 thereafter only small amounts of pottery dating from *c* 1600 onwards are found on the A2 sites.

Pottery illustration catalogue (Figs 5.28–30)

1. Ipswich-Thetford ware (LS10). Small jar/cooking pot base/body. Base diam. 60mm. Flat base with concentric wire-marks underneath. Sooted internal upper wall. Probably 11th C. Site A, pit 3337 context 3338.
2. London early medieval sandy ware (EM13). Jar/cooking pot. Diam. 200mm. Oxidised with grey core. Turntable-finished. Sooted. Date *c* 1050–1100? Site A, pit 3337 context 3341.
3. NW Kent shelly ware (EM35). Jar/cooking pot. Diam. 240mm. Weakly oxidised. Heavily sooted ext. Date *c* 1175–1225. Site C context 7624.
4. NW Kent shelly ware (EM35). Jar/cooking pot. Diam. 230mm. Grey-brown ext, brown int. Under-fired hybrid EM35/EM36 fabric with abundant fine sand. Upper part shows wheel/turntable-finishing. Heavily sooted ext. Date *c* 1175–1225. Pond D South, context 2128.
5. NW Kent shelly ware (EM35). Jar/cooking pot with internally bevelled rim. Diam. 230mm. Grey reduced fabric. Sooted ext. but mainly int. A2PC06.C 3341. SF319.
6. NW Kent shelly ware (EM35). Jar/cooking pot rim with ext. bevel. Diam. 260mm. Soft oxidised fabric with coarse shell including complete clam-like bivalve shell inclusion 8mm. across and sparse gastropod. Date *c* 1050–1150. Site L, context 12828.
7. NW Kent shelly ware (EM35). Large jar/cooking pot profile. Diam. 350mm. Upper half wheel/turntable-finished. Lower half handmade but quite neatly. Some diagonal wiping int. to smooth over coil joins. Horizontal scoring and striations ext. Single surviving vertical/oblique thumbed strip. Under-fired dull grey-brown hybrid EM35/EM36 fabric with abundant fine sand. Shell dissolved. Rare coarse flint. Heavily sooted ext. Date *c* 1175–1225. Pond D South contexts 2128 and 2266.
8. NW Kent shelly ware (EM35). Jar/cooking pot with lightly thumbed rim. Diam. 260mm. Oxidised with grey core. Coarse shell to 9mm. Sooted ext. Date *c* 1050–1150. A2PC06.L 12947.
9. NW Kent shelly ware (EM35). Bowl profile with internally bevelled rim. Diam. *c* 380mm. Oxidised with grey core. Sooted ext. Date *c* 1050–1150. A2PC06.A 3343. SF314.
10. NW Kent shelly ware (EM35). Bowl profile. Straight-sided with thumbing on int. rim angle. Diam. *c* 340mm. Oxidised with coarse shell inclusions to 10mm. across including gastropod and bivalve. Faint sooting ext. Date *c* 1050–1150. A2PC06.L 12566 and 12584.
11. NW Kent shelly ware (EM35). Bowl rim with int. thumbing. Diam. 320mm. Oxidised. Possibly sooted ext. Date *c* 1050–1150. A2PC06.L 12957.
12. NW Kent shelly ware (EM35). Bowl with light int. thumbing on rim. Diam. 320mm. Oxidised with grey core. Date *c* 1050–1150. Pond D South, context 2082.
13. NW Kent shelly ware (EM35). Jug with pouring lip. Diam. 120mm. Handmade. Under-fired dark grey-brown fabric. Date *c* 1075–1150/75? A2PC06.Pond D South 2159.
14. NW Kent shelly-sandy ware (EM36). Jar/cooking pot rim with int. thumbing. Diam. 280mm. Hybrid EM36/EM35 silty-sandy fabric with abundant fine quartz to 0.25mm. Moderate fine-coarse shell inclusions to 5mm. Dull grey-brown ext. surfaces with reduced dark grey core and int. surface. Upper part and rim wheel/turntable-finished. Slight sooting ext. Date *c* 1100–1150? A2PC06.L 13200 and 13204.
15. NW Kent shelly-sandy ware (EM36). Jar/cooking pot with squared/flanged rim. Diam. 210mm. Wheel-turned. Dark grey. Shell dissolved. Sooted all over ext. Date *c* 1225–1350. A2PC06.K 12007.
16. NW Kent shelly-sandy ware (EM36). Bowl with incised line decoration on rim. Diam. 300mm. Dark grey fabric with reddish core. Rare-sparse shell. Wheel-turned. Associated wares *c* 1270–1350. A2PC06.C 5594.
17. NW Kent shelly-sandy ware (EM36). Tripod pitcher or jug. A very rare vessel form in Kent. Rim diam. 180mm. Leached pale grey-brown fabric with moderate shell inclusions mostly under 2mm. Handmade with wheel-finished rim of slightly lid-seated form. Squat globular body. Handle scar present. Sagging base with vestiges of three applied tripod feet. As surviving these appear to be hollow but the surviving parts are probably just the sockets for three solid luted-on feet—since detached and lost. The more complete foot has a traces of a thumbed strip down the centre and this may have been flanked by a pair of incised vertical lines. The base, which is complete, has neatly notched decoration around the basal angle. Decoration on the body consists of a combed horizontal band on the neck/shoulder and combed vertical bands on the body joining the neck band. The lower ends of the vertical bands have been removed by basal knife-trimming or wiping. Vessel found in very crushed state (reconstructed from *c* 156 sherds). Date *c* 1175–1250? A2PC06.C 15031. SF586.
18. London-type ware (M5). Profile small drinking jug. Diam. 90mm. Wheelthrown. Reconstructed from *c* 54 sherds. Collared rim. Complete flat base, fettled underneath, with evidence of scorching on side. Some body sherds and lip of rim also slightly sooted (possibly from heating drinks?). Rod handle pushed through vessel wall. Unglazed soft oxidised orange-red sandy fabric. Associated date *c* 1270–1350. A2PC06.C 15054. SF586.
19. NW Kent fine sandy ware (reduced) (M38B). Unusual tall jug profile. Diam. 150mm. Height 372mm. Wheelthrown. Sub-conical form with slightly sagging base and collared rim. Rim pierced by very small pre-firing perforation 3mm. in diam. Perforation probably too small to be functional except possibly for ventilation? Fine horizontal rilling or brushing allover ext. Thumbed vertical strips spaced around the body—possibly four or five? No evidence of handle surviving and no evidence of use. Vessel around 50% complete but found in very crushed state (reconstructed from *c* 161 sherds). Black surfaces with grey-brown core. Very fine sandy fabric with rare-sparse flecks of shell. Date *c* 1270–1350? A2PC06.C 5777.

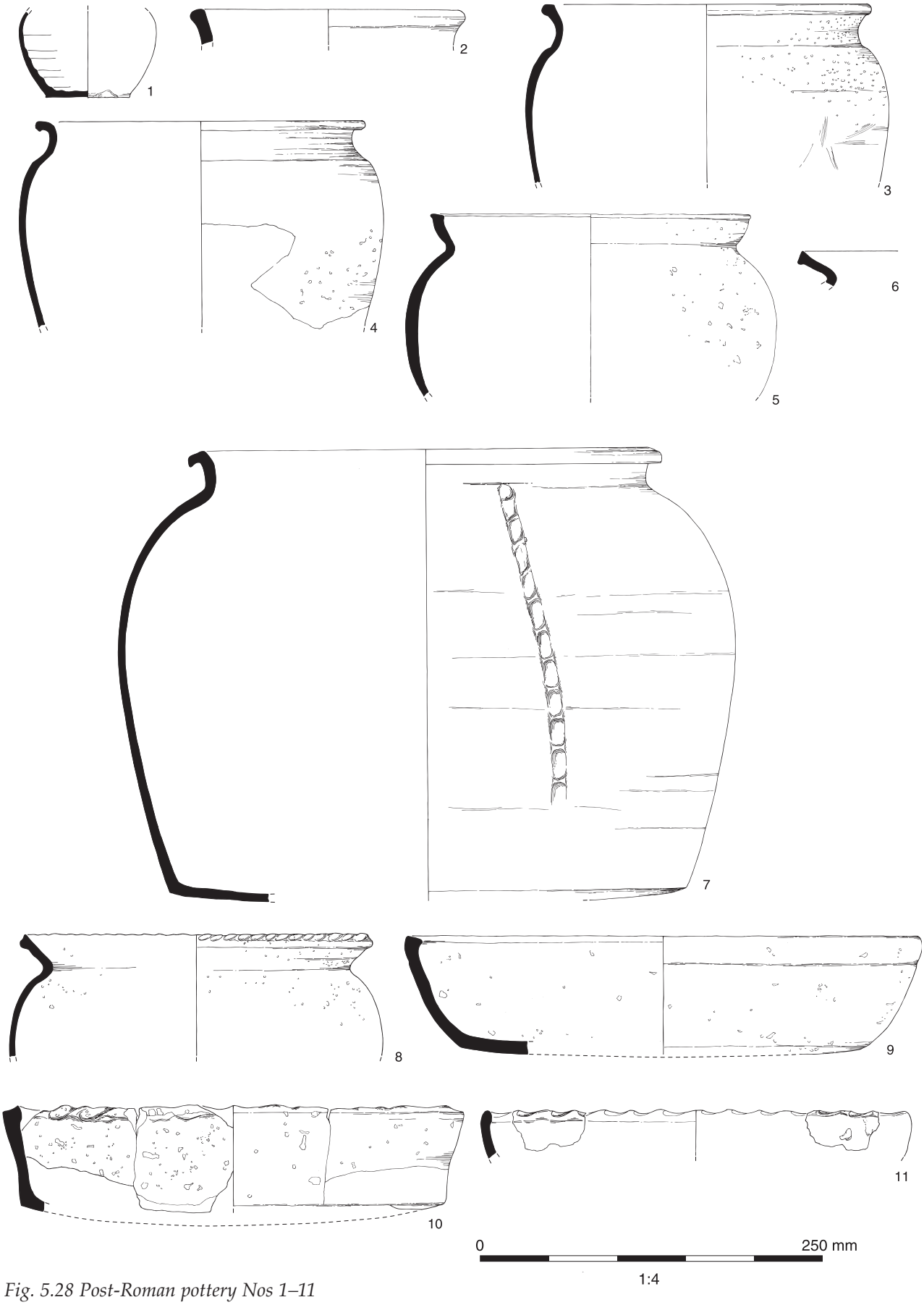


Fig. 5.28 Post-Roman pottery Nos 1–11

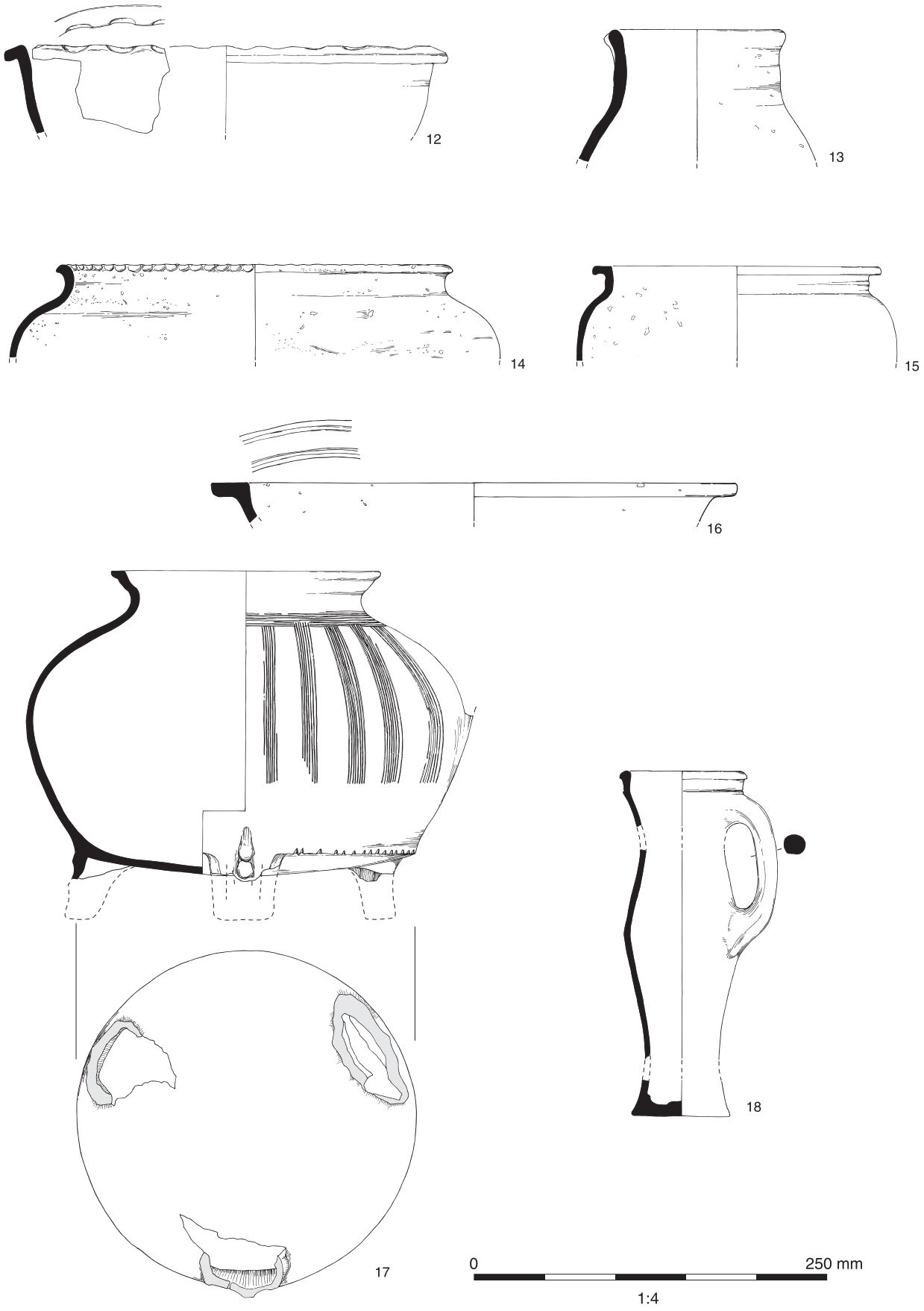


Fig. 5.29 Post-Roman pottery Nos 12–18

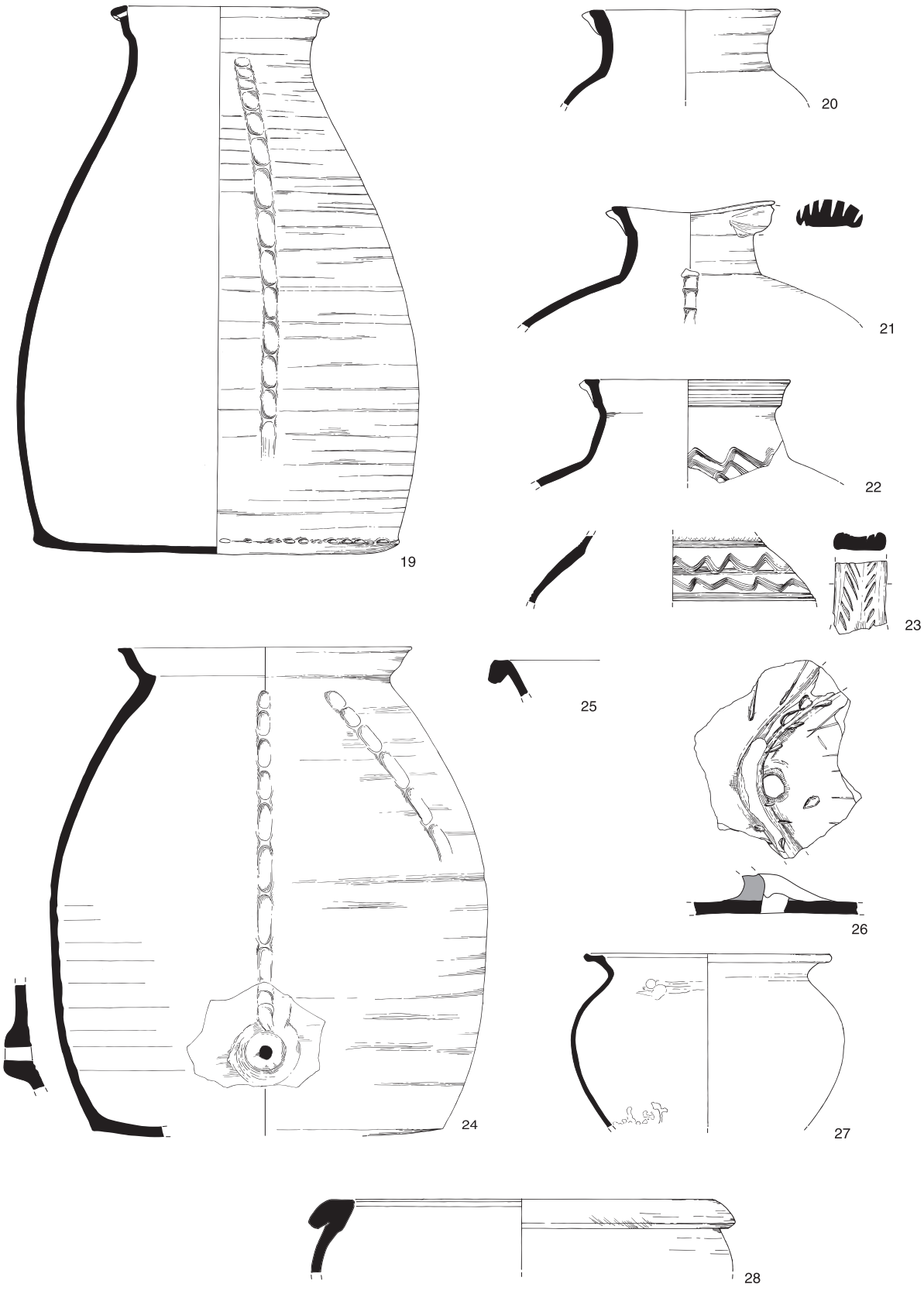


Fig. 5.30 Post-Roman pottery Nos 19–28

20. NW Kent fine sandy ware (reduced) (M38B). Jug with collared rim. Diam. 120mm. Wheelthrown. Leached pale grey surfaces with grey core. Date *c* 1175–1225. A2PC06.Pond D South 2128.
21. NW Kent fine sandy ware (reduced) (M38B). Complete upper part of globular jug. Diam. 120mm. Wheelthrown. Three vertical thumbed strips on body and handle stub with traces of stabbed or slashed decoration. Dark grey fabric. Date *c* 1250–1350? A2PC06.C 7311. SF575.
22. NW Kent fine sandy ware (reduced) (M38B). Jug with combed wavy line decoration on shoulder. Diam. 140mm. Wheelthrown. Fine horizontal rilling or grooving on ext. of collared rim. Grey with brown core. Date *c* 1250–1350? A2PC06.C 15058.
23. NW Kent fine sandy ware (reduced) (M38B). Jug shoulder with alternating bands of horizontal and wavy combed decoration. A fairly common decorative scheme on M38 and EM36 jugs. Traces of decoration on neck (criss-cross strokes?). Strap handle from same vessel with slashed herringbone decoration (also typical). Wheelthrown. Grey medium sandy fabric with darker core. Date *c* 1250–1350? A2PC06.C 5361.
24. NW Kent fine sandy ware (reduced) (M38B). Bunghole cistern profile. An unusually early example of this form for Kent. Diam. 200mm. Wheel-turned. Pale grey medium sandy fabric. Rare superficial shell inclusions. Pear-shaped body with lid-seated rim and sagging base. Thumbed vertical strips *c* 90mm. apart at upper limit, extending as far down as bunghole in lower wall. Applied circular bunghole with unusually narrow aperture—only 9mm across (probably for wooden plug?). Clay plug internally in area of bunghole. Possible handle scar surviving on one shoulder sherd. No evidence of use. Reconstructed from 39 sherds. Date *c* 1270–1350? A2PC06.C 5777.
25. NW Kent fine sandy ware (reduced) (M38B). Bowl rim with squared overhanging bead/flange. Diam. 360mm. Wheel-turned. Hard dark grey fabric. Associated date *c* 1250–1300. A2PC06.C 5947.
26. NW Kent fine sandy ware (reduced) (M38B). Fragment from the dome of a curfew (fire cover). Stub of strap handle on upper surface with aperture/ventilation hole behind. Handle anchored by reinforcing strips, with light thumbing, extending away from the base of the handle. Decoration consisting of ?radial incised lines or slashes and deeper stabbing at the base of the handle. Fine sandy black fabric with brown core. Rare-sparse shell inclusions. Interior darker, possibly sooted? Date *c* 1250–1350? A2PC06.C 7311.
27. Mill Green coarseware (M6A). Jar/cooking pot. Diam. 180mm. Wheelthrown. Thin-walled. Oxidised with grey core. Fine sandy matrix with moderate coarse rounded and sub-rounded quartz, mostly *c* 1mm. across, rarely to 3mm. Quartz clear, milky and brown. Abundant fine white mica. Rare splashes of thin dull green glaze on the upper part of the vessel internally and especially towards the base, suggesting the latter was glaze covered. The character of the fabric resembles an early post-medieval red earthenware fabric (PM1). Heavily sooted externally. Possibly the first Mill Green coarseware vessel recognised from Kent. Date *c* 1270–1350. A2PC06.C 5769.
28. Late Normandy stoneware (LPM29). Storage jar rim. Diam. 290mm. Hard purplish-brown stoneware fabric with dark grey margins and brown core. Sparse coarse quartz. Rare white limestone including grit 10mm. across embedded in rim. Date *c* 1775–1825? A2PC06.C 5322.

Fired clay *by Dan Stansbie*

A total of 2043 fragments of medieval fired clay, weighing 5692g, was recovered from Sites L, C and Pond D South along the course of the road scheme. Only structural material, deriving from oven superstructures or wall daub, was found. Preservation was poor. For details of fabrics, see Chapter 2.

The largest assemblage in terms of fragment count was from Site L (1140 fragments, weighing 1772g), mostly structural material in fabric A, with a small amount of unidentified material. A total of 188 fragments (1060g) from Site A is dominated by structural material in fabrics A and E, several fragments having internal wattle impressions and some having been burnt after firing. The little material from the Saxon sunken-featured building was also structural, and in the same fabrics. Site C produced 399 fragments weighing 1982g from the medieval period, dominated by fabrics A, A2, D and E. Sunken-featured building 7612 produced fragments of clay plate 21mm thick in fabric E, with sooting on one side.

Overall, very little fired clay was recovered from the post-Roman phases of activity along the scheme, and the only objects were the fragments of clay plate from Site C. These were presumably used in cooking or baking, either in ovens to keep bread and other foods from resting directly on the hot ashes, or as hot plates to keep food warm after cooking.

Ceramic figurine legs *by Paul Booth*

The lower legs and feet of a small ceramic figurine were recovered from subsoil context 4001 in Site B (sf 405; Fig. 5.31). The fabric is well fired and oxidised, with sparse-moderate fine sand inclusions up to a maximum of 0.3mm, and occasional very fine iron oxides and mica. The fragment survives to a height of 21mm and was cast in a two piece mould, the seams of which are evident on the outer

Fig. 5.31 Legs of ceramic figurine

side of the lower legs. There is a piercing, presumably to aid firing, through the length of the right leg. This is 1mm in diameter, widening slightly at the feet, presumably the end from which the piercing was made. The feet are damaged, but it is clear that moulding is complete beneath them, ie there was no base, and in its present form the fragment does not stand without support. The pronounced character of the knees and the slightly chubby calves might suggest that the figure represents a child or a cherub or similar.

The figure is in a completely different fabric from that of the well-known Gaulish pipeclay figurines of the Roman period (eg Jenkins 1958; Rouvier-Jeanlin 1972; Van Boekel 1993) and the character of the piece does not suggest a Roman date. Given that it was effectively unstratified it is most likely to be of post-medieval date, but parallels of this period have not been sought.

Clay tobacco pipes *by John Cotter*

The excavations produced a total of 25 fragments of clay pipe weighing 75g. Oswald's typology (Oswald 1975) has been used to date the pipes. The assemblage is highly fragmentary in the first instance. That aside, the pieces are in a variable condition with many fairly fresh and some very worn pieces. Pipe stems, mostly of quite short surviving length, dominate the assemblage and parts of only two pipe bowls are present, and no mouthpieces. Apart from milling on the rim of one bowl profile, all the pipes are plain. Pipe bowl typology provides the best guide to dating with stem thickness and stem bore (SB) diameter providing a more approximate guide (early pipe stems having a wide bore and later stem bores decreasing with time).

A range of pipe dates from the 17th to at least the 19th century is represented. A few thicker 17th-century type stems were noted, mostly quite worn (eg 6014). A slender, near-complete, bowl of *c* 1680–1710 (with short-spur or narrow oval heel) is the earliest bowl-type present although this is residual in a 19th-century context (5379). The only other bowl type identified is a small fragment from a 19th-century fluted-type bowl (6168). There is nothing to identify where these pipes were made. They could just as easily be fairly local or from London.

The highly fragmentary character of the assemblage and the predominance of short-length stem fragments plus quite a few worn pieces suggests the character of general domestic rubbish perhaps scattered as a component of field manure.

Ceramic building material *by Dan Stansbie*

A small quantity of tile and brick of medieval date in fabric A was recovered from sites L, A, B, C and possibly N. This included one fragment of medieval floor tile from Site A. A fragment of medieval tile in fabric B was also recovered from Site A. The quantities that were present were insufficient to suggest that any buildings roofed with tile had existed within the line of the scheme. No medieval brick or tile was recovered from Pond D South, despite the medieval occupation here.

Small quantities of post-medieval brick and tile were widespread along the scheme, but again in insignificant numbers.

Metalwork *by Ian R Scott*

Site assemblages

Site L

Other than a silver coin of Edward III (sf 1402), the clearly medieval material consists of a single T-headed medieval nail (context 13208) from the medieval sunken-featured building 12583.

Post-medieval finds include a horseshoe nail (pit 12571, context 12570), a possible tool or utensil handle (context 12621) from a post-medieval denehole (12619) and a piece of edge binding from a deep undated pit 12595 (context 12600), probably also post-medieval. A washer (context 12616) was found in feature 12632, probably part of an early Iron Age pit 12527, but was probably intrusive and of post-medieval date. The limited range of metal types alone suggests that there was little or no domestic occupation or craft activity of post-Roman date in the close vicinity (though see slag report below).

Site A

There are three large features of post-Roman date: a deep square pit 3337, a large sub-rectangular pit (3082) and a Saxon SFB (3344). The deep square pit 3337 produced a two-piece Colchester brooch, a possible small knife blade, a small fragment of iron plate, two nails and some 20 small fragments or crumbs of iron. Despite the date of the brooch, a large collection of Saxo-Norman pottery came from this pit. The possible small knife blade (context 3341) has a curved back and edge, and a triangular cross section. Unfortunately the knife blade is not closely dateable, although a medieval date is plausible. The Saxon SFB (3344) produced an iron object of uncertain function and two tiny iron fragments. A large pit 3082 has produced a fire steel or strike a light of early to middle Saxon date (Fig. 5.32, Cat. no. 1). Other finds from this feature included a piece of late post-medieval tile, worn pottery sherds, marine shell and animal bone.

In addition a sub-rectangular pit 3349 contained a reaping hook, a plain iron ring and a nail stem fragment. The reaping hook is of a type used both in the Roman and later periods (see Chapter 4, Fig. 4.69, Cat. no. 4).

Site B

Site B crossed an Iron Age and early Roman settle-

ment, and had hardly any features or finds of post-Roman date. These finds include three pistol balls from topsoil (context 4000). There are also a number of latter items relating to transport and trade: a horseshoe fragment (context 4778) and horseshoe nail (context 3992) both of post-medieval date, and 56 lead sack or parcel seals of post-medieval date. There was one personal item, a post-medieval heel iron (context 3780).

Site C

Site C contained a medieval rural settlement, with a trackway, buildings, linear features and pits. The metal finds from Site C number some 132, but include 71 nails and 17 miscellaneous pieces (strip, plate, bar, etc). Transport items are all medieval or post-medieval in date, and comprise a copper-alloy crotal bell (context 5114), three horseshoes, or horseshoe fragments (contexts 5379, 5822 & 7220), and five horseshoe nails (contexts 5007, 5317, 5379 & 15049).

There was one tool, a drill bit (Cat. no. 2). The drill bit is not closely dateable, but probably medieval, since it was found in a pit with medieval finds. Personal items include a number of buckles, including a sub-rectangular buckle frame cast in copper-alloy (Cat. No. 7) of medieval date, probably dating to the later 14th or 15th century (Egan and Pritchard 1991, 22, 96 and fig 61), and a circular frame with small plate (Cat. no. 5), which is late medieval or early post-medieval in date. The other buckle fragments—an iron buckle plate (Cat. no. 4), and trapezoidal buckle frame (Context 15025)—are not closely dateable. A layer that produced Iron Age material also produced a post-medieval crotal bell. Finally there are two post-medieval heel irons (context 5379 & 7510) and a modern dress pin (context 5055).

There are no household items, and only a single structural item—a spike with a tapering point. There is, however, a fragment from a medieval barb spring padlock case (Cat. no. 8), a length of chain comprising four small oval links and a triangular hinge plate (Cat. no. 9). The latter is certainly from a box or piece of furniture, not from a window or door.

The settlement evidence and trackway clearly form parts of the same landscape as the enclosures, near the former Northumberland Bottom army camp, investigated as part of the HS1 (ARC WNB 98 Area A/B: Union Railways 2001, 19–20, figs 12 & 13). The finds from the HS1 work on the medieval enclosures seem to have been very limited (ibid., 22; Askew 2006, 41). There was a sunken-featured building (574), which produced no metal finds.

Site D

Post-Roman finds are limited. There are three household items, which include a post-medieval knife with whittle tang and solid bolster (context 6045), and fragments of metal ware vessels (context 6170). Structural items comprise two iron collars

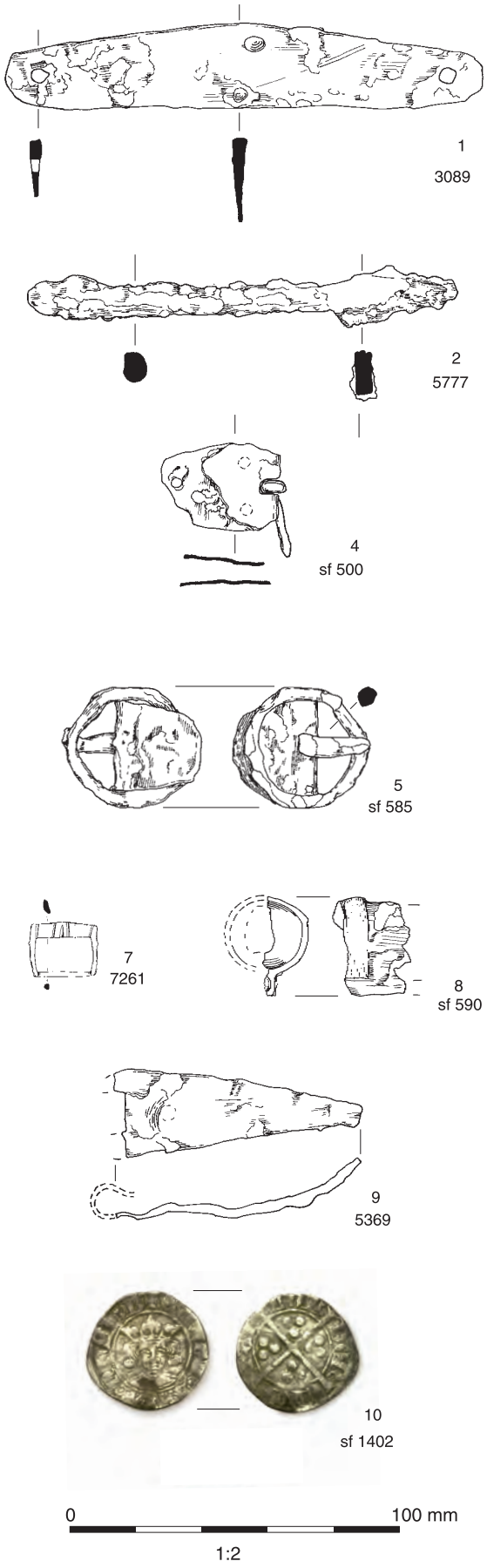


Fig. 5.32 Saxon and medieval metalwork

(context 6115). The range of types of metal find is very limited and provides little evidence for domestic occupation of any date.

Other areas

In total the other excavated area produced only 40 metal objects. The range of finds was limited and only small numbers came from each site. The only find of any interest was the spring from a barb spring padlock, which was unfortunately unstratified.

1 **Fire steel** or **strike a light** (Fig. 5.32). Comprises blade of triangular section with straight edge and arched back, rounded and pierced with a rivet hole at each end. Fe. L: 144mm; W: 25mm. Site A, context 3089, pit 3082. Early or middle Saxon. Usually mounted on a purse, some examples are published as purse mounts.
2 **Drill bit**, or tool, with distinctive diamond-shaped tang (Fig. 5.32). Encrusted. Fe. L: 130mm. Site C context 5777, pit 5776.
3 **Crotal**, or **rumbler**, **bell** (not illustrated). Cast with square loop. Cu alloy. L: 38mm. Site C, context 5114, layer, sf 1385.
4 **Buckle plate** (Fig. 5.32) formed from folded iron sheet, with three rivet holes with one extant cu alloy rivet. Cu alloy pin. Buckle frame missing. Fe and Cu alloy. L: 37mm; W: 25mm. Site C, context 5007, sf 500.
5 **Circular buckle frame** and small buckle plate (Fig. 5.32). L: 40mm; frame D: 35mm. Site C, context 15009, ditch 15010, sf 585
6 **Trapezoid buckle frame** (not illustrated). Fe. L: 30mm; W: 31mm. Site C, context 15025, pit 15026, sf 589.
7 **Sub rectangular buckle frame**, cast (Fig. 5.32). Cu alloy. L: 16mm; W: 21mm. Site C, context 7261, scoop 7260.
8 Fragment of a **cylindrical barb spring padlock case** (Fig. 5.32**)**. Medieval or later. Fe. L: 24mm; D: 32mm. Site C, context 15039, pit 15041, sf 590.
9 **Hinge plate** (Fig. 5.32), elongated triangle, with two nail holes. The broad end is cut for the hinge pivot. Fe. L: 76mm; W: 26mm. Site C, context 5369, trackway 5368.
10 **Silver penny**. Long cross penny, Edward III, third or florin coinage 1344–51, Obverse: bust with bushy hrir. Reverse: Lombardis script. London Mint.. Silver. D: 18mm x 19mm. Site L, context 13180, pit 13171, sf 1402

Iron slag and related high temperature debris *by Lynne Keys*

A tiny assemblage (1133g) of medieval and post-medieval material was examined for this report. It had been recovered by hand and from samples taken on site. Most of the slag in the assemblage was undiagnostic, ie could not be assigned to either smelting or smithing either because of its morphology or because it had been broken up during deposition, re-deposition or excavation. Other types of debris in the assemblage may be the result of a variety of high temperature activities, including domestic fires. These include fired clay, vitrified hearth lining, cinder and fuel ash slag, all of which may be produced by domestic fires. Overall, the evidence does not indicate that iron-working was taking place to any significant degree.

Fig. 5.33 Medieval worked stone quern

Table 5.6: Medieval worked stone

Category	*Site A*	*Site C*	*Pond D South*	*Grand Total*
Quern	1	5	4	10
Spindle whorl	1			1
Hone	1			1
Total	3	5	4	12

Worked stone *by Ruth Shaffrey*

Medieval

Twelve medieval contexts on sites A, C and Pond D South produced worked stone, the vast majority of which (3.5kg) are lava quern fragments (Table 5.6). All of these are highly weathered and nothing can be determined about size or design.

A complete (but fractured) upper rotary quern of shelly Upper Jurassic limestone (sf 527, Fig 5.33) of probable Dorset origin (Williams pers. comm.) was recovered from a posthole within sunken-featured building 5950 (Site C) in which it was possibly being used as a post-pad. It is the size of a hand-operated rotary quern but has features associated with mechanically operated millstones, in particular the rynd chase and the curved furrows close to the eye. Despite its tiny size compared to that typical of known examples from Tamworth (Wright 1992), it seems most likely to be from a horizontal-wheeled mill, and its small diameter would indicate it was early medieval (pre-Conquest) in origin (Martin Watts pers. comm.; Watts 2002, plate 11). The recovery of the stone from a structural context, the fact that it has been reused (and broken) prior to deposition, and the lack of a water source on the site suggest it was brought in from elsewhere. It is of interest that the site is located only 2km from the Saxon horizontal-wheeled mill at Northfleet and that none of the millstones used at this site were recovered during excavations. The Northfleet mill was in operation for only about 30 years and was carefully dismantled at the end of its life (Andrews *et al.* 2011). There is no direct link between the two sites, but it is reasonable to assume that it had been in use somewhere locally prior to its deposition here.

Imported items of limestone are unusual in Kent although one mortar of Quarr stone from the Isle of Wight was found at Stonar (Dunning 1977, 328). Limestone querns are rare everywhere, but occur in slightly greater numbers in areas with a good local source, for example at Southampton (Shaffrey and Allum 2011). This is, however, the first from Kent known to the author.

Fig. 5.34 Chalk spindlewhorl

Two pieces of worked stone were recovered from an isolated medieval pit on Site A (3338) including a single plain chalk spindle whorl (sf 317, Fig. 5.34). This is of type A1 form (Walton Rogers 2007, 25) and with a wide perforation of 11mm. The same fill also contained a single hone of a sandy limestone, probably Kentish Rag.

Post-medieval

Three post-medieval contexts produced stone of interest. Two of these contained fragments of slate (5055, 6170), the latter being recognisable as a roof-slate and the former being very small fragments. These have almost certainly been imported from the west country. The third context (3277) produced a small quantity (83g) of weathered lava fragments that would have been from a rotary quern originally.

Worked bone *by Ian R Scott*

One eroded or weathered pin or point (Fig. 5.35) was recovered from the fill of pit 3337 in Site A. Pit 3337 contained Roman material, but also early medieval (11th century AD) material. The pin would fit better in an early medieval context.

1. **Pin**, or **point**, of flat oval section. Slightly flatter at the broad end. Very eroded or weathered surface. L: 86mm, W: 9mm, Site A, Context 3343, Pit 3337

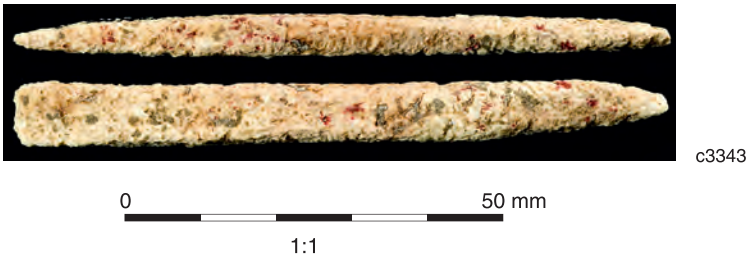


Fig. 5.35 Medieval worked bone object

SAXON, MEDIEVAL AND LATER ENVIRONMENTAL EVIDENCE

Animal bone *by Andrew Bates, Jacqui Mulville and Adrienne Powell*

Quantification, distribution and ABG descriptions

Saxon

A very small collection of animal bone was recovered from the sunken-featured building 3370 on Site A (Table 5.7). Of the identifiable bone within the sunken area of the building, cut 3344, only one cow metatarsal was attributed to a deposit from the use of the building, the remainder coming from backfill deposits. A full methodology and analysis can be found in the digital report.

Saxo-Norman

A few bones from four sites were recovered from this period (Table 5.8). With the exception of the equid, a single sheep/goat metacarpal and a neonatal cattle skull fragment, all the identifiable bone fragments from Site A were excavated from pit 3337, 104 of these from deposit 3341. The 95 fragments of pig bone within deposit 3341 are considered to represent just three individuals, including two neonatal individuals, and the rear leg of an animal between two to three and a half years of age. Butchery marks on this leg demonstrate where the animal was dismembered and filleted. Similarly, six of the sheep/goat bones were from the forelimbs of a lamb less than six to eight months old. In addition, a goat horn core had evidently been removed from the skull of the animal so that the horn could be soaked off and worked. Of the 27 equid or horse bones from Site C, 18 of these are from a single fragmented skull excavated from pit 5782, from which a horse metatarsal was also excavated. In addition, eight fragments are from a single horse skull excavated from denehole 7215.

Table 5.7: Animal bone recovered from SFB group 3370, including both hand-collected bone and bone from soil samples

Species	*3344*	*Postholes 3353 and 3361*
Cattle	8	
Sheep/goat	4	
Goat	1	
Pig	6	
Equid sp	2	
Bantam	1	1
Frog	1	1
Total	23	2

Table 5.8: Animal bone recovered from Saxo-Norman deposits, including both hand-collected bone and bone from soil samples

Species/Site	*A*	*C*	*D*	*L*	*Total*
Cattle	7	7	1	3	18
Sheep/goat	12	19		4	35
Sheep		2			2
Goat	1	1			2
Pig	95	6		2	103
Horse		13			13
Equid sp	2	14			16
Red deer	1				1
Toad	2				2
Frog	4				4
Total	124	62	1	9	2034

Medieval

Few bones were excavated from high medieval or later medieval deposits (Table 5.9). Articulated animal remains were recovered from a late medieval pit 11137 (group 11153) on Site H (see Fig. 5.25). The pit measured 4m by 1.6m in size and 0.64m deep, with deposit 11138 used to backfill the feature after the deposition of the three animal carcasses. A complete pig (11145) and dog (11144) were positioned in its base. Further pig remains were represented by at minimum of seven foetal piglets, excavated from the body area of pig 11145.

It was noted during the excavation that the neck of the dog had been broken. The skull was positioned with the mandibles of the head uppermost and the skull below, with the spine laid positioned perpendicular to the head. The atlas of the dog, the uppermost cervical vertebra which articulates with the occipital condyles of the skull, had been cracked and was recovered in two halves, with one half attributed to context 11138. The styloid process from the left side of the skull, a projecting bone which lies adjacent to the atlas, was also broken off. Both these breakages could easily be a post-depositional break, or from other causes. Alternatively, the hanging of animals as the familiars of witches is documented up to the early modern period, with an account of the hanging of a

Table 5.9: Animal bone recovered from medieval deposits, including both hand-collected bone and bone from soil samples; articulated remains counted as 1 NISP

Species/Site	*C* *High Medieval*	*H* *Late Medieval*	*Total*
Cattle	6		6
Sheep/goat	2		2
Pig	2	8	10
Equid sp		1	1
Dog	1	2	4
Total	11	11	22

dog in the Salem trials of 1692. The injuries from hanging are though most likely to cause damage to the hyoid bone and the odontoid process of the axis (the second vertebra; Ceridwen Boston pers. comm.), both of which are complete. None of the bones of these two animals produced evidence of having been butchered.

Overlying the rear of the pig was a partial horse skeleton (11143), possibly a mare. It comprised the pelvis, sacrum, the lumbar vertebra, all but the uppermost thoracic vertebra, and a number of ribs of a horse. No butchery marks were recorded, but the animal had evidently been dismembered, with the head, neck and all of the limbs removed. Pathologies on the bones of this animal are thought to relate to its use as a riding animal, and possibly for traction.

The horse had most of its carcass removed elsewhere, most likely for further processing. Horse meat would normally be used for dog food during this period of history (Wilson and Edwards 1993). It seems not unreasonable to conclude that the animal had its neck broken prior to deposition, given the position of the head rather than any breakage of the bone, since there seems no reason to have inflicted this damage to facilitate its deposition. The burial of diseased animals around or at the threshold of the animal housing was associated with the prevention of disease to the rest of the stock (Wilson 2000, 103–4), but this feature is not associated with a building. During a livestock epidemic in Brie in the 18th century, an animal was hung upside down by its feet over the threshold while formulae were said (ibid.). Similar actions could be speculated on for these remains, although no direct parallel was found.

Species description and discussion

The ageing, sexing and metrical data for cattle and sheep/goats for the post-Roman periods was too small for analysis, but is presented in the digital report.

Pig

Two congential defects were identified on the remains of very young piglets. Two of the third phalanges excavated from Saxo-Norman pit 3337 of a neonatal piglet were fused together (syndactyle).

Equids

The late medieval partial horse skeleton (11143) in pit 11137, including part of the spine, ribs and pelves, had a number of pathologies. These included new bone growth around the articular surface of adjoining vertebra, on the sixth lumbar vertebra and the first thoracic vertebra, and the fifth and sixth lumbar vertebra. The first and second lumbar vertebra had fused together. A crack across the caudal centrum epiphysis was present on the sixth thoracic vertebra. Some limited exostosis was present around the cranial epiphysis of the sacrum, with one caudal vertebra fused to its caudal epiphysis.

In addition, traumatic osteomas were recorded on the bone adjacent to the ischium part of the acetabulum and on the illiac crest, the result of damage to the adjacent tissue causing bleeding at the subperiosteal level (Baker and Brothwell 1980, 117–18). Levine (1998) described injuries of the spine to be predominantly related to riding. This includes cracks in the centrum epiphysis and new bone growth around the centrum articular surface, as seen in skeleton 11143. Injuries to the shoulder and hip are characteristically from the use of the animal for traction (ibid.). It is quite possible that the horse found within pit 11137 was used for both purposes, as the average farm horse may have been used for both plough, cart and carriage (Trow-Smith 1959, 161).

Dog

A single dog burial was found in medieval pit 11137. No butchery marks were recorded on dog bones. Wither heights were calculated from seven bones of the medieval dog excavated from pit 11137, being between 590.21mm and 659.26mm, with an average of 619.19mm.

Wild species

Hare bones were also present in small numbers in a single Saxon-Norman deposit. No butchery marks were present on these bones, but hare would undoubtedly have been hunted and consumed, with potential uses also found for its pelt.

Birds

A small number of bird bone fragments (90) were recovered from deposits dating to the medieval period, including greylay or domestic goose, domestic fowl and jackdoor as well as unidentified passerines. No butchery marks were recorded on any bird bones. A total of 83 assorted domestic fowl bones from pit 7271 on Site C represented a minimum of four individuals. It is unlikely that the species list given here represents the full list of wild bird species hunted and consumed by the inhabitants of the area, but they do not appear to have made a large contribution to the diet.

Fish remains *by Rebecca Nicholson*

The fish remains discussed below were recovered both by hand and from the heavy residues of sieved samples. Bones and scales were identified to species, or other taxonomic level where appropriate, using the author's personal comparative collection. For further details of methodology, and of condition, see Chapter 3.

Results

Site A

Pit fill (3337) contained bones from large cod, small cod or whiting (*Gadus morhua* or *Merlangius merlangus*), herring (*Clupea harengus*) and a calcined vertebral centrum from a small shark or ray

(Elasmobranchii). The large cod bones comprised remains from fish of at least 0.7–1m long, and included three articulating precaudal vertebrae, fragments of cleithra from at least three fish and a supracleithrum. While butchery marks are usually rare on fish bones, three bones from this group had clear knife cuts consistent with beheading. Two of the proximal cleithra fragments (both from the right side) exhibited two parallel cuts to the lateral aspect. The supracleithrum had been cut in a similar manner, with two parallel cuts to the dorsal aspect. Although beheading may obviously have taken place as part of general food preparation, these cut marks are also typically found on bones from stockfish—fish beheaded at or anterior to the cleithrum and wind dried (with many vertebrae still retained in the dried product).

Site L

While many of the fish bones were extremely degraded and fragmented, 16 fragments, from (12566) and (12584), both fills of gully 12567, were identifiable to at least family (Gadidae) and most of these were head bones from a minimum of two large cod. Those bones present in pit fill (3337) from Site A were absent in the group of bones from Site L. Fill (12803) in ditch 12805 produced a large number of fish bone fragments, many of which were considered unidentifiable. Those pieces which could be identified mainly came from the heads of at least two large or very large cod (around 0.8–1.2m long) while haddock (*Melanogrammus aeglefinus*) was represented by a supracleithrum and a single precaudal vertebra derived from an indeterminate small gadid.

Site C

Nine identified bones were recovered, all but one from sieved samples. Two herring vertebrae were found in the fill of SFB (5347). A fragment of fish vertebra, probably from large cod, also came from this feature, while fill (5101) from pit 5087 contained a vertebra probably from a small-medium sized cod or other gadid. Medieval pit fill 5084 (cut 5080) contained a herring vertebra and a tiny clupeid vertebra was found in the denehole fill (7219).

Discussion

Fish remains from medieval contexts are almost all from marine fish, with cod and herring the most common. Both fish were the focus of commercial fishing in the medieval period, herring fishing being well established by the 10th century AD. Herring are representative of net fishing; shoals of herring are seasonally abundant along the North Sea coast and Straits of Dover and with the right equipment capturing them is relatively easy. Large (>0.7m) cod, on the other hand, would have been caught on a hook probably in deep water. While the bones were sparse and preservation poor, the butchery evidence and selection of large gadid skeletal elements in the fills of pit 3337 (Site A) is typical for a beheaded product, possibly dried stockfish, while large gadid bones from this period found in Site L ditch fills are typical of the bones which would be left behind after beheading, raising the possibility of differential discard of waste between features. Stockfish were widely exported from Scandinavia and northern Scotland in the middle ages, the trade having its origins in the decades around AD 1000 (Barrett *et al.* 2004; Perdikaris 1999).

Charred Plant Remains *by Wendy Smith*

Nine samples dating to the 11th/12th centuries AD were analysed (Table 5.10 and Fig. 5.36). Six of these samples come from Site L, two from Site C and one, sample 341 (pit 3337, context 3342), from Site A. Samples from Site L are primarily from oven complex 12583, but a sample from ditch 12805 (sample 1319, context 12803) was also analysed. Samples from Site C comprise one from cut 5772 in ditch 7393 (sample 1559, context 5772) and one from pit 5080 (sample 513, context 5084). Since the archaeobotanical results from Site L are primarily derived from one major feature, the results presented here may well be biased to this specific structure rather than reflecting the general pattern of agricultural activity on site during this period.

Six samples of 13th/14th century date were also analysed (Table 5.11 and Fig. 5.36), all from occupation in Site C, and the majority (four) from the same sunken-featured building (SFB 5347). One sample (859) from deep pit 7271 within SFB 5950, and another (1567) from pit 5832 just west of building 5909, were also analysed.

The samples are all frequently dominated by the remains (usually grain, but sometimes chaff; eg sample 1410) of free-threshing wheat (*Triticum* spp.). Unfortunately, it is not possible to identify wheat species on the basis of the morphology of the grain alone (eg G Jones 1998), and none of the free-threshing wheat rachis nodes was sufficiently intact to allow identification to species level (in all cases the rachis node was only preserved to the abscission scar). Smaller quantities of rye (*Secale cereale* L.) and barley (*Hordeum* spp.) grain/chaff also were recovered. Cereal chaff is usually a much smaller component of the assemblage (< 12% of all identifications), with the exception of samples from oven 12583, where free-threshing wheat rachis nodes are quite abundant (36.2% of all identifications in sample 1407, for example).

The main difference between the earlier and later samples is that most of the samples from Site C have fairly significant proportions of larger-sized pulses, which are presumably cultivated, as well as securely identified broad bean (*Vicia faba* L. var. minor), common vetch (*Vicia sativa* L.) and garden pea (*Pisum sativum* L.) (this has been indicated in bold for the 'pulses' in the relative proportion section of Table 5.10).

Limited remains of nuts and tree-fruit were recovered in extremely small quantities from both Sites C

Table 5.10: Summary statistics for medieval period samples (11th/12th century)

Sample	341	1319	1330	1406	1407	1410	1413	513	1559
Context	3342	12803	12597	13199	13201	13205	13208	5084	5772
Context Description	pit 3337	ditch 12805	Hearth/ oven 12583	oven 12583 - rake out	oven 12583 - 'trampled area'	oven 12583 - rake out from oven 13191	oven 12583 - 'early' rake out	pit 5080	ditch 5771/ sub-group 7393
Site	A	L	L	L	L	L	L	C	C
Phase	11th/12th C	11th/12th C	11th/12th C	11th/12th C	11th/12th C	11th/12th C	11th/12th C	11th/12th C	11th/12th C
Sample Vol (L)	40	100	40	90	30	40	40	20	40
Flot Vol (ml)	200 ml	100 ml	55 ml	500 ml	50 ml	400 ml	100 ml	65	85 ml
Proportion of Sample Sorted	100%	50%	100%	12.5%	25.0%	6.3%	12.5%	100.0%	100.0%
Seeds per litre of sediment	1.9	1.1	3.0	54.4	30.5	174.0	41.4	15.6	3.5
Total Identifications (FLOT)	74	56	119	612	229	435	203	312	138
Total Identifications (Heavy Residue)	0	0	0	0	0	0	4	0	0
Total Identifications (Heavy Residue + Flot)	74	56	119	612	229	435	207	312	138
TOTAL SCORE									
Cereal Grain	42	38	59	441	122	207	137	177	27
Cereal Chaff	0	3	9	115	83	91	18	23	0
Detached embryo/ sprout	0	2	2	0	0	1	1	13	0
Pulses	0	0	0	2	1	4	2	13	22
Tree/ Shrub	0	1	0	1	1	1	4	0	2
Weed/ Wild	13	11	32	48	11	99	38	35	27
Unidentified/ Indeterminate	19	1	17	5	11	32	7	51	60
RELATIVE PROPORTION									
Cereal Grain	**56.8%**	**67.9%**	49.6%	**72.1%**	53.3%	47.6%	**66.2%**	**56.7%**	19.6%
Cereal Chaff	0.0%	5.4%	7.6%	18.8%	36.2%	20.9%	8.7%	7.4%	0.0%
Detached embryo/ sprout	0.0%	3.6%	1.7%	0.0%	0.0%	0.2%	0.5%	4.2%	0.0%
Pulses	0.0%	0.0%	0.0%	0.3%	0.4%	0.9%	1.0%	4.2%	15.9%
Tree/ Shrub	0.0%	1.8%	0.0%	0.2%	0.4%	0.2%	1.9%	0.0%	1.4%
Weed/ Wild	17.6%	19.6%	26.9%	7.8%	4.8%	22.8%	18.4%	11.2%	19.6%
Unidentified/ Indeterminate	25.7%	1.8%	14.3%	0.8%	4.8%	7.4%	3.4%	16.3%	43.5%

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). All calculations are based on the combined results for flot and heavy residue.

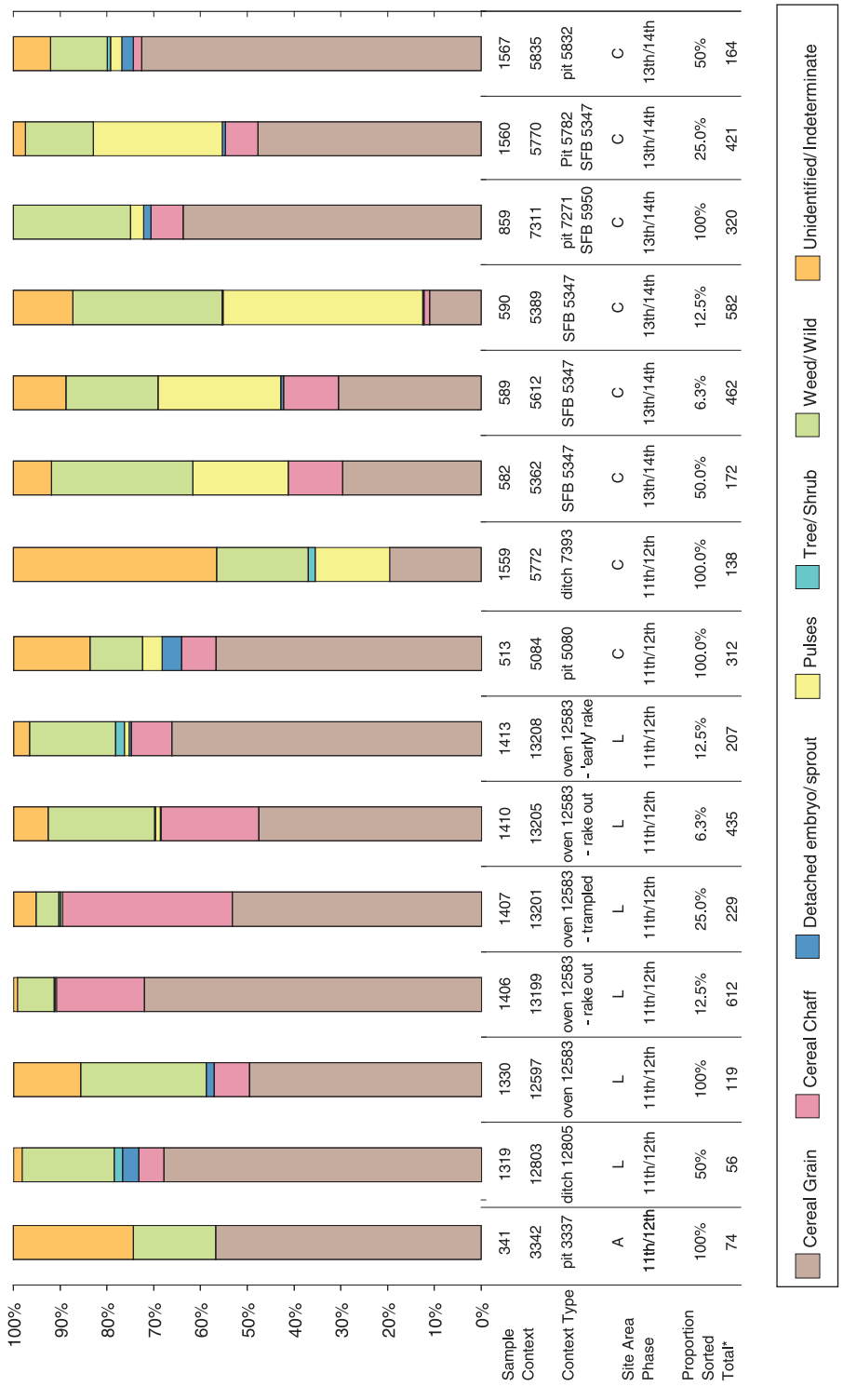


Fig. 5.36 Relative proportions of 11th/12th and 13th/14th century charred plant remains

Table 5.11: Summary statistics for medieval period samples (13th/14th century)

Sample	582	589	590	859	1560	1567
Context	5362	5612	5389	7311	5770	5835
Context Description	SFB 5347	SFB 5347	SFB 5347	Basal fill of pit 7271, SFB 5950	pit 5782, SFB 5347	pit 5832
Site	C	C	C	C	C	C
Phase	13th/14th C	13th/14th C	13th/14th C	13th/14th C	13th/14th C	13th/14th C
Sample Vol (L)	?10	10	30	5	40	20
Flot Vol (ml)	50 ml	700 ml	480 ml	16 ml	535	55 ml
Proportion of Sample Sorted	50.0%	6.3%	12.5%	100%	25.0%	50%
Seeds per litre of sediment	34.4	739.2	155.2	64.0	42.1	16.4
Total Identifications (FLOT)	172	442	582	320	421	164
Total Identifications (Heavy Residue)	0	20	0	0	0	0
Total Identifications (Heavy Residue + Flot)	172	462	582	320	421	164
TOTAL SCORE						
Cereal Grain	51	141	64	204	201	119
Cereal Chaff	20	54	7	22	29	3
Detached embryo/ sprout	0	3	2	5	3	4
Pulses	35	121	248	9	116	4
Tree/ Shrub	0	0	1	0	0	1
Weed/ Wild	52	91	186	80	61	20
Unidentified/ Indeterminate	14	52	74	0	11	13
RELATIVE PROPORTION						
Cereal Grain	29.7%	30.5%	11.0%	**63.8**%	47.7%	**72.6**%
Cereal Chaff	11.6%	11.7%	1.2%	6.9%	6.9%	1.8%
Detached embryo/ sprout	0.0%	0.6%	0.3%	1.6%	0.7%	2.4%
Pulses	*20.3%*	*26.2%*	*42.6%*	2.8%	*27.6%*	2.4%
Tree/ Shrub	0.0%	0.0%	0.2%	0.0%	0.0%	0.6%
Weed/ Wild	30.2%	19.7%	32.0%	25.0%	14.5%	12.2%
Unidentified/ Indeterminate	8.1%	11.3%	12.7%	0.0%	2.6%	7.9%

Bold indicates those samples where a plant category is clearly dominant (i.e. >50% of all identifications made). *Italic* in pulses indicates those samples with significant proportions of cultivated peas/ beans. All calculations are based on the combined results for flot and heavy residue.

and L. Small-sized fragments of hazel (*Corylus avellana* L.) nutshells (never amounting to more than 1 individual nut) were recovered from both Sites C and L. A small fragment of a walnut (*Juglans regia* L.) nutshell was recovered from pit 5832 (sample 1567, context 5835) in Site C and a single apple (*Malus* sp.) pip was recovered from ditch 5771/sub-group 7393 (sample 1559, context 5770) also in Site C.

A few charred leaf buds of willow (*Salix* spp.) and one possible ash (*Fraxinus excelsior* L.) bud were recovered. These may have been intentionally collected for some purpose (possibly even playfully, as children adore the soft furry buds of certain willows); there was no ash or willow wood identified in charcoal samples from this period that were analysed (see Challinor below). Certainly, willow withies will be stripped of buds before weaving baskets or mats and these could easily have been charred if discarded directly into a hearth.

The weed/wild assemblage recovered for the medieval samples is remarkably consistent between samples from Sites A, C and L. Most of the weed/wild taxa typically occur as weeds of cereal crops and are frequently encountered in archaeobotanical assemblages. The vast majority of these taxa were also encountered in the Iron Age assemblages from the A2. However, there are a few indicators suggesting that the conditions of cultivation have somewhat altered. In particular stinking chamomile (*Anthemis cotula* L.), which is frequent in these medieval samples, often occurs on heavier soils (Kay 1971, 625; Stace 1997, 733) and taxa such as rush (*Juncus* spp.) and sedge (*Carex* spp.) are typical of wet or damp soil conditions. Whether this implies fields that were poorly drained or that new areas, with more clayey soils, were being brought under cultivation, possibly with improved tillage technology, is not clear. Certainly, some have argued that the increasing appearance of stinking chamomile (*Anthemis cotula* L.) in archaeobotanical assemblages may be associated with changing methods of soil tillage from the Roman period onward (eg M Jones 1981). From the Saxon period onwards stinking chamomile is increasingly recovered in samples from English sites, along with rye (*Secale cereale* L.) and free-threshing wheat (*Triticum* spp.). This may suggest the introduction of new ploughing technologies to rural farmers (C J Stevens pers. comm.; see also Stevens 2009).

The 13th/14th century samples indicate a possible broadening of the range of cereal crops cultivated, with significantly more pulses than in the 11th/12th centuries.

Discussion

The central issue for the medieval deposits of charred plant remains is whether deposits sampled, and therefore the plant remains recovered, are primary or secondary. The assemblage associated with SFB sub-group 5347 in Site C is of interest in this respect—does it represent hearth-sweepings or is this material that has been dumped into an otherwise abandoned building? The remains from oven 12583 in Site L can be usefully compared to clarify the significance of the high density of CPR in some of the SFB sub-group 5347 samples.

Although possibly only of specific archaeobotanical interest, two other issues are worth exploring further. First, in terms of the recovery of indicators of spoiled or malted grain—detached embryos or sprouts—there is evidence that has implications not only for the A2, but for the wider recognition of malting products/by-products. Second, many of the samples analysed from the medieval period contain mixtures of cultivated crops and it is worthwhile considering whether these could have been cultivated as maslins (intentionally mixed crops).

SFB 5347: A primary deposit of filtered hearth waste or a midden?

Rich assemblages of charred plant remains were found associated with SFB 5347 (see Table 5.11). This feature also had three separate areas of burning, with a series of distinct ash layers all sealed by a cobbled surface (see above; Fig. 5.12). Certainly at the parallel HS1 site of Northumberland Bottom, located immediately adjacent to the A2 excavations, Davis (2006a) has suggested the relatively low density of charred plant remains recovered from the undercroft of SFB Building 896 as charred detritus accreting beneath the floor boards of the building (ARC-WNB-98: all samples 20L – sample 75 (50% sub-sample) 34.2 seeds/L, sample 76 (100% flot sorted) 4.45 seeds/L and sample 77 (100% flot sorted) 19.55 seeds/L). The relative density of CPR from Northumberland Bottom SFB Building 896 is semi-quantified for grains and pulses, nevertheless using these approximate scores the relative density is fairly low. Samples 582 and 1560 from SFB 5347 at the A2 have similarly low densities of CPR to those samples from SFB Building 896 at Northumberland Bottom. However, the two other samples from SFB 5347 at A2 had approximately 4x (sample 590 – 155.2 seeds/L is 4x Northumberland Bottom's sample 75's 34.2 seeds/L, which is the richest of the three samples from SFB Building 896) to 21x (sample 589 with 739.2 seeds/L) the density of cereal grain/or pulses to that of Northumberland Bottom, so we are clearly dealing with a much richer assemblage for SFB 5347 at A2 Site C. If we also consider the likelihood that not all of the material deposited was charred, and it is likely that some remains were only partially charred, then the rich CPR assemblage recovered from the undercroft of SFB 5347 is unlikely to be merely occasional fragments from hearth sweeping.

The samples analysed from SFB 5347 are some of the richest assemblages recovered on site. They are substantially richer than those from the earlier oven/hearth (oven 12583) from Site L, which had densities of between 3–174 seeds per litre of sediment in the five samples studied from this feature. This comparison usefully suggests that these layers are not merely gradual accumulations of occasional charred remains drifting down between floor boards, but instead are more likely to be intentionally deposited, possibly as levelling deposits between various phases of use of the building, if not merely dumping of debris in an abandoned building, which was later reclaimed (ie the cobbled surface). Indeed, some have suggested that sunken-floor hut-like structures in Kent are frequently used as rubbish pits following their abandonment (Allen 2004, 133).

A consideration of evidence for malting at the A2

Charring is a biased form of preservation of plant remains and there are a multitude of possible interpretations for charred cereal remains, even if they are directly associated with an oven/corndrier (eg van der Veen 1989). A number of ratios can be calculated to explore patterns in the data (eg ibid., 304–5; van der Veen and Jones 2006, 223); however, these calculations do need to be treated with caution and certainly one cannot simply plug in scores of grain, chaff and weed seeds without regard to the specific context from which the data was generated.

Unlike the small quantities of detatched embryos found in Iron Age samples, none of which were swollen, detached embryos, and indeed detached sprouts, are present in the medieval samples. The embryos are often swollen and the coleoptiles clearly have developed rootlets and sprout (technically an acrospire), which is distinctive of germination. There is a consistent pattern of swollen detached embryos and sizeable detached sprouts (coleoptiles), as well as clearly germinated grain. By this period malting/brewing is recorded and it is likely, therefore, that some brewing was occurring. However, even in the richer deposits, only relatively small quantities of detached embryos/sprouts and germinated grain were noted, and most of these come from only two features—SFB 5347 and oven complex 12583. Despite one of these features being an oven, it was not possible to identify any large-scale malting in the medieval period at A2. Clearly these deposits suggest large-scale processing of cereals (especially free-threshing wheat), but, in the absence of substantial quantities of detached embryos/sprouts, germinated grain and/or independent supporting archaeological evidence

(eg malting floor tiles, etc), there is not sufficient evidence to suggest large-scale malting.

Mixed assemblages and the possibility of medieval maslin crops

There are several samples from SFB 5347 that have mixtures of free-threshing wheat (*Triticum* spp.) grain and large-sized pulses (eg *Vicia* spp./*Pisum sativum* L., *Vicia sativa* L., *Vicia faba* L. var. *minor*). Small quantities of rye (*Secale cereale* L.) and barley (*Hordeum* spp.) were also recovered; however these occur in such low numbers that they most likely represent accidental contaminants. Traditionally, peas, beans and vetches were grown as 'break-crops' after cereals to help return 'goodness' (in this case nitrogen) to the soil and for fodder (Barker 1995, 46; Campbell 1994, 75). The SFB deposits varied from moderately abundant to extremely rich archaeobotanical assemblages (see Table 5.11). In this case, it seems likely that the lower-growing pulse crops were not grown with cereals, but were admixtures after harvesting, during parching or even during food preparation. Their presence, however, could imply a system of crop rotation may have been in practice (op. cit. Barker 1995, 46).

Comparison with other archaeobotanical results from Kent

Two sites from the HS1 excavations—Northumberland Bottom (Davis 2006a) and Tollgate (Davis 2006b)—are immediately adjacent to the excavations at A2 and, therefore, are directly comparable.

Saxo-Norman samples from A2 are of similar date to those from HS1 Tollgate (Davis 2006b), but are earlier than the medieval features studied from HS1 Northumberland Bottom (Davis 2006a); nevertheless, their comparison is of interest in terms of any continuity or change of crops between these two periods. Notably, all these deposits are dominated by free-threshing wheat (*Triticum* spp.) and include smaller quantities of rye (*Secale cereale* L.) and barley (*Hordeum* spp.). However, the later A2 samples include broad bean (*Vicia faba* L. var *minor*), common vetch (*Vicia sativa* L.), garden pea (*Pisum sativum* L.) and indeterminate vetch/garden pea (*Vicia* spp./*Pisum sativum* L.), which are especially abundant in SFB 5347 from Site C. The more frequent recovery of large-sized pulses, which are either definite cultivars or likely cultivars, occurs only on the A2 in the 13th/14th century deposits; this may, however, simply reflect the bias toward data from one particular sunken-featured building (SFB 5347). The weed/wild flora, and the abundance of stinking chamomile (*Anthemis cotula* L.), is entirely consistent between the medieval samples from the A2 and the adjacent HS1 samples.

Wood Charcoal *by Dana Challinor*

Eight samples were examined from several medieval phases (methodology is included with the Bronze Age charcoal report in Chapter 2). The 11th/12th century medieval oven 13238 on Site L was fuelled by a diverse range of nine taxa,

Table 5.12: Results of the charcoal analysis from medieval features

	Phase	*c*11th/12th century AD				
	Site	Pond D South		L		
	Feature type	pit		oven		
	Feature	2119		13238		
	Context	2058	2096	13199	13204	13207
	Sample	210	211	1406	1409	1412
	% identified		12.5			6.25
Coniferous						1
Fagus sylvatica L.	beech			+		8
Quercus sp.	oak	++++	266r	+	+	5
Corylus avellana L.	hazel		1			9r
Alnus/Corylus/Carpinus	alder/hazel/hornbeam				+	3
Prunus spinosa L.	blackthorn					1
Prunus cf *avium*	wild cherry					10r
Prunus sp.	cherry type			++ r	++	6r
Maloideae	hawthorn group	+	12r	++ r	++++ r	47r
Cytisus/Ulex	broom/gorse					4
Acer campestre L.	field maple				+	1
Fraxinus excelsior L.	ash					
Sambucus nigra L.	elder					
Indeterminate			3			11
Total		++++	282	++++	++++	106

r= roundwood; h=heartwood; + = <5; ++ = 5-25; +++ = 25-100; ++++ = >100

including a significant quantity of hawthorn group roundwood, along with cherry and blackthorn (Table 5.12). This feature was rich in charcoal and also in charred cereal grain (see Smith, this vol.) indicating a cooking or corn drying function. The other assemblage of this date, from feature 2119 on Pond D South, was dominated by oak charcoal, though most fragments appeared to be from immature roundwood.

Two samples came from a 13th/14th century SFB on Site C, group 5347. Interestingly, both were exceptionally rich in charcoal and dominated by large fragments of beech roundwood. The beech was variable in age but often slow-grown, with some fragments more than 30 years old. Lesser quantities of elder and field maple were also present. The samples came from a rectangular pit/oven in the north-eastern corner, and clearly represent a distinct deposit of spent fuelwood. There were other areas of associated burning in the structure, and evidence for cereal and food remains (see Smith, this vol.). This suggests that the building may have functioned as a bakery, or more likely a kitchen given the quantity of vetch/peas recovered.

That this is the first occurrence of beech in the dataset from the A2 is of interest, since a medieval preference for beechwood has been noted at other, particularly urban, sites (Challinor 2010b). Beech may have been utilised because of pressure on woodland resources, but this is the only feature to be dominated by beech, and it may relate to the specific activities occurring in the SFB. Pit 5087, also of 13th/14th century date from Site C, also produced a fairly diverse assemblage, though with a greater quantity of oak and beech. Analogous to the charcoal in a medieval oven at Northumberland Bottom (Challinor 2006a), these assemblages are fairly typical for the types of fuelwood used in the high medieval period, where firewood was supplied from managed woodland, including a mix of underwood species and trimmings from timber trees (Rackham 2006). This is also likely to have been the case for the earlier sample from Pond D south.

Land snail analysis *by E Stafford*

In the central area of Site C, three spot samples were examined from the fills of denehole 7215. Finds from this feature were medieval, although it is possible that these were residual, and that the feature is later than the medieval occupation.

The lower context (7214) was very abundant in shell dominated by shade-demanding taxa (*C. tridentatum, D. rotundatus,* Clausillidae, Zonitidae, *P. elegans,* with occasional *Vallonia* sp.). The upper context (7213) was also abundant in shell, but in contrast had more open country component (*T. hispida, Monacha* sp., *Vallonia sp., P. muscorum*, zonitids, occasional *D. rotundatus* and *C. tridentatum).* A single spot sample from ditch 5177 produced a poorly preserved assemblage.

Radiocarbon dating of Post-Roman deposits *by Rebecca Nicholson and Tim Allen*

A total of four samples provided radiocarbon values indicating post-Roman dates (Table 5.13). A well (19267) in Pond D north was originally thought to belong with the late Iron Age settlement, although it contained a large collection of later Bronze Age struck flint. However, radiocarbon dates from two samples of blackthorn (*Prunus spinosa*) charcoal from a piece of charred wood found towards the base of this feature indicated use in the post-Roman period (NZA 33018: cal AD 420–560 and NZA 32549: cal AD 400–540).

A posthole (5058) within Site C belonging to a probable structure that contained only scraps of Iron Age pottery contained oats among the charred plant remains, which would be unusual in a prehistoric assemblage. A charred oat grain was therefore submitted for dating, and gave a date in the late Saxon or medieval period (NZA-32798: cal AD 990–1160).

Pit 11137 (Site H) contained the well-preserved skeletons of several animals: a butchered horse skeleton (11143) overlying those of a complete pregnant sow (11145) and a complete adult male dog (11144). A few sherds of pottery suggested a

Table 5.13: Post-Roman radiocarbon dates

Laboratory number	*C14 Age BP*	*Error*	*Site*	*Sample/ skeleton no.*	*Context No.*	*Feature*	*Material*	$\delta^{13}C$ (‰)	*Calendrical date cal AD (95.4% unless stated) Calibrated using OxCal 3.10*
NZA 30149	407	25	H		11145	11137	Mammal bone – pig left calcaneus	-20.6	cal AD 1430–1520 (86.4%); cal AD 1590–1620 (9%)
NZA 32798	969	40	C	Sample 508	5059	5058	Charred oat grain (*Avena* cf. *sativa*) x1	-25.3	cal AD 990–1160
NZA 33018	1556	20	Pond D N.	Sample 2922	19293	19267	Charcoal- blackthorn *(Prunus spinosa)*	-25.3	cal AD 420–560
NZA 32549	1610	20	Pond D N.	Sample 2922	19293	19267	Charcoal- blackthorn *(Prunus spinosa)*	-25.2	cal AD 400–540

medieval date, but were too few to provide a confident date. A calcaneus from the pig was dated the late medieval or early post-medieval period (NZA 30149: cal AD 1430–1520 at 86.4%).

DISCUSSION *by Tim Allen and Alan Hardy*

Evidence for early Saxon activity along the line of the scheme is slight, and is absent for the middle and almost all of the late Saxon periods. For the medieval period, the evidence revealed by this scheme has fleshed out the development of local rural settlement hinted at by recent excavations in the vicinity to the south and west (Hardy and Bell 2001; Askew 2006; Brookes and Harrington 2010; Reynolds 2011), and has been able to address some of the questions raised by them (Hardy and Bell 2001, 20–1). Of particular interest is a suite of sunken-featured buildings, occurring in all the medieval sites, and in all phases of medieval settlement, that appears to belong to a distinct regional architectural style, seen elsewhere in Kent, but—so far—not in any numbers further afield.

The chronology of settlement

As demonstrated in Chapter 4, evidence for occupation along the line of the scheme in the late Roman period was limited to the small cemetery found alongside the major boundary ditch on Site L overlooking the Downs Road dry valley. The settlement in which these people lived was not identified for certain, but later Roman activity was found at Hazells Road in the valley during construction of the HS1, and the settlement was presumably not far away. The only early Saxon activity in the west part of the scheme was the single sunken-featured building found on Site A, again overlooking the dry valley. Structures such as these can date to the early or middle Saxon period, and finds from this example were few, but the latest pottery sherds were in a fabric believed to date from AD 450–650 (see Cotter this vol.). This was a large, well-built example, similar to another single SFB found at Northfleet Sports Ground, west of the villa and more than 100m from the group of SFBs found there (Andrews *et al.* 2011). Sunken-featured buildings are normally found in groups, but isolated examples are occasionally found in the countryside, as at Gravelly Guy, Stanton Harcourt, Oxfordshire (Lambrick and Allen 2004, 217–8). These structures may represent lone dwellings or workplaces constructed in isolated locations, like those later used by charcoal-burners or shepherds. As it lay within 150m of the late Roman settlement, and only 120m from the late Roman cemetery, however, and in sight of both, some form of continuity, or succession of land ownership, remains possible.

Like the example at Northfleet, the Site A SFB may instead have been part of a larger settlement, as it lay close to the southern edge of the excavation, and areas between this and the line of the HS1 remain unexplored. Early Saxon settlements along the Thames are often widely spread, with SFBs dispersed amongst fenced enclosures, posthole longhouses and open areas (Booth *et al.* 2007, 81–99). The areas that were stripped and examined did not locate any other SFBs, so rule out an extensive settlement or village, but an area of posthole alignments, some thought to indicate buildings, and other features was found on the line of the HS1 just to the south. These were dated to the 11th/12th century, but the number of finds was small, and many features were undated. Finds from posthole structures of the early and middle Saxon period are often very sparse, and it remains possible that some of these postholes were earlier than the main period of use. A small Saxon cemetery was found during the HS1 excavations at Springhead, little more than 1km from the building on Site A (Hardy and Bell 2001, 2).

In the absence of clearly middle Saxon activity, however, and in the light of the limited evidence for both the late Roman and early Saxon period, there was clearly no significant settlement continuity from the late Roman to the late Saxon period. It is likely that the Downs Road dry valley, with its metalled Roman road, was used as a natural route from the estuary to the chalk uplands, hence the name, and that this explains some level of intermittent but continuing use or occupation of this area.

At the east end of the scheme, and 4km east of this, a waterhole of 5th century date was found within the excavation area at Pond D north. This feature appears to be isolated, as no other trace of Saxon activity was found either in Pond D North or South. As the waterhole lay only 50m from Roman Watling Street, it is probable that it was dug here to provide water for animals being driven along the road, perhaps between the major villa estates at Cobham to the eat and Northfleet to the north-west. There was also a Saxon cemetery at Claylane Wood east of Singlewell, burials from which were found during the digging of an entrenchment in 1825 (SMR KE1533). Although the precise location of this is not known, it probably lay within 800m of Pond D North, and is likely to indicate Saxon settlement relatively close by.

Settlement trajectory

The medieval settlement sequence along the line of the scheme appears to have been as follows: On land not occupied for a long period, dispersed occupation developed in the late 11th or early 12th century, adopting a mixed farming regime, and disappeared at Site L by the late 12th century. At Pond D South activity continued into the early 13th century, but ceased thereafter. At Site C (equivalent to the HS1 site west of Northumberland Bottom) settlement did not begin quite as early, probably starting during the 12th century, but intensified through the 13th century, and continued until the mid/late 14th century, at which point the settlement was

abandoned. A very similar chronology to that at Sites L and A was found at the medieval settlement east of Downs Road on the HS1, just 50m south-west of Site A (Askew 2006). These sites probably all belonged to one ribbon of settlement alongside Downs Road. The same later 11th and 12th century date range came from a settlement at Pepperhill Lane, Northfleet approximately 2km to the west (Hardy and Bell 2001). West of Downs Road and some 80m further south-west, medieval settlement on the HS1 Hazells road diversion was dated to the 12th and early 13th century, with a second phase of enclosure ditches in the later 13th century.

The form and function of the medieval buildings

Before discussing the settlements, the interpretation of the structures found within them needs to be addressed. Research into post-Roman buildings in rural settlement in recent decades has tended to focus on the early and middle Saxon periods, and in particular upon the ubiquitous *grubenhaus*—the sunken-featured building (see Tipper 2004 for a comprehensive recent review). Attempts have been made to compile a typology of Saxon timber framed halls (see James *et al.* 1984) and a developmental sequence for late Saxon and early medieval sub-manorial domestic plans (Gardiner 2000). However, as more and more new Saxon and early medieval sites have been discovered in recent years, the variety of building designs has tended to render the typologies moribund.

None of the medieval buildings from this project belongs to any of the 'classic' types usually associated with medieval settlement. This is in part due to the local geology, which does not provide abundant good quality building stone, and thus does not aid the survival of medieval buildings, and partly to the low status of the settlements involved. Sites such as these often reveal structures built not by skilled craftsmen to established formulae, but *ad hoc* according to the availability of local materials, individual levels of skill and design. This in part explains the variability within the SFBs excavated on this project, and the lack of exact parallels for some of the features that have been revealed.

Sunken-featured buildings

Sunken-featured buildings as a whole are more typical of Saxon settlement, though later examples are not unknown in urban contexts (Hardy and Bell 2001, 18). Kent is unusual in having a long history of such structures, beginning in the early Roman period (Bennett *et al.* 2008), and continuing beyond the Saxon period well into the medieval period. This type of building was first excavated in the 1990s, and a late 12th to 14th century example at Manston (Boast in Perkins *et al.* 1998, 235–9) was the first of this type to be published, followed in 2004 by a 13th century example at Chestfield, only 4m square and with a pit apparently used as a hearth (Allen 2004, 127–8 and fig. 3). At the time of the A2 excavation these were still rare. Hollows at Pepperhill substation, Northfleet, including one containing a hearth, were discussed as possible SFBs, but were concluded to have been quarries or open features (Hardy and Bell 2001, 18). Within a medieval enclosure excavated during the HS1 works at Northumberland Bottom (and now believed to be part of the A2 Site C settlement) another single example was found (Askew 2006). It is possible that yet another structure of this type was present on the site called West of Downs Road, where two adjacent ovens were found cut into a boundary ditch at the very edge of the excavation area, and apparently lay within a sub-circular working hollow approximately 7m by 6m (Askew 2006, 39 and fig. 24). The ovens, which were 1.2m and 2.5m across, dated to the 12th/early 13th century, but no further details of the cut within which they lay was provided. Recent excavations by Canterbury Archaeological Trust near Monkton in Thanet have uncovered over 30 more such structures dated to the medieval period (http://www.canterburytrust.co.uk/thanearth.html).

Several more examples were published in 2009, together with a summary of the distribution and date range of the type, and a discussion of their function (Schuster and Stevens 2009, 249–51 and fig. 5.1). Some of the most important evidence from the excavation at Fulston Manor and at Star Lane was the survival of clay walls to a considerable height, and at Fulston Manor the survival of holes for a wattle superstructure, together with vertical stones at the mouth of the oven flue (Dinwiddy and Schuster 2009; Powell *et al.* 2009). In other respects the construction of these large circular ovens was identical to the 11th/12th century structures found on Sites L and Pond D South, suggesting that these too were domed ovens rather than hearths, although holes for the wattle superstructure were not found. As discussed further below, this has important implications for the functions of these buildings.

Origins

The early examples (12583 and 2158) belong to a type that may have its origins in pre-Conquest England. Early and middle Saxon SFBs showing evidence of internal hearths are fairly common (Tipper 2004, 89–92), although such evidence is rarely more substantial than traces of reddened subsoil, usually in the centre of the SFB pit. In some instances (particularly at West Stow), these were alternatively interpreted as hearth bases that had once occupied raised platforms over suspended floors (see West 1985, fig. 81). More importantly, at Fladbury in Worcestershire a late Saxon sunken-featured building was found containing what was interpreted as the base of a domed oven (Peacock 1967, 123–4; Wilson and Hurst 1968).

While the combination of SFB pit and large clay lined hearth/oven base may be native in origin, it could also have continental roots, possibly even

from as far as central northern Europe. The excavations of Tilleda Palace in the Harz Mountains revealed the juxtaposition of several 10th-century sunken-featured buildings with the main timber- or stone-built church and palatial halls (Grimm 1968, figs 22b and 24b). The sunken-featured buildings were service buildings or servants quarters, and some contained hearths or ovens, almost always situated in their north-west corners. By contrast SFBs in north-west Europe have rarely revealed any internal remains of a hearth (Chapelot and Fossier 1985, fig. 38).

The development of the sunken-featured buildings found on the A2 scheme and the adjacent HS1

In their discussion of medieval sunken-featured buildings, Schuster and Stevens illustrated five examples from other sites in Kent, ranging in size from little over 3m square at Star Lane to 7.4m by 4.8m at Fulston Manor, Sittingbourne (Schuster and Stevens 2009, fig. 5.2). The last of these, which was by far the largest, sat within the manorial enclosure, and was interpreted as a bakehouse/brewhouse. Given their numbers at Monkton, however, it was suggested that they might have had various functions connected with the preparation of food, and could be interpreted as bakeries or kitchens cum brewhouses (ibid., 251). The five illustrated structures give the impression of a fairly unchanging layout that appears not to alter appreciably from the late 11th century to the 14th century.

A total of six structures sharing the common factors of a sunken floor and an internal hearth and or oven were found on the A2, spanning a date range from the late 11th century to the early 14th century (Fig. 5.37). To these should be added a single example (hollow 896) from the settlement south of Site C on the HS1 (Askew 2006, 40–1 and fig. 29), and possibly another, less clearly-defined, from the settlement west of Downs Road (ibid., 39 and fig. 27). Both of the examples from the HS1 can be accommodated within the model suggested by Schuster and Stevens, but the examples from the A2 have more variety, and show changes of the basic model over time.

Structures 12583 in Site L, and 2158 in Pond D south both date to the late 11th/12th century, and display the footprint of a near square sunken base, within which is a large circular oven or hearth base close to, or hard against, one side. In addition both have some evidence for a small additional hearth or oven alongside the main one. Both structures are small, 12583 having an area of only 18m², and 1258 an area of *c* 20m². Neither structure shows any evidence for a superstructure, although in both cases the floor layers that accumulated during their use would seem to imply that they were roofed. Both of these are similar to the type described and illustrated by Schuster and Stevens (2009).

Dating to the late 12th century, Structures 6280 and 15035—both in Site C—are slightly larger, being respectively nearly 26m² and 22m² in area. The internal arrangements of these structures were, however, different from those of the preceding phase, and from one another. There was a large sub-circular raised platform with a flint surface in 6280, but if this was intended to be the base of another oven, it was never completed, as there was virtually no burning associated with it. In place of the second hearth or oven, there was an underground double-chambered pit, the burning associated with which was slight, suggesting a lower temperature than in the earlier ovens, and perhaps the use of a slow-burning fuel such as charcoal. Structure 15035 had a fair-sized hearth area, but no hearth structure, and a small rectangular oven protruding from one end of the structure, though the stratigraphic relationship of the oven and building is uncertain. The position of the hearth would have made joint operation of hearth and oven virtually impossible, and it is more likely that the hearth came after the oven Again, evidence that might relate to a superstructure is virtually absent. Structure 15035 contained a few shallow postholes that might relate to a superstructure, and Structure 6280 revealed just one.

The possible example West of Downs Road was only investigated by two trenches at right angles, so its shape and overall character was not clearly established, and it remains uncertain whether this was really a structure of the same type. If it was, it appears to have been much larger in every respect; the hollow measured approximately 7m by 6m, and contained two much larger ovens at one end, one with a diameter of 2.6m, the other 1.2m across. Its internal arrangements conform broadly to the type described by Schuster and Stevens.

The final two structures from the A2, 5347 and 5950, both in Site C and both dating to the late 13th century, have more regular and longer sunken floors (Fig. 5.37). This was also the case with the single example from the HS1 enclosure just south of Site C, hollow 896, which also dated to the late 13th or early 14th century (Askew 2006, 41 and fig. 29). Two of these three, 5347 and 896, were considerably larger than the earlier A2 examples, with areas of 32m² and 28m² respectively. In both these cases, the sunken structure was still the footprint of a stand-alone building. In contrast, Structure 5950 was much smaller, with an area of only 19m², but may have been an annex to a larger beam-slot and posthole structure (5909) to the north-west (Fig. 5.14).

In both 5347 and 5950 there is evidence (in the form of areas of burnt subsoil) for the presence of a central fireplace (or a raised brazier). In the case of Structure 5347, this 'hearth' appears to have moved around during the life of the building, and was accompanied by a rectangular pit, not unlike that adjacent to hearth 2060 within structure 2158. Possibly this was an oven or cooking pit of some sort. In Structure 5950 only a small patch of reddening of the base gives any clue to the possible site of a brazier. In neither structure was there evidence of a purpose-built hearth base as was present in the earliest structures. In 896, in contrast,

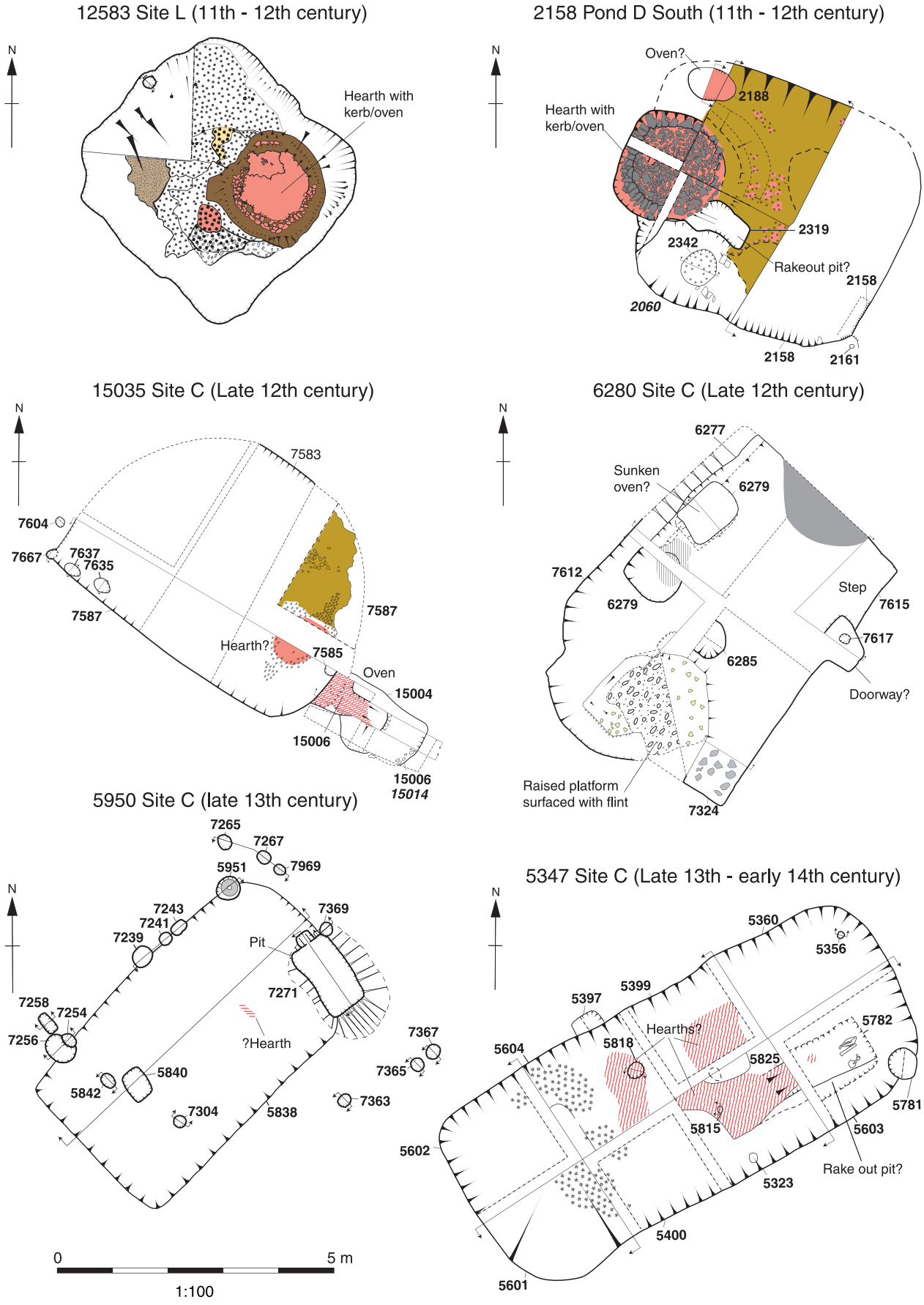


Fig. 5.37 Plan showing all sunken-featured buildings from the A2 excavations

there was a large oven of similar dimensions to that West of Downs Road, and adjacent a smaller burnt feature. In the north-east corner of the building was an oval pit, possibly the firepit or flue for another oven (Askew 2006, 40–1 and fig. 29). The arrangement at the south end matches very closely that found in the earliest A2 structures, and the five illustrated by Schuster and Stevens (2009).

What is clear from this is that, while the type of sunken-floored structure described by Schuster and Stevens is undoubtedly the most common found so far, the examples from Site C indicate that there is considerable variety in internal arrangements, and probably a correspondingly wide range of possible functions for this basic building type.

Superstructure

None of the A2 examples has good evidence for the superstructure either within the sunken area or immediately outside. Only structure 5950 has a group of postholes that could perhaps have held timber uprights supporting a wall and/or roof, and these could instead belong to 5909, the building defined by beam-slots and postholes adjacent. The degree of truncation of the ground surface (by later ploughing) must always be taken into account, but given the substantial nature of posts associated with Saxon SFBs, it does not seem likely that all trace of postholes would have been destroyed, and alternative explanations must be sought.

It has already been argued that the surviving hearth bases were originally domed ovens, and some such ovens were external structures, not within buildings, such as the stone examples of the 13th/14th century at West Cotton, Northants. With clay domes, however, ovens would have not been proof against heavy rain, and some form of roof would most likely have been necessary. The survival of internal floor layers also strongly indicates that these buildings were roofed. If (less probably) these structures were not ovens but hearths, they would still have needed protection from the elements, and would have constituted a significant fire-risk, needing some sort of chimney. Although house chimneys (as opposed to louvres) first appear in stone in high-status buildings in the later 12th century, the existence of chimneys as constructions made of wood and clay is also documented (Wood 1965, 289).

If there was a superstructure around and over the SFB pit, it need not necessarily have followed the edges of the sunken area, although it is unlikely to have been much larger; an unsupported span of more than 5m would be very unlikely. Only Structure 5950—a possible sunken annex to Structure 5909—revealed possible central postholes that could have supported a ridged roof. In the absence of any postholes or beam-slots, the use of 'mass'-built walls (sometimes known as 'cob'), constructed of mixed top- and sub-soil, bonded sometimes with straw and animal dung, is more likely. It would be a cheap and fireproof material, and could be raised to wall plate height, supporting a timber and thatch roof. A local chalk-based variant of this is 'clunch', as seen in the medieval sunken-featured building on Plateau 1 at Monkton, Thanet (http://www.canterburytrust.co.uk/thanearth.html#september2). Such material, when degraded or eroded through time or plough action, can leave no discernible trace in the archaeological record. Medieval structures built using this material have been found with walls standing to a considerable height; the best-preserved example from the 12th century found in England was at Wallingford, Oxfordshire, where the cob walls survived intact to a height of up to 1.6m buried within the later rampart of the castle (Chapelot and Fossier 1985, 255–6 and fig. 84).

Sunken-floored structures such as these could have provided most of the material for the superstructure directly from their excavation, and by being sunken into the ground, would have reduced the height needed for the walls (Allen 2009). This would have reduced the area of wall exposed to the elements, and so increased their longevity, as well as their stability. This is an economic means of building using the materials to hand. On the analogy of more recent examples of such walls, there would presumably have been horizontal beams along the tops of the walls on which to rest the roof. These were probably joined together into a frame, into which the king posts supporting the apex could have been set, and on which the principal rafters would have rested. Other, less sophisticated possibilities include half-cruck frames, perhaps resting on slabs set within the clunch walls, but in reality the options would have been very wide, depending upon how long the buildings were expected to last.

One way to measure this is to consider evidence for rebuilding and repair. Since the details of the construction of these buildings are unclear, evidence for repair or alteration is difficult to pin down, but we can estimate longevity from the associated internal structures. Building 12583 in Site L has a succession of floor layers, and the hearth was very highly fired, while in building 2158 the large hearth or oven was rebuilt three times, each phase showing considerable signs of use, and there were a number of successive floor layers. Leaving aside the associated pottery, the investment in rebuilding the oven alone suggests that building 2158 was in use for a considerable period of time. Estimates of 50–100 years seem reasonable.

Although these buildings were almost certainly roofed, that does not mean that they were completely enclosed. While there is evidence for an entrance in the form of a step on the south-east side of structure 6280 at the A2, and several of the examples illustrated by Schuster and Stevens (2009) also have entrances (and sometimes porches), the need both for light and for air circulation would have been considerable, and it is possible that the upper part of one or both end

walls was left open to provide the necessary air circulation and more light.

Function

For some of the A2 structures, the large proportion of the floor area occupied by the oven (over 20% in the case of structure 12583) makes interpretation as a house difficult by modern standards. If the structure in the corner were an oven, then the ashes may well have been raked out while still hot, and as these covered most of the floor, it is unlikely that there were many other internal fittings in this building. Nevertheless, it is still possible that these were dwellings. Single-roomed peasant cottages average around 17.5m² internally (Beresford and Hurst 1971), and a stone example dating as late as the 14th century with an internal floor area of only 13.5m² was excavated at Dean Court Farm in Oxfordshire (Allen 1994, 258–9, fig. 25 and 423). SFB 1258 had a sunken area of *c* 20m², 12583 had a sunken area of 18m², and even SFB 12787 an area of 15–16m². Nevertheless, if the smaller second hearth or oven in 1258 was contemporary, this would have reduced the floor area in this structure even more, and it is perhaps more likely that the double oven or hearth and oven type were specialist structures.

As long ago as 1967 Peacock recognised the incongruity of a substantial oven in a rudimentary structure and suggested that it might have been a bakery belonging to the residence of the Bishop of Winchester, thought to have existed in the vicinity (Peacock 1967, 124). From the absence of any industrial debris in the published examples, Schuster and Stevens (2009, 251) concluded that the function of this type of structure was not in any way related to industrial processes, and that they were probably 'bakeries and/or kitchens cum brewhouses'. Except in the case of Fulston Manor, most of these structures did not seem to be attached or closely associated in settlement layout to any 'hall' or dwelling, leading to the suggestion that they represent communal bakehouses/kitchens serving several households within a community. As Figure 5.38 shows, the early SFBs from this project fit well in terms of size and layout alongside the Star Lane and Leybourne examples.

Amongst the examples from the A2 and the adjacent HS1, three (the single examples from Sites L, Pond D south and that from the HS1 enclosure south of Site C), are of this type. The description of the structure at West of Downs Road suggests that the ovens were successive rather than contempo-

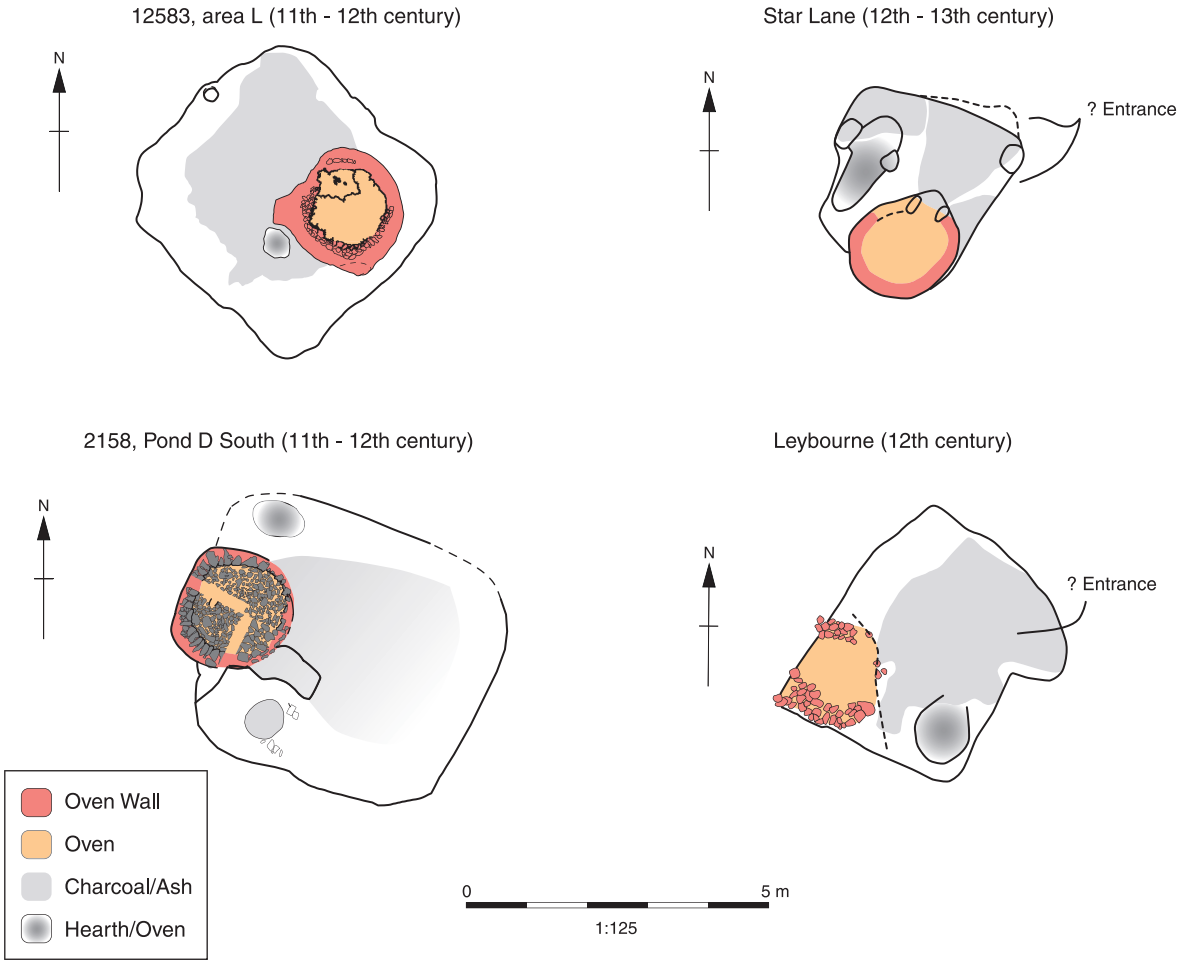


Fig. 5.38 Plan comparing the 11th/12th century SFBs to others in Kent

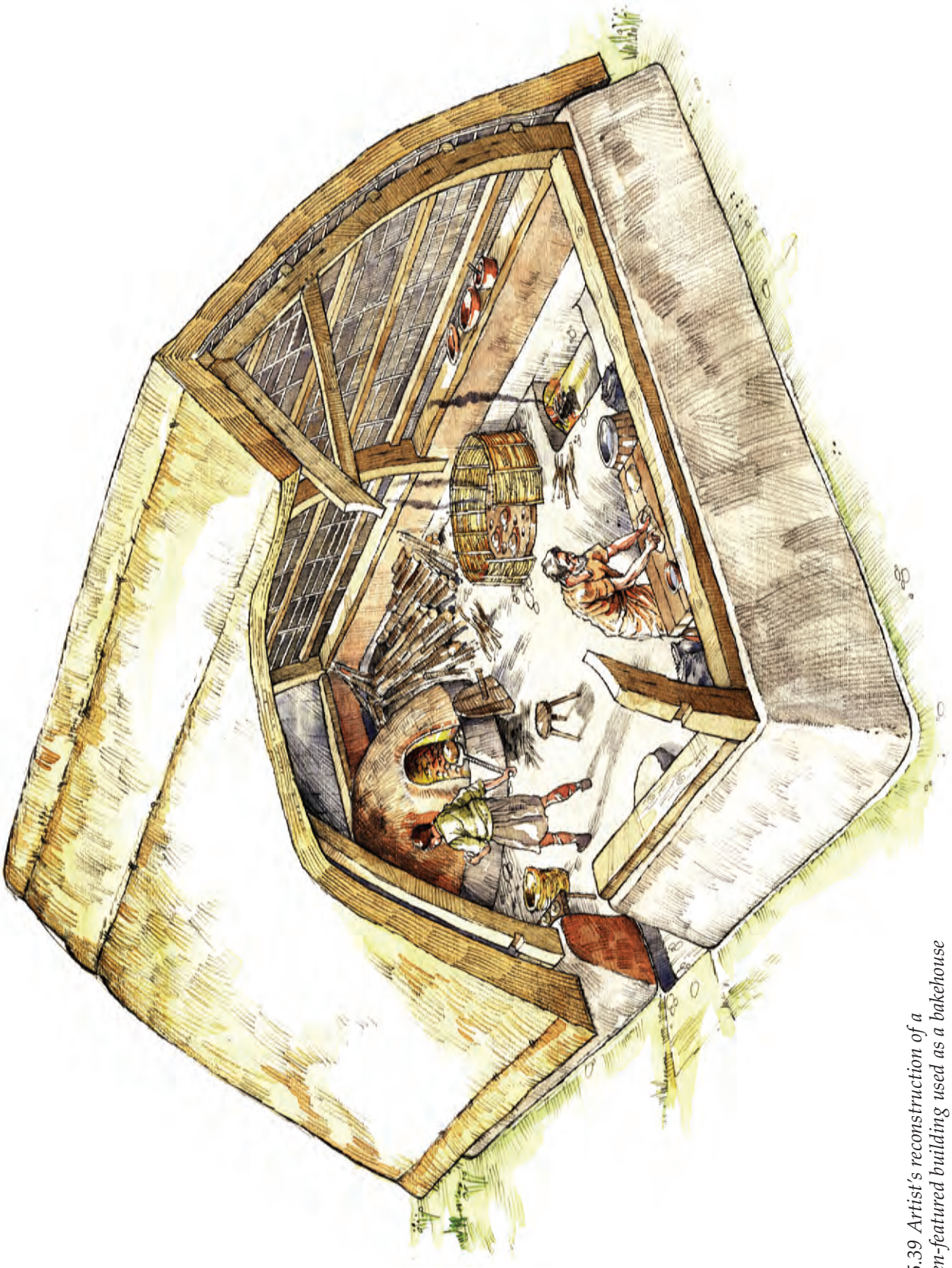


Fig. 5.39 Artist's reconstruction of a sunken-featured building used as a bakehouse

rary, but the very large size of the later oven also suggests use for a sizeable community, or for a high status establishment. As would be expected if this interpretation were correct, there was one such structure on all of the identified medieval settlements, except for Site C prior to the later 13th century. Given that the other examples demonstrate the survival of this type virtually unchanged over 250 years, it is most likely that an earlier bakehouse remains unexcavated in the area between Site C and the enclosure on the HS1 to the south. Figure 5.39 presents an artist's impression of a sunken-featured building being used as a bakehouse.

The presence of four sunken-featured buildings on Site C (five counting the HS1 example), some of which clearly overlapped in date, made interpretation of all such buildings as bakehouses/brewhouses inherently implausible. This has only been strengthened by the recent discovery of many similar structures ('more than 30') within the context of a sizeable, but by no means obviously high status, rural settlement at Monkton on the Isle of Thanet. Schuster and Stevens recognised this when they interpreted these buildings as 'kitchens cum bakehouses/brewhouses' (2009, 251). Kitchens were commonly separate buildings on higher-status rural settlements until the 14th century because of the risk of fire, and there is no reason why this might not also have applied on lower-status rural sites, especially where houses were constructed in wood. Some of the remaining examples could be interpreted as such, although the only example where there is good evidence for a different type of building adjacent, structure 5950, had little evidence of burning within it, and certainly not enough to justify designation as a kitchen.

Regarding brewing, some sprouted grains were found amongst the charred plant remains in structures 12583 and 5347, but the numbers were not sufficient to provide unequivocal evidence for malting (see Smith this vol.). In terms of structural evidence, malting kilns require a lower temperature than ovens, and a flue to draw in the air, and the double-chambered pit within SFB 6280, with its different pattern of burning, might be better interpreted as a malting kiln than a bread oven. Despite its similar size to the large ovens in 12583 and 2158, and the layer of flints upon it, the raised platform in structure 6280 showed no signs of sustained burning, and could have had other uses. Rather than being an unfinished oven, it might for instance have been a platform upon which to place the mash tub for brewing, especially if the large flints found around it did belong to a stone kerb or low wall (a smaller and less elaborate version of the vat stand at Furnells Manor, Raunds (Audouy and Chapman 2009, fig. 5.45). There was no ceramic evidence to support this, but adjacent to SFB 5950, pit 5776 contained a virtually complete bunghole cistern that Cotter (this vol.) suggested was used for brewing, together with a tall jug. This SFB may perhaps have been a brewhouse, not a kitchen.

It is also possible that some of the sunken-floored structures on Site C were themselves domestic buildings, or (in the case of 5950) parts of them. The combination of large oven and limited internal space was not present in these other examples, and this may have been a local form of peasant cottage using the cheapest materials that came easily to hand.

Other specialised uses should, however, also be considered. The significant presence of wide bowls on Site L has been noted by Cotter (this vol.) who remarked that this has often been taken as evidence for dairying practices, although such bowls may also have been used as grain-measures, or 'cantels'. There was no evidence for 'industrial' debris from any of the six SFB buildings, but agricultural uses are possible; crop-drying was suggested for the large ovens found along the HS1 both at Northumberland Bottom (SFB 896) and West of Downs Road (Askew 2006, 39 and 41), because of the large quantities of charred cereal grains and chaff recovered. Similarly large quantities of charred cereals were recovered from SFB 12583 on Site L, but, as Schuster and Stevens have argued for similar structures elsewhere, these can have been used to test the temperature of an oven, as a protective base layer for loaves, or as fuel (2009, 249–51). Certainly crop-processing would have been an important activity in these settlements, but it is uncertain whether large ovens of this shape would have been well-suited for crop-drying, rather than as communal bread ovens. The layout of the Northumberland Bottom SFB in particular suggests that it, like the structures on Sites L and Pond D South, was a bakehouse. Arrangements within SFB 5347 were much less clear, and it remains possible that the deposits rich in charred plant remains do relate to the use of this structure for the processing of crops, not only cereals but also pulses and vetch.

The wider context of sunken-featured buildings

While the SFBs discovered along the route share common characteristics, and some show many striking similarities to others across the county, examination of them in the context and chronology of the settlements in which they are situated has distinguished a variety of functions for them. They all lie within complexes of small enclosures or paddocks, and those in Site C were clearly integral parts of a developing settlement practising a mixed farming regime. It is therefore not surprising that these buildings fulfilled individual and varied functions.

Re-examination of other local excavations of the medieval period has also suggested that further examples have been found previously, but have not always been recognised. On the edge of the medieval settlement at Pepperhill Lane, Northfleet, a subcircular bed of heavily burnt clay was partly exposed, in association with a curving beamslot and a few postholes, phased (by a limited pottery assemblage) to the late 11th–12th century (Hardy

and Bell 2001, 8–11). Interpreted as the base of a possible external oven, this may also have been a similar structure.

Outside Kent relatively few sunken-floored structures are known elsewhere in south-east England in the late Saxon and medieval periods. The late Saxon example at Fladbury in Worcestershire is a rare example, and possibly owes its structural form to the immediate topography—it appears to have been deliberately situated within a hollow left by a partly-filled Roman ditch (Peacock 1967, 123). A sunken-floored rectangular building measuring 4m by 2m and 0.3m deep, and described as a 'hut', was found at Tetsworth in Oxfordshire (Robinson 1974, 55–6 and fig. 4). This had no accompanying postholes, and was dated to the later 12th century (ibid. 56). Stones that may represent foundations were found along the west and south sides. As the description indicates, such buildings were not considered significant, and may often have been overlooked or (when only partially investigated) interpreted as 'working hollows' of various sorts. Another example, structure 5196 from Barford Road on the Great Barford bypass, was also first constructed in the 12th century (Timby *et al.* 2007, 188 and fig. 6.18). This was at least 3.5m x 3.4m across and 0.15m deep, and had a burnt area and a layer of ash in the centre; it may have been associated with metalworking, although the evidence was not conclusive (ibid., 188–193). There were several large postholes around the edge, but some of these were removed when a second clay floor was laid, without apparently affecting the structure, so may not have been to support the roof. Two posts at the north end of the east side may indicate a doorway (ibid., 188 and 210). It is therefore likely that such structures were more widespread than has previously been recognised. Nevertheless, the difference between the numbers now identified in Kent and in other areas is striking, and suggests that in the medieval period this was a type of construction particularly favoured in Kent.

Other possible buildings

Structure 5909 is represented by an arrangement of pits, possible postholes and short gullies that seem to define two sides of a rectangle, with the long side facing west and including a gap of *c* 1.5m that could represent an entranceway. The lack of regularity and precision in the arrangement of these features is notable. The intention in this instance may have been to build a timber-framed structure set on sill beams, resting on the ground surface. If the ground surface was sloping NE-SW, then the south end of the building may have had to be raised on pads, each set into a suitably sized pit or gully along the wall line. The material available for the pads may well have been only the left-over irregularly-shaped parts of the trees that had already been divested of their straight timber. There would be no need to shape these 'pad' timbers into neatly squared baulks; as long as they were roughly faced and levelled on their upper surface where they carried the sills, that would suffice for the superstructure. Alternatively, stones could have been used for the pads, hence the need for holes of varying lengths and depths. Structure 15090 is even more fragmentary, and the difficulty of determining whether the linear features are gullies or slots makes this very difficult to interpret. Nevertheless, it is possible that another such building is represented.

Clearly, ad hoc solutions to building problems are by nature unique, but one nearby example shows some similar characteristics. At the Pepperhill Substation (Hardy and Bell 2001) the very ephemeral traces of a two-cell house survived as very shallow postholes and irregular short gullies, together defining the building footprint (ibid. 10–11 and figs 3 & 6). Here also a sub-rectangular hollow was located close by the structure, although it produced no finds and was thought to be a quarry for the required wall-daub, rather than a structural element as is Structure 5950.

Settlement organisation

Two main periods of medieval activity were identified from the stratigraphy and the artefactual assemblages, the first from the late 11th to the late 12th centuries, the second from the 13th to the mid-14th century. The first period comprises three small sites along the length of the scheme, but the second is focused in Site C (see below).

The 11th/12th centuries

Sites L and A

In Site A, the proximity of the late 11th century pit and other scattered activity to the posthole buildings and other evidence found during the HS1 work less than 50m to the south-west (Askew 2006, 38) strongly indicates that it belonged to the same settlement. The features belonging to the medieval occupation in Site L were nearly 200m to the north, but may also have been part of a ribbon of settlement along Downs Road at this time. Only the eastern part of this occupation lay within the excavation, ditches continuing both to the west and to the north-west. All of the medieval features lay on the south-west side of earlier boundary ditch 13161, and indeed some 10m from it. There was no evidence from the ditch fills that this was still open in the medieval period, and in the access road at the very north end of the site the ditch fills were cut by a pit containing a silver penny of Edward III. It is however possible that a bank had been thrown up on the south-west side of the ditch, and this may still have been an upstanding landscape feature in the 11th century.

This possibility is strengthened by the alignment of the principal medieval boundary ditch on Site L, which ran parallel to the line of 13161 some 20–23m

to its west, ending on the south just short of one of the Roman field ditches running at right angles downhill to the south-west. The fact that the ditch ended at this point might even suggest that the field boundaries established in the Roman period had survived, or been maintained, above ground throughout the Saxon period. The medieval ditch was recut several times, and was crossed towards the north end by another ditch running downslope.

The area defined by the putative bank of 13161 and the parallel ditch to its west, and by the boundaries running downslope, contained two sub-square features of similar surface area and shape, one towards either end. The more southerly of these, 12583, was fully excavated, and proved to be a sunken-floored structure 4.4m long and 4m wide containing a large oven and a smaller hearth or oven adjacent (see Fig. 5.37). With hindsight, it is likely that the other feature 12787, although smaller (just under 4m across), less regular in plan and more poorly preserved, was another similar structure, but it was only partly investigated, and this did not reveal any clear evidence of a purpose-built hearth/oven base (see above, Figs 5.4–5). As Site L was the first area to be excavated, and 12583 was the first sunken-floored structure to be found on the site, its potential was not recognised, and as it contained few finds it was not investigated further.

As regards date and function, neither 12583 nor 12787 contained many finds in their backfill, and chronologically they were indistinguishable. As with early Saxon SFBs, however, the backfill need not reflect the activities that took place within or near to the structure during its life (see Tipper 2004, 184). The absence in 12787 of the rakeout deposits, which covered much of the floor in 12583, may indicate that the internal arrangements in 12787 were not the same; the sunken-floored structures in Site C had a variety of internal features (see Fig. 5.37), showing that not all of these structures should be considered as necessarily performing the same functions. The survival of a succession of occupation spreads across much of the floor of this structure suggests that the structure must have been covered, otherwise neither the oven nor the occupation layers would have survived.

Structure 12583 was isolated, whereas 12787 was surrounded by a scatter of postholes and gullies. The substantial quantities of food waste and pottery in the fills of these features, as well as the common occurrence of structural fired clay, suggests that 12787 was close to a centre of domestic activity. If these two structures were not domestic buildings, then houses of some other type need to be sought. No structural evidence in the form of a coherent plan of postholes or beam-slots like that on the HS1 site to the south was revealed, but something of this type may have lain just beyond the limits of the excavation.

The main oven within structure 12583 was substantial, raising the possibility that it was constructed to serve the uses of more than a single household, or perhaps, as at Fulston Manor (Dinwiddy and Schuster 2009), a high status household. The pottery assemblage from the area does not contain any unusual types or quantities of exotic wares, although Cotter stresses (this vol.) that at this time there is no reason to think that the social status of a household was conventionally expressed by the pottery it used. Cotter (this vol.) noted a high number of bowls in the pottery assemblage from this site, and noted that these are sometimes interpreted as grain measures (cantels). This might support interpretation as a bakehouse serving several households, although the number of bowls was not in fact very large.

Only the south-eastern and north-eastern limits of the settlement were revealed within the excavations. No medieval activity was identified in the adjacent part of Site A to the south, and only a single large pit containing a medieval coin was observed on the line of the access road to the north, but the west end of both of these was buried under colluvium that was not removed. To the north-west in particular, the apparent blank in the access road need not mark the limit of settlement. If the settlement were of similar size to that at Downs Road to the south, however, then it might have been confined south of the access road. Even if so, it remains possible that the 'bakehouse' in Site L might have been serving both the Site L and the Downs Road settlement only 200m further south.

The charred plant remains suggest an emphasis on cereal cultivation, though these may simply relate to the function of the bakehouse. The presence of marine shells in quantity suggest that the settlement had access to the coast, and the pottery also suggests that they looked to the Thames estuary and across to Essex for commodities.

Pond D South

The most easterly concentration of activity was at Pond D south, situated 50m to the south of Watling Street. The focus of revealed activity was again an SFB (2158; see Figs 5.21 and 5.37), whose long axis was parallel to the road, and which was *c* 5m long by 4.4m wide. This also had a large circular oven base (2060) at one end of the SFB, but in this instance clearly showing three phases of use. The building may have been used for a century or more, from the late 11th century to the end of the 12th or early 13th century.

In this case the oven protruded slightly beyond the end of the sunken structure, and had a pronounced lip around the part within the sunken floor. As with the fired structure within 12583, there were flint nodules incorporated into the base and the lip, but no traces of any wattle structure within the successive clay lips, and no collapsed wattle structure overlying the latest phase. Because of its similarity to the structure in Site L, however, it is probable that this too was an oven. Alongside this, the burnt base and sides of a probable second, very small oven were found.

As with SFB 12583, there were no postholes or stakeholes to clarify the form or character of any superstructure, but again the survival of the ovens, and the presence of several floor layers, including thin layers of trampled ash and charcoal, suggests that the structure was roofed.

Domestic debris was scarce in the infill of the feature, but relatively abundant in a group of intercutting pits just to the south-east. Sherds of a single vessel were found in both the structure and the pits, demonstrating their contemporaneity. The pottery included bowls like those on Site L, and one very large cooking pot, which Cotter (this vol.) suggested must have been used for communal food preparation. The size of the oven in SFB 12583 in Site L led to the suggestion that it might have served several households, and this pot might be interpreted as supporting a similar communal function for this SFB. In this case, however, the location of the site right next to the A2 might indicate that the settlement served as a wayside eating-house, much as the Cobham Services do now, in addition to any function as a bakehouse for the settlement itself.

The oven and pits were set within a partially revealed network of small enclosure gullies and ditches (Fig. 5.21). These were too small to have been fields, though they might well have been paddocks or garden plots. The probable pond might also have been used to provide a watering-stop for travellers using the A2, and the horses or oxen tethered and fed in the adjacent enclosures while their owners ate.

While the excavation appeared to have located the eastern limit of the settlement, it is not clear how far it extended to the west, nor if there were further structures to the north immediately adjacent to the A2. To the south, only an isolated hearth (feature 419) was found close to this site within the line of the HS1 (Bull 2006, 22). Fourteen sherds of medieval shelly ware came from this, indicating contemporaneity with the settlement at Pond D South.

Occupation on Site C

The medieval activity on Site C was clearly a continuation of the settlement excavated to the south as part of the HS1 works (Northumberland Bottom; Askew 2006). Medieval activity may have started earlier in the area of the A2 excavations, where a radiocarbon date clearly showed activity no later than the mid 12th century (cal AD 990–1160; NZA 32798). A complete but broken upper rotary quern (Fig 5.33), probably of late Saxon date, was found reused in a small pit/posthole belonging to structure 5950, apparently serving as a post-pad. The rynd chases in the upper surface of the stone suggest it was originally from a horizontal watermill (see Shaffrey this vol.). The nearest known Saxon horizontal mill was 2km to the north-west, at Northfleet, which was demolished in the early 8th century (Andrews *et al.* 2011). There is no reason why the stone could not have originally come from that mill, but does not indicate an earlier focus of activity on Site C.

Apart from the single radiocarbon date, there was relatively little evidence for 12th century occupation, and the pottery that was found probably belongs to the later 12th century (see Cotter this vol.). The first phase of activity at Northumberland Bottom was dated to the 12th/early 13th century. Although the enclosure ditch here was clearly still filling up in the early 13th century, it is most likely that significant activity began in the later 12th century both here and on Site C. Activity at Northumberland Bottom army camp was located to the west of the holloway, a continuation of which was picked up to the north-east in the HS1 excavation (Askew 2006, fig. 2).

The enclosures on Site C lay either side of the holloway, and none of the medieval ditches was crossed by it. This strongly suggests that the holloway was medieval or earlier in origin. The dating from its infilling shows that it continued in use beyond the end of the life of the settlement, probably in the mid-14th century.

Although curving, the holloway did not change direction over short distances, so it would have been possible to lay out a system of regular square or rectangular enclosures roughly at right angles on either side. This clearly did not happen. The settlement appears to have been restricted by boundary ditches on a roughly north-south alignment on the east and west, and by the oblique line of the holloway between, creating triangular areas of land either side. Two long ditches, one west and one east of the holloway, did define major north-east boundaries roughly at right angles to the holloway, and the smaller settlement enclosures appear to have developed using combinations of ditches following both the north-south and north-east alignments.

This suggests that the settlement developed organically. It is not clear how the north-south boundaries were established; they did not apparently belong to existing major landscape divisions, and they did not continue much further north or south. The western boundary was roughly in line with a boundary extending north from the enclosure on the HS1, but this was part of the later 13th century phase there, and ended before the north edge of the HS1 excavation. No continuation of this ditch was picked up in the A2 Activity Park excavation 90m to the north. The eastern boundary did not continue south of the holloway in the HS1 excavated area, although it is possible that the holloway itself marked the eastern edge of medieval settlement here.

To the north, a ditch in two lengths did continue on the line of the eastern boundary ditches in the A2 Activity Park excavations, although this was tentatively dated to the Iron Age despite the lack of any finds (Dawkes 2010, fig. 10). There was a gap of at least 20m between the A2 boundary and the more southerly of these ditches, and they ended after another 50m (ibid. fig. 8). Some 1m beyond this another ditch returned south-westwards towards a middle Bronze Age ring ditch, and beyond this the termini of two further ditches were

revealed, one continuing south-west, the other running SSW. Although all of these ditches were provisionally dated as either prehistoric or Roman (Dawkes 2010, figs. 8 and 17), they run parallel to medieval ditches within the Site C settlement, and may represent a field attached to the medieval settlement, whose limit on the north was marked by a prehistoric barrow.

The initial focus of the Site C settlement may well have been the sub-rectangular ditched enclosure found on the HS1. This had an entrance to the north-east facing onto the trackway, and the position of the gateposts, and the fact that internal ditches tended to end short of it, suggests that it had an internal bank. Internal activity was limited, but the enclosure appears to have been divided by an east-west ditch and a north-south one, creating an inner enclosure on the south, inside which was a further north-south ditch and a line of postholes. In the absence of buildings, and because of the small numbers of finds, the enclosure was interpreted as a stock enclosure (ibid., 40). The quantity of finds may, however, have been a reflection of the level of excavation undertaken, which was limited.

Site C also displayed settlement evidence of this earlier medieval period. The western north-south boundary ditch, plus several NE-SW ditches, appear to have defined small enclosures or paddocks along the west side of the holloway, while Structure 5724, with the evidence of burning and charcoal, suggests craft or industrial activity (see Fig. 5.9). The structure appears to suggest that the division between two of these enclosures went out of use early on, although it is conceivable that the structure was earlier, and that material associated with it only went into the ditch once this was no longer being maintained. To the south, a further group of possible slots and postholes (Structure 7562; see Fig. 5.17), may be contemporary, for although some of the artefactual material suggests a later date, this comes from two pits (7608 and 5087) which may be later than the structure 7562. Less evidence of activity of this phase was recovered east of the holloway, and this is therefore difficult to interpret. If the two lengths of ditch aligned just east of south-north are genuinely of this date, these follow the same alignment as the undated eastern boundary of the settlement, suggesting that the eastern boundary was also laid out from the start, and that this was an open area divided into several fields.

No domestic focus of this period has been definitely identified on the site, although it is likely that one existed. Almost a third of the settlement remains uninvestigated between Site C and the medieval enclosure at Northumberland Bottom, and the south end of the Northumberland Bottom enclosure was also not exposed.

Medieval occupation clearly intensified on the north-eastern side of the holloway in the late 12th and 13th centuries. Neither of the two SFBs (6280 and 15035**)** contained the large oven characteristic of the structures on Sites L and Pond D South, and their internal arrangements were sufficiently different to suggest that they had different uses. Structure 6280 may have been a brewhouse, and 15035 a kitchen. Both features appear to have been constructed in the late 12th century, and quantities of animal and fish bone were recovered from the pit infills and other feature fill nearby. This suggests that there was domestic occupation on the site at this time. If the sunken-featured buildings were not themselves also houses, then these presumably lay in the areas without features east of each of these sunken structures. Such buildings could well have been of timber-sill construction.

The occupation area may have been divided into two at this period, either side of a trackway formed by the early gullies and a parallel set of ditches to the east. It is suggested that this trackway was simply to keep separate animals being driven from the holloway to the enclosed field north of the settlement. Structure 15035 probably sat against the west side of the eastern plot, and 6280 towards the west side of the western plot. A gap between the two lengths of ditch making up the eastern side of the trackway was probably deliberate, left for access. The eastern plot was later subdivided by another ditch running just south of structure 15035, and just north of this access gap.

Structure 6280 was hard up against the NE-SW ditch bounding the main settlement area here, and it seems unlikely that the building and the ditch could have been contemporary, even though the long axis of the building was very similar to that of the ditch. Unfortunately no section was dug across the ditch along this side of the building to clarify this relationship. The plan gives the appearance that the long boundary ditch came before the shorter length of ditch 7280 to its north, which was part of a process of encroachment onto the open ground to create further enclosures alongside the holloway. It is, however, possible that ditch 7280 was laid out at right angles to building 6280, so that encroachment was independent of the long boundary. On balance, it is probable that the structures sat within areas that were only loosely defined.

Late 13th/14th centuries

The later 13th century saw the Northumberland Bottom enclosure extended to the west, becoming more rectangular in form, and containing a sunken-featured building with a large oven in the north-west corner. The internal area of the original enclosure was further subdivided by several radial ditches, an arrangement that could have facilitated stock management, although storage of other materials is also possible (Askew 2006, fig. 28). Several later phase ditches crossed the original enclosure ditch, but ended just inside, suggesting that the bank was still standing, and formed the real boundary. The sunken-featured building was interpreted as a crop processing oven, indicating a possible diversification of agricultural activity

(ibid., 42), but, as was argued above, was probably a communal bakehouse.

East of the holloway, two beam-slot and posthole buildings appear to have been built, one either side of the proposed north-south trackway. This may indicate that this part of the settlement continued to be divided into two units, each with its own dwelling and associated pits. The sunken-featured buildings had probably gone out of use by this time, although a new small sunken-floored structure was part of the western timber sill and post building. The connection between the western plot and brewing continued, with the recovery of a bunghole cistern from pit 5776 adjacent to this building. It was presumably at this time that the long NE-SW ditch was dug, blocking the former trackway and enclosing the two properties on the north side.

To the north of this a series of short gullies on a similar alignment may indicate that the apparently open area was in fact divided into strips, but that below-ground drainage was only necessary at the west end. There is however no consistent width to these strips, and the alignments are not precisely parallel. The process of encroachment onto the open area to the north continued, with a further triangular plot enclosing a large area of burning and a denehole immediately north-east of the holloway.

It was also at this time that an additional ditched enclosure was dug east of the main settlement boundary, representing further settlement expansion into previously unenclosed land. The purpose of this enclosure is not clear. It is of similar width to the enlargement of the Northumberland Bottom enclosure, and the finds were of domestic character, so it may represent a plot of similar overall size, perhaps with a building in the unexcavated area beyond the southern limit of Site C.

Structure 5347 (see Fig. 5.12), situated on the western side of the holloway, was the largest of the SFBs revealed on the A2 excavations, with an internal floor area of nearly 32m². Much of the floor showed signs of burning, which could indicate that large fires were lit, leaving little room for other activities, as in the structures with large ovens. In this case a link with crop processing is likely, given the large quantities of cereals and pulses recovered. It is, however, equally likely that fires were lit in a variety of different positions over time, although all within the central part of the building and the vicinity of the rectangular firepit. In this case, the ends of this building might well have been used for habitation by someone of less status than those the other side of the holloway.

One other aspect of the Site C settlement is the occurrence of large pits or deneholes. None of those planned and excavated definitely cut medieval features, although some, for instance those adjacent to structure 5347, were too close to have co-existed. It is therefore perfectly possible that some of these features were dug in the medieval period, and were then enclosed, ditches marking their boundaries, and were allowed to become overgrown. Some such as 5587 may have been backfilled before medieval occupation took place. While such features are not normally found within settlements, the apparent open character of much of the site, and the organic nature of its development, makes the opportunistic quarrying of materials for construction and for the fields perfectly plausible. Two probable deneholes or deep pits were found below the holloway, and these may give an indication of when in the post-medieval period the holloway finally went out of use. Here, however, the soilmark of the holloway was much wider, and traffic may simply have gone around them.

The economy and status of the medieval settlements

Other than pottery, the quantity of finds, and of environmental evidence, obtained from the medieval sites on this scheme was generally poor. This is often the case with rural, low-status settlements. In terms of dress items there was nothing of any significance, and the presence of a single stone spindlewhorl, one iron knife (and possibly a reaping hook) and two bone points, does not provide much insight into the activities carried out by these settlements. It is particularly unfortunate that so few animal bones were found, as much larger assemblages of Iron Age date were recovered from adjacent areas. This is partly due to the small numbers of deep pits found on the medieval sites, the majority of the remains coming from open ditches of no great depth, or from shallow structures dug not into chalk but into the acidic Thanet sands. Marine resources, whether shells or fish bones, were clearly available to the inhabitants of these settlements, suggesting that Gravesend on the Thames estuary was an important destination for marketing local produce and for barter. The charred plant remains provide the best environmental samples, and these indicate the relatively large-scale processing of cereals and other crops. There is certainly an increase in the proportions of pulses in the later 13th and 14th century samples, though it is unclear whether this represents a change in cultivation strategy or the particular activities carried out in sunken-featured building 5347, from which most of the later medieval samples came.

Landscape context

The scheme runs through the ancient parishes of Swanscombe (now Swanscombe and Greenhithe), Southfleet, Northfleet, Ifield (now part of Northfleet), Cobham and Shorne. Other than Ifield, Cobham and Shorne, which are not listed, the Domesday Book mentions all of these parishes as manors (estates) in 1086. The A2 lies along the edges of most of these parishes, which would suggest that it was of peripheral importance. Only Northfleet was crossed by the A2, but here as in the other parishes, the manorial centres and parish churches

do not lie along the road, but a long way from it. The parishes in this part of north-west Kent do not have the characteristic shape and mix of different farming resources of strip parishes common elsewhere in the south of England. In some cases there are detached parcels providing access to different resources, in others not. The extent of the Domesday manors is not known, but the irregular shape of Ifield and Longfield in particular may indicate that they represent the extent of single manorial estates.

The earliest documentary reference to the area is a record of the Synod of Clofesho in AD 798, in which Abbess Cynethryrth (widow of Offa of Mercia) confirmed her possession of the manor of Cookham in Berkshire in exchange for several large estates in North Kent, including 60 Hides at 'Fleot' given to Aethelheard, Archbishop of Canterbury (Gelling 1979). It is possible that the Domesday parishes of the area are a late Saxon development, being sub-divisions of a large 8th century estate centred on the Ebbsfleet Valley as a whole (Skanska-Owen Williams 2004). The manor of Northfleet (hundred of Toltingtrough) was still held by the Archbishop of Canterbury in the Domesday survey.

During the Saxon period it is likely that Watling Street survived, but only as a subsidiary route, as the urban centres of Rochester and Canterbury were not important, and more traffic travelled by sea (Tatton-Brown 2001). With the reoccupation of the Roman towns of Rochester and Canterbury, the end of Danish raids, and the rebuilding of Rochester Bridge in the early 11th century, however, Watling Street regained its importance, and this was the route followed by William the Conqueror to London. Stone castles were built at key points along this route at Dover, Canterbury and Rochester (ibid., 125). One of the most significant uses of the route was for pilgrimage, a role continuing throughout the medieval period, as shown by Chaucer's Canterbury Tales.

From the later 13th century (as shown by a lawsuit of AD 1293), and possibly much earlier, a competing route by river from London to Gravesend (called the Long Ferry) was possible (Hiscock 1968, 229). Also in the later 13th century, the silting up of the Ebbsfleet allowed the construction of a Stonebridge at Northfleet, creating an alternative route bypassing the A2 between Strood and Dartford, which probably diminished the importance of the A2 south of Gravesend by the late medieval period (ibid.). Some retraction was probably also caused by the effects of the Black Death in the early 14th century.

The absence of middle or late Saxon activity found along the A2 scheme and the adjacent HS1 may support the view that the parishes of this area were established in the Saxon period, when the A2 was not an important routeway. The settlements revealed in this project seem to represent an expansion following the resurgence of the importance of this routeway in the Norman period, and persisting until it was again superseded by alternative, seaborne routes, in the later medieval period. It must also be remembered that the late 11th and 12th centuries also coincided with a period of particularly warm weather, resulting in expansion in settlement and agricultural activity across much of Britain. Both these general factors and the particular stimulus of the revived use of the A2 are likely to have contributed to the growth of new medieval settlements at this time. The late 11th/12th century site excavated at the Pepperhill Lane electricity substation just south of Wingfield Bank (Hardy and Bell 2001) appears to have been another such settlement. A medieval well and a number of large pits or deneholes were found at Coldharbour Road just north of the A2, some 400m north-east of the settlement in Site C (Mudd 1994). Most were given a broad medieval date, although one (Keevill in Mudd 1994, 394) was dated to the 11th–13th centuries. Smaller-scale medieval activity was also recorded along the line of the HS1 just east of Church Road (Bull 2006, fig. 14), and just west of Henhurst Road (ibid., fig. 11). At Church Road the activity was dated late 11th to mid-13th century, and at Henhurst Road to the late 11th or 12th century. The coincidence of medieval activity with Church Road and Henhurst Road to the south may indicate that these roads were medieval in origin, a suggestion supported at Henhurst Road by a medieval ditch parallel to, and just east of, the modern road.

None of these sites has physical evidence of occupation beyond the 14th century, although documentary evidence shows that Wingfield Bank (Wenifalle) continued, and by the late 18th century was an isolated farm (Hardy and Bell 2001, 17). The earliest detailed maps of the area are the Ordnance Survey drawings of 1797–9, which show Shinglewell (now Singlewell) alongside the A2, and there are several Listed Buildings within the village of 18th century origin. A smaller settlement and a tollhouse (all now vanished) appear on the Ordnance Survey map of 1801 at Northumberland Bottom. Hastead's map of the hundred of Totlingtrough in his History of Kent (1799) shows the same settlement pattern. No excavation has taken place at either to establish whether these were also medieval settlements contemporary with those along the scheme, or later foundations. Documentary and (later) map evidence shows no significant further development of settlement or landscape exploitation until the early 20th century (Tatton-Brown 2001, 128).

Final comment

Traditionally medieval archaeological research in rural lowland England has tended to focus on archaeologically 'high-visibility' sites investigated by means of research excavations. High visibility often means higher-status sites—manorial or monastic. One of the unfortunate consequences of this in regard to PPG16-stimulated work is that such

sites—even if they are now unoccupied—are often either legally protected or deliberately avoided because of the expense of pre-emptive excavation.

Large infrastructure projects, like road or rail corridors, or large scale housing development, which by their nature will often be laid out across 'green' land, away from present rural centres of settlement, appear to 'accidentally' pick up relatively transient dispersed medieval occupation evidence with notable frequency. Thus it is that the corpus of discovered medieval settlement of many lowland regions has increased markedly in the last decade or so—and particularly in Kent, which has arguably seen more than its share of large scale, infrastructure-related archaeological fieldwork in recent years.

Postscript

by Tim Allen

There are some themes that appear to recur across several time periods, and the purpose of this final section of the report is to draw attention to these.

The results of the adjacent HS1 excavations had identified a wide range of sites of different periods, and the overall impression was of a landscape in which settlement was never static for long periods, nor were significant land boundaries identified that appeared to have persisted across several periods. The only exception to this was Downs Road, where a Roman metalled road was found alongside the modern one, and where medieval boundaries at right angles to Downs Road suggested that this routeway had also been used in the medieval period.

The A2 excavations did not completely overthrow this picture, but they did emphasise the significance of certain places during prehistory, and the role played by trackways in creating and sustaining this significance. In the early Neolithic, a rare type of monument, a single large post, was identified on Site G, and it was speculated that this might have marked the top of a dry valley used as a route from the coast up to the chalk plateau (see Fig. 1.2). Although no evidence of middle Neolithic use was found, the continuing use of this natural routeway might explain the occurrence of a recut pit of the late Neolithic adjacent to the vanished post. Late Neolithic/early Bronze Age flint scatters and tree-throw holes containing early Bronze Age pottery were also concentrated on either side of the top of this dry valley. A length of cobbled track was constructed leading out of it in the middle Bronze Age, alongside which a settlement enclosure was constructed. The ditches and banks of this enclosure created a much more visible and lasting reminder of the past than in previous periods, but this enclosure was largely avoided in the Iron Age. Continued use of the route no doubt led early Iron Age people to establish several small areas of pits and four-post structures close by, around the head of the dry valley. There was no evidence of middle Iron Age activity in this part of the scheme, but late Iron Age and early Roman pits were found adjacent to the earlier Iron Age ones, again possibly due to the use of the routeway.

At Site C, the importance of a trackway leading across the highest part of the undulating chalkland was even clearer. The use of this route might have begun as early as the Beaker period, when a double burial was made marking this high point, and overlooking the dry valley to the east. A wide feature adjacent to this was tentatively interpreted as a prehistoric holloway leading southwards (Askew 2006, fig. 5 and 11–12). There may well have been a mound over these burials, further emphasising this focal point. The use of barrows as markers for routes in prehistory is not uncommon; for example, the fact that lengths of the A30 in Cornwall run from barrow group to barrow group shows the great longevity of some such routes. From the middle Bronze Age onwards the Site C route was marked by a ditched trackway traced for 300m from Coldharbour Road and across the A2 Activity Park, to which a ditched enclosure was added in Site C. Both the route and the enclosure became a focus for burials for the communities using this route throughout the later Bronze Age, and developed in the early Iron Age into a holloway that was eventually surfaced with flint. Early and middle Iron Age pits and four-posters appear alongside the metalled trackway, and again close to, but not encroaching upon, the middle Bronze Age enclosure.

The Downs Road dry valley was probably another ancient routeway in prehistory, long before the provision of a metalled Roman road, but the scale of excavation in the valley bottom was limited. An early–middle Iron Age ditched trackway certainly led down to the dry valley from the east, however, and this may have overtaken the earlier Site C trackway as the importance of Springhead, and the use of river transport, grew later in the Iron Age.

Cycles of movement by prehistoric communities, and the following of established routeways, are one of the most plausible explanations for the 'remembering' of sites evident through episodes of deposition that span decades, centuries or even millennia (cf Roughground Farm, Lechlade Glos.; Allen *et al.* 1993, 46–7 and 195). It is, however, relatively rare to find physical evidence of these tracks before late prehistory, although short lengths of metalled surface, particularly crossing boggy ground, are known from the middle Iron Age, as at Mingies Ditch and Farmoor, Oxfordshire (Allen and Robinson 1993; Lambrick and Robinson 1979). In this respect, as in many others, Kent is unusual, as metalled roads, particularly of the Iron Age, are becoming more frequent on excavations, for example on the East Kent Access Road (K Welsh pers. comm.). In this, Iron Age Kent is similar to Northern France, where holloways evident over long distances form parts of organised landscapes from at least the 6th/5th century BC, and are believed to have originated much earlier (Le Goff

2009). In Brittany metalled roads are known from at least the 3rd century BC at Paule (Menez 2008).

Despite this pattern of trackways, there is little evidence of permanent division of the countryside, for instance in the form of land boundaries, until the middle Iron Age, and even then these are individual ditches, not field systems. Unless boundaries were entirely above ground, the pattern of land use, and of rights of access, does not appear to have become fixed in prehistory or in the Roman period. The situation was clearly still fluid in the Norman period when several new settlements appear, perhaps created by assarting in a still unenclosed landscape.

This view is supported by the fact that, taken together, the A2, the HS1 and the A2 Activity Park evidence still supports the overall shifting of settlement across more than two millennia. Middle Bronze Age enclosures are not reused in the late Bronze Age, and early Iron Age activity is dispersed across the landscape, although there are concentrations adjacent to both of the middle Bronze Age enclosures. Nucleation in the middle Iron Age does not occur around either of the previous trackways and associated early Iron Age foci, and there is a further shift of focus at the start of the Roman period, although occupation continues into the 2nd century on part of the later Iron Age settlement. The rectilinear Roman enclosure at Site D is abandoned in the later 3rd century, and the only late Roman activity is focussed alongside Downs Road. There is no focus of Saxon activity within the line of the two schemes, and medieval settlements occupy virgin sites, managing to avoid most earlier foci.

In terms of later Bronze Age settlement, there is no consistent pattern along the Thames Valley. There are similar discontinuities between the middle and late Bronze Age around the Wittenhams in Oxfordshire, and at Eton Rowing Course in Buckinghamshire (Allen *et al.* 2010; Allen *et al.* forthcoming(a)), but at Heathrow Terminal 5 in contrast the middle Bronze Age enclosure systems are extended in the late Bronze Age, although there is little continuity of actual occupation sites (Lewis *et al.* 2010). In Kent itself there are no middle Bronze Age predecessors to the late Bronze Age enclosures at Highstead (Bennett *et al.* 2007), nor any late Bronze Age.

The rarity of earliest Iron Age sites, the dispersed settlement pattern of the early Iron Age, and the absence of continuity from the early to the middle Iron Age seen at the A2, are also seen elsewhere, for example in the stretch of the Middle Thames including the Eton Rowing Course and Cippenham, Slough (Allen *et al.* forthcoming(b); Ford *et al.* 2003). At Heathrow waterholes of the early Iron Age respect the boundaries of the earlier fields, indicating that above ground there were still hedge boundaries, but the middle Iron Age pattern of settlement cuts across these enclosures, implying a major discontinuity in landscape terms (Lewis *et al.* 2010). Once established in the middle Iron Age, however, several sites in the Eton area continue through the late Iron Age and into the early Roman period. At Heathrow, the middle Iron Age focus shifts slightly in the late Iron Age, but continues thereafter right through the Roman period (ibid., 213–5).

There is a significant contrast between this pattern and that seen in other areas such as Stanton Harcourt or Yarnton in Oxfordshire, where settlements established in the early Iron Age continue through the middle and late Iron Age, and persist into the 2nd century AD (and at Yarnton beyond the end of the Roman period). Lambrick (Lambrick and Allen 2004, 479–84) saw the settlements at Stanton Harcourt as reflecting the gradual fossilisation and clarification of earlier prehistoric landuse arrangements by communities whose ancestors were buried in the monuments of the sacred landscape around the Devil's Quoits henge, and who shared grazing rights there. Yarnton had a significant floodplain resource adjacent, and this may have ensured its continuity (Hey *et al.* 2011, Chapter 4). Despite the presence of the Tollgate Neolithic mortuary enclosure, and the double Beaker burial on the other side of the valley, there is no good evidence that these formed similar foci for further burial monuments that might have created social conditions leading to such a settled and established pattern of landuse. Such communities were probably the exception rather than the norm in later prehistoric southern Britain.

In Kent itself, continuity from the middle to late Iron Age, as seen at the A2, is in itself unusual; only 4 of 17 late Iron Age settlements along the line of the HS1, for example, had middle Iron Age origins (Booth *et al.* 2011). The settlement at Keston is an important exception, and the enclosure at Farningham Hill probably began late in the middle Iron Age (Philp 1991; Philp 1994). Late Iron Age to Roman continuity is however common, as locally at Hillsend (Philp and Chenerry 1998), so the establishment of a new farmstead on Site D very soon after the Roman conquest is particularly striking. Whether the result of the stimulus of the new Roman road and its traffic to an existing local magnate, or the granting of land to a pro-Roman native family, this new enclosure, situated in sight of Watling Street, is one of the clearest examples yet seen of the immediate effect of the Claudian conquest upon native rural settlement. The apparent abandonment of activity at Pond D North at much the same time may be another indication of this effect, although as only a part of the site was seen this picture may be incorrect. Several middle-late Iron Age sites along the HS1, however, also appear to have ended at around this time (Booth *et al.* 2011), so a causal link with the Roman conquest cannot be entirely discounted.

A second theme is the variety of burial rite, and the mobility of burial sites, evident throughout prehistory and the Roman period on the scheme (and more widely in Kent). Neolithic burial was

presumably focussed on the Tollgate mortuary enclosure, although no associated human remains have been identified as yet. The double Beaker inhumation burial west of Wrotham Road on the HS1 represents a further, and perhaps deliberately opposing, focus on the other side of the dry valley (Askew 2006, fig. 5). There are apparently no further burials in this location, but an early Bronze Age cremation was found within the dry valley west of Downs Road (ibid.). In both cases the burial rite conforms to the usual custom.

Middle–late Bronze Age cremation burials on the A2, the HS1 and the A2 Activity Park are found alongside boundaries and trackways and in loose clusters not far from settlement, a pattern also seen in the Middle Thames, as around Eton (Allen *et al.* forthcoming(a)). None were found associated with the earlier prehistoric burials, however, as is common elsewhere across Southern Britain. Middle Bronze Age ring ditches are rarer, but the example from the A2 Activity Park is small, as are most other examples of this date, and its proximity to the enclosure in Site C is matched at sites such as Itford Hill, Sussex (Bradley 2007, 197–9). The inhumation found within the ditch, however, appears to be a further example of a growing number of middle Bronze Age inhumation burials found along the Thames Valley (Lambrick with Robinson 2009, 283–327). Both rites appear to have been practised contemporarily.

In Southern Britain early and middle Iron Age burials are usually inhumations, even though these may comprise complete, partial or excarnated bodies. Both complete and partial inhumations are present on the A2 scheme, as is a cremation burial, the second found recently in North-West Kent. This may reflect continental influence, as mixed rite cemeteries are known there from the end of the 5th century onwards (Le Goff 2009, 99). The location of middle and late Iron Age inhumations within or alongside boundary ditches continues the focus of later Bronze Age burials alongside trackways. The late Iron Age sees a return to cremation on these two schemes, although inhumation 'warrior' burials are also found in East Kent, as at Mill Hill, Deal and Brisley Farm, Ashford (Champion 2007b, 125–6). Such burials are exceptional, but in the A2 Activity Park immediately adjacent, inhumations have been dated to the late Iron Age or very early Roman period (Dawkes pers. comm.), and both cremations and inhumations are present from the very start of the Roman period at the Pepperhill cemetery (Biddulph 2006a). This mixed rite is found on the A2 from the 2nd century onwards, and is present on Site L until the very end of the Roman period.

The implications of at least four cemeteries within the area between Springhead and Tollgate, and evidence for further burials alongside Watling Street, have already been discussed in Chapter 4. The key point to emphasise here is that, although a large and relatively long-lived urban cemetery existed at Pepperhill, foci of burial in the countryside were not as clearly fixed, mirroring the evidence for continuing fluidity of settlement.

In terms of burial rite, Kent demonstrates a greater flexibility than many other areas of prehistoric and Roman Britain. This may be due to its position close to the Continent, and thus in contact with a wider range of customs and ideas than most other areas. It is also possible that there were more incomers settling here, like the foreigner of North African, or at least Mediterranean extraction, identified within the late Roman cemetery on Site L. While this particular individual does not exhibit significant differences in burial from his neighbours, others may have brought with them their own burial customs and beliefs.

Another theme that appears several times in the chronological development of this scheme is feasting, and in particular assemblages of pottery whose deposition might have been associated with this activity. The basic premise behind the identification of such groups is that they do not represent an even representation of a standard range of vessel types and sizes for the given period, but include a large proportion of small cups, perhaps accompanying one or more larger vessels that may have contained food or drink for communal consumption.

A connection between Beakers and alcoholic beverages has been demonstrated from residues found on vessels in graves (Rojo-Guerra *et al.* 2006), and other vessels containing fats were also associated, suggesting that food was also involved. The large number of Beaker vessels found in a pit on Site D, most of which are of similar size, could well represent the discard of vessels from communal feasting events. It is even possible that the decoration, which was different on every vessel, was personalised, or at least was specific to a particular family group on each occasion. The fact that substantial parts of some vessels are present, and little of others, may simply be an artefact of preservation, as most archaeological features are truncated, and so no longer contain all of the material originally deposited within them. Alternatively, it may mean that the pit was filled from a midden that represented repeated events spanning a long period, but does not invalidate this interpretation of the events they represent. The few larger open bowls might perhaps represent communal vessels for particular foods. Such pit groups occur in small numbers across much of Southern Britain, as might be expected in societies where permanent settlements were rare or absent, and social groups small, so that communal gatherings were essential for social intercourse, and for reinforcing group identity (Rojo-Guerra 2006, 253–62).

It is less usual to find middle Bronze Age pit groups that contain groups of vessels that might be interpreted in this way. Nevertheless, pit 12510 on Site L contained much of an extremely large bucket urn, together with fragments of five much smaller

vessels, of which two at least were small tubs or cups. If an equivalent for decorated Beakers were to be sought in the middle Bronze Age, it would probably be the fine-walled Globular Urns, but there is no reason why simpler vessels might not have been used for such gatherings. They may have held individual servings of food rather than of drink. The scale of event or events represented here may well have been smaller than that represented by the Beaker pit, but the composition of this assemblage suggests that a particular meal was being commemorated by the deliberate burial of the pottery involved.

Another possible example of such an assemblage, also from Site L, was found in an early Iron Age pit. Here a preponderance of bowls was argued to represent vessels used in feasting, but it was not simply the pottery, but part of an animal skeleton, and the careful separation and placement of a variety of other objects, that suggested that the pit and its contents were commemorating an important event, or series of events, of which feasting was probably a part.

A very different assemblage was found in a pit on Site G, comprising only one example of each of a group of vessels of different size, form and finish. Similar sets of late Bronze Age date have been found adjacent to cremation burial pits, and have been labelled 'feasting sets', though how they were used is less clear. It is possible that each originally held foodstuffs or drink of different types that were consumed at the graveside. In the case of pit 9010, they were accompanied by pig skeletons, supporting the idea that feasting of some sort was involved, and by human bones. This was the only early Iron Age pit on the scheme to have a set of vessels of this type, and also the only one to contain human bones, reinforcing the view that sets like this were particularly associated with rites connected with death or its commemoration.

Although animal skeletons are found in a number of other pits and ditches, together with other deposits of special character including whole pots, no other Iron Age features contained pottery that so clearly demonstrates the likelihood of feasting. It is, however, noticeable that middle and late Iron Age ditches contain the same kinds of deliberate deposits that were found in early Iron Age pits, and it is in the early Roman ditches of the Site D enclosure that feasting assemblages are next clearly identified. Here again the pottery assemblages are remarkable both for their quantity and for the large numbers of certain types of vessel.

In looking at the context of such deposits, it is instructive to note that the ditch deposits in the Site D enclosure were 20m and 50m from the graves that were the foci of these events. While the placement of whole pots in small enclosure ditches immediately surrounding deep pits or shafts, as in Site B, provides an easy spatial association, other deposits found on this scheme could well relate to activities or features well outside the limits of excavation. More generally, it reminds us that the focus of such behaviour need not be immediately adjacent to its material remains, and that the scale of investigation needs to be sufficiently wide to have a fair chance of interpreting these remains.

This project has shown sporadic evidence for feasting over a period of more than two millennia. This is only remarkable in that the evidence, in comparison to that of most other sites, is relatively clear, although in only a very few examples. Given the importance of communal gatherings, and of celebrations to mark rites of passage, important agreements and other events in the lives of local people, the important question is why such evidence is not more commonly found, or perhaps, recognised.

Fitzpatrick's reminder of the ceremonies described as carried out at the graveside of Roman dead (1997), and on certain anniversaries thereafter, shows that where literary evidence is preserved, it suggests that such commemorative events were held more than once a year. Not all such events need, however, have been large-scale, or have involved feasting. It may be that the ways in which such events were commemorated did not, in most communities, involve rituals of destruction and deposition that leave such clear ceramic indicators, and that in this respect, the customs of the inhabitants of this area of north-west Kent were particularly distinct.

The literary evidence, however, reminds us that we need to be sensitive to the possibility of a wide variety of depositional events that were of considerable significance, although not necessarily represented archaeologically in as dramatic a manner as the collections of feasting debris. Just such a variety of deposits has been identified in this project, although as yet we lack the tools to interpret them.

The future

Finally, a note on opportunities for the future. Despite the controls of the planning system, narrow strips of land like that isolated between the High Speed 1 and the new A2 are often forgotten, or overlooked, especially when large-scale excavations have taken place on either side. This narrow strip, however, contains both the Tollgate mortuary enclosure and the central part of the Site D Roman enclosure, both key elements for the proper understanding of this landscape in the Neolithic and in the late Iron Age and Roman period. Significant questions remain regarding the character of the middle–late Iron Age settlement in Site B, the Saxon occupation in Site A, and the medieval settlement in Site C, which can only be addressed by the investigation of the area in between.

Bibliography

NB. All references to HS1 (previously CTRL) site and specialist reports (ADS Collection 335) deposited with the Archaeology Data Service (ADS 2006) can be found at the following web address: http://archaeologydataservice.ac.uk/archives/view/ctrl/reference.cfm

ADS, 2006 CTRL Phase 1 digital archive, Archaeology Data Service

Albarella, U, 2007 The end of the sheep age: people and animals in the Late Iron Age, in Haselgrove and Moore 2007, 388-402

Albert, R, and Fauduet, I, 1976 Les fibules d'Argentomagus (1re partie & 2e partie), *Revue archéologique du Centre de la France* **15**, 43-74, 199-240

Aldritt, D, 2006a The wood charcoal from North of Saltwood Tunnel, Kent, *HS1 Specialist Report Series*, in ADS 2006

Aldritt, D, 2006b The archaeological wood charcoal from White Horse Stone, Aylesford, Kent, *HS1 Specialist Report Series*, in ADS 2006

Aldritt, D, 2006c The wood charcoal from Beechbrook Wood, Hothfield, Kent, *HS1 Specialist Report Series*, in ADS 2006

Allen, D F, 1971 British potin coins: a review, in D Hill and M Jesson (eds), *The Iron Age and its hillforts: papers presented to Sir Mortimer Wheeler,* Univ Southampton Monogr **1**, 127-54

Allen, M J, 2005 Beaker Settlement and Environment on the Chalk Downs of Southern England, *Proc Prehist Soc* **71**, 219-46

Allen, M, 2006 Dating prehistoric to early medieval activity in Kent: a review of the radiocarbon dating, *HS1 Scheme-wide Specialist Report Series*, in ADS 2006

Allen, T G, 1994 A medieval grange of Abingdon Abbey at Dean Court Farm, Cumnor, Oxon, *Oxoniensia* **59**, 219-447

Allen, T, 2004 Swine, salt and seafood: A case study of Anglo-Saxon and Early Medieval settlement in North-East Kent, *Archaeol Cantiana* **124**, 117–35

Allen, T G, Miles, D and Palmer, S, 1984 Iron Age buildings in the Upper Thames Region, in B Cunliffe and D Miles (eds), *Aspects of the Iron Age in Central Southern Britain*, Oxford Univ Comm Archaeol Monogr **2**, 89-101

Allen, T G, Darvill, T C, Green L S and Jones, M U, 1993 *Excavations at Roughground Farm, Lechlade Gloucestershire: a prehistoric and Roman landscape*, Oxford Univ Comm Archaeol, Thames Valley Landscapes: the Cotswold Water Park, Volume **1**, Oxford

Allen, T G and Robinson, M A, 1993 *The prehistoric landscape and Iron Age enclosed settlement at Mingies Ditch, Hardwick-with-Yelford, Oxon*, Oxford Archaeol Unit Thames Valley Landscapes: the Windrush Valley **2**, Oxford

Allen, T G and Kamash, Z, 2008 *Saved from the grave: Neolithic to Saxon discoveries at Spring Road Municipal Cemetery, Abingdon, Oxfordshire*, Oxford Archaeol Thames Valley Landscapes Monogr **28**, Oxford

Allen, T and Donnelly, M, 2009 A2 Pepperhilll to Cobham Widening Scheme, Kent; Post-Excavation Assessment and Research Design Volume 3: finds, environmental and scientific dating assessments, unpubl client report, Oxford Archaeol

Allen, T, Hayden, C and Lamdin-Whymark, H, 2009 *From Bronze Age enclosure to Anglo-Saxon hillfort. Archaeological excavations at Taplow hillfort, Buckinghamshire,* Oxford Archaeol Thames Valley Landscapes Monogr **30**, Oxford

Allen, T, Cramp, K, Lamdin-Whymark, H and Webley, L, 2010 *Castle Hill and its Landscape; Archaeological Investigations at the Wittenhams, Oxfordshire*, Oxford Archaeol Monogr **9**, Oxford

Allen, T, Barclay, A, Anderson-Whymark, H, Catheral, P, Robinson, M and Jones, G, forthcoming (a), Opening the Wood, Making the Land. The Archaeology of a Middle Thames Landscape: the Eton College Rowing Lake Project and the Maidenhead, Windsor and Eton Flood Alleviation Scheme, Volume 1: Mesolithic to early Bronze *Age*, Oxford Archaeol Thames Valley Landscapes Monogr, Oxford

Allen, T, Bradley, P, Parker, A and Cromarty, A-M, forthcoming (b) Bridging the river, dividing the land. The Archaeology of a Middle Thames Landscape: the Eton College Rowing Lake Project and the Maidenhead, Windsor and Eton flood alleviation scheme, Volume 2: middle Bronze Age to Roman, Oxford Archaeol Thames Valley Landscapes Monogr, Oxford

Allen, T G, Biddulph, E, Dodd, M, Donnelly, M, Gourlin, B, and Poole, C, 2012 Rocade d'agglomération briochine (Trégueux - Côtes-d'Armor - Bretagne) : la fouille d'un enclos défensif, bâtiment public et habitat nucléé de la Tène 2, et leurs développements à la période gallo-romaine et à l'époque médiéval, Rapport final d'opération submitted to the SRA in Brittany on behalf of the Conseil Général des Cotes d'Armor

Allison, E, 2006 Environmental samples, in K Parfitt (ed), A prehistoric 'burnt mound' site at Crabble Paper Mill, near Dover, *Archaeol Cantiana* **126**, 219–38

Andrew, P, 2008 Springhead, Kent- old temples and new discoveries, in D Rudling (ed), *Ritual landscapes of Roman South-East Britain*, 45-62
Andrews, P, Egging Dinwiddy, K, Ellis, C, Hutcheson, A, Philpotts, C, Powell, A B and Schuster, J, 2009 *Kentish sites and sites of Kent. A miscellany of four archaeological excavations*, Wessex Archaeol Rep **24**, Salisbury
Andrews, P, Biddulph, E, Hardy, A and Brown, R, 2011 *Settling the Ebbsfleet Valley: HS1 excavations at Springhead and Northfleet, Kent. Vol. 1 The late Iron Age, Roman, Saxon and medieval landscape*, Oxford Wessex Archaeol Monog., Oxford and Salisbury
Ashbee, P, 2005 *Kent in Prehistoric Times*, Stroud
Ashbee, P, 2007 Clay Lane Wood, Cobham: a Bronze Age Cult Site?, *Archaeol Cantiana* **127**, 424-8
Askew, P, 2006 The Prehistoric, Roman and Medieval Landscape at Northumberland Bottom, Gravesend, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Audouy, M and Chapman, A, 2009 *Raunds: The origin and growth of a midland village AD450-1500. Excavations in north Raunds, Northamptonshire 1977-87*, Oxford
Aveling, E M and Heron, C, 1998 Identification of birch bark tar at the Mesolithic site of Star Carr, *Ancient Biomolecules* **2**, 69-80
Baker, J R and Brothwell, D R, 1980 *Animal Diseases in Archaeology*, London
Bamford, H M, 1982 *Beaker Domestic Sites in the Fen Edge and East Anglia,* EAA Rep **16**
Bamford, H, 1985 *Briar Hill: excavation 1974-1978*, Northampton Development Corporation Archaeol Monogr **3**, Northampton
Barclay, A, 1994 Prehistoric Pottery, in Mudd 1994, 385-93
Barclay, A, Lambrick, G, Moore, J and Robinson, M, 2003 *Lines in the Landscape. Cursus monuments in the Upper Thames Valley: excavations at the Drayton and Lechlade cursuses*, Oxford Archaeol Thames Valley Landscapes Monogr **15**, Oxford
Barclay, A and Edwards, E, 2006 Earlier Prehistoric Pottery, in Barclay *et al.* 2006, 10-33
Barclay, A, Booth, P, Edwards, E, Mepham, L and Morris, E, 2006 Ceramics from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Specialist Report Series*, in ADS 2006
Barford, P, 1982 A new type of Kentish briquetage, *Kent Archaeol Rev* **69**, 204-5
Barford, P, 1983 A Late Iron Age site at Thong Lane, Gravesend, Kent, *Kent Archaeol Rev* **73**, 54-68
Barford, P, 1984-5 Early briquetage from Corringham, *Essex Archaeol Hist* **16**, 140-1
Barford, P M, 1988a Briquetage, in Wilkinson 1988, 97-8
Barford, P M, 1988b Salt production equipment, in Bond 1988, 39-41
Barford, P M, 1988c Fired clay objects, in Bond 1988, 49-51
Barford, P M and Major, H J, 1992 Later Bronze Age loomweights from Essex, *Essex Archaeol Hist* **23**, 117-20
Barker, G, 1995 *Prehistoric Farming in Europe*
Barnes, I M, 1985 The non-ferrous metalwork from Hunsbury hillfort, Northants, unpubl postgraduate diploma thesis, Univ Leicester
Barnes, I, Boismier, W A, Cleal, RMJ, Fitzpatrick, A P and Roberts, M R, 1995 *Early settlement in Berkshire: Mesolithic-roman occupation sites in the Thames and Kennet valleys,* Wessex Archaeol Rep **6**
Barnett, C, 2009 Wood Charcoal from West Malling, Kent, in P Andrews *et al.* 2009, 48-50
Barnett, C, McKinley, J I, Stafford, E, Grimm, J and Stevens, C J, 2011 *High Speed 1 excavations at Springhead and Northfleet, Kent. Vol. 3 The Late Iron Age, Roman, Saxon and Medieval Landscape*, Oxford Wessex Archaeol Monog., Oxford and Salisbury
Barrate, F, Bonnamour, L, Guillaumet, J-P, and Tassinari, S, 1984 *Vases Antiques de métal au Musée de Chalon-sur-Saône*, Revue Archéologique de l'Est et du Centre-Est, Cinquieme Supplément, Dijon
Barrett, J, 1980 The pottery of the later Bronze Age in lowland England, *Proc Prehist Soc* **46**, 297-319
Barrett, J C, Bradley, R and Green, M, 1991 *Landscape, monuments, and society: the prehistory of Cranborne Chase*, Cambridge
Barrett, J H, Locker, A M and Roberts, C M, 2004 "Dark Age Economics" revisited: the English fish bone evidence AD600-1600, *Antiquity* **78**, no. 301, 618-31
Barton, K J, 1979 *Medieval Sussex Pottery*, London
Barton, R N E, Bouzouggar, J, Humphrey, L T, Berridge, P, Collcutt, S N, Gale, R, Parfit, S, Parker, A G, Rhodes, E and Schwenninger, J L, 2008 Human burial evidence from Hattab II Cave (Oued Laou-Tétuoan, Morocco) and the question of continuity in Late-Pleistocene-Holocene mortuary practices in Northwest Africa, *Cambridge Archaeol J* **18 (2),** 195-214
Bates, A, 2008 Animal Bone, in N Cooke, F Brown and C Phillpotts (eds), *From hunter gatherers to huntsman: a history of the Stansted landscape*, Framework Archaeology, Oxford and Salisbury, CD-Rom Chapter 32
Bates, A, forthcoming The Animal Bones, in T G Allen *et al.* forthcoming (b)
Bates, A, Jones, G and Orton, D, 2007 Animal Bone, in F Brown, C Howard-Davis, M Brennand, A Boyle, T Evans, S O'Connor, A Spence, R Heawood and A Lupton (eds), *The Archaeology of the A1(M) Darrington to Dishforth DBFO Road Scheme,* Oxford, 148-50
Baxter, I, 2011 Faunal Remains, Temple Precinct, in M Medlycott, *The Roman Town of Great Chesterford*, East Anglian Archaeology **137**, 320-44
Bayley J, 1988 Non-ferrous Metal-working: Continuity and Change, in E A Slater and J O Tate (eds), *Science and Archaeology Glasgow 1987,*

Proceedings of a conference on the application of scientific techniques to archaeology, BAR Brit Ser **196**, 193-207
Bayley J, 1990, The Production of Brass in Antiquity with particular Reference to Roman Britain, in P T Craddock (ed), *2000 Years of Zinc and Brass*, British Museum Occas Pap **50**, London, 7-26
Bayley, J and Butcher, S, 2004 *Roman brooches in Britain: a technological and typological study based on the Richborough collection*, Rep Res Comm Soc Antiq **68**, London
Beck, F, 1977 Objets gallo-romains découverts á Échevronne (Côte d'Or), *Antiquités Nationales* **9**, 50-65
Beck, F, Menu, M, Berthoud, T and Hurtel, L-P, 1985 Métallurgie des bronzes, in J Hours (ed), Recherches gallo-romaines I, Notes et documents des musées de France, Paris: Editions de la Réunion des Musées Nationaux, 69-139
Bedwin, O, 1996 *The Archaeology of Essex; Proceedings of the Writtle Conference*, Colchester
Bell, A, Gurney, D and Healey, H, 1999 *Lincolnshire Salterns: Excavations at Helpringham, Holbeach St Johns and Bicker Haven, Heckington*, EAA Rep **89**
Bell, M, 1977 Excavations at Bishopstone, Sussex, *Sussex Archaeol Collect* **115**, 1-241
Bell, M, 1990 *Brean Down Excavations 1983-1987*, English Heritage Archaeol Rep **15**, London
Bell, M, Fowler, P J and Hillson S W, 1996 *The Experimental Earthwork Project, 1960-92*, CBA Res Rep **100**, London
Bennett, P, Frere, SS and Stow, S, 1982 *Excavations at Canterbury Castle*, Archaeol Canterbury **1**, Canterbury Archaeol Trust
Bennett, P, Macpherson-Grant, N and Couldrey, P, 2007 *Excavations at Highstead, Chislet, Kent*, Archaeol Canterbury New Ser Vol **IV**, Canterbury Archaeol Trust
Bennett, P, Clark, P, Hicks, A, Rady, J and Riddler, I, 2008 *At the Great Crossroads: Prehistoric, Roman and Medieval discoveries on the Isle of Thanet 1994-5*, Canterbury Archaeol Trust Occas Pap **4**
Beresford, M W and Hurst, J G, 1971 *Deserted Medieval Villages*, Woking
Berger, S, 1884 Der Grabfund von Holubic, *Mitteilungen der K K Central Commission zur Erforschung und Erhaltung der Kunst- und historischen Denkmale*, new series **10**, lxxxvii-xciii
Berke, S *Römische Bronzegefässe und Terra Sigillata in der Germania Libera*, Boreas, Münstersche Beiträge zur Archäologie, Beiheft **7**, Münster
Bersu, G, 1940 Excavations at Little Woodbury, Wiltshire, part 1, *Proc Prehist Soc* **6**, 30-1
Biddle, M, 1967 Two Flavian burials from Grange Road, Winchester, *Antiq J* **47**, 224-50
Biddulph, E, 2005 Last orders: choosing pottery for funerals in Roman Essex, *Oxford J Archaeol* **24(1)**, 23-45
Biddulph, E, 2006a The Roman cemetery at Pepper Hill, Southfleet, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Biddulph, E, 2006b What's in a name? Graffiti on funerary pottery, *Britannia* **37**, 355-9
Biddulph, E, Seagar Smith, R and Schuster, R, 2011, *Settling the Ebbsfleet Valley. High Speed 1 excavations at Springhead and Northfleet, Kent. Vol. 2 Late Iron Age to Roman Finds Reports*, Oxford Wessex Archaeology, Oxford and Salisbury
Bienert, B, 2007 *Die römischen Bronzegefäße im Rheinischen Landesmuseum Trier*, Trierer Zeitschrift für Geschichte und Kunst des Trierer Landes und seiner Nachbargebiete, Beiheft 31, Trier
Binford, L and Bertram, J B, 1977 Bone Frequencies-and Attritional Processes, in L Binford (ed), *For Theory Building in Archaeology*, 77-153
Bird, J, 2006 Catalogue of samian ware, in Biddulph 2006a, appendix
Blanquaert, G and Bostyn, F 1998 L'age du fer a Coqulles et Frethun (Pas-de-Calais) (Fouilles du Transmanche 1986-1988), *Archeologie de la Picardie et du Nord de la France (Revue du Nord)* **80**, 109-37
Blinkhorn, P, 1998-1999 The trials of being a utensil: Pottery function at the medieval hamlet of West Cotton, Northamptonshire, *Medieval Ceramics* **22-23**, 37-46
Blinkhorn, P, 2001 Medieval pottery, in Hardy and Bell 2001, 22-26
Bliquez, L J, 1994 *Roman surgical instruments and other minor objects in the National Archaeological Museum of Naples*, Mainz
Blockley, K and Blockley, P, 1990 Excavations at Bigbury, near Canterbury 1981, *Archaeol Cantiana* **107**, 239-51
Blockley, K, Blockley, M, Blockley, P, Frere, S S and Stowe, S, 1995 *Excavations in the Marlowe car park and surrounding areas*, Archaeol Canterbury **5**, Canterbury Archaeol Trust
Boddington, A, Garland, A N and Janaway, R C, 1987 *Death, decay and reconstruction – approaches to archaeology and forensic science*, Manchester
Boessneck, J, 1969 Osteological Differences between Sheep (*Ovis aries Linne*) and Goat (*Capra hircus Linne*), in D Brothwell and E Higgs (eds), *Sci &Archaeol* **2**, 131-58
Bond, D, 1988 *Excavations at the North Ring, Mucking, Essex*, EAA Rep **43**
Boon, G C, 1961 Roman Antiquities at Welshpool, *Antiquaries Journal* **41**, 13-31
Booth, P, 2004 Quantifying status: some pottery data from the Upper Thames Valley, *J Roman Pottery Studies* **11**, 39-52
Booth, P, 2006a Late Iron Age and Roman pottery, in Barclay *et al*. 2006, ADS 2006
Booth, P, 2006b Coins catalogue, in J Keily and B Richardson (eds), Small finds from Northumberland Bottom, Southfleet, Kent, *HS1 Scheme-wide Specialist Report Series*, in ADS 2006
Booth P, 2011 A2/A282/M25 Improvement Scheme at Dartford: Later Prehistoric Pottery, in Simmonds *et al*. 2011, 110-15

Booth, P, Dodd, A, Robinson, M and Smith, A, 2007 *The Thames through Time: The archaeology of the Gravel Terraces of the Upper and Middle Thames. The early historical period: AD1-1000*, Oxford Archaeol Thames Valley Landscapes Monogr **27**, Oxford

Booth, P, Bingham, A-M and Lawrence, S, 2008 *The Roman roadside settlement at Westhawk Farm, Ashford, Kent: excavations 1998-9*, Oxford Archaeol Monogr **2**, Oxford

Booth, P and Simmonds, A, 2009 *Appleford's earliest farmers: archaeological work at Appleford Sidings, Oxfordshire*, Oxford Archaeol Occas Pap **17**, Oxford

Booth, P, Simmonds, A, Boyle, A, Clough, S, Cool, H E M and Poore, D, 2010 *The late Roman cemetery at Lankhills, Winchester: Excavations 2000-2005*, Oxford Archaeol Monogr **10**, Oxford

Booth, P, Champion, T, Foreman, S, Garwood, P, Glass, H, Munby, J and Reynolds, A, 2011 *On Track: The Archaeology of High Speed 1 Section 1 in Kent*, Oxford Wessex Monogr, Oxford and Salisbury

Boucher, S, 1990 Surface Working, Chiseling, Inlays, Plating, Silvering, and Gilding, in *Small Bronze sculpture from the Ancient World*, The J Paul Getty Museum

Boulton, N and Heron, C, 2000 Chemical detection of ancient wine, in P T Nicholson and I Shaw (eds), *Ancient Egyptian materials and technology*, 599-603

Boyer, R and Guineau, B, 1990 Découverte de la tombe d'un occuliste à Lyon (fin du IIe siècle après J.-C.). Instruments et coffret avec collyres, *Gallia* **47**, 15-49

Boyle, A and Early, R, 1998 *Excavations at Springhead Roman Town, Southfleet, Kent*, Oxford Archaeological Unit Occasional Paper **1**, Oxford

Boyle, A, Evans, T, O'Connor, S, Spence, A and Brennand, M, 2007 Site D (Ferry Fryston) in the Iron Age and Roman periods, in F Brown *et al.* in F Brown, C Howard-Davis, M Brennand, A Boyle, T Evans, S O'Connor, A Spence, R Heawood and A Lupton (eds) *The Archaeology of the A1 (M) Darrington to Dishforth DBFO Road Scheme*: Lancaster Imprints **12**, Oxford Archaelogy North, Lancaster

Bradley, P, 1999 The worked flint, in A Barclay and C Halpin (eds), *Excavations at Barrow Hills, Radley, Oxfordshire*, Oxford Archaeol Thames Valley Landscapes Monogr **11**, Oxford, 211-27

Bradley, R, 1975 Salt and Settlement in the Hampshire Sussex Borderland, in de Brisay and Evans 1975, 20-25

Bradley, R, 1992 The excavation of an oval barrow beside the Abingdon causewayed enclosure, Oxfordshire, *Proc Prehist Soc* **58**, 127-42

Bradley, R, 2007 *The Prehistory of Britain and Ireland*, Cambridge

Bradley, R, Lobb, S, Richards, J and Robinson M, 1980 Two Late Bronze Age Settlements on the Kennet Gravels: excavations at Aldermaston Wharf and Knight's Farm, Burghfield, Berkshire, *Proc Prehist Soc* **46**, 217-96

Brady, K, 2006a The Prehistoric and Roman Landscape at Beechbrook Wood, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Brady, K, 2006b The Prehistoric Landscape at Tutt Hill, Westwell, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Brady, K, Powell, K and Hayden, C, 2011 Pinden Quarry, Dartford, Kent: post-excavation assessment and project design, unpubl archive report, Oxford Archaeol

Brickley, M and McKinley, J I, 2004 *Guidelines to the standards for recording human remains,* BABAO and IFA Paper No. **7**

Brill, R, 1971 *Science and Archaeology,* Boston

Bronk Ramsey, C, 1995 Radiocarbon calibration and analysis of stratigraphy: the OxCal program, *Radiocarbon* **37**, 425-30

Bronk Ramsey, C, 1998 Probability and dating, *Radiocarbon* **40**, 461–74

Bronk Ramsey, C, 2001 Development of the radiocarbon program OxCal, *Radiocarbon* **43**, 355-63

Brookes, A J G, 2004 The Visible Dead: a new approach to the study of Late Iron Age mortuary practice in South-Eastern Britain, unpubl PhD thesis, Univ Wales College, Newport

Brookes, S J and Harrington, S, 2010 *The Kingdom and People of Kent AD 400-1066: their history and archaeology,* Stroud

Brossler, A, Early, R and Allen, C, 2004 *Green Park (Reading Business Park): Phase 2 Excavations 1995: Neolithic and Bronze Age Sites*, Thames Valley Landscapes Monogr **19**, Oxford

Brown, D H, 1997 Pots from Houses, *Medieval Ceramics* **21**, 83-94

Brown, D H, 2002 *Pottery in Medieval Southampton, 1066-1510*, London

Brown, L, 1984 Objects of stone, in B Cunliffe, *Danebury an Iron Age Hillfort in Hampshire, Volume 2. The Excavations 1969-78: the finds*, 407-56

Brown, L, 2000 The regional ceramic sequence, in Cunliffe 2000, 79-127

Brown, L, 2007 Briquetage from the pottery assemblage, in Archaeological Excavation along the Route of the Eynsford to Horton Kirby Water Main, Post-Excavation Assessment and Research Design, unpubl client report, Oxford Archaeol

Brown, N, 1991 Middle Iron Age decorated pottery around the Thames Estuary, *Essex Archaeol Hist* **22**, 165-6

Brown, N, 1995a Ardleigh Reconsidered: Deverel-Rimbury pottery in Essex, in I Kinnes and G Verndell (eds), *Unbaked Urns of Rudely Shape, Essays on British and Irish Pottery for Ian Longworth*, 123-144

Brown, N, 1995b Prehistoric Pottery, in Ecclestone 1995, 28-34

Brown, N, 1995c Later Bronze Age and Early to Middle Iron Age pottery, in Wymer and Brown 1995, 77-92

Brown, N, 1999 *The Archaeology of Ardleigh, Essex: Excavations 1955-1980,* EAA Rep **90**

Brown, W A B and Chapman, N G, 1991 The dentition of red deer (*Cervus elaphus*): a scoring scheme to assess age from wear of the permanent molariform teeth, *J Archaeol Sci* **224**, 519-36

Brück, J, 1999a Houses, lifecycles and deposition on Middle Bronze Age settlements in southern England, *Proc Prehist Soc* **65**, 145-166

Brück, J, 1999b Ritual and rationality: some problems of interpretation in European archaeology, *European J Archaeol* **2**, 313

Bryan, E and Morris, E L, 2005 ARC330 98, ARCWNB 98, ARCHRD98 Zone 3, West of Northumberland Bottom, Later Prehistoric Pottery, in Barclay *et al.* 2006

Buckley, D G, 1995 Stone, in G J Wainwright and S M Davies, *Balksbury Camp, Hampshire*, English Heritage Archaeological Report **4**, 40-49

Buckley, D G and Major, H, 1995 Quernstones, in Wymer and Brown 1995, 72-3

Buikstra, J E and Ubelaker, D H, 1994 *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeol Survey Res Ser **44**

Bull, R, 2006a The prehistoric, Roman and medieval landscape at Tollgate, Gravesham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Bull, R, 2006b The prehistoric landscape at Whitehill Road, Longfield and New Barn, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Bulleid, A and Grey, H St G, 1917 *The Glastonbury Lake Village*, Taunton

Burgess, C B, 1986 Urnes of no small variety: Collared Urns Reviewed, *Proc Prehist Soc* **52,** 339-51

Burns, B, 1991 Post-medieval Normandy stonewares from Guernsey, in E Lewis (ed), *Custom and Ceramics. Essays presented to Kenneth Barton*, 104-27

Butler, C, 2001 Horned scrapers and other prehistoric flintwork from Alfriston, East Sussex, *Sussex Archaeol Collect* **139,** 215-23

Butler, C, 2005 *Prehistoric flintwork*, Stroud

Butterfield, B G and Meylan, B A, 1980 *Three-Dimensional Structure of Wood, An ultrastrutural approach*, London

Campbell, G, 1994 The preliminary archaeobotanical results from Anglo-Saxon West Cotton and Raunds, in J Rackham (ed), Environment and Economy in Anglo-Saxon England: A Review of Recent Work on the Environmental Archaeology of Rural and Urban Anglo-Saxon Settlements in England, CBA Res Rep **89**, London, 65–82

Campbell, G, 1998 The charred plant remains, in A Boyle and R Early 1998, 36–9

Campbell, G, 2000 Plant utilization: The evidence from charred plant remains, in Cunliffe 2000, 45–59

Campbell, G, 2007 Cremation deposits and the use of wood in cremation ritual, in J Harding and F Healy (eds), *The Raunds Area Project: A Neolithic and Bronze Age Landscape in Northamptonshire*, 30-33

Carnegie, W, 1910 *How to Trap and Snare*, London

Carruthers, W, 2000 The mineralised plant remains, in A J Lawson (ed), *Potterne 1982–5: Animal Husbandry in Later Prehistory Wiltshire,* Wessex Archaeol Rep **17**, Salisbury, 67–75

Case, H, 1993 Beakers: deconstruction and after, *Proc Prehist Soc* **59**, 241-68

Chadwick Hawkes, S, 1975 Rare bronze escutcheon from Canterbury, *Kent Archaeol Rev* **41**, Autumn, 6-8

Challinor, D, 2006a Wood Charcoal from Northumberland Bottom, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006

Challinor, D, 2006b The Wood Charcoal from Pepper Hill, Northfleet, Kent, *HS1 Specialist Report Series,* in ADS 2006

Challinor, D, 2009a The Wood Charcoal, in S Lawrence and A Smith (eds), *Between Villa and Town: Excavations of a Roman roadside settlement and shrine at Higham Ferrers, Northants,* Oxford Archaeol Monogr **7**, 309-11

Challinor, D, 2009b Charcoal from a potentially mortuary-related vessel deposit, Romano-British contexts and a medieval SFB, in K Egging Dinwiddy and J Schuster (eds), Thanet's longest excavation. Archaeological investigations along the route of the Weatherlees; Margate to Broadstairs wastewater pipeline, in P Andrews *et al.* 2009, 125-9, 133-4, 142-3

Challinor, D, 2010a The Wood Charcoal, in Powell *et al*. 2010, 195-202

Challinor, D, 2010b The Wood Charcoal, in A Norton and J Mumford (eds), Anglo-Saxon Pits and a Medieval Kitchen at the Queen's College, Oxford, *Oxoniensia* **75,** 214-16

Challinor, D, forthcoming The Wood Charcoal, in T G Allen *et al. Opening the Wood, Marking the Land; the Mesolithic to Early Bronze Age*, Oxford Archaeol Monogr

Champion, T C, 1980 Settlement and environment in later Bronze Age Kent, in J C Barrett and R J Bradley (eds), *Settlement and Society in the British Later Bronze Age*, BAR Brit Ser **83**, 223-46

Champion, T C, 1982 The Bronze Age in Kent, in Leach 1982, 31-9

Champion, T, 2007a Settlement in Kent from 1500-300 BC, in C Haselgrove and R Pope (eds), *The Earlier Iron Age in Britain and the near Continent*, 293-305

Champion, T, 2007b Prehistoric Kent, in Williams 2007, 67-132

Champion, T, 2011 Later Prehistory, in Booth *et al.* 2011, 151-242

Chapelot, J and Fossier, R, 1985 *The Village & House in the Middle Ages*, London

Charters, S, Evershed, R P, Goad, L J, Leyden, A, Blinkhorn, P W and Denham V, 1993 Quantification and distribution of lipid in archaeological ceramics: implications for sampling potsherds for organic residue analysis

and the classification of vessel use, *Archaeometry* **35(2),** 211-23
Charters, S, Evershed, R P, Blinkhorn, P W and Denham, V, 1995 Evidence for the mixing of fats and waxes in archaeological ceramics, *Archaeometry* **37(1),** 113-27
Charters, S, Evershed, R P, Quye, A, Blinkhorn, P W and Reeves, V, 1997 Simulation experiments for determining the use of ancient pottery vessels: the behaviour of epicuticular leaf wax during boiling of a leafy vegetable, *J Archaeol Sci* **24(1),** 1-7
Chenery, C, Müldner, G, Evans, J, Eckardt, H and Lewis, M, 2010 Strontium and stable isotope evidence for diet and mobility in Roman Gloucester, UK, *Journal of Archaeological Science* **37**, 150–63
Chowne, P, Cleal, R M J and Fitzpatrick, A P, 2001 *Excavations at Billingborough, Lincolnshire, 1975-8: a Bronze-Iron Age Settlement and Salt-working Site,* EAA Rep **94**
Clark, A J and Thompson, F H, 1989 Revised radiocarbon dates for three hillforts in Kent and Surrey, *Antiq J* **LXIX**, 303-7
Clarke, D L, 1970 *Beaker Pottery of Great Britain and Ireland*, Cambridge
Cleal, R M J and Bacon, J K F, 2001 Briquetage, in Chowne *et al*. 2001, 56-65
Cleal, R, Walker, K E, Montague, R and Allen, M J, 1995 *Stonehenge in its landscape: twentieth-century excavations*, London
Clutton-Brock, J, 1992 *Horse Power; a history of the horse and donkey in human society*, Natural History Museum Publications
Cohen, A and Serjeantson, D, 1996 *A manual for the identification of bird bones from archaeological sites*, London
Coles, S, Hammond, S, Pine, J, Preston, S and Taylor, A, 2003 *Bronze Age, Roman and Saxon sites on Shrubsoles Hill, Sheppey and at Wise Lane, Borden, Kent: a landscape of ancestors and agriculture by the Swale,* Thames Valley Archaeol Services Monogr **4**, Reading
Collis, J, 1978 *Winchester excavations. Volume II, 1949-1960: excavations in the suburbs and western parts of the town*, Winchester
Condamin, J, Formenti, F, Metais, M O, Michel M and Blond, P, 1976 The application of gas chromatography to the tracing of oil in ancient amphorae, *Archaeometry* **18(2)**, 195-201
Cool, H E M, 2006 *Eating and drinking in Roman Britain*, Cambridge
Cool, H E M, 2007 The glass vessels, in Crummy *et al.* 2007, 340-46
Cool, H E M, 2008 Copper alloy artefacts from Burial 9200, in Booth *et al*. 2008, 31-4
Cool, H E M, and Price, A J, 1995 *Roman vessel glass from excavations in Colchester, 1971-85*, Colchester Archaeological Report **8**, Colchester Archaeological Trust, Colchester
Corr, L T, Sealy, J C, Horton, M C and Evershed, R P, 2005 A novel marine dietary indicator utilising compound-specific bone collagen $\partial^{13}C$ values of ancient humans. *Journal of Archaeological Science* **32**, 321-30
Cotter, J P, 2000 *Post-Roman Pottery from Excavations in Colchester 1971-1985*, Colchester Archaeol Rep **7**, Colchester
Cotter, J P, 2001 The Pottery, in M Hicks and A Hicks (eds), *St Gregory's Priory, Northgate, Canterbury Excavations 1988-1991,* The Archaeol Canterbury New Ser Vol. **II**, 231-66
Cotter, J P, 2002 Medieval shelly wares in Kent: a summary of recent research, *Canterbury's Archaeology 1999-2000* **24**, 56-60
Cotter, J P, 2003 Archive report on the medieval pottery from Queen's Farm, Shorne, near Gravesend (QFS EX 03) unpubl archive report for Canterbury Archaeol Trust
Cotter, J P, 2006 The Pottery, in K Parfitt, B Corke and J Cotter (eds), *Townwall Street Dover Excavations 1996,* The Archaeol Canterbury New Ser **III**, 121-254 and 407-16
Cotter, J P, 2008 Medieval London-type ware kilns discovered at Woolwich, *Medieval Pottery Research Group Newsletter* **61**, August, 3-5
Cotton, J, 2000 Foragers and farmers: towards the development of a settled landscape in London, *c*. 4000-1200 BC, in I Haynes, H Sheldon and L Hannigan (eds), *London Under Ground: The Archaeology of a City*, 9–34
Cotton, J and Field, D, 2004 *Towards a new stone age: aspects of the Neolithic in south-east England.* CBA Res Rep **137,** York
Couldrey, P, 1984a The Iron Age pottery, in The Iron Age farmstead on Farningham Hill, in Philp 1984, 38-70
Couldrey, P, 1984b Late Bronze Age and Iron Age Pottery, in Philp 1984, 123-8
Couldrey, P, 1988 Report on the Prehistoric Pottery from Welling, *Kent Archaeol Rev* **42**, 43-7
Couldrey, P, 1991 The Iron Age pottery (associated with Periods II and III), in B Philp (ed), *The Roman Villa site at Keston, Kent. First Report (Excavations 1968-1978),* Kent Monogr Ser Res Rep **6**, Kent Archaeol Rescue Unit, 206-17
Couldrey, P, 1998 The Iron Age pottery, in B Philp, D Garrod and D French (eds), *Neolithic and Iron Age Sites at Darenth, Kent*, Kent Special Subject Ser No. **10**, Kent Archaeol Rescue Unit, 45-63
Couldrey, P, 1999 The Iron Age Pottery in Philp *et al.* 1999, 107-121
Couldrey, P, 2003 Prehistoric Pottery in Hutchings 2003, 55-59
Couldrey, P, 2007 The Late Bronze Age/Early Iron Age pottery, in Bennett *et al*.
Couldrey, P, 2009 Later Prehistoric Pottery, in Allen and Donnelly 2009, 15-160
Cox, M and Mays, S, 2000 *Human osteology in archaeology and forensic science*, London
Coy, J, 1984 The Bird Bone, in Cunliffe 1984, 527-31
Cracknell, P M, 1990 A group of marked brooches from Gloucester, *Britannia* **21**, 197-206
Craddock, P T, 1985 Three thousand years of

copper alloys from the Bronze Age to the Industrial Revolution, in L Van Zelst and P England (eds), *Application of science in the evaluation of works of art*, 59-67 and microfiche
Craddock, P T and Lang, J, 1983, Spinning, turning and polishing, *Historical Metallurgy* **17 (2)**, 79-81
Cramp, K, 2006 The worked flint from Beechbrook Wood, Hothfield, Kent, *HS1 Specialist Report Series*, in ADS 2006
Creighton, J, 2006 *Britannia: the creation of a Roman province*, London
Cronyn, J, Pye, E and Watson, J, 1985 The recognition and identification of traces of organic materials in association with metal artefacts, in P Phillips (ed), *The archaeologist and the laboratory*, CBA Res Rep **58**, 24-27
Croom, A T, 2007 *Roman furniture*, Stroud
Crosby, A, 2001 Briquetage (Morton Saltern), in Lane and Morris 2001, 106-33
Crummy, N, 2007 The brooches, in Crummy *et al.* 314-20
Crummy, P, Benfield, S, Crummy, N, Rigby, V and Shimmin, D, 2007 *Stanway. An élite burial site at Camulodunum*, Britannia Monogr **24**, London
Cummings, L S, 1992 Illustrated phytoliths from assorted food plants, in G Jr Rapp and S C Mulholland (eds), *Phytolith Systematics – Emerging Issues*, 175-192
Cunliffe, B, 1984 *Danebury: an Iron Age hillfort in Hampshire. The excavations 1969-1978:2 vols*, CBA Res Rep **52**
Cunliffe, B, 1992 Pits, preconceptions and propitiation in the British Iron Age, *Oxford J Archaeol* **11(1)**, 69-84
Cunliffe, B, 1995 *Danebury, an Iron Age hillfort in Hampshire, volume 6: a hillfort community in perspective*, CBA Res Rep **102**, London
Cunliffe, B, (ed) 2000 *The Danebury Environs Programme: The Prehistory of a Wessex Landscape. Volume 1: Introduction*, English Heritage and Oxford Univ Comm Archaeol Monogr No. **48**, Oxford
Cunliffe, B, 2005 *Iron Age communities in Britain*, 4 edn, London
Cunliffe, B and Orton, C, 1984 Radiocarbon age assessment, in Cunliffe 1984, 190-8
Cunliffe, B and Poole, C, 1991 *Danebury: an Iron Age hillfort in Hampshire. Volume 4: the excavations 1979-1988: the site*, CBA Res Rep **73**, London
Cunliffe, B and Poole, C, 2000 *The Danebury Environs Programme – The Prehistory of a Wessex Landscape, Volume 2, Part 2 – Bury Hill, Upper Clatford, Hants, 1990*, English Heritage and Oxford University Committee for Archaeology Monograph No. 49 (Part 2), Oxford
Curtis, R J, 1991 *Garum and Salsamenta: Production and Commerce in Materia Medica*, New York
Daniel, P, 2009 *Archaeological Excavations at Pode Hole Quarry: Bronze Age Occupation on the Cambridgeshire Fen-edge*, BAR Brit Ser **484**, Oxford
Dannell, G B, Dickinson, B M, Hartley, B R, Mees, A W, Polak, M, Vernhet, A, and Webster, P, 2003 *Gestempelte Südgallische Reliefsigillata (Drag. 29) aus den Werkstätten von La Graufesenque*, Mainz
Davies, B, Richardson, B and Tomber, R, 1994 *A dated corpus of early Roman pottery from the City of London*, CBA Res Rep **98**, London
Davies, M, 2001 Death and social division at Springhead, *Archaeol Cantiana* **121**, 157-69
Davies, S M, 1981 Excavations at Old Down Farm, Andover. Part II: Prehistoric and Roman, *Proc Hampshire Fld Club Archaeol Soc* **37**, 81-163
Davis, A, 2006a The charred plant remains from Northumberland Bottom, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006
Davis, A, 2006b The charred plant remains from Tollgate, Cobham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Davis, J M, 1995 *The Archaeology of Animals*, London
Davis, S, *2006* The prehistoric landscape at Cobham Golf Course, Cobham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Davis, S J, 1992 A Rapid Method for Recording Information about animal bones from Archaeological Sites, AML 19/92, unpubl report
Dawkes, G, 2010 Archaeological investigations at A2 Activity Park, Gravesend, Kent, unpubl post-excavation assessment report prepared by Archaeology South East
DeBrisay, K and Evans, K (eds), 1975 *Salt: The Study of an Ancient Industry*, Colchester
Desfossés, Y, Martial, E, Vallin, L, Marinval, P, Munaut, A-V, Emontspohl, A-F, Rodriguez, P, Solari, M-E and Yvinec, J-H, 1992 Le site d'habitat du Bronze Moyen du « Château d'Eau » à Roeux (Pas-de-Calais), *Bulletin de la Société préhistorique française* **89**, 343-92
Desittere, M, 1967 *Die robkeramik der Urnenfelderkulturin in Belgien und den Niderlanden undder Sagenannte Harpstedter Stil*, Gent
Detsicas, A P, 1966 An Iron Age and Romano-British Site at Stone Castle Quarry, Greenhithe, *Archaeol Cantiana* **81**, 36-90
Detsicas, A P, 1975 A Romano-British Building at Charing, *Archaeol Cantiana* **91**,107-10
Detsicas, A P, 1984 A Salt-Panning Site at Funton Creek, *Archaeol Cantiana* **101**, 165-8
Devaney, R, 2006 The worked flint from Eyehorne Street, Hollingbourne, Kent, *HS1 Specialist Report Series*, in ADS 2006
Devoy, R J N, 1979 Flandrian sea-level changes and vegetational history of the lower Thames estuary, *Phil Trans Royal Soc Bull* **285**, 355-407
Dewey, H and Bromehead, C E N, 1921 *The geology of south London*, London
Dewey, H, Bromehead, C E N, Chatwin, C P and Dines, H G, 1924 *The Geology of the Country around Dartford. Explanation of Sheet 271*, London
Dickenson, B, Hartley, B R and Pengelly, H W, 2004 Fabric supply: Class S, samian wares, in H E M Cool, *The Roman cemetery at Brougham, Cumbria. Excavations 1966-67*, Britannia Monograph **21**, London, 335-52

Diez, V, Keys, L, Northover, P and Shaffrey, R, 2006 Small finds from Beechbrook Wood, Hothfield, Kent (ARC BBW00, ARC BWD98), *HS1 Specialist Report Series*, in ADS 2006

Dimbleby, G, 1984 *The Palynology of Archaeological Sites*, London

Dines, H G, Buchan, S, Holmes, S C A and Bristow, C R, 1969 *Geology of the Country around Sevenoaks and Tonbridge*. *Explanation of one Inch Geological Sheet 287*, New Ser

Dinwiddy, K E and Schuster, J, 2009 Thanet's longest excavation: Archaeological investigations along the route of the Weatherlees-Margate-Broadstairs Wastewater Pipeline, in P Andrews *et al*. 2009, 57-174

Dobney, K M, Jaques, S D and Irving, B G, 1996 *Of Butchers and Breeders: Report on the vertebrate remains from various sites in the City of Lincoln*, Lincoln Archaeol Studies **5**

Down, A and Rule, M, 1971 *Chichester Excavations 1*, Chichester Civic Soc Excav Comm

Drew, C D and Piggott, S, 1936 The excavation of long barrow 163a on Thickthorn Down, Dorset, *Proc Prehist Soc* **2**, 77-96

Drewett, P L, 1982 Later Bronze Age downland economy and excavations at Black Patch, East Sussex, *Proc Prehist Soc* **48**, 321-400

Druce, D, 2011 The charcoal, in Simmonds *et al.* 2011, 170-2

Dryden, H, 1845 Roman and Roman-British remains at and near Shefford, Co. Beds., *Publications of the Cambridge Antiq Soc*, Vol **1**, 1840-46 (No. 8, 1845)

Dudd, S N and Evershed, R P, 1998 Direct demonstration of milk as an element of archaeological economies, *Science* **282**, 1478–81

Dudd, S and Evershed, R P, 1999 Unusual triterpenoid fatty acyl ester components of archaeological birch bark tar, *Tetrahedron Letters* **40**, 359-62

Dungworth, D, 1996 The production of copper alloys in Iron Age Britain, *Proc Prehist Soc* **62**, 399-421

Ecclestone, J, 1995 Early Iron Age settlement at Southend: excavations at Fox Hall Farm, 1993, *Essex Archaeol Hist* **26**, 24-39

Edgeley-Long, G P, 2006 ARC 330 98 Zone 4 Tollgate Later Prehistoric Pottery, in Barclay *et al.* 2006

Edwards, E, 2006a The early prehistoric pottery from Northumberland Bottom, Southfleet, Kent, *HS1 Specialist Report Series,* in ADS 2006

Edwards, E, 2006b The early prehistoric pottery from Beechbrook Wood, Hothfield, Kent, *HS1 Specialist Report Series,* in ADS 2006

Edwards, E, 2006c The early prehistoric pottery from North of Saltwood Tunnel, Saltwood, Kent, HS1 *Specialist Report Series,* in ADS 2006

Egan, G, and Pritchard, F, 1991 *Dress accessories,* c.*1150* – c.*1450*, Medieval finds from excavations in London; **3**, HMSO, London

Eggers, H J, 1951 *Der römische Import im freien Germanien*, Beiheft zum Atlas der Urgeschichte 1, Hamburgisches Museum für Völkerkunde und Vorgeschichte, Hamburg

Eglinton, G and G A, Logan, 1991 Molecular preservation, *Phil Trans Roy Soc London B* **333,** 315-328

Ellison, A, 1975 Pottery and settlements of the later Bronze Age in Southern England, unpubl PhD thesis, Univ Cambridge

Ellison, A, 1978 The Bronze Age in Sussex, in P L Drewitt (ed), *Archaeology in Sussex to AD 1500*, CBA Res Rep **29**, 30-7

Ellison, A, 1981 Towards a socioeconomic model for the Middle Bronze Age in southern England, in I Hodder, G Isaac and N Hammond (eds), *Patterns of the Past*, Cambridge, 413–38

Ellison, A, 1987 The Bronze Age settlement at Thorny Down: pots, post-holes and patterning, *Proc Prehist Soc* **53,** 385-392

Ellison, R A, 2004 *Geology of London,* British Geological Survey

Esmonde Cleary, S, 2001 Putting the dead in their place: burial location in Roman Britain, in J Pearce, M Millett and M Struck (eds), *Burial and society and context in the Roman world*, Oxford, 127-42

Evans, E P, 1906 *The Criminal Prosecution and Capital Punishment of Animals,* London

Evans, J G, 1972 *Land snails in archaeology*, London

Evans J G, 1984 Stonehenge- The environment in the late Neolithic and early Bronze Age and a beaker burial, *Wiltshire Archaeol Nat Hist Mag* **78**, 7-30

Evans, J G and Jones, H, 1973 Subfossil and modern land snail faunas from rock-rubble habitats', *J Conchology* **28**, 103–29

Evans, J H, 1953 Archaeological horizons in the north Kent marshes, *Archaeol Cantiana* **66**, 103-46

Evershed, R P, 1993 Biomolecular archaeology and lipids, *World Archaeol* **25(1),** 74-93

Evershed, R P, Stott, A W, Raven, A, Dudd, S N, Charters, S and Leyden, A, 1995 Formation of long-chain ketones in ancient pottery vessels by pyrolysis of acyl lipids, *Tetrahedron Letters* **36(48),** 8875-8

Evershed, R P, Dudd, S N, Charters, S, Mottram, H, Stott, A W, Raven, A, van Bergen, P F and Bland, H A, 1999 Lipids as carriers of anthropogenic signals from prehistory, *Phil Trans Roy Soc London B* **354,** 19-31

Evershed, R P, Berstan, R, Grew, F, Copley, M S, Charmant, A J H, Barham, E, Mottram, H R and Brown G, 2004 Formulation of a Roman cosmetic, *Nature* **432**, 35-36

Evershed, R P, Dudd, S N, Lockheart, M J and Jim, S 2001 Lipids in archaeology, in D R Brothwell and A M Pollard (eds), *Handbook of Archaeological Sciences,* 331-49

Every, R, 2006 The late Iron Age and Roman pottery from Northumberland Bottom, Southfleet, Kent, *HS1 Scheme-wide Specialist Report Series*, in ADS 2006

Farmer, P G, 1979 *An Introduction to Scarborough Ware and a Re-assessment of Knight Jugs,* privately published by author
Farwell, D E and Molleson, T I, 1993 *Poundbury volume 2 – the cemeteries*, Proc Dorset Nat Hist and Archaeol Soc Monogr Ser **11**, Dorchester
Fasham, P J, 1989 *The archaeological site at Easton Lane, Winchester*, Hampshire Field Club and Archaeological Society Monograph no. **6**, Winchester
Fenton, A, 1983 Grain storage in pits: Experiment and fact, in A O'Connor and D V Clarke (eds), *From the Stone Age to the 'Forty Five,* Edinburgh, 567–88
Ferembach, D, Schwidetzky, I and Stloukal, M, 1980 Recommendations for age and sex diagnoses of skeletons, *Journal of Human Evolution* **9**, 517-49
Fitzpatrick, A P, 1997 *Archaeological excavations on the route of the A27 Westhampnett Bypass, West Sussex, 1992. Volume 2: the Late Iron Age, Romano-British and Anglo-Saxon cemeteries*, Wessex Archaeol Rep No. **12**, Salisbury
Fitzpatrick, A, Brunning, R, Johns, C, Minnitt, S, Moore, T and Mullin, D, 2007 Later Bronze Age and Iron Age, in C J Webster (ed), *The archaeology of south west England. South West Archaeological Research Framework: resource assessment and research agenda*, 117-44
Ford, S, Entwistle, R and Taylor, K, 2003 *Excavations at Cippenham, Slough, Berkshire, 1995-7*, Thames Valley Archaeol Services Mono **3**, Reading
Fitzpatrick, A P, and Megaw, V, 1987 Further finds from the Le Catillon hoard, *Proc Prehistoric Soc* **53**, 433-44
Fitzpatrick, A P, and Megaw, V, 1989 Le depot de monnaies Celtiques et de parures du Catillon, Jersey, Iles Anglo-Normandes, *Bulletin de l'Association Manche Atlantique pour la Recherche Archéologique dans les îles*, N^{O} **2**, 55-9
Foster, J, 1990 Other Bronze Age artefacts, in Bell 1990, 158-75
Fox, C, 1946 *A find of the early iron age from Llyn Cerrig Bach, Anglesey*, National Museum of Wales, Cardiff
French, D A and Green, P W, 1983 A late Iron Age site at Thong Lane, Gravesend, *Kent Archaeol Rev* **73**, 54-68
Fulford, M G and Peacock, D P S, 1984 *Excavations at Carthage: The British Mission* Vol **I:2**
Fürtwangler, A, 1913 Die Bronzeeimer von Mehrum, *Kleiner Schriften* (ed. J Sieveking and L Curtius), vol 2, Munich, 391-400
Gale, R, 1992 Charcoal, in C A Butterworth and S J Lobb (eds), 1992 Excavations at Field Farm, Burghfield, Berkshire, in *Excavations in the Burghfield Area, Berkshire,* Wessex Archaeol Rep **1**, Salisbury, 5-70, 65-8
Gale, R, 1997 Charcoal, in Fitzpatrick 1997, 77-82
Gale, R and Cutler, D, 2000 *Plants in Archaeology: Identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c. 1500*, london
Gallois, R W (ed), 1965 *British Regional Geology: The Wealden District*, British Geological Survey, London
Gardiner, M, 2000 Vernacular Buildings and the Development of the Later Medieval Domestic Plan in England *Med Archaeol* **44**, 159-79
Garrow, D, 2006 *Pits, settlement and deposition during the Neolithic and Early Bronze Age in East Anglia*, BAR Brit Ser **414**, Oxford
Garrow, D, Beadsmore, E and Knight, M, 2005 Pit Clusters and Temporality of Occupation: an Earlier Neolithic Site at Kilverstone, Thetford, Norfolk, *Proc Prehist Soc* **71**, 139-58
Garwood, P, 2011 Early Prehistory, in Booth *et al.* 2011, 37-150
Gechter, M and Kunow, J, 1983 Der frühkaiserzeitliche Grabfunde von Mehrum. Ein Beitrag zur Frage von Germanen in römischen Diensten, *Bonner Jahrbücher* **183**, 449-68
Gelling, M, 1979 *The early charters of the Thames Valley*, Leicester
Gent, H, 1983 Centralized storage in Later Prehistoric Britain, *Proc Prehist Soc* **49**, 243-67
Getty, R, 1975 *Sisson and Grossman's the Anatomy of the Domestic Animals*, 5 edn
Gibson, A M, 1990 Neolithic sherds and the Beaker, in D R J Perkins and A M Gibson (eds), A Beaker burial from Manston, *Archaeol Cantiana* **108**, 19-24
Gibson, A M, 1992a Appendix I: The Beaker from Cottington Hill, Ebbesfleet, Ramsgate, in D R J Perkins (ed), 1992 Archaeological Evaluations at Ebbesfleet in the Isle of Thanet, *Archaeol Cantiana* **110**, 2-86
Gibson, A, 1992b Note on a Beaker sherd from Wye, *Archaeol Cantiana* **110**, 399-400
Gibson, A M, 1998 The Neolithic-Early Bronze Age pottery, in Preece and Bridgland 1998, 295-302
Gibson, A M, 2002 *Prehistoric Pottery in Britain and Ireland*, Stroud
Gingell, C, 1992 *The Marlborough Downs: a later Bronze Age landscape and its origins*, Wiltshire Archaeol Nat Hist Soc Monogr **1**
Going, C J, 1987 *The mansio and other sites in the south-eastern sector of Caesaromagus:the Roman pottery*, CBA Res Rep **62**, London
Going, C J, 1988 The ceramics, in *Excavations at Great Dunmow, Essex: a Romano-British small town in the Trinovantian civitas* (N P Wickenden), East Anglian Archaeol **41**, Chelmsford, 22-3
Gollop, A, 2003 Queen's Farm, Shorne, *Canterbury's Archaeology 2002-2003* **27**, 36-8
Goodburn-Brown, D, 1996 Surface Studies on Metals from Waterlogged Sites, *Corrosion Science* **38**, 443-5
Goodburn-Brown, D and Panter, I, 2004 Reburial Ahead of Development, *Conservation and Management of Archaeological Sites, Colloquium on Reburial of Archaeological Sites, Santa Fe, New Mexico (March17-21, 2003)*
Goodburn-Brown, D, forthcoming Nuetron Analysis Studies on a Collection of Roman

bronzes from South-east England
Gosselin, J-Y *et al.* 1984 Le site protohistorique de Vron (Somme), sílos réutilisés comme sépultres, in J-Y Gosselin, G Leman-Delerive and C Seiller, *Les Celtes en Belgique et dans le Nord de la France*, Revue du Nord, no. special, 33-40
Grant, A, 1981 The significance of deer remains at occupation sites of the Iron Age to the Anglo-Saxon period, in M Jones and G Dimbleby (eds), *The Environment of Man: The Iron Age to the Anglo-Saxon Period*, BAR Brit Ser **87**, 205-13
Grant, A, 1982 The use of toothwear as a guide to the age of domestic ungulates, in B Wilson, C Grigson and S Payne (eds), *Ageing and sexing animal bones from archaeological sites,* BAR Brit Ser **109**, Oxford, 91-108
Grant, A, 1984 Animal Husbandry, in Cunliffe 1984, 496-548
Green, M, 1992 *Animals in Celtic Life and Myth*, London
Green, M, 1997 *Dictionary of Celtic Myth and Legend*, London
Greene, K, 1979 *Report on the excavations at Usk, 1965-1976: The pre-Flavian fine wares*, Cardiff
Grigson, C, 1982 Sex and Age Determinations of some Bones and Teeth of domestic Cattle: a review of the literature, in A R Hands and D R Walker (eds), *Ageing and Sexing of Animal Bones from Archaeological Sites*, BAR Brit Ser **109**, Oxford,7-23
Grimm, P, 1968 The royal palace at Tilleda: excavations from 1935-66, *Medieval Archaeol* **12**, 83-100
Grünberg, J M, 2002 Middle Palaeolithic birch-bark pitch, *Antiquity* **76**, 15-16
Guasch-Jané, M R, Ibern-Gómez, M, Andrés-Lacueva, C, Jáuregui O and Lamuela-Raventos, R M, 2004 Liquid chromatography with mass spectrometry in tandem mode applied for the identification of wine markers in residues from Ancient Egyptian vessels, *Analytical Chemistry* **76**, 1672-7
Guillaumet, J-P, 1991 Les situles Eggers 16, in M Feugère and C Rolley (eds), *La vaisselle tardo-républicaine en bronze: actes de la table-ronde CNRS organisé à Lattes du 26 au 28 avril 1990*, Dijon, 8-11
Gurney, D, 1986 *Settlement, Religion and Industry on the Fen-Edge: Three Romano-British Sites in Norfolk,* EAA Rep **31**
Gurney, D, 1999 A Romano-British salt-making site at Shell Bridge, Holbeach St Johns: Excavations by Ernest Greenfield, 1961, in Bell *et al*. 1999, 21-69
Guttmann, E B A and Last, J, 2000 A Late Bronze Age landscape at South Hornchurch, Greater London, *Proc Prehist Soc* **66**, 319-59
Hakbijl, T, 2002 The traditional, historic and prehistoric uses of ashes as an insecticide, with an experimental study on the insecticidal activity of washed ash, *Environmental Archaeol* **7**, 13–22
Halstead, P, 1985 A study of mandibular teeth from Romano-British contexts at Maxey, in F Pryor (ed), *Archaeology and environment in the lower Welland Valley*, EAA Rep **27**, 219-24
Hambledon, E, 1999 *Animal Husbandry Regimes in Iron Age Britain: A comparative study of faunal assemblages from British Iron Age sites*, BAR Brit Ser **282**, Oxford
Hamerow, H F, 2002 *Early Medieval Settlements. The archaeology of Rural communities in Northwest Europe 400-900*, Oxford
Hamilton, S, 1988 Earlier first millennium BC pottery from Rectory Road and Baker Street, in Wilkinson 1988, 77-80
Hamilton, S, 2007 Cultural choices in the 'British Eastern Channel Area' in the Late Pre-Roman Iron Age, in C Haselgrove and T Moore (eds), *The later Iron Age in Britain and beyond*, Oxford, 81-106
Hamilton, S and Seager-Thomas, M, 2005 Neolithic and Bronze Age Pottery in B Bishop and M Bagwell (eds), *Iwade*, Pre-Construct Archaeol Monogr **3**, 20-38
Hamilton-Dyer, S, 2006 Bird and fish bone, in J Kitch (ed), Animal bone from Thurnham Roman Villa, Kent, *HS1 specialist report series*, in ADS 2006
Hamilton-Dyer, S, 2008 CTRL2 Fish Report, unpubl document
Handy, E S C and Pukui, M K, 1958 *The Polynesian family system in Ka-'U, Hawai'I*, Wellington
Hanworth, R and Tomalin, D J, 1977 *Brooklands, Weybridge: the excavation of an Iron Age and medieval site*, Surrey Arch Soc Res Vol. **4**
Harcourt, E, 1979 The Animal Bone, in Wainwright 1979, 105-6
Harding, D W, 1972 *The Iron Age in the Upper Thames Basin*, Oxford
Harding, P, 1990 The worked flint in J C Richards (ed), *The Stonehenge Environs Project*, 15-25
Harding, P, 2006 Prehistoric Worked Flint from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Scheme-wide Specialist Report Series*, in ADS 2006
Hardy, A and Bell, C, 2001 *The excavation of a medieval rural settlement at the Pepper Hill electricity substation, Northfleet, Kent*, Oxford Archaeol Occas Pap No. **10**, Oxford
Hardy, A, Charles, B M and Williams, R J, 2007 *Death and Taxes: the archaeology of a Middle Saxon estate centre at Higham Ferrers, Northants,* Oxford Archaeol Monogr No. **4**, Oxford
Hardy, A and Andrews, P, 2011 Saxon, medieval and post-medieval landscape, in P Andrews *et al.* 2011, 249-306
Hart, J and Mudd, A, forthcoming A late prehistoric hilltop settlement and other excavations along the Taplow to Dorney Water Pipeline, Cotswold Archaeol Rep
Hartley, B R and Dickinson, B M, 2008 *Names on terra sigillata, volume 1 (a to axo)*, BICS Supplement **102-01**, London
Haselgrove, C, 1998 The Iron Age Coins, in I Kinnes *et al., Excavations at Cliffe, Kent*;British

Museum Occasional Paper no. **69**, London, 63-4
Haselgrove, C and Moore, T (eds), 2007 *The Later Iron Age in Britain and Beyond*, Oxford
Hather, J G, 2000 *The Identification of Northern European Woods; A Guide for Archaeologists and Conservators*, london
Havis, R and Brooks, H, 2004 *Excavations at Stansted Airport, 1986-91. Volume 1: Prehistoric and Romano-British*, East Anglian Archaeology **107**, Chelmsford
Hawkes, C F C, and Hull, M R, 1947 *Camulodunum: First report on the excavations at Colchester 1930-1939*, Rep Res Comm Soc Antiqs London **14**, London
Hawthorn, A, 1979 *Kwakiutl art*, Washington
Hayden, C, 2006a The Prehistoric landscape at White Horse Stone, Aylesford, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Hayden, C, 2006b The Prehistoric landscape at Eyhorne Street, Hollingbourne, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Healy, F, 1988 *The Anglo-Saxon cemetery at Spong Hill, North Elmham. Part VI: occupation in the seventh to second millennia BC*, EAA Rep **39**
Hedges, J D and Buckley, D G, 1978 Excavations at a Neolithic causewayed enclosure, Orsett, Essex, 1975, *Proc Prehist Soc* **4**, 203-18
Hermet, F, 1934 *La Graufesenque (Condatomago)*, Paris
Heron, C and Evershed, R P, 1993 The analysis of organic residues and the study of pottery use, in M B Schiffer (ed), *Archaeol Method and Theory* **V,** 247-86
Heron, C and Pollard, A M, 1988 The analysis of natural resinous materials from Roman amphoras, in E A Slater and J O Tate (eds), *Science and archaeology—Glasgow 1987. Proceedings of a conference on the application of scientific techniques to archaeology,* BAR Brit Ser **196**, 429–47
Hey, G, Booth, P and Timby, J, 2011 *Yarnton: Iron Age and Romano-British settlement and landscape. Results of excavations 1990-8,* Oxford Archaeol Thames Valley Landscapes Monogr **35**, Oxford
Heyworth, M, 2007 Examination and analysis of fired clay from Pit B215, in Bennett *et al.* 2007, 268-9
Highways Agency, 2004 A2 Pepperhill to Cobham Widening Scheme, Environmental Statement, Volume **1**
Hill, J D, 1995 *Ritual and rubbish in the Iron Age of Wessex*, BAR Brit Ser **242**, Oxford
Hill, J D, Evans, C and Alexander, M, 1999 The Hinxton Rings – a late Iron Age cemetery at Hinxton, Cambridgeshire, with a reconsideration of northern Aylesford-Swarling distributions, *Proc Prehist Soc* **65**, 243-73
Hill, J D, Spence, A J, La Niece, S and Worrell, S, 2004, The Winchester hoard : a find of unique Iron Age gold jewellery from Southern England, *Antiquaries Journal* **84**, 1-22
Hillman, G, 1981 Reconstructing crop husbandry practices from the charred remains of crops, in R J Mercer (ed), *Farming practice in British prehistory,* 123-62
Hillman, G, 1984a Interpretation of archaeological plant remains: The application of ethnographic models from Turkey, in W, van Zeist and W A, Casparie (eds), *Plants and Ancient Man: Studies in Palaeoethnobotany*, 1-41
Hillman, G, 1984b Traditional husbandry and processing of archaic cereals in recent times: the operations, products and equipment which might feature in Sumerian texts. Part I: The glume wheats, *Bulletin on Sumerian Agriculture* **1**, 114-52
Hillman, G, 1985 Traditional husbandry and processing of archaic cereals in recent times: the operations, products and equipment that might feature in Sumerian texts. Part II: The free-threshing cereals, *Bull Sumerian Agriculture* **2**, 1-31
Hillson, S, 1992 *Mammal bones and teeth: an introductory guide to methods of identification*, London
Hiscock, R H, 1968 The road between Dartford, Gravesend and Strood, *Archaeol Cantiana* **83**, 229-47
Hobbs, R, 1996 *British Iron Age Coins in the British Museum*, London
Hodder, I, 1987 The meaning of discard: Ash and domestic space in Baringo, in S Kent (ed), *Method and Theory for Activity Area Research: An Ethnoarchaeological Approach*, 424-48
Hodgson, J G, Halstead, P, Wilson, P J and Davis, S, 1999 Functional interpretation of archaeobotanical data: Making hay in the archaeological record, *Vegetation Hist and Archaeobotany* **8**, 261-71
Hodson, M J, 2002 Phytoliths, in S Foreman, J Hiller and D Petts (eds), *Gathering the people, settling the land: the archaeology of the Middle Thames landscape Anglo-Saxon to post medieval*, Thames Valley Landscapes Monogr, **14**, Oxford CD-Rom
Holden, J L, Phakley, P P and Clement, J G, 1995 Scanning electron microscope observations of heat-treated human bone, *Forensic Science International* **74**, 29-45
Holleyman, G A and Curwen, E C, 1935 Late Bronze Age Lynchet-Settlements on Plumpton Plain, Sussex, *Proc Prehist Soc* **1**, 16-38
Holman, D J, 2000 Iron Age Coinage in Kent : a review of current knowledge, *Archaeol Cantiana* **120**, 205-33
Holman, D J, 2005 Iron Age Coinage and Settlement in East Kent, *Britannia* **36**, 1-54
Honch, N V, 2008 The Palaeodietary Implications of Amino Acid Stable Isotope Analysis: Developments in the Application of Compound Specific Isotope Techniques to Archaeological Bone Collagen. Unpublished D.Phil. Thesis, University of Oxford
Humphrey, J, 2003 The use of flint in the British Iron Age, in J Humphrey (ed), *Researching the Iron Age: selected papers from the proceedings of the*

Iron Age Research Students Seminars 1999–2000, Leicester Archaeol Monogr **11**, Leicester
Humphrey, J and Young, R, 1999 Flint use in England after the Bronze Age: time for a re-evaluation, *Proc Prehist Soc* **65**, 231-42
Hurtrelle, J, Monchy, E, Roger, F, Rossngnol, P and Villes, A, 1990 Les débuts du second âge du fer dans le Nord de la France. Les dossiers de Gauheria **1**
Hutchings, P, 2003 Ritual and riverside settlement: a multi-period site at Princes Road, Dartford, *Archaeol Cantiana* **123**, 41-79
Housley, R A, Gamble, C S, Street, M and Pettitt, P, 1997 Radiocarbon evidence for the Late glacial human recolonisation of northern Europe, *Proc Prehist Soc* **63**, 25-54
Inizan, M-L, Roche, H and Tixier, J, 1992 *Technology of knapped stone*, Cercle de Recherches et d'Etudes Préhistoriques, CNRS, Meudon
Ishida, S, Parker, A G, Kennet, D and Hodson, M J, 2003 Phytoliths from the archaeological site of Kush, Ras al Khaimah, United Arab Emirates, *Quaternary Research* **59**, 310-21
Jacobi, R, 1978 The Mesolithic of Sussex, in P L Drewitt (ed), *Archaeology in Sussex to AD 1500*, CBA Res Rep **29,** London, 15-22
Jacques, A and Prilaux, G, 2003 *Dans Le Sillage De Cesar; Traces de romanisation d'un territoire, les fouilles d'Actiparch à Arras.* Arras: Musée des Beaux-Arts
James, S, Marshall, A and Millett, M, 1984 An Early Medieval Building Tradition, *Archaeol J* **141**, 182-215
James, S and Rigby, V, 1997 *Britain and the Celtic Iron Age*, London
Jenkins, F, 1958 The Cult of the "Pseudo-Venus" in Kent, *Archaeol Cantiana* **72**, 60-76
Jessup, R, 1930 *The Archaeology of Kent*, London
Johnston, D E, 1972 A Roman Building at Chalk, near Gravesend, *Britannia* **3**, 112-148
Jones, G, 1984 Interpretation of archaeological plant remains: Ethnographic models from Greece, in W, van Zeist and W A, Casparie (eds), *Plants and Ancient Man: Studies in Palaeoethnobotany*, 43-61
Jones, G, 1987 A statistical approach to the archaeological identification of crop-processing, *J Archaeol Sci* **14**, 311-23
Jones, G, 1995 Maslins, mixtures and monocrops: On the interpretation of archaeobotanical crop samples of heterogeneous composition, *J Archaeol Sci* **22**, 103-14
Jones, G, 1996 An ethnoarchaeological investigation of the effects of cereal grain sieving, *Circaea* **12(2)**, 177-82
Jones, G, 1998 Wheat grain identification – why bother? *Environmental Archaeol* **2**, 29-34
Jones, G, 2000 Evaluating the importance of cultivation and collecting in Neolithic Britain, in A S Fairbairn (ed), *Plants in Neolithic Britain and beyond*, Neolithic Studies Group Seminar Papers **5,** 79-83
Jones, G, forthcoming, Evidence for the importance of cereals in the Neolithic: Charred plant remains from the Neolithic settlement at Lismore Fields, Buxton, in D Garton (ed), The Excavation of a Mesolithic and Neolithic Settlement Area at Lismore Fields, Buxton, Derbyshire
Jones, G and Halstead, P, 1995 Maslins, mixtures and monocrops: On the interpretation of archaeobotanical crop samples of heterogeneous composition, *J Archaeol Sci* **22**, 103-14
Jones, G and Rowley-Conwy, P, 2007 On the importance of cereal cultivation in the British Neolithic, in S Colledge and J Conolly (eds), *The Origins and Spread of Domestic Plants in Southwest Asia and Europe*, 391-419
Jones, G J, 2006 Tooth Eruption and Wear Observed in Live Sheep from Butser Hill, the Cotswold Farm Park and Five Farms in the Pentland Hills, UK, in D Ruscillo (ed) *Recent Advances in Ageing and Sexing Animal Bones, Proceedings of the 9th Conference on the International Council of Archaeozoologists, 2002*, 155-78
Jones, G P, 2006 The later prehistoric Pottery from Tollgate, Cobham, Kent (ARC TLG 98), *HS1 Specialist Report Series*, in ADS 2006
Jones, G P, 2009 Later prehistoric and Roman pottery from the route of the Weatherlees – Margate – Broadstairs wastewater pipeline, in P Andrews *et al.* 2009, Specialist Rep. no. 2
Jones, M K, 1981 The development of crop husbandry, in M K Jones and G Dimbleby (eds), *The Environment of Man, the Iron Age to the Anglo-Saxon period*, BAR Brit Ser **87**, 95-127
Jones, M K, 1985 Archaeobotany beyond subsistence reconstruction, in G Barker and C Gamble (eds), *Beyond domestication in prehistoric Europe*, 107-28
Jones, M U, 1972 Potters' graffiti at Mucking, Essex, *Antiq J* **52**, 335-8
Jones, M U, 1977 Prehistoric salt equipment from a pit at Mucking, Essex, *Antiq J* **57**, 317-9
Jones, M U and Bond, D, 1980, Late Bronze Age settlement at Mucking, Essex, in J Barrett and R Bradley (eds), *Settlement and Society in the British Late Bronze Age*, BAR Brit Ser **83**, Oxford 471-82
Karasová, Z, 1998 *Die römischen Bronzegefässe in Böhmen*, Fontes Archaeologici Pragenses, Vol **22**, Prague
Kay, Q O N, 1971 Biological flora of the British Isles: *Anthemis cotula* L., *J of Ecology* **59 (2)**, 623-36
Kay, Q O N, 1994 Biological flora of the British Isles: *Tripleurospermum inodorum*, *J of Ecology* **82**, 681-97
Keesing, R M, 1975 *Kin Groups and Social Structure*, New York
Keiller, A and Piggott, S, 1939 Badshot long barrow, in K P Oakley, W F Rankine, and A W G Lowther (eds), *A Survey of the Prehistory of the Farnham District (Surrey)*, Surrey Archaeol Society, 133-49
Kerney, M P, 1999 *Atlas of the land and freshwater*

molluscs of Britain and Ireland, Great Horkesley
Kerney, M P, Brown, E H and Chandler, T J, 1964 The late glacial and post-glacial history of the chalk escarpment near Brook, Kent, *Phil Trans Roy Soc London* **248**, 135-204
Kerney, M P, Preece, R C and Turner, C, 1980 Molluscan and plant biostratigraphy of some Late Devensian and Flandrian deposits in Kent, *Phil Trans Roy Soc London B* **291**, 1-43
Key, C A, Aiello, L C and Molleson, T, 1994 Cranial suture closure and its implications for age estimation, *Int J Osteoarchaeology* **4**, 193-207
Kitch, J, 2006a Animal bone from Tollgate (CTRL Project Area 330, Zone 4), Gravesham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Kitch, J, 2006b Animal bone from a Roman cemetery at Pepper Hill, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006
Kitch, J and Hamilton-Dyer, S, 2006 Animal bone from Mersham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Kloster, A, 1997 *The Bronze vessels 2. Acquisitions 1954-1996 (including vessels of pewter and iron)*, Description of the Collections of the Provincial Museum G M Kam at Nijmegen, **XIII**
Knorr, R, 1919 *Töpfer und Fabriken verzierter Terra-Sigillata des ersten Jahrhunderts*, Stuttgart
Kunow, J, 1983 *Der römische Import in der Germania libera bis zu den Markomannenkriegen : Studien zu Bronze- und Glasgefässen*, Göttinger Schriften zur Vor- und Frühgeschichte, Bd. **21**
Künzl, E, 1982 *Medizinische Instrumente aus Sepulkral funden der römischen Kaiserzeit* (Rheinisches Landesmuseum, Kunst und Altertum am Rhein Nr. 115), Bonn
Künzl, E, 2002 *Medizin in der Antike*, Theiss, Stuttgart
Lambrick, G and Allen, T, 2004 *Gravelly Guy, Stanton Harcourt, Oxfordshire. The development of a prehistoric and Romano-British community*, Oxford Archaeol Thames Valley Landscapes Monogr No. **21**, Oxford
Lambrick, G and Robinson, M A, 1979 *Iron Age and Roman riverside settlements at Farmoor, Oxfordshire*, Counc Brit Archaeol Res Rep **32**, London
Lambrick, G with Robinson, M, 2009 *The Thames through Time; the Archaeology of the Gravel Terraces of the Upper and Middle Thames. The Thames Valley in Late Prehistory: 1500 BC-AD 50*, Oxford Archaeol Thames Valley Landscapes Monogr No. **29**, Oxford
Lamdin-Whymark, H, 2008 *The residue of ritualised action: Neolithic deposition practices in the Middle Thames Valley*, BAR Brit Ser **466**, Oxford
Lamdin-Whymark, H, 2009, Struck flint, in Allen and Donnelly 2009, 263-84
Lane, T and Morris, E L (eds), 2001 *A Millennium of Saltmaking; Prehistoric and Romano-British Salt Production in the Fenland*, Lincolnshire Archaeol and Heritage Reports Ser **4**, Lincoln
Lane, T, Morris, E L and Peachey, M, 2008 Excavations on a Roman Saltmaking Site at Cedar Close, March, Cambridgeshire, *Proc Cambridgeshire Antiq Soc* **97**, 89-109
Lavender, N J, 1991 A late Iron Age burial enclosure at Maldon Hall Farm, Essex: Excavations 1989, *Proc Prehist Soc* **57**, 203-9
Leach, P (ed), 1982 *Archaeology in Kent to A.D. 1500*, CBA Res Rep **48**, London
Leese, M, 1991 A preliminary statistical study, in I M Stead, *Iron Age cemeteries in East Yorkshire*, London Heritage archaeological report **22**, 171-8
Legge, A J, 1991 The animal bones, in Stead 1991, 104-7
Le Goff, E, 2009 *Habitats et paysages ruraux en Gaule et regards sur d'autres regions du monde celtique*, Actes du XXXIe colloque international de l'AFEAF 2007, Memoire **XXXV**, 93-107
Le Goff, E, Cherel, A-F et Lepaumier, H, 2004 Les Occupations protohistoriques et antiques de la Z.A.C.<<Object'Ifs Sud>> (Calvados), Rapport final d'operation, 5 vol
Leman-Delerive, G, 1984 Les Celtes en Belgique et dans le Nord de la France. Les fortifications de l'Âge du Fer, Revue du Nord, no. spécial Hors série
Lethbridge, T C, 1953 Burial of an Iron Age Warrior at Snailwell, *Proc Cambridgeshire Antiq Soc* **47**, 25-37
Levine, M A, 1982 The use of crown height measurements and eruption-wear sequences in horse teeth, in B Wilson, C Grigson and S Payne (eds), *Ageing and Sexing Animal Bones form Archaeological Sites*, BAR Brit Ser **109**, Oxford, 223-50
Levine, M A, 1998 *The Palaeopathology of Horse Husbandry* http://www.arch.cam.ac.uk/~ml12/project/page3.html
Lewis, J, Leivers, M, Brown, L, Smith, A, Cramp, K, Mepham, L and Phillpotts, C, 2010 *Landscape Evolution in the Middle Thames Valley. Heathrow Terminal 5 excavations Vol. 2*, Framework Archaeology Monograph 3, Oxford and Salisbury
Lindsay, H, 1998 Eating with the dead, in I Nielsen and H S Nielsen (eds), *Meals in a social context-aspects of communal meal in the Hellenistic and Roman world*, 67-80
Liversidge, J, 1954 The Thornborough Barrows, *Recs Buckinghamshire* **16**, 29-32
Longley, D, 1980 *Runnymede Bridge 1976: excavations on the site of a Late Bronze Age settlement*, Surrey Archaeological Society Research volume **6**, Guildford
Longworth, I, 1984 *Collared Urns of the Bronze Age in Great Britain and Ireland*, Cambridge
Longworth, I, Ellison, A and Rigby, V, 1988 *Excavations at Grimes Graves, Norfolk, 1972-76 Fascicule 2, Neolithic, Bronze Age and Later Pottery*
Luke , M, 2008 *Life in the loop: Investigation of a prehistoric and Romano-British landscape at Biddenham Loop, Bedfordshire*, EAA Rep **125**
Lund Hansen, U, 1987 Römischer Import im

Norden, (København: Det Konigelige Nordiske Oldskriftselskab)
Lyman, R L, 1996 *Vertebrate taphonomy*, Cambridge
Lynnerup, N and Jacobsen, J C B, 2003 Age and fractal dimensions of human sagittal and coronal sutures, *American J Phys Anthropology* **121**, 332-6
MacDonald, D and Barrett, P, 1995 *Mammals of Britain and Europe*, Oxford
Macpherson-Grant, N, 1980 Archaeological work along the A2, 1966-74, *Archaeol Cantiana* **96**, 133-83
Macpherson-Grant, N C, 1989 The pottery from the 1987-89 Channel Tunnel excavations, *Canterbury's Archaeology 1988-89*, 60-3
Macpherson-Grant, N C, 1991 A re-appraisal of prehistoric pottery from Canterbury, *Canterbury's Archaeology 15th Annual Report 1990-91*, 38-48
Macpherson-Grant, N, 1992 A review of Late Bronze Age pottery from east Kent, *Canterbury Archaeological Trust 16th Annual Report*, 55-63
Macpherson-Grant, N, 1994 The pottery, in D R J Perkins, N Macpherson Grant and F Healy (eds), Monkton Court Farm Evaluation,1992, *Archaeol Cantiana* **114**, 262-3
Macpherson-Grant, N, 1995 Post-Roman Pottery in K Blockley, M Blockley, P Blockley, S S Frere and S Stow (eds), *Excavations in the Marlowe Car Park and Surrounding Areas, Part II: The Finds,* The Archaeol of Canterbury **V,** Canterbury Archaeol Trust, 815-920
Macpherson-Grant, N, 1996 The Late Bronze/Early Iron Age Transition Pottery from Cobham and Rochester Golf Course 1995, Pre-Construct Archaeol unpubl archive report
Macpherson-Grant, N, 2005 The late Bronze Age/early Iron Age and later pottery, in C Greatorix (ed), Later prehistoric settlement on the Hoo peninsula, *Archaeol Cantiana* **125**, 67-81
Macpherson-Grant, N, 2007a Later prehistoric briquetage from north-east Kent, in Bennett *et al.* 2007, 269-270
Macpherson-Grant, N, 2007b Perforated pottery slabs, in Bennett *et al.* 2007, 267-8
Malainey, M E, Przybylski, R and Sherriff, B L, 1999 The effects of thermal and oxidative degradation on the fatty acid composition of food plants and animals of Western Canada: implications for the identification of archaeological vessel residues, *J Archaeol Sci* **26,** 95-103
Maltby, M, 1981 Iron Age, Romano-British and Anglo-Saxon Animal Husbandry – A Review of the Faunal Evidence, in G Dimbleby and M Jones (eds), *The Environment of Man: the Iron Age to the Anglo-Saxon Period*, BAR Brit Ser **87**, Oxford, 155-203
Maltby, M, 1985 The Animal Bones, in P J Fasham (ed), *The Prehistoric Settlement of Winnal Down, Winchster: Excavations of MARC3 Site R17 in 1976 and 1977*, 97-150
Maltby, M, 1987 The Animal Bones from the Excavations at Owlsbury, Hants, an Iron Age and Early Romano-British Settlement, AML 6/87, unpubl report
Manning , W H, 1985 *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*, London
Margary, I D, 1973 *Roman roads in Britain,* 3rd edn, London
Marsh, G, and Tyers, P, 1978 The Roman pottery from Southwark, in *Southwark excavations 1972-1974, Joint Pub No 1 London and Middlesex Archaeol Soc*, Surrey Archaeol Soc, 533-82
Masefield, R, Branch, N, Couldrey, P, Goodburn, D and Tyers, I, 2003 A Later Bronze Age Well Complex at Swalecliffe, Kent, *Antiq J,* **83**, 47-121
Matson, F R, 1971 *A study of temperatures used in firing ancient Mesopotamian pottery, in Brill 1971*, 65-79
Mattusch C, 1990 The Casting of Greek Bronzes, *Small Bronze sculpture from the Ancient World*, The J Paul Getty Museum, 125-44
Mays, S and Anderson, T, 1995 Archaeological research priorities for human remains from south-east England (Kent, East and West Susses and Surrey), *Archaeol Cantiana* **115**, 355-88
Mays, S, Brickley, M and Dodwell, N, 2004 *Human bones from archaeological sites – guidelines for producing assessment documents and analytical reports*, English Heritage
McAvoy, F, 2000 The development of a Neolithic monument complex at Godmanchester, Cambridgeshire, in M Dawson (ed), *Prehistoric, Roman and Post-Roman landscapes of the Great Ouse Valley,* CBA Res Rep **119**, 51-6
McCarthy, M R and Brooks, C M, 1988 *Medieval Pottery in Britain AD 900-1600*, Leicester
McCullagh, J S O, 2007 Development of New Analytical Techniques for Amino Acid Isotope Analysis with Application to Palaeodietary Reconstruction. Unpublished D.Phil. Thesis, University of Oxford
McGovern, P E, Glusker, D L, Exner, L J and Voigt, M M, 1996 Neolithic resinated wine, *Nature* **381**, 480-1
McKinley, J I, 1993 Bone fragment size and weights of bone from modern British cremations and the implications for the interpretation of archaeological cremations, *Int J Osteoarchaeology* **3**, 283-7
McKinley, J I, 1994 Bone fragment size in British cremation burials and its implications for pyre technology and ritual, *J Archaeol Sci* **21**, 339-32
McKinley, J I, 1997 Bronze Age 'barrows' and funerary rites and rituals of cremation, *Proc Prehist Soc* **63**, 129-45
McKinley, J I, 2000a Cremation burials, in B Barber and D Bowsher (eds), *The eastern cemetery of Roman London. Excavations 1983-1990*, Museum of London Archaeol Services Monogr **4,** 264-7
McKinley, J I, 2000b The analysis of cremated bone, in Cox and Mays 2000, 403-21
McKinley, J I, 2000c, Phoenix rising: aspects of cremation in Roman Britain, in J Pearce, M

Millett and M Struck (eds), *Burial, society and context in the Roman world*, 38-44
McKinley, J I, 2004 Compiling a skeletal inventory: cremated human bone, in Brickley and McKinley 2004, 9-13
McKinley, J I, 2006 Human remains from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Scheme-wide Specialist Report Series*, in ADS 2006
McKinley, J and Roberts, C, 1993 *Excavation and post-excavation treatment of cremated and inhumed human remains*, Institute of Field Archaeologists Technical Paper No. **13**
Mcnee, B, 2006 The Pottery, in M Diack (ed), *A Bronze Age Settlement at Kemsley, near Sittingbourne, Kent*, Canterbury Archaeol Trust Occas Pap No. **3**, 25-52
Mcnee, B and Morris, E L, 2006 The later prehistoric pottery from Cobham Golf Course, Cobham, Kent (ARC CGC 98), *HS1 Specialist Report Series*, in ADS 2006_
McOmish, D, 1996 East Chisenbury: ritual and rubbish at the late Bronze Age-Iron Age transition, *Antiquity* **70**, 68-76
McParland, L C, Collinson, M E, Scott, A C, Campbell, G and Veal, R, 2010 Is vitrification in charcoal a result of high temperature burning of wood? *J Archaeol Sci* **37 (10)**, 2679-87
Meindl, R S and Lovejoy, C O, 1985 Ectocranial suture closure: A revised method for the determination of skeletal age at death based on the lateral-anterior sutures, *American J Phys Anthropology,* **68**, 29-45
Mellor, M, 1994 Oxfordshire Pottery: A synthesis of middle and late Saxon, medieval and early post-medieval pottery in the Oxford Region, *Oxoniensia* **59**, 17-217
Menez, Y, 2008 Le Camp de Saint-Symphorien à Paule (Côtes-d'Armor) et les résidences de l'aristocratie du second âge du Fer en France septentionale, Thèse
Menzel, H, 1960 *Die römischen Bronzen aus Deutschland I. Speyer*, Römisch-Germanischen Zentralmuseums, Mainz
Menzel, H, 1986 *Die römischen Bronzen aus Deutschland III. Bonn*, Römisch-Germanischen Zentralmuseums, Mainz
Mepham, L, 2006 The post-Roman pottery from Northumberland Bottom, Southfleet, Kent (WNB 98), *HS1 Specialist Report Series*, in ADS 2006
Merrifield, R, 1975 *The Archaeology of London*, London
Merriman, N, 1990 *Prehistoric London*, London
Merriman, N, 2000 Changing approaches to the first millennium BC, in H Haynes, H Sheldon and L Hannigan (eds), *London Under Ground: the Archaeology of a City*, 35–51
Meyers P, 1990 The Use of Provenance Studies of Ancient Bronzes, *Small Bronze sculpture from the Ancient World*, The J Paul Getty Museum, 237-52
Middleton, A P, 1995 Prehistoric red-finished pottery from Kent, in I Kinnes and G Varndell (eds), '*Unbaked Urns of Rudely Shape': Essays on British and Irish Pottery for Ian Longworth*, Oxbow Monogr **55**, 203-10
Miles, A, 1962 Assessment of age of a population of Anglo-Saxons from their dentition, *Proc Roy Soc Medicine* **55**, 881-6
Miles, A, 1975 Salt-panning in Romano-British Kent, in de Brisay and Evans 1975, 26-30
Miles, D, 1984 *Archaeology at Barton Court Farm, Abingdon, Oxon*, CBA Res Rep **50**
Millett, M, 1986 An early Roman cemetery at Alton, Hampshire, *Proc Hampshire Fld Club Archaeol Soc* **42**, 43-87
Millett, M, 1987 An early Roman burial tradition in central southern England, *Oxford J Archaeol* **6**, 63-8
Millett, M, 1993 A cemetery in an age of transition: King Harry Lane reconsidered, in M Strück (ed.), *Römerzeitlicher Gräber als Quellen zu Religion, Bevölkersungsstruker und Sozialgeschichte*, Mainz, 255-82
Millett, M, 2007 Roman Kent, in Williams 2007, 135-84
Moffett, L, Robinson, M A and Straker, V, 1989 Cereals, fruit and nuts: charred plant remains from Neolithic sites in England and Wales and the Neolithic economy, in A Miles, D Williams and N Gardner (eds), *The beginnings of agriculture*, BAR Int Ser **496**, 243-61
Mols, S T A M, 1999 *Wooden furniture in Herculaneum: form, technique and function*, Amsterdam
Monaghan, J, 1983 An investigation of the Romano-British pottery industry of the Upchurch marsh, *Archaeol Cantiana* **98**, 27-49
Monaghan, J, 1987 *Upchurch and Thameside Roman Pottery: a ceramic typology for northern Kent, first to third centuries AD*, BAR Brit Ser **173**, Oxford
Monk, M A, 1991 The archaeobotanical work carried out for the M3 Project: A retrospective view, in P J Fasham and R L B Whinney (eds), *Archaeology and the M3*, Hampshire Fld Club and Archaeol Soc Monogr **7**, 105–10
Moore, C, 2002 Late Bronze Age, Romano-British and Early/Middle Saxon features at Hoo St Werburgh, *Archaeol Cantiana,* **122**, 259-74
Moore, J and Jennings, D, 1992 *Reading Business Park, a Bronze Age landscape*, Thames Valley Landscape Monogr, **1**, Oxford
Moorhouse, S, 1986 Non-dating uses of medieval pottery, *Medieval Ceramics* **10**, 85-123
Moorrees, C F A, Fanning, E A and Hunt, E E Jr, 1963 Age variation of formation stages for ten permanent teeth, *J Dental Research* **42**, 1490-1502
Morgan, E D, Titus, L, Small, R J and Edwards, C, 1984 Gas chromatographic analysis of fatty material from a Thule Midden, *Archaeometry* **26(1),** 43-8
Morgan, F M, 1959 The excavation of a long barrow at Nutbane, Hants, *Proc Prehist Soc* **25**, 15-51
Morris, E L, 2001a Briquetage (Cowbit), in Lane and Morris 2001, 33-63

Morris, E L, 2001b Briquetage (Langtoft), in Lane and Morris 2001, 252-61
Morris, E L, 2001c Briquetage (Market Deeping), in Lane and Morris 2001, 265-79
Morris, E L, 2001d Briquetage (summary), in Lane and Morris 2001, 351-76
Morris, E L, 2001e Briquetage and Salt Production and Distribution Systems: a Comparative Study, in Lane and Morris 2001, 389-404
Morris, E L, 2004 Later prehistoric pottery, in Brossler *et al.* 2004, 58-90
Morris, E L, 2005a ARC CGC98 Cobham Golf Course Briquetage, in Barclay *et al.* 2006
Morris, E L, 2005b ARC CXT 98, ARC 330 98 (Archaeological Zone 6) Cuxton Later Prehistoric Pottery, in Barclay *et al.* 2006
Morris, E L, 2005c ARC WHS 98 White Horse Stone, ARC PIL 98 Pilgrims Way, ARC BFE 98 Boarley Farm East, ARC BFW 98 Boarley Farm West and ARC 420 58+200, 59+000, 59+300 98/9 Boarley Farm Later Prehistoric Pottery, in Barclay *et al.* 2006
Morris, E L, 2005d ARC BBW 98 Beechbrook Wood Briquetage, in Barclay *et al.* 2006
Morris, E L, 2006 Later prehistoric pottery, in Barclay *et al.* 2006
Morris, E L, 2007 Making magic: later prehistoric and early Roman salt production in the Lincolnshire fenland, in Haselgrove and Moore 2007, 430-43
Morris, E L, 2009 The Briquetage, in Daniel 2009, 74-82
Mottram, H R, Dudd, S N, Lawrence, G J, Stott, A W and Evershed, R P, 1999 New chromatographic, mass spectrometric and stable isotope approaches to the classification of degraded animal fats preserved in archaeological pottery, *J Chromatography **A*** **833**, 209-221
DeMoulins, D, 2006 Charred plant remains, in D Hurst (ed), *Roman Droitwich: Dodder Hill fort, Bays Meadow villa, and roadside settlement*, CBA Res Rep **146**, 69-75
Mudd, A, 1994 The excavation of a later Bronze Age site at Coldharbour Road, Gravesend, *Archaeol Cantiana* **114**, 363-411
Müldner, G and Richards, M P, 2007 Stable isotope evidence for 1500 years of human diet at the city of York, UK, *American Journal of Physical Anthropology* **133** 682-97
Muldner, G, Chenery, C, and Eckardt, H, 2011 The "headless Romans": multi-isotope investigations of an unusual burial ground from Roman Britain, *Journal of Archaeological Science*, **38**, 280-90
Mulholland, S C, and Rapp, G Jr, 1992 Phytolith Systematics: An Introduction, in G Jr Rapp and S C Mulholland (eds), *Phytolith Systematics-Emerging Issues*, 65-89
Mullin, D, Strid, L and Biddulph, E, 2011, A cattle burial from Hassocks, West Sussex, *Post-Medieval Archaeol* **45/2**, 366-7
Mulville, J, 2008 Foodways and Social Ecologies from the Middle Bronze Age to Late Iron Age, in J Pollard (ed), *Prehistoric Britain*, 225-37
Mulville, J and Levitan, B, 2004 The Animal Bone, in Lambrick and Allen 2004, 463-78
Murphy, P, 2001 Impressions and Other Plant Material in Briquetage from Salterns at Cowbit, Middleton and Morton Saltern, in Lane and Morris 2001, 376-7
Murray, P, 1980 Discard location: the ethnographic data, *American Antiquity* **45**, 490-502
Mynard, D C, 1973 Medieval pottery from Dartford, *Archaeol Cantiana* **88**, 187-99
Neal, D S, Wardle, A and Hunn, J, 1990 *Excavation of the Iron Age, Roman and Medieval settlement at Gorhambury, St Albans*, English Heritage Archaeol Rep No. **14**
Needham, S, 1996 Chronology and periodisation in the British Bronze Age, *Acta Archaeologia* **67**, 121-40
Needham, S, 2005 Transforming Beaker culture in north-west Europe: processes of fusion and fission, *Proc Prehist Soc* **71**, 159-70
Niblett, R, 1985 *Sheepen: an early Roman industrial site at Camulodunum,* CBA Res Rep **57**, London
Niblett, R, 1999 *The Excavation of a Ceremonial Site at Folly Lane, Verulamium*, Britannia Monogr Ser **14**, London
Nicholson, R A and Worley, F, 2006 Animal bone from Saltwood Tunnel, Kent, *HS1 Specialist Report Series*, in ADS 2006
Northover, J P, 1983 The exploration of the long-distance movement of bronze in Bronze and early Iron Age Europe, *Bull Inst Archaeol* **19**, 1982/3, 45-72
Northover, J P, 1984 Analysis of the bronze metalwork, in B W Cunliffe (ed), *Danebury, an Iron Age hillfort in Hampshire, Vol. 2, The excavations 1969-78: the finds,* CBA Res Rep **52**, 430-3
Northover, J P, 1987 Non-ferrous metallurgy, in B W Cunliffe (ed), *Hengistbury Head, Dorset, Vol. 1, The prehistoric and Roman settlement, 3500 BC–AD 500*, OUCA Monogr **13**, 186-196, Fiche 7: A3-12, B1-4
Northover, P, 1989 Non-ferrous metallurgy in archaeology, in J Henderson (ed), *Scientific Analysis in Archaeology*, Oxford, 213-34
Northover, J P, 1991a Non-ferrous metalwork and metallurgy, in N Sharples (ed), *The Excavations at Maiden Castle, 1985-6*, London, 159-165 and microfiche
Northover, J P, 1991b Non-ferrous metalwork and metallurgy, in B W Cunliffe (ed), *Danebury: an Iron Age hillfort in Hampshire, Vol. 5, The excavations 1979-1988: the finds,* CBA Res Rep **73**, 407-412
Northover, J P, 1992 Materials Issues in the Celtic coinage, in M Mays (ed), *Celtic Coinage: Britain and Beyond,* Proceedings of the 11th Oxford Symposium on coinage and monetary history, BAR **222**, 235-300
Northover, J P, 2000 Copper alloy analysis in J C Barrett, P W M Freeman and A Woodward (eds),

Cadbury Castle, Somerset: the later prehistoric and early historic archaeology, English Heritage, Archaeolog Rep **20**, 271-73
Northover, J P, 2004a Analyses of copper alloy metalwork from ACS, in R Havis and H Brooks (eds), *Excavations at Stansted Airport, 1986-91, Vol.* I, *Prehistoric and Romano-British,* EAA Rep **107**, 128-130
Northover, J P, 2004b Analysis of metalwork from DCS, in R Havis and H Brooks (eds), *Excavations at Stansted Airport, 1986-91, Vol.* I, *Prehistoric and Romano-British,* EAA Rep **107**, 234-238
Northover, J P and Salter, C J, 1990 Decorative metallurgy of the Celts, *Materials Characterisation* **25(1)**, 47-62
Novotný, B, 1955 Hrob velmože z počátku Doby Římské v Praze-Bubenči (Das Fürstengrab aus dem Beginn der Römerzeit in Prag-Bubeneč), *Památky Archeologické* **46**, 227-64
Nuber, H U, 1972 Kanne und Griffschale. Ihr Gebrauch im täglichen Leben und die Beigabe in Gräbern der römischen Kaiserzeit, *Bericht Römishc-Germanischen Kommission*, **53**, 1-232
OA, 1995 Tollgate Cropmark Complex, Gravesham, Kent (ARC TLG 95), unpubl archaeological evaluation report by Oxford Archaeol for Union Railways (South) Ltd.
O'Connor, T P, 2003 *The Analysis of Urban Animal Bone Assemblages: A handbook for archaeologists*, The Archaeol of York Principals and Methods, **19/2**
Ogilvie, J D, 1982, The Hammill Ritual Shaft, *Archaeol Cantiana* **98,** 145-66
Olivier, A, 1988 The Brooches, in T W Potter and S D Trow, Puckeridge-Braughing, Herts: The Ermine Street excavations, 1971-1972. The late Iron Age and Roman Settlement, *Hertfordshire Archaeology* **10**, 1988, 35-53
Onhuma, K and Bergman, C A, 1982 Experimental studies in the determination of flake mode, *Bull Inst Archaeol London* **19,** 161-71
Orton, C R and Tyers, P A, 1992 Counting broken objects: The statistics of ceramic assemblages, in A M Pollard (ed), *New Developments in Archaeological Science*, 163–184
Oswald, A, 1975 *Clay Pipes for the Archaeologist*, BAR **14**, Oxford
Oudemans, T F M and J J, Boon, 1991 Molecular archaeology: analysis of charred (food) remains from prehistoric pottery by pyrolysis-gas chromatography/mass spectrometry, *J Analytical and Applied Pyrolysis* **20,** 197-227
Oudemans, T F M and Erhardt, D, 1996 Organic residue analysis in ceramic studies: implications for conservation treatment and collections management, in A Roy and P Smith (eds), Preprints of the contributions to the Copenhagen Congress, 26-30 August 1996: *archaeological conservation and its consequences,* International Institute for Conservation of Historic and Artistic Works, 137-142
Padley, T G, 1991 The Roman shoes, in T G Padley and S Winternbottom (eds), *The wooden, leather and bone objects from Castle Street, Carlisle: Excavations 1981-2, Excavations in Castle Street, Carlisle, Fascicule 3, Cumberland & Westmorleand* Antiq and Archaeol Soc Res Ser **5**, 228-43
Palmer, S C, 1999 Archaeological excavations in the Arrow Valley, Warwickshire, *Trans Birmingham Warwickshire Archaeol Soc* **103**, 1-231
Parfitt, J H, 1976 A Moated Site at Moat Farm, Leigh, Kent, *Archaeol Cantiana* **92**, 173-201
Parfitt, K, 1995 *Iron Age Burials from Mill Hill, Deal*, London
Parfitt, K, 2004 The Iron Age *c* 700 BC- AD 43, in T Lawson and D Killingray (eds), *An historical atlas of Kent*, Chichester, 16-18
Parfitt, K and Corke, B, 2003 The Dover-Deal bulk supply watermain, *Canterbury's Archaeology 2001-2002*, Canterbury, 35-6
Parker, A G, 1995 Pollen analysis, in T G Allen (ed), *Lithics and Landscape: Archaeological Discoveries on the Thames Water Pipeline at Gatehampton Farm, Goring, Oxfordshire 1985-92,* Thames Valley Landscape Monogr, **7**, Oxford, 109-113
Parker, A G, 1999 The pollen and sediments of Daisy Banks Fen, in A Barclay and C Halpin (eds), *Excavations at Barrow Hills, Radley, Oxfordshire. Volume 1. The Neolithic and Bronze Age Monument Complex*, Thames Valley Landscapes Monogr **11**, 254-267
Parker, A G, 2009 Phytoliths and Pollen, in Allen *et al.* 2009, 155-64
Parker, A G, 2010 Pollen and Phytoliths, in Allen *et al*. 2010, 96-7, 203-4
Parker, A G, Eckersley, L, Smith, M M, Goudie, A S, Stokes, S, White, K and Hodson, M J, 2004 Holocene vegetation dynamics in the north-eastern Rub' al-Khali desert, Arabian Peninsula: a pollen, phytolith and carbon isotope study, *J Quaternary Sci* **19,** 665-76
Parker-Pearson, M, 1999 Food, Sex and Death: Cosmologies in the British Iron Age with Particular Reference to East Yorkshire, in *Cambridge Archaeol J* **9**, 43-69
Parker-Pearson, M, Chamberlain, A T, Collins, M J, Craig, O E, Marshall, P, Mulville, J, Smith, H, Chenery, G, Cook, G, Craig, G, Evans, J, Hiller, J, Montgomery, J, Schwenninger, J-L, Taylor, G and Wess, T, 2005 Evidence for mummification in Bronze Age Britain, *Antiquity* **79**, 529-46
Patrick, M, de Koning, A J and Smith, A B, 1985 Gas liquid chromatographic analysis of fatty acids in food resides from ceramics found in the Southwestern Cape, South Africa, *Archaeometry* **27(2),** 231-6
Pautreau, J-P, 1999 *Antran. Un ensemble aristocratique du premier siècle*, Musee de Poitiers
Payne, S, 1973 Kill-off patterns sheep and goats: the mandibles from Aşwan Kale, *Anatolian Stud* **23**, 281-303
Payne, S, 1985 Morphological Distinctions between the Mandibular Teeth of Young Sheep, *Ovis*, and Goats, *Capra*, *J Archaeol Sci* **12**, 139-47

Paynter, S, 2007 Analysis of the currency bars, grave goods and pyre debris, in Crummy *et al*. 2007, 327-38
PCRG, 1997 *The study of later prehistoric pottery: general policies and guidelines for analysis and publication*, Prehistoric Ceramics Res Group Occas Pap Nos **1** and **2**, 2nd edn
PCRG, 2010
Peacock, D, 1967 Fladbury, *Curr Archaeol* **5**, 123-4
Peacock, D P S, 1982 *Pottery in the Roman World*, London
Peacock, D P S, 1984 Salt, seawater and ceramics, in Fulford and Peacock 1984, 263-4
Pearce, J, 1999 The dispersed dead: preliminary observations on burial and settlement space in rural Roman Britain, in P Baker *et al*. (eds), *Proceedings of the 7th Theoretical Roman Archaeology Conference*, Oxford, 151-62
Pearce, J, 2011 Marking the dead: tombs and topography in the Roman provinces, in M Carroll and J Rempel (eds), *Living through the dead : burial and commemoration in the classical world*, Oxford
Pearce, J E, Vince, A G and White, R with Cunningham, C M, 1982 *A dated type-series of London medieval pottery, Part 1: Mill Green Ware,* Trans London Middlesex Archaeol Soc **33**, 266-98
Pearce, J E, Vince, A G and Jenner, M A, 1985 *A dated type-series of London medieval pottery, Part 2: London-type Ware*, Trans London Middlesex Archaeol Soc, Spec Pap **6**
Pearce, J E and Vince, A G, 1988 *A dated type-series of London medieval pottery, Part 4: Surrey Whitewares*, Trans London Middlesex Archaeol Soc, Spec Pap **10**
Pelling, R, 2003 Charred plant remains, in Hutchings 2003, 71-6
Pelling, R, Thompson, G and Francis, R, 2008 Charred plant remains and charcoal, in K Poole and L Webley (eds), Prehistoric activity at Westwood, Broadstairs, *Archaeol Cantiana* **128**, 75-106
Peña-Chocarro, L, 1996 *In situ* conservation of hulled wheat species: The case of Spain, in S Padulosi, K Hammer and J Heller (eds), *Hulled Wheat: Proceedings of the First International Workshop on Hulled Wheats 21–22 July 1995 Castelvecchio Pascoli, Tuscany, Italy,* (Promoting the Conservation and Use of Underutilized and Neglected Crops No. 4), Rome, International Plant Genetic Resources Institute, 128-46
Penn, W S, 1965 Springhead – map of discoveries, *Archaeol Cantiana* **80**, 107-17
Perdikaris, S, 1999 From chiefly provisioning to commercial fishery: long term economic change in Artic Norway, *World Archaeol* **30**, 388-402
Perkins, D R J, 1995 Report on work by the Thanet Trust for Archaeology, *Archaeol Cantiana* **115**, 468-74
Perkins, D R J, Boast, E, Wilson, T and Macpherson Grant, N, 1998 Kent International Business Park, Manston: Excavations and evaluations 1994-1997, Report 1, *ArchaeolCantiana* **118**, 217 55
Perkins, D R J, Macpherson Grant, N and Healey, E, 1994 Monkton Court Farm Evaluation, 1992, *Archaeol Cantiana* **114**, 237-316
Perkins, D R G and Parfitt, K, 2004 The Roman Villa at Minster-in-Thanet. Part 1: Introduction and report on the Bath-House, *Archaeol Cantiana* **124**, 25-50
Phillips, C W, 1936 The Excavation of the Giants' Hills Long Barrow, Skendleby Lincolnshire, *Archaeologia* **85**, 37-106
Philp, B, 1973a *Excavations in West Kent, 1960-1970*, Kent Monogr Ser **2**, Kent Archaeol Rescue Unit, Dover
Philp, B, 1973b A Bronze Age Site on Hayes Common, in Philp 1973a, 30-52
Philp, B, 1984 *Excavations in the Darent Valley, Kent,* Kent Monogr Ser **4**, Kent Archaeol Rescue Unit, Dover
Philp, B, 1991, Major Iron Age site discovered near Alkham, *Kent Archaeol Rev No*. **103**, Spring, 50-2
Philp, B, 2002 *Archaeology in the Front Line; 50 years of Kent rescue 1952-2002,* Kent Archaeol Group, Dover
Philp, B and Willson, J, 1984 Roman site at Scotney Court, Lydd, *Kent Archaeol Rev* **68**, 156-61
Philp, B J, Parfitt, K, Willson, J, Dutto, M and Williams, W, 1991 *The Roman villa site at Keston, Kent: First report (excavations 19668-1978),* Kent Monogr Ser Rep **6**, Kent Archaeol Rescue Unit, Dover
Philp, B J and Chenery, M, 1997 *Hillside, Gravesend 1994-5: an outline report on a prehistoric and Romano-British site,* Kent Spec Sub Ser **11**, Kent Archaeol Rescue Unit, Dover
Philp, B and Chenery, M, 1998 *Prehistoric and Roman sites at Hillside, Gravesend, Kent*, Kent Spec Sub Ser **11**
Philp, B, Garrod, D, and French, D, 1998 *Neolithic and Iron Age sites at Darenth, Kent. The urgent rescue-excavation of two major prehistoric sites at Darenth during ongoing gravel extraction 1975-1982.* Kent Archaeological Rescue Unit, Canterbury
Philp, B, Parfitt, K, Willson, J and Williams, W, 1999 *The Roman villa site at Keston, Kent; second report (excavations 1967 and 1978-1990)*, Kent Monogr Ser Res Rep **8**, Kent Archaeol Rescue Unit, Dover
Philp, B and Chenery, M, nd *A Roman site at Springhead (Vagniacae) near Gravesend,* Kent Spec Sub Ser **9,** Kent Archaeol Rescue Unit
Philpott, R, 1991 *Burial practices in Roman Britain – a survey of grave treatment and furnishing AD 43-410,* BAR Brit Ser **219**, Oxford
Pič, J L, 1907 *Die Urnengräber Böhmens*, Leipzig
Piercy Fox, N, 1967 The Ritual Shaft at Warbank, Keston, *Archaeol Cantiana* **82**, 184-91
Piperno, D R, 1988 *Phytolith Analysis: An Archaeological and Geological Perspective,* San Diego
Pitts, M, 2005 Pots and pits: drinking and deposi-

tion in late Iron Age south-east Britain, *Oxford J Archaeol* **24(2)**, 143-61
Pitts, M W and Jacobi, R M, 1979 Some aspects of change in flaked stone industries of the Mesolithic and Neolithic in Southern Britain, *J Archaeol Sci* **6**, 163-77
Pollard, A M, Ditchfield, P, McCullagh, J S O, Allen, T G, Gibson, M, Boston, C, Clough, S and Marquez-Grant, N, 2011 "These boots were made for walking": the isotopic analysis of a C_4 Roman inhumation from Gravesend, Kent, UK, *American Journal of Physical Anthropology* **146**, 446-56
Pollard, R J, 1988 *The Roman pottery of Kent*, Kent Archaeol Soc Monogr Ser **V**, Canterbury
Pollard, R, 2001 An Iron Age Inhumation from Rushey Mead, Leicester, *Trans. Leicestershire Archaeol and Hist Soc* **75**, 20-5
Poole, C, 1995a Study 14: loomweights versus oven bricks, in Cunliffe 1995, 285-6
Poole, C, 1995b Pits and propitiation, in Cunliffe 1995, 249-75
Poole, C, 2011 The fired clay in Simmonds *et al.* 2011, 136-41
Poulton, R, 2004 The Iron Age in Surrey, in J Cotton, G Crocker and A Graham (eds), *Aspects of Archaeology and History in Surrey: Towards a Research Framework for the County*, Surrey Archaeol Soc, 51-64
Poux, M, Demierre, M, Garcia, M, Gratuze, B, Gruel, K, Guichon, R, and Nieto-Pelletier, S, 2007, Paire de fibules en or du 1er S. av. J-C, *Gallia* **64**, 222-5
Powell, A B, Barnett, C, Grimm, J M, Mepham, L, Phillpotts, C and Stevens, C J, 2009 A medieval enclosure and bakery or brewhouse at Fulston Manor, Sittingbourne, in P Andrews *et al*. 2009, 175-97
Powell, K, Smith, A and Laws, G, 2010 *Evolution of a farming community in the Upper Thames Valley. Excavation of a Prehistoric, Roman and Post-Roman landscape at Cotswold Community, Gloucestershire and Wiltshire. Volume 1: Site Narrative and Overview*, Oxford Archaeol Thames Valley Landscapes Monogr **31**, Oxford
Powell, T G E, 1958 *The Celts*, London
Preece, R C and Bridgland, D R, 1998 *Late Quaternary Environmental Change in North-West Europe: excavations at Holywell Coombe, South-East England*, London
Price, J and Cottam, S, 1998 *Roman-British glass vessels: a handbook*, CBA Practical handbook in archaeology **14**, London
Prilaux, G, 2000 *La production du sel à l'Age du Fer*. Montagnac: Éditions Monique Mergoil, Protohistoire Européenne **5**
Quinnell, H and Blockley, M R, 1994 *Excavations at Rhuddlan, Clwyd 1969-73. Mesolithic to Medieval,* CBA Res Rep **95**, London
Rackham, O, 2006 *Woodlands*, London
Raumpou, M, Heron, C, Andreou, S and Kotsakis, K, 2003 Organic residues in storage vessels from the Toumba Thessalonikis, in A Gibson (ed), *Prehistoric pottery: people, pattern and purpose*, BAR Int Ser **1156**, Oxford, 189-99
Raven, A M, van Bergen, P F, Stott, A W, Dudd, S N and Evershed, R P, 1997 Formation of long-chain ketones in archaeological pottery vessels by pyrolysis of acyl lipids, *J Analy Applied Pyrolysis* **40-41,** 267-85
Raymond, F, 2003 Pottery, in S Coles, S Hammond, J Pine, S Preston and A Taylor (eds), *Bronze Age, Roman and Saxon sites on Shrubsoles Hill, Sheppey and at Wises Lane, Borden, Kent,* Thames Valley Archaeol Services Monogr, **4**, 22-41
Reber, E A and Evershed, R P, 2004 Identification of maize in absorbed organic residues: a cautionary tale, *J Archaeol Sci* **31,** 399-410
Regert, M, Delacaotte, J M, Menu, M, Pétrequin, P and Rolando, C, 1998 Identification of Neolithic hafting adhesives from two lake dwellings at Chalain, (Jura, France), *Ancient Biomolecules* **2,** 81-96
Reimer, P J, Baillie, M G L, Bard, E, Bayliss, A, Beck, J W, Bertrand, C J H, Blackwell, P G, Buck, C E, Burr, G S, Cutler, K B, Damon, P E, Edwards, R L, Fairbanks, R G, Friedrich, M, Guilderson, T P, Hogg, A G, Hughen, K A, Kromer, B, McCormac, G, Manning, S, Bronk Ramsey, C, Reimer, R W, Remmele, S, Southon, J R, Stuiver, M, Talamo, S, Taylor, F W, van der Plicht, J and Weyhenmeyer, C E, 2004 IntCal04 Terrestrial radiocarbon age calibration, 0–26 Cal Kyr BP, *Radiocarbon*, **46**, 1029–58
Reverte, J M, 1986 *Cremaciones prehistóricas en España*, *Anales de la Escuela de Medcina Legal* **1**, 129-51
Reynolds, A, 2011 The Anglo-Saxon and Medieval Periods, in Booth *et al.* 2001, 341-400
Reynolds, P J, 1974 Experimental Iron Age Storage Pits: an interim report, *Proc Prehist Soc* **40**, 118-31
Reynolds, P J, 1995 The life and death of a post-hole, *Interpreting Stratigraphy* **5**, 27-32
Rhodes, M, 1980 Leather footwear, in D M Jones (ed), *Excavations at Billingsgate Buildings 'Triangle', Lower Thames Street, 1974*, London and Middlesex Archaeol Soc Spec Pap **4**, 99-128
Richards, M P, Hedges, R E M, Molleson, T I, and Vogel, J C, 1998 Stable isotope analysis reveals variations in human diet at the Poundbury Camp cemetery site, *Journal of Archaeological Science* **25**, 1247-52
Riddler, I, 2004 Anglo Saxon Kent: Early Development *c*.450-c.800, in T Lawson and D Killingray, *An Historical Atlas of Kent*, Chichester
Riddler, I and Trevarthen, M, 2006 The prehistoric, Roman and Anglo-Saxon funerary landscape at Saltwood Tunnel, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Riddler, I and Walton Rogers, P 2006. Early Medieval Small Finds in K Parfitt, B Corke and J Cotter, *Townwall Street, Dover Excavations 1996. The Archaeology of Canterbury New Series,* Volume **3**, Canterbury, 256

Rigby V, 1985 The Gallo-Belgic wares – discussion and conclusions, in Niblett 1985, 74-82
Rigby, V, 1995 The Pottery, in Parfitt 1995, 35-57
Rigby, V, 1999 Gallo-Belgic wares and local imitations, in Niblett 1999, 182-93
Rigby, V, 2007 The pots from funerary contexts and pyre debris in pits, in Crummy *et al.* 2007, 271-4
Rigby, V and Timby, J, 2007 Gallo-Belgic database (http://gallobelgic.thehumanjourney.net),
Rigold, S E, 1971 Eynsford Castle and its excavation, *Archaeol Cantiana* **86**, 109-171
Rigold, S E and Fleming, A J, 1973 Eynsford Castle: The moat and bridge, *Archaeol Cantiana* **88**, 87-116
Riha, E, 1986 *Römisches Toilettengerät und medizinische Instrument aus Augst und Kaiseraugst*, Forschungen in Augst, Bd 6, Augst 1986
Roberts, C and Manchester, K, 1999 *The archaeology of disease*, Ithaka
Roberts, C A and Cox, M, 2003, *Health and disease in Britain from prehistory to the present day*, Gloucester
Robinson, M, 1974 Site 4: Excavations at Copt Hay, Tetsworth, in D A Hinton and T Rowley (eds), *Excavations on the route of the M40*, Oxfordshire Archit and Hist Soc and Oxfordshire Archaeolog Unit, 41-115
Roe, F, 1994 Worked Stone, in Mudd 1994, 363-411
Roe, F, 2008 Worked Stone, in Allen *et al.* 2010, 170-75
Rojo-Guerra, M A, Garrido-Pena, R, Garcia-Martinez-de Lagran, I, Jaun-Tresseras, J and Matamala, J C, 2006 Beer and Bell Beakers: drinking rituals in Copper Age Inner Iberia, *Proc Prehist Soc* **72**, 243-65
Rosen, A M, 1993 Phytolith evidence for early cereal exploitation in the Levant, in D M Pearsall and D R Piperno (eds), *Current Research in Phytolith analysis: Applications in Archaeology and Paleoecology*, MASCA: Ann Arbor, Michigan,160-71
Rouvier-Jeanlin, M, 1972 *Les figurines gallo-romaines en terre cuite au Musée des Antiquités Nationales*, Gallia Supplement 24, CNRS, Paris
Rudling, D (ed), 2002 *Downland Settlement and Land-use: The Archaeology of the Brighton Bypass,* UCLFAU Monograph No. **1**, London
Sahlins, M D, 1985 *Islands of history*, Chicago
Sakař, V, 1970 *Roman imports in Bohemia*, Fontes Archaeologici Pragenses, vol. **14**, Prag: Nationalmuseum
Saville, A, 1980 On the measurement of struck flakes and flake tools, *Lithics* **1,** 16-20
Savory, H N, 1976 *Guide catalogue to the Early Iron Age collections*, National Museum of Wales, Cardiff
Scaife, R G, 1987 A review of later Quaternary microfossil and macrofossil research in southern England; with special reference to environmental archaeological evidence, in H C M Keeley (ed), *Environmental Archaeology: a Regional Review Vol 1*, HBMC England, Occas Pap **1,** 125-203
Scheuer, L and Black, S, 2000 *Developmental juvenile osteology*, London
Schmid, E, 1972 *Atlas of animal bones for prehistorians, archaeologists and quaternary geologists,* Amsterdam, London and New York
Schuster, J and Stevens, C J, 2009 A Kentish type of Medieval Sunken-Featured Bakery/Kitchen, in P Andrews *et al.* 2009, 249-51
Schwantes, G, 1914 Zwei römische Bronzeeimer der frühen Kaiserzeit, *Lüneburger Museumsblätter Heft* **9**, 24-37
Schwartz, J H, 1995 *Skeleton keys- an introduction to human skeletal morphology, development and analysis*, Oxford
Schweingruber, F H, 1990 *Microscopic wood anatomy; Structural variability of stems and twigs in recent and subfossil woods from Central Europe*. 3rd edn, Birmensdorf
Scott, D A, 2002 *Copper and Bronze in Art*, Los Angeles
Scott, D A and Podany, J, 1990 Ancient Copper Alloys: Some Metallurgical and Technological Studies of Greek and Roman Bronzes, in M True and J Podany (eds), *Small Bronze sculpture from the Ancient World*, The J Paul Getty Museum, Los Angeles 31-60
Scott, E M, 2003 The third international radiocarbon intercomparison (TIRI) and the fourth international radiocarbon intercomparison (FIRI) 1990–2002: results, analyses, and conclusions, *Radiocarbon* **45**, 135-408
Seagar Smith, R, Brown, K M and Mills, J M, 2011 The pottery from Springhead, in E Biddulph *et al.* 2011, 1-133
Sealey, P R, 1996 The Iron Age of Essex, in Bedwin 1996, 46-68
Sellwood, L, 1984 Objects of Iron, in Cunliffe 1984, 346-71
Serjeantson, D, 1996 The animal bones, in S Needham and T Spence (eds), *Refuse and disposal at Area 16 east Runnymede: Runnymede Bridge research excavations,* London, 194-253
Shaffrey, R, 2011a Worked Stone, in Biddulph *et al.* 2011, 363-78
Shaffrey, R, 2011b Worked Stone, in Simmonds *et al.* 2011, 145-6
Shaffrey, R and Allum, C, 2011 Worked Stone, in R Brown and A Hardy, *Trade and Prosperity, War and Poverty. An archaeological and historical investigation into Southampton's French Quarter*, Oxford Archaeology Monograph **15**, Oxford, 207-14
Shaffrey, R and Roe, F, 2011 The widening use of Lodsworth Stone: Neolithic to Romano-British quern distribution, in D Williams and D Peacock (eds), *Bread for the people: The Archaeology of Mills and Milling*, BAR Int Ser **2274**, Oxford, 309-24
Shennan, S, 1997 *Quantifying archaeology* (2 edn), Iowa City
Sieveking, G, de, 1971 *Prehistoric and Roman Studies commemorating the opening of the department of prehistoric and Roman antiquities*, London
Silver, A, 1969 The Ageing of Domestic Animals,

in D Brothwell and E Higgs (eds), *Sci & Archaeol* **2**, 283-301
Simmonds, A, Wenban-Smith, F, Bates, M, Powell, K, Sykes, D, Devaney, R, Stansbie, D and Score, D, 2011 *Excavations in North-West Kent 2005-2007: one hundred thousand years of human activity in and around the Darent Valley*, Oxford Archaeol Monogr **11**, Oxford
Skanska-Owen Williams, 2004 A2 Pepperhill to Cobham Widening Scheme Environmental Statement , Volume 2 Part 4 Cultural Heritage, 3.10.33
Smith, I F, 1973 The Prehistoric Pottery, in B Philp (ed), *A Neolithic Site near Baston Manor, Hayes, Kent, Excavations in West Kent 1960–1970*, Kent Archaeol Rescue Unit Res Rep **2**, 9-14
Smith, I F, 1984 Prehistoric pottery, in Philp 1984, 122-3
Smith, W, 2009 Assessment of charred plant macrofossils and charcoal from the A2 excavations, near Gravesend, Kent, Oxford, in Allen and Donnelly 2009, unpubl
Smith, W, 2011 Charred Plant Remains from Northfleet, in Barnett *et al.* 2011, 105-113
Smith, W and Davies, A, 2006 The charred plant remains from Thurnham Roman Villa, Kent, *HS1 specialist report series*, in ADS 2006
Stace, C, 1997 *New flora of the British Isles*, 2nd edn, London
Stafford, E C, 2006 The Land Mollusca from Northumberland Bottom, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006
Stafford, E C, 2011 Land snails, in Simmonds *et al.* 2011, 173-180
Stansbie, D, Brown, R, Allen, T and Hardy, A, forthcoming The excavation of Iron Age ditches and a medieval farmstead at Allcourt Farm, Little London, Lechlade 1999, Trans Bristol Gloucestershire Archaeol Soc
Stead, I M, 1965 *The La Tène cultures of eastern Yorkshire*, York
Stead, I M, 1967 A La Tène III burial at Welwyn Garden City, *Archaeologia* **101**, 1-62
Stead, I M, 1971 The reconstruction of Iron Age buckets from Aylesford and Baldock, in G de Sieveking (ed), *Prehistoric and Roman Studies*, London, 250-82
Stead, I M, 1976 The earliest burials of the Aylesford Culture, in G de G Sieveking, I H Longworth, and K E Wilson (eds), *Problems in Economic and Social Archaeology*, London, 401-16
Stead, I M, 1979 *The Arras culture*, York
Stead, I M, 1991 *Iron Age cemeteries in East Yorkshire: excavations at Burton Fleming, Rudston, Garton-on-the-Wolds and Kirkburn*, English Heritage Archaeol Rep **22**, London
Stead, I M and Rigby, V, 1989 *Verulamium: the King Harry Lane site*, English Heritage Archaeol Rep **12**, London
Stead, I and Rigby, V, 1999 *The Morel Collection Iron Age Antiquities from Champagne in the British Museum*, London
Stern, B, Heron, C, Tellefsen, T and Serpico, M, 2008 New investigations into the Uluburun resin cargo, *J Archaeol Sci* **35**, 2188-233
Stevens, C J, 2009 The Romano-British agricultural economy, in J Wright, M Leivers, R Seager Smith and C J Stevens (eds), *Cambourne New Settlement: Iron Age and Romano-British settlement on the clay uplands of West Cambridgeshire*, Wessex Archaeol Monogr **23**, 104-10
Stevens, C J, 2011 Charred Plant Remains from Springhead, in C Barnett *et al.* 2011, 95-104
Stuiver, M and Kra, R S, 1986 Editorial comment, *Radiocarbon* **28(2B)**, ii
Stuiver, M and Polach, H A, 1977 Reporting of ^{14}C data, *Radiocarbon* **19**, 355-63
Sygrave, J, 2008 Archaeological investigations at Castle Road Sittingbourne, *Archaeol Cantiana* **128**, 129-42
Tafuri, M A, Craig, O E, and Canci, A, 2009 Stable isotope evidence for the consumption of millet and other plants in Bronze Age Italy, *American Journal of Physical Anthropology* **139**, 146-53.
Tassinari, S, 1993 *Il vassellame bronzeo di Pompei*, 2 vols, Rome
Tatton-Brown, T, 2001 The evolution of 'Watling Street' in Kent, *Archaeol Cantiana* **121**, 121-33
Taylor, A, 2001 *Burial practice in early England*, Stroud
Tester, P J, 1961 The Roman villa in Cobham Park, near Rochester, *Archaeol Cantiana* **76**, 88-109
Theunissen, J D, 1994 A method for isolating and preparing silica bodies in grasses for scanning electron microscopy, *Biotechnic and Histochemistry* **69,** 291-4
Thoen, H, 1975 Iron Age and Roman Salt Making Sites on the Belgian Coast, in K des Brisay and K Evans (eds), *Salt: the study of an ancient industry,* Colchester Archaeol Group, Colchester, 56-60
Thomas, J, 1999 *Understanding the Neolithic*, London
Thomas, R, 1981 Stone Weights from the Thames, *Oxoniensia* **46**, 129-33
Thompson, F H, 1986 The Iron Age hillfort of Oldbury, Kent: excavations 1983-4, *Antiq J* **63**, 237-78
Thompson, F H, 1983 Excavations at Bigberry, near Canterbury 1978-80, *Antiq J* **63**, 248-51
Thompson, I, 1978 The 'Belgic' cemetery at Allington, *Archaeol Cantiana* **94**, 127-138
Thompson, I, 1982 *Grog-tempered 'Belgic' pottery of south-eastern England,* BAR Brit Ser **108**, Oxford
Thompson, I, 1995 Belgic, in J J Wymer and N R Brown, *Excavations at North Shoebury: settlement and economy in south-east Essex 1500BC-AD1500*, East Anglian Archaeology **75**, Chelmsford, 88-91
Thompson, I, 2001 Late Iron Age pottery from Hawkinge Airfield, Folkestone, Kent, unpublished report for Archaeology South-East
Thorley, A, 1981 Pollen analytical evidence relating to the vegetation history of the Chalk, *J Biogeography* **8**, 93-106
Timby, J, Brown, R, Hardy, A, Leech, S, Poole, C and Webley, L, 2007 *Settlement on the Bedfordshire*

Claylands: Archaeology along the A421 Great Barford Bypass, Bedfordshire Archaeol Monogr **8**, Oxford
Tipper, J, 2004 The Grubenhaus in Anglo-Saxon England: an analysis and interpretation of the evidence from a most distinctive building type, The Landscape research centre, York
Tomber, R and Dore, J 1998 *The National Roman Fabric Reference Collection:* A *Handbook*, MoLAS Monograph **2**, London
Tomlinson, P and Hall, A, 1996 A review of the archaeological evidence for food plants from the British Isles: an example of the use of the Archaeobotanical Computer Database (ABCD), *Internet Archaeology* **1** http://intarch.ac.uk/journal/issue1/tomlinson_toc.html
Toynbee, J M C, 1962 *Art in Roman Britain,* London
Toynbee, J M C, 1971 *Death and burial in the Roman world*, London
Treasure Report 2000, Department for Culture, Media and Sport, London 2002
Trow, S, James, S and Moore, T, 2009 *Becoming Roman, being Gallic, staying British; Research and Excavation at Ditches 'Hillfort' and Villa 1984-2006*, Oxford
Trow-Smith, R, 1959 *A History of British Livestock Husbandry 1700-1900*, London
Ubelaker, D H, 1989 *Human Skeletal Remains*. *Excavation, Analysis, Interpretation,* 2 edn, Taraxacum, Washington
Urem-Kotsou, D, Stern, B, Heron, C and Kotsakis, K, 2002 Birch Bark tar at Neolithic Makriyalos, Greece, *Antiquity* **76**, 962-7
URS, 1995 Tollgate Cropmark Complex, Gravesham, Kent, Archaeological Evaluation Report prepared by Oxford Archaeology, Union Railways (South), ADS 2006
URS 2001a Channel Tunnel Rail Link, Area 330 (Zone 3) Northumberland Bottom (ARC WNB 98) Archaeological Post-excavation Assessment Report prepared by the Museum of London Archaeology Service, Union Railways (South) October 2001, ADS 2006
URS 2001b Channel Tunnel Rail Link, Area 330 (Zone 2) Watching Brief (ARC 330 98) Post-Excavation Assessment report, unpublished report prepared by the Museum of London Archaeology Service, Union Railways (South) August 2001, ADS 2006
van Boekel, G M E C, 1993 Terres cuites du Centre dans les Pays-Bas, le Luxembourg et la Grande-Bretagne, in C Bémont, M Jeanlin and C Lahanier (eds), *Les figurines en terre cuite gallo-romaines,* Paris, 240-52
van der Veen, M, 1984 Sampling for seeds, in W, van Zeist and W A, Casparie (eds), *Plants and Ancient Man: Studies in Palaeoethnobotany,* Rotterdam, Balkema, 193-99
van der Veen, M, 1989 Charred grain assemblages from Roman-period Corn Driers in Britain, *Archaeol J* **146**, 302-19
van der Veen, M, 1995 The identification of maslin crops, in H Kroll and R Pasternak (eds), *Res Archaeobotanicae,* Kiel, Institu für Ur- und Frühgeschichte der Christian-Albrecht-Universität, 335-43
van der Veen, M, 2007 Food as an instrument of social change: Feasting in Iron Age and Early Roman southern Britain, in C Twiss (ed), *The Archaeology of Food and Identity*, Center for Archaeological Investigations Southern Illinois University Carbondale Occasional Paper **34**, 112–29
van der Veen, M and Fieller, N, 1982 Sampling seeds, *J Archaeol Sci* **9**, 287-98
van der Veen, M and Jones, G, 2006 A re-analysis of agricultural production and consumption: implications for understanding the British Iron Age, *Vegetation History and Archaeobotany* **15**, 217-28
van der Veen, M and Jones, G, 2007 The production and consumption of cereals: a question of scale, in Haselgrove and Moore 2007, 419-29
van Doorselaer, A, Putnam, R, van der Gucht, K and Janssens, F, 1987 De Kemmelberg: en keltische bergrtrijkvesting, *Westvlaamse Archaeologica Monografieen* **III**, Kortrijk
VCH, 1963 *The Victoria History of the county of Essex, vol.* **3**, Oxford
Vidal, M, 1976 Le seau de bois orné de Vieille-Toulouse (Haute Garonne), Étude comparative des seaux de la Tène III, *Gallia* **34**, 167-200
Vince, A G, 1985 The Saxon and Medieval Pottery of London: A Review, *Medieval Archaeol* **29**, 25-93
Vince, A G and Jenner, A, 1991 The Saxon and Early Medieval Pottery of London, in A G Vince (ed), *Aspects of Saxon and Norman London 2: Finds and Environmental Evidence*, LAMAS Spec Pap **12**, 19-119
von den Driesch, A, 1976 *A guide to the measurement of animal bones from archaeological sites*, Peabody Museum of Archaeology and Ethnology, Harvard University
von Uslar, R, 1938 *Westgermanische Bodenfunde: des ersten bis dritten Jahrhunderts nach Christus aus Mittel- und Westdeutschland*, Germanische Denkmäler der Frühzeit **3**, de Gruyter, Berlin
Wainwright, G J, 1979 *Gussage All Saints. An Iron Age settlement in Dorset*, DOE Archaeol Rep **10**, London
Walton Rogers, P, 2007 *Cloth and Clothing in Early Anglo-Saxon England, AD 450-700*, CBA Research Report **145**, London
Ward Perkins, J B, 1938 An early Iron Age site at Crayford, Kent, *Proc Prehist Soc* **4**, 151-68
Ward Perkins, J B, 1944 Excavations on the Iron Age hill-fort of Oldbury, near Ightham, Kent, *Archaeologia* **90**, 127-76
Warhurst, A, 1954 The pottery, in A F Allen (ed), Roman and other remains from Chalk near Gravesend, *Archaeol Cantiana* **68**, 151-8
Waton, P V, 1982 Man's impact on the chalklands: some new pollen evidence, in M Bell and S Limbrey (eds), *Archaeological aspects of woodland*

ecology, BAR **146**, Oxford, 75-91
Watson, J, 1988 The identification of organic materials preserved by metal corrosion products, in S Olsen (ed), *The Use of the Scanning Electron Microscope in Archaeology*, BAR Int Ser **452**, Oxford, 65-76
Watts, M, 2002 *The Archaeology of Mills and Milling*, Stroud
Webley, L and Timby, J, 2007 *Fairfield Park, Stotfold, Bedfordshire: later prehistoric settlement in the eastern Chilterns*, Bedfordshire Archaeol Monogr **7**, Oxford
Webster, P, 1996 *Roman samian pottery in Britain*, CBA Practical Handbooks **13**, York
Weekes, J, 2010 Canterbury Archaeological Trust interim reports. 7. Thanet Earth, Monkton, *Archaeol Cantiana* **130**, 357-62
Wegewitz, W, 1937 *Die langobardische Kultur im Gau Moswidi (Niederelbe) zu Beginn unserer Zeitrechnung*, Urnenfriedhöfe in Niedersachsen Bd. **2**, August Lax, Hildesheim and Leipzig
Wegewitz, W, 1962 *Der Urnenfriedhof von Ehesdorf-Vahrendorf in Kreise Harburg aus der vorrömischen Eisen- und älteren römschen Kaiserzeit,* Urnenfriedhöfe in Niedersachsen, Bd. **6,** August Lax, Hildesheim
Wessex Archaeology, nd *Cliffs End Farm, Ramsgate*, http://www.wessexarch.co.uk/system/files/Cliffs%20End%20Farm.pdf, Wessex Archaeology
West, S, 1985, *West Stow: The Anglo-Saxon Village,* East Anglian Archaeology **24**, Ipswich
Wheeler, R E M, 1943 Maiden Castle, Dorset, Society of Antiquaries, London
Whimster, R, 1981 *Burial practice in Iron Age Britain 700BC-43AD,* BAR Brit Ser **90**, Oxford
White, B, 2006 Human remains from Northumberland Bottom, Gravesend, Kent, *HS1 Specialist Report Series*, in ADS 2006
Whiting, W, Hawley, W and May, T, 1931 *Report on the excavation of the Roman cemetery at Ospringe, Kent*, Rep Res Comm Soc Antiq London **8**, Oxford
Whittle, A, 1984 The pits, in B Cunliffe (ed), *Danebury: an Iron Age hillfort in Hampshire. Vol 1 The excavations 1969-1978: the site*, London, 128-46
Whittle, A, 1991 Wayland's Smithy, Oxfordshire: excavations at the Neolithic tomb in 1962-3 by R J C Atkinson and S Piggott, *Proc Prehist Soc* **57**, 61-102
Whittle, A, Atkinson, R J C, Chambers, R and Thomas, N, 1992 Excavations in the Neolithic and Bronze Age complex at Dorchester-on-Thames, Oxfordshire, 1947-1952 and 1981, *Proc Prehist Soc* **58,** 143-201
Wilkinson, K N, 2003 Colluvial deposits in dry valleys of Southern England as proxy indicators of palaeoenvironmental and land-use change, *Geoarchaeology* **18**, 725-755
Wilkinson, T J, 1988 *Archaeology and Environment in south Essex: Rescue Archaeology along the Grays By-Pass, 1979/80,* EAA Rep **42**
Wilkinson, T J and Murphy, P L, 1995 *The Archaeology of the Essex Coast, Volume I: The Hullbridge Survey,* EAA Rep **71**
Willers, H, 1907 *Neue Untersuchungen über die römische Bronzeindustrie von Capua und von Niedergermanien*, Hahnsche buchhandlung, Hannover and Leipzig
Williams, D, 1999 The amphorae, in Niblett 1999, 193-5
Williams, J H, 2003 New light on Roman Kent, *J Roman Archaeol* **16**, 219-36
Williams, J H (ed), 2007 *The Archaeology of Kent to AD 800*, Rochester
Williams, R J and Zeepvat, R J, 1994 *Bancroft. A Late Bronze Age/Iron Age Settlement, Roman Villa and Temple-Mausoleum,* Buckinghamshire Archaeol Soc Monogr Ser No.**7**, Aylesbury
Willis, S H, 2005 Samian pottery, a resource for the study of Roman Britain and beyond: the results of the English Heritage funded samian project, an e-monograph, *Internet Archaeology* **17**, http://intarch.ac.uk/journal/issue17
Wilson, B, 1996 *Spatial Patterning among Animal Bones in Settlement Archaeology; An English regional exploration,* BAR Brit Ser **251**, Oxford
Wilson, B and Edwards, P, 1993 Butchery of horse and dog at Witney Palace, Oxfordshire, and the knackering and feeding of meat to hounds during the post-medieval period, *Post-Medieval Archaeol* **27**, 43-56
Wilson, C, 2000 *The Magic Universe: Everyday Ritual and Magic in Pre-modern Europe*, London
Wilson, D, and Hurst, D G, 1968 Medieval Britain in 1967, *Medieval Archaeol* **12**,162
Wood, M, 1965 *The English Medieval House*, London
Woodward, A, 2000 When did pots become domestic? Special pots and everyday pots in British prehistory, *Medieval Ceramics* **22-23**, 3-10
Woodward, A, 2008 Ceramic Technologies and Social Relations, in J Pollard (ed), *Prehistoric Britain,* Oxford, 288-309
Woodward, A and Blinkhorn, P W, 1997 Size is important: Iron Age vessel capacities in central and southern England, in C G Cumberpatch and P W Blinkhorn (eds), *Not so much a pot, more a way of life*, Oxbow Monogr **83**, Oxford, 153-62
Woodward, A and Hill, J D (eds), 2002 *Prehistoric Britain, The Ceramic Basis,* Prehistoric Ceramic Research Group Occas Pub **3**, Oxford
Worsfold, F H, 1943 A report on the Late Bronze Age site excavated at Minnis Bay, Birchhington, Kent, 1938-40, *Proc Prehist Soc* **9**, 28-48
Worsfold, F H, 1948 An Early Iron Age site at Borden, *Archaeol Cantiana* **66**, 148-55
Wright, S M, 1992 Millstones, in P Rahtz and R Meeson, *An Anglo-Saxon Watermill at Tamworth. Excavations in the Bolebridge Street area of Tamworth, Staffordshire, in 1971 and 1978,* CBA Res Rep **83**, London
Wymer, J J and Brown, N R, 1995 *Excavations at North Shoebury: settlement and economy in south-*

east Essex 1500BC-AD150, EAA **75**
Yalden, D, 1999 *The history of British mammals*, London
Yates, D T, 2007 *Land, power and prestige: Bronze Age field systems in southern England*, Oxford
Ytrehus, B, Carlson, C S and Ekman, S, 2007 Etiology and Pathogenesis of Osteochrondrosis, *Veterinary Pathology* **44**, 429-48
Zohary, D and Hopf, M, 2000 *Domestication of plants in the Old World: the origin and spread of cultivated plants in West Asia, Europe, and the Nile Valley*, 3 edn, Oxford

Index

Oxford Archaeology Monograph 16
2012

Artist's reconstruction of middle Bronze Age settlement in site G looking west

Excavations along the new road line have revealed nearly 6000 years of human activity, from a massive marker post erected by early Neolithic farmers at the head of a dry valley to a bizarre burial of several different animals dating to the sixteenth century AD. Prehistoric discoveries include two enclosures of the middle Bronze Age, both associated with some of the earliest cobbled roads ever found, a collection of Iron Age storage pits rich in diverse deliberate offerings, and the emergence of a nucleated hamlet in the middle Iron Age. Most exciting were rich cremation burials of the late Iron Age and early Roman periods, probably successive generations of a local family, whose rise to prominence between the invasions of Caesar and of Claudius coincides with the growth of the cult centre at Springhead (at the head of the Ebbsfleet valley) nearby. Medieval settlements of the late 11th-14th centuries mirror the renewed importance of Watling Street after the Norman conquest, and its eventual return to obscurity due to competition from the ferry from London to Gravesend.

SKANSKA

HIGHWAYS AGENCY

oxfordarchaeology southsouthsouth

Janus House, Osney Mead, Oxford OX2 OES

9 780904 220681

£32.00

A Road Through the Past

Archaeological discoveries on the A2 Pepperhill to Cobham road-scheme in Kent

By Tim Allen, Mike Donnelly, Alan Hardy, Chris Hayden and Kelly Powell

oxfordarchaeology southsouthsouth